OVERHEAD STRUCTURE OF CENTRAL ENGINEERING AS OF 6/29/74

LARRY PORTNER

CC		# People	# Direct People	# Ovhd People	% Ovhd
301	Diagnostics	59	57	2	
315	Diag. Std	10	10	0	
317	Auto Mfg. Diag.	45	44	1	
345	Diagnostic Admin.	8	0	8	
TOTAL	DIAGNOSTICS	122	111	11	10%
306	Applications	35	29	6	
341	DECsystem-10 System Engineering	45	40	5	
342	Small Sys SW Engrg	52	44	8	
343	Software Planning	5	0	5	
345	~~Diag Engrg Admin~~	59	53	6	
346	Research & Dev	9	6	3	
347	SW Engrg & Serv Admin	18	0	18	
348	SW Engrg Admin	9	0	9	
34A	Hardware/Software Engrg.	12	10	2	
34B	SW Engrg Training	14	0	14	
34C	Software Documentation	47	42	5	
34D	SW Quality Engrg	35	31	4	
365	SW Dist Center	98	0	98	
SUB-TOTAL	Software Design	345	255	90	35%
TOTAL		565	366	199	54%

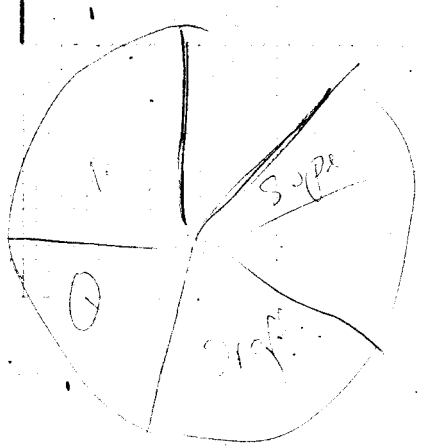
BOB PUFFER

CC		# People	# Direct People	# Ovhd People	% Ovhd
324	Model Shop	58		58	
325	Design Drafting	155		155	
327	Information Serv	58		58	
TOTAL	ENGINEERING SERVICES	271		271	
330	Mech Engrg.	17	14	3	
379	Disk Engrg.	59	55	4	
383	Printer Paper Tape Engineering	35	32	3	
384	Tape Engineering	23	20	3	
386	Special Projects	5	0	5	
391	Power Supply Engrg.	25	22	3	
377	Simulation	4	0	4	
382	LSI	13	10	3	
SUB-TOTAL	PRODUCT DESIGN	181	153	28	15%
36A	Software Prep	18	0	18	
36B	SW Engrg and SW Services Group Admin	9	0	9	
364	Computational Services	20	0	20	
366	CS/3	3	0	3	
TOTAL	CS/2	50	0	50	
TOTAL		502	153	349	69%

DICK CLAYTON

CC		# People	# Direct People	# Ovhd People	% Ovhd
367	11/45 Engrg	25	23	2	
372	Medium Systems Development	5	0	5	
373	11/40 Engrg.	9	6	3	
374	11 Packaging Design	9	7	2	
375	Adv 11 Engrg.	5	2	3	
378	11 Sys Engrg	19	0	19	
395	11/05 Systems Engineering	23	20	3	
SUBTOTAL	-PDP-11	95	58	37	64%
381	PDP-8 Engrg.	24	21	3	12%
TOTAL		119	79	40	50%
322	Gordon	15	0	15	0%

GRAND TOTAL 1201 598 603 100%



Phil Laut
7/31/74

OVERHEAD STRUCTURE OF CENTRAL ENGINEERING AS OF 6-29 -74

Organization	(1) # people who design	(2) # people who do not design	(3) total people	2 ÷ 1 ratio
Software Development Larry Portner				
Diagnostic Engineering	111	11	122	10%
Systems Software Design	255	90	345	35%
Software Distribution	0	98	98	-
TOTAL Software Dev.	366	199	565	54%
Hardware Development Bob Puffer				
Product Design	153	28	181	18%
Engineering Services	0	271 (136)	271 (136)	-
In-house time sharing	0	50 (21)	50 (21)	-
TOTAL Hardware Dev.	153	349 (185)	502 (338)	228% (121%)
Computer Systems Development Dick Clayton				
PDP-8 Engineering	21	3	24	12%
PDP-11 Engineering	58	37	95	64%
TOTAL Computer Systems Dev.	79	40	119	50%
Finance, planning & design process overhead	0	15	15	-
GRAND TOTAL	598	603 (439)	1201 (1037)	100% (73%)

Bracketed figures show the approximate manpower used in the indicated service groups by Central Engineering.

Unbracketed figures represent total population.

P. Laut
7/25/74

July, 14, 1974.

ℓ = levels in organization
s = span of an individual

w = number of workers $= s^{\ell}$ = last level.
M = mgmt = $N - w$
N = total number of people

efficiency = $w/N = \eta$.

$$N = \sum_{i=0}^{i=\ell} s^i = \frac{s^{\ell+1}-1}{(s-1)} = \sum_{i=0}^{i=\ell} (s^i + s^{i-1})$$

$s = 6$ $\eta = 5/6$ in limit $= .83$

Matrix Mgmt

ℓ	w	N	η	η with staff opp. pay	N	η
0	1	1	1		1	1
1	6	7	.85		8	.75
2	36	43	.83	(69)	50	.72
3	216	259	.83		302	.71
4	1296	1555	.83		1814	.71

$s = 5$ * $\eta = 4/5 = .8$

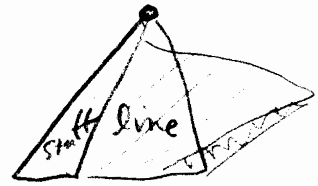
ℓ	w	N	η			
0	1	1	1.		1	1
1	5	6	.83		7	.71
2	25	31	.8		37	.67
3	125	156	.8	(.64)	187	.67
4	625	781	↓		937	.66
5	3125	3906			1687	.66

$$\eta = \frac{s^{\ell}(s-1)}{(s^{\ell+1}-1)} = \frac{s-1}{s - 1/s^{\ell+1}}$$

or for ℓ large $= \frac{s-1}{s}$

$\eta = \frac{s-1}{s+1}$ — for ℓ large

Assume that a staff (non-directly productive) is ~~[illegible]~~ added:



$$w = \left(1-\frac{1}{s}\right) \times s^{l}$$

$\left(1-\frac{1}{s}\right)$: fraction of workers removed at lowest levels — where workers (troops) are.

$$\eta = \frac{s\left(1-\frac{1}{s}\right) \times (s-1) \times s^{l}}{s\,(s^{l+1}-1)} = \frac{(s-1)^2 \times s^{l-1}}{s^{l+1}-1}$$

(numerator: w; denominator: total.)

for s^l large

$$= \frac{(s-1)^2 \times s^{l-1}}{s^{l+1}-1} = \frac{(s-1)^2 \times s^{l-1}}{s^2 \times s^{l-1}} = \frac{(s-1)^2}{s^2} = \left(\frac{s-1}{s}\right)^2$$

---

max. available for staff assignment:

$$\text{fract} = \frac{N_{staff} = \frac{s^{l}-1}{(s-1)}}{N_{total}\ \frac{s^{l+1}-1}{(s-1)}} = \frac{s^{l}-1}{s^{l+1}-1} = \frac{1}{s}$$

for s^l large

digital INTEROFFICE MEMORANDUM

TO: Gordon Bell ✓
Bob Puffer
Dick Clayton
Larry Portner
] + Phil
Henry Lemaire

DATE: July 12, 1974

FROM: Ken Olsen

DEPT: Administration

EXT: 2300 LOC: 12-1

JUL 12 1974

SUBJ: OVERHEAD IN ENGINEERING

The Operations Committee is becoming very concerned about increasing overhead in the Corporation. We are particularly concerned that there is much more management coordination, scheduling, marketing, surveying, and meeting going in the Engineering Department at the cost of engineering.

We would like to get a feeling for this and we would like to have you collect some data for two to four weeks. During this short period of time will you please have a secretary to the manager of each project, about three o'clock on Friday afternoon, collect from each of the Engineers an estimate of the time they spent on actual engineering during that week, and how much time on other activities such as attending meetings, coordinating and collecting opinions. For this survey we would consider all supervision as being overhead, and only actual design as direct labor. We are not all that interested in actual time and the Engineer's offhand opinion is good enough. We can then have the secretaries telephone the information in to some centralized point where they can be added up. By doing this we will get a feeling for what is happening and we can check it again later to see if we are getting better or worse.

/ma

Ken is about to distribute this. See my attachment. I would hope numbers would come out to about 50% — although this may be high considering new hires. What I want to do is measure the # of people in overhead positions versus the producers (project-oriented) for starters by walking down the organizational tree. To get a bound on the problem.

GB

s = 7

l	w	N	η	n with staff
0	1	1	1	
1	7	8	.875	
2	49	57	.86	
3	343	400	.8575	.734
4	2401	2801	↓	
5	16807	19608		

n mat...

digital INTEROFFICE MEMORANDUM

TO: Gordon Bell ✓
Cc: Dick Clayton
Bob Puffer
Larry Portner
Phil Laut
} staff mtg.

DATE: June 11, 1974

FROM: Ken Olsen

DEPT: Administration

EXT: 2300 LOC: 12-1

JUN 11 1974

SUBJ: DEVELOPMENT OF YOUR REPORTING SYSTEM TO OPERATIONS COMMITTEE

As you develop your system for reporting to the Operations Committee, will you work out a system so that each manager can report each period how many hours of his engineering time were spent on projects approved by the Operations Committee, how many were spent on other projects, and how many were overtime.

There is a feeling that a good percentage of our engineering time is spent in making proposals or on unapproved projects, and it would be a good idea to make the situation clear.

/ma

digital INTEROFFICE MEMORANDUM

TO: Woods Meeting Attendees

DATE: February 4, 1974 (rev. 2/7/74)

FROM: John Fisher

DEPT: Administration

EXT: 4515 LOC: Mill, 12-1

SUBJ: CENTRAL ENGINEERING

I have received feedback that the following issues should be considered in reorganizing Central Engineering:

1. Product Managers are significant to a strong Central engineering function. Today, the people to perform these jobs either don't exist or are spread throughout the Company. The alternatives are:

   a) Permit and encourage a draft of key guys into the Central group.

   b) Approve the funds to go outside to hire these people.

2. Names must be put on the System Manager jobs under Dick Clayton. The ones I've heard most often are:

   a) PDP-8 -- Peters
   b) Small 11 -- Delagi/Teicher
   c) Medium 11 -- Delagi/Arulpragasam
   d) Large 11 -- Demmer
   e) New Ideas -- Stockebrand

   I gather that everyone feels comfortable with the PDP-10 Systems continuing in the Product Line Organization.

3. Some time should be spent considering how the following Software functions fit into the Centralized concept:

   - Software Engineering
     Operating Systems
     Languages
     Diagnostics
   - Applications
   - Field Support
   - Unique Product Line Software (including PDP-10)

4. Enough people have mentioned it so I believe we need a voting rule for the Products Committee. The issues are (1) who votes, and (2) how many votes does it take to approve a plan?

5. Can we add up the Company parts by Products as well as Product Lines (markets).

CORPORATE/OPERATIONS COMMITTEE ORGANIZATION AND OPERATING MATRIX

WIN	11/45 IPG LDP BIOMED CSS ED PDP-15				PRODUCT LINES AND MARKETING
ANDY	(Andy to define)				
STAN	TYPE DCM BUS TPL				
	LENG				
	LONG				
GORDON	SYS	CLAYTON	8s	Small	Medium	Large	CENTRAL ENGINEERING
	COMPONENT	PUFFER (HW)				
		PORTNER (SW)				
AL						FUNCTIONAL GROUPS
TED		SHIELDS				
ETE						

= Proposed New Operations Committee plus Ken

ORGANIZATION

1. Matrix Organization of Systems & Component Managers

2. Systems Groupings:
   a) 8s
   b) Small
   c) Medium
   d) Large

3. System Manager's Internal Line Responsibilities:
   a) CPUs and Option Design
   b) Systems Definition and Engineering
   c) Organization consisting of System Engineers and Product Managers

4. Component Manager's Line Responsibilities:
   a) Initiates Product Plan
   b) Introduces Products into Manufacturing
   c) Sets and Achieves Cost and Reliability Goals
   d) Organization consisting of Product Managers,Project Engineers and Engineering Managers

5. Formal Plans include:
   a) Component and System Manager prepare 3 year Product"Possibilities" List.
   b) Product Lines prepare Product Wish List
   c) System Manager publishes System Goals
   d) Component Manager proposes Product Plan in the context of the Funding Algorithm. He occupies a strong position and is not "told what he will do."
   e) Component and System Managers operate in the context Final Plans approved by the New Products Committee.

6. New Products Committee approves Plans subject to Operations Committee veto.
   a) Consists of:
      Engineering Vice President and Staff
      Component Manager
      Systems Manager
      Software Manager
      Manufacturing Representation
      Product Line Representation
   b) Utilizes Specialized Steering Committees and Task Forces

7. Woods meetings used for communication and feedback, but not to approve Plans.
   a) Separate meetings for small, medium and large - limited to people with direct interest.
   b) Meetings might also be held for major components such as disks, tapes, etc.

8. Specific "open door" Appeal System to Operations Committee to openly challenge formally approved Plans and propose alternatives.

FUNDING

1. Derived from tax on Products to be sold.

2. Charged to Product Lines as part of Product Transfer Cost.

3. Portion off top for New Products and Manufacturing Engineering (probably 1/2% and 1/2% respectively).

4. Remainder, at first approximation, allocated to development of products which incurred tax.

5. Managers propose changes and work out differences which Products Committee approves.

6. Product Lines can engineer their own products if they are not satisfied with what Central Engineering is doing but, in addition to Central Tax.

CONFIDENTIAL

INTEROFFICE MEMORANDUM

TO: John Fisher
Phil Laut
Ken Olsen

DATE: September 27, 1973

FROM: Gordon Bell

DEPT: Engineering 12-1

EXT : 2236

SUBJ: PIECES, CONSTRAINTS, COMMENTS on New Organization

Regarding the organization: a rating of the groups and the organization is attached from the Board report, together with my ranking of the engineering managers. It is a gut feel and shouldn't be used except as a starting point for an alternative ranking. We could do it more scientifically a la Hay on technical, span, and personal criteria together with results.

I want to enumerate the problems which an organization may solve. My gut reactions about some of the product problems (along with the 10 in the BOD report) which might be worked are:

0. Better product/market product line interface in determining product strategy. Is the Products Committee doing enough?

1. Hardware-software interface. We're a long way from building systems.

2. Software organizational strengthening. I don't believe the myth that software can't be done outside the software group. I believe that the better products only come from outside, and only when not too closely coupled to the group. The great products are few and far between. I believe we may have a dependency relationship here that I'd like to see us get out of. Larry and Dave are the only 2 people who have any visibility within the company. There has been no lower level alternatives to do either of their jobs. Things are getting better here.

3. Product line use of standard new products just doesn't seem to be happening in any non-trivial way (e.g. VTXY).

4. Tremendous phasing problems a la TU60 for systems that involve a peripheral that causes a controller(s), that causes the software, that causes some market utilization. (See my BOD report on this case study.)

5. Product line planning in any non-trivial way for something in the good tools and bordering on turn-key systems.

6. An environment that seems to impede getting into new systems (e.g. Point of Sale) or entering new PL's (e.g. consumer). Our remnant PL's aren't big enough markets (e.g. lab) but won't change.

7. We aren't thinking about deep applications in the PL's.

8. Poor packaging, power supply, cooling cabling as an integrated whole.

9. Poor integration of production plans with PL's in memory area. Both memory engineering and manufacturing are too distant.

10. Body of knowledge to get us semiconductor components are in Gale's area now. Where do we want it? central? We have to get some real experience here to follow the semiconductor technology on which the goodness of our new products depend!

11. There is a critical mass associated with central, highly technical engineering groups like testors (about 75 people), power supplies(10), packaging and components. How do we cope here?

12. I believe we are missing some pieces of a balanced organization.

    A. Advanced applications (mostly software, but also packaging and some hardware)--I may want this.

    B. Systems groups with both hardware and software.

    C. Networks...not clear yet.

    D. Semiconductor component technology.

13. The non-integration of terminals drives me especially crazy. Little innovation in LA, GT, and RT areas. Non-coordination between VT and LA for cassettes has to be solved. I want them all coupled.

14. Better manufacturing-engineering interface, but with more capability to manufacture with a deeper understanding.

G. Bell
9/26/73

ENGINEERING MANAGERS

1 Puffer, Saviers (y)*

2 Clayton, Delagi(y), Teicher(Y), Tays, Stone*, Wilhelm, Portner

3 Van Roekens(y), Conklin, Fagerquist, Stockebrand (Y), St. Amour, Corell(y), Savell, Cudmore

4 Hughes(y), Ellson(y), Horovitz, Hurley, Gale, Amann, Moffa

5 Milton, Bastiani(y), Clarke, Eggert(y), Halio, Rey, O'Connor, Nevala, Cajolet

6 Lawrence(staff), Melvin

7 No data--Atterbury, Ball

In thinking about the organization, I tried to rank (categorize) our engineering managers.

---

* (y) means young; unreliable estimate or hunch on my part.
The underlined ones are software engineers--there aren't many. We are in trouble here, since our future depends significantly on software.

Fig. 1 Engineering ORGANIZATION

S-service PL-product line 8/73
C-component
Sy-Sup'ter Sf-software

	E*	T*	P*
HINDLE			
Clayton			
Central Eng.--Puffer			
Sy PDP-11--Delagi			
Small--Teicher	5	4	
Large--Hughes	6	5	
Systems--Swanson ?	2	1	
Reliability--Ancona	5	5	
Bus Options--Dando	6	5	C
C-Disks--Saviers	22	22	
C-Tapes--Lawrance	9	7	
C-Printing Terminals, Cards, & Paper Tape--Corell	12	11	
S-Engineering Services--Tays			
Auto.Draft--~~Elgin~~ Vrablik			
Model Shop--Gerelds			
Drafting--Reilly			
Reproduction--Gillette			
Software Eng.--Portner			
Sf Products--Stone			
Staff Plan.--Wade			
Small Sys.--Elson			30
PDP-11--Van Roekens			60
Languages			
Applications			
S Diagnostics--Horovitz			
Sys. 10--Conklin			25
S Production Support			
Software Sup.--Schroeder			
Library (production)			
S ? Research,Dev.,Consult.--Bell			5
Soft.Eng. Education			
Sy CSS--Holman			
Maynard			
Eng.	20	22	18
Low Vol. Prod.	2	8	0
LA--Butler	4	5	5
Europe (UK)	8	7	5
Europe (Munich)	8	4	11
Australia	2	2	4
Japan	1	0	0
Canada	4	2	2
Sy PDP-10--Leng			
KL10--Wilhelm	21	6	
Eng.--Atterbury			
KA,KI--Fagerquist	5	3	
Eng.--Ed Siegmann			
Advanced Systems--Hurley	4	7	

	E	T	P
S. OLSEN			
C Terminals--Stockebrand	4	2	2
PL Typeset/Traditional--Lane			**
Eng.--Milton	1	0	24
Low Vol. Prod-Reed	2	21	11
PL Business PL--Jacobs			
Eng.--Ball	1	1	
PL Communications PL--Marcus			
Eng.--11 Comm. Prod.-Bastiani	6	8	
KNOWLES			
Sy OEM PL			
PDP-8--Clarke	9	7	
PDP-16-Eggert	1	2	
LSI--Gale	6	4	2
PL Industrial PL--Vachon			
Eng.--Melvin			
C K, Analog, Specials-Gordon	3	4	
Sy PDP-14 & 14 Terminal--Ricketts	3	7	1
C Modules PL			
Eng.--Moffa			
C-Terminal RT	1	2	
C-Remote Data	3	4	
Modules	5	5	
Computer-on-a-board--O'Loughlin			
PL LDP, EDU, Medi, Terminals PL			
LDP, terminals			
LDP Eng.--Budianski	6	3	
C Graphics--Halio	4	5	
Medi			
Eng.	1	0	3
BELL			
Chief Eng.--Best			
Plans & Review--Laut			
Software Plan & Review--Teichholtz			
Power Supplies + Primary			
Memories--Savell			
C-Power Sup.+ Wiring--Rey	6	4	
C-Memories			
Core	3	4	
MOS	2	2	

*E=engineers, T=technicians, P-programmers
**Wiremen

	E	T	P
KAUFMANN--Manufacturing			
Cent. Eng.--Cudmore	20	58	
Test Equip.Eng.--O'Connor	13	55	
Pack/Environ.--Lawrence	3	1	
Components--Amann	4	2	
Metals--St. Amour	25	2	
Mfg.Eng.--Bean	16		
Ind.Design+ME--Nevala	6	1	
Large Vol.Mfg.--Hanson (PR/Canada/Boards)	18	9	
Process-Cajolet	12	5	
Modules/Test/Special			
Systems--Smith	15	19	
Mfg./QC--Cady	4	8	
Core Memories--Lemaire	10	3	
Magnetic Heads	1		
Components	2	1	
Systems	7	1	
Peripherals (Westfield)	9	0	
Mfg. Eng.	6	0	

JOHNSON

Field Service--Shields
Busiek
Techniques, support Comm.,Tel.Co--Kalagher
10 Support--Yurick
Ind.,TPL,LDP,OEM 8--Dubay
OEM 11, 11/45,15--Karpowski
Testing Design & Mfg. for Depots--Zereski
Long

G.Bell
8/73

Comments on Organizational Groups

8 - Came from a technician based organization to a balanced group. Heavy support required in Puerto Rico. No significant products yet. Ultra Conservative due to problems. Significant magnetic tape control problems.

8/B - Came up fast in learning about LSI and designing with it. (Approx. 1 year old). Highly stimulated. Relatively fat.

11 - small - Highly motivated. Must learn LSI. Must do total repackage and are concerned.

11 - large - Follow on to 11/45 needs direction. Significant addressing problems in 11/45.

11 - reliability - Room for good work. No data.

11 - systems - Room for good work. No data.

11 - options - Room for good work. No data.

KA,KI10 - Support. Massbus and communication controller designs.

KL10 - Highly motivated, well run with best scheduling techniques, great set of products ranging from 11/45+to greater than KI-10 assuming pricing is done this way.

14 - Well motivated, solo effort. I don't like product.

16 - Highly motivated. We haven't learned to use or sell it.

Industrial - Many products. No plan. Competition.

Business - Essentially a non-group. Identified reliability problem.

TPL/Typeset - Apparently good support of both groups.

LDP/Graphics - Graphics effort probably too small. Lots of products. When will it pay?

Communications - Lots of products. Where are they going?

Modules - Good. Highly motivated. Identified a need 1 year before company!

Disks - RS - Very good technology and motivation.

Disks - RK - Good first (learning) product.

Disks - RP - We need a group, product, and plan.

Tape - Cassette - Support.

Tape - DECtape - Support.

Tape - IBM - The people mix is right to produce a unit whether we want it or not - we need techniques for eventual product as companion to RP-series.

LA30L - Well motivated. Hopefully will build a few good products.

Printers - Support now. Basis for a printer in LA30 effort.

Keyboard - Good start, too early to tell.

Paper tape - support

VTXY - Best motivated group. Exciting product.

RT - terminals - Motivated. Products expensive.

Memories - Good mfg. costs even though a weak 8K design. Good 16K design
Close intra-cooperation. Need more aggressive MOS effort.

Power Supply - Acceptable costs. Response time and innovation problems.
Hard to integrate with systems.

Service

Packaging - Still no plan - may be impossible. Response to individual projects. Trying for a standard. Must have better cooling, cabling, connectors, lower costs, etc.

Metals - Lots of effort. How do we measure it?

Testing - where are we headed?

Components - Just established, already some direction.

Mfg. Eng. - in plants, diverse. No automation, analysis, models, of physical lines. Set-of-parts operations.

Research - Interesting projects, need wider internal circulation. I want to see some product come out. Most use as a service to solve problems, help with standards, study.

To: O²D Fm: G Bell | I'd like to talk about this at our Sunday mtg. Gordon

ED Shein's

Review of Interviews with Operations Committee and Engineering VP's Nov. 11, 1978

General Company Issues

1) The company has not yet resolved whether it will be dominated by products (engineering) or by markets. The result of this tension is confusion of how to develop a product strategy at all levels of the organization and how to manage the interface between marketing and engineering. There is mutual mistrust both ways ("you guys dont deliver what you promise" or "your products dont work" vs. "you dont know what you want" and "you change your mind all the time."

2) The company has not yet resolved the balance between developing essentially a mail-order business of low cost high volume standard products or developing less standard sophisticated systems tailored to different users. A number of people questioned why DEC is not able to deliver a low cost high volume product? Is engineering too concerned with state of the art and elegance to produce simpler more practical products, or is the pressure coming from sales and marketing for the more sophisticated systems?

Organization Structure Issues

1) The role of the Group VP is still unclear--corporate officer setting basic goals and directions or line manager getting involved in product or functional concerns on a day to day basis? What is the right balance? Is basic strategy getting enough attention?

2) Role of committees, especially the Product Strategy Committees, is not clear? Are they "Boards of Directors" or "clearing houses" or what? How should they intefface with central engineering and the operations committee? What is the basic role of the Operations Committee?

3) In a geographically decentralized complex matrix organization such as DEC has become, where is the basic accountability for various kinds of decisions and is it clear to people? Can the basic philosophy of management by productive conflict work in a large organization?

4) What is the role of Product Line Managers, Product Managers, and Central Engineering, and is the role clear to everyone?

Organization Process Issues

1) What is the appropriate style of management for top corporate executives in a complex matrix organization which is geographically decentralized to the degree that people do not know each other face-to-face? What is the role of consistent policies and organizational systems in such a matrix? How involved should a top manager be with operational decisions?

2) Do committees work effectively as groups (that includes everything from the Operations Committee on down)? Are the committee chairmen and members trained in how to work effectively in group settings? Are staff meetings being run effectively? Is there a need for training in "meetings management?" Are chairmen picked carefully and briefed?

3) Is there a clear process for making marketing and product development decisions, and do people understand that process and use it? Do people follow up on the kind of structure they create and make sure that it works?

Central Engineering Issues

Some general observations made by one or more people:

--Problem stems basically from not having good products ready at a time when the competition has been able to develop products, hence operating too much in a panic mode.

--Engineers are scared because of past experiences of having been punished, hence are building walls, creating long schedules, high budgets, etc. all as a self-protective device.

--Engineers are too oriented toward the state of the art product, too theoretical, not practical enough.

--Engineering does not have enough basic talent to do its job.

--Engineering has been too disorganized in the past and is now possibly getting over-organized. Should go back to temporary project group idea instead of permanent product grs.

--Engineering managers do not adequately monitor, control, get involved with their groups to insure effective follow through.

--Some engineering groups have low motivation, have become 9-5 types.

--Engineers would prefer to be closer to marketing and find the other system preferable, but some engineers prefer centralization and isolation. ("Honeywell" syndrome)

--Engineering is a huge investment and therefore must work.

--By centralizing engineering it has become more visible to top management and, therefore, has become more of a target around various issues.

--it is not clear whether the philosophy of "whoever designs a product is responsible for it forever" still applies, and, if so, how it is implemented.

--There are different degrees of "business orientation" within engineering--hardware group is most business oriented, software group is least so; all engineers must become educated to be more business oriented.

--Central engineering does make sense in terms of similarity of products, economies of scale, and need to integrate hardware, soft-ware, and peripherals.

--Engineering has become too powerful--who can keep it from doing something stupid? who can moniter its operation? who can keep it from becoming a fortress?

--company wants engineering to do complete documentation and at the same time complains of that things take too long and cost too much (too much overhead)

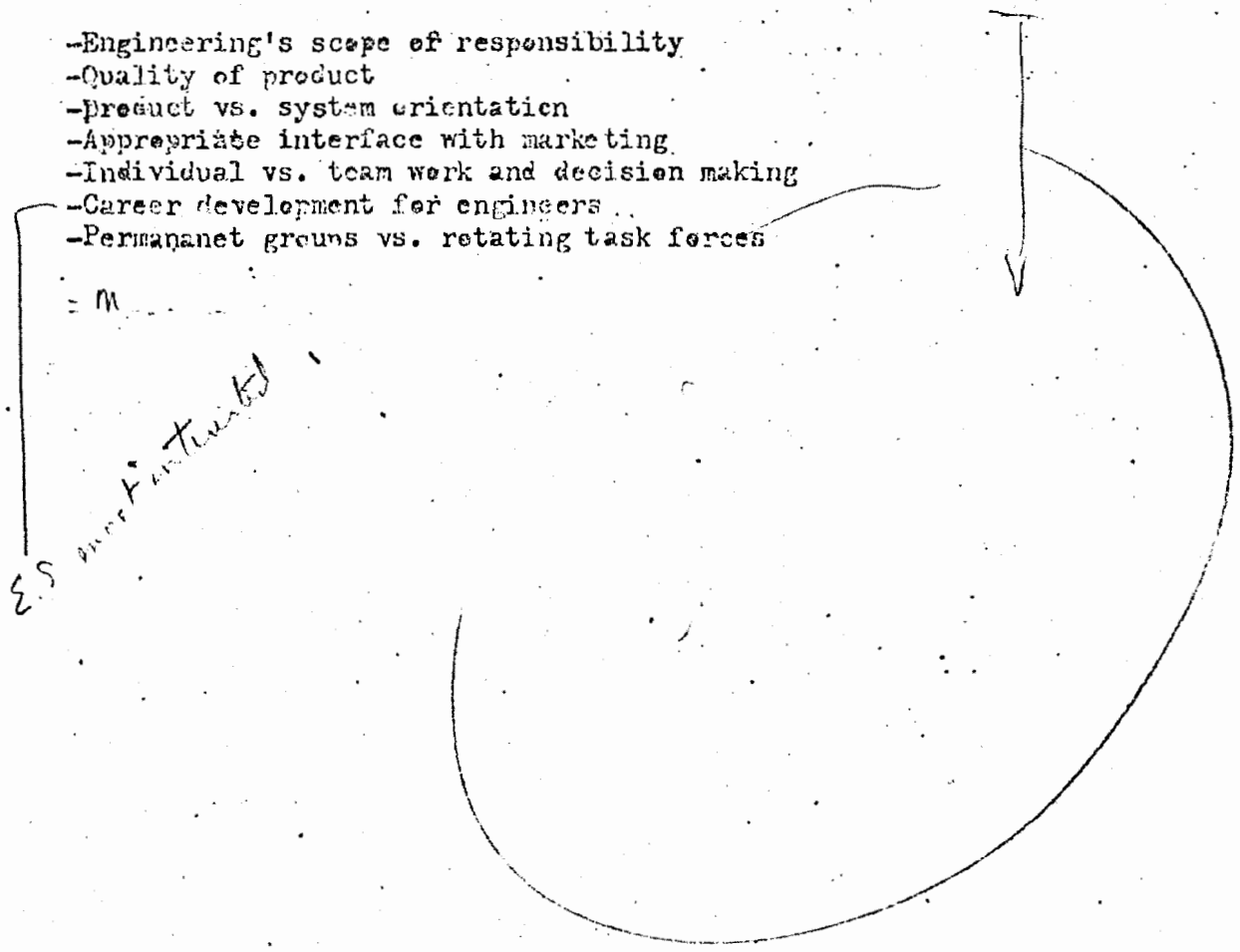
Summary of Engineering Issues

1) Should there be a coordinated plan between Clayton, Puffer, and Portner? Should they be a team? Is it necessary? Do others see a need for it? How is it to be obtained?

2) How should G.B. be involved in the planning and implementing process? How much team building should be done with him or without him? What is the best use of his time and effort?

3) What should be the "philosophy" of engineering in regard to

-Engineering's scope of responsibility
-Quality of product
-Product vs. system orientation
-Appropriate interface with marketing
-Individual vs. team work and decision making
-Career development for engineers
-Permananet groups vs. rotating task forces



G.B. Observations and Issues

--Not a good manager, but should not be one; should be a real leader

--More thing oriented than people oriented, a real intellectual, technically brilliant

--Sends mixed siggals--sometimes amplifies Ken's concerns and attacks the org., sometimes ends up defending the org. If he agrees with Ken that he is worried that worries Ken all the more; if he defends the org. cannot be a good technical resource or consultant to Ken.

--Caught in the middle between Ken and the Organization, not clear about own role.

--Perceived as frustrated, tied down in administration

--Not aware of his inconsistencies and mixed signals

--Emotionally too up and down; not consistent; too flighty

--Too often deals with human problems simplistically

--Not tenacious on some issues

--Has too many hot buttons, gets too involved in crisis management

--Has not yet built a team under him

--Too suspicious of outside resources, esp. personnel

OFFICE OF DEVELOPMENT
ORGANIZATION CHART

Updated: 10/10/74
G. Bell

```
VICE PRESIDENT, OFFICE OF DEVELOPMENT (Gordon Bell)
|
|',',.PERSONNEL (Mark Abbett)
|     |----Software Senior Representative (open)
|          |----SOFTWARE PERS. REP. (Joe Underwood)
|     |----PERIPHERALS SR. PERS. REP. (Jerry Patton)
|     |----COMPUTER SYSTMS PERS.REP. (Dave Larson)
|     |----ADMINISTRATOR (Theresa Buckley)
|     |----PERSONNEL SERVICES ADMINISTRATORS
|          PERIPHERALS PSA (Jan Rodli)
|          SOFTWARE PSA (Patty Mercury)
|     |----CENTRAL RECRUITING SUPVR. (open)
|          |----Recruiter (open)
|          |----Recruiter (Leo McKiernan)
|          |----Associate Recruiter (Susan Coffey)
|          |----Associate Recruiter (Randi Love)
|
|----FINANCE (Phil Laut)
|     |----Planning (Al Sharon)
|     |',',.EDP (Arnie Goldfein)
|     |',',.SOFTWARE ANALYST ( Pat Soratt)
|     |',',.HARDWARE ANALYST (Irene Leary)
|     |',',.SYSTEMS ANALYST (Larry Smith)
|
|----CHIEF ENGINEER (Dick Best)
|     |----DESIGN REVIEW (Carl Noelcke)
|----TECHNICAL STAFF (vacant)
|',',.MEMORIES (Henry Lemaire)
|',',.COMMUNICATIONS OPTIONS (Vince Bastiani)
|',',.TERMINALS (Tom Stockebrand)
|',',.PDP-10 (Fred Wilhelm)
|
|----VICE PRESIDENT, SOFTWARE DEVELOPMENT (Larry Portner)
|     |----MANAGER, SFT PRODUCTS GROUP Mgr. (Mel Woolsey)
|          |----MULTI-USER SOFTWR.Prod. Mgr. (Dick Angel)
|          |----REAL-TIME SOFTWR. Prod. Mgr. (Claiborne Neal)
|          |----LANGUAGES & UTILIITIES Prod. MGR. (Al Brown)
|          |----SMALL SYSTEMS SOFTWR. Prod. Mgr. (open)
|          |----SOFTWARE POLICIES Mgr. (Jim McKinley)
|     |----MGR. PDP-11 SOFTW.ENG. (Pete Van Roekens)
|          |----SMALL SYSTEMS SOFTWR ENG. (Ken Ellson)
|          |----LANGUAGES (P. Van Roekens, acting)
|          |----NETWORK+Real Time (Frank Hassett)
|     |----DECSYSTEM 10 Softw. Eng. (Peter Conklin)
|          |----Decsystem 10 MARKET S.E. (J. Singer)
|          |----Decsystem 10 S.E. (C. Turley)
|          |----DECSYSTEM-10 LANG. PRODUCTS Mgr. (Jim Mills)
|     |----Mgr. Software APPLICATIONS (Ed Fauvre)
|          |----TYPESET-11 Prod. Sys. Dev. (T. Donovan)
|     |----Software Engineering Support Mgr. (Bill Slack)
|          |----European Software Eng. Mgr. (Cary Wyman)
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|          !----Software Documentation Mgr, (Bob Gafford)
|          !----SOFTWARE STANDARDS Mgr, (Pat White)
|          !----Hrdwr./Softwr, Tools Mgr, (John Xenakis)
|     !----RESEARCH & Dev, Mgr, (Jim Bell)
|          !----ADVANCED SYSTEMS RESEARCH Supr, (Bill Strecker)
|          !----SYS, TECH, & MEASUREMENT Supr, (Rollins Turner)
|     !----Administration & SERVICES Mgr, (Oleh Kostetsky)
|          !----Operations Analysis (Don Crowther)
|          !----Sftwr, Distribution Center (Tom Mullane)
|          !----MIS Systems, Cont, Admin, Doc, Svcs, (Roy Lightfoot)
|     !----Diagnostic ENGINEERING Mgr, (George Plowman)
|          !----Automated Mfg, (Marv Horovitz)
|          !----PRODUCT LINE Diagnostics (Walter Manter)
|          !----STANDARDS & SYSTEMS (George Plowman, Acting)
|     !----Software Planning Mgr, (Larry Wade)
|          !----Departmental Planning Mgr, (Ed Wright)
|          !----HIRING & TRAINING Mgr, (Jim Murphy)
|     !----Networks Program Mgr, (Nat Teichholtz)
|     !----PERSONNEL MGMT, DEV, (open)
|     !----FINANCE (Pat Spratt)
|     !----SOFTWARE RELIABILITY ENG, Mgr, (Jack Mileski)
|
|
!----VICE PRESIDENT, COMPUTER SYSTEMS (Dick Clayton)
|     !
|     !----PDP-8 DEVELOPMENT Mgr, (John Clarke)
|          !----PRODUCT SUPPORT (Dave Brown)
|          !----8/A PROJECT ENGINEER (John Kirk)
|     !----SMALL PDP-11 SYSTEMS (Steve Teicher)
|          !----T-2L 11/05's Supvr, (John Soflo)
|          !----RELIABILITY (Richard Olsen)
|          !----PRODUCT SUPPORT SUPVR, (Doug Rothenberg)
|          !----LSI (Dick Spencer)
|          !----MOS SYSTEMS (Mike Titelbaum)
|     !----MEDIUM & LARGE 11 SYSTEMS (Bill Demmer)
|          !----LARGE 11 SYSTEMS Mgr, (Al Ryder)
|               !----Product Mgmt (John Mistalek)
|               !----11/45 Supvr, (Bob Kirk)
|               !----MEMORIES (Sas Duryasula)
|               !----TECHNOLOGY (Dave Potter)
|               !----NEW SYSTEM(Steve Rothman)
|          !----MEDIUM 11 SYSTEMS Mgr, (Jega Arulpragasam)
|               !----PRODUCT PLANNING (Bob Gray)
|               !----11/40 (Jega Arulpragasam, acting)
|               !----NEW SYSTEM(John Levy)
|          !----11 FAMILY PACKAGING Mgr, (Dick Gonzales)
|          !----11 FAMILY SYSTEM ENG, Mgr, (Ralph Platz)
|               !----ELECTRICAL RELIABILITY (Don Vonada)
|               !----SYSTEM TESTING (Ray Archambault)
|               !----SYSTEMS SUPPORT (Ed Permon)
|               !----SYS, DIAGNOSTICS & AVAIL.(Rick Fadden)
|     !----LARGE MINIS Mgr, (Bruce Delagi)
|          !----PRODUCT MANAGEMENT (Al Avery)
|          !----SYSTEM DESIGN (Len Hughes)
|     !----MKT, SERVICES, DEVELOPMENT Mgr, (Bill McBride)
|          !----TECHNICAL LITERATURE (Roger Dow)
|          !----PROMOTIONAL
|          !----COMPETITIVE PRODUCT EVALUATION
|     !----SYSTEMS PLANNING INTEGRATION (Robin Frith)
|     !----FINANCE (Larry Smith)
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!     !----PERSONNEL (Dave Larson)
!
!
!----VICE PRESIDENT, HARDWARE DEVELOPMENT (Bob Puffer)
!     !
      !----DISK ENGINEERING (Grant Saviers)
!           !----PROJECT MANAGEMENT
!           !----PLANNING & PRODUCT Mgr, (Paul Badum)
!           !----RP04 (Steve Orr)
!     !----TAPE ENGINEERING (Bob Peyton)
!           !----PROJECT MANAGEMENT
!           !----PLANNING & PRODUCT Mgr, (Paul Bauer)
!     !----LA36, UNIT REC,I/O (Ed Correll)
!           !----PROJECT MANAGEMENT
!           !----PLANNING AND PRODUCT Mgr, (Al Huefner)
!     !----LSI ENGINEERING (Lorrin Gale)
!           !----TOOLS (Bob Kusik)
!           !----CHIP DESIGN
!     !----POWER & PACKAGING (open)
!           !----POWER SUPPLY ENGINEERING Mgr, (Paul Rey)
!           !----MECHANICAL & INDST, DESIGN Mgr, (Dave Nevala)
!     !----ENGINEERING SERVICES (Phil Taye)
!           !----MODEL SHOP Mgr, (George Geralds)
!           !----DESIGN SERVICE Mgr, (Leo Bennett)
!                 !----DRAFTING Mgr, (Dick Reilly)
!                 !----CAD DEVELOPMENT Mgr, (Ed Vrabilk)
!                 !----CAD OPERATION Mgr, (Jack Murray)
!           !----INFORMATION SERVICES (Jim Gillett)
!           !----INFOR, PROCESSING & CORP, NETWORK DEV, MGR(Ron Rutledge)
!     !----FINANCE (Irene Leary)
!     !----PERSONNEL (Jerry Patton)
```
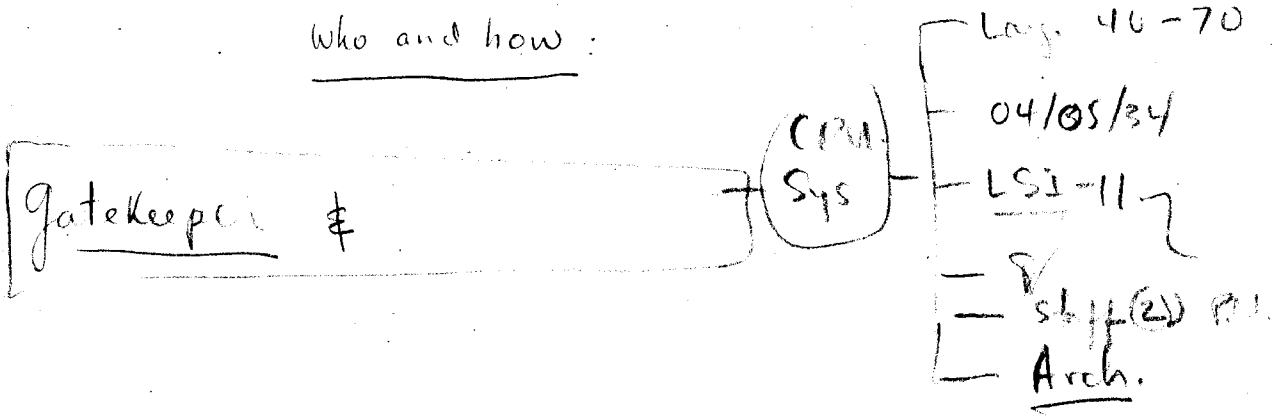

Who and how:



GENERAL GROWTH TRENDS AND ORGANIZATION SOLUTIONS

1. LOWER LEVEL OF INTEGRATION ⟹ LSI FOR COST

   ⟹ LSI FOR PERFORMANCE

2. HIGHER LEVEL OF INTEGRATION ⟹ APPLICATIONS

3. MORE (CLEAR) CHARTER SEGMENTATION (I.E. IN FACTORY/ MARKET/PRODUCT) ⟹ BETTER CENTRALIZED

   PLAN. ROLL-UP, CLEAR STANDARDS, GOALS, AND PLAN

   TESTING/TRACKING ⟹ STAFF AND TOOLS!

4. MANUFACTURING ⟹ FOCUSED VERSUS DEFOCUSED FACTORY?

GB
11/6/75

NEW TECHNOLOGIES TO BE ASSIGNED, WATCHED, AND ASSIMULATED

(IN PRIORITY) *-REQUIRES ORGANIZATIONAL/PERSON CHANGE

*COMPUTERS THAT ARE ULTRA RELIABLE, DON'T FAIL, AND/OR REPAIR THEMSELVES ⇒ FS/ENG./R&D

SEMICONDUCTOR TECHNOLOGY ⇒ STRENGTHEN ASAP IN CPU + SEMI GROUPS

ELSI FOR LARGE COMPUTERS

ELSI FOR SMALL COMPUTERS

*TERMINALS (HIGH QUALITY PRINTING, ALL TERMINALS ⇒ GRAPHICS) ⇒ ?

*TERMINALS:DETERMINE SMART/DUMB BOUNDRY ⇒ ADV. DEV. + TERMINALS

*MULTI-PROCESSOR/MULTI-COMPUTERS SYSTEMS ⇒ PROJECT HOME NEEDED!

VIRTUAL MEMORIES--HIGH AND ESPECIALLY LOW END ⇒ ADV. DEV.+ GROUPS?

*MOVEMENT OF HARDWARE/SOFTWARE BOUNDRY TO MORE COMPLEXITY IN

HARDWARE ⇒ COMM, DISKS, TAPE, TERMINALS + ADV. DEV.

*MEMORY HIERARCHIES IN SUB-SYSTEM ⇒ DISK SUBSYSTEMS GROUP.

ULTRA RELIABLE SOFTWARE ⇒ ADV. DEV.??

BETTER HUMAN ENGINEERING ⇒ R & D? TECHNICAL AUDIT?

ADVANCED MEMORIES: CCD, ELECTRON BEAM ⇒ ADV. DEV.?/ MEMORY GROUP

TV TECHNOLOGY (CABLES, VIDEO DISK, COLOR MOUNITOR) ⇒ ADV.DEV.

HIGH SPEED, LOW COST, SERIAL LINK (E.G. CATV, FIBERS, COMP) ⇒ ?

COMPUTER USE IN OFFICE ⇒ ADV.DEV. + BUS PRODUCTS + COMM.

BETTER INTERFACE TO CONTINUOUS (ANALOG) DOMAIN ⇒ ADV.DEV.

SIGNFICANTLY EASE USE OF COMPUTERS (E.G. APPLICATIONS PROGRAM GENERATION) ⇒ R.

VOICE I/O ⇒ R

Gen. Comp. Sys. architecture ⇒ how does one apply a mathematics.

GB
11/6/75

INTER-GROUP INTERFACES

0. GENERAL TECHNIQUES

   PEOPLE ROTATION

   USE CONTROLS ($)

   COUPLE VIA MATRIX TO OTHER ORGANIZATION

   SEGMENT BUSINESS TO DECOUPLE ENGINEERING (I.E. DECENTRALIZE --COUPLE ENGINEERING TO A "DIVISION")

   PHYSICAL LOCATION

1. MANUFACTURING

   HOW DO WE SUPPORT DEFOCUSED FACTORIES?

   MOVEMENT OF PEOPLE TO SUPPORT AND/OR DESIGN AT THE FACTORY IN COMMODITY (I.E. TECHNOLOGY)-ORIENTED AREAS (E.G. DISKS, TAPE, DUMB TERMINALS, MEMORY)
   MUST CO-HABIT WITH MFG.ENG. (TEST ENG.; PROCESS ENG., ETC.)

2. PRODUCT/LINE

   HOW DO DESIGNERS HAVE UNDERSTANDING OF USE? (ROTATION AND P/L TASKS)

   CHARTS

   MUST MATRIX WHERE COMMUNICATION IS POOR!

   WILL BECOME A JUNGLE WITH "50 PRODUCT LINES"
   NEED CLOSER LIAISON WITH P/L ENGINEERING

3. FIELD SERVICE

   QUALITY ADV. DEVELOPMENT

   RAISE

   JOINT BUY-IN MATRIX

4. SOFTWARE SUPPORT (SEE F/S)

5. CSS $\Rightarrow$ MATRIX

   USE AS EARLY WARNING AND ADV. DEVELOPMENT GROUP.

6. EUROPE AND CANADIAN PRODUCTS!

GB 11/6/75

DEC-EXTERNAL-GROUP INTERFACES

1. TECHNOLOGY ⇒ GENERALLY ORGANIZE TO "MONITOR AND BUY"
   (AD HOC NOW)

   SEMICONDUCTORS ⇒ MORE DESIGNS OUTSIDE

   MAGNETICS ⇒ CATCH-UP!

   NEW DEVICES ⇒ ?

   PROGRAMS ⇒ SET TO STIMULATE THIS MARKET AND SUPPLY
   PATENTS BUYOUT

2. EXTERNAL STANDARDS ⇒ ?? GROUP CENTRALIZED

   SAFETY (UL, CSA, VDE)

   EMI

   INFORMATION PROCESSING (ANSII, ISO, CCITT)

   INTERFACES OF HARDWARE (NBS, CBEMA, GSA)

   LEGAL

3. CUSTOMER (HOW/DOES HE USE OUR MACHINES?)

GB
11/6/75

INTRA-ENGINEERING INTERFACES

(AND GROUP PROBLEMS)

ADV. DEV.

GETTING ACCEPTANCE OF VARIOUS PRODUCTS (TECHNOLOGY TRANSFER)

ESTABLISHING THIS FUNCTION IN VARIOUS GROUPS.

DEVELOPMENT

BETTER SYSTEMS FOCUS

HARDWARE/SOFTWARE CO-LOCATION

H/S CONTROL EXPERIMENT (VAX) HIGHLY MATRIXED

ARCHITECTURE CONTROL AND PLAN $\Longrightarrow$ WHERE??

BETTER DISKS $\Longrightarrow$ PEOPLE

BETTER DISKS AND MEM SUB-SYSTEM $\Longrightarrow$ NEED SYSTEM PEOPLE

LOW END PRODUCT PLETHORA $\Longrightarrow$ IN FUNCTION

HIGH END PLAN $\Longrightarrow$

SUPPORT

SEE MANUFACTURING

GB (CAN HE) (DOES HE WANT) TO "RUN" SUCH AN ORGANIZATION?

GB
11/6/75

TRAINING

GENERAL BUSINESS ($, MARKET, PLANNING, SCHEDULING, RESOURCE ALLOCATION)

MARKETING AND P/L AWARENESS ⟹ ROTATION THROUGH P/L'S

(ESPECIALLY IMPORTANT AS OUR BUILDERS DRIFT AWAY FROM BEING USERS).

ALSO, TAKE ON P/L CONTRACTS IN CE

TECHNICAL

EVENTUAL RETRAED (WITH SLOWER GROWTH)

HARDWARE PEOPLE LEARN MORE SOFTWARE

NEW SKILLS FOR BOTH LOWER LEVEL INTEGRATION

HIGHER LEVEL OF INTEGRATION REQUIRES INDUSTRY ORIENTATION (E.G. BANKING, MANUFACTURING)

PEOPLE ⟹ LESS-ORIENTATION

MANUFACTURING SKILLS

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11/75

--- PEOPLE

PECUNIARY CONTROL, PLACE, PRODUCTS SUMMARY, PROCESS TOOLS (E.G. PERT)

TECHNICAL STAFF--ARCHITECTURE?, STANDARDS, PATENTS AND TECHNOLOGY PURCHASE ≈ 6 + (R+D)?

--- SEMICONDUCTORS AND ELECTRONIC MEMORIES (DESIGN & MFG.)

MANUFACTURING INTERFACE

- ELECTROMECHANICAL MEMORIES
- UNIT RECORD DEVICES
- PACKAGING AND POWER
- ENGINEERING SERVICES

INCLUDES---SOFTWARE SUPPORT AND MEMORY SUB-SYSTEMS

LEVEL OF INTEGRATION

SMALL SYSTEMS AND TERMINALS

- LA
- VT
- GRAPHICS
- PACKAGED SYSTEMS

INCLUDES---SOFTWARE SUPPORT

CPU'S --- INTERFACE TO COMM.

INTERFACE TO FS — R+D

SOFTWARE---INTERFACE TO SWS

P/L INTERFACE (APPLICATIONS) --- 10/15---SHOULD THIS BE TO CPU SYSTEMS?

- CSS
- COMMERCIAL GROUPS
- REAL TIME PRODUCT LINES--IPG & LDP
- COMPUTATION

9=7+2---

GB 11/75

+++ People — Type. — GB Oct 6, 7

→ pecuniary control, place, products summary, process tools (eg. Pert).

— Tech staff
architecture? stds, patents + Tech. purchase (R + D)? } ≈ 6 + (R + D)?

Level-of-integ ↓

+++ Semiconductors + electronic memories (Design + Mfg)

(Mfg. interface)

— Electromechanical memories
Unit record devices
PKG + power.
Eng. Services
} includes soft support and disk mem. sub-systems

— Small systems + Terminals
— LA
— VT
— — — graphics
— PKGed systems
—
} incl — — — software support. .

— CPU's — interface to comm.
— interface to FS
or

— Software — — — interface to SWS.
— 10/15 — should this be to CPU systems?

— P/L interface (Applicat
— ++ CSS
— Bus.
— RT/PL – IPG + LDP
— Compu.

9 = 7 + 2 — — —

ORGANIZATION CHART

PRODUCT MANAGERS

Gordon Bell

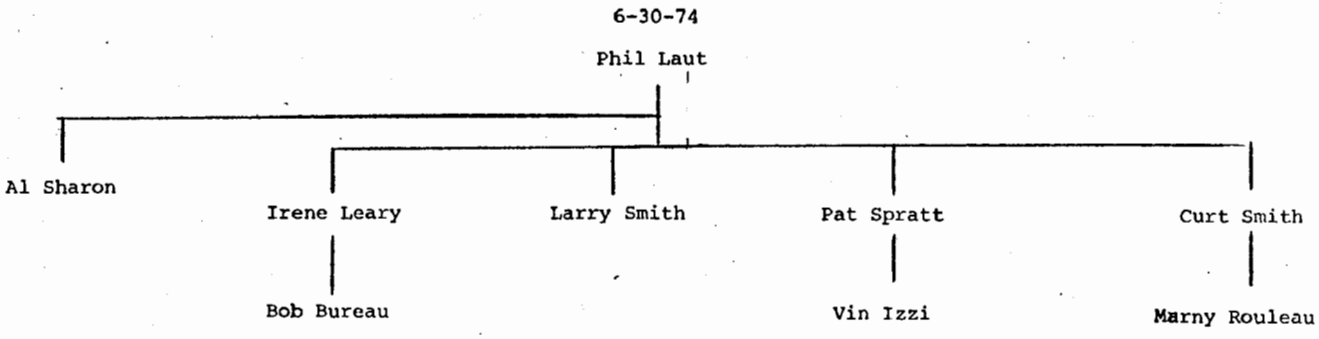
Area	Name	Specific Products If Not Listed in Area Column
DICK CLAYTON		
SYSTEMS DEVELOPMENT		
PDP-8	Walt Vignault	PDP-8 Hardware and Software
Sub UNIBUS-11	Steve Teicher	(LSI-11)
Small UNIBUS-11	Mike Tomasic	(11/04/05/10)
PDQ-11	Bob Gray	
11/35 & 40	Dick Testa	
11/45	Dick Testa	
11/70	Janice Carnes	
Large-11	Bruce Delagi	
Plan Integration	Malcolm Johnston	
HENRY LEMAIRE		
Memory	Brian Croxon | Development Manager └— Mike Gutman Product Manager	(All PDP-11 Memory)
JULIUS MARCUS		
Communications Options	Tony Lauck	(DV-11, DUP-11, DMD-11, etc.)
LARRY PORTNER		
SOFTWARE DEVELOPMENT		
Real Time Operating Systems	Clay Neal	(RSX-11S, RSX-11M, RSX-11D, IAS)
Languages	Larry Portner (acting)	
Time Sharing Operating Systems and Transaction Processing	Ed Converse	(RSTS/E)
Small Operating Systems	Bill Munson	(RT-11, CAPS-11, PTS-11)
Networks	Nat Teichholtz	
BOB PUFFER		
HARDWARE DEVELOPMENT		
Disks	Grant Saviers | Development Mgr. └— Paul Badum | Product Mgr. └— Steve Orr Product Mgr.	 RK05, RSL, RPR02 RK06, RP04, RS03, RS04
Tapes	Bob Peyton | Development Mgr. └— Paul Bauer Product Mgr.	 TU60, TU10, TU16, RX01, TU56, TS03, TS02
Printers*	Ed Corell | Development Mgr. ├— Al Huefner Product Mgr. └— Chuck Bickoff Product Mgr.	 LA30, TA36, LA35, LA37, LT33 LA180, LS01
Displays	Tom Stockebrand | Development Mgr. ├— Mike Wurster Product Mgr. └— Open Product Mgr.	 VT50, VT52 including Copier VT61

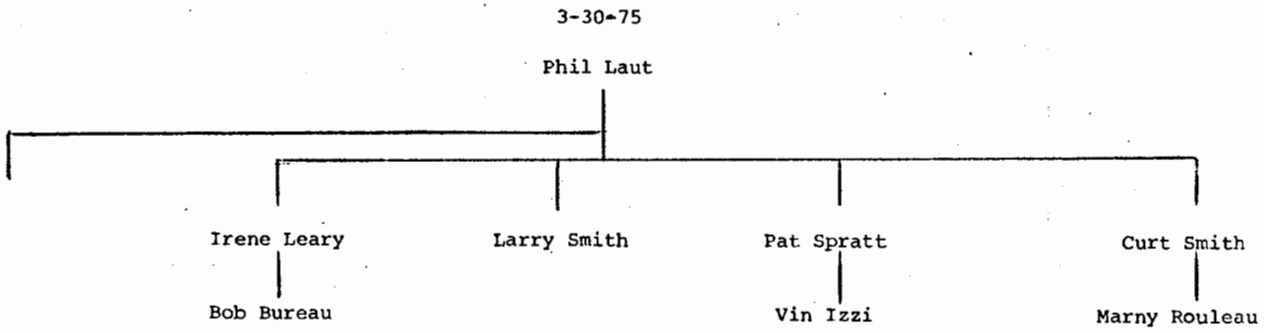
*LP04, LP05, CM11, CR11, PC04/05, LV11 do not have a Product Manager

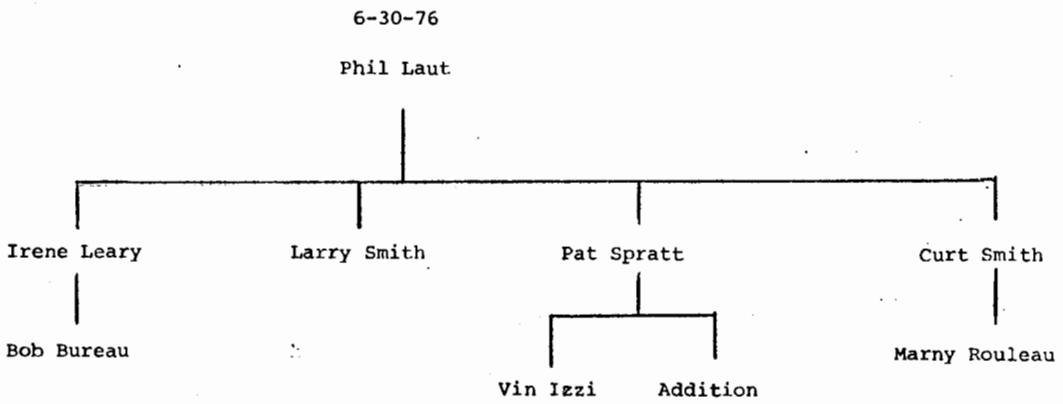
Phil Laut
6/18/75
/ale

EXHIBIT VI

Finance Organization-Engineering







Phil Laut
4/10/75
/ale

COMPONENTS BUSINESS (continued)

B. Marketing Plan
   a) Terms & Conditions
   b) Target Customers -- individually and by market
   c) Field Sales Plan & Agreements with Ted's people
   d) Interaction with rest of company

C. Budgets
   a) Thompson and Michels will present the first pass at the March Budget Review.
   b) Andy will give Pete a back of the envelope order by March 1. He will be ready to make formal requests by the May 1, 1974 go-around.

D. The group will tentatively have the following name and logo:

   digital
   equipment
   components

E. Logistics and Business Management
   a) Warehouse plan
   b) Shipping plan
   c) Receiving plan
   d) QC and Depot repair plan
   e) Administration - Order Processing, Billing, Short-term Forecasting and Inventory Management

F. Engineering
   a) Test equipment, QC monitor and planning
   b) Applications -- literature and coordination with marketing group
   c) Interface with Central Engineering

4. PRODUCT LINE PROGNOSIS

Ken feels we should emphasize building stronger Product Line organizations. He would be happy to call the major Product Lines 'Divisions' if it would get us there sooner. Everyone agrees that in a billion dollar business no Product Line Manager will be able to do all of the following without a strong organization:

   a) Look through all of our hardware/software product development.
   b) Know the market
   c) Do all the things in Clayton's Red Book
   d) Have his ear to the ground within the Company

PRODUCT LINE PROGNOSIS (continued)

It's clear that an effective Product Line Organization will depend upon delegation and a strong team. The Group developed the Organization goal for a major Product Line outlined in Appendix 4. Ken feels we should start with the Components and OEM groups as examples and the Group VPs should target the four remaining major Product Lines to be organized this way by the end of FY 1975. After working through the following chart, the group felt that over half the present slots in the major Product Lines were understaffed:

PL MGR.	MKT. MGR.	FIN. MGR.	BNS. MGR.	ENGR.MGR.
Leng	Kiesewetter	Strauss	Bradley	Wilhelm Fagerquist
Long	Meany Willis Cothran	Cerra	None	None
Vachon	Marshall	None	A. Jones	Savell
Kramer	Spector Frost	Mullarkey	Schmidt	3 guys
Marcus	Alusic Cady	Bresnahan	Hunt	Bastiani

Ken again emphasized that the Group VPs should work at strengthening the major Product Line Organization over the next year. Win suggested that some day we might measure them by NOR and expense budgets, rather than profit. However, Ken was not comfortable with this.

5. OPERATIONS COMMITTEE MEMBERS

Ken suggested the Operations Committee should be expanded. There was major concern whether a large group could work effectively. The discussion evolved into a ranking of key managers. Ken will work the issue at the February Board of Directors meeting along with the possibility of appointing additional VPs.

6. MISCELLANEOUS ISSUES

Ken wants John Leng to explain his Engineering Budget to the March Budget Review and the Board of Directors.

MISCELLANEOUS ISSUES (continued)

Win will work with the Marketing Committee to choose a position for the Computation Group. The alternatives are:

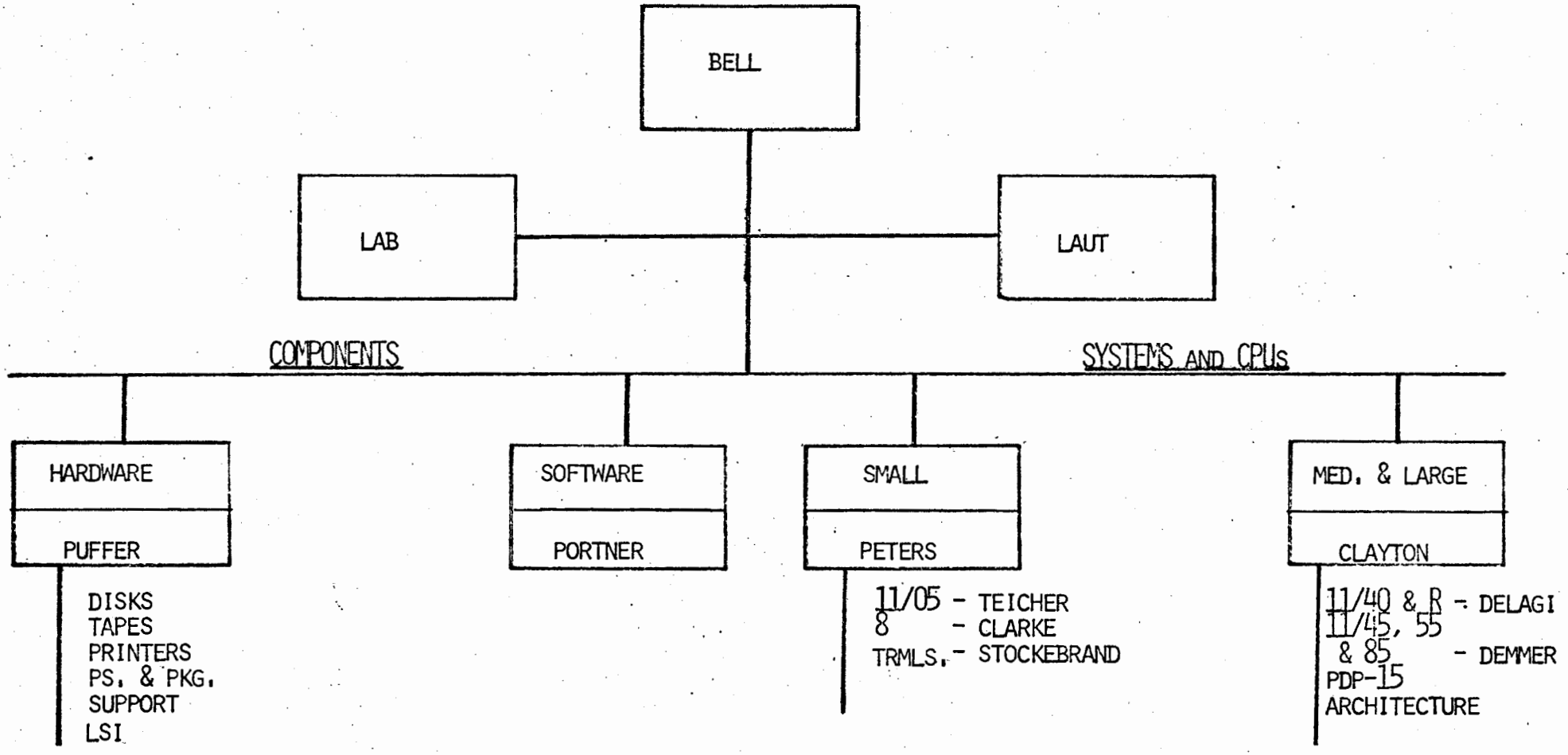
a) Keep separate and independent

b) Put into the PDP-10 Group

c) Combine with Business and let Stan decide what to do with the Education segment.

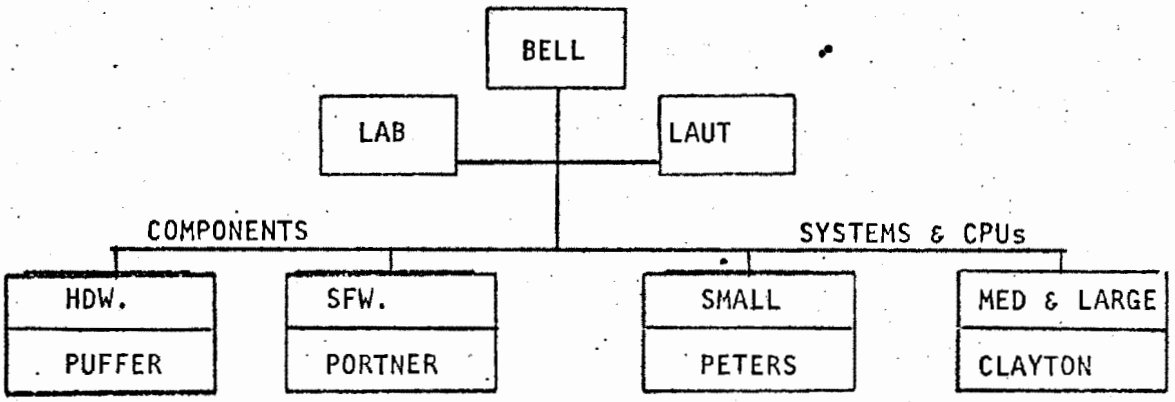
djc

CENTRAL ENGINEERING ORGANIZATION



ORGANIZATION

1. DEC Central Engineering is a matrix Organization of Systems and Component Managers as follows:



2. Systems Groupings:

   a) Small
   b) Medium & Large

3. System Manager's Internal Line Responsibilities:

   a) CPUs and internal option design
   b) Systems definition and engineering
   c) Organization consisting of System Engineers and Product Managers

4. Component Manager's Line Responsibilities:

   a) Initiates Product Plan
   b) Introduces products into Manufacturing
   c) Sets and achieves Cost and Reliability Goals
   d) Organization consisting of Product Managers, Projects Engineers and Engineering Managers

5. Formal Plans include:

   a) Component and System Manager prepare 3 year Product "Possibilities" List
   b) Product Lines prepare Product Wish List
   c) System Manager publishes System Goals
   d) Component Manager proposes Product Plan in the context of the Funding Algorithm
   e) Component and System Managers operate in the context Final Plans approved by the New Products Committee

ORGANIZATION (continued)

6. New Products Committee approves Plans subject to Operations Committee veto.

   a) Consists of:
      Engineering Vice President and Staff
      Component Manager
      Systems Manager
      Software Manager
      Manufacturing Representation
      Product Line Representation

   b) Utilizes specialized Steering Committees and Task Forces

7. Woods meetings used for communication and feedback, but not to approve Plans.

   a) Separate meetings for small, medium and large - limited to people with direct interest.
   b) Meetings also held for major components such as disks, tapes, etc.

8. Specific "open door" Appeal System to Operations Committee to openly challenge formally approved Plans and propose alternatives.

FUNDING

1. Derived from tax on products to be sold,with facility for different tax rate for different products.

2. Charged to Product Lines as part of Product Transfer Cost.

3. Portion off top for New Products and Manufacturing Engineering (probably 1/2% and 1/2% respectively).

4. Remainder, at first approximation, allocated to development of products which incurred tax.

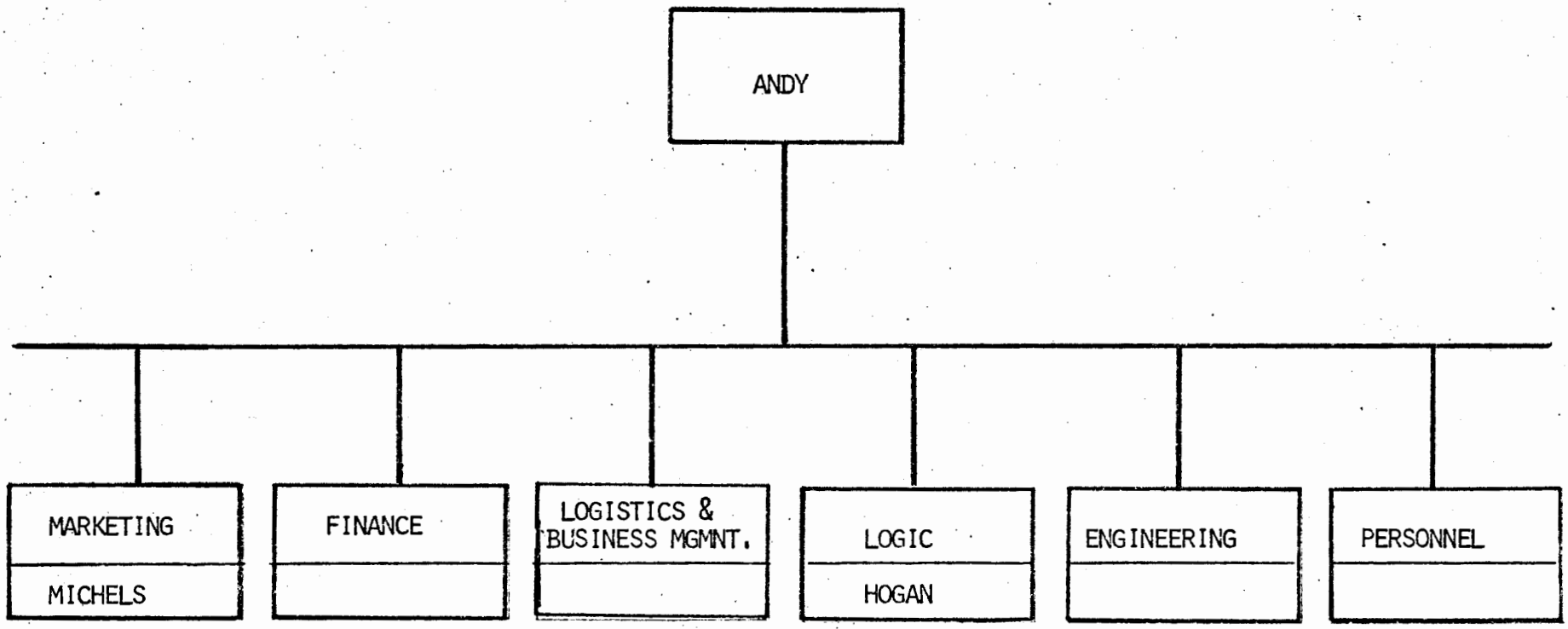
5. Managers propose changes and work out differences which Products Committee approves.

6. The Finance Department will cut the business by Products and Systems as well as Markets to measure the effectiveness of the Central Engineering Group.

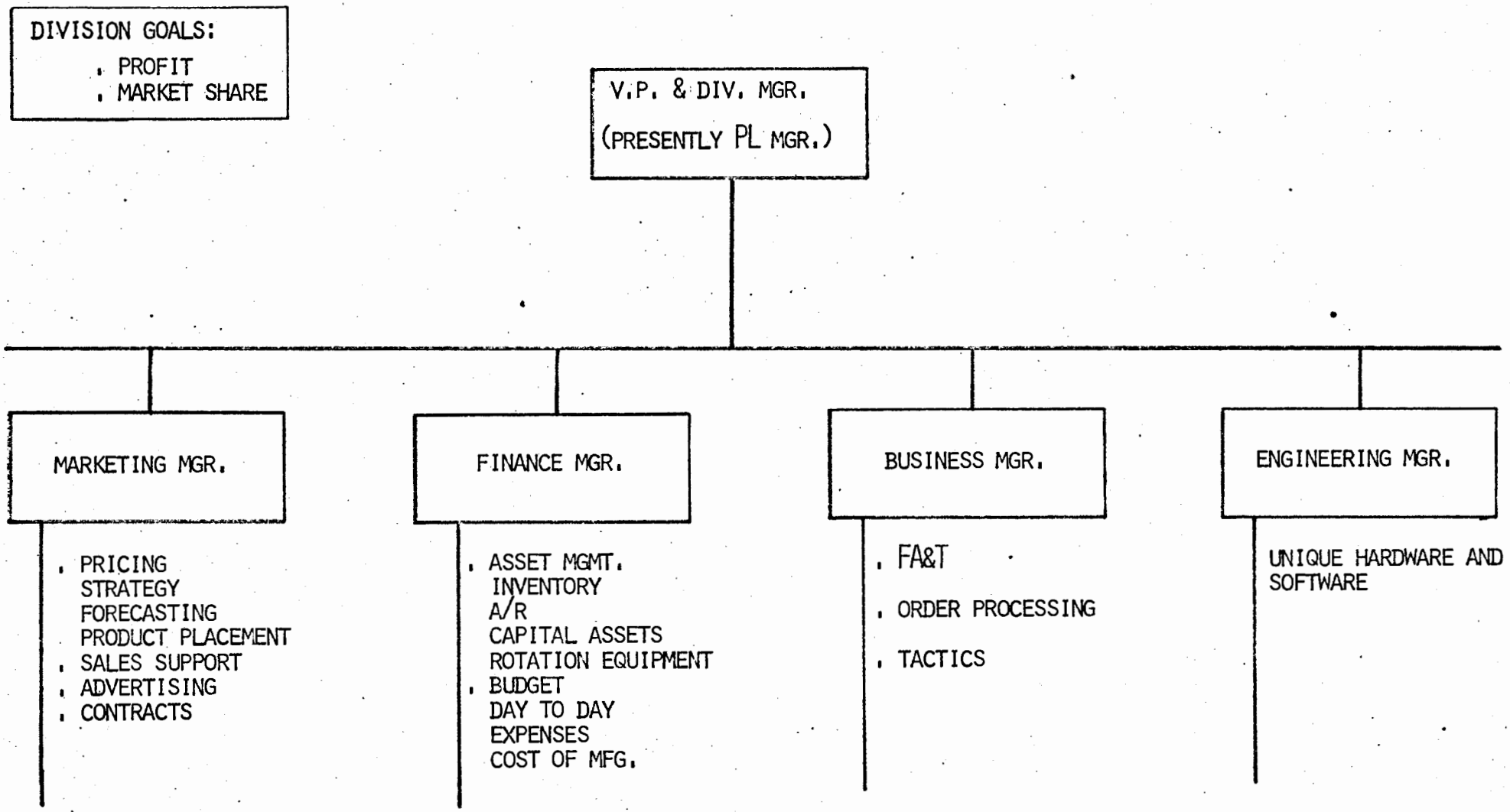
7. Product Lines can engineer their own products if they are not satisfied with Central Engineering but, in addition to Central Tax.

djc

DIGITAL EQUIPMENT COMPONENTS PROPOSED ORGANIZATION



GOAL FOR MAJOR PRODUCT LINE ORGANIZATION



Office of Development Handbook (Internal)

Personnel Requisitions

1. Complete Request For Personnel Form as far as the approvals section.

2. Send to Cost Center Manager for signature.

3. Cost Center Manager retains pink copy.

4. Send to Financial Analyst:

Software Development	-	Pat Spratt	X3317	PK3-1
Hardware Development	-	Irene Leary	X2067	1-3
Computer Systems	-	Larry Smith	X4492	5-2
		(temporarily - Phil Laut	X4308	12-1)

5. Financial Analyst indicates whether the hire is within the budget and forwards to the appropriate Vice President. Finance retains yellow copy.

Software Development	-	Larry Portner
Hardware Development	-	Bob Puffer
Computer Systems	-	Dick Clayton

6. Vice President (dis)approves. All personnel requisitions not within budget must be approved by Gordon Bell before going to Personnel.

7. Return to Finance.

8. Finance sends white copy to Mark Abbett in Personnel.

9. Finance sends green copy to Cost Center Manager as notification that requisition has been approved.

Phil Laut
5/24/74

/ale

Signatory Authority

Software Development

	Applicable Cost Centers	Capital Reqs	Purchase Orders	Expenses	Travel Advances
Larry Portner	SW Development	$20,000	$20,000	$3,000	$500
Mel Woolsey	353		500	250	250
Pete Van Roekens	342,344		5,000	500	250
Peter Conklin	341		5,000	500	250
Ed Fauvre	306,352, 353,354, 355		5,000	500	250
Jim Bell	346		500	250	250
Bill Slack	34A,34B, 34C,34D, 348		500	250	250
George Plowman	315,317, 345,301		5,000	500	250
Oleh Kostetsky	365,554		5,000	250	250
Larry Wade	343		500	250	250

Software Development Cost Centers:

301 Product Line Diagnostics
306 Typeset-11
315 Diag. Stds & Accept Tests
316 European Software Engineering
317 Auto. Manufact. Diagnostics
341 DECsystem-10 Software Engineering
342 Small Systems Software Engineering
343 Software Planning
344 Comp. Real Time Sys SW Engineering
345 Diagnostic Engineering Administration
346 Research & Development
347 Software Engineering & Serv Admin.
348 Software Engineering Adminstration
34A Hardware/Software Engineering
34B Software Engineering Training
34C Software Documentation
34D Software Quality Engineering
352 Software Applications Admin.
353 Software Product Management
354 Edu & Applications
355 PDP-15 Software
365 Software Distribution Center
554 Documentation Services

P. Laut
6/11/74 rev.
/ale

Signatory Authority

Computer Systems

	Applicable Cost Centers	Capital Reqs	Purchase Orders	Expenses	Travel Advances
Dick Clayton	Computer Systems	$20,000	$20,000	$3,000	$500
John Clarke	381		5,000	500	250
Steve Teicher	395		5,000	500	250
Bill Demmer	367,372, 373,374, 378		5,000	500	250
Bruce Delagi	375		5,000	250	250
Robin Frith			2,000	250	250
Bill McBride			2,000	250	250

Computer Systems Cost Centers:

367 11/45 Engineering

372 Medium Systems Development

373 11/40 Engineering

374 11 Packaging Design

375 Advanced 11 Engineering

378 11 Systems Engineering

381 PDP-8 Engineering

395 11/05 Systems Engineering

P. Laut
6/11/74 rev.
/ale

Signatory Authority

Hardware Development

	Applicable Cost Centers	Capital Reqs	Purchase Orders	Expenses	Travel Advances
Bob Puffer	HW Development	$20,000	$20,000	$3,000	$500
Grant Saviers	379		5,000	250	250
Bob Peyton	384		5,000	250	250
Ed Corell	383		5,000	250	250
Phil Tays	324,325, 327,364, 366,496, 36A,36B, 213		5,000	250	250
Paul Rey	391		5,000	250	250
Dave Nevala	330		5,000	250	250
Lorrin Gale	377,382		5,000	250	250

Hardware Development Cost Centers:

213 Marketing System Operators
324 Model Shop
325 Design Drafting
327 Information Services
330 Mechanical Engineering
364 Computational Services
366 Computational Services CS/3
377 Simulation Development
379 Disk Engineering
382 LSI Engineering
383 Printer Paper Tape Engineering
384 Tape Engineering
386 Special Projects
390 Computation Services DECsystem-10
391 Power Supply Engineering
36A Software Preparation Services
36B Software Engineering and Software Services Group Administration
496 Manufacturing Documentation

P. Laut
6/11/74 rev.

PM location

1. Extern

2. CPU- group

3 Parallel to CPU group

4. Software with develpt

5. Parallel to progr

} BRU

} Soft

Mkt
Small
8
Lg 11
11/05
11 family
platz

1. <32; >32K

2. RT / multi-user / Single user or Fg+Bg

3. batch, rt; ts; single user

4. 1 user - n user

PM = MKt, promo, Business
Get agreements
Sell them

Goals N

1. New CPU's & systems

2. Integrate 11 family + family plans.

3. Integrate 11 family literature & MKt.

4. To measure + track system

System

- 8 PG (E, MK, SE)
- Small-11 E
- Mid-11 - E
  - 40, 45
  - 44
  - 55
  - Systems + Ilness
- New Arch.
  - 11/85
- Product MKt.
  - Small - 11
  - Mid 11
  - Nets
  - RSX
  - RT... PT (POS)
  - RSTS / SCP
  - Central Plan

  } PM
  - 10

Software

(System)

- Small 11 (RT) and its lang. *
- Languages
- Nets + Comm.
- RSX
- RSTS/SCP
- Tools, tech, meas.
- Stds + Writers
- 10

8? (Diag + Mfg.)

- 11 System
- Peripherals
  - tape
  - disk
  - terminals
- Techniques
- Mfg. test
- 10

Applic.

- Bus
- LDP?
- TS
- Comm?
- IND
- Logic?

SWS

- Systems
- Computer Service
- Research
- QA, DOC

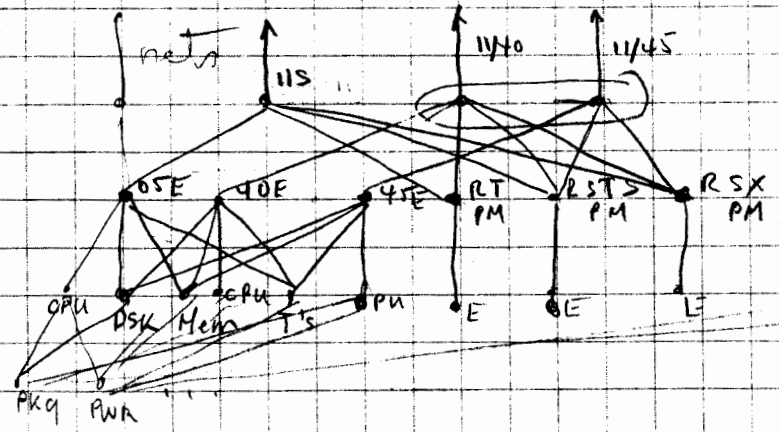
Option

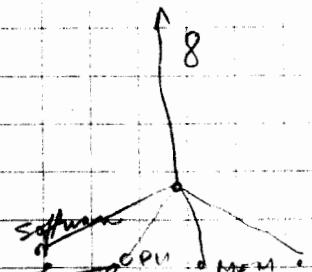
Service

- Tape
- Disk
- Terminals

} PM + E

- Pkg + PWT
- Eng
- LSI - Eng





Plan 1

Mar 74

Measure/finance

- 8 (Business + soft)
- Small 11 - Business (Eng + PM)
- 40/45 - Business (PM+E)
- 44 - Business (PM+E)
- New Arch
  - 85
- Nets PM
- ~~Mkt.~~/plan
  - op sys - Mgrs PM)
- ~~9~~

- Small soft (RT)
- Mid soft.
  - RSX +
  - RSTS/SCP
- Nets + Comm.
- Tools, techs, measures
- Stds
- 10

- 8 Diag
- 11 System
- Peripherals
  - tape
  - disk
  - term.
- Mfg. tes
- 10

Applic

- ~~$~~ SWS
- Comp. Semi
- Research
- QA, DOC

Service

- tape
- disk ✓
- terms — PM+Eng.
- Pkg + PWR
- LSI

plan 2

gb
8 Mar 74

PLANNERS

Titular and Otherwise

PRODUCT PLANNERS

Printers	John Wolaver
Disks	Al Sharon
PDP11 Hardware	Bob Gray
PDP11 Software	Larry Wade

FINANCIAL PLANNERS

Bill Thompson
Lou Burke

MANUFACTURING PLANNERS

Ed Savage
Jack Sharp

Material Managers:

Puerto Rico	Dick Price
I/O Westfield	Phil Gorman
Disks - Westfield	Mike Flaherty
Tapes - Westfield	Bill Mulcahy
Components - Westfield	Bob Hopley
Metals - Westfield	Marion Huggins

Westminster:

Cross Products	E. Bannon
Commercial	Bill Lee
Industrial	N. Pendleton
LDP	H. Luther
Computation	Phil Wood

Memory	F. Kimball, Frank Holland

PL

~~Dave~~ Gruhn –

OEM –

digital INTEROFFICE MEMORANDUM

TO: Marketing Committee
Product Line Managers Committee
Gordon Bell

DATE: December 19, 1973

FROM: Ted Johnson

DEPT: Sales

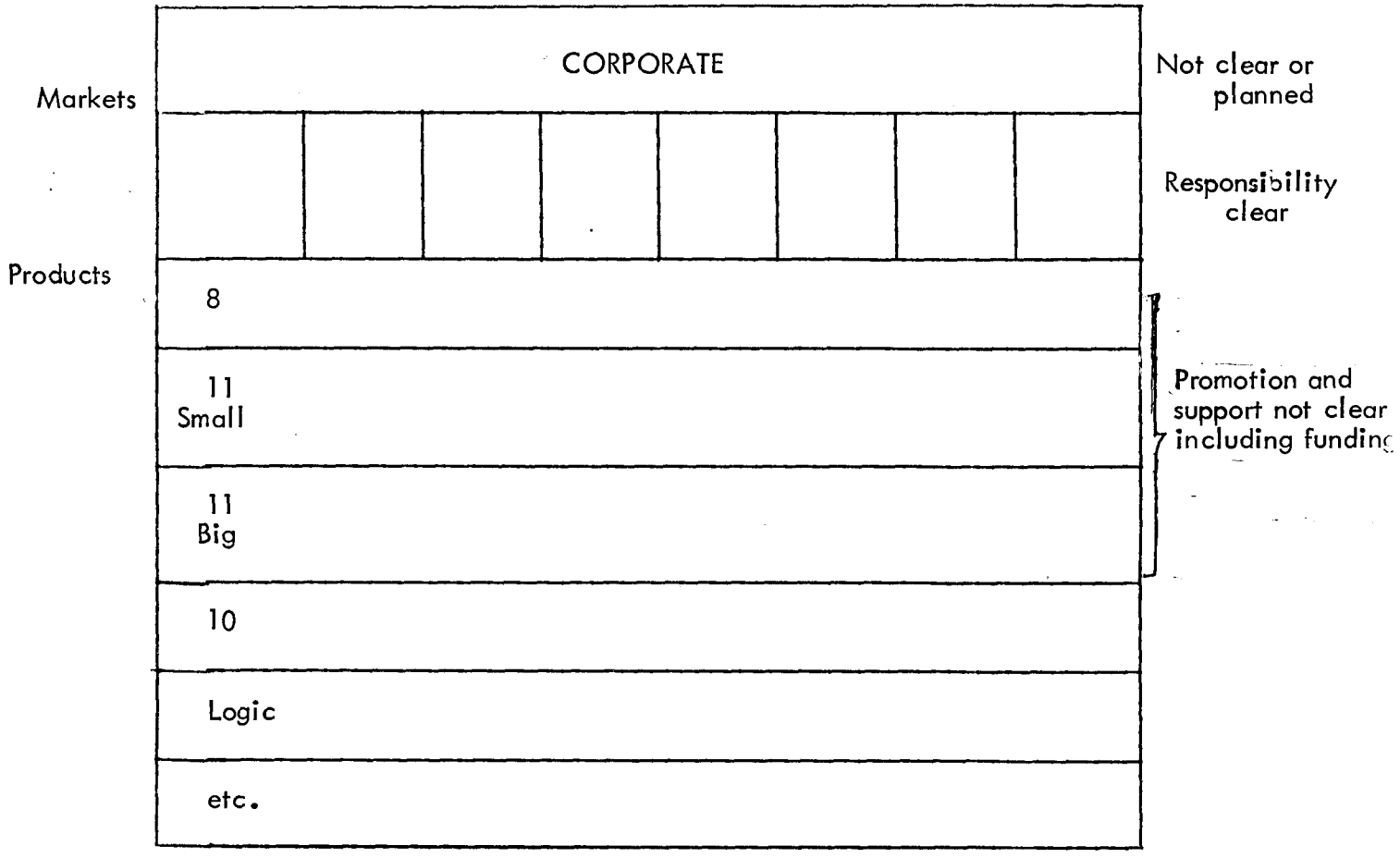
EXT: 5942 LOC: PK-3, 2

SUBJ: ORGANIZING A BALANCED, EFFECTIVE PROMOTION AND SUPPORT STRATEGY

At the Product Line Managers Meeting (12/17), we discussed the problem of getting promotion mileage out of key cross-products (peripherals, software, concepts, etc.).

We have, I believe product marketing support problems too.

It seems to me that we should have an overview of marketing strategy that looks like this:



I believe we should look at ways to make sure we get responsibilities, and forecasting mechanisms identified and established so we can get the balanced program for the corporation.

JAN 4 1974

Gordon Bell

digital INTEROFFICE MEMORANDUM

TO: Operations Committee
cc: John Fisher

DATE: January 3, 1974

FROM: Andy Knowles

DEPT: Small Computer Products

EXT: 3043 LOC: 5-2

SUBJ: WOODS MEETING OF 1/2/74

I thought you might be interested in the reaction of a new senior manager - attached.

/sc
attachment

digital INTEROFFICE MEMORANDUM

TO: Andy Knowles

DATE: January 3, 1974

FROM: Dave Peters

DEPT: Small Computer Engineering

EXT: 5272 LOC: 5-2

SUBJ: WOODS MEETING OF 1/2/74

I came away from yesterday's meeting a little frustrated. It seems to me that we have an awfully confused organization and that we are attempting to resolve the confusion by creating more organization.

I'm simple-minded, so my view of an organization is simple-minded. The corporation has a set of responsibilities in addition to those of responsible management. For instance,

Corporation

1. Businesses we want to be in, for instance

   Computer systems
   Peripherals
   End-user software

2. Businesses we don't want to be in, for instance

   Turnkey systems
   Point-of-sale

3. Businesses we want to learn more about before deciding if we want to be in them, for instance

   Calculators

4. What our general corporate goals are, for instance

   Long term growth rate
   Profit levels

5. How we want to spend our R&D money, for instance

   By major general category
   By very approximate dollar amount

In response to this, responsible management would:

Responsible Management

1. Make proposals resulting from original ideas
2. Make business plans
3. Manage programs with specific goals

    Costs
    Schedules
    Profit growth rates
    Compatibility
    Organization

And in return, the corporation would:

Corporation

1. Alter plans
2. Prioritize programs
3. Mediate major program conflicts

In my estimation, the term "responsible management" means the PLM's and the engineering managers. Their respective responsibilities are, among other things:

PLM - find out what the market needs are
- react to proposed programs

    usefulness
    timeliness
    product cost
    development cost

- generate ideas
- write business plans

Eng. Mgmt. - generate and test ideas
- respond to outside ideas
- give cost and schedule responses
- manage engineering programs

January 3, 1974

As far as a development organization is concerned, I think of things like

Small Systems Medium Systems Large Systems Terminals	hardware software peripherals

who would be supported by common-to-all organizations like

Power supplies
Memories
Packages

The Systems organizations would be responsible for development plans within the very general constraints of the corporation. They would also be responsible for the execution of those plans. The supporting organizations may get conflicting inputs and therefore, they must put their own development plans together and be measured by them.

Dave

jd

let MFG pay warranty or let F. Service run Q.C.

Change organization

Technical & Business Issues (may be organizationally induced)

NO Low end — focus exists in Maynard - field sales focus may occur as Maynard focus provides some products
YES Terminals no critical mass in any one group - first time for many groups - most
YES MOS Core vs. MOS — MOS mfg should be in same place as Core mfg
responsibility to MOS Reliability - steps at design review — maybe get a recognized reliability expert or two — complicated design problem due to human interaction
NO LSI - do it - maybe buy a co.
YES Compatibility
Hardware/Software Co-ordination
Systems vs. Components — PRODUCT MANAGER HASSLE RESOLVER NEEDED

Organizational Issues (some duplicates from above)

Product Planning — memories
Engineering Education
Co-ordination between PDP-10 & rest
Personnel Evaluation
Standards & Engineering Process (Hardware & Software)
Product Managers
Packaging & Power Supply Co-ordination
LSI
Design Automation & Simulation
Research (none done in hardware)
Terminals (Co-ordination)
Memory (role of memory group)
Manufacturing Engineering
F A & T
Process Engineering (Module Test)

Terminals
Core vs. MOS

YES
PC

2/22/74 G. Bell 9B

To:

we are making a change.

~~A change~~ is being considered for the central engineering organization. The change is an outgrowth of a requirement for better product plans and products rather than solely for DEC's increasing size. The change does not represent a net increase in the functions of the central engineering organization. The objective is to increase the quality, rather than the quantity of products.

Our goal is to develop basic products which can be built and sold profitably into present and future product lines, ~~including product type (IO, Logic, Grpahics, Communications and CSS); applications type (Business, LDP, Industrial, Biomedical, Computation); and customer type (OEM); and service type~~ (Software Support and Field Service).

We are attempting to provide better products by focusing on the following issues:

0. Establishing a strong product development business (sellers) for the evolving strong product line businesses (buyers).
1. ~~Better~~ integrated planning and development of hardware-software systems to fit the PL requirements. We hope to plan total systems ~~more carefully~~ along one or more of the dimensions: size (overall configuration size together with memory management options); operating system user-type (Human User, Real Time, and Batch); and operating system multiprogramming (single user, foreground-background-1+1 user and multiple user).

Computer systems will be viewed as a layered hierarchy consisting of CPU and memory, hardware options, operating systems, programming languages and applications programs. This is in contrast to thinking of computers as a collection of hardware options and pieces of software.

2. ~~Better~~ Planning of options and the corresponding support software to provide total systems which can be introduced on a complete basis, ~~rather than gradually with software following hardware.~~

3. ~~Better~~ Manuals, documentation and promotional material for the basic products.

4. Product Managers will be ~~totally~~ aligned with the products and their role ~~function expanded~~ ~~The Product Managers of today are beginning~~ to function effectively, and their charter will be extended to include: initial product planning; financial analysis including the coordination of engineering and manufacturing start-up; and sales of products to the various Customer-Applications-Service Product Lines. We believe there must be product (and product manager) measurement at roughly the same level of detail and precision as for Product Line Managers.

5. The general hassle-level should be significantly reduced, and confined to only relevant hassling. Thus providers (sellers) and users (buyers) of particular products would participate in products and policies--not all buyers of any product. Under the current budget method, this will consist of allocating funds according to system size, and then having the product groups and their customers allocate within the groups.

A longer term goal must be a scheme for comparing all product candidates equitably including those developed especially for Product Lines on the basis of their profitability to the corporation.

6. Better orientation of dominately technology-oriented products (as opposed to dominately market-oriented). These include core memories, semiconductor memories, and semiconductors.

7. Increased standardization of hardware. The hardware includes purchased components, cabinets, boxes, boards, power equipment and basic memory circuits. In general, subassembly numbers should be reduced to aid manufacturing and reduce field service inventory.

8. Increased standardization of software within the PDP-11 and extending to PDP-8 and PDP-10. For the PDP-11 this will include a common operating system interface and file system, such that user-level systems programs (ie., translators, run time, and editors) and user programs operate on all members of the family--provided the system supports the capability. All higher level languages would also be subset compatible such that a common language manual could describe the language for all systems.

9. Operating system support of multicomputer structures. This would enable the construction of networks and tightly-coupled computer systems.

10. ~~Better (fairer) review of engineers.~~

11. Personal development of engineers ~~to follow engineering, management, or sales tracks for products, product process, or engineering~~ tools.

Increased career opp.

hardware and software

- Central 11 Mkt
- 8
- 11S
- 11Lg.
- 11 } ~~Eng.~~
- Staff
- new arch.

- Tapes
- Disks
- Terminal
- Services
- Pkg + Pwr
- LSI / Sim.

- SWS
- 11-S+ 8
- 11 L
- App
- Cronshey.
- QA, Docum.
- Adm.
- Diag.

- Control
  - Finance
  - Plan.
  - EPP.

Clayton.

~~11/05~~

8 - PL.

architecture.

Kaepan 11 stds. (Unibus, Massbus?

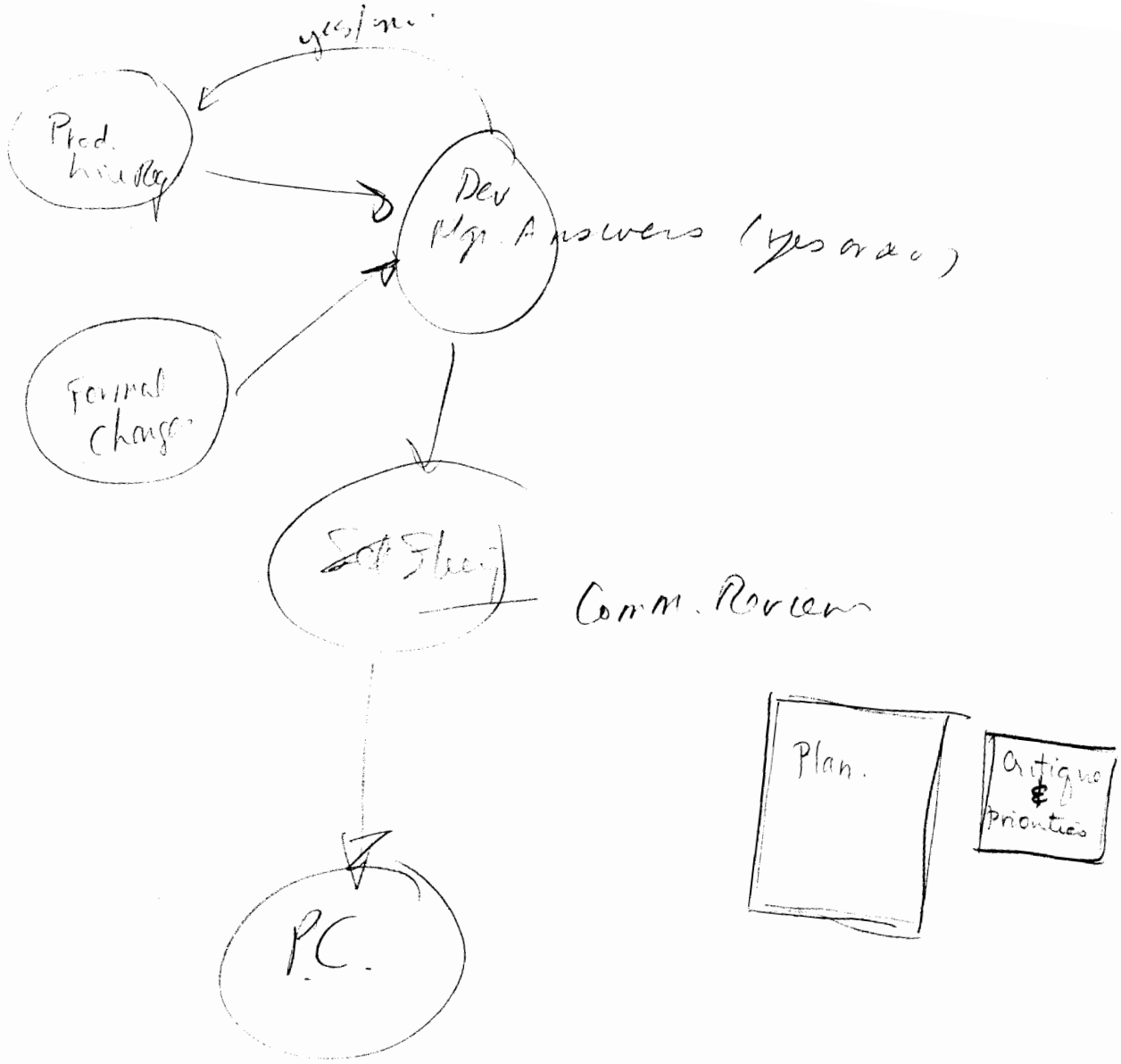
Systems

11/05

11/40 —

11/45.

Mkt services ..



K.O. admant

1. (Dev.) writes down.
   (PL)
- PL writes critique
  Dev. " answers with plan.

May
13th + 14th

Changes must be formalized.

OFFICE OF DEVELOPMENT HANDBOOK

ORGANIZATION PRODUCTS COMMITTEE, TECHNOLOGY/PRODUCTS FORMAL ORGANIZATION, GUIDANCE COMMITTEES (STRUCTURE AND CHARTERS)

REPORTS AND CONTROL DOCUMENTS

A. PRODUCT LINE PRODUCT/TECHNOLOGY 3 YEAR PLAN--PRODUCT REQUIREMENTS (ISSUED QUARTERLY)

B. TECHNOLOGY/PRODUCT 3-YEAR PLANS (PARTS: SUPPORT, DESIGN, FEASIBILITY, RESEARCH, COMPETITION, USE)

C. YELLOW BOOK--MONTHLY STATUS OF PRODUCTS AND PROJECTS; WILL INCLUDE MEASURE OF PRODUCT SHIPMENT VERSUS PLAN.

FORMAL MEETINGS

A. PRODUCTS COMMITTEE

B. QUARTERLY PCM/OOD MARKET/TECHNOLOGY OVERVIEW IN WOODS COMMITTEES

C. TPGC MEETINGS (WEEKLY-MONTHLY)

D. TPGC ~~WOODS MEETINGS~~ (SEMI-ANNUALLY) hearings.

PROCESSES

A. PRODUCT BUSINESS PLAN APPROVAL

B. TECHNOLOGY/PRODUCT PLANNING AND BUDGETING PROCESS

GB
4/22/74

digital Product Approval Process INTEROFFICE MEMORANDUM

TO: Phil Laut
Gordon Bell
Bill Thompson

DATE: October 4, 1973

FROM: Grant Saviers

CC: Products Committee
Manufacturing-Engineering Committee

DEPT: Disk Engineering

EXT : 2357

OCT 08 1973 10-91

SUBJ: YOUR PROPOSED APPROVAL PROCEDURE FOR PRODUCTS AND PRICES.

I don't like the Products Approval flow charts. They are deficient in the following respects:

1. We should correlate major corporate reviews of products with proposed major commitments. Examples:

PHASE	REVIEW/PURPOSE	RESULTING COMMITMENT
0	Concept	Organizational Restructuring
1	Proposal/Business Plan	Development $
2	Design	Manufacturing Startup $
3	Release	Inventory $, Manufacturing Manpower
4	Announcement	Customer Commitments
5	Ship	Field Service startup $
6	Withdraw	Write-offs, Customer Decommitments

I don't think that the Products or Manufacturing-Engineering Committees have the energy, time, or manpower to watch projects as often as the flow charts indicate. The major reviews should occur between the event blocks (Concept, Proposal, Design and Price, Release, Test (new), Announce, Ship, Withdraw). See my attached flow chart.

2. The Design Review looks like a club rather than an aid to the Project Manager. These must happen, but getting a good Design Review takes a strong push to get effective participation.

3. Product test is not even mentioned!! This is one reason why we deliver unreliable products. I believe we should have an independent product test group. The engineers need the incremental help at the Test stage of a project since they

are 120% busy with solving problems, helping Manufacturing, etc. We could set testing up in parallel with release and not incur any major built-in delays to first ship.

4. The field release activity is not mentioned. Hardware should have test sites, like software. A positive approach to field training, getting feedback, solving logistical problems must be taken. The "system" doesn't work (because of growth) for existing products, let alone new ones.

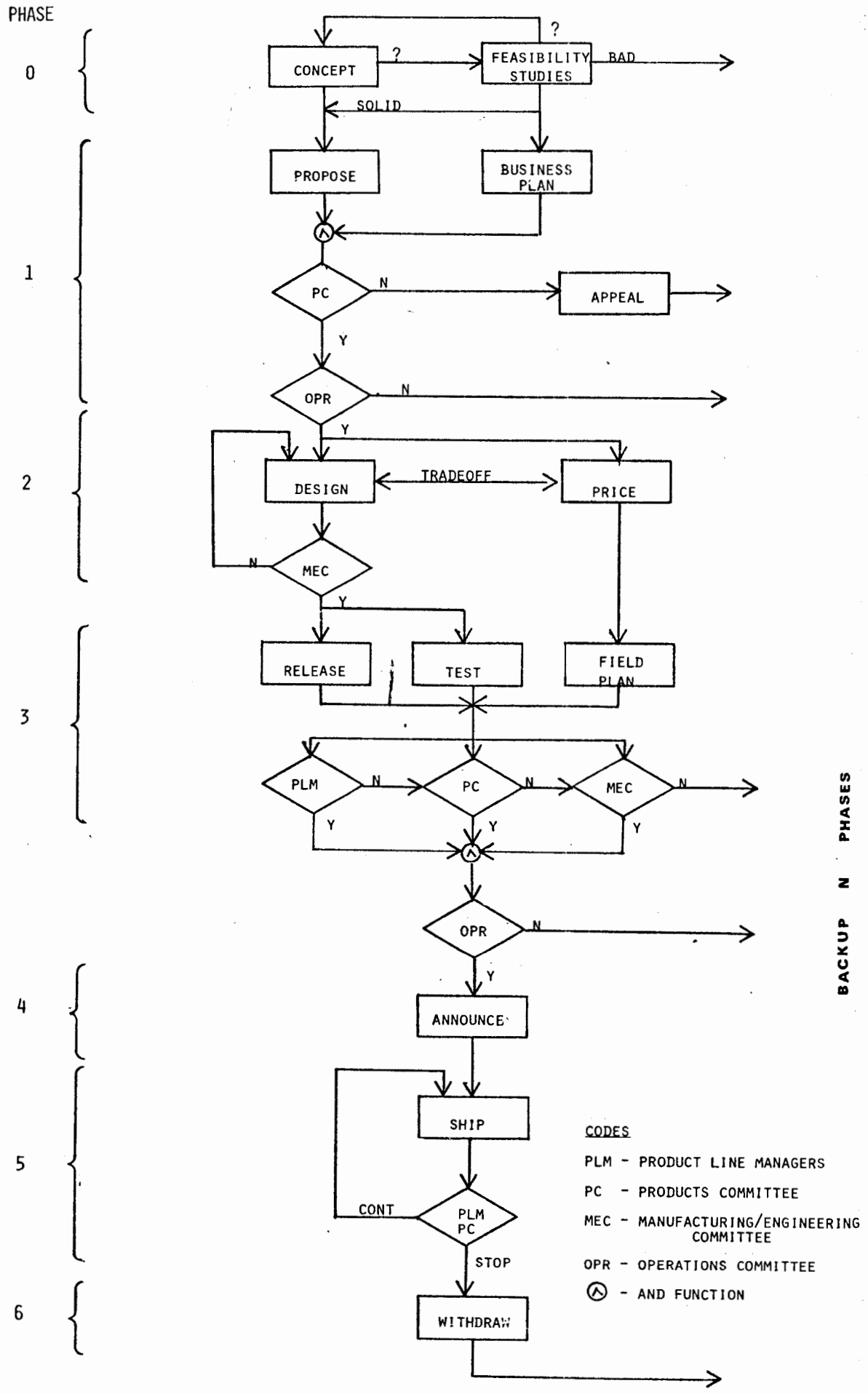
   I suspect that our product introductions need to be as fancy as IBM's (Volume is about the same).

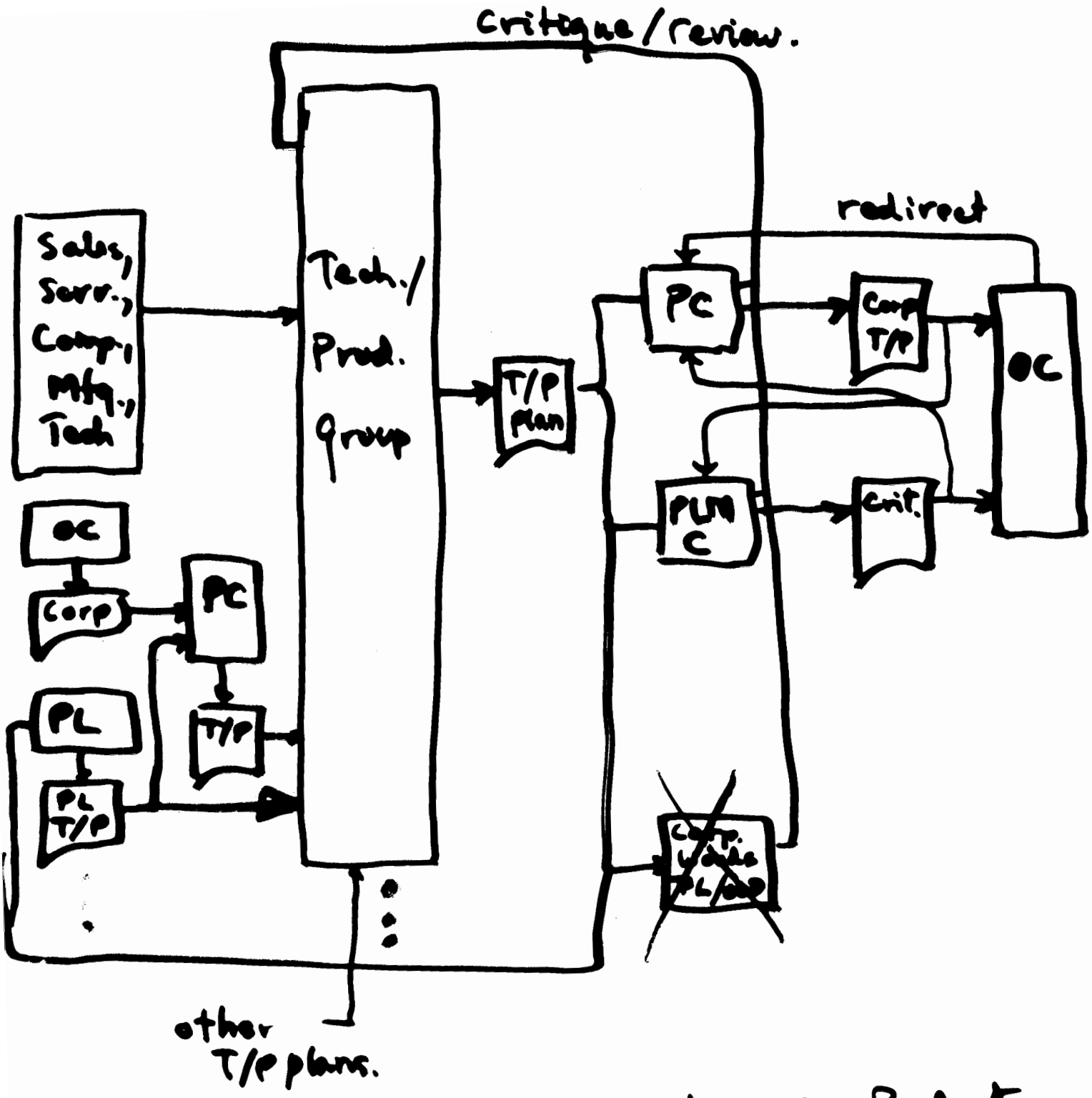
5. I note that in Figure 2, the only permitted answer from the "Operations Committee Appeal" box is NO.

6. The Manufacturing-Engineering Committee should be the reviewer at "Assembly and Test" (Step 5F). "Production Release" (Step 5J) no longer has any meaning with all startup in remote plants.

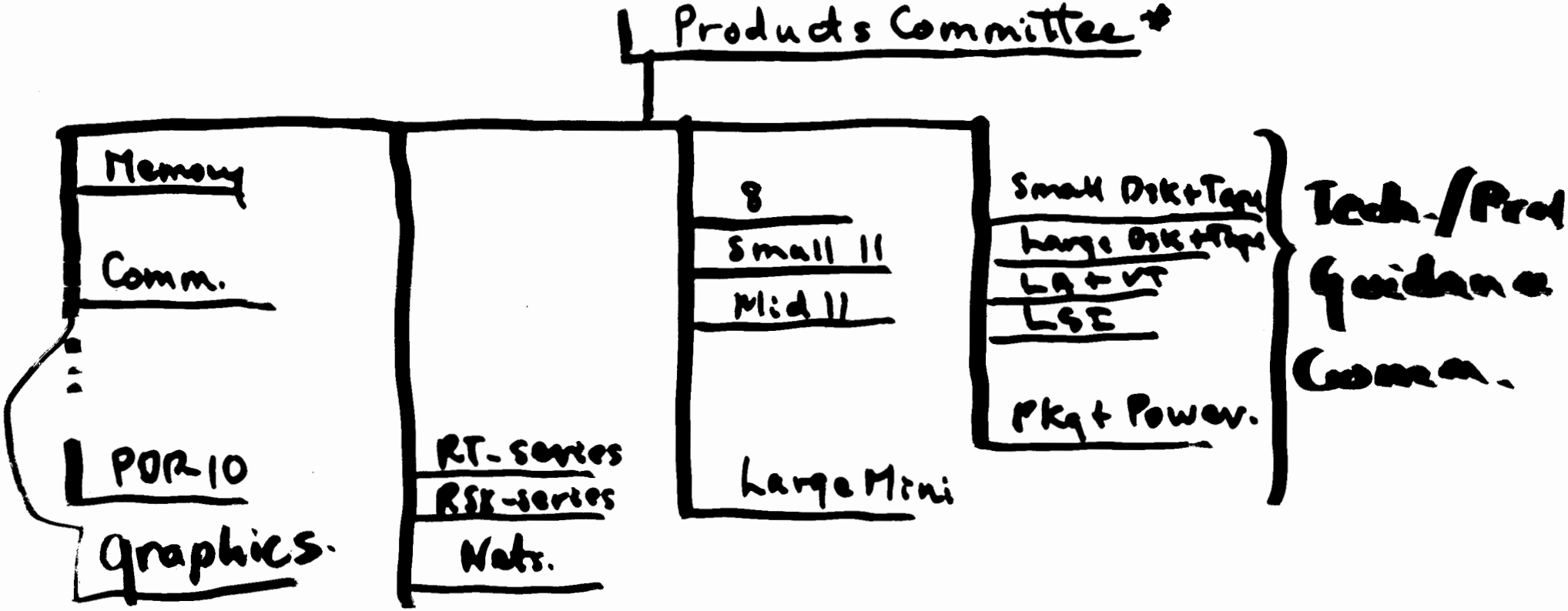
GS:bca

Attachment (1)


PHASE
0
1
2
3
4
5
6
CONCEPT
FEASIBILITY STUDIES
BAD
SOLID
PROPOSE
BUSINESS PLAN
PC
N
APPEAL
Y
OPR
N
Y
DESIGN
TRADEOFF
PRICE
N
MEC
Y
RELEASE
TEST
FIELD PLAN
PLM
N
PC
N
MEC
N
Y
Y
Y
OPR
N
Y
ANNOUNCE
SHIP
CONT
PLM PC
STOP
WITHDRAW
CODES
PLM - PRODUCT LINE MANAGERS
PC - PRODUCTS COMMITTEE
MEC - MANUFACTURING/ENGINEERING COMMITTEE
OPR - OPERATIONS COMMITTEE
- AND FUNCTION
BACKUP N PHASES



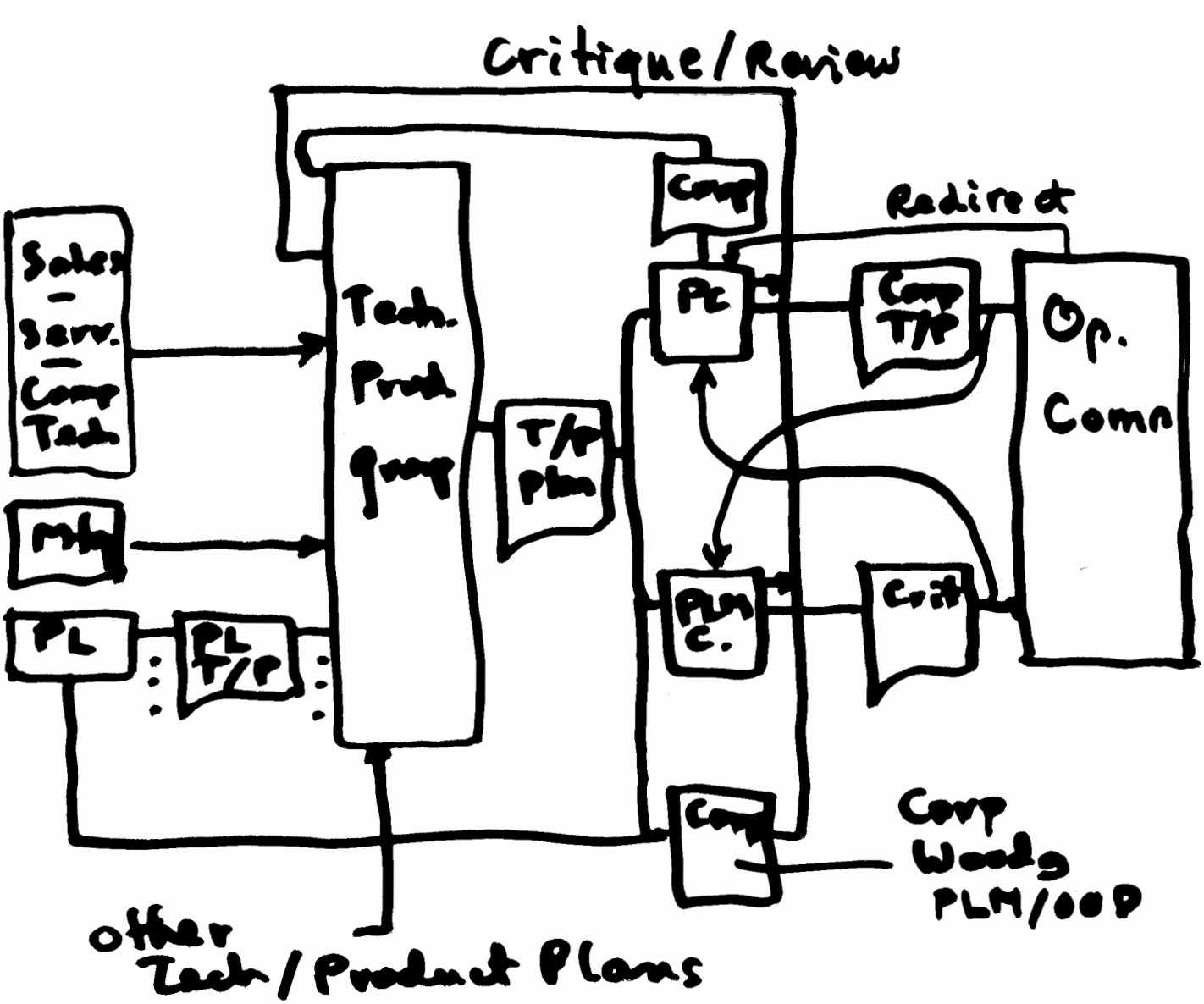
Basic Strategy / Tactics, Budget Process.

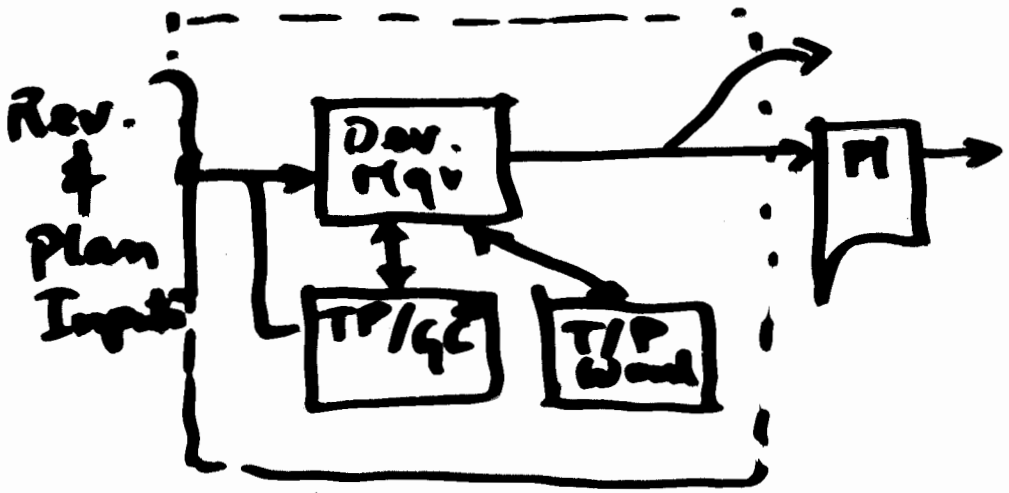


Membership

R+D Advts.

- Bell, Patton, Clayton, Portner, Lent
- Hanson, Smith, Lemaire
- Moore
- Knowles, Long, Marcus, Kramer, Lang
- Thompson





*Reps from: co-dev., PL, Salient Service Mfg., diagnostics, etc.

Basic Strategy, tactics, Budget. Process.

OFFICE OF DEVELOPMENT HANDBOOK

ORGANIZATION — PRODUCTS COMMITTEE, TECHNOLOGY/PRODUCTS FORMAL ORGANIZATION, GUIDANCE COMMITTEES (STRUCTURE AND CHARTERS)

REPORTS AND CONTROL DOCUMENTS

A. PRODUCT LINE PRODUCT/TECHNOLOGY 3 YEAR PLAN--PRODUCT REQUIREMENTS (ISSUED QUARTERLY)

B. TECHNOLOGY/PRODUCT 3-YEAR PLANS (PARTS: SUPPORT, DESIGN, FEASIBILITY, RESEARCH, COMPETITION, USE)

C. YELLOW BOOK--MONTHLY STATUS OF PRODUCTS AND PROJECTS; WILL INCLUDE MEASURE OF PRODUCT SHIPMENT VERSUS PLAN.

FORMAL MEETINGS

A. PRODUCTS COMMITTEE

B. QUARTERLY PCM/OOD MARKET/TECHNOLOGY OVERVIEW IN WOODS COMMITTEES

C. TPGC MEETINGS (WEEKLY-MONTHLY)

D. TPGC WOODS MEETINGS (SEMI-ANNUALLY)

PROCESSES

A. PRODUCT BUSINESS PLAN APPROVAL

B. TECHNOLOGY/PRODUCT PLANNING AND BUDGETING PROCESS

GB
4/22/74

Business Plan
a. Development —
b. mfg. —
c. Pricing —
d. Before commit —

magic charts needed
PL inputs
Support, tech. → PC

GB
~~4/74~~
4/20/74

OFFICE OF DEVELOPMENT REFERENCE MANUAL

need process + charts

The Organization--structure and function

1. Formal organization.

2. Products Committee and its charter. Tech. Guid. C.

3. Technology ~~Area Group~~ ~~Sub Advisory~~ Product Committees and their charters. guidance (~~TGC's~~ T/PGC's)

TASTG Tech Area Strategy Tech. A S, T, F C TAGC.

Reports and Forms

STP

0. Product Line Product Technology Plans (quarterly update; response to plans)

1. ~~Product/Technology~~ Technology/Product Plans (~~semi-annually, updated as needed~~ quarterly) consists of

   ~~A. Yearly--for budget purpose~~
   ~~B. 2 Year--for budget purpose~~
   ~~C. 5 year--for strategy~~
   } 3 year with 2 yr budget 1 year for Tech trends – possible ~~Sys~~ follow on product

2. Yellow Book - (Monthly)
   Sum of projects, products in production; add P&L for products against business plan.

3. Discrete project list (monthly)
   Is this needed?

4. Project expense (monthly) to Project Eng.

* Tech Plan

5. List of semi-annual woods strategy, tactics meetings for technology plans. (1 or 2 day/quarter)--members, chairmen, ~~time~~ (updates)

* Product Bus. Plan

6. List of quarterly--PLM/OOD Market/Technology overview (2 day/quarter) --~~Mmo~~. (updates)

7. List of ~~Tech. Area Groups~~ ~~TGC's~~ TPGC's & members. (updates)

* PL plan *

8. Product Business Plan Proposal Format (LB 2/22/74)
   Concurrent with new product proposal.

9. Manufacturing Engineering Plan Proposal Format (part of Business Plan)
   Concurrent with new product proposal.

10. Feasibility Study Proposal Format? available to us.
    I'd prefer that this be in province of Development Manager with appropriate entries in Yellow Book

GB
4/74

P.L. inputs
(1.) Tech plan critiques
(2) We read PLM plans.
(3) Questionnaire re, Taitras follow
(4) Budget priorities
→ (5) Formal Product Plan request ← L. Burke

Software
System
Charts

Processes

1. Approval Procedures for products and prices (PL 9/27/73)
   a.
2. Design Review process (See DEC Stds.)
3. Budget process--to do.
4. Strategy process--to do.

Quality

Algorithms, Rules, and Support Program for Process

1. Who budgets for what (PL memo)
2. Budget allocation of projects to PL's; spending algorithms.
3. ROI calculations for a product/project--program in existence.

Definitions

PM, PE, SE, ME--definition (GB)
Strategy, tactics
Corporate plan group

a. Development
b. ~~[illegible]~~

digital INTEROFFICE MEMORANDUM

TO: Gordon Bell
Al Pilon

DATE: March 22, 1974

FROM: Phil Laut

DEPT: Engineering

EXT: 4308 LOC: 12-1

MAR 25 1974

SUBJ: Goals and Structure of the Financial and Product Planning Organization in Engineering

GOAL - My goal is to provide data and tools that cause us to spend development dollars as wisely as possible.

ROLE OF STAFF PEOPLE IN MEETING THE GOAL

(Some of this previously outlined to Gordon)

The purpose of a staff is to cause follow-up, communication and useful data to occur, not to run the place. This results in some useful rules for staff members.

Endeavor not to criticize unless you can offer at least a helpful suggestion.

Don't do manager's job. Learn to say no.

Expansion of the goal into various objectives.

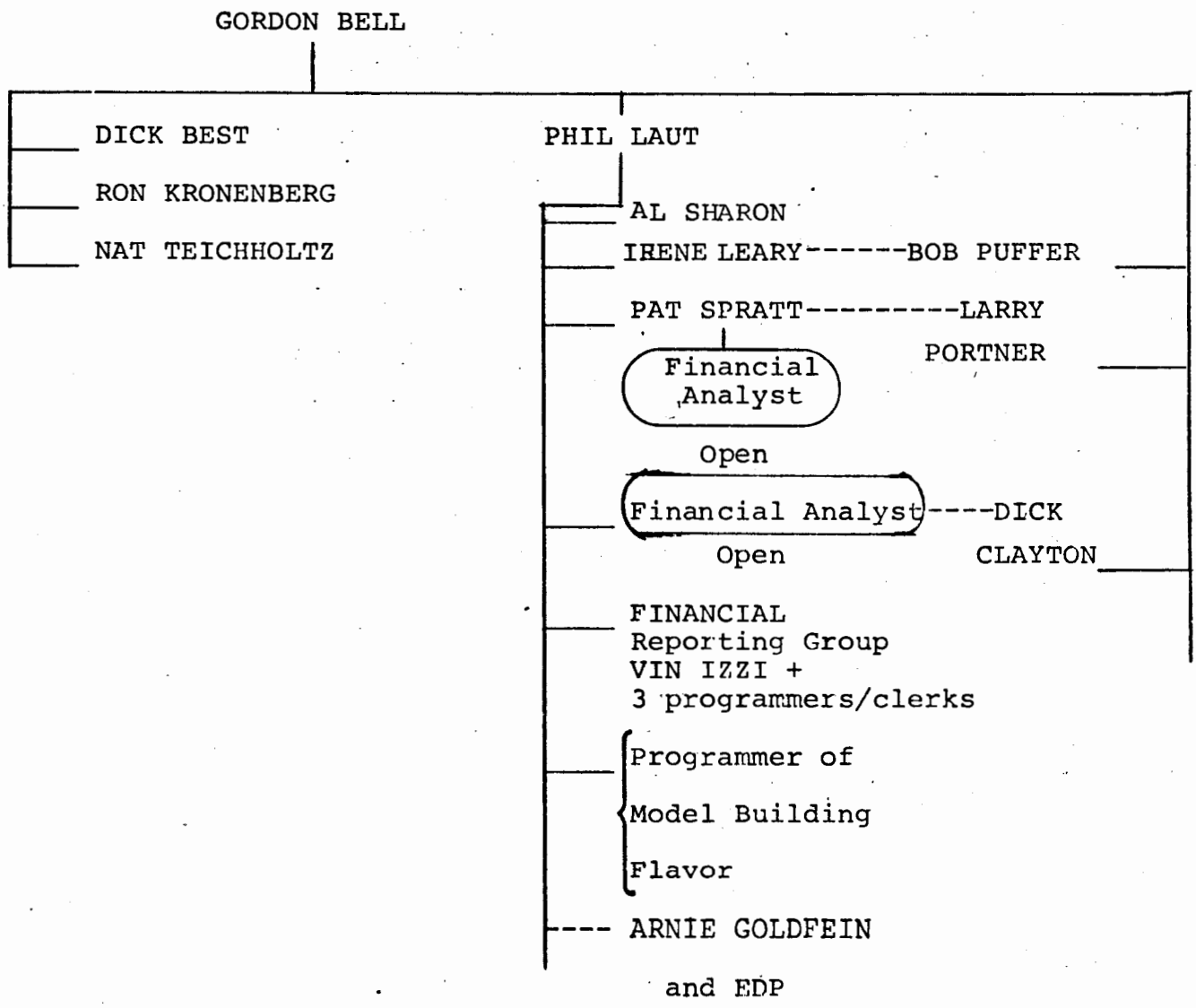
Objective	Who will help get us there	Measures accomplishment of	Approx. Annual Cost (000's)
Improve Design Process	Dick Best Ron Kronenberg Nat Teichholtz	Reduced hassle level to the point where most hassle is Productive. Design Standards which are understood and bought in to by designers	$115
Better Product and Business Planning	Al Sharon Nat Teichholtz Programmer of Model Building Flavor	Internal consistency of product plans. Input to product plans by marketing and sales. Degree to which product lines buy into product plans.	$ 91
More Financial Support for Design Groups & Product Accounting	Financial Analysts Irene Leary Pat Spratt Open (2) *Financial Reporting Group	Accuracy and ease of gathering data. Ease of preparing and commitment to budgets by managers	$221

Sub Total (see back up sheet for detail) $ 427

*See appended proposal for Financial & Product Reporting Group.

Product Accounting	Analysis and programming from EDP, represented by Arnie Goldfein	Improve systems for reporting & forecasting sales and expenses by product	$180
Grand Total			$607

ORGANIZATION



FINANCIAL & PRODUCT REPORTING

GROUP

To achieve the goal, some level of reporting of financial information, cut by product and compared against plan is necessary.

The reporting system will use, as much as possible, the data from the central accounting system, although the level of precision and auditing in the central system will not be required, because it is not intended to use accounting data by product to fulfill the company's legally imposed requirements to report to IRS, SEC and others.

The data required for this reporting system called Product Accounting breaks down into two basic categories - shipment information and expense information.

Shipment information - The capability exists to extract shipment data by product from today's records, but this process is cumbersome and time consuming, due to the largely manual method of exploding system shipments into pieces. (Arnie Goldfein to provide analysis and programming to make this simpler.)

Expense information - Today there exists a company-wide discrete project reporting system and within Software Engineering, a budget package that facilitates the formulation of cost center budgets.

What Next

During the next nine months (i.e., by January 1, 1975) I would like to:

1) Implement the use of the Software Engineering budget package in Systems & Hardware Engineering cost centers.

2) Finish product accounting to the point where we are able to publish product statements vs. plan each quarter, one month after the end of the quarter.

People Needed - Although most of the data used in Product Accounting is from the central accounting system, as mentioned earlier, the implementation of the software needed to produce Product Accounting data is not all that is needed for timely Product Accounting reports. I believe we need people who will:

1) Enter and verify budget data
2) Check accuracy of budget output and actual output
3) Prepare and distribute reports
4) Maintain software.

For this, I propose a financial reporting group of four (4) people.

BACKUP TO EXPENSE CALCULATIONS

	Annual Salary Expense	# people hourly	salaried	total
Dick Best				
Ron Kronenberg				
Nat Teichholtz				
Phil Laut				
Irene Leary				
Pat Spratt				
Al Sharon ✓				
Anna Elliott				
June Payne				
Sub-total existing people	$ 178.5	2	7	9
Openings				
Financial Analysts (2)	40.0		2	2
Programmer (Model Building)	16.5		1	1
Clerk/Secretary for: Pat Spratt, Irene Leary, New Financial Analysts	34.4	4		4 (Note 1)
Financial Reporting Group	45.4	3	1	4
Sub-total openings	136.3	7	4	11
Total - Salary	314.8	9	11	20
Salary Increases	32.0			
Expenses other than salary				
Fringe benefits	36.3			
Phone, travel, occupancy	44.1			
Grand Total	$ 427.2			

(Note 1) This number can be reduced if geography permits sharing.

OFFICE OF DEVELOPMENT HANDBOOK

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D. TPGC WOODS MEETINGS (SEMI-ANNUALLY)

PROCESSES

A. PRODUCT BUSINESS PLAN APPROVAL

B. TECHNOLOGY/PRODUCT PLANNING AND BUDGETING PROCESS

GB
4/22/74

GB
4/29/74

OFFICE OF DEVELOPMENT HANDBOOK

ORGANIZATION: FORMAL ORGANIZATION, PRODUCTS COMMITTEE, TECHNOLOGY/PRODUCTS GUIDANCE COMMITTEES (STRUCTURES AND CHARTERS)

REPORTS AND CONTROL DOCUMENTS:

A. PRODUCT LINE PRODUCT/TECHNOLOGY PLANS--PRODUCT REQUIREMENTS (ISSUED QUARTERLY)

B. DEVELOPMENT TECHNOLOGY/PRODUCT PLANS (ISSUED QUARTERLY)

C. YELLOW BOOK--MONTHLY STATUS OF PRODUCTS AND PROJECTS; WILL INCLUDE MEASURE OF PRODUCT SHIPMENT VERSUS PLAN.

D. MONTHLY 1 PAGE QUICK AUDIT OF PRODUCTS.

REVIEW GROUPS:

A. PRODUCTS COMMITTEE

B. PRODUCT LINE MANAGERS COMMITTEE

C. TPGC (WEEKLY TO MONTHLY)

D. TPGC PRODUCT AND MARKET HEARINGS (WOODS MEETINGS) (SEMI-ANNUALLY)

E. OTHER MEETINGS WITH PLM AND OPERATIONS COMMITTEE TO REVIEW BUDGETS AND SPECIFIC PRODUCT AREAS.

PROCESSES:

A. PRODUCT BUSINESS PLAN APPROVAL (BOTH INITIAL PLAN AND PRICING)

B. TECHNOLOGY/PRODUCT PLANNING AND BUDGETING PROCESS

ALGORITHMS:

A. BUDGETING BY AREA/SUB AREA

B. ALLOCATION CRITERIA BY AREA

C. PRODUCT EVALUATION CRITERIA

GB
4/29/74

PRODUCT LINE PRODUCT PLAN

RESPONSIBILITY: PRODUCT LINE MANAGER

ISSUED: QUARTERLY IN RESPONSE TO DEVELOPMENT PLANS. COLLECTED BY LONG RANGE PLANNING GROUP FOR REISSUE TO DEVELOPMENT GROUPS.

PURPOSE: TO STATE PROJECTED USE OF VARIOUS PRODUCTS AS THEY ARE AND MIGHT BE DEFINED. TO REQUEST NEW PRODUCTS. TO CRITIQUE PRODUCTS IN CURRENT PRODUCTION.

FORMAT

1. PROJECTED USE BY SYSTEM, TECHNOLOGY AND SOFTWARE SYSTEM.
   A. 1 YEAR--TAKEN FROM PRODUCTION CHARTS
   B. 2-5 YEAR CURRENTLY PRODUCED PRODUCTS
   C. PRODUCTS IN DESIGN PHASE (COMMENTS ON INTRODUCTION)
   D. PRODUCTS IN STUDY OR PROPOSAL PHASE.

   NOTE--CATEGORIES B-D FORM THE BASIS OF A FORMAL SET OF PRODUCT PLANNING CHARTS (BY QUARTER), WHICH ARE AKIN TO PRODUCTION CHARTS.
2. NEW PRODUCTS WHICH ARE NOT BEING CONSIDERED, AND MARKET PROJECTIONS.
3. PRODUCT EVALUATION--THOSE PRODUCTS IN SEVERE COMPETITIVE PRESSURE.

DEVELOPMENT TECHNOLOGY/PRODUCT PLAN

RESPONSIBILITY: PRODUCT AREA MANAGER

ISSUED: QUARTERLY, WITH ONE REVISION IN RESPONSE TO PL PRODUCT PLAN. SENT TO PL'S, CENTRAL PRODUCT PLANNING, AND LONG RANGE PLANNING.

PURPOSE: TO PRESENT AN UP-TO-DATE PLAN OF EACH TECHNOLOGICAL AREA THAT PL'S MAY USE FOR PRODUCT PLANNING PURPOSES AND CRITICISM.

FORMAT

1. LIST OF PROJECTS (PRODUCTS), SUMMARY DEFINITIONS, THEIR PHASES (STATUS), BUDGETS, PROJECTED USE FROM PL'S, AND PROJECTED ROI.
   - A. PRODUCTION (SUPPORT)
   - B. DESIGN AND PRODUCTION TOOLING
   - C. REJUVINATION DESIGN
   - D. PROPOSAL
   - E. STUDY
2. COMPETITORS, TECHNOLOGICAL PROJECTIONS, AND PRODUCTS POSITION.
3. RANKING OF AREA PRODUCTS (PROJECTS) BY VARIOUS CRITERIA AND BY USER PL'S.

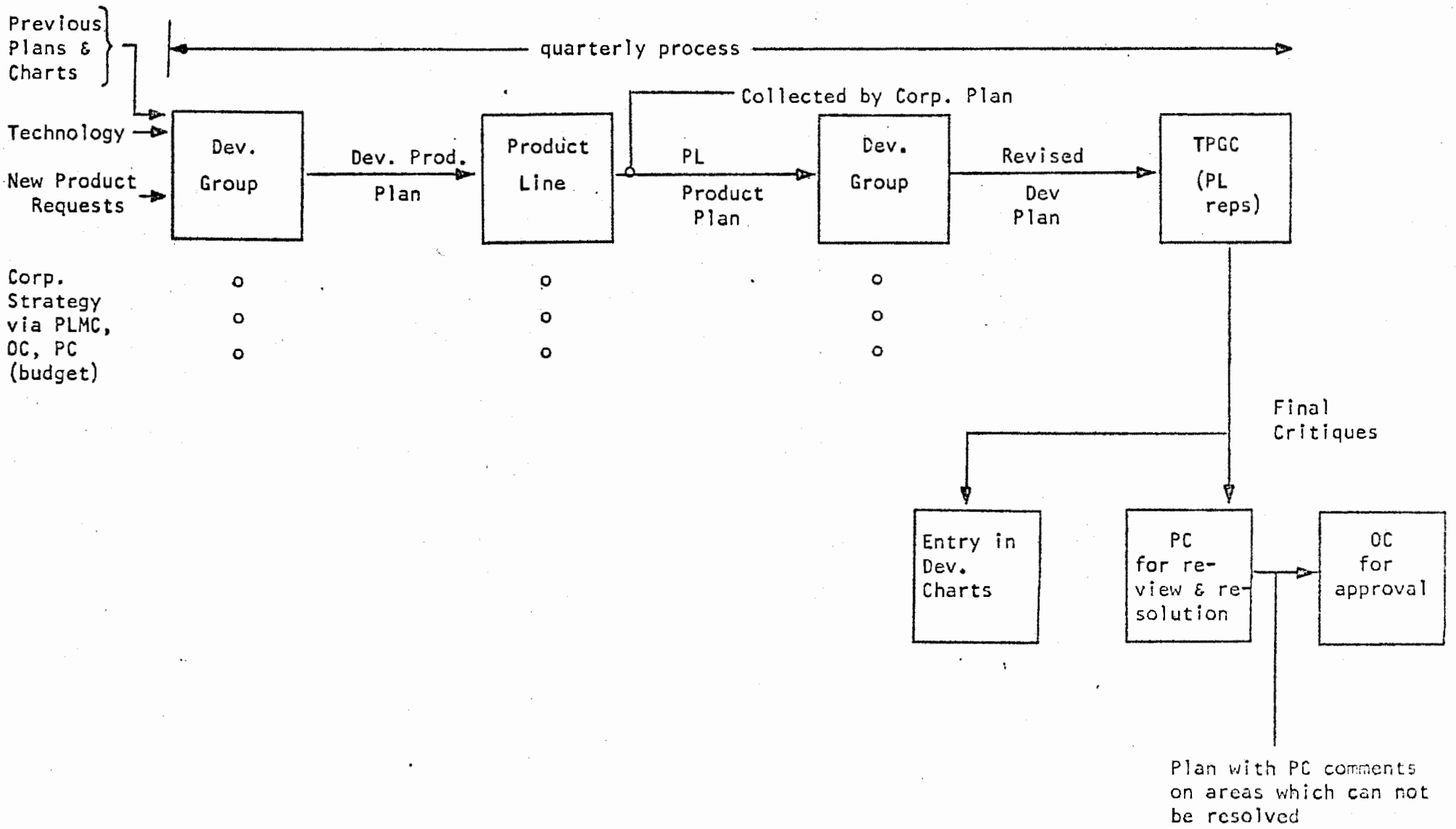


Figure 1. Technology/Product Planning and Product Budgetary Process

OFFICE OF DEVELOPMENT

0. Line responsibility for management of new products, definition, and development with engineering support of high volume products.

1. Manage line development according to plans. (budget, schedule, specs, reliability, etc.)

2. Plan and implement orderly growth of development organization with respect to:

   A. New technology and market opportunities.

   B. Management growth and enhancement of people, and development of technical expertise.

3. Salary review of professionals within development organization.

4. Streamline planning and development process to effect low hassle level by open organization, and well defined processes with clear inputs and outputs.

GB
4/26/74

PRODUCTS COMMITTEE

Membership: Consists of development (5 1/2), representative PL's (5), sales (1), and manufacturing (2 1/2)

Bell, Laut, Portner, Puffer, Clayton, Leng, Hanson, Lemaire, Moore, Busiek, Knowles, Kramer, Jacobs, (Thompson, Assoc. Mem.)

Change to:

1. Establish and review allocation algorithms in line with corporate strategies. Review area plans in accordance with algorithms. Recommend R&D budget for Operations Committee approval.

2. Establish and review technology/product guidance groups for appropriate system and technology areas. The area group will determine detailed product strategies, tactics, and day-to-day crises. Areas will contain representatives from development, manufacturing consumer product lines, and the field (sales, field service and software support).

3. Formulate aggregate corporate product strategy in terms of product area strategies.

4. Review major Products Business (Development)Plans prior to establishment of project (including those within the Product Lines). Recommend to Operations Committee.

5. Examine pricing and introduction plan as per the Business Plan.

6. Monitor area product (project) budgets.

4/26/74

TECHNOLOGY/PRODUCT GUIDANCE COMMITTEES FOR HARDWARE, SOFTWARE AND SYSTEMS

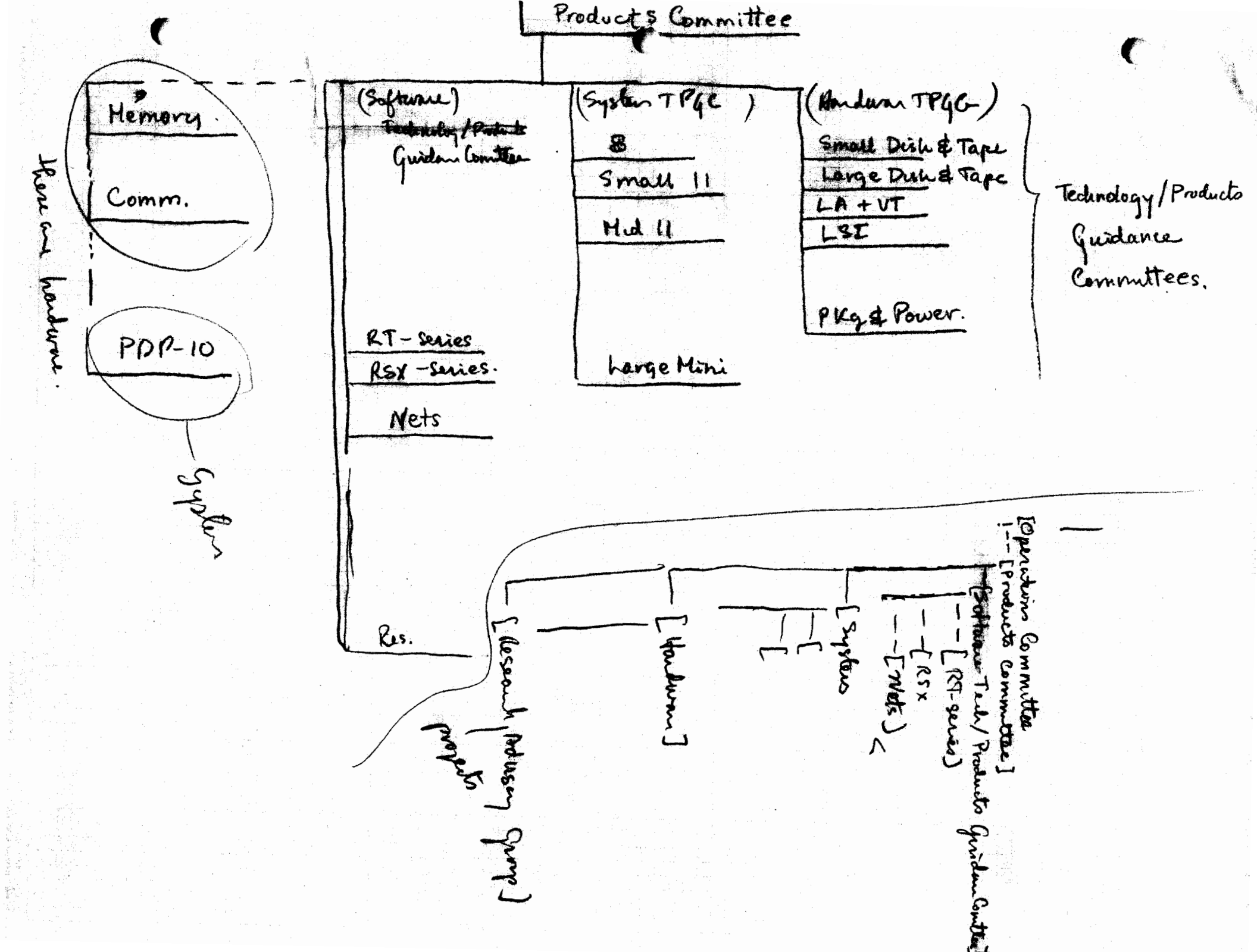
Chaired: Development Manager of area; Secretary: Product Planner of area

Membership: Buyers (PL's), Mfg., Diagnostics, Sales, area Product Managers and Development Managers and co-area Managers

Purpose: Communication and review of strategy, tactics and day-to-day issues with technology/product area manager.

Charter:

1. Carry out detailed review and reformulation of 3 year plan for product area. Area planning responsibility of area manager.
2. Detailed review of Business Plan (Development Project Part) before presentation to PC (and PLMC).
3. Detailed review of Business Plan (Pricing and Introduction Part) before presentation to PLMC (and PC).
4. Monitor product (Product Manager) and project (Project Engineer) performance against budgets.
5. Constantly review products position.
6. Sponsor Woods Meetings


Products Committee
Memory
Comm.
Interconnect hardware.
PDP-10
System
(Software)
Technology/Products
Guidance Committee
RT-series
RSX-series.
Nets
(System TPGC)
8
Small 11
Mid 11
Large Mini
(Hardware TPGC)
Small Disk & Tape
Large Disk & Tape
LA + VT
LSI
PKg & Power.
Technology/Products
Guidance
Committees.
Res.
[Research Projects Group]
[Hardware]
[Systems
[
[
[
[Operations Committee
[Products Committee]
[Software Tech/Products Guidance Committee]
[RT-series]
[RSX
[Nets]

Strategy Committee Membership

Mar 14, 1974

11-LARGE?
WHO RESOLVES { 8 vs 11/05
MID 11 vs LARGE 11
& IT's } CGB

← PL's →

	Strategy Committee	Semi-Woods Mtg	Chair.	PL's		Mfg./Diag.	Eng.			Other
8-Systems	S	W	Willis	P, O, CSS	T, E, I	M /D	D, C, T, Tm			H+S
11/05	S?	W	Teicher	P, O	T, B, I, L, S		D, C, T, Tm			RT, ..., PT
11-Mid	S?	W	Delagi/Stone	P, O	All		"			RSX, RSTS
Terminals (Tm) (LA, VT, RT)	S?	W	Corell.	P, O			8, 11/05, 11M			—
Tape (T)	S?	W	Peyton	P, O						—
Disk (D)	S?	W	Savreis	P, O						—
Core. (C)	S	W	Lemaire	P, O						—
PS + Pkg (P)		W?	Roy	P, O						—
Nets+Comm (...)	S	W?	WECKER ~~Stockpole~~	O	I, L, C, S, 10	D	11 (all)			
GT Term.	S? why not tech. guy	W?	Spector	O	I, I, 10, S	M /D				
A/D/A			Spector/Savell	O	L, I					Inter PL
10	S	W		10	S					Intra PL
K +D		W	JBell	any			11/05, 11M, 10			
Indust. (I)										
Comm. (C)										
Bus. (B)										
Typeset (T)										
LDP (L)										
OEM O										
Commercial (P)										
Computation (S)										
10 (10)										
CSS (CSS)										
RSX		W	VAN ROEK.							
RT		W?								
RSTS Comtex		W	ELLSON							

SHOULDN'T PM OR APM BE INVOLVED?

NT 3/25

?

?

R Puffer Comments

19 Mar 1974
96

Strategy Committee Membership

Mar 19, 1974
CGB

Strategy Committee
Semi-Woods Mtg

← PL's →

			Chair.			Mfg./Diag.	Eng.			Other
8-Systems	S	W	Willis	P, O, CSS	T, B, I	M/D	D, C, T, Tm			H+S
11/05	S?	W	Taicher	P, O	T, B, I, L, S		D, C, T, Tm			RT, ..., PT
11-Mid	S?.	W	Delagi/Stone	P, O	All		"			RSX, RSTS
Terminals (Tm) (LA, VT, RT)	S?	W	Corell.	P, O			8, 11/05, 11M			—
Tape (T)	S?	W	Peyton	P, O						—
Disk (D)	S?	W	Savers	P, O						—
Core. (C)	S	W	Lemaire	P, O						—
PS + Pkg (P)		W?	Rey	P, O						—
Nets + Comm (N)	S	W?	Stachipole	O	I, L, C, S, 10	D	TT (all)			
GT Term.	S?	W?	Spector	O	I, I, 10, S	M/D				
A/D/A			Spector/Sorell	O	L, I					Inter. PL
10	S	W		10	S					Intra PL
K +D		W	JBell	any			11/05, 11M, 10			

Believe we should worry about only things above this line.

Indust. (I)	
Comm. (C)	
Bus. (B)	
Typeset (T)	
LDP (L)	?
OEM O	
Components (P)	
Computation (S)	
IO (10)	
CSS (CSS)	
RSX	
RT	?
RSTS	
Comtex	

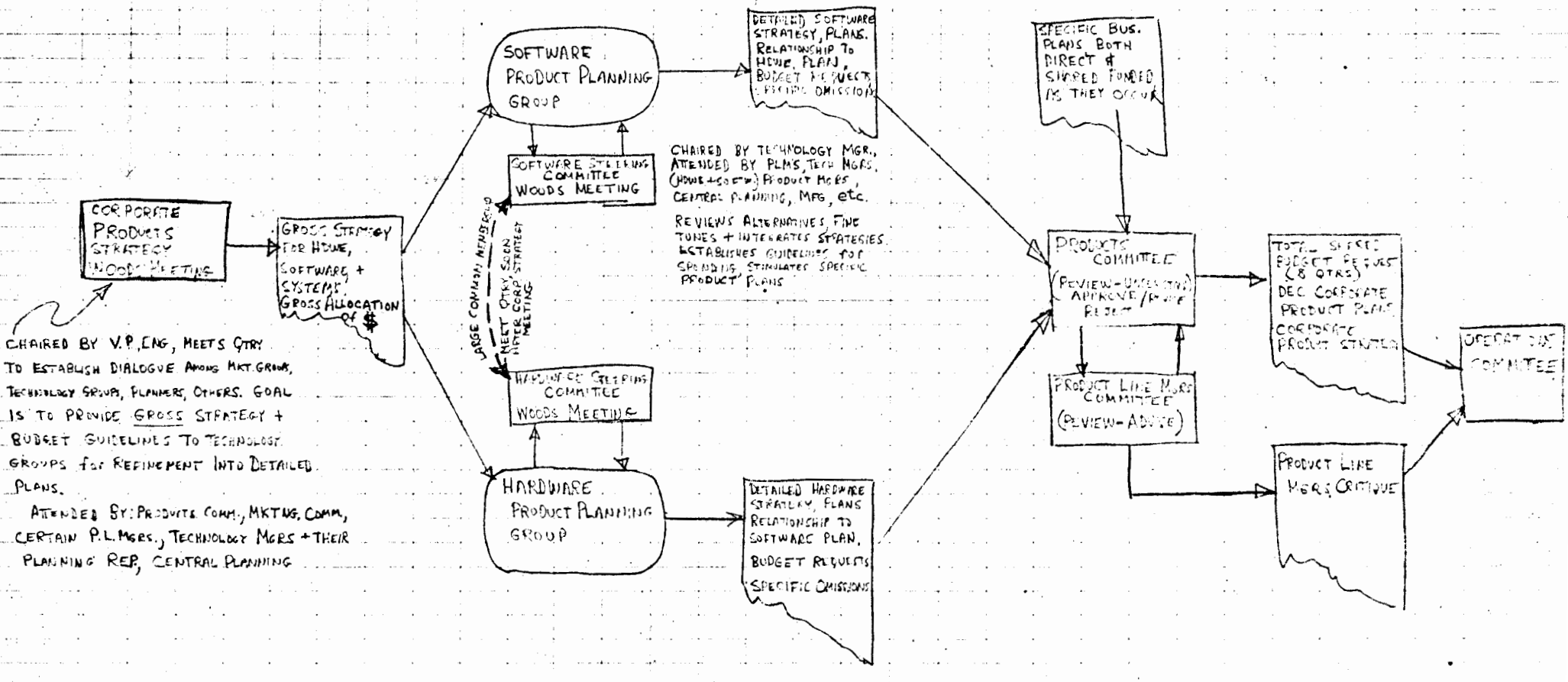
4

FORM 10 THE COOP

mtgs (LSI PRGs PS & Modules

19 Mar 1974
SB

STEADY-STATE* PRODUCT PLANNING CYCLE



* EXPECT INITIAL CYCLE TO TAKE 6 MONTHS, THEREAFTER QTRLY MEETINGS SHOULD BE MAKING MINOR REVISIONS - GOAL SHOULD BE MAJOR STRATEGY REVIEWS ON 6 MONTH CYCLE.

L. Patterson

From the desk of -
AL SHARON

4/9/74 APR 09 1974

Ref. Participation in Woods Mtgs

Gordon,

Instead of going to the managers of the product under review for names, I suggest we get them to agree on augment this chart and then get the names of the specific individuals from each PL mgr.

This way we can be sure of proper representation from PL. Same applies for designating representatives from Hardware and Software Engineering.

Please comment.

Also any suggestion for LSI meeting participation

Thanx

Al

digital INTEROFFICE MEMORANDUM

TO: Product Line Managers
Operations Committee
CC: Bill Thompson

DATE: April 22, 1974

FROM: Lou Burke

DEPT: Corporate Planning

EXT: 3968 LOC: PK 3-2

SUBJ: LONG RANGE FORECAST BY PRODUCT LINE (By System)

Since the beginning of calendar year 1974 we have been working with the product lines to collect long range forecasts by system by product line. The first iteration is 80% complete. Attachment I is a status report by product line.

What are these forecasts to be used for? (Current and Future)

-Currently

1. Communication between the Product Line and Development

   It is the beginning of a formal means of communication and transmittal of commitment between the product lines and development.

   -It facilitates the product or development managers obtaining his new product forecasts because a base line forecast will already exist. It is easier (Example: 11/55 Forecast, Product Manager John Misialek) to delta (plus or minus) a forecast due to performance changes, cost/price changes or time phasing-in if a base already exists.

2. It is a view of the outside world from a marketing viewpoint.

-Future

1. It will be the basis for eventual Long Range Product Line Business Plans of which the forecasts with their associated mix will become business volumes.
2. The aggregate of the product line forecasts (business volumes) will be the basis for a DEC Long Range Plan.
3. Field Service Planning--How many of a certain type product will be required to be installed? When?
4. Manufacturing-- The volume and mix of products that will be needed in the future. Facilitates manufacturing planning.

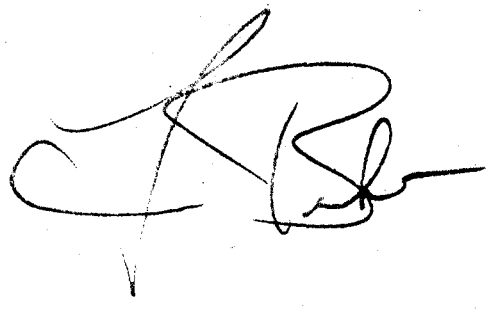
The overriding consideration now becomes that of quality. What's needed is a review of each product line forecast by the respective product line management to ensure consistency, proper time phasing-in of all new products, wish lists-- in other words, requests including volume and a general description for any new product or enhancement that doesn't appear on the new product lists, assumptions and an expression of some degree of confidence.

Attachment II is a random sample of the end product of the long range sys tem forecast. The sample was LDP. We (the product lines and I) have been committed to publish the first forecast by May 17, 1974. Included will be:

1. System forecasts by various configurations
2. Dollar volumes from the above
3. An explosion from the systems forecasts of the various options within the systems.

This is not a one time project but an on-going part of forward year planning. This forecast, in total, will be updated a minimum of every six months and individual product forecasts will be updated whenever a new product business plan is issued and its forecasts supersede a particular forecast on an item or system.

/a



ATTACHMENT I

ATTACHMENT I

LONG RANGE SYSTEM FORECAST BY PRODUCT LINE

STATUS REPORT

	STATUS	WHO DID IT	COMMENTS
LDP	Completed 1st Iteration	Del Glover	Must pick up (1) GT 40 to 45 (2) Time phased system add-on projections (3) More detail on software breakdown (4) Better phase in of new peripherals
IPG	Completed 1st Iteration	Mike Shah Dick Finn Jim Davis	Needs: (1) Better phase in of new product (2) Time phased system add-on projections
Business	Completed 1st Iteration	Dan Riordan Tom Barnett	Needs: (1) Time phased system add-on projections
Typeset	Completed 1st Iteration	Mike Mancuso	Needs: (1) Better phase in of new products (2) add-ons for business system
DECComm	Completed 1st Iteration	Roger Cady Dave Stackpole	Need: (1) System Cons. detail for ½ Bus. (2) Add-Ons.
OEM	Completed 1st Iteration of "11" Forecast	Joe Meany Dick Testa Mike Tomasic	Need: (1) Configuration detail on 11/45, 11/55 (2) PDP-8 forecast (3) More peripheral detail on mid-range 11/40, 11/45
Comp	Group Currently Refining Market Targets		Group Needs More Time

4/18/74
Lou Burke
Corp. Planning

ATTACHMENT II

Exhibit I represents the long range forecast by system configuration. Although LDP sells many more configurations, the bulk of their business can be captured with 10 to 15 configurations.-- Ten are used thus far. The configurations labeled NPL[1] designate the phase-in point of the new "11" processors.

Exhibit II shows how a configuration changes with time. Note the phase-in of new products.

Exhibit III is a product explosion, which is the result of multiplying the system forecast number(s) times the configuration(s). A very simple configuration is chosen here, a large laboratory system, an 11/45. In 1975 the 11/55 is phased-in and in 1977 the 11/85 is the new product which replaces the 11/55.

(1) NPL = New Product Line

LDP

LONG RANGE SYSTEMS FORECAST SUMMARY (UNITS)

	FY 75	FY 76	FY 77	FY 78	FY 79
DEC LAB 11/10A	360	570	713	704	
DEC LAB 11/10B	285	451	565	705	
DEC LAB 11/10D	206	327	408	511	
11/40BE	164	153	42	-	
11/44BE - NPL	-	76	250	367	
GT44BA	137	106	26	-	
GT44BA - NPL	-	52	150	219	
11/40BC	59	63	16	-	
11/44BC - NPL	-	27	100	147	
11/L50BE	163	74	22	-	
11/L55BE - NPL	52	141	72	10	
11/85BE - NPL	-	-	185	298	
VT55	600	2825	4250	5445	
8E	264	140	25	-	

See Exhibit II and III

LDP

LARGE SYSTEM EVOLUTION

	FY 74	FY 75		FY 76		FY 77			FY 78	
CPU	11/45	11/45	11/55	11/45	11/55	11/45	11/55	11/85	11/55	11/85
Memory										
Core	--	--	32K	--	32K	--	32K	--	32K	--
MOS	16K	16K	--	16K	--	16K	--	32K	--	32K
Bootstrap	DB →									
Disc	RK11 →				RK06[1] Cont →			RK06[2] Cont →		
TAPE	TM11	TM11	TM11	TU16 Cont	TU16 Cont →					
Printer	LA30	LA36	LA36	LA36	LA36 →					
Control Software Operating Systems										
RT11	1.0 →							?		?
RSX11D	--									
RSX11M	--									
DOS	--							?		?
Languages Fortran IV	1.0 →									
Quantity	--	163	52	74	141	22	72	165	10	298

These are system configurations 11/L50BE (11/45), 11/L55BE (11/55), and 11/85BE (11/85); See Exhibit I.

(1) 1 RK06 with controllers
(2) 2 RK06's with controllers

4/22/74
L. Burke
Corporate Planning

EXHIBIT III

SAMPLE

PRODUCT SUMMARY

	1975	1976	1977	1978	1979	1980	TOTAL
CPU's							
11/45	163	74	22	--	N/A	N/A	
11/55	52	141	72	10			
11/85	--	--	165	298			
Memory							
Core							
11/45 16K	--	--	--	--			
11/55 32K	52	141	72	10			
MOS							
11/45 16K	163	74	22	--			
11/85 8K	--	--	660	1192			
DASD[1]							
RK05	215	74	--	--			
RK06/Cont	--	141	359	308			
RK06/Spindle	--	--	165	298			
TAPE							
TM11	215	--	--	--			
TU16/Cont	--	215	259	298			

(1) Direct Access Storage Devices

4/22/74
Lou Burke
Corporate Planning

EXHIBIT 111

PRODUCT SUMMARY

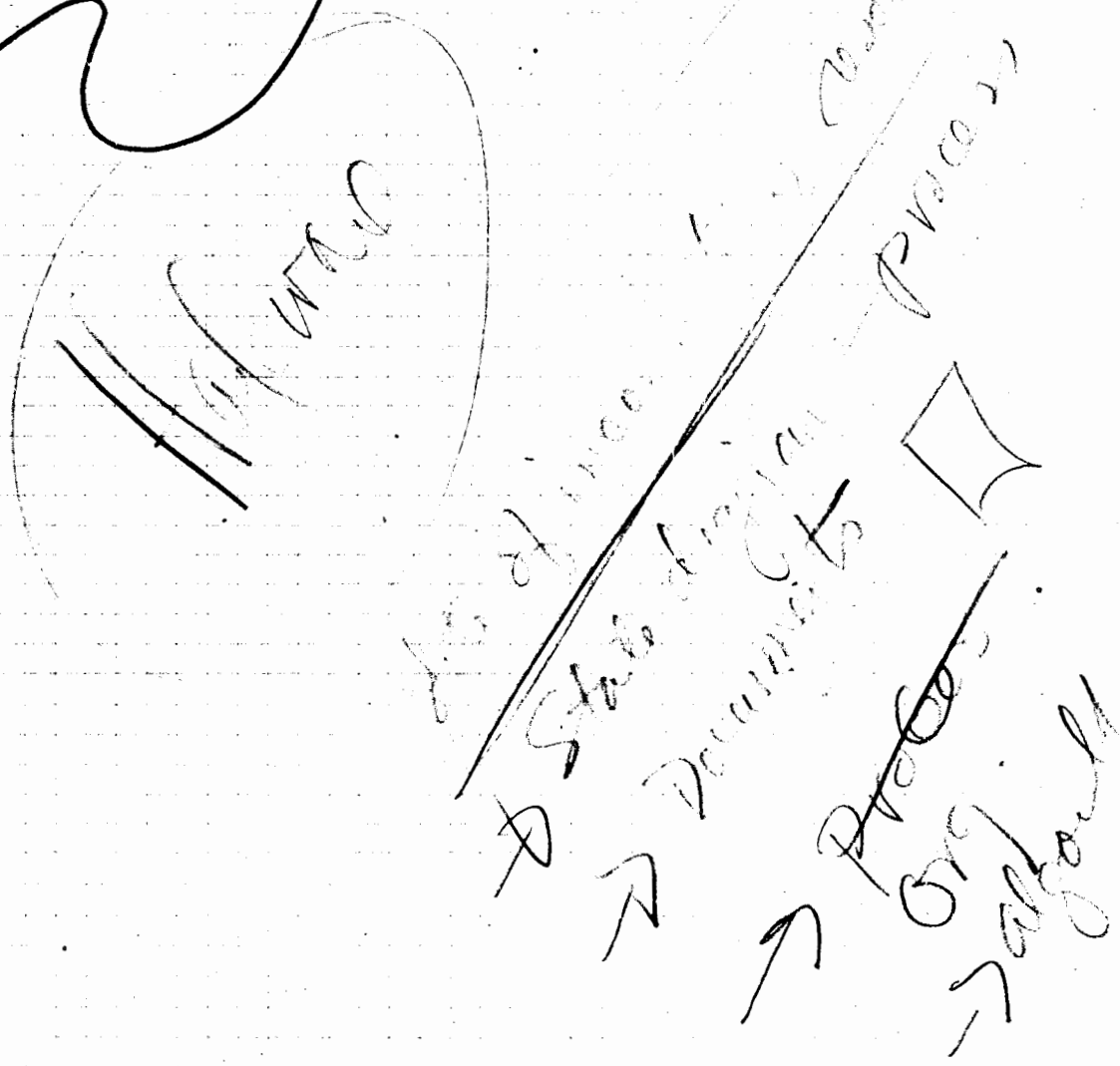
	1975	1976	1977	1978	1979	1980	Total
Printers							
LA30	-	-	-	-			
LA36	215	215	259	308			
Software							
Operating System							
RT11	215	215	94	10			
(10 Equiv)	-	-	165?	298?			
Languages							
ANSI FORTRAN IV	215	215	259	308			

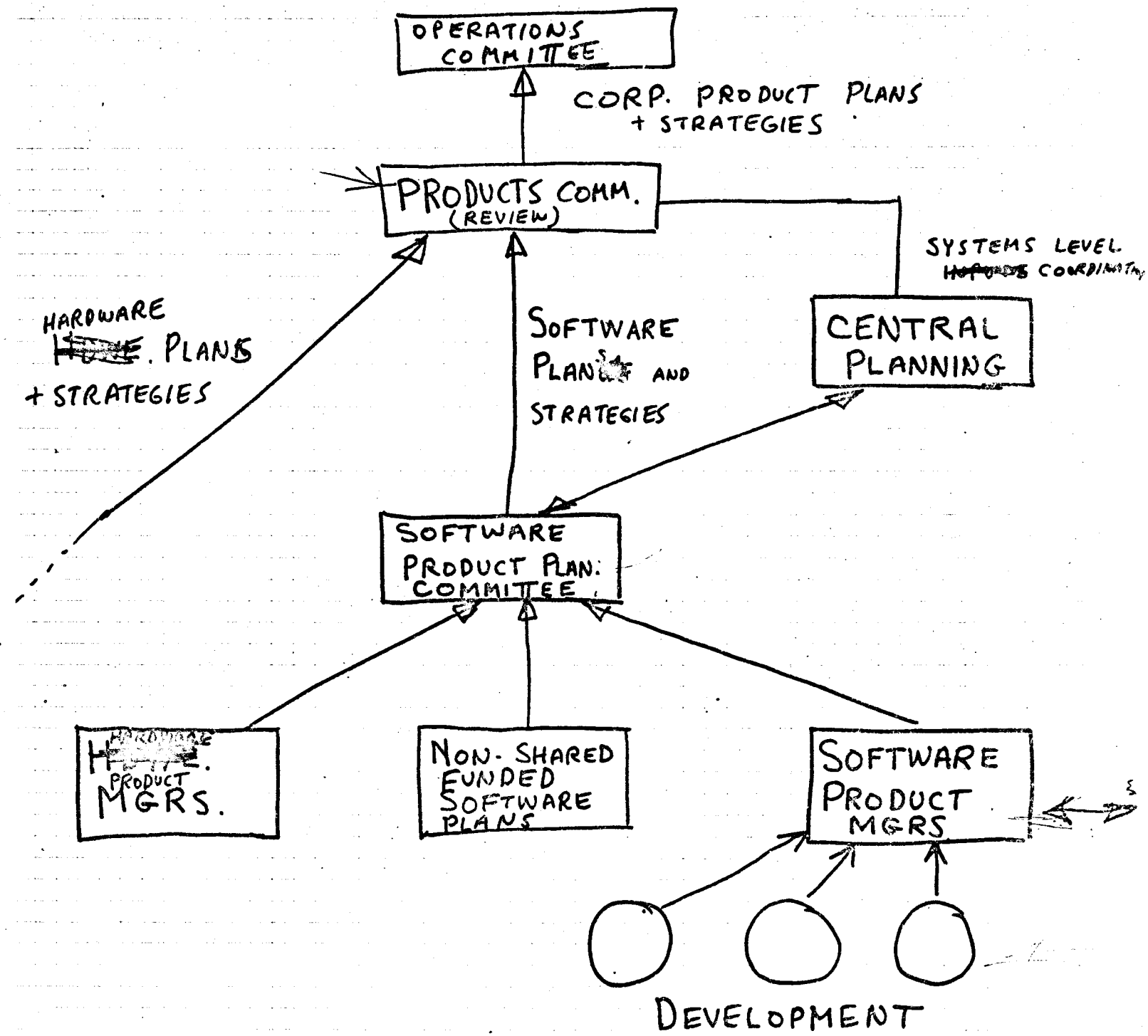
4/22/74
Lou Burke
Corporate Planning

SOFTWARE PRODUCT PLANNING COMMITTEE

MGR- SOFTWARE PRODUCT MGRS., CHAIRMAN					
MARKETING	CENTRAL PLANNING	SALES	S.W.S.	DEVELMT.	PRODUCT MGRS.

DESIGNATED REPRESENTATIVES FROM





To Be Defined - relationship with other committees such as Product Line Mgrs., Marketing, etc.

digital INTEROFFICE MEMORANDUM

TO: Phil Laut

cc: Gordon Bell ✓
Bob Puffer
Dick Clayton

DATE: April 12, 1974

FROM: Larry Portner

DEPT:

EXT: LOC:

APR 16 1974

SUBJ:

Phil, would you please publish a schedule of the various Woods Meetings related to software and hardware planning and strategies. Would you update this schedule periodically?

Yellow Book

gm

ORGANIZATIONAL PRIORITIES

1. PRODUCT MANAGEMENT
   - A. DEFINE THE JOB
   - B. DEFINE THE ORGANIZATION
   - C. FIND THE MANAGER
   - D. FILL THE VACANCIES

2. PLANNING STRUCTURE
   - A. UNDERSTAND HOW PLANNING WORKS
   - B. DEFINE INTEGRATION + REVIEW PROCESS
   - C. FUNCTIONALLY INTEGRATE THE FIELD INTO PLANNING + REVIEW PROCESS

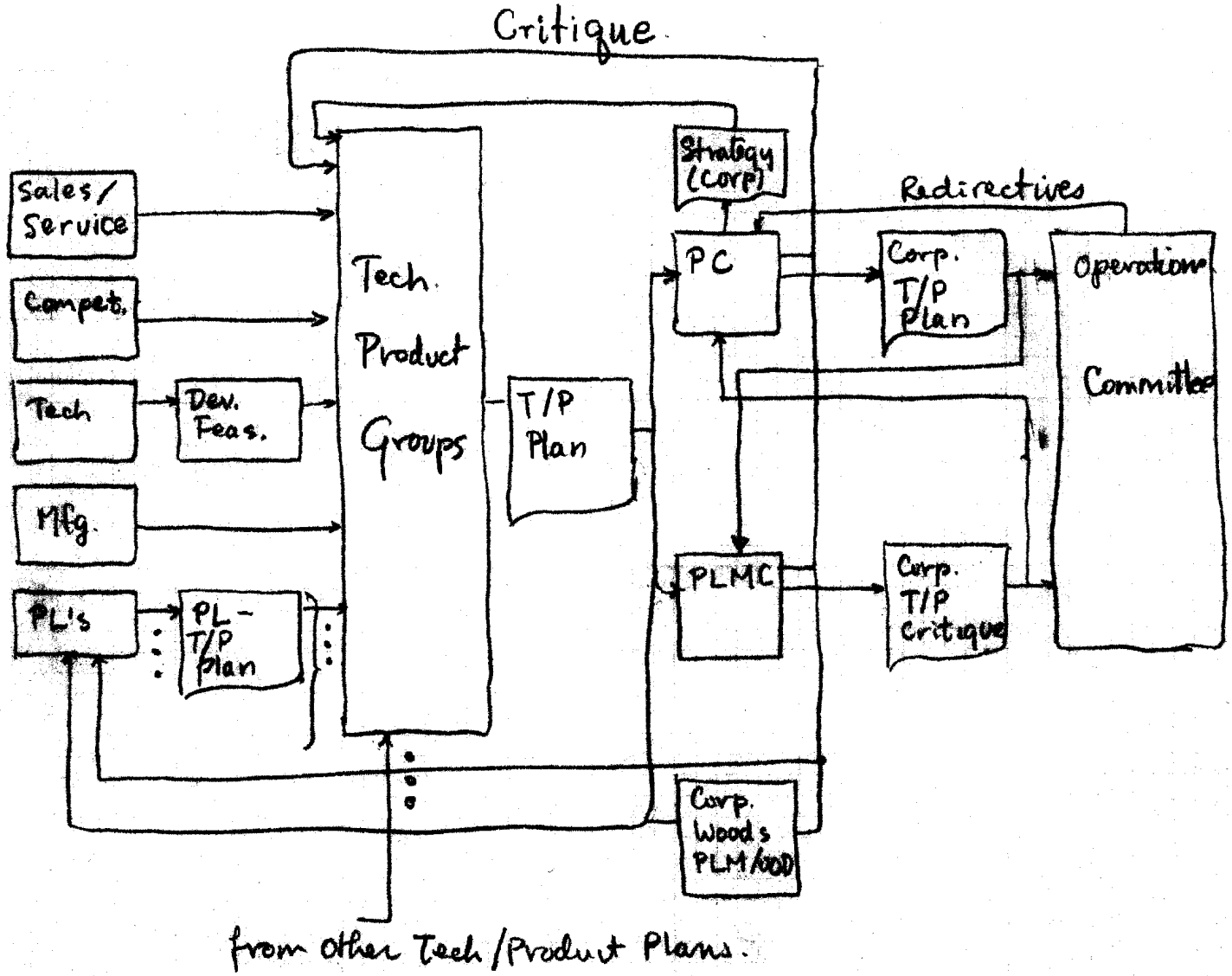
3. STREAMLINE DEVELOPMENT PROCESS
   - A. LOWER OVERHEAD
   - B. ESCALATE Q.A., DOCUMENTATION QUALITY
   - C. INTEGRATE SWS REPORTING ANALYSIS INTO PRODUCT PLANNING + DEVELOPMENT
   - D. INCREASE PROCESS TECHNOLOGY

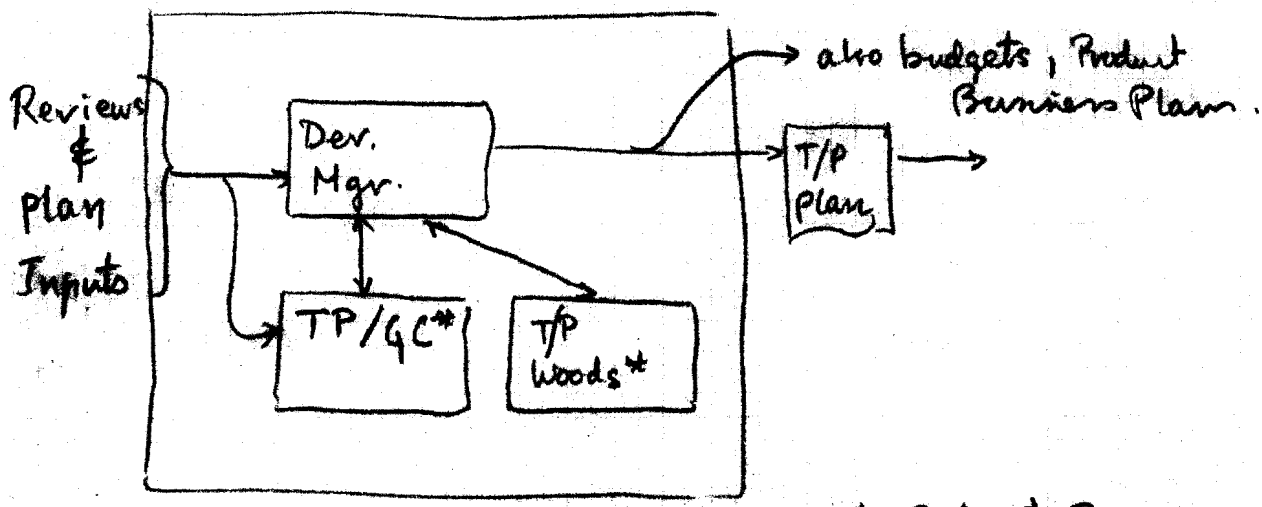
4. SOFTWARE SUPPORT
   - A. REPLACE BRUNO DUERR IN EUROPE
   - B. GET BRUNO HERE
   - C. INTEGRATE SUPPORT PLANNING INTO PRODUCT MANAGEMENT ROLE
   - D. ACCELERATE MAINTENANCE (SUBSCRIPTION SERVICES) ACTIVITIES
   - E. FOLD SOFTWARE COMMUNICATIONS GROUP INTO SWS

5. COMPUTATIONAL SERVICES
   - A. TRANSFER OPERATIONS GROUP TO PUFFER
   - B. STREAMLINE SOFTWARE DISTRIBUTION CENTER, TRANSFER REPRODUCTION AND DISTRIBUTION TO MANUFACTURING

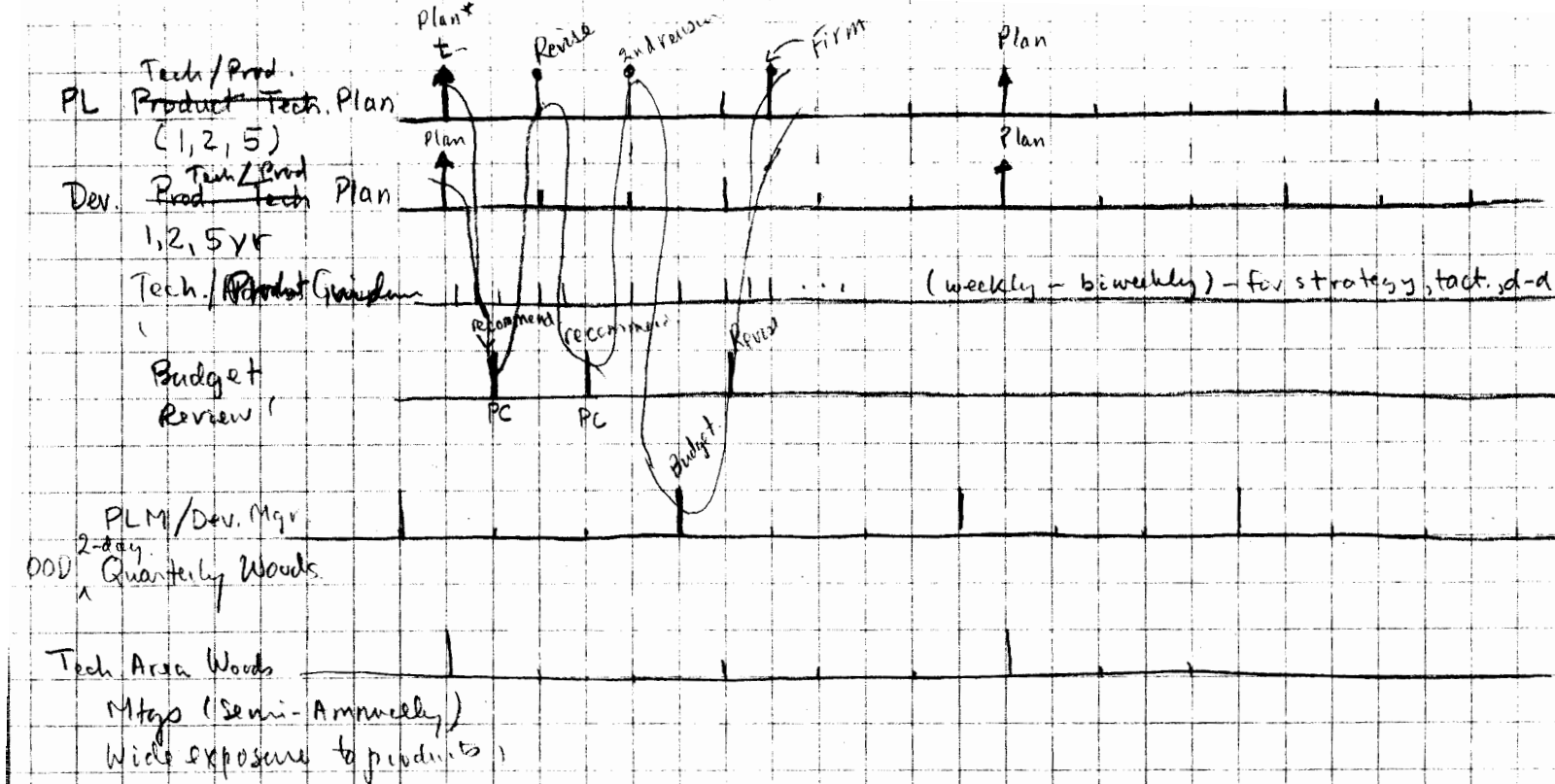
Role of Software Product Manager

- Product definition
- Business Plan
- Engineering budget request
- Engineering budget control
- Promotion
  - Internal - boilerplate
  - External - building DEC Software Image
- Policy Development
  - Pricing
  - Minimum Support
  - Distribution
    - frequency
    - content
    - media
- Product Planning
- Corporate Software Strategy
- Coordinate with
  - Marketing
  - Field
  - Hardware Planning Groups

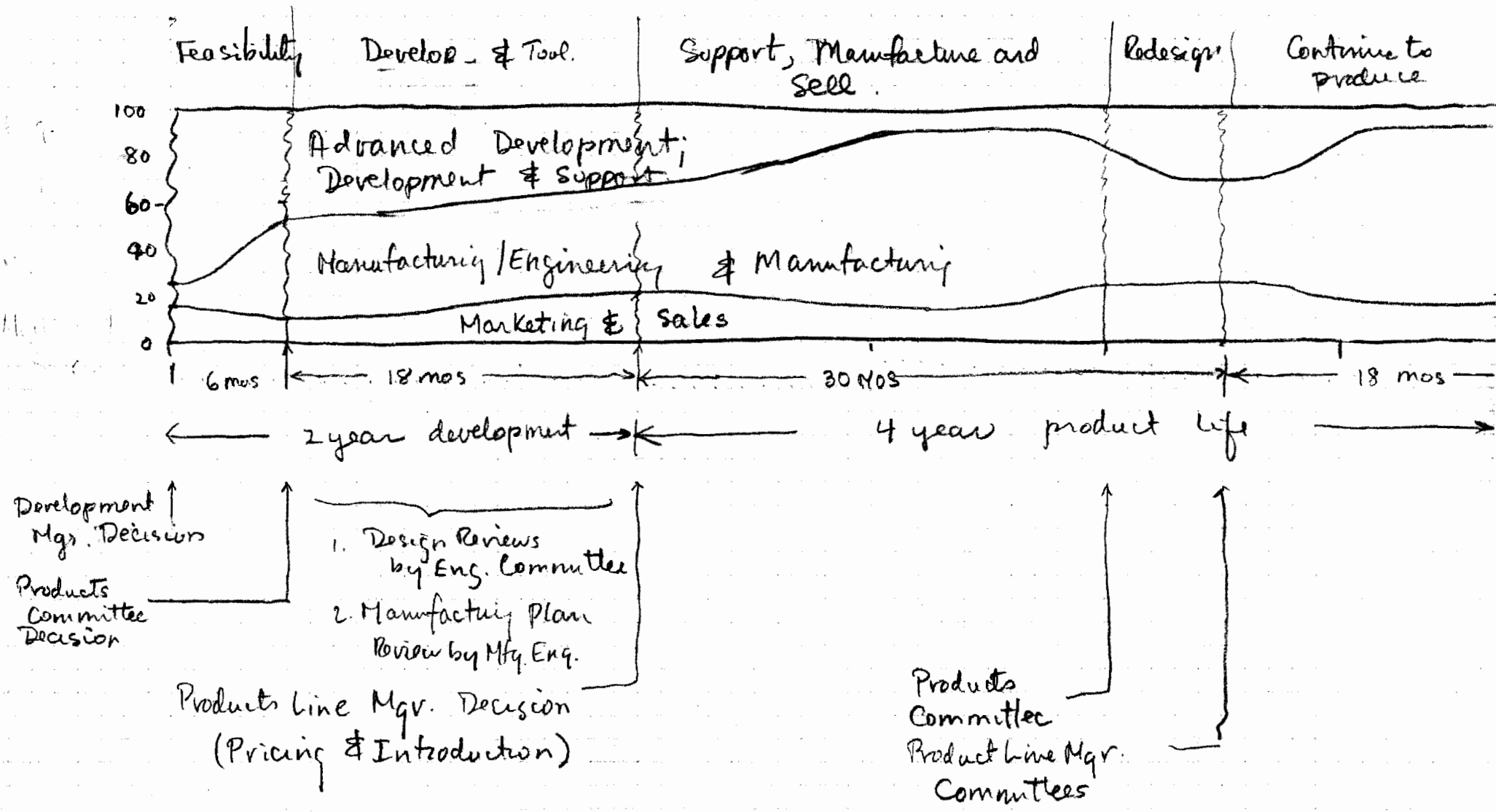




* Reps from: co-developers, PL's, Sales & Service, Mfg., diagnostics, etc.



* Assume all documents are available to PLM, TAG's, PC, etc. at time of generation.


Feasibility
Develop & Tool.
Support, Manufacture and Sell.
Redesign
Continue to produce
100
80
60
40
20
0
Advanced Development; Development & support
Manufacturing/Engineering & Manufacturing
Marketing & Sales
1
6 mos
18 mos
30 MOS
18 mos
2 year development
4 year product life
Development Mgr. Decision
Products Committee Decision
1. Design Reviews by Eng. Committee
2. Manufacturing Plan Review by Mfg. Eng.
Product Line Mgr. Decision (Pricing & Introduction)
Products Committee
Product Line Mgr. Committees

Possible Goals Fy 75 Oct. 12, 1974

	Puffer	Clayton	Portner	[redacted] Lant	gp
	· Cab+ PS Strategy →		Diagnostic & Recovery Improve.	· Formulate MK/Buy	· Get Contracts: KO, OOD
	· Components (LSI) →			· Build total eval Sys MK/Buy & rank projects	· Operate Eng. C. better
	· Terminals (smart-LA36 →	→	→		· ↑ space process & Quality
		Integrate Sys	→	· EDP Improve & get tools	
		VM & CPU's →			
		Multi Pc's →	software.		
	· Field S →		· TSS II	· Streamline reports & processes.	
			· Nets		
			· Stds. (Files, Lan, OS)		
			· PL/1?		
	Use. ←	{Single K + smart K} →	Support		
	· EMI, VDE, UL →	process →			
		Build more ideas			
			· Improve t. resp.	Co-ordinate people, $, space plan →	
			· Desc. Soft. Dept.		
			· Applications ↑		
	· Mgrs. Develop. · Improve D/A to speed designs		· HLL ↑		
			· Str. prog + Share		
			· Quality, Reuse Code		

· Develope / interact to get overall corp. system strategy · Know position & products & move out · Work together better · Better documentation of · Need C. Sys Course; · Better · grow Mgrs.		OOD, PM, Eng, Tech. Educ.	(esp. Disks) Process. · get schools	Includes: C-in-	hand, table, desk

Possible OOD GOALS FY 76

June 15, 1975

Lemaire / Marcus	Putter	Clayton	Portner	Laut	Bell
• LSI-11 2nd Src. • Cust. MOS / Bipol. • Serial BUS	• Cab + PS Direct./ Org.	→	• Policy for Lang., Op. Sys, Stds. →	• Clean up YB • Help / Hold metrics • move EDP to help OOD (analysis, K) • Build prod./Mkt. analysis	• GOALS ∀ OOD • ↑ 1:1 Interaction
	Term & Organiz.	VM ∀ CPU's →			
	Support / Arch				
	• Low End	→ DEFINE LOW.			
• Comm. Sys, → Hdw		?	• Support Comm.		
			Nets & MPc		
	Strong Stds: • VDE, UL • Noise, EMI • Des Rev.	PDQ WCS			• Std. lang for. rt, massem, ISP
		VAX	VAX		• VAX.
		Systems / Mgmt.	=		
		Better Mkt. Seg. Sch. (soft., data collect., Mkt.	• Quantify metrics		
	Controller Arch.				
	• Decrease Proto. t.		• Policies Str. Prog., Impl., Modules, Chief programmer. • Reuseable Code	• ↑ understd of ROI ∀ products + history • Space control	• More OOD to be by profit → Get Quiet + less energy

- Product profit orient.
- Orient all groups: goals, structure, philosophy, control metrics, Establish productivity measures; Evaluate people
- OOD Hand book update: product Approval
- Team as needed; Clean up staff mtgs.
- Know Product Position {∀ products} {∀ phases}: study (R/D), proposal, design / tool, produce (support), Rejuvinate (Measure accordyly)
- Establish systems Focus: Mgmt, $ Contol, Fund in 2 dimensions
- Standards to reduce Cost, increase interconnectivity possibilities, ease learning / design
- Better interfaces: P/L, Mfg. / F.S / SWS.. Assign to OOD Individuals.
- ↑ Prototypes ~ work further out
- Use PDP-11's, → 10's within OOD
- Quality metrics needed.

Jack Brown + Near Term Goals G.B.

D I G I T A L INTEROFFICE MEMORANDUM -->FILE COPY

PAGE 1

SUBJ: OOD PRIORITIES

DATE: 24-Feb-76
FROM: GORDON BELL
EX: 2236
MS: ML12/A51

COMPANY CONFIDENTIAL

ABSTRACT: Proposed OOD Very High Priority problems to be solved by Q1 FY77.

To: OOD

People/Products

✓ Disk (RP,GS,GB,RC,(MA,HL)) = Problem stated, solution outlined, and assigned.

System-ness (LP,RC)

Tape (RP) = Plan in line with needs

Terminals integration into OOD (GB,RP,EC)

Products (strategies)

Low end strategy (RC) = Get out of planning.

Terminals strategy (EC) = State problem, define arch., sell detached keyboard, integrate with low end.

Multiprocessor work started (GB,RC,LP) = Get to "program" status

VAX direction and sales (BD,LP,RC)

CPU (RC), Term(EC,RC,LP), Disk(GS) Bus/PMS arch. – Serial vs multidrop – Q vs U vs SBI + VAX 8080 vs LSI-11. Disk Bus.

Pecuniary

Budget overrun crisis (PL,RC)

Process

✓ Red Book (LP, LW,JB)

✓ "Charts" (RC,WT,JB) = Get ready for April phaseover.

Product Line interface?
F.S. interface?

✓ PR. Visit

✓

SUBJ: OOD PRIORITIES

DATE: 24-Feb-76
FROM: GORDON BELL

Manufacturing interface?

Policies

Resource allocation across (t,Ssize, Level-of-integration)
Make vs Buy (JB+JC,PL,GB)
✓ Eng. vs support (same)
✓ A permanent Policy Manual (SB)

GB:mjf

D I G I T A L INTEROFFICE MEMORANDUM -->FILE COPY

SUBJ: JOB DESCRIPTION

DATE: 19-Jan-76
FROM: GORDON BELL
EX: 2236
MS: ML12/A51

Ref: Jack Brown

To: Distribution

Jack would like to work at DEC, but would like to get a better understanding about the company before taking on a permanent job. His current thoughts are probably in something like a product manager, or a product line profit (market) area manager, or perhaps an engineering management job. He doesn't know for sure, but would like to get the understanding first.

Jack would like to work in this capacity 6-12 months.

I have an immediate goal of wanting help to make an extraordinary Redbook this time. Hence, he would work with Phil and I in several capacities:

1. Acting as a liaison with some of Win's product lines to collect inputs for systems. He would not perform any integration that would lose information, nor would he add any information of his own, that would add noise. The goal would be to make conflicts among product lines, and within product lines and between product lines/central engineering visible.

2. He would work with us on the problem of data presentation, review and analysis. I have several different ways of looking at the data this time that I think would significantly focus better on understandng how we spend versus where we should spend. There are also questions about a refined algorithm. We have never (due to time) looked that carefully at the plan, but have focused on getting it done.

3. General review as an outsider. I think we would get at least the gain we have from the consultant (e.g. BCG), I want to really look hard this time at some areas we say we need to work on, including make versus buy, and what level of integration are we at?

4. Work as the designer of the magic charts for engineering. I have heard that Bill Thompson is to have something on this by June, yet I haven't seen a spec. Since this is a pretty complicated task, and one that is also somewhat vague, I seriously doubt that it can be done in the time frame. I would like to see what it is. I would

SUBJ: JOB DESCRIPTION

DATE: 19-Jan-76
FROM: GORDON BELL

Propose that we (he) postulate the magic charts, (hopefully just update the view), and proceed to set the inputs on this basis. We would then work with 1 product line on this basis, to see if it can be made to work. Ken wants the charts, I want the charts, and I don't know of anyone who doesn't want them...I want someone whose going to help get them for us.

Jack has talked with Win, Ted, Ken, and I. I believe he should also talk with Bill Thompson, Dick and Phil (some more).

GB:mjf

Distribution

Mark Abbett
Dick Clayton
Win Hindle
Ted Johnson
Phil Laut
Bill Thompson
Ken Olsen

CORPORATE POLICY MEMORANDUM

DATE: November 20, 1975
FROM: John Fisher
DEPT: Administration
EXT: 4515
LOC/MAIL STOP: ML 12/1 A-50

SUBJ: MARKETING COMMITTEE/OOD INTERFACE

DEC's product strategy is determined through an interaction of the Marketing Committee and the Office of Development. The purpose of this policy is to define the formal procedures for product decisions between these groups.

SUMMARY

Interaction regarding products occurs at two levels:

- the strategic level
- the individual product level

Strategic review will consist of:

Continuation of the process started last spring with the Red Book strategy.

Namely on a semi-annual basis:

Propose updates to strategy	- OOD
Review strategy	- key Product Lines
Approve and/or require changes tc strategy	- Marketing Committee

Individual product review consists of:

Institution of a formal review process in which the steps are clearly defined and which allows considerable flexibility regarding the time investment by the various management committees in the Company. The reason for this is that not every product is a hot issue all the time and this feature allows focus on the hot issues.

INTERACTION AT THE INDIVIDUAL PRODUCT LEVEL

This is the process whereby business plans for the major products are prepared by the Product Manager and reviewed. The intention of this process is to communicate the most amount of information with the least amount of hassle. A six to eight page business plan summary will be the information that is circulated. Supporting information in excess of the summary will be published in an

appendix that will not be distributed but will be available upon request for the people who want it. Attached are a summary flow chart that describes where the information goes and a more detailed chart that shows content and purpose of the various documents.

PROCEDURES

There are a couple of things that we can do to make the process effective:

1. Documents will be distributed to the various groups and committees. An oral presentation will not be scheduled unless requested.

2. One OOD Staff Meeting per month will be set aside for review of business plans.

3. Prior to OOD approval (where shown on the summary flow chart), the business plan will be distributed to OOD members and to cognizant managers in Manufacturing, Field Service and Software Support, as applicable. A minimum of two weeks will exist between distribution of the business plan and the scheduled review at OOD. The purpose of the two week period is to allow recipients of the business plan to review it in their groups and to decide whether to call for a presentation by the initiator at the next OOD monthly review of business plans.

4. The process can start in two ways. In cases where the proposed product is part of the approved strategy, all that is needed is distribution of the applicable section of the strategy document as notification that work is starting. In cases where a product that is not included in the current strategy is proposed what is required to start the process is a brief (two page) document defining the business and technical justification for the proposed design.

For certain Key products our policy encourages competing design efforts. Funding in such cases will be limited to prototype development and a choice between the alternatives will occur before funds are committed for production start-up.

Distribution of Product Planning Information

Summary Flow Chart

Phase #	Product Phase Name	Flow Chart for Written Material
None	Before the beginning	Semi-annual strategy update reviewed by key Product Line Managers. Approved by Marketing Committee.
0	Preliminary Planning	Two Page Rough Plan → OOD for Approval → PLM & MC for information and if requested, for review.
1	Design	Phase I Business Plan → PSG for Opinion → OOD for Approval → PLM & MC for information and if requested, for review.
2	Prototype Build and Debug	Phase II Business Plan Including Manufacturing Plan → PSG for Opinion → OOD for information and if requested, for review. → M/E Committee for Approval → PLM for information and if requested, for review.
3	Production Start-up	Pricing Proposal → PLM & MC for Approval
4	On-going Production	Changes in production rates are caused by and monitored by the forecast/commit system. Changes in price are approved at PLM and Marketing Committee. Product life data is reviewed quarterly by product managers for any indicated requirement to phase out products.

The purpose of this chart is to list at the summary level, the four phases of product development and to show the written material that will be published at the end of each phase.

Phil Laut
9/17/75
/ale

CORPORATE POLICY
MEMORANDUM
NUMBER 75-8
PAGE 4 of 4

Distribution of Product Planning Information

Chart I

Phase #	Phase Name	Events Needed to Progress to Next Stage	Documentation Planning and Approval to Progress to Next Stage	Purpose of Documentation	Originator of Documentation	Routing of Documentation	Events that Occur During this Phase
None	Before the beginning	Idea - Generation of Development Strategy	None	None	None	None	
β	Preliminary Planning	Generation of brief preliminary plan	Two pager (preliminary plan). OOD Approval	To allow early management review of new designs. To communicate to OOD and the rest of the Company about what is being designed. To allow determination of whether proposed design agrees with current strategy or whether strategy needs to be revised.	Product Manager/or initiator if Product Manager not appointed	Product Manager , or initiator, sends to OOD (Phil Laut). The two pager will be reviewed at monthly OOD and decision will be communicated to originator. Subsequent distribution to Bill Thompson for Marketing Comm. and Product Line Mgrs. Comm.	Appoint Product Manager. Establish design team.
1	Design	Chose implementation for design	Phase I Business Plan. OOD Approval	To communicate the anticipated business impact of the proposed implementation. Business Plan at this stage would have firm data on the technical characteristics of the proposed product, like performance, features and cost and firm data on engineering expenses. Volume, price, cost and reliability information will by nature be preliminary.	Product Manager	Product Manager presents at Product Steering Group (PSG). Product Manager sends to OOD (Phil Laut) for approval. Phase I Business Plan will be reviewed at monthly OOD and decision will be communicated to originator. Subsequent distribution to Bill Thompson for Marketing Committee and Product Line Manager's Committee.	Generate specifications. Complete paper design. Build breadboard. Design review.
2	Prototype build and debug	Operating Prototype	Phase II Business Plan including Manufacturing Plan. M/E Committee Approval	To communicate final Business Plan for the product before the major capital equipment and inventory commitments are made. To communicate the planned steps to achieve high volume manufacture.	Product Manager Manufacturing Mgr.	Product Manager presents at Product Steering Group (PSG), sends to OOD (Phil Laut) for information. Subsequent distribution to PLM M/E Committee . approves (Army Goldfein).	Build and debug prototype. Design of manufacturing process. Buy initial tooling. Manufacturing cost estimate by cost accounting.
3	Production Start-up		Pricing Proposal Marketing Committee Approval	Obtain approval from Marketing Committee for the price and announcement of a new product.	Product Manager	PLM Committee Marketing Committee (Bill Thompson)	Implement manufacturing process. Pilot production. Buy final tooling. Write necessary marketing guides, brochures and other documentation.
4	On-going production		Changes in production rates are caused by and monitored by the forecast/commit system. Changes in price are approved at PLM and Marketing Committee. Product life data is reviewed quarterly by product managers for any indicated requirement to phase out products.		Product Manager	PLM Committee Marketing Committee	Public announcement. Market introduction. On-going manufacture and sale.

Phil Laut
1/17/75
Sale

digital INTEROFFICE MEMORANDUM

SUBJ: Strategic/Management/Operation Controls Reporting and Control Systems and Their Processes--OOD Level Inventory Manual

TO: Stan Pearson
CC: OOD
Bruce Delagi
Bill Thompson

DATE: 28 JAN 77
FROM: Gordon Bell
DEPT: OOD
EXT: 2236 LOC: ML12/A51

We have been discussing the need to categorize and set priorities on the wide range of reports, control systems and processes that various people expect of OOD. We recognize that we have not been clear or consistent on expectations, goals, and priorities on such things as: yellow book, project process plans, schedule reviews, magic charts (engineering), project reporting systems, monthly status reports, etc.

Could you collect and clearly summarize the various existing desirable reports, control systems, and processes; put them in the form of a basic looseleaf manual with the appropriate section headings? Phil did an "Engineering Information Locater" that might be of help in starting. Let's identify the item (e.g. yellow book) and its goals. The level should serve OOD Vice Presidents in external communications, inter-group functions. I would hope it could be used down one or two levels so I could look at projects and performance.

I would like to know what to expect from the Vice Presidents as to formal communications, and goals--Win has a good scheme. His managers issue quarterly reports against their goals. Please get a recent copy of his to see whether it can be used within OOD.

The process characterization is a part of this compendium. Could you also identify them as per my January 18, 1977 memo (attached); and get any of the Corporate ones from Bill. The EDP tools and reports are clearly another section.

Dick, Bob, and Larry believe it is possible to collect, enumerate, and then clarify the goals of the various reports, prioritize them, and breath some much needed life into a selected service of our many administrative and control tools. They would like to complete the summerization by February 8, and hope for formal OOD prioritization and goal clarification by February 18.

GB/mjf

Attachments

Does not conform to DEC STD date format P

D I G I T A L INTEROFFICE MEMORANDUM

PAGE 1

SUBJ: ADDRESS DATE: 11-12-75

FROM: GORDON BELL

EX: 2236

MS: ML12-1/A51

TO: ALLAN KENT MR1-2/E17

Subject: Morass of Process Procedures, Product Standard, Business Plan Formats, etc.

1/0 11/21

To: Distribution

Although I loathe to suggest it, I believe we need something that resembles a policies and procedures manual.

Official Document Placeholders:

0. DEC Standards deal with both product and engineering process (eg. schedule format) standards.

1. The OOD Handbook is one cut which explains the workings of Engineering, but it is grossly incomplete, and now out of date. There are also many ad/hoc memos (eg. the Laut/Burke and Johnson updates which describe plan formats) the problems, product approval procedures (eg. Phil's interface to the Marketing Committee for product approval). The memos that describe the current status of the PSG charters, as well as other group charters were placed there once.

I've never seen this one

2. We also try to put certain procedures in the Corporate Personnel Policies Manual, particularly when it applies to the whole organization (eg. Honoraria).

won't normally think of looking here

3. The Engineering Information Locator helps to find reports, etc. but should now be incomplete.

4. The Engineering Handbook is up for redo and it goes a way toward helping. Is there a person available now to help update the Engineering Handbook?

these seem to be different for no good reason sometimes

Software Engineering is tending to build its set of procedures, formats, etc. and when other engineering groups (e.g. P/L Engineering) get organized they'll do the same.

Generally I'm concerned about these because the most recent work often overlooks and overlaps previous work, often because the earlier document simply can't be retrieved. This hurts in another

Digital Interoffice Memo

Subject: Corporation and CCD Calendar of Synchronous Processes

To: CCD
Bruce Delagi
Bill Thompson

CC: Ken Olsen

Date: 18 JAN 77
From: Gordon Bell
Dept: CCD
Loc.: ML12-1 Ext.: 2236

F/U 1/31

Picking up on the work to rule notion let's get a first pass at corporate and CCD yearly process clocks. This could help form a base for the PR and Bermuda hoods. Also, it would formalize just what processes we have (and haven't)! (The purpose would be to get time for the constant stream of fire drills and crises.)

Bill, could you give us the current corporate calendar and the corporate processes that affect CCD? These would include interfaces and dates for P/L; Manufacturing; Personnel (and organization); Space; Product (CCD); Computational Resources; Capital equipment processes.

Ideally these are all laid out in a one page table (about 10 yards long) by organization versus time so that we can see how the output of one process is used for another (e.g., budget setting --> begin Spring Red Book Update; P/L LRP --> Fall Red Book Update). Also, note if we all use the same format, then anyone can understand what's going on. Since the Red Book is probably the most clear and routine, let's put it on one page (or 1/2 page).

Within CCD I'd like to enumerate the processes, their keepers, inputs, outputs; review/approvals; and reporting and then fix their calendars.

Stan/Larry - Red Book and P/L interaction

Dick/Annie/Bill Thompson - Bill's Engineering Magic Charts or mine (since his probably won't even make it)

Arnie/Stan - Product reviews

Arnie - Yellow Book (reporting); any other reviews? Quarterly financial reviews; Computational resources.

John Meyer/G. Bell - Salary planning/performance appraisal/goal setting

Jim - R and Advanced Development plan and review

Bob/John Meyer - Organizational plans and space

G.Bell - Jungle meetings

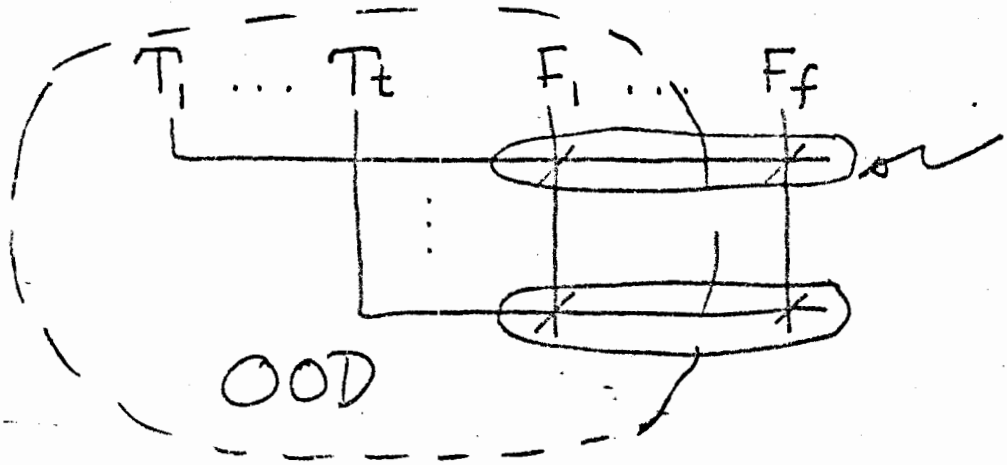
Bruce and Bill, can you help us here?

GB:ljp

How Are We Organized? PEOPLE gb May 3, 1974

- Functionally by skills (eg. drafting) and by technology (eg. disk mem.) with Matrix mgmt. via Technology using Skills

adds R,13 process overview org.

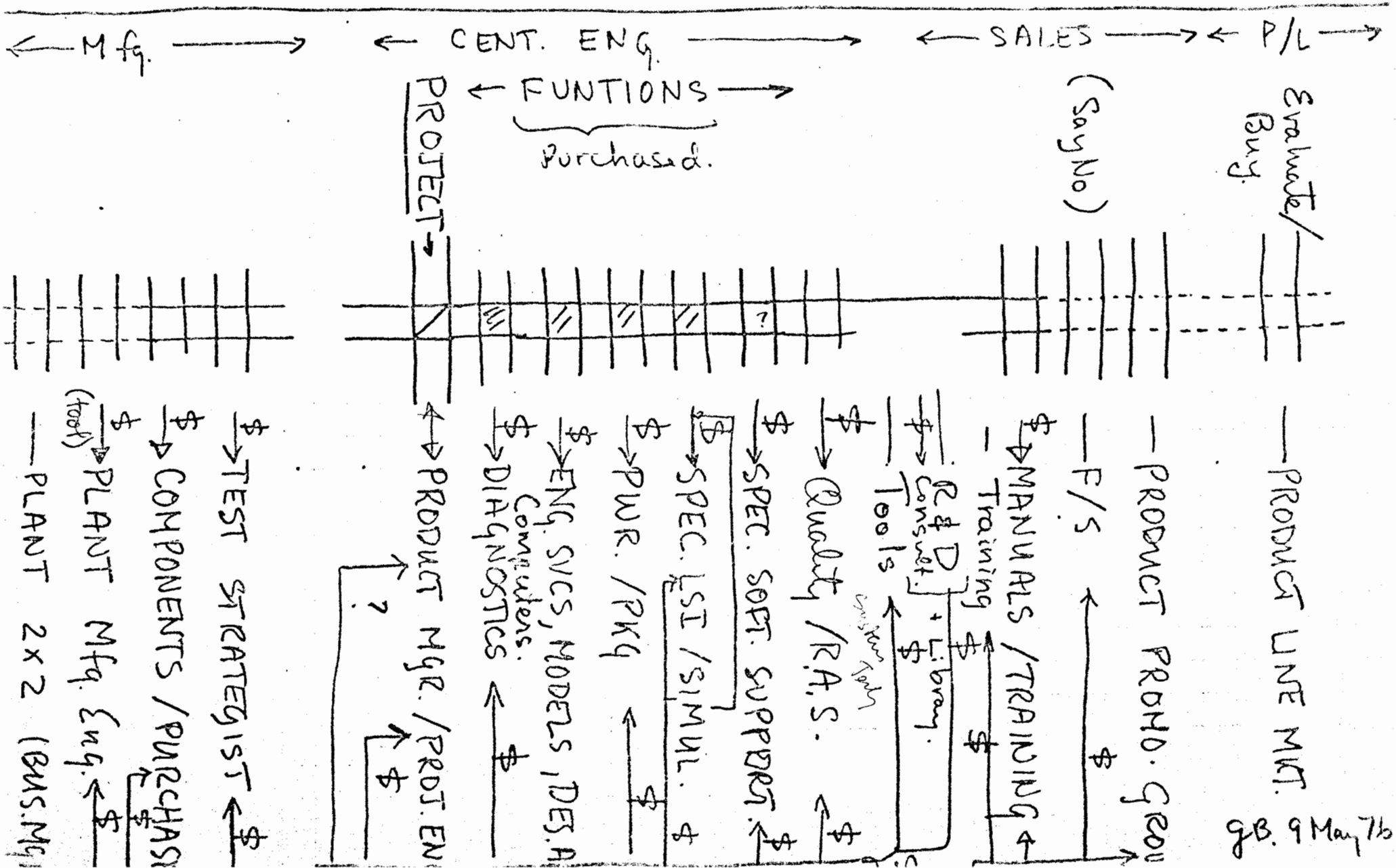


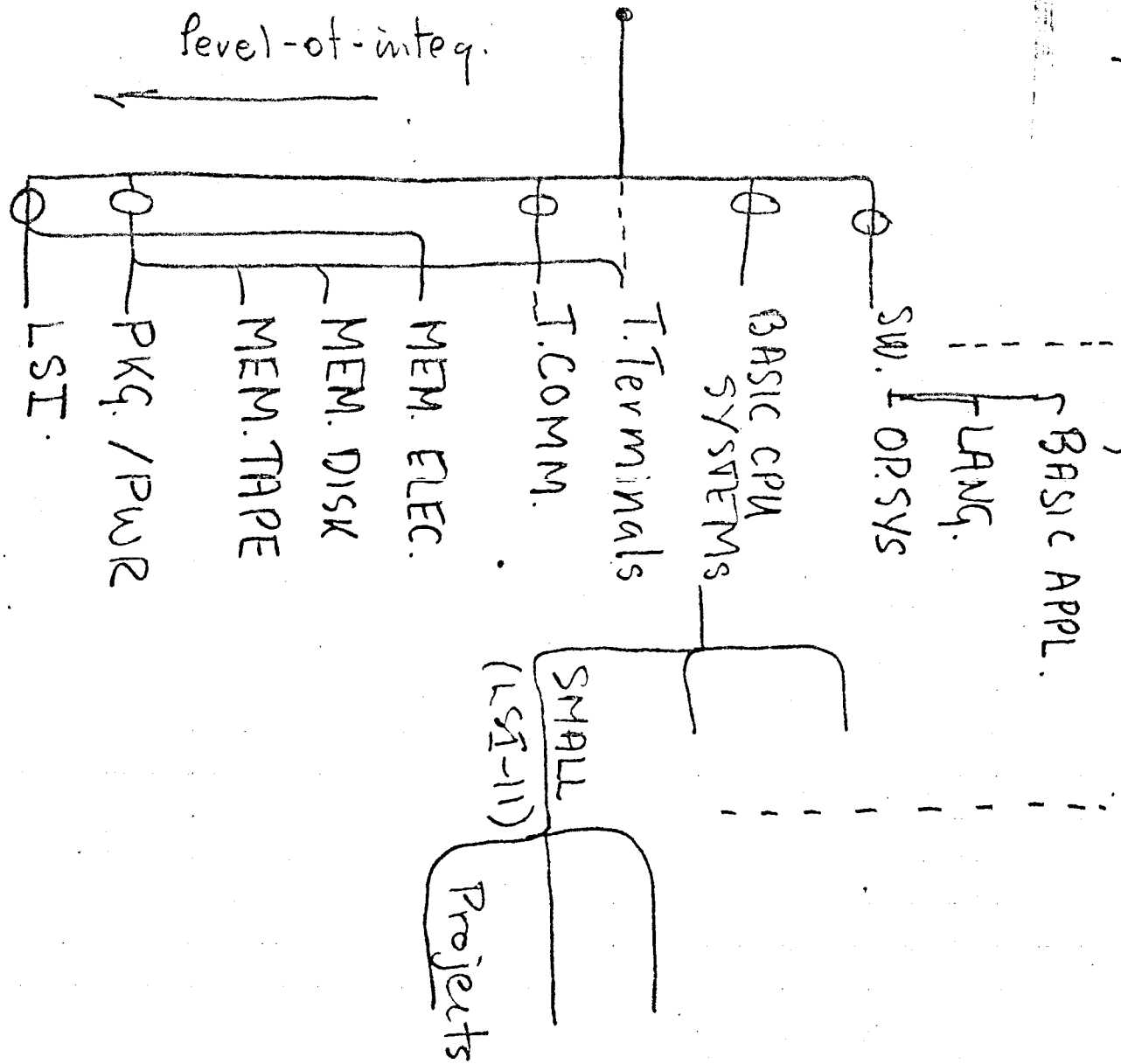
How do we Measure Output?

- Mostly by "success" of product ≈ NOR!
  - Schedule
  - $. develop and $. cost
  - Performance of Product (eg. Reliability, function, ...)
  - Rarely as/ agreement.
  -
- Gut feel
  - Truly useful • Does it feel good? (Weak link)
  - Adds evaluation dimension
  - Doesn't lose Sales for Other Systems.

Project MATRIX

Projects are formed from Matrix of Functional / Product Skills.
(Matrixed person has: 2 bosses, lives with project, skill orientation)
and Many functions are outside Central Eng.





Proposer (Producer) / Decider (Consumer)

OOD → MC+P/L

- Allocation of Products by: SIZE / technology / time (5) / Tools

→ [Rev. by Products Comm.]

Technology Group → MC+P/L

- Alloc. into Projects (size etc.)

→ [Review by PSG's]

Project → OOD/MC/P/L

- Mgmt. of Product Design

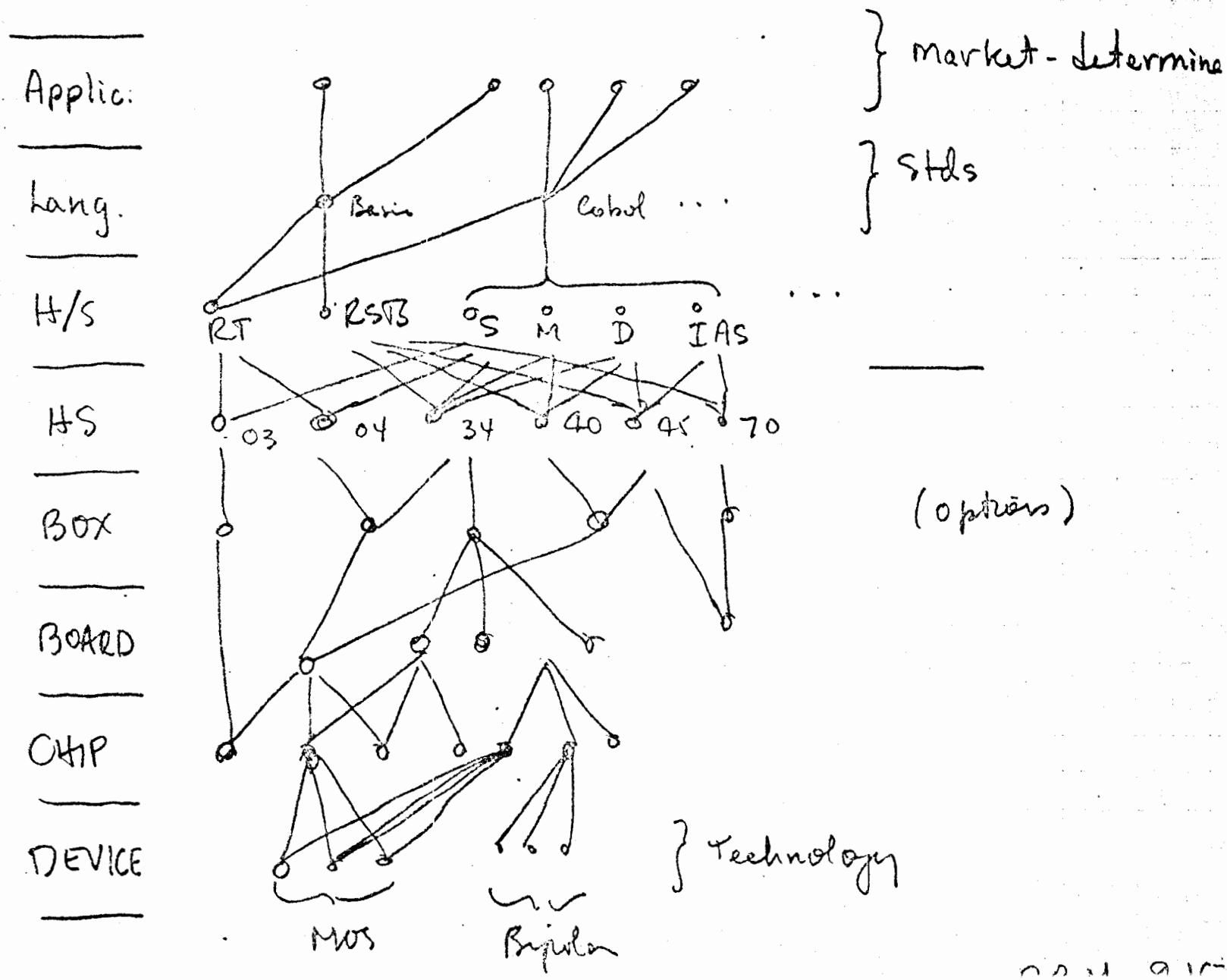
[Bus. Plans]

Decision-making at 3-levels of OOD (OOD - Technology Area - Project)

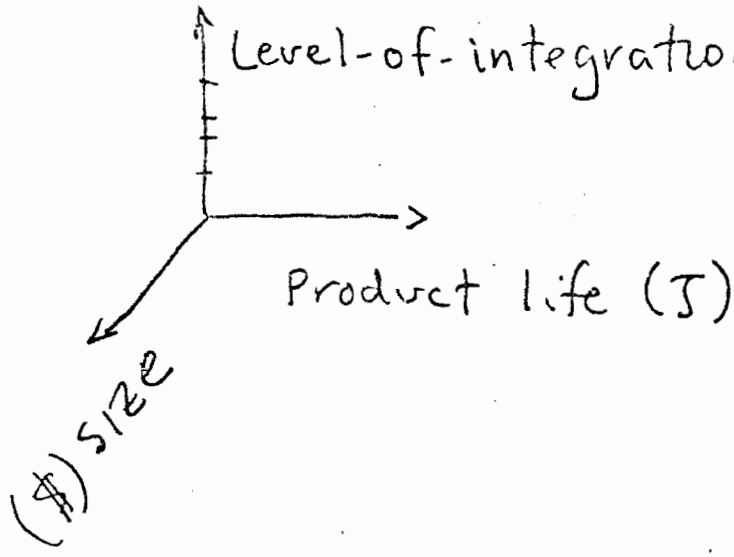
GB May 9, 1976.

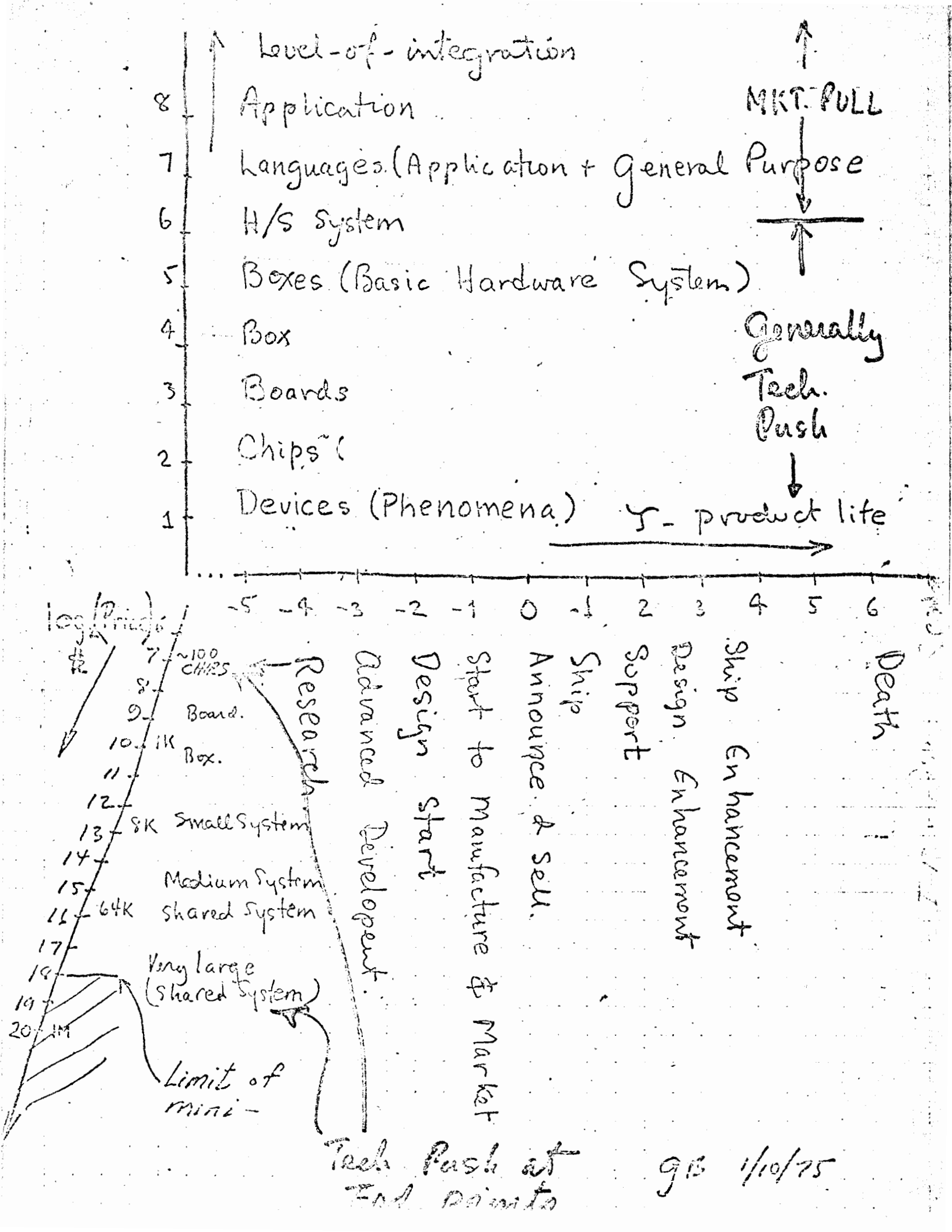
THE PRODUCT: Allocate Resources in size, life cycle (T), level-of-int

Computer System Development IS A Network (NOT JUST A Tree-structured HIERARCHY) OF 8 DISTINCT LEVELS. (IN ESSENCE, A PROJECT MAY DEPEND ON 1 OR MORE SUB PROJECTS AND A PROJECT MAY AFFECT SEVERAL SUCCESSOR PROJECTS



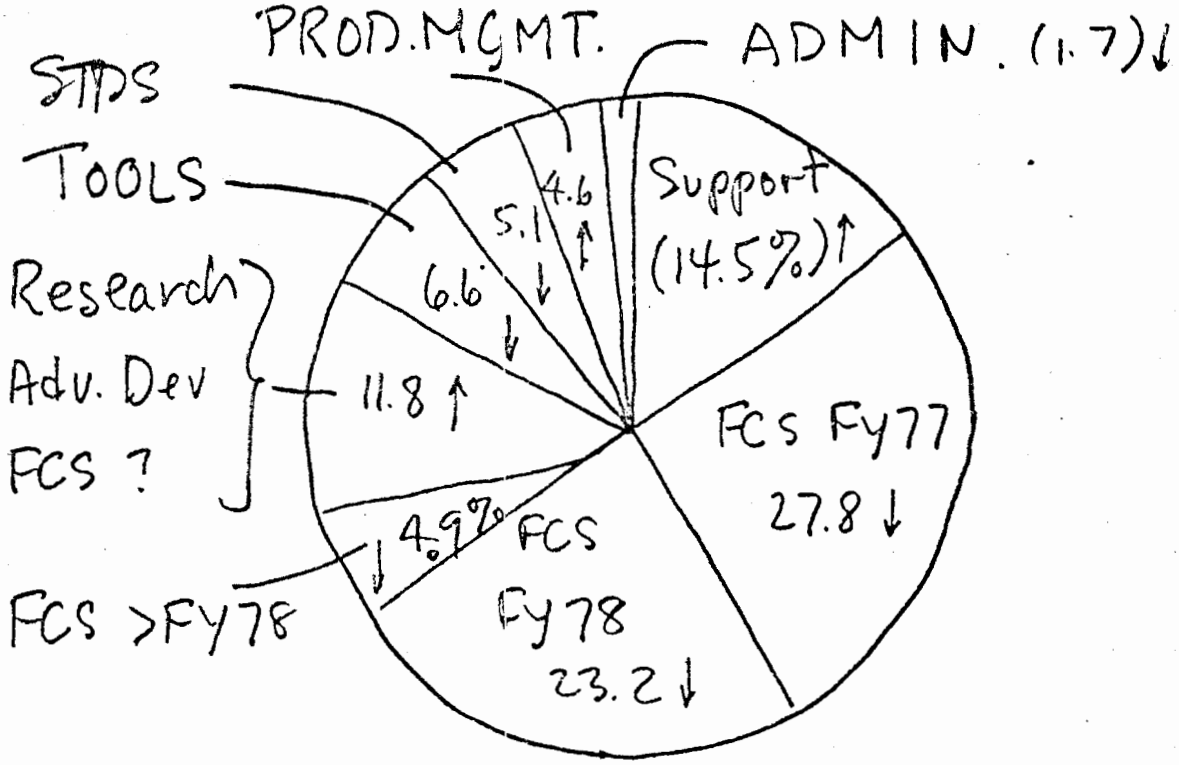
OOD MGMT IS FUNDAMENTALLY RESOURCE ALLOCATION IN SPACE



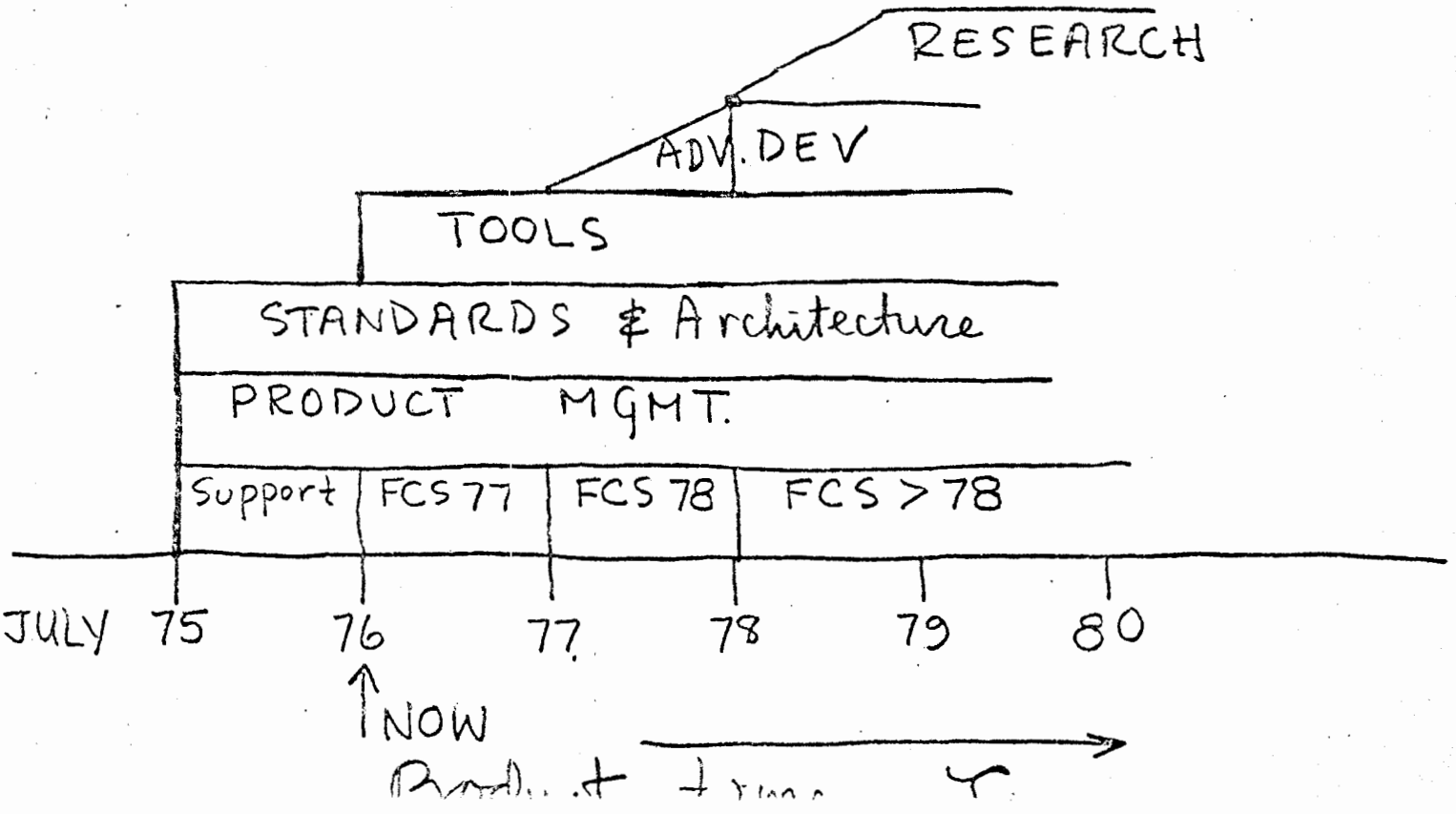

Level-of-integration
8 Application
7 Languages (Application + General Purpose
6 H/S System
5 Boxes (Basic Hardware System)
4 Box
3 Boards
2 Chips
1 Devices (Phenomena)
MKT. PULL
Generally
Tech.
Push
Y- product life
-5 -4 -3 -2 -1 0 1 2 3 4 5 6
Log (Price)
$
7 ~100 CHIPS
8
9 Board.
10 1K Box.
11
12
13 8K Small System
14
15 Medium System
16 64K Shared System
17
18 Very large (Shared System)
19
20 1M
Limit of mini-
Research
Advanced Development
Design Start
Start to Manufacture & Market
Announce & sell.
Ship
Support
Design Enhancement
Ship Enhancement
Death
Tech Push at End Points
gs 1/10/75

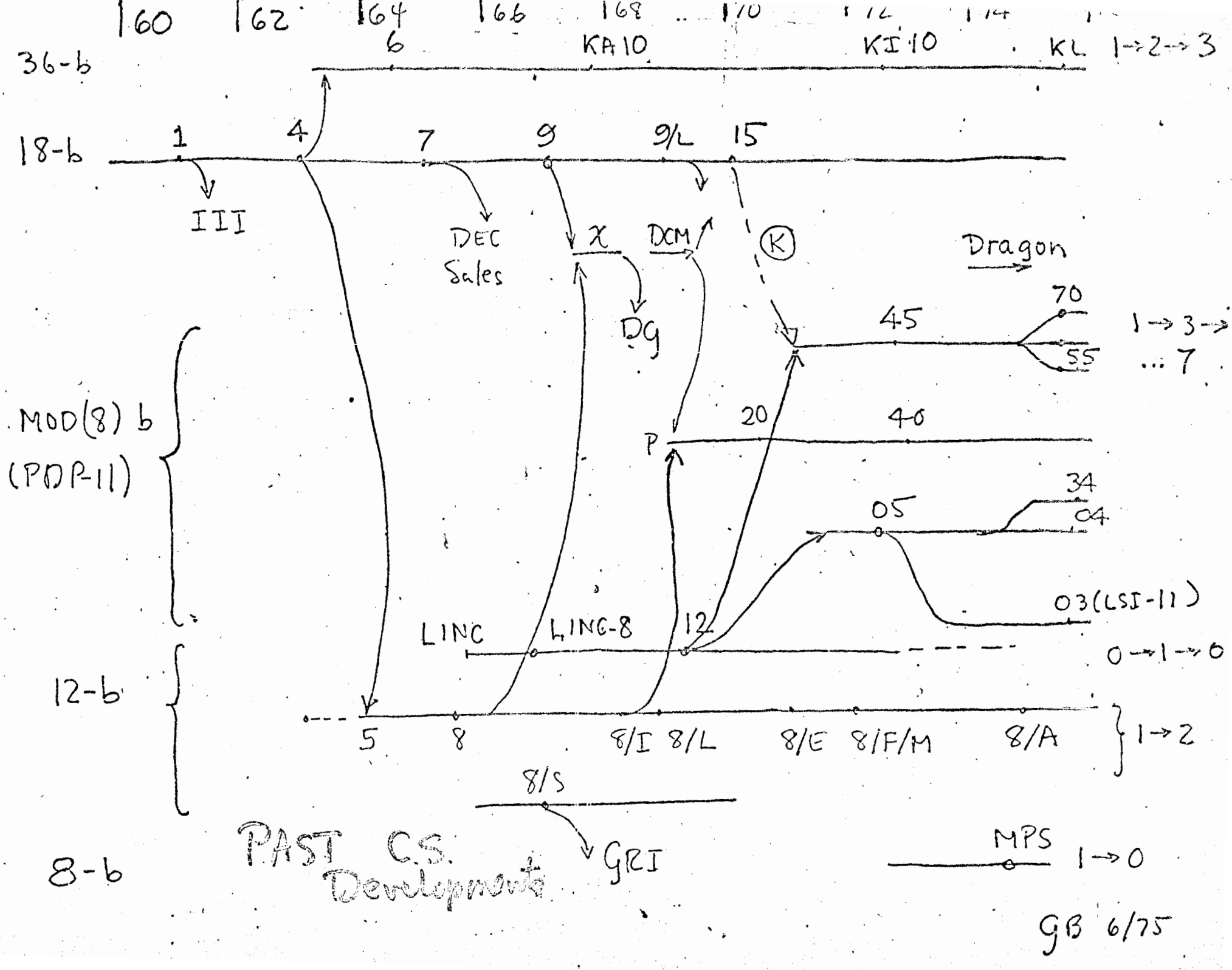
Resources Measurement Categories gb in time (T) dimension.

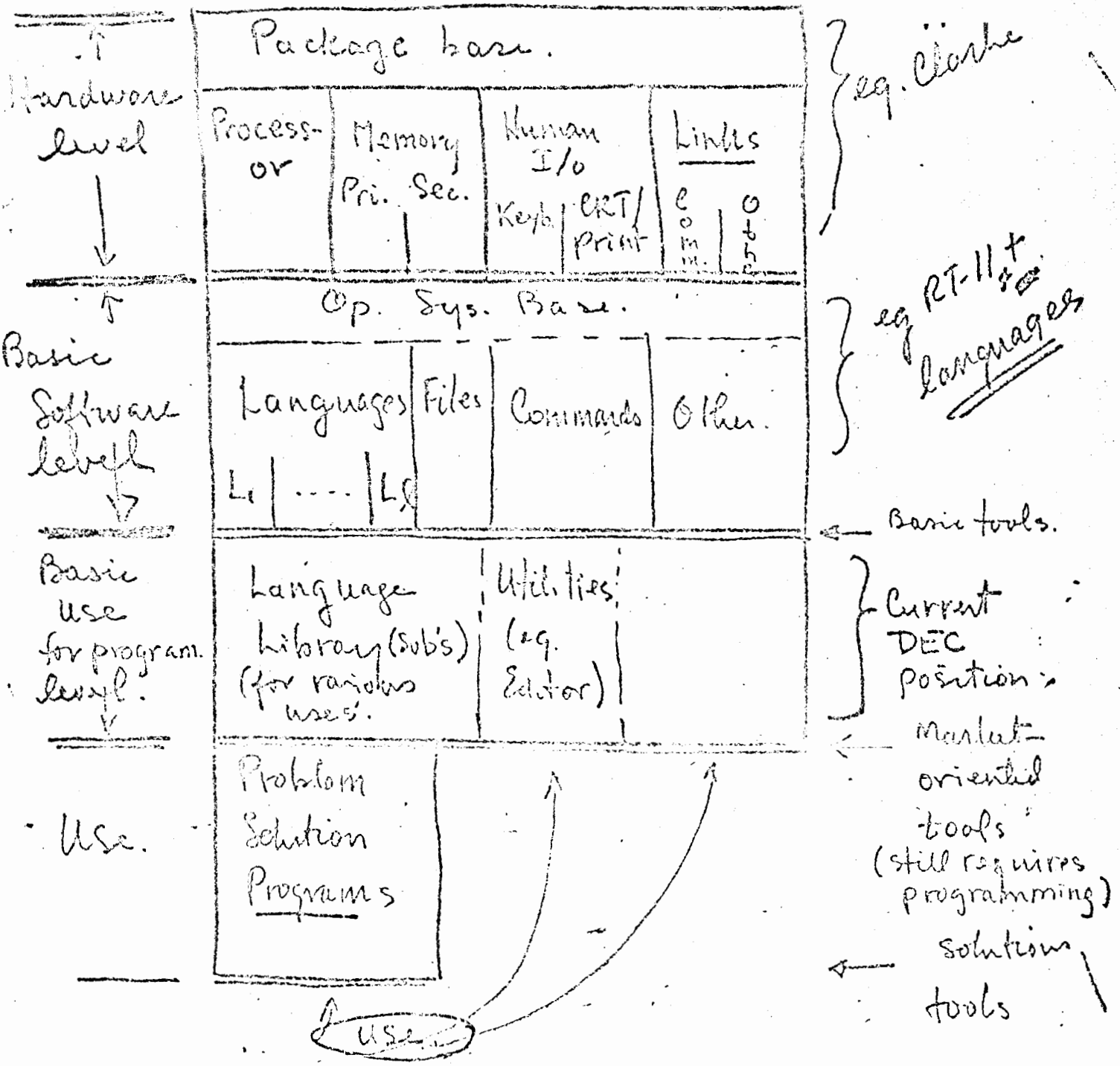
May 9, 197

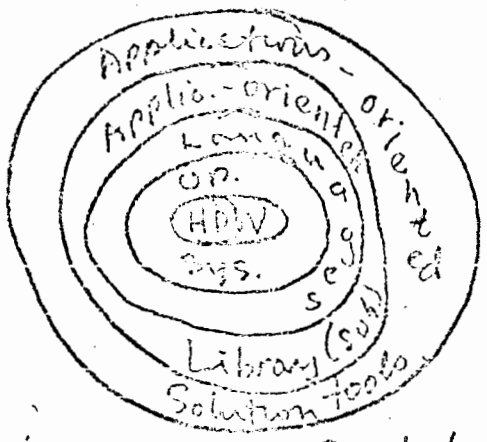


FY 77 Budget. (Trend FY 78)




160
162
164
166
168
170
172
174
6
KA10
KI10
KL
1→2→3
36-b
18-b
1
4
7
9
9/L
15
III
DEC
Sales
X
DCM
K
Dragon
DG
70
45
55
1→3→
... 7
MOD(8) b
(PDP-11)
20
40
P
34
05
04
03(LSI-11)
LINC
LINC-8
12
0→1→0
12-b
5
8
8/I
8/L
8/E
8/F/M
8/A
1→2
8/S
GRI
MPS
1→0
8-b
PAST C.S.
Developments
GB 6/75





Levels of Machines - Partitioning

gb 21 Sept 1975

PROCESS

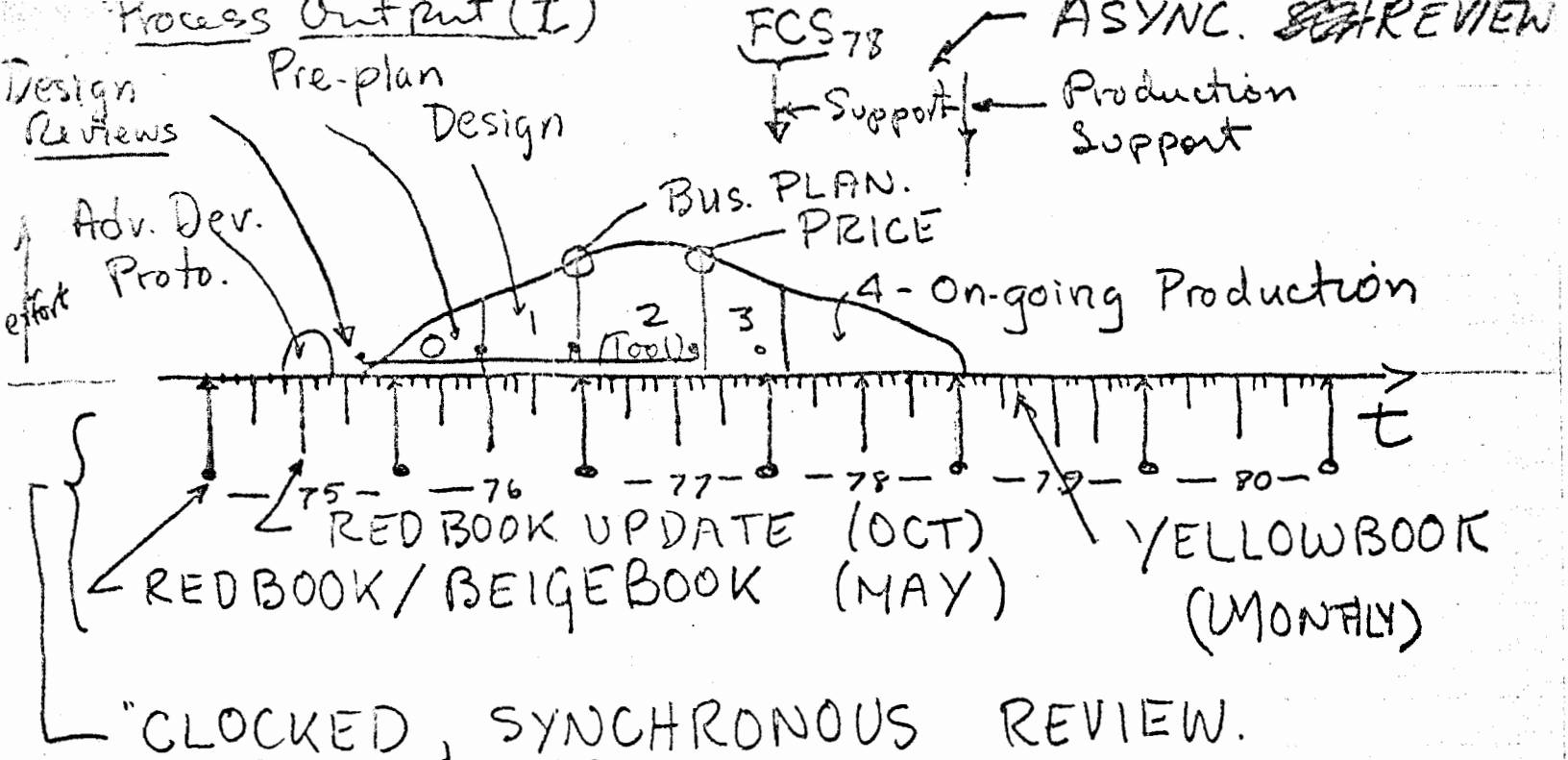
TIME-YEARS (?)

multi-disciplin

PROCESS	SOFTWARE (OS, LANGUAGES)	CPU (LARGE)	DISK
basic idea → RESEARCH	0-20	1-10	1-10
→ DISCLOSURE PATENTS			
proto { TECHNOLOGY ADVANCED DEVELOPMENT	1/2-2	1-2	1-2
→ PEOPLE (ISS, MRX)			
(schedulable) DEVELOPMENT	1-2	1-2	>2
→ TOOL-UP	1/4-2	ANNOUNCE MKT DEMAND	ANNOUNCE MKT DEMAND
TEST, TOOL & EXT	1/4-1/2	1/2-1	1
→ FCS		1~2	
SHIP	1/4-1/2	1/4-1/2	1/4-1/2
EDUCATE & USE	1/2-5 MKT DEMAND	1/2	0

Commod...

← Education / Awareness (mkt)



Project Effort vs. time.

Reviews:

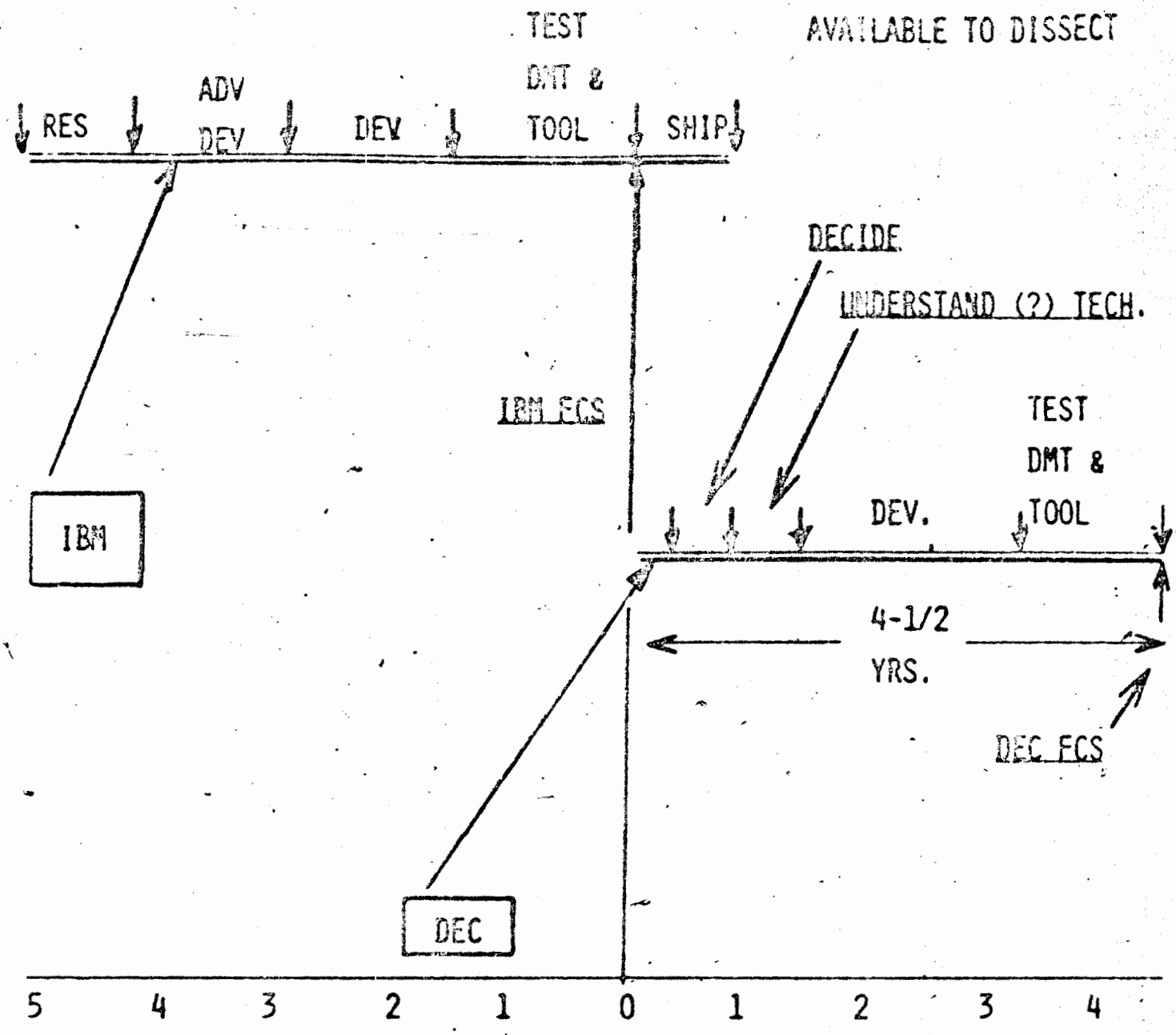
SYNCHRONOUS

- Redbook
- Redbook update
- Yellow Book (status update)

Asynchronous (Project Based)

- Prototype (Adv. Dev.). {Idea Generation}.
- Prel. Plan. {Alternatives to Select from}.
- Design Reviews (Measures/Monitors Project)
- Business Plans (Reviews)
  - 2 page (to go into design)
  - To go ahead
  - To produce
  - To build/sell.
- PSG monitor

gb May 9. 1976.

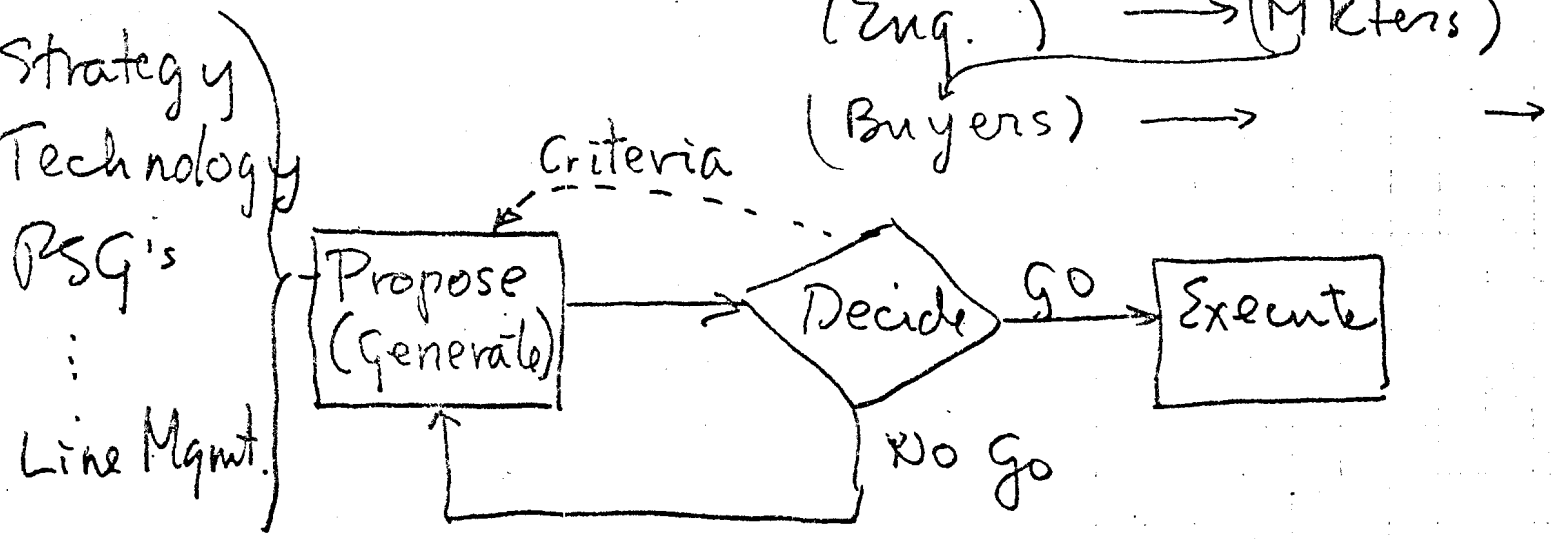


TIMES FOR IBM/DEC DISKS

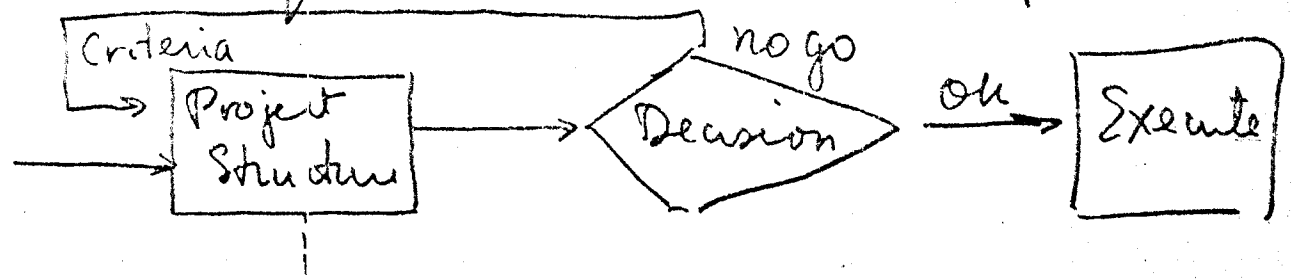
DECISION-MAKING WITHIN OOD

GB
May 9, 1976

- Fundamentally no Substitute for Hi-Q. Person(s)
- Basically decisions are made according to Model set forth by Ken and Op. Comm.
- Carry forward notion of a (decision) process & attempt to form structures (Organize) such that: Individuals Can propose and have decided such that individuals are responsible to do. (i.e. he who plans, does).
- Process requires: Producers → Consumers
  (generators) → (Testors)
  (Designers) → (Evaluators)
  (Eng.) → (Mktors)
  (Buyers) → →



(General) Techniques for Decision-making May 9, 1976



Inputs (Comm.) ——→ monitor fcn.

- 5 year strategic plans, (Budget allocation)
  Redbook. ; Meetings
  DEC Stds. / Policies / processes (eg. approval process).
  DEC Goals (roi program).
  Competitive ideas
  Technology base: R&D; Idea; Invention
  → Market Requirement (need). PSG.
  Specify Action ... i.e. Tell 'em. + Manage

STRUCTURE / MANAGE {Team, Task force, Committee, Indiv.

Organiz. Engineering. / Matrix / Move People (skills)
Educate / Train
Consultants. Or Get 1 or 2 Good People.

Monitor

Yellow books, Redbooks, PSG's.

Decision

Specify Problem, Goals, Constraints, Evaluation Criteria

(tradeoffs)

GB 9 May 72

Problems in Decision-Making

We are significantly Market driven (via PSG's, MKtgrs, etc.).
As we get larger, it is harder to Recover from poor MKT-based (Persons) ~~D/R~~ Recommendations vs. Tech. risk.

Examples:

→ Don't write down Goals, etc. hence instability
→ Don't move out far enough (mP)
→ Don't understand new mkt. (LSI-11)
→ Don't understand Systems we'll Sell (eg. Size on 11/70)
→ Don't understand changing mkt. (optimize R~R vs. Real Performance).
→ "Mill Around", No Clear decision/Test (CIS).
→ Overall the developers want to be heros ... i.e. building anything is OK. and avoids risk of Project Cancel. (eg. Unicorn)
→ Don't understand risk of a fully peopled company. Mfg. ... F/s. — hence minimum product cost, max. user (etc.) cost.

CONTROL (DECISIONS) VIA FUNDING gjs 9 May 7

- PROJECT DIRECT (Hdw., SOFT, Hdw + Soft.)
  Memory (electronic, disk, tape), Comm., terminals, CPU's, Operating Systems, Languages.

- PROJECT SUPPORT (Fully purchased Services)
  Drafting, Model shops, Consulting, Computers, EDP.

- PROJECT SUPPORT WITH TECHNOLOGY BASE
  LSI, PKG., POWER, DIGGNOSTICS, QUALITY
  - Purchasing, Components, testing, tool-up
  - Manuals, Training.

- Open loop
  Tools, Standards, Research, Adv. Dev.
  Library, Program Library.
  Field Service, Software Support, Training.

digital

INTEROFFICE MEMORANDUM

TO: O^2D
Bill Thompson

DATE: 23 FEB 77
FROM: Paul Bauer
DEPT: HDW DEV
EXT: 6581
LOC/MAIL STOP: ML1/E38

Gordon Bell
FEB 28 1977

SUBJ: PRODUCT BUSINESS REVIEW(S)

This memo is in response to G. Bell's request to Stan Pearson and others to come up with a common format for Product Business Reviews to make the reviews more "visible". This memo has been prepared with help from Stan, Bruce, Frank, and Arny.

0. Proposal

I recommend that O^2D set up a products committee as described below (paragraph 2.b). The purpose of the committee is outlined on Page 2.

1. Common Format

The attached charts (Appendix A) are an attempt to standardize the format of the Business Plan Reviews. I would like to ask if the objectives and methodology are reasonably consistent with what O^2D has in mind.

Content

The idea is to review the previous plan against results to date and current expectations.

Time & Format

Reviews should be about a half-hour in length and provide open communication. There should be a fixed format for common questions and a free format to accommodate product specific messages that the Product Manager feels appropriate.

After hearing from you I will incorporate any comments you may have, communicate the results to the Product Managers, and set up a schedule.

2. Visibility

a) The best way to improve the visibility of the review process is to hold the Product Managers formally responsible for their plans and judge them on that basis. This implies that (1) the corporation wants to manage itself in this dimension (as well as all other dimensions it manages itself); and (2) that a product management organization will exist with a manager or officer responsible for the overall success in that dimension.

b) Assuming you don't want to make such a drastic change, the next-best way to make the process "visible" is to tie it into the Business Plan approval process. From the corporate Green Sheet #75-8 (Appendix B) Business Plans are the vehicle by which O^2D formally approves a project. My impression is that OOD has not been active on this matter for some time.

2. Visibility (continued)

If O^2D was active in Business Plan approval, and if there was a recognizable feedback path between the Business Plan Review process (old plans) and the Business Plan Approval process (new plans), the review process would have all the visibility you could wish. The most easily recognized feedback path is common people involved with the review and approval processes. Also necessary is an approval process with "teeth", that is, all programs are reviewed and require approval to continue.

A Products Committee

If O^2D cannot dedicate the time to be actively and sincerely involved in a Business Plan review and approval process, I suggest you delegate it and set up a Products Committee responsible to maintain the process. My recommendation is that a committee of Arny, Stan, Bruce, Frank, Larry Wade, Bill McBride, Glenn Reyer, Dan Riordan, Al Huefner, Abbott Weiss, and one person from the Sales/Service organization be set up to conduct Business Plan Post Partum Reviews and new business plan previews. Since I am pushing this idea, I will initially chair the committee and make the reviews happen, I will ask Myron Kandra to be the secretary, and we will pass on to O^2D our conclusions and recommendations (one page maximum or by oral report) to OOD for your action and information. The results of these reviews will also be published in the Yellow Book.

The purpose of the committee will be to provide Product Managers with a defined forum for reviewing business plans, to provide planning people with a forum for reading the mood of the corporation, and to provide O^2D with a mechanism for testing their program plans.

c) Should you wish to do neither of the above, your personal attendance and interest in the reviews is essential.

rml
Att.

PRODUCT BUSINESS PLAN REVIEW

PRODUCT

Reviewer_____

Date _____

PRODUCT MESSAGE or DESCRIPTION:

Name_____

Introduction Date (FCS) _____

Price _____

Performance _____

Field Experience_____

Volume_____

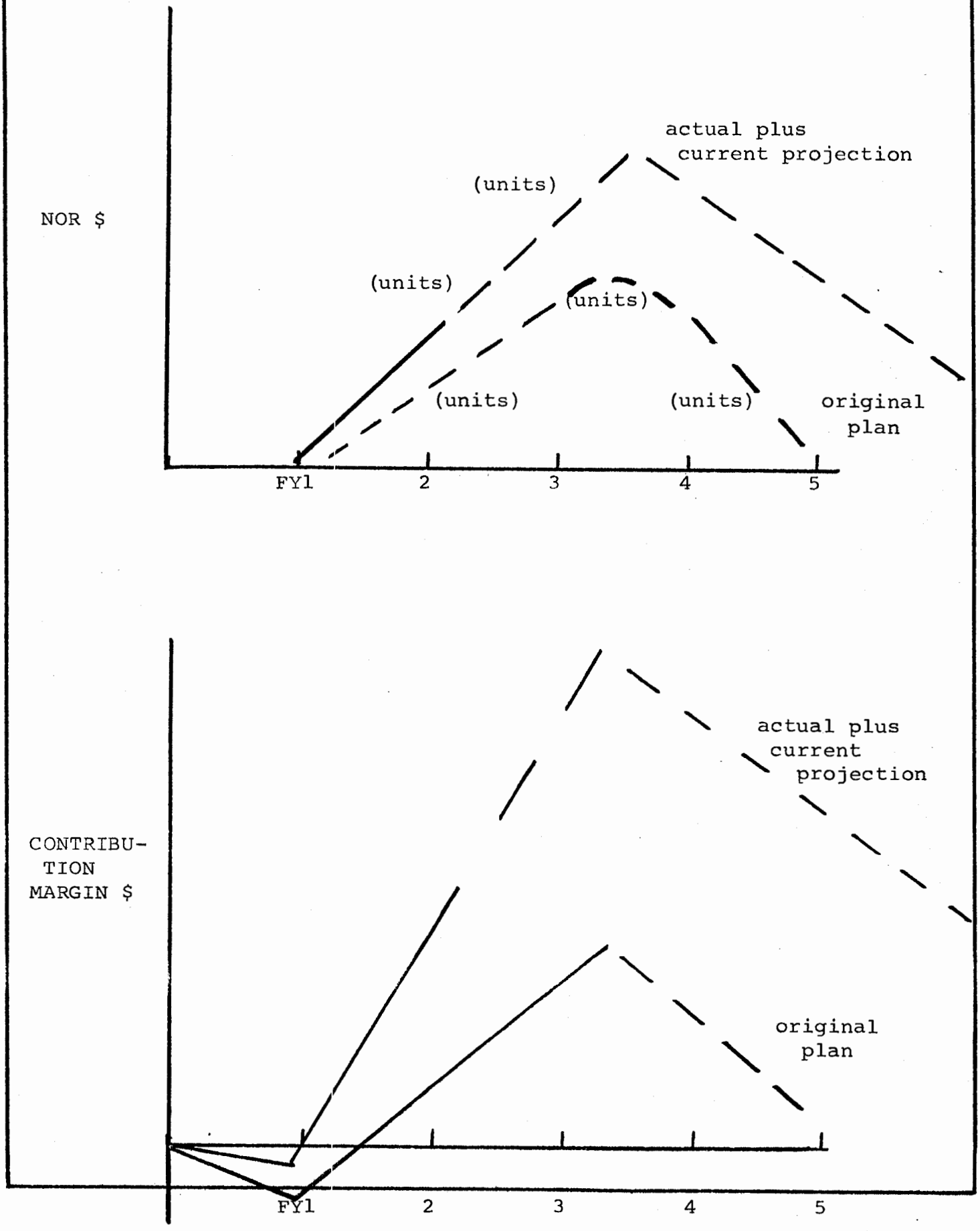
Cost_____

Overall Assessment_____

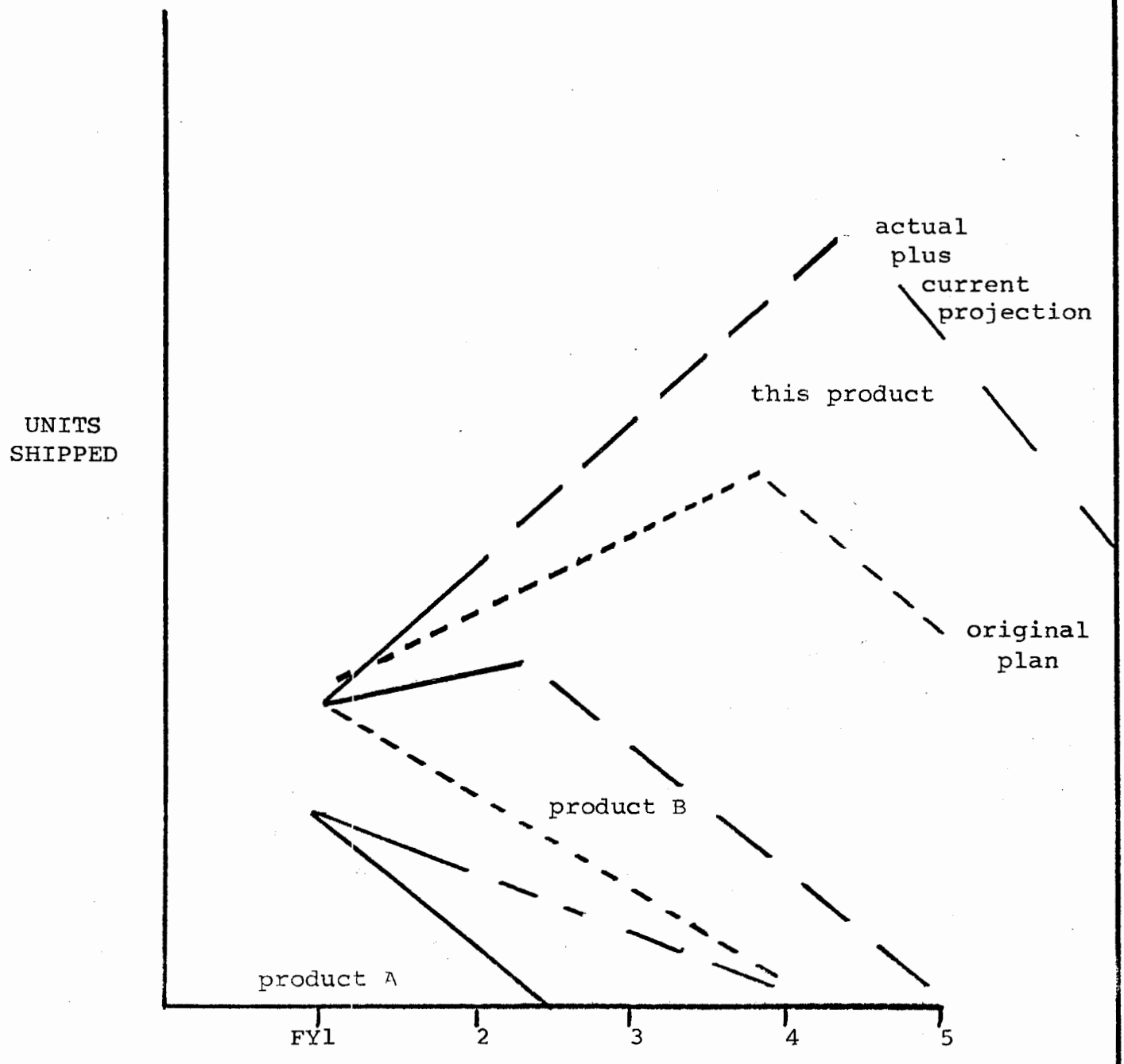
COMPETITIVE PRODUCTS

Competitor	A	B	C
Name			
Introduction Date			
Price			
Performance			
Field Expereience			
Volume			
Cost			
Overall Assessment			

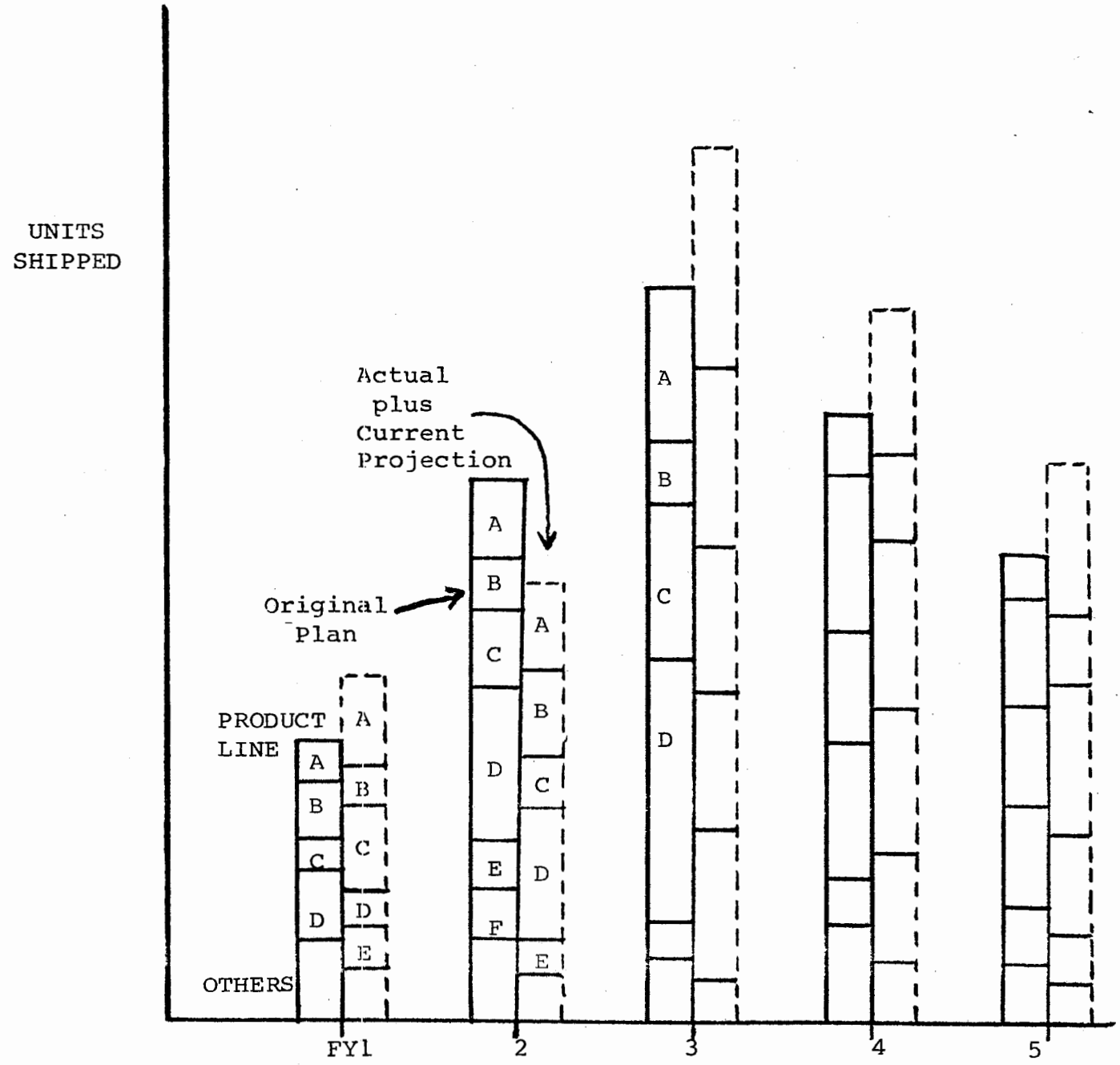
VOLUME ANALYSIS



IMPACT ANALYSIS

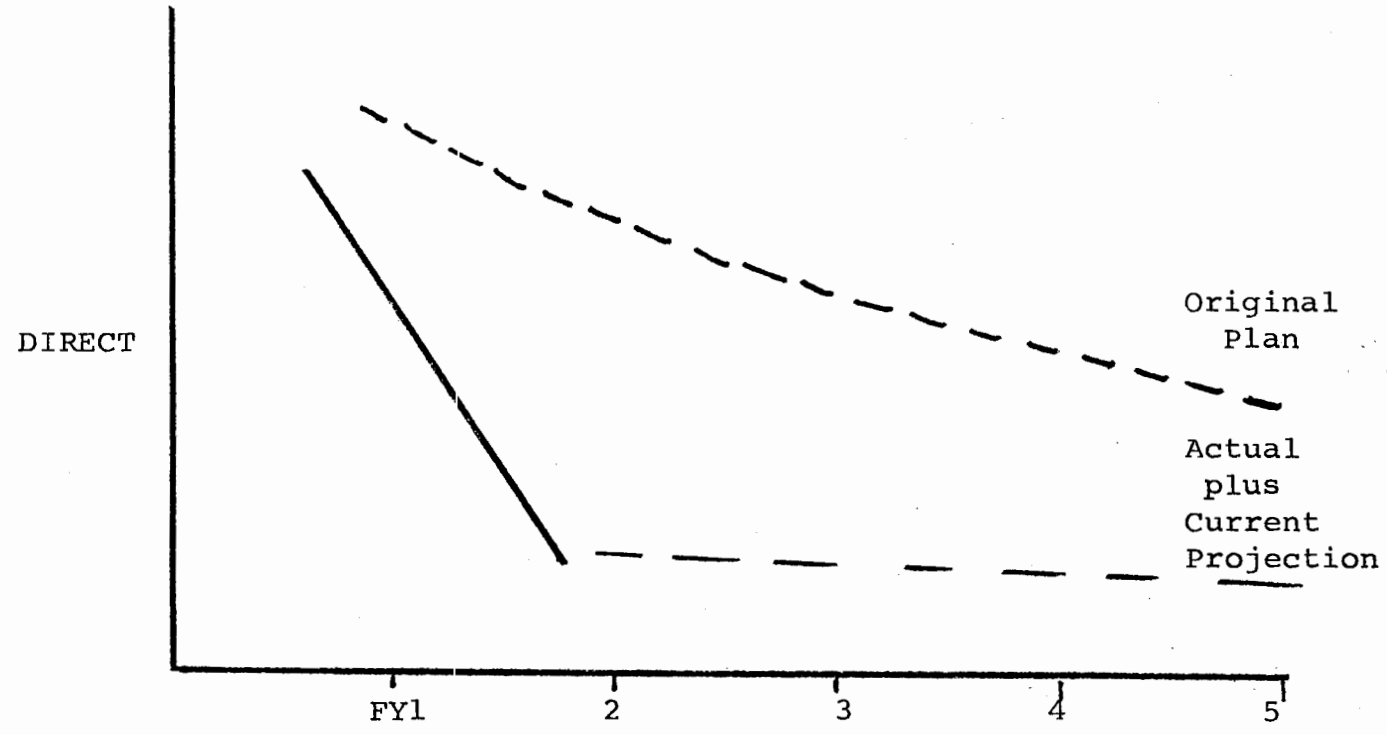


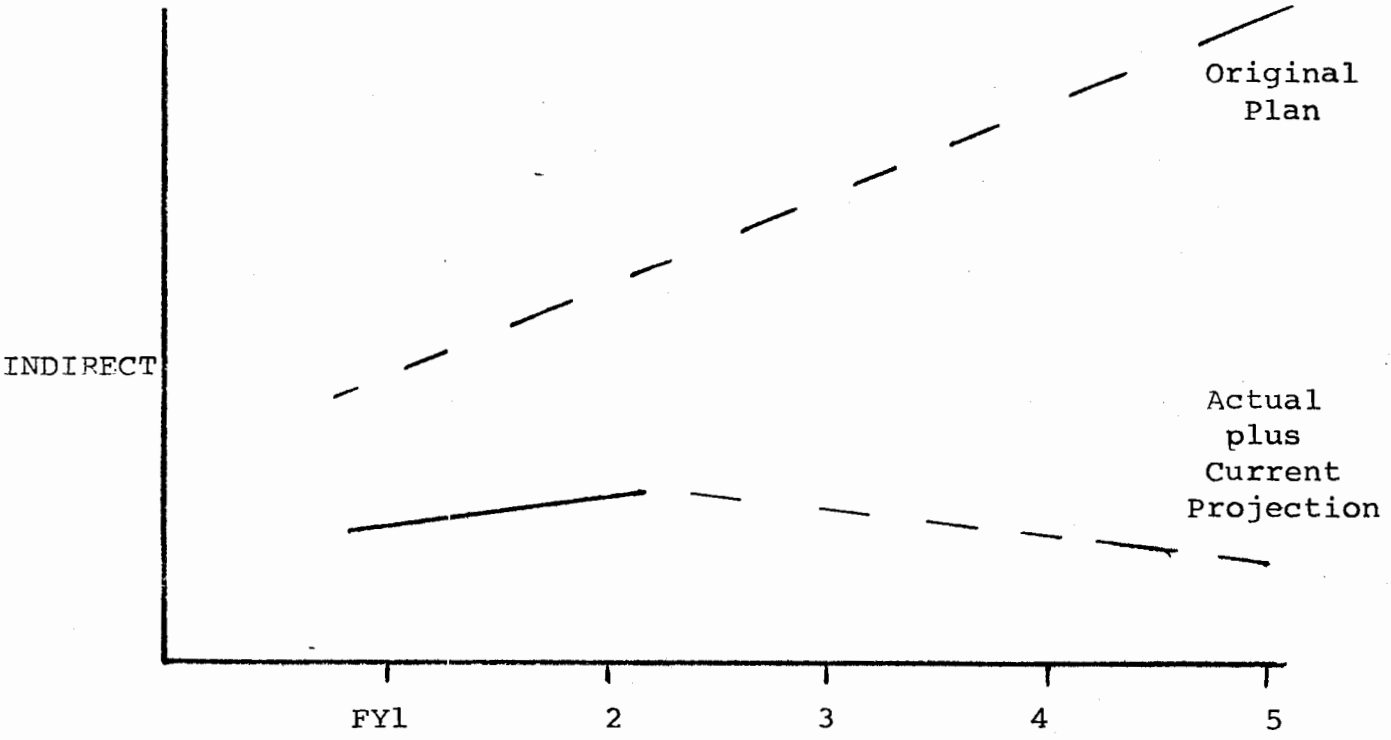
CHANNELS OF DISTRIBUTION



EXPLANATION OF KEY DIFFERENCES

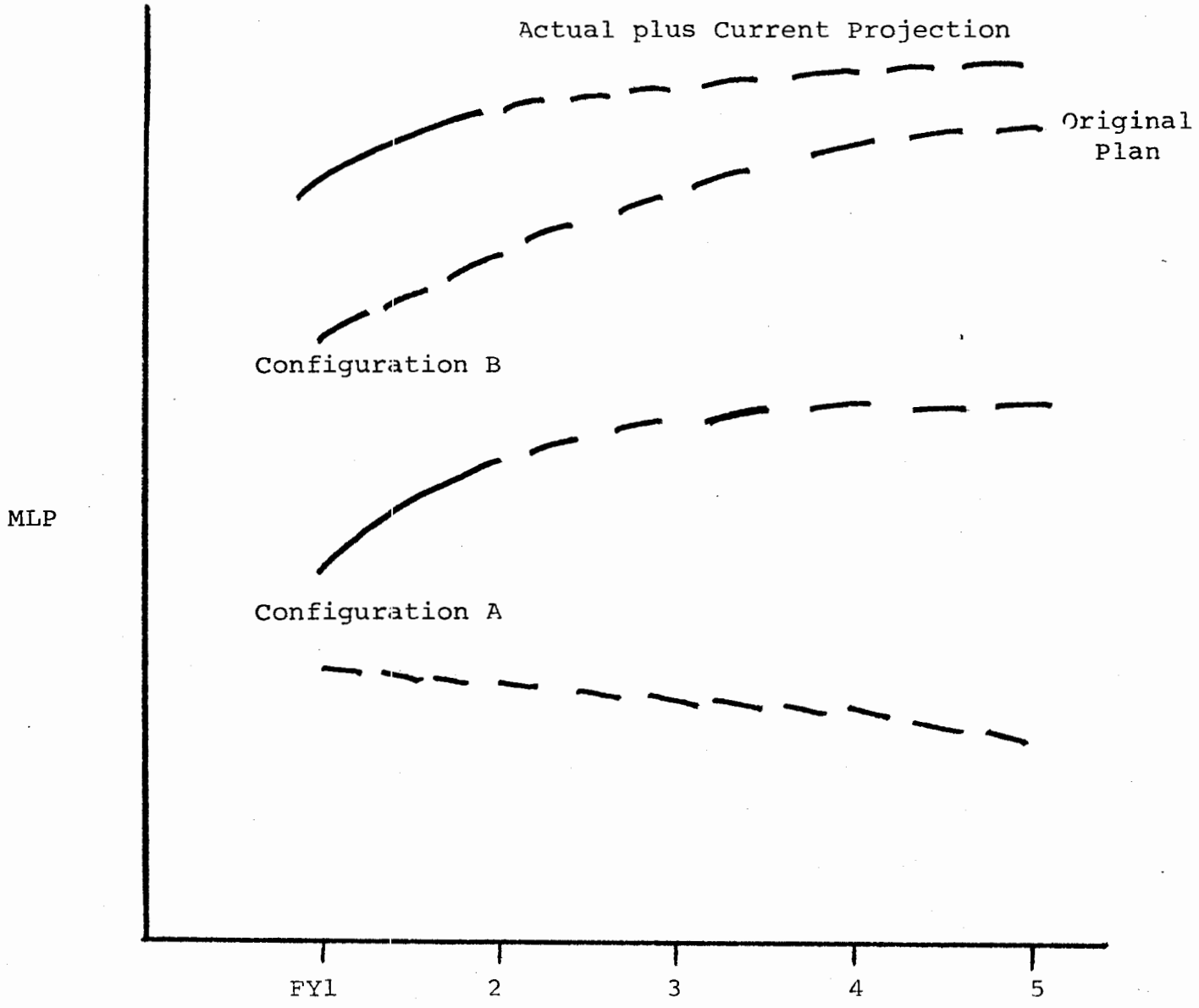
COST ANALYSIS





EXPLANATION OF KEY DIFFERENCES

PRICE ANALYSIS



EXPLANATION OF KEY DIFFERENCES

PROGRAM LOG

	DATE	INITIAL PROPOSAL	BUSINESS PLAN	ACTUAL/ CURRENT
MARKETING REQUIREMENT DOCUMENT				
PRODUCT REQUIREMENT DOCUMENT				
FEASIBILITY STUDY				
START DESIGN				
OPERATE PROTOTYPE				
LIMITED RELEASE/ FIELD TEST				
PUBLIC ANNOUNCEMENT				
FCS				
FIRST MO. VOL. SHIPMENTS (MONTH, #/MO.)				
DEVELOPMENT SPENDING				
MANUFACTURING COST				
SOFTWARE OR F.S. SUPPORT COSTS				

PRESENTER: _____

DATE: _____

FIELD EXPERIENCE

OVERALL ASSESSMENT

BIGGEST PROBLEM

NEXT BIGGEST PROBLEM

OTHER PROBLEMS, ISSUES
WORTH MENTIONING

PRESENTER: _____

DATE: _____

WHAT I LEARNED

THINGS I WOULD DO DIFFERENTLY

PRODUCT DEFINITION

ENGINEERING OF PRODUCT

BUSINESS PLAN PREPARATION AND CORPORATE EXPECTATIONS

FIELD OR SOFTWARE SERVICE

PRODUCT LINES

MANUFACTURING

OTHER DEVELOPMENT GROUPS

PRESENTER: _____

DATE: _____

digital

INTEROFFICE MEMORANDUM

Gordon Bell
JAN 19 1977

TO: OOD
Distribution

DATE: 17 January 77
FROM: Arny Goldfein
DEPT. Engineering
EXT. 6001
LOC/MAIL STOP: 3-2/A16

SUBJ: BUSINESS PLAN REVIEWS

I will shortly be contacting you to schedule a date for you to review your business plans with OOD. Business plans are an important part of OOD's control and communication processes. They are critical for communication with engineering management, manufacturing, finance, and the product lines.

Paul Bauer has produced a list of products, their phases, and FCS dates. I'm going to call upon you in reverse order of FCS. Paul's memo with the list of projects, phases, and appropriate review periods, is attached. If you disagree with any of the contents or want to enhance the list, feel free to call me.

I am going to schedule the 11 CPU and the Memory Options next month.

Gordon has written a program, which is being enhanced by Mike Mitchell in our EDP group, to allow you to generate the phase zero 2-page summary (with financials, on-line) at a terminal. Please contact your F.A. if you want help or assistance in using this program. The phase Ø summary should be available for every product which is at phase Ø or later.

Copies of the draft DEC Standard 130 are available from Paul or me ... if you need some guidance as to how to structure a business plan.

Att.
/dl

digital

INTEROFFICE MEMORANDUM

TO: Arny Goldfein
CC: Distribution

DATE: 14 Jan 77
FROM: Paul Bauer
DEPT:
EXT: 6581
LOC/MAIL STOP: ML 1-3/E38

SUBJ: OOD BUSINESS PLAN - APPROVAL PROCESS

Per your request, I have polled parts of Central Engineering to compile a current status on business plan approval. Attached is a schedule of projects, and when they could/should be reviewed by OOD.

For purposes of consistency, the phase 0 plans should be the two pages- one page a completed Engineering Project Survey (see attached) plus one page Option Products. Phase 1 plans should follow. The outline attached contains an updated project survey and option brochure. Phase 2 plans will be the full plan per DEC Standard 130 (which we are currently preparing).

PROJECT	PHASE	0	I	II	PRODUCT MANAGER
LCG					
TOPS System 20	2		Feb		D. Kiarsis
TOPS System 20	3		March		D. Kiarsis
TOPS System 10	6.04		April		D. Kiarsis
VAX					
STAR/STARLET				Jan	B. Lacroute
COMET/STARLET			Q3		D. Best
PULSAR			Q1 FY78		G. Plowman
11 CPU					
Multi Processor 11			Jan		M. Johnston
11/34 Enhancements			Jan		M. Tomasic
11/70 Enhancements			Jan		J. Carnes
Uniplex			Jan		H. Fineman
PDQ			Jan		W. Vignault
Tiny 11			Jan		D. Dezzani
Fonz					L.Halio/D.Dezzani
Annie Oakley					D. Dezzani
LSI 8					G. Cole
Krypton					A. Dziejma
Memories					
Star Memory				Jan	M. Gutman
11/70 Multi Print				Jan	M. Gutman
MF20				Jan	M. Gutman
MS8C				Jan	M. Gutman
Communications					
(Tony Lauck will advise)					
Terminals					
LA120				Jan	D. Cotton
VT100				Mar	A. Dziejma
LP14				Jan	D. Cotton
VT62				Jan	M. Wurster
LA00				Mar	D. Cotton
LQP				July	D. Cotton
Disks					
RR06			Apr		S. Orr
RL01				June	W. Galusha
RM01				Q4	K. Smith
R80		Q4			S. Orr
RP07		Q4			K. Smith
Tapes					
TU77				Q3	E. Siegmann
TS04				Q3	E. Siegmann
TM78			Q3		E. Siegmann
RX02				Q3	C. Ju
TAxx		Q3			C. Ju
TA00		Q1			C. Ju

PROJECT	PHASE	0	I	II	PRODUCT MANAGER
CAD					
Idea			Jan		E. Vrablik
Software					
RT				Q3	J. Mileski
RSX-11D					C. Gibson
RSX-11M				Q3	K. Friedrich
RSX-11S					K. Friedrich
RSX-110/IAS				Q3	C. Gibson
RSTS				Q3	D. Pekin
TPS				Q3	R. Ham

DISTRIBUTION:

Al Avery	ML3/E35
Gordon Bell	ML12/A51
Leo Bennett	ML1/E24
D. Best	ML5-2/M17
J. Carnes	ML5-2/E71
Dick Clayton	ML3-3/E71
G. Cole	PK3-1
Ed Corell	ML1/E62
D. Cotton	ML1-3/E62
Bruce Delagi	ML12-1/F41
Bill Demmer	ML3/E35
D. Dezzani	ML1-2/E65
A. Dziejma	ML5-3/E12
Ulf Fagerquist	MR1/E78
H. Fineman	ML3-3/E67
W. Galusha	ML1-3/E58
A. Goldfein	ML3/A16
Mike Gutman	ML21/E64
L. Halio	ML1-2/E60
R. Ham	ML5-5/E40
M. Johnston	ML5-2/E71
C. Ju	ML1-3/E63
D. Kiarsis	MR1-2/E78
B. LaCroute	ML3-5/E35
Tony Lauck	PK3/M10
Henry Lemaire	ML1-4/A97
Jack Mileski	ML12/E51
S. Orr	ML1-3/E58
Stan Pearson	ML12/E13
D. Pekin	ML12-3/E13
Bob Peyton	ML1/E63
Bill Picott	ML12/E13
G. Plowman	ML12-3/A62
Larry Portner	ML12-3/A62
Bob Puffer	ML1-3/E38
Frank Sanjana	ML3-3/E71
Grant Saviers	ML1/E58
E. Siegmann	ML1-3/E63
K. Smith	ML1-4/E58
Steve Teicher	ML1/E65
Mike Tomasic	ML3/E71
W. Vignault	ML5-5/E67
E. Vrablik	ML1-1/E24
M. Wurster	ML5-3/E12

digital

INTEROFFICE MEMORANDUM

TO: G. Bell ML12/A51
D. Clayton ML3/E71
L. Portner ML12/A62
B. Puffer ML1/E38

DATE: 4 JAN 1977
FROM: Stanton Pearson
DEPT: O²D Planning
EXT: 2424
LOC/MAIL STOP: ML12/E13

Gordon Bell JAN 05 1977

SUBJ: OP COM PRODUCT BUSINESS REVIEW (S)

This memo is in response to G. Bell's request for me to outline the purpose and schedule of product business reviews to the Operations Committee. (attached)

The attached program is based on what I would want if I were reviewing the product business outlook. Before going further I would like to ask if the objectives and methodology is reasonably consistent with O²D views.

Briefly:

The idea is to review previous versus current prediciton of business results based on potential impact to existing plans.

Reviews should be about a half hour in length and provide open communication. There should be a fixed format for common questions and a free format to accommodate product specific messages that the product managers feels appropriate.

The next steps are to incorporate any comments you may have, communicate with the Product Managers, and set up the schedule.

Attachment

SHP:ssc

D R A F T P R O P O S A L

Please comment to S. Pearson
ML12-3/A62
X 2424

TITLE: Product Business Reviews.

OBJECTIVE: Implement a process that will give visability to Central Engineering Products that have potential impact on current or future business.

SCOPE: All Centrally developed Products.

METHODOLOGY:

- Coordinated by O^2D strategic planning.
- Product Managers responsible for individual review content.
- Product area's will be scheduled one per month on a three month rolling schedule.
- Product selection will be based on perceived impact level.
- Audience will be the Operations Committee and Product Line Managers Committee.
- Review time will be targeted for a half hour.
- Format will be part fixed and part free form. The fixed portion will be structured to answer predefined common questions. The free form will be the Product Managers opportunity to communicate any messages unique to the particular product area.
- The reviews will be structured to address the following questions:

  1. Product Message - What are the unique selling points about this product relative to our other products and those of our competitors?

  2. Competition - Who are the key competitors? Who is the major competitor and what is the product comparison in terms of delta price,

function, performance plus other influencing factors that may be key?

3. Milestone dates, Market requirement document, Product requirement doucment, Feasibility study, Functional Specification, Design Specification, prototype, Engineering release, Manufacturing release, First Customer Shipment, Volume Shipment?

4. Business Volume, total revenue and contribution to date and five-year outlook versus original prediction? Revenue by channel of distribution to date and five-year outlook?

5. Cost Factors - the key cost factors to date and five-year outlook versus original predictions?

6. Recommend variance to existing plans and associated impact/benefit.

7. Things to do differently next time?

8. Other messages the Product Manager would like to communicate?

Stan — Will you go ahead on this? Jon

/ Bruce | Please work out with Stan ~~how get prepared by OOD~~

STAN

Paul Bauer

B

NOV 12 1976

~~Stan MC/ [illegible]~~

Gordon Bell

NOV 17 1976

Digital Interoffice Memo

Subject: Product Manager Review Visibility

To: Stan Pearson

CC: Operations Committee
OOD
Paul Bauer
Ed Fauvre
Al Huefner
George Plowman
Mike Tomasic

JAN 3 1977

Date: 10 NOV 76
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

DEC 06 1976

F/U 11/17

We've been asked by the Operations Committee to make the review of products vis a vis the Product Managers at the monthly meetings more visible.

Could you publish a memo stating the purpose, schedule, and the handouts of the last meeting in the Yellow Book?

I'd also like to get this on the Operations Committee or Marketing Committee agenda for their information and comment.

GB:ljp

Gordon Bell
DEC 23 1976

Stan: I suggest that these presentations be made to MMC — ~~PA~~ (marketing managers committee) — perhaps one per meeting (20 minutes) — Bruce

Bruce Excellent idea Phil F

Digital Interoffice Memo

Subject: Product Review

To: Paul Bauer, Ed Fauvre, Arny Goldfein, Bill Heffner, Stan Pearson, Mike Tomasic

Date: 23 NOV 76
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

CC: OOD
Ralph Byrd

F/U 12/7

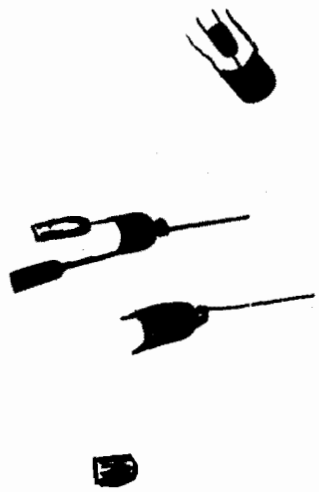
When's an appropriate time to get a decent common format for Product Review (ala Post Partem) so we can put it in the Yellow Book and go to Operations Committee with what we're doing?

Product managers would like information on system size, component, etc. distributions. When can our programs be there?

GB:ljp

PROPOSAL

A PLANNING SYSTEM FOR ESTABLISHING PRODUCT STRATEGIES MORE CLOSELY LINKED TO MARKET STRATEGIES THAN THE CURRENT "RED BOOK" PROCESS.



GOALS OF THE PROCESS

- ESTABLISH MORE USEFUL (not just sales) COMMUNICATIONS BETWEEN OOD AND THE MARKETING GROUPS.
- PROVIDE VISIBILITY AND BALANCE BETWEEN PRODUCT AND MARKET STRATEGIES.
- PARTITION RESOURCES AND PROBLEM SPACES,
  - REDUCED HASSLE
  - QUICKER DECISIONS
  - FORCED CONSIDERATION OF STRATEGIC ALTERNATIVES.
- MAINTAIN STRATEGIC FOCUS BY SYSTEM-SIZE, WHILE INCREASING RESPONSIVENESS TO MARKETING GOALS.
- ACHIEVE A MORE BALANCED POSTURE BETWEEN "TOP DOWN" AND "BOTTOM UP" PLANNING.
- JOINT REVIEW OF PLANS AT VARIOUS LEVELS OF STRATEGIC FOCUS, BY GROUPS COMPOSED OF ENGINEERING AND MARKETING MANAGEMENT (HIERARCHICAL AND PARALLEL COMMUNICATIONS).
- ALLOW STRATEGIC ALLOCATION OF RESOURCES BETWEEN TECHNOLOGY AND MARKET DRIVES.
- FOSTER COMMITMENT TO PLANS.

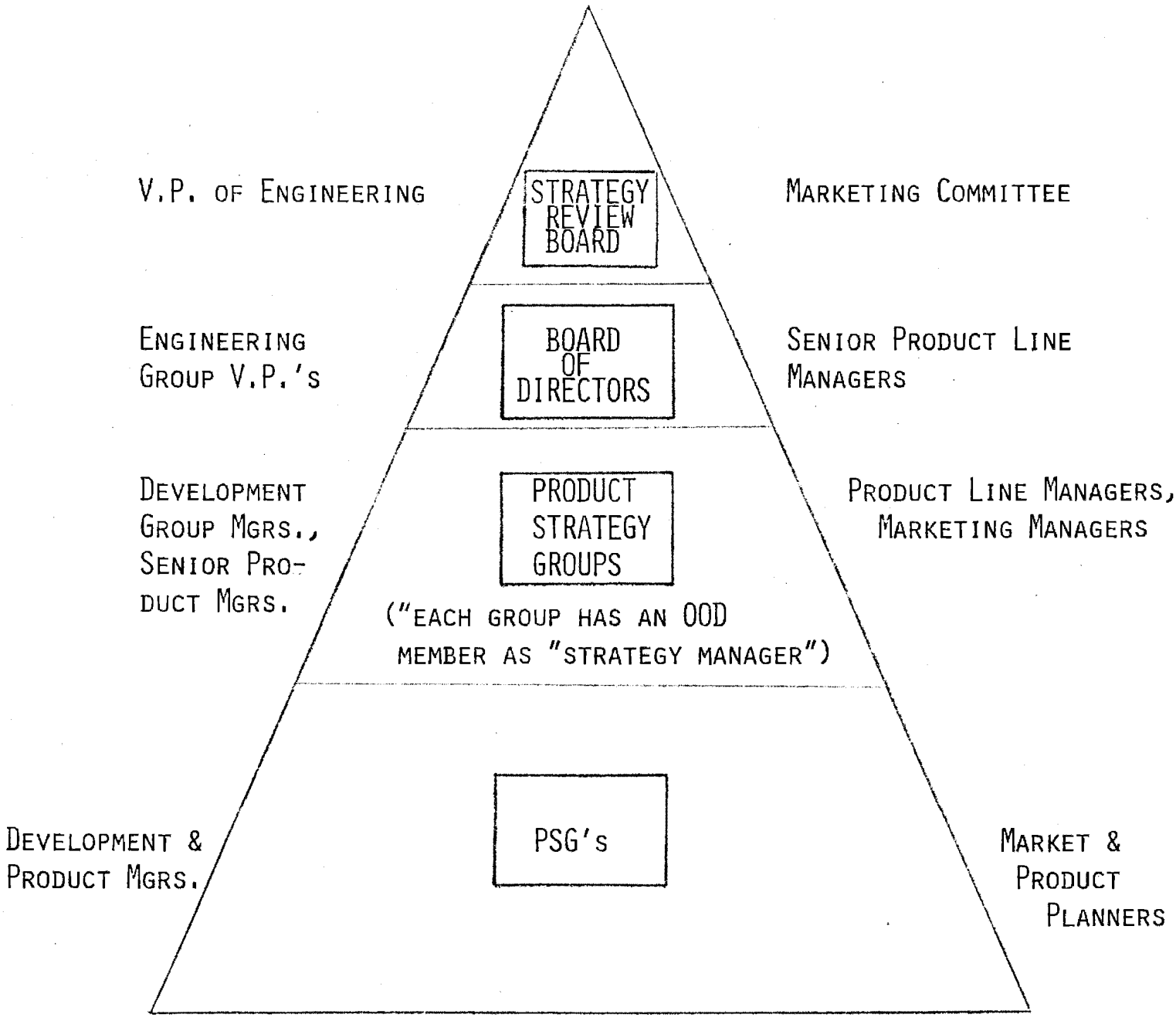
Non-Goals
Success all groups to be given up.

ESSENCE OF THE PROPOSAL

A PAIRING OF DEVELOPMENT AND MARKETING MANAGEMENT AT SEVERAL LEVELS, WITH JOINT RESPONSIBILITY FOR DEVELOPING, REVIEWING, AND APPROVING PRODUCT AND MARKETING PLANS. FUNDS WOULD FLOW FROM THE TOP DOWN, ACCORDING TO STRATEGIC ALLOCATION CRITERIAL, AND IN RESPONSE TO BALANCED PLANS FLOWING UPWARD. THESE FUNDS WOULD BE ALLOCATED TO VARIOUS POTS, FORCING TRADEOFFS AMONG HARDWARE, SOFTWARE, PERIPHERAL, AND MARKET ALTERNATIVES AS THE RESOURCE AND FINANCIAL CONSTRAINTS ARE ENCOUNTERED. THE PROCESS WOULD YIELD A HIERARCHY OF STRATEGIES, FROM GLOBAL ALLOCATION AMONG TECHNOLOGIES AND MARKET ALTERNATIVES AT THE TOP, TO MID-LEVEL INVESTMENT STRATEGIES FOR SOFTWARE, CPU'S, PERIPHERALS, AND ON DOWN TO SPECIFIC PRODUCT FEATURES, INTRODUCTION TIMING, SIZING AND POSITIONING AT THE BOTTOM.

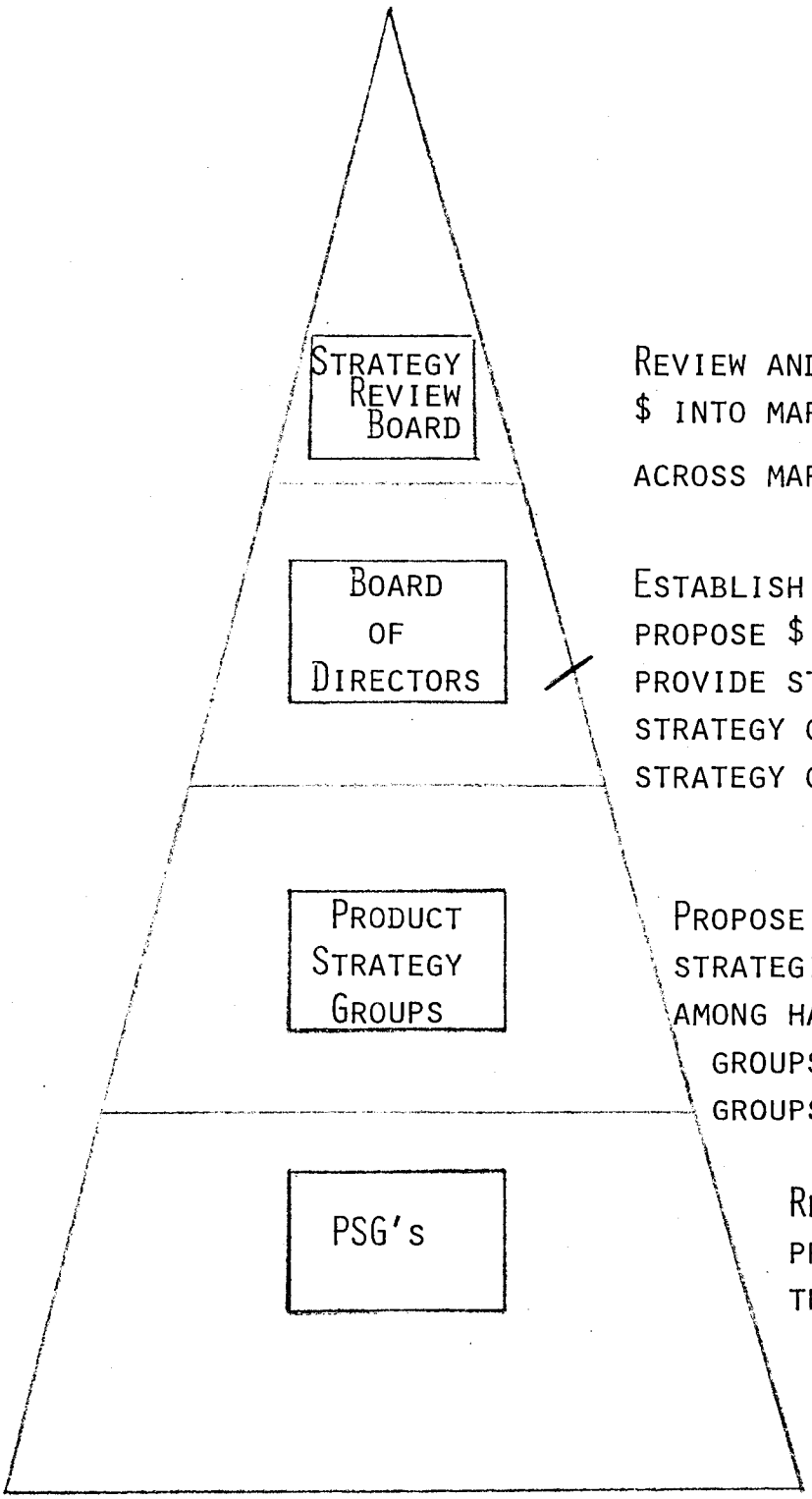
THE FOCAL POINT OF THE PROCESS IS "PRODUCT STRATEGY GROUPS". EACH PRODUCT STRATEGY GROUP IS MANAGED BY AN OOD V.P., AND INCLUDES A "PERMANENT STAFF" CONSISTING OF OOD SENIOR PRODUCT MANAGEMENT (CARNES, PICOTT, MILESKI, TOMASIC, ETC.)

STRATEGIC PLANNING LEVELS



ROLES

RESPONSIBILITIES



REVIEW AND APPROVE GROSS PARTITIONING OF $ INTO MARKET AND TECHNOLOGY POTS AND ACROSS MARKETS; BALANCE LONG/SHORT TERM.

ESTABLISH "POTS" FOR RESOURCE ALLOCATION; PROPOSE $ ALLOCATION FOR VARIOUS POTS; PROVIDE STRATEGIC DIRECTION TO PRODUCT STRATEGY GROUPS; APPROVE PLANS OF PRODUCT STRATEGY GROUPS.

PROPOSE BALANCED PRODUCT/MARKET STRATEGIES; ALLOCATE DEVELOPMENT $ AMONG HARDWARE/SOFTWARE/PERIPHERAL GROUPS. REVIEW PLANS OF DEVELOPMENT GROUPS. REVIEW "2-PAGE BUSINESS PLANS.

REVIEW PROJECT PLANS; COORDINATE PRODUCT FEATURES, CONTENT, TIMING, TRADEOFFS.

A WALK THROUGH OF THE PROCESS

STEP 1 - OPERATIONS COMMITTEE SETS NOR TARGET FOR 2 YEARS.

STEP 2 - OOD PROPOSES CENTRAL AND APPLIED ENGINEERING SPENDING CUT BY SUPPORT, ADVANCED DEVELOPMENT, PRODUCT DEVELOPMENT, ETC. OOD ALLOCATES TECHNOLOGY $.

STEP 3 - PRODUCT STRATEGY GROUPS, MANAGED BY OOD V.P.'S, PROPOSE BALANCED PRODUCT/MARKET STRATEGY TO BOARD OF DIRECTORS.

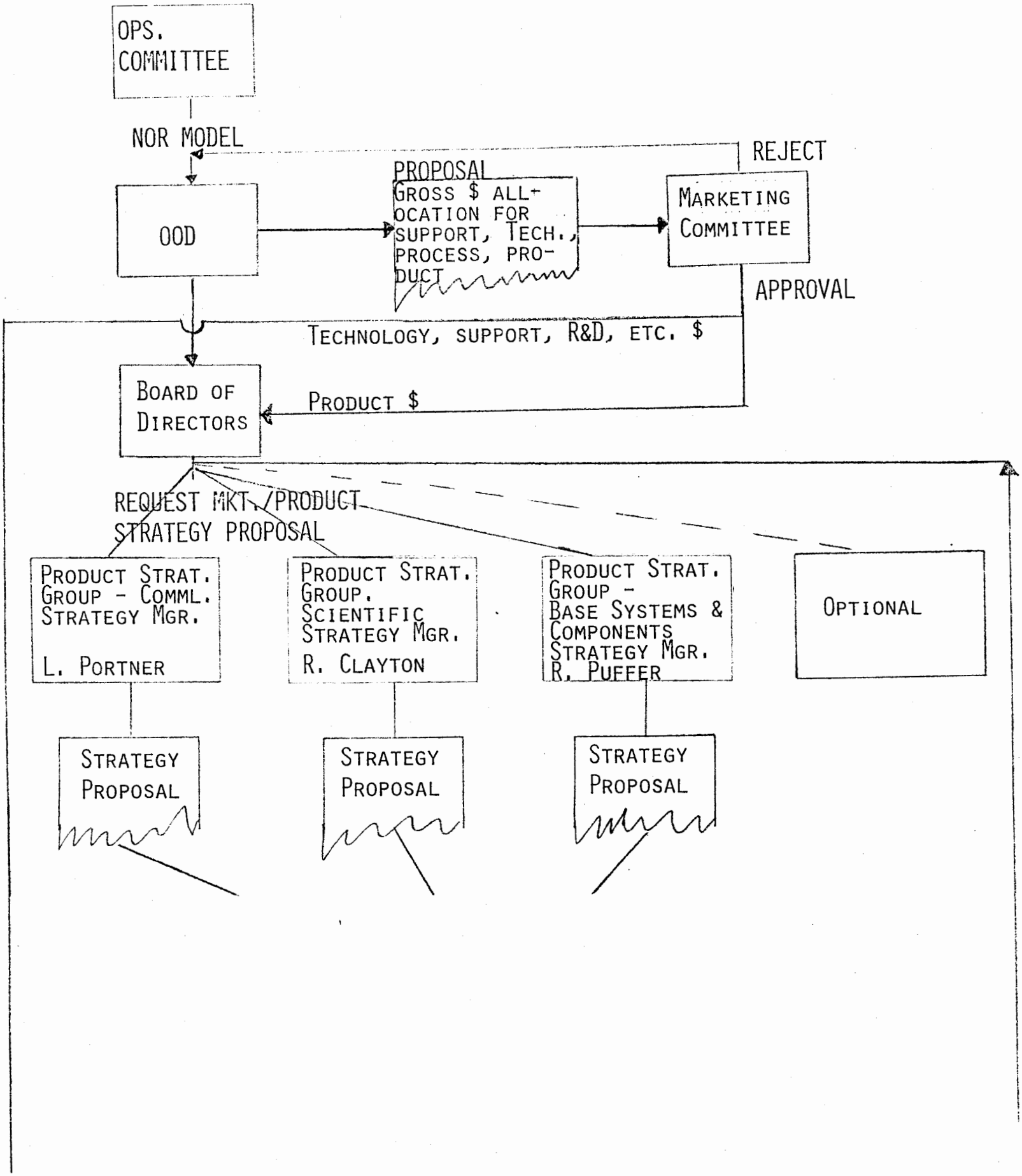
STEP 4 - OOD PLANNING STAFF, WORKING WITH PRODUCT STRATEGY GROUPS, REVIEWS PLANS AGAINST CRITERIA OF NOR, PROFIT, GROWTH RATE, MARKET SHARE, ETC. THIS REVIEW IS TO PREPARE DATA FOR STRATEGIC ALLOCATION PROPOSAL BY BOARD OF DIRECTORS (REVIEWED BY MARKETING COMMITTEE).

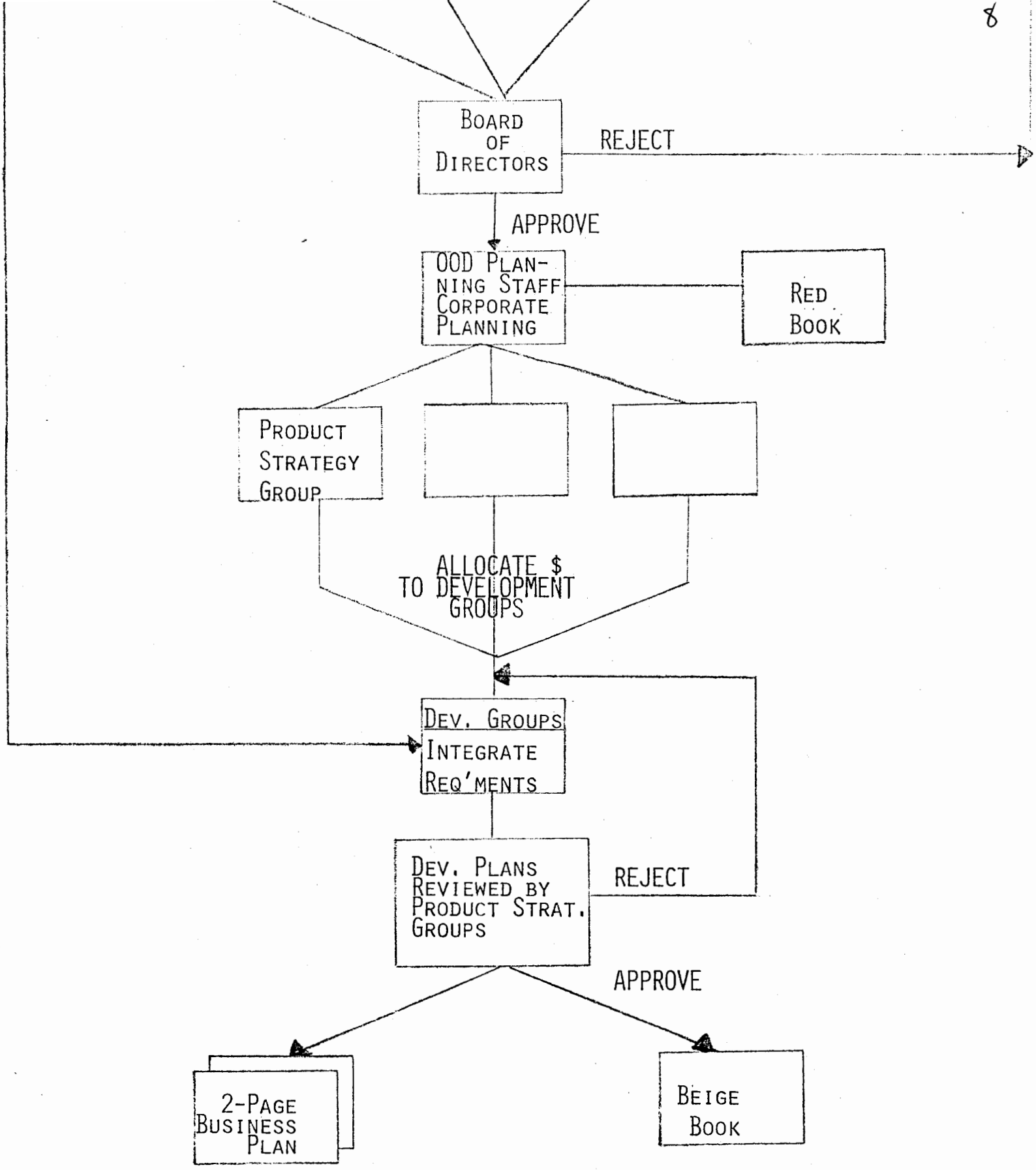
STEP 5 - AFTER MARKETING COMMITTEE APPROVES, $ ARE ALLOCATED INTO THE "POTS" (PRODUCT STRATEGY GROUPS). OOD PLANNING STAFF ASSISTS IN GENERATION OF "RED BOOK".

STEP 6 - PRODUCT STRATEGY GROUPS RE-BALANCE MARKET/PRODUCT PLANS, SET SYSTEM (AND/OR COMPONENT) REQUIREMENTS AND FORM WORKING GROUPS TO GENERATE DEVELOPMENT PLANS ("BEIGE BOOK").

STEP 7 - DEVELOPMENT MANAGEMENT (OR GROUP PRODUCT MANAGERS) INTEGRATE ACROSS GROUPS AND INCLUDE OOD TECHNOLOGY FUNDS, PRODUCE TECHNOLOGY PLANS.

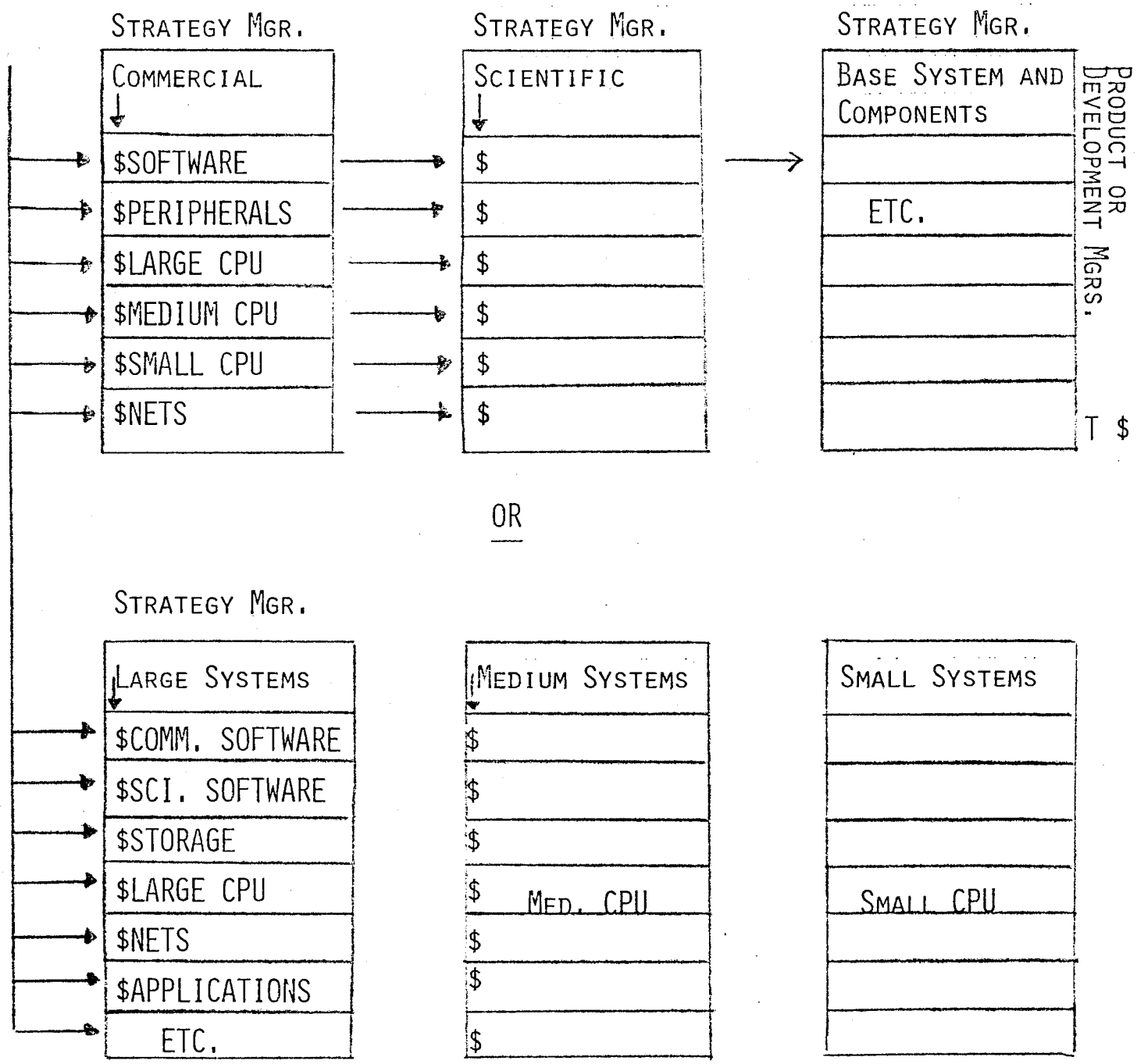
STEP 8 - BOARD OF DIRECTORS APPROVES FINAL STRATEGIES.


OPS. COMMITTEE
NOR MODEL
REJECT
PROPOSAL
GROSS $ ALLOCATION FOR SUPPORT, TECH., PROCESS, PRODUCT
OOD
MARKETING COMMITTEE
APPROVAL
TECHNOLOGY, SUPPORT, R&D, ETC. $
BOARD OF DIRECTORS
PRODUCT $
REQUEST MKT./PRODUCT STRATEGY PROPOSAL
PRODUCT STRAT. GROUP - COMML. STRATEGY MGR.
L. PORTNER
PRODUCT STRAT. GROUP. SCIENTIFIC STRATEGY MGR.
R. CLAYTON
PRODUCT STRAT. GROUP - BASE SYSTEMS & COMPONENTS STRATEGY MGR.
R. PUFFER
OPTIONAL
STRATEGY PROPOSAL
STRATEGY PROPOSAL
STRATEGY PROPOSAL


BOARD OF DIRECTORS
REJECT
APPROVE
OOD PLANNING STAFF CORPORATE PLANNING
RED BOOK
PRODUCT STRATEGY GROUP
ALLOCATE $ TO DEVELOPMENT GROUPS
DEV. GROUPS INTEGRATE REQ'MENTS
DEV. PLANS REVIEWED BY PRODUCT STRAT. GROUPS
REJECT
APPROVE
2-PAGE BUSINESS PLAN
BEIGE BOOK

ALTERNATIVE STRUCTURES FOR PRODUCT STRATEGY GROUPS

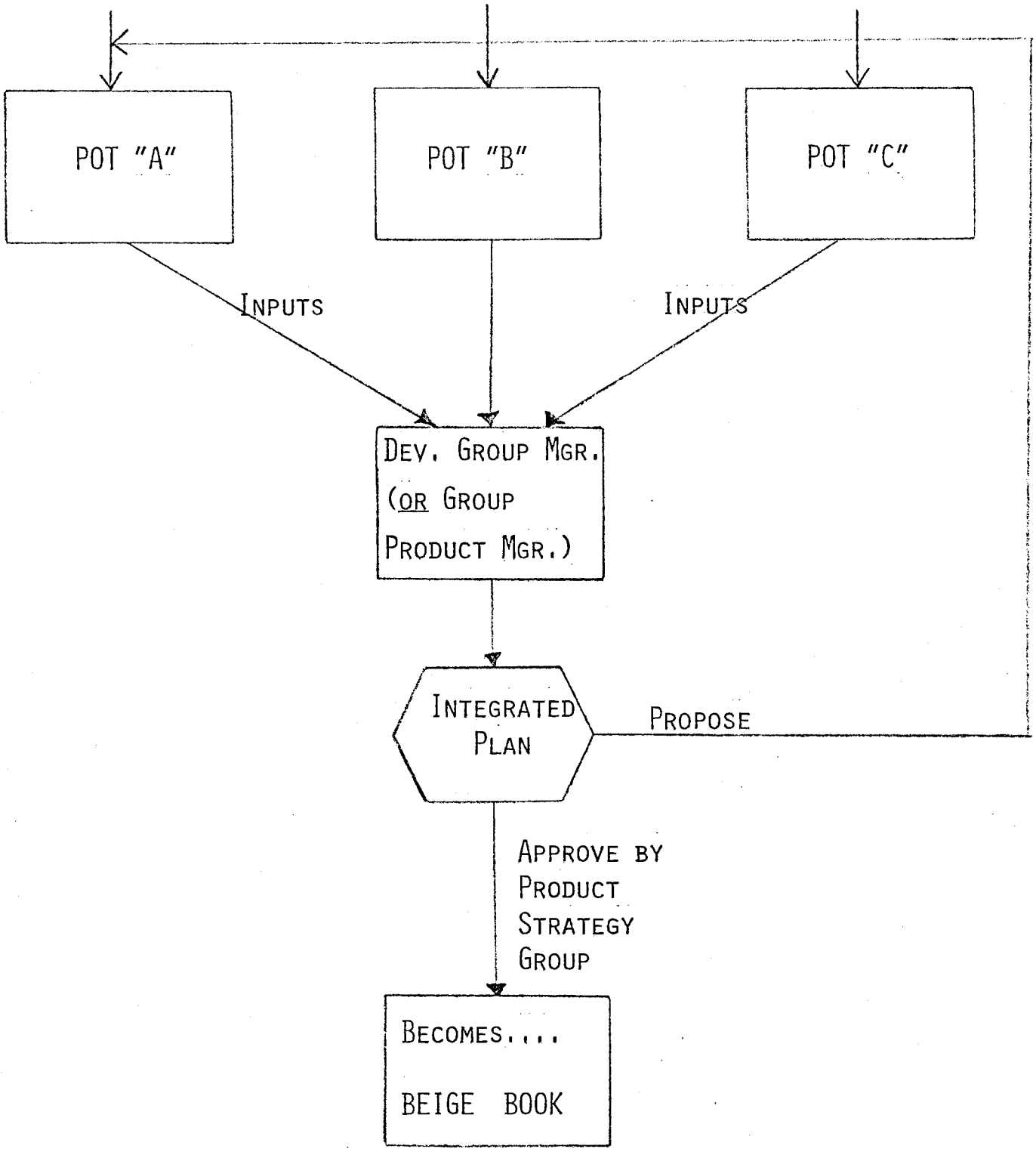
BOARD OF DIRECTORS
AND/OR OOD $



KEYS

1. OOD V.P. IS ALWAYS STRATEGY MANAGER.
2. PLANS REVIEWED (OR FUNDED) IN BOTH DIMENSIONS.
3. "PERMANENT STAFF" OF PRODUCT STRATEGY GROUP CONSISTS OF OOD SENIOR PRODUCT MGMT. (CARNES, PICOTT, MILESKI, TOMASIC, ETC.)

TURNING THE CORNER



ISSUES LIST FOR 1979 ORGANIZATION PLANNING

8/6/78
Rev. 1

LP

FUNDING
- Sources
- Internal Flows

STAFFING REQUIREMENTS
- Technical
- Managerial
- Critical Mass

CHARTERS (Clarify Roles)

TOOLS & PROCESSES FOR REMOTE COMMUNICATIONS

OVERALL PLAN FOR IMPLEMENTATION
- Restructure
- Relocation
- Work in Process
- Information Flow

REMOTE PROJECT M ANAGEMENT (A Management System for Decentraliz ed development)

TECHNOLOGY TRANSFER & ADVANCED DEVELOPMENT ACTIVITIES

OVERALL TECHNICAL STRATEGIES
- Definition
- Implementation

STAFF GROUPS (Personnel Finance etc.)

CENTRAL CONTROLS (What, Who, & How)
- Standards
- Technical Strategies
- Interface Specifications
- Compatibility & Migration
- Eco Control

KEY INTERFACES (What, who, How)
- SDC
- Systems Mgmt.
- Inter-group
- Product Line
- Service Groups (Technical writing, S.D.C. Administration etc.)
- Engineering
- Software Support

PRODUCT MAINTENENCE

SOFTWARE POLICIES
- Warrenty
- Classifications
- Updates, Patching, Newsletters, Etc.

INTERNAL COMMUNICATIONS
- Policy
- Activities
- Goals, Objectives, Philosophy etc.

Q.A. TECHNICAL WRITING, DIAGNOSTICS DEC-10-20, (Clarify Charter, Structure)

TOOLS & METHODS GROUPS

DETAILED ANALYSIS OF CHANGES IN STRUCTURE, LOCATION, CHARTER, OF ALL EXISTING ORGANIZATIONS

NEW ENDEAVORS (Applications, Distributed Processing, etc)

ROLE OF PRODUCT MANAGERS, PROGRAM MANAGERS IN NEW STRUCTURE

SUB-SYSTEM DEVELOPMENT

TECHNICAL DIRECTOR FUNCTION
- Definition
- Resources

8/6/76
Rev. 1

COMPETITION

- MEDICAL DATA SYSTEMS
  - STRENGTHS
    - IMAGE OF COMMITMENT TO THE FIELD OF NUCLEAR MEDICINE
    - LARGER BASE OF INSTALLED SYSTEMS
    - GREATER FLEXIBILITY IN MEETING SPECIAL NEEDS
    - DEDICATED SALES FORCE
    - LOW COST SYSTEM $38K
    - LARGE LIBRARY OF CLINICAL SOFTWARE
  - WEAKNESSES
    - FINANCIALLY NOT SOLID
    - FAIL TO MEET COMMITMENTS
    - SOFTWARE NOT COMPLETELY DEBUGGED
    - SYSTEM DIFFICULT TO USE
    - POOR FIELD SERVICE
- PRODUCT LINE SHARE
  - CLINICAL PRODUCT LINE HAS 50% OF THE NUCLEAR MEDICAL MARKET
  - AT PRESENT MDS HAS 30% OF THE MARKET
  - OTHER COMPETITORS CAPTURE 20% OF THE MARKET
- LESSEN COMPETITION BY
  - IMPROVING OUR SYSTEM SOFTWARE
  - OFFERING MORE FLEXIBILITY IN HARDWARE
  - BETTER CLINICAL APPLICATION SOFTWARE
  - MORE CONCENTRATION ON THE MARKET
  - BETTER TRAINING OF OUR CUSTOMERS AS WELL AS OUR OWN PEOPLE
  - MEDICAL OEM'S

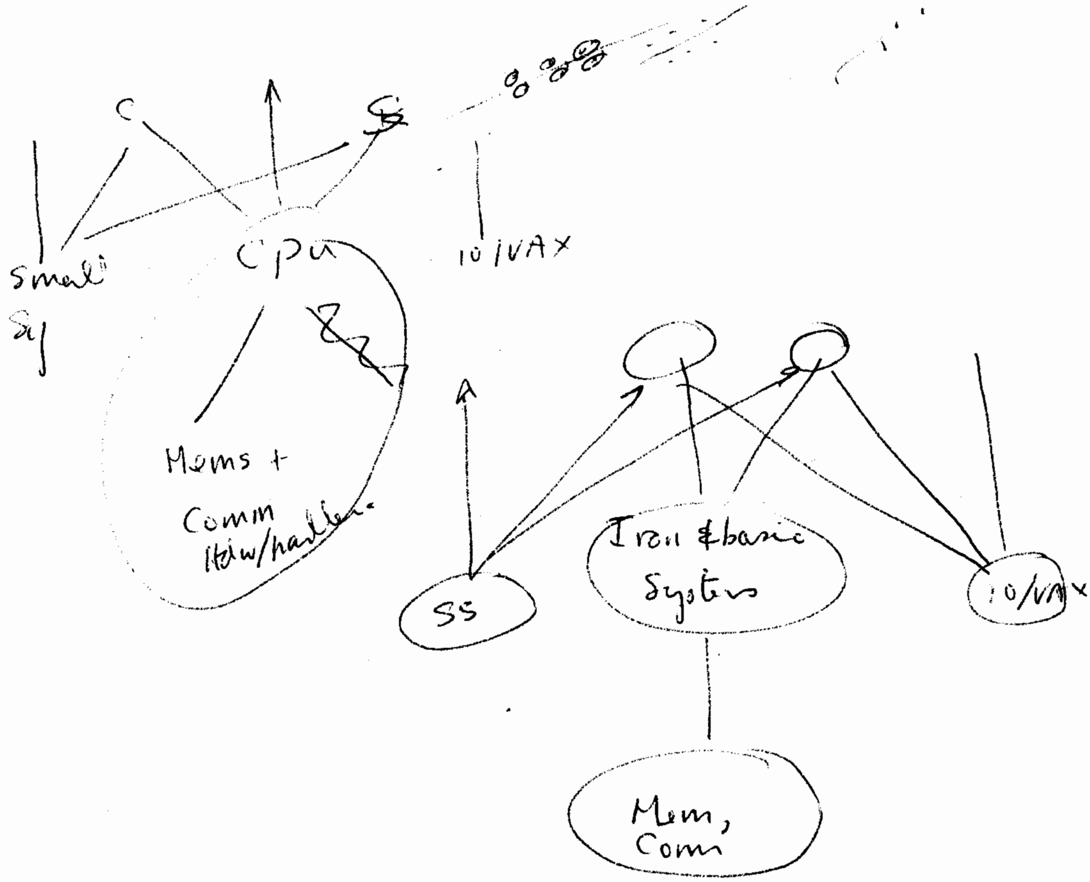
2300

Dick

- Not 1 Business plan except PDQ
- 1 report
- last goals ala August not update...
- Charts
→ Yellow Book
CIS, DK/K.

|- Budget set-up.

- No reports
- No common goals:



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INTEROFFICE MEMORANDUM

TO: Dick Clayton
Bob Puffer
Gordon Bell

DATE: January 21, 1977
FROM: Larry Portner
DEPT:
EXT:
LOC/MAIL STOP:

Gordon Bell JAN 21 1977

SUBJ:

Since you have asked me to complete the process model right down to all the appropriate details, I would appreciate if in parallel you would do the following: write down your set of goal statements for the process; I'd like to compare your individual sets with each other and with mine, which I've already written down. I will be very interested to see whether or not we have many, or some of, none of, or a conflicting set of goals for the process. This will tell us a lot about our chances of succeeding.

How about by Wednesday?

Thanks.

✓. ≤ 10 people of Products/Resources

✓. The activity corresponds identically to someone's responsibility!

High level involvement

→ · Man interaction among groups

gm → · clear measurement / responsibility for individuals .. not committee

Constraint

· tie comm at multiple levels in mgmt hierarchy

· get ~~the~~ Product related decisions from OOD

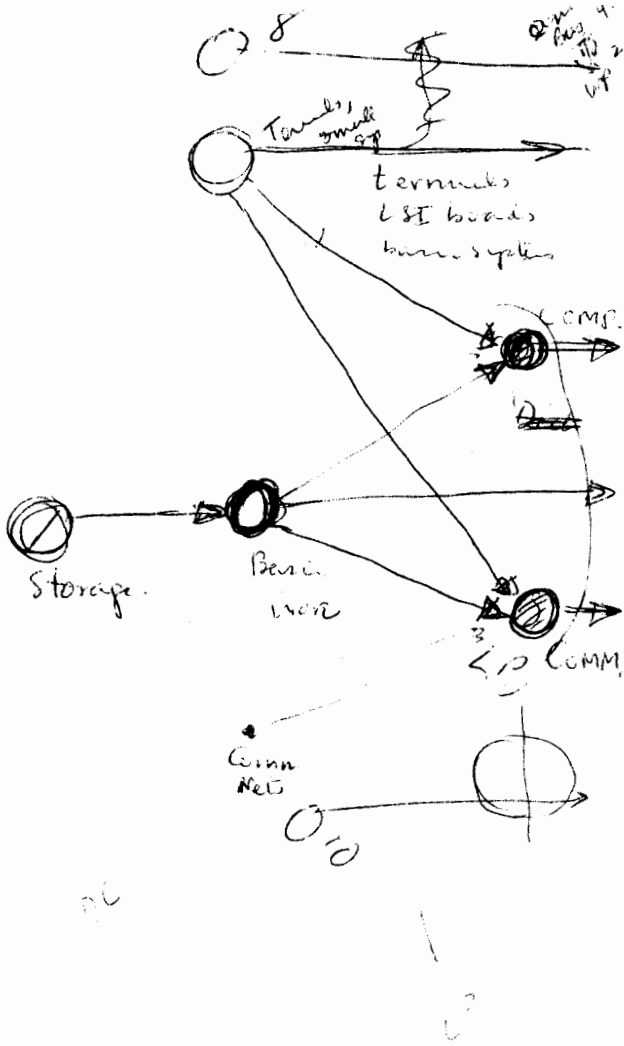
· less Etime in planning

· a reporting scheme on projects

· a measmt/mfr report .. for products at all stages (incl. charts)

· ties ~~the~~ back to historical data base

· model


terminals
LSI boards
Storage
Comm
Net

Dec. 76
WT/LP

STRATEGIC PRODUCT PLANNING PROCESS

The current product planning process creates an adversary relationship between OOD and the Product Lines. In addition, because of the lack of clear common goals and limitations, communication and trust has not developed. Within OOD the necessary investment trade-offs between disciplines has been very difficult for many of the same reasons. Given the above, the climate for stable strategic planning has been lacking.

Any new process should foster:

- -mutual trust and understanding - Better comm.
- -stable strategic planning
- -clear responsibilities
- -effective trade-offs between markets and technologies
- -joint market/product planning
- -clear expectations from marketing

Strategic planning is matching the desirable with the possible. As such we are, therefore, not talking about either the advanced development funds not the product support monies— these should be handled by other clear processes. The monies we are then talking about are Product Development funds. Refer to Chart I and Chart II for a graphical way to look at the issue.

The point is the people involved in developing strategic alternatives is fewer and higher in the organization versus the implementation details.

In order to help facilitate the trade-offs of engineering funds, it is recommended that the funds initially be broken into pots (3-5 like Commercial, Scientific/Industrial, Iron, Mass Storage, etc.) to bound the issues. These funds plus marketing directions should be given to teams of senior Product Line Marketing/Product Planning Managers and senior development and product managers. The teams with proposals from the development managers would recommend the strategy for effectively spending the funds to meet the strategic goals or other alternatives they feel would be effective.

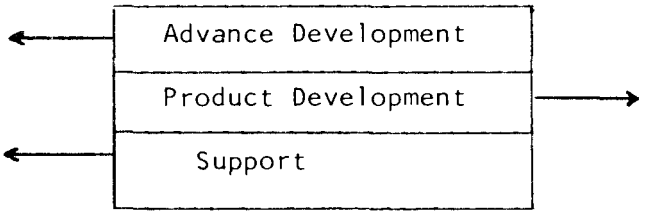
The teams would recommend a product/strategy based upon the marketing plans of the product lines. Thus, if the product plan is not accepted, the impact on marketing will be clear. The teams' strategies will be reviewed by a "Board of Directors" made up of senior OOD managers and senior product line managers. This group will make recommendations to the OOD and the Marketing Committee. OOD will, as a group, either concur with the proposals or recommend alternatives. Note this does <u>not</u> include either advanced development or product support funds.

The strategic process would flow as follows:

<u>STRATEGY</u>

-Operations Committee establishes funds for next two years or more.

-OOD develops, with Marketing Committee and Board of Directors, a split of funds into several categories. The Board, with the Marketing Committee/ Gordon Bell, develops strategic direction and suggestions to the system teams.



-System teams review current strategy, available funding (and performance), and make a product/market strategy (1-5 years) recommendation to the board.

-Board reviews, interacts, modifies, and makes recommendations to the Marketing Committee/Gordon Bell.

-Marketing Committee/Gordon Bell approves/disapproves strategy and makes any final trade-offs between the "pots".

IMPLEMENTATION

-System team meets regularly to:

.review progress
.discuss possible modification/alternatives
.recommend approval/disapproval of specific two page business plans (before Development starts to spend monies) on a specific implementation of strategies.

The advantages to such a process are:

-Development of joint market/product strategies which will create mutual commitment and expectations.

-Creation of a Board of Directors will foster joint recommendations of senior product lines and OOD (forced interaction between product line managers to OOD).

-Creation of "pots" will force senior managers to express a first round bias of where funds will be spent.

-Allow differentiated/focussed investment strategy, i.e. if "scientific/ industrial" understand the need for higher investment, they can fund a higher level.

-On going interaction of marketing/development by people who can commit their groups to implications of the strategic direction.

POSSIBLE BOARD

Julius Marcus	Ed Kramer
Irwin Jacobs	Dick Clayton
John Leng	Larry Portner
Bill Long	Bob Puffer

POTS

The Product Development Pots are like product lines. They are management's technique to bring focus to the organization. They do not have to be consistent, but they should meet clear goals.

I believe the goals to be:

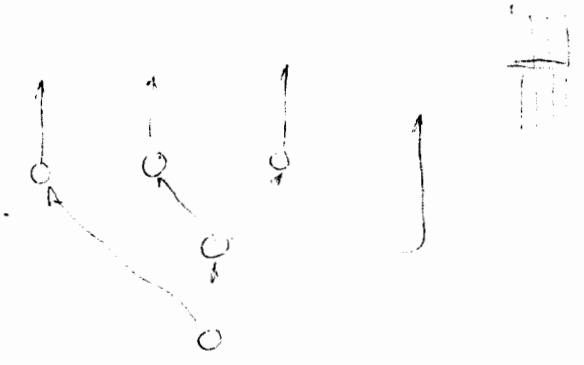
- -Encourage market/product strategies
- -Allow technical trade-offs
- -Bring a system focus
- -Provide mechanism for meaningful top management interaction on strategic level

One alternative is:

(1) .Commercial Systems
(2) .Computational (Industrial/Scientific)
(4) .Basic Systems (old DEC)
(3) .Small Systems/Terminals

(5) · Data sharing system

(6) Basic technology · Pkg, Pwr, LSI,



W.R. Thompson
Corporate Planning
1/6/76

CHART I

STRATEGY
DEVELOPMENT/APPROVAL

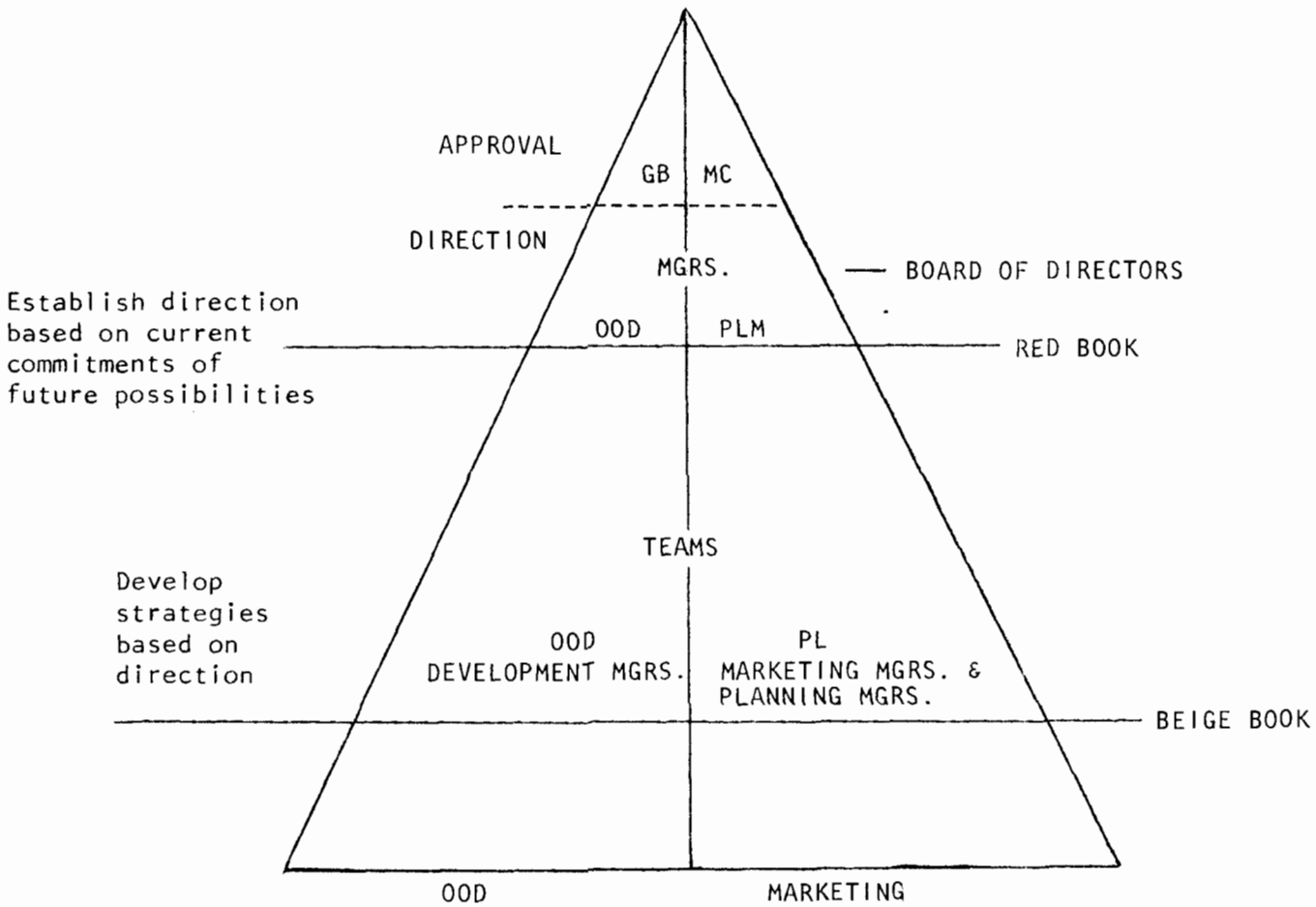
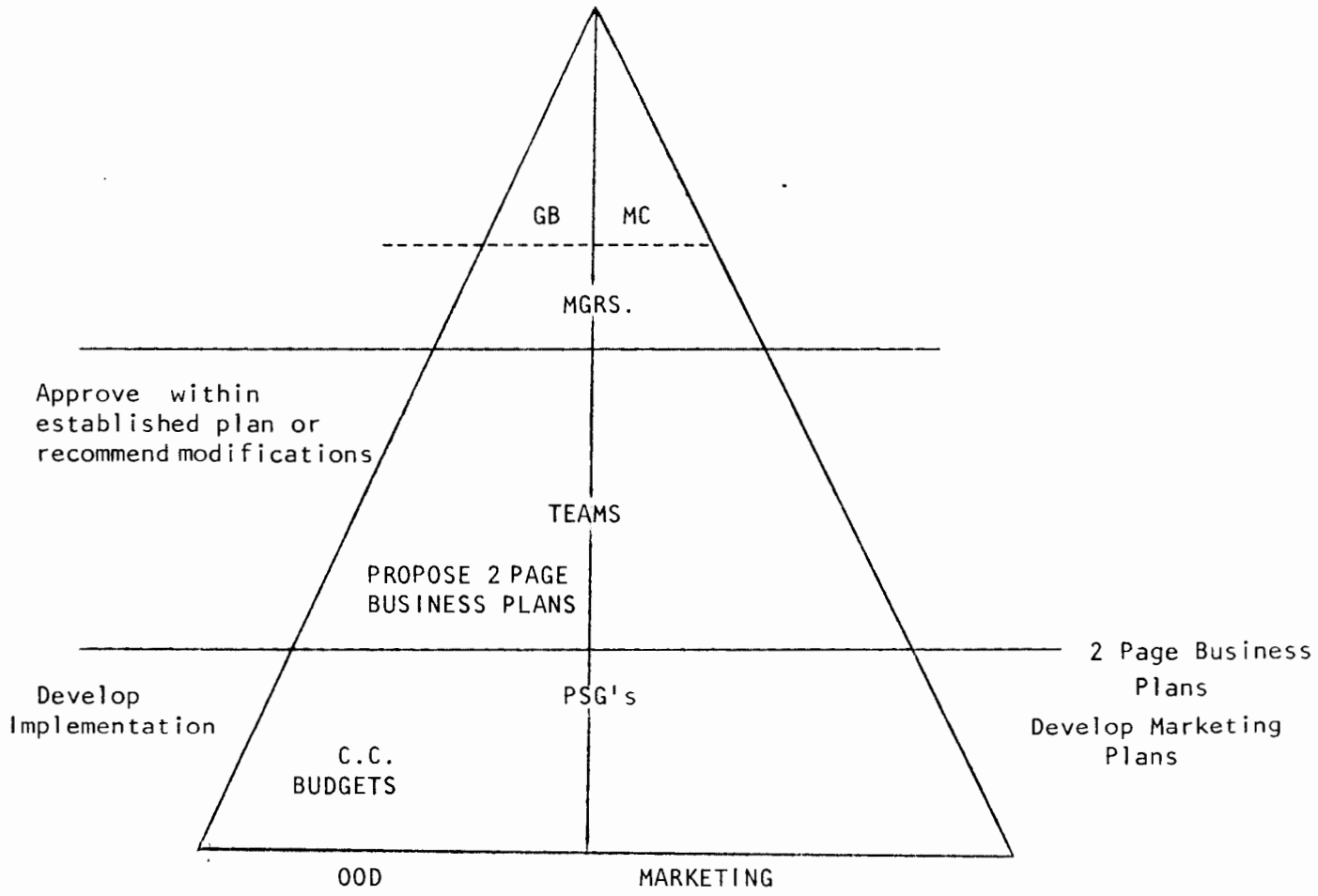


CHART II

IMPLEMENTATION

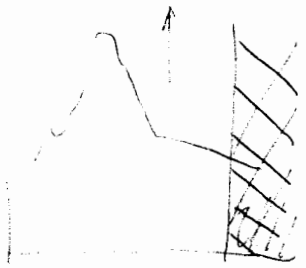


What I want out of it

Thx

→ Basically to be removed from it

→ Improve Quality of communications



Contracts

Goals

→ Decrease amount of time in process

get decision resolved in 1 pass ... not infinite loop

digital

INTEROFFICE MEMORANDUM

TO: Office of Development
cc: Marketing Committee
Bill Thompson

DATE: January 18, 1977
FROM: Bruce Delagi (for OOD Planning)
DEPT: Corporate Planning
EXT: 3563
LOC/MAIL STOP: ML-12-1/F41

SUBJ: DEVELOPMENT STEERING PROCESS (PROPOSAL OVERVIEW)

Gordon Bell
JAN 21 1977

WHAT PROBLEMS DOES THIS PROPOSAL ADDRESS?

Marketing-Development Communication

Many of the product lines have expressed frustration with the adversary relationships and the difficulty of meaningful interaction with central development.

Because of the lack of clear common goals and limitations, communication and trust have not developed.

Product line personnel often appear to development personnel to be involved in ill-informed sniping actions rather than constructive dialog. As a consequence, there is little inclination for development to trust what is heard from product lines.

Commitment to Plans

The authority to form agreements with development on product direction and overall strategy has not been effectively excercised or delegated by a significant number of our product line managers.

In the absence of clear agreements, development personnel perceive that massive upheaval of their plans can occur every six months. This creates instability in operating development groups that is detrimental to their motivation and impacts our ability to develop new products in a timely, efficient manner.

Adaptation versus Extrapolation

While much of the technology can be modeled extrapolatively, we provide an inadequate forum in our semi-annual review for the discussion of our overall plan in terms of:

- o emphasis on long/short term developments
  (presumably related to economic projections and competitive posture)
- o changes in our markets
  (emphasis on distributed processing, high availability,...,
  reaction to competitors with a different "model of the business"
  e. g. IBM, INTEL, HP, DATAPOINT, ...)
- o new markets we wish to be in
  (investment in commercial applications, intelligent instruments
  and terminals,...)

o market acceptance of DEC uniqueness and DEC-induced change (level of adherance to standards, changes in customer interfaces, projected regulatory environments,...)

There appears to be little learning taking place in these semi-annual reevaluations since the same issues are (indirectly) questioned each time without much addition of information or understanding.

There is little visability of our "technology" oriented programs at the level at which senior development management can provide interaction and guidance.

We get locked in to a budget allocation on which 50-100 people have built their plans before we have established clear agreement on where we are going overall.

Planning for systems we deliver to customers does not occur. As a consequence, we may be unable to react to changing customer requirements for systems. Investment tradeoffs between disciplines has been very difficult and is generally not done.

WHAT ARE THE GOALS OF THIS PROPOSAL?

Marketing-Development Communication

Increased cooperation and understanding between development and marketing groups on the course we follow in the overall direction of our engineering efforts as related to our market plans.

Clear expectations consistent with agreed limitations.

Timely review of product direction to ensure that as a company we know how a development fits with our strategic purpose.

Commitment to Plans

Clear responsibility for the establishment of our direction at each appropriate level in the organization.

Less upheaval of our development operations since marketing and development operate from a common understanding of our purpose and a mutual commitment to plans that are jointly arrived at by development management and authorized, committing representatives of product line managers.

Adaptation versus Extrapolation

Increased learning on the strategic issues that confront us.

More visability on and opportunity for senior corporate management to meaningfully participate in the generation of our development strategy.

Better cooperation between sub-system development groups toward the goal of producing systems complete enough to be more useful to our customers and more profitable to us than those of our competitors are to them.

WHAT DOES THIS PROPOSAL ENTAIL?

1. Establishment of partitions of the engineering budget by product phase (Technology, Product Development, and Support) so that interactions may be accomplished most appropriate to each segment at several levels in the organization:

   Technology

   - Support of long term corporate direction.

     (Proposed by OOD, approved by the Marketing Committee and Gordon Bell.)

   - Tradeoffs between development disciplines.

     (Proposed by development managers, reviewed by senior development management, approved by OOD.)

   Product Development

   - Market relatable allocation of resources in support of corporate objectives.

     (Proposed by OOD with the help of senior product line managers, approved by the Marketing Committee and Gordon Bell.)

   - Deployment of resources within market relatable allocations.

     (Proposed by development management with the help of product line marketing/planning managers, approved by OOD and senior product line managers.)

   Support

   - Resource allocation to accomplish NOR, manufacturing cost, and field expense goals.

     (Allocation proposed by development management, goals reviewed by MMC or M&E Committee, approved by OOD.)

2. Within the Product Development segment of the engineering budget, allocation of resources by market relatable "pots":

   Commercial Environments: System components driven principally by commercial applications - e. g. COBOL, DBMS, TPS, CIS, the VT62.

   Scientific/Industrial Environments: System components driven principally by scientific/industrial applications - e. g. FORTRAN, IAS, FPU's, the 11/60.

   Base Systems: General purpose system components - e. g. 11/34, STAR, STARLET, RSX-11 kernal, bus structures, memory.

   Terminals and Small Systems: Thrusts into developing market areas for DEC with strong emphasis on integrated development to support bounded function, distributed processing products - e. g. VT100, LA100, LA180, TAXX, TA00 networks and communications protocol support, RX01, Annie Oakley. A drive to counter or adapt to the changing market structure being developed by INTEL, HP Instruments Division, DATAPOINT...

Data Systems Storage system components planned together to facilitate adaptation to market changes being introduced by IBM (and followed by the "independents") in integrated storage systems - e. g., RMS-11, disk and tape drivers, RKØ6, TU77, RMØ1, BORAM products.

3. "System Teams" of producers and consumers dealing in the products and markets most relevant to the resource allocation pots (above). System Teams meet regularly (monthly) to:

   Review progress

   As implementation problems surface, discuss and recommend alternate deployments of resources to support market objectives within the established allocation.

   Recommend approval/disapproval of specific two-page business plans (before product development spending begins) on specific implementations of overall plans.

4. Annual extension of overall plans in line with resource limitations and market objectives.

   - Discussion of market objectives and technical opportunities by System Teams.
   - Reports by System Teams on perceived dependencies, commitments, and recommended direction for their areas.
   - Review of System Teams Reports and synthesis of problems and opportunities for the Marketing Committee and Gordon Bell by OOD and senior product line managers (the "Development Board of Directors").
   - Operations Committee establishment of the resource limit for engineering for the next two years or more.
   - Development of an overall direction and allocation of the OC funds into the catagories discussed above (as well as a Reserve Fund) by OOD with the help of the "Development Board" and the approval of Marketing Committee and Gordon Bell.
   - System Teams review of the current strategy, available funding, and performance and proposal of a recommended product/market plan (1-5 years) to the Board.
   - Development Board review, interaction, modification, and recommendation to the Marketing Committee and Gordon Bell.
   - Marketing Committee and Gordon Bell approval/disapproval of strategy and final tradeoffs between the "pots".

/pb

INTEROFFICE MEMORANDUM

TO: Bill Thompson

DATE: December 20, 1976

FROM: Bruce Delagi

DEPT: Corporate Planning
(on behalf of the OOD Planning Group)

EXT: 3563 LOC: ML 12-1 F-41

SUBJ: DEVELOPMENT STEERING PROCESS (PROPOSAL)

WHAT PROBLEMS DOES THIS PROPOSAL ADDRESS?

The inefficiency of senior product line management's interaction with major development programs is being seen by many of those I talked to as a significant flaw in our development steering process. The PSG's are too numerous and time consuming to attract senior management attention and, perhaps as a consequence, the PSG membership often seems disconnected from the thinking of those responsible for the activity of the product lines. We attempt, with indifferent success, to "batch process" the setting of all product directions on a semi-annual basis. In doing so, we encourage polarization of "Stan's PL" and "Win's PL" product needs. Clear relationships between strategic and product directions are less visible than desired and I think it has proven difficult to pay adequate attention to each of the important issues raised in this Red Book pass within the Red Book process (e. g.the - 11/70 replacement, migration, VAX vis-a-vis 11 strategy, high availability multiprocessor systems, PDQ announcement, Krypton-DK plans, the Mass Storage spectrum, Scientific/Commercial operating environments, Distributed Processing Plans). Well thought through, generally understood plans for each of these issues are not coming out of either the PSG's or the intermittent strategic interaction we are employing.

In our traditional style, we are responding to this need as a company by forming Blue Ribbon Committees and other special interest groups. The drain on product line management resources is becoming burdensome and, if not coordinated, we will certainly find those resources insufficient to the problem at hand. I have developed a proposal based on the thinking of several of the product line managers, staff people, and development managers involved. This proposal is comprised of three elements:

-Systems Councils to focus on integrated systems planning and provide the ongoing strategic interaction that would allow a less frequent Red Book process to pay more adequate attention to the corporate objectives our developments are intended to satisfy.

-Partitioning of the engineering budget into Technology, Systems Development, and Support segments so that the appropriate interactions may be held on each piece.

-Structuring of the strategic process to be clearly responsive to the marketing requests, concerns, business drives, strategic biases,... that are established at the outset of each review interval.

Drive for the proposed strategy, taking these points into account, remains with OOD and is based on its understanding of the overall environment (including competition, regulations, and technology).

HOW DO SYSTEMS COUNCILS WORK?

1. They provide a forum for discussion of inter-development group strategic tradeoffs and for formal review of business plans. They are responsible for testing such plans against the currently approved strategy and recommending authorization of budgets to OOD against previously approved ("strategic") spending levels. The System Councils recommend announcement timing to the Product Line Managers Committee. They provide a force for clear statements of product specs, reason for being, and competitive posture early in development.

   (PSG's act as information transfer bodies and can provide very detailed interactions on product definitions.)

   System Councils interact with Development Management on product direction at the Beige Book level. As implementation problems surface that impact product direction, System Councils can suggest corrective action to OOD. If these implementation problems cause strategic reappraisals, System Councils can suggest evaluated strategic alternatives to the PLMC and the Marketing Committee.

   Planning for product unique dependencies on other component developments (e. g. processor unique memory subsystems, disk drivers,...) will be the responsibility of the dependent council - and the dependent development management.

2. It is recognized that program approval is an asynchronous process. Semi-annual batching of business plan approval doesn't provide enough time for useful review of each program. Thus these System Councils are to meet on roughly a monthly basis throughout the year and deal with each Business Plan in their purview.

   (Current corporate policy states that "Red Book approval" is approval to do a business plan, not acceptance of a budget.)

3. The work of System Councils is partitioned so that the most relevant trade-offs can be made between product disciplines and so that the natural producer-consumer relationships are given formal visibility.

   (See Figure I)

   It is recognized that as a company we sell to our customers at various levels of integration (e. g. for some product lines we tend to sell the specs of our processors and disks, in some we configure the system and sell integrated hardware performance, in others we sell problem solving capacity including the operating system environment).

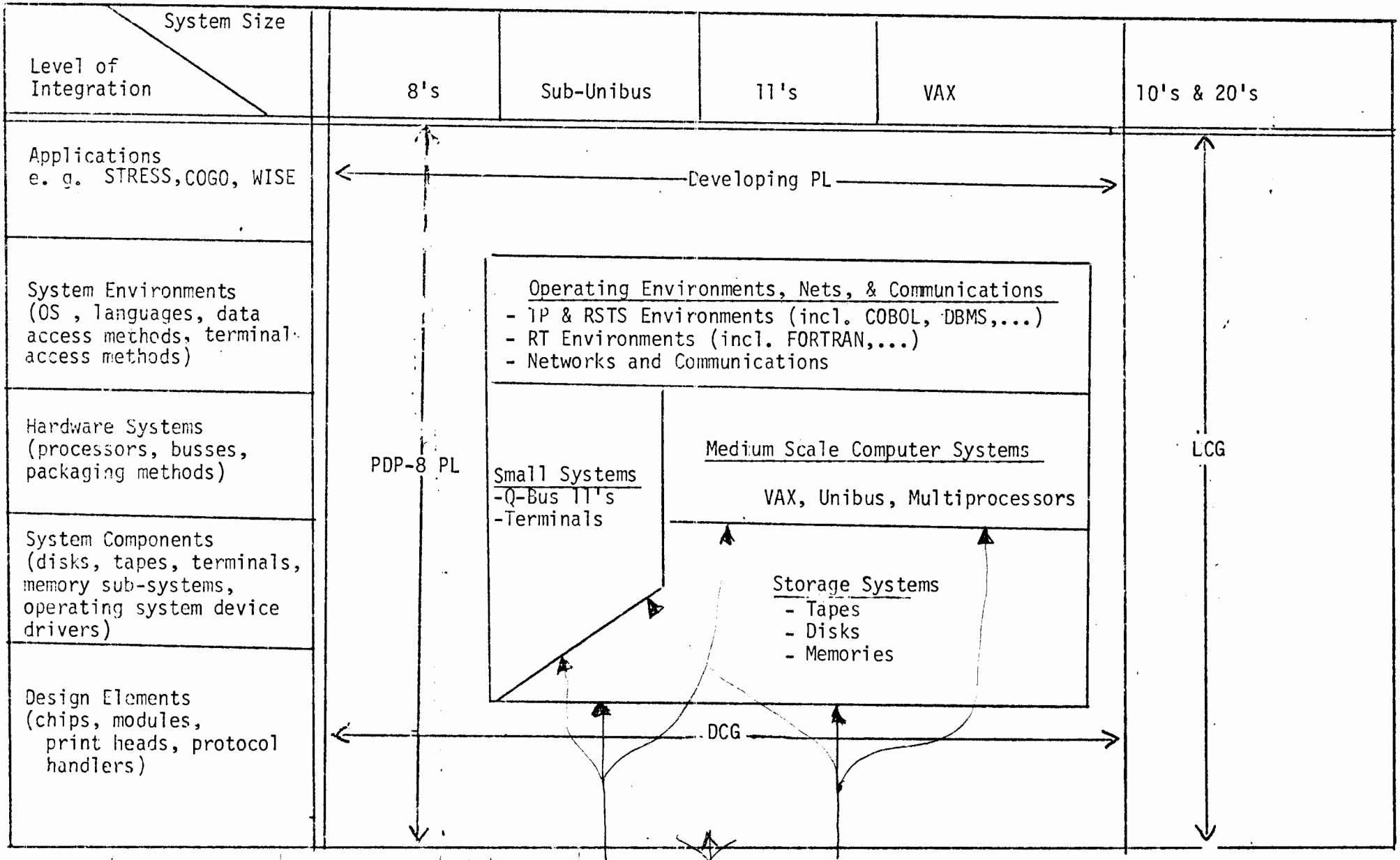
4. Membership of the System Councils is comprised of systems development and product line consumers who are party to their group's product strategy decisions and long range plans and having the authority to commit their groups on product questions.

   It is expected that the total size of each council will be 12-14 members (mostly from the product lines).

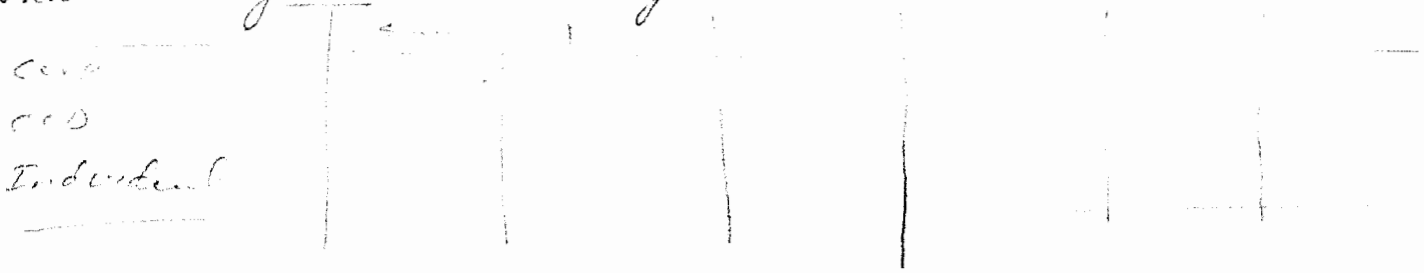
DEVELOPMENT STEERING PROCESS (PROPOSAL)

FIGURE 1

SYSTEM COUNCIL PARTITION



→ What are joint OOD Mgmt. activities?



sf

Kitty

Prod. Dev.
Support

Product Mgmt. ?

✓ Ada. Dev.

Stds.

Tools.

Admin. ←

elotist

elete

elite

Gordon

COMPANY CONFIDENTIAL

Digital **Interoffice Memo**

Subject: **Corporate Personnel Candidate**

To: Win Hindle

CC: Dave Brauer
John Meyer
Ken Olsen

Date: 21 JAN 77
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

An engineer friend of mine recommends Don Zrebiec of Xerox, Stanford, as our personnel director. He's near the top of Xerox personnel structure - although not top guy cause Xerox got a random person from field, etc. to be the head.

The reasons:

1. He's done personnel for a while; started as a recruiter (at about the same time Xerox was our current size).

2. He rose rapidly.

3. He's a combination of both an administrator, but with a concern about people (missing in most personnel people).

4. He was at Bell Labs and has a feeling about high growth/high technology companies.

Let's try him in an interview! I don't want anymore of the vacuous discussions ala OC, Schein, OC (Jenks), requested 1:1. Let me talk to someone. This general b.s. is a waste of time. Get off the dime!

He also recommended a personnel person at Rochester: Steve McGrath.

GB:ljp

System Council members must provide synthesis of their using group's viewpoints on product proposals. Each using group has the responsibility of coordinating its views between the product areas chartered to each council on which it is represented.

Customer Services is represented on the System Councils in order that they may take timely part in the setting of product service goals for our development programs.

(See Figure II)

5. System Council chairmen will be rotated on a yearly interval from members of the Product Line Managers Committee. The chair's responsibility is to assure that the agenda is relevant to the work of the council and that the discussion is productive to its goals.

(The alternative of chairing each System Council by the development vice-president responsible for that level of integration builds less commitment by the product lines to the steering process and is a fall back position if it proves impossible to get sufficient porduct line management involvement in this process).

6. System Council members, as the key consumers of the developments in their charter area, receive monthly status reports on the development projects that are the domain of that Council. It is expected that these reports highlight any changes in the product specs, reason for being, and competitive posture that occur after program approval.

7. Staff support to the System Councils will be provided by Corporate Planning in order to establish a consistent level of interaction. Scheduling of System Councils will be controlled to facilitate common representation of a consuming group on all System Councils.

(See Figure III)

8. Minutes of System Councils will be distributed to OOD and the Product Line Managers Committee. System Council chairmen will report on an as needed basis to either of those groups.

HOW MIGHT WE PARTITION THE ENGINEERING BUDGET?

1. Parcel the engineering budget by program phase so that those most involved in each phase focus on the issues appropriate to that partition.

   - o TECHNOLOGY BUDGET - through product definition

     Issues: feasibility, relevancy

   - o SYSTEMS DEVELOPMENT BUDGET - through product introduction (includes enhancement projects)

     Issues: clear specs, competitive position, reason for being

FIGURE II

DEVELOPMENT STEERING PROCESS (PROPOSAL)

SYSTEM COUNCIL MEMBERSHIP
(EXAMPLE ONLY)

Product Line	Storage Systems (incl. Memories)	Small Systems (incl. Terminals)	Medium Scale Computer Systems	Operating Environments Nets & Communications
OEM	X	X	X	X
LDP	X	X	X	X
IPG	X	X	X	X
EPG	by LDP	by LDP	X	X
LCG	X	by ESG	by ESG	X
ESG	by LCG	X	X	by LCG
BUS	X	X	X	X
DDP	X	X	X	X
TELCO	X	by DDP	X	X
WP	by BUS	X	by G-A	X
GRAPHIC ARTS	by BUS	by WP	X	by WP
MICROPROCESSORS	by Terminals PL	X	by OEM	by OEM
TERMINALS	X	X	by OEM	X
	8	9	9	10
Development				
TP/TS Environments	by RT Environments	X	X	___
RT Environments	X	X	X	___
Networks	___	X	___	___
Terminals	X	___	___	X
VAX	X	___	___	___
Unibus Processors	X	___	___	___
Sub-Unibus Processors	by Terminals Development	___	___	by Terminals Development
Disks	___	___	X	X
Tapes	___	___	by Disks	by Disks
	___	___	___	___
	4	3	3	2
Customer Services	X	X	X	X
	___	___	___	___
TOTAL	13	13	13	13

FIGURE III

DEVELOPMENT STEERING PROCESS (PROPOSAL)

(FXAMPLE)
SYSTEM COUNCIL SCHEDULE
Wednesday 10-12 AM
Ken's Conference Room (ML12-1)

Week	System Council		Topic	Producing Manager (Systems Team Leader)
1.	I	Storage Systems	Disks	(Saviers)
2.	II	Small Systems & Terminals	Sub-Unibus Processors	(Teicher)
3.	III	Medium Scale Computer Systems	VAX	(Demmer)
4.	IV	Operating Environments, Networks & Communications	TP Environments: COBOL, DBMS, ...	(Fauvre)
5.	II	Small Systems & Terminals	Terminals	(Corell)
6.	III	Medium Scale Computers Systems	Unibus & Multi-Processors	(Tomasic)
7.	I	Storage Systems	Disks & Memories	(Saviers & Croxon)
8.	II	Small Systems & Terminals	Sub-Unibus Processors	(Teicher)
9.	III	Medium Scale Computer Systems	VAX	(Demmer)
10.	IV	Operating Environments, Networks & Communications	RT Environments FORTRAN,...	(Heffner)
11.	I	Storage Systems	Tapes	(Peyton)
12.	II	Small Systems & Terminals	Terminals	(Corell)
13.	IV	Operating Environments, Networks & Communications	Networks & Communications	(Plowman & Bastiani)

o SUPPORT BUDGET - through product retirement (maintenance level only)

Issues: Maintenance strategy, inventory control, phase-in/phase-out

2. Allow graceful mid-course correction

o DISCRETIONARY BUDGET

(Allows a selected few, good new ideas that are not aligned with the previously agreed-to strategy to be pursued with limited disruption of our other plans.)

3. OOD would be assisted by providing forums from which they can get thoughtful, careful analysis and formal recommendations on proposals appropriate to each partition of the development budget. The System Councils described above provide that help to both OOD and the product lines for the Systems Development budget partition.

4. The Technology Council, a working group of key development managers, will provide a cross-functional viewpoint on significant problems and opportunities in technology.

-Interacts on technology strategy with OOD. It develops the recommended budget by functional area but leaves decisions to invest in promising ideas in the hands of each development manager. It reviews progress on each functional area's technology plans twice a year on a round robin basis. Some of the Technology Budget may be reserved by the Council for apportionment at a later time.

-Ensures that we are developing responses (and drives when appropriate) to emerging industry, national and international standards and regulations.

-Example Membership: Jim Bell (Chairman), Grant Saviers, Ed Corell, Lorrin Gale,Brian Croxon, Vince Bastiani, Len Hughes, George Plowman, Bob Peyton, Jim Marshall, Pete VanRoekens, Mike Titlebaum, Phil Tays

-Meeting Frequency: Monthly

-Minutes Distribution: OOD and area (e. g. Europe), functional (e. g. Manufacturing), and product line planning managers. It is expected that the minutes will include program goals and that the Council chairman will solicit review by relevant outside parties (e. g. Customer Services, Manufacturing, European Marketing,...) as required.

5. Marketing Managers Committee is an existing operational group concerned with the three to four quarter time span relevant to introduction strategy, particulary inventory control and phase-in/phase out questions. The maintenance strategy issues and a review of each product area's significant business problems and opportunities would be most relevantly presented to this committee.

HOW IS ALL THIS TIED TOGETHER BY THE STRATEGIC PROCESS?

The work of these committees is intended to off-load the current Red Book-Beige Book process of much of the almost operational content it now carries (e. g. product direction, budget approval,...) The Strategic Process would be better focused on longer term perceptions of environmental changes and would overview course corrections. It would address cross-council functions:

- -Is our perception of the economic forecast best met with a heavier/lighter emphasis on Technology (4 years), Systems Development (2 years), or Support (1 year or less)?

- -Do our projected markets require a heavier/lighter emphasis on small systems, on medium scale computer systems, operating environments, or on mass storage systems?

The Strategic Process would tend to deal more in "spending levels" (authorization to prepare business plans) than "budgets" (authorization to hire or purchase).

The Strategic Process is kicked off by an OOD proposal that reflects:

- -Product line long range plans (forecast implications, corporate concerns, and business drives) integrating many inputs to the product lines (including the monthly Council reports).

- -Yearly Council reports by the Systems Councils, the Technology Council, and the Marketing Managers Committee. These reports layout the position of each of these groups on current status, committments, and a recommended future direction.

  Calibration of status, committments, and direction in quantitative terms (including historical and projected revenue and expense) is included in these reports.

OOD's "Proposed Guidelines"(above)state OOD's position on the:

- -Technology outlook and a proposal Technology spending level .

- -System Development status, objectives, and committments (including the implied expense level) and a trial allocated spending level by system area:

  - o Commercial Environments
  - o Scientific - Industrial Environments
  - o Networks and Communications
  - o Unibus and Multiprocessor Systems
  - o Small Systems and Terminals
  - o Storage Systems

- -Support Strategy and a proposed development group/product management allocation.

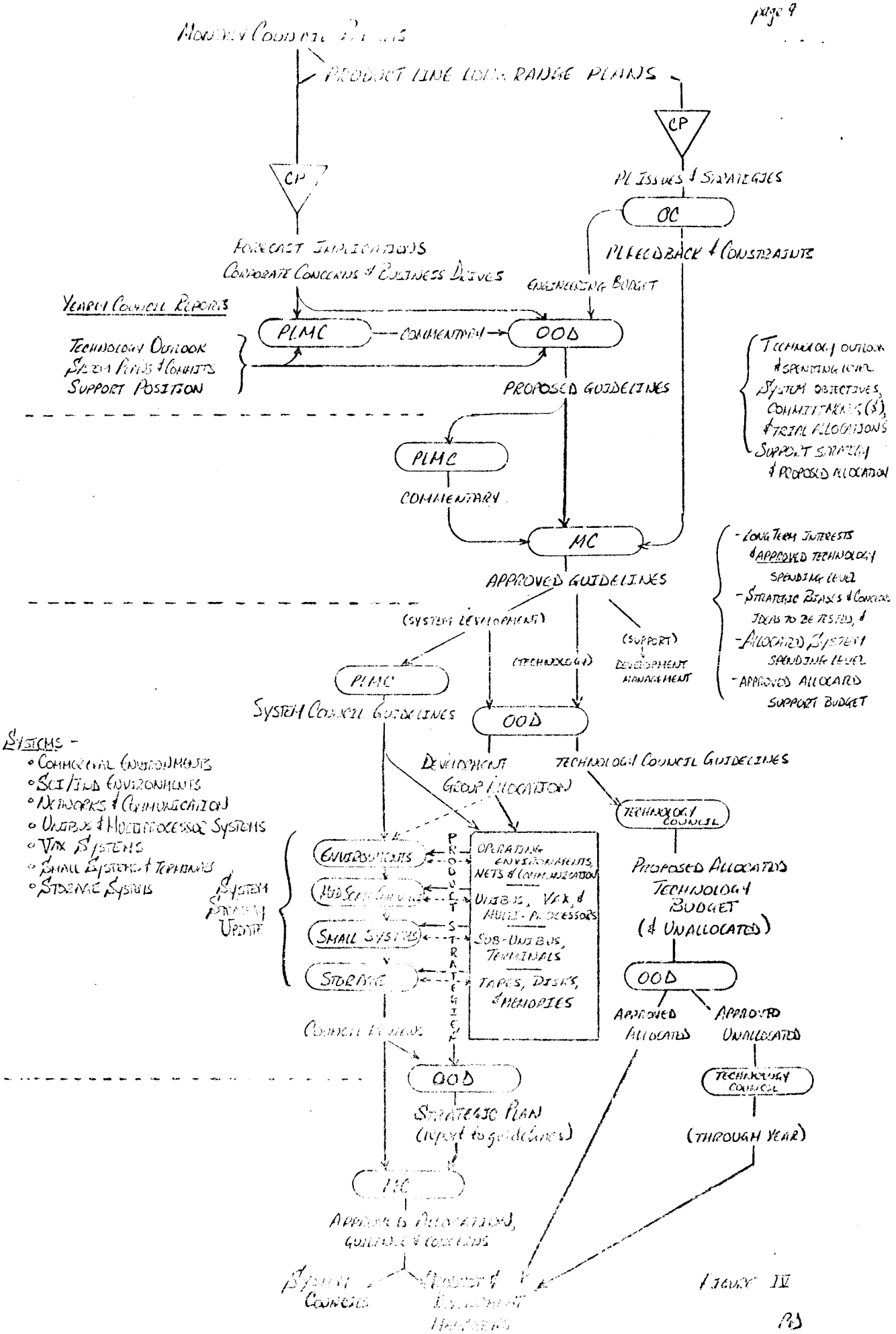


FIGURE IV

PJ
10 DEC 76

THE MARKETING COMMITTEE PROVIDES APPROVED GUIDELINES TO OOD

The Marketing Committee Approved Guidelines establish the:

-Technology Spending Level and an expressed Marketing Committee long term development interest for the Corporation.

-Allocated Support Budget.

-Allocated System Development Spending Levels and the Strategic biases, concerns, and ideas that are to be tested in the current pass of the Strategic Process.

Figure IV shows the flow of the Strategic Process. The partitions of the Engineering Budget are handled individually after the Approved Guidelines are established. (see below)

SUPPORT BUDGET

The Allocated Support Budget is provided to appropriate development managers. No further attention is paid to the Support Budget at the strategic level but monthly interaction continues at Marketing Managers Committee on the implementation of the support plan.

TECHNOLOGY BUDGET

The Technology Spending Level and the long term interests for the Corporation expressed by the Marketing Committee are used by OOD in developing the Technology Council Guidelines which are used in turn by the Technology Council in developing a proposed allocated and unallocated Technology Budget. OOD provides development managers with approved technology budgets and provides the Technology Council with a reserve fund that they approve additional projects against throughout the year.

SYSTEMS DEVELOPMENT BUDGET

The guidance of the Marketing Committee is provided to PLMC and OOD so that they may position the System Councils and allocate system development spending levels to each development group. These groups are responsible for proposing the system development strategies pertinent to their area to the relevant System Councils. It is expected that development groups will integrate their proposals so that the System Councils can most efficiently deal with the proposed development strategies. (Please see Stan Pearson's "Systems Teams- A Proposal"). Interaction is concluded at the discretion of the System Council chairpersons and is documented in Council Reviews and the OOD Strategic Plans. The Strategic Plans responds to the original Marketing Committee guidelines in terms of the effect of the biases that were applied by the Marketing Committee, the concerns expressed by them, and a report on the ideas that the Marketing Committee wished to be tested.

The Marketing Committee uses the Reviews and Strategic Plans in granting Approved Allocated Spending Levels to development managers and System Councils together with communication of their remaining concerns and any additional guidance they wish to provide these groups for use during the year.

The approved spending levels, remaining concerns, and guidelines are the background against which business plans and budgets are approved during the year by OOD upon review and recommendation by the appropriate System Council.

digital

INTEROFFICE MEMORANDUM

TO: List
CC: 0^2D

DATE: 21 January 1977
FROM: Stanton Pearson
DEPT: 0^2D Planning
EXT: 2424
LOC/MAIL STOP: ML12-3/E13

Gordon Bell
JAN 21 1977

SUBJ: 24 JANUARY 1977 AGENDA

TIME: 11:00 to 1:00

PLACE: COSMIC ROOM, ML12-3

ATTENDEES: Bauer, Mastendino, Sanjana, Kandra, Delagi, Pearson, (Goldfein will be out of town)

1. Discussion:

   Where are we on the Development Steering Process?

   - Jan 25 Woods called off--Pearson
   - Input for Feb. 2 - 4 0^2D Woods--Pearson
   - Latest thinking on Red Book partitioning--Bauer
   - Documented DSP Proposal--Delagi
   - Thoughts on System Cuts, Charter, Product Fit, Membership--Pearson

2. Discussion:

   Spring '77 Planning Goals?

   - Formal 0^2D Review and Partitipation
   - Focus on FY78 quarterly budget
   - Fine tune FY78 strategy
   - Establish FY79 spending targets
   - Start April 1 - - Finish Mid-May
   - Review with Marketing Committee last week in May
   - Red and Beige Book addendums only--not a complete update
   - Output of Spring pass is keyed to the June Board of Directors Meeting for FY78 budget.

3. Discussion:

FAll '77 Planning Goals

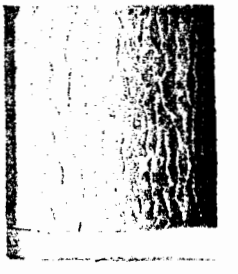
- Formal O^2D Review and Participation
- Key off P/L Long Range Planning exercise in July/August
- Start September 1 - - Finish Mid-October
- Formal statement of alternatives and impacts at the beginning of the cycle
- Two issues of Red/Beige Books at the end of September. We put out draft in Mid-October; we put out the final for review with Marketing Committee.

The discussions should provide the basis for a presentation to O^2D on goals, process, and calendar for the Spring and Fall 77 planning cycles.

SHP:ssc

OOD

GORDON BELL	ML12/A51
DICK CLAYTON	ML3/E71
ULF FAGERQUIST	MR1/E78
HENRY LEMAIRE	ML1/A97
JULIUS MARCUS	PK3/M10
LARRY PORTNER	ML12/A62
BOB PUFFER	ML1/E38
JIM BELL	ML3/E41
ARNIE GOLDFEIN	ML12/A16
JOHN MEYER	ML12/A11
STAN PEARSON	ML12/E13



PR

- Process of Planning
- Arm / Stan Charter
- Ennumerate other processes!

Async

+ Product Approval Process

Synch vs. Asynch.

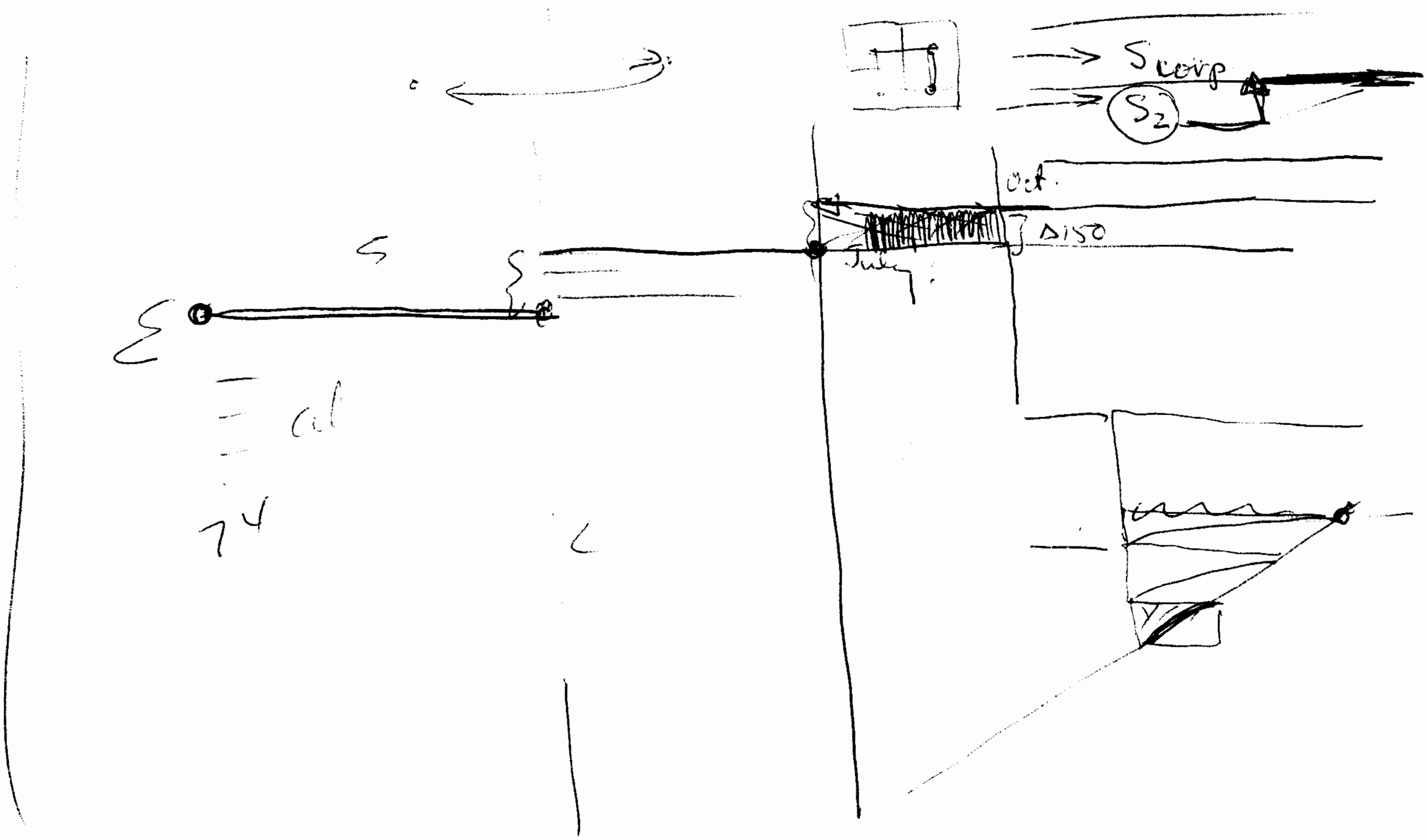
35 ⟌ 200 = 56
175
250

35 ⟌ 65 = 1.86
35
300
280
200

25 ⟌ 45 = 1
25
200

Planning Processes

Product	Org → People Space ←	Capital Equip.	Computation Hdw / Sw
(RB) $3m	(300/Job)	Arnie	?



Digital Interoffice Memo

Subject: Planning Architecture Charter

To: Larry Portner

CC: OOD
Jim Bell
Stan Pearson

Date: 9 DEC 76
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

F/U 12/27

As original author of the Red Book process will you work with Stan, Arny, Bruce and the rest of OOD to significantly revamp our planning process? Since Stan will be full time on this January 1, clearly he needs to work out his charter (he's got a draft).

Some of the naughty problems connected with this:

1. How do plans of various groups tie together? Systems? Hardware Systems?

2. How does the product plan tie in with the organizational and space plan that Bob was chartered with?

3. How do we keep planning from consuming us? How big is the group involved here?

4. How does Jim monitor R and Advanced D across the groups to review (and give us an independent assessment) whether there is adequate technology?

5. What are groups? Process?

6. How does Arny get information to relevant people for existing programs (e.g., Yellow Book)?

Please help...get to OOD soon for kickoff dinner.

GB:ljp

GORDON, REMEMBER THIS? I WROTE IT ABOUT 2 YEARS AGO. I BELIEVE IT STILL DEFINES FAIRLY WELL THE FOCUS OF STAN PEARSONS NEW ROLE.
JP.

1. RECOGNIZE THE BUDGETING AND PLANNING PROCESS AS TWO PARTS OF A WHOLE.

2. EXTEND THE PLANNING FRAMEWORK 8 QUARTERS.
   - ENGAGE IN MINOR DEFLECTIONS NOT MAJOR UPHEAVALS.

3. ALLOW AN ORDERLY PROCESS FOR THE OOD COMPONENT GROUPS TO "PLUG INTO".

4. ALLOW A MIX OF TOP DOWN AND BOTTOM UP IN THE PROCESS.
   - KEY STRATEGY DIRECTION FROM OOD
   - PLANS AND INTERACTIONS WITH PRODUCT LINES FROM OPERATING GROUPS

5. Opportunity to get our act together
   - Before exposure to DEC world
   - Fewer instances of uncoordinated plans, budgets
   - OOD management sets the tone for effective interaction among the groups

6. Use "Market Requirements" documents to focus Product Lines on long term market goals.
   - Allows OOD to be creative in Product Planning
   - Allows Product Lines to integrate their plans

7. Provides clear interface with Product Lines, Marketing Committee.

8. OOD "staff" allows planning expectations to be coordinated, adjusted.
   - Plans more likely to "fit" together
   - Allows us to focus on strategy <u>and</u> plans

9. ATTEMPT TO SUBSTITUTE PLANNING AND DIRECTION AT FRONT END FOR HASSLE AND DISAPPOINTMENT LATER.

10. FORCES US TO DOCUMENT OUR PLANS AND STRATEGIES.

11. THIS IS NOT INTENDED TO REPLACE OTHER "PROCESSES" UNDERWAY, I.E., DISK STRATEGY GROUP, MULTI-PROCESSOR TASK FORCE, SMALL SYSTEMS STRATEGY GROUP, ETC.

Groups Review?

CHARTER FOR OOD STRATEGIC PLANNING

General

Establish OOD planning and feedback methods to be consistent with emerging changes in size, market focus and geographic distribution of Corporation.

The emphasis will be on developing a PRACTICAL method for Product Strategy, Implementation and Result Feedback planning.

A. PRODUCT STRATEGY

- System focus, the integration of Software, CPU and Peripheral product strategies into system level plans.
- Major influences are: Market Requirements from Product Lines; Technology from Software, CPU and Peripheral Eng.; Strategy guidelines approved by Marketing Committee.
- Provide a more rational framework in which to make trade-off decisions.

B. PRODUCT IMPLEMENTATION

- Responsibility of Development groups
- Effort here is to provide visible linkage between Strategy and Implementation.

C. RESULT FEEDBACK

- Provide a mechanism that will allow timely visibility to significant deviations to projected results that would influence future resources and plans.

SHP
10/21/76

Specific

Reports to Vice President of Engineering

- Coordinate the Central Engineering planning interface groups in evaluating System Strategies in such areas as:
  - Market and technology trends
  - Opportunity trade-offs across software, CPU, and Peripheral areas.
- Works with Corporate Planning and Marketing Committee to ensure consistency with Long Range Plans of the Corporation and establish OOD strategy guidelines.
- Manage the integration of Product Plans produced in the three (3) engineering groups within Central Engineering.
- Coordinate the statement of OOD plans to the Corporation via the Red/Beige Book.

CHARTER FOR STRATEGIC PLANNING

The Strategic Planning staff will be a direct report to the Vice President Software Development and Advanced Systems.

- Overview, evaluate and critique the product strategies as they relate to

  - market trends
  - technology trends
  - technological opportunity
  - competitive activities
  - industry trends
  - technological opportunities in the hardware/software tradeoff dimension
  - subsystem development

- Maintain a consistent high-level overview to provide a longer term focus on product development trends versus alternatives.

- Coordinate development of the Red Book, Beige Book, and all other Product Planning-Business strategizing within the organization.

- Coordinate the Planning interface with other OOD activities, including the OOD Planning group, CPU and Peripheral development.

- Working with the Technical Director, integrate the Product Plans and the Technical Strategies into a coherent whole.

- Coordinate and aid the integration of the Product Plans produced by the three (3) groups within Software Development.

[redacted] Stan Pearson FYI

From:
L. Portner

digital

INTEROFFICE MEMORANDUM

TO: Gordon Bell

DATE: January 4, 1977
FROM: Larry Portner
DEPT:
EXT:
LOC/MAIL STOP:

SUBJ: OBSERVATION

We can't run Engineering like the corner candy store for a billion $+ company; we should be investing heavily now in building the management structure, processes, controls, and the like, that will enable us to implement our operational philosophies in the future. I don't believe that the Marketing Committee model of part time marketing management (while their real jobs are running businesses or the Sales department) will work for OOD. I believe it's time for us to discuss a radical restructuring of OOD. I believe the present system of casually distributed responsibility is unworkable.

gm

digital INTEROFFICE MEMORANDUM

TO: Bruce Delagi

cc: OOD Members ✓
Bill Thompson

DATE: 30 Dec 76

FROM: Bill Demmer

DEPT: Advanced 11 Systems

EXT: 4453 LOC: ML3/E35

SUBJ: A Comment on Your System Council Proposal

Separate the Strategy Planning function from the funds allocation responsibility of OOD or I believe the following will result:

1. There will be a complete loss of strategy level focus and only project level budget hassles will remain.

2. Part time participants from outside the development organization will not be competent to allocate funds across the multi-dimensions of advanced technology, system development, engineering services operations and development, and product support functions as well as achieving a resource distribution associated with product development strategy.

3. Confusion on who will be held accountable for the results: A committee that dictates plans rather than approves them, or OOD management who do what they are told (only slightly overstated).

To try to be more constructive, I would suggest the following:

a. I believe your division of the System Councils is the cleanest such division along the system dimensions I have yet seen proposed. While you are not far from it, I believe that the funds allocation path must follow organizational lines to be stable. Therefore, I would work toward the restructuring of OOD to match your system groups. In the interim, I would strongly urge that the OOD members themselves chair these councils and that they then act as strategy level advisory boards to the manager clearly identifiable for the results. That is, the System Council can then be forced to keep its focus at the strategy level and can assign priorities to its recommendations to aid OOD management in its task of allocating resources.

b. OOD (synonomous with System Council chairman) would get agreement with the Marketing Committee on the relative strategy emphasis to be placed in each domain. This allows OOD to set its budgetory levels, which I believe is doable amongst four people, but is not achievable with a cast of "many".

- more -

c. I would further suggest that each council chairman (OOD member) identify what he considers as stable or committed elements of his world based upon the "corporate thrust" level of agreement from the Marketing Committee. We need to find a way to confine the discussion space to only that which is realistic to spend energy in.

In summary, we need a process that provides a top down planning overlay to our bottom up driven implementation heritage. I personally feel very strongly that this planning process should be kept separate from funds allocation which must be maintained by the responsible OOD manager. Your breakdown of the System Council areas is a very good start to improving our planning process, if we can keep it a strategy planning function and not an unstable project level budgeting roller coaster.

Bill

BD:kj

digital

INTEROFFICE MEMORANDUM

TO: Gordon Bell

DATE: 12 January 77
FROM: Arny Goldfein AG
DEPT: Engineering
EXT: 6001
LOC/MAIL STOP: 3-2/A16

SUBJ: PROPOSED AGENDA FOR FEBRUARY JUNGLE ON THE DEVELOPMENT STEERING PROCESS

input of processes IDEA, etc.

1. What processes are we talking about?

   a. Internal OOD planning processes.
   b. OOD/product line planning.

2. What are our goals for these processes and how do we measure performance against these goals.

3. How do our current processes stack up according to these goals?

   a. What do we like.
   b. What don't we like.

4. What proposals are there to enhance, modify, or formalize these processes?

   a. Delagi proposal
   b. Others
   c. How do they rate according to our goal set
   d. How do they provide for measurement of performance of the process.

/dl

Interface with P/L & how they ~~get~~ educate us & get products in their areas!

NC

[illegible] vs. ext. + processes

[illegible]

digital

INTEROFFICE MEMORANDUM

SHP:76:239

TO: Those Listed

DATE: 28 December 1976
FROM: Stanton Pearson
DEPT: Software Product Management
EXT: 2424
LOC/MAIL STOP: ML12-3/E13

SUBJ: 10 JANUARY WOODS MEETING REMINDER — If you have oc woods

BACKGROUND

On November 22 most of the direct reports to Puffer, Clayton, and Portner (13 people) held a four-hour Woods Meeting to discuss concerns, objectives, scope, and follow-up program for proposing refinements to the Development Steering Process (DSP) to O²D. The January 10th is the second in a series of three Woods Meetings for development of the DSP proposal. January 25 is tentatively scheduled as the third and last (if things go as well as expected). My intent is to keep O²D informed during the development stage and present the proposal for approval in early February.

Minutes from the November 22 meeting are attached for the readers' convenience.

PROCEDURE

We must start now if the exercise is to have a favorable influence on the Spring '77 Planning Cycle in April/May.

Several areas will need focus and coordination as we refine our Development Steering Process. An example is the relationship between Red, Yellow, and Brown Books and the Product Business Plans etc. Proposals will initially be presented to those listed. When we feel the proposal hangs together we will present it to O²D for approval. An O²D planning group has been formed and is meeting weekly to coordinate the overall effort. This group has representatives from CSD/F. Sanjana, Peripherals/P. Bauer, Software/S. Pearson (acting), Finance/A. Goldfein, Corporate Planning/B. Delagi, Secretary/M. Kandra, and O²D/S. Pearson.

Minutes of these meeting will be issued to those listed and copied.

JANUARY 10 WOODS MEETING

- Purpose is to review proposals on refining our Development Steering Process.
- Time will be 11:00 to 6:00 with lunch provided.
- Place will be Colonial Inn in Concord.
- Agenda will be Proposals presented on:
  - Future Red/Beige Book Partitioning (Bauer)
  - Development Steering Process (Delagi/Pearson)
  - Funds Flow (Goldfein)
  - System Teams (Teicher, Picott, Tomasic, Mileski)
- Attendees will be those listed.

SHP:ssc
Attachments (2)

JANUARY 10 WOODS MEETING--DEVELOPMENT STEERING PROCESS

Proposals should be presented in the context of objectives, recommendations, and benefits. Presentors should be prepared to discuss alternatives rejected and rationale.

11:00 to 12:00 Future Red/Beige Book Partitioning (Bauer)

- what should it be in the future?
- what can we accomplish in Spring '77 pass?
- how does it fit in overall DSP and relationship to Yellow Book, Brown Book, PL Long Range Plan Books, Product Business Plans, etc.?
- who will author various sections?

12:00 to 12:30 Buffet Lunch

12:30 to 1:30 Development Steering Process (Delagi/Pearson)

By January 10 B. Delagi and/or S. Pearson will have discussed proposals with attendees and those copied. Proposal addresses current and future environments for planning. Emphasis is on a more productive, lower hassle process for achieving plans that balance such factors as:

- time spent planning vs. implementing
- market pull vs. technology push
- committed vs. contingency funds
- advanced vs. applied technology funds
- etc.

1:30 to 2:30 Method of Funds Flow and Monitoring (Goldfein)

- how does it happen now?
- problems to be solved?
- potential impact of problems?

2:30 to 6:00 System Cuts and Teams (Teicher, Picott, Tomasic, Mileski)

- system cuts?
- charter for system teams?
- membership?
- product fit?
- how often to meet?
- formal minutes?
- how do teams interact with each other?
- can system teams start by February so they can influence the Spring '77 planning cycle?
- how do we integrate the output of the system teams?
- other key questions to be answered?

This is a packed agenda. We will attempt to keep on schedule by listing items that need further work by our January 25 Woods Meeting.

digital

INTEROFFICE MEMORANDUM

SHP:76:236

TO: Those Listed

DATE: 9 December 1976
FROM: Stanton Pearson
DEPT: Software Product Management
EXT: 2424
LOC/MAIL STOP: ML12-3/E13

SUBJ: MINUTES OF 22 NOVEMBER 1976 MEETING

On 22 November a half-day Woods Meeting was held between key development and product managers within Central Engineering (13 attendees). The area under discussion was our Development Steering Process and was exploratory in nature.

1. We attempted to identify issues, influencing factors, and questions to be answered by the Development Steering Process.

2. Define the objectives of the Development Steering Process (see Appendix III)

3. Define scope.

4. Agree on a follow-up program and time frame.

The first couple of hours we kind of wandered around discussing issues of the day (see Appendix I). After that we started to focus in on some more specific topics. Namely, the partitioning of the Red and Beige Books for the Spring cycle to get more system focus. Basically, the group finally came to a tentative agreement for four system cuts (see Appendix II); Commercial, Scientific, Small Systems, and Iron. We also agreed on a system chairman for each one of these four cuts. The chairman was given the objective (with the help of others) to examine mission, product fit, interface between the other groups, etc. These teams have agreed to meet between now and the beginning of January and present their views to the group around the second week in January.

Delagi, Goldfein and Pearson were asked to present an overall Development Steering and Funds Flow Process to the group by the second week in January.

I believe that it was a very productive meeting and that this forum should enable us to develop closer working relationships between the various Central Engineering Groups.

Basically, we agreed to meet again as a group during the second week of January. The meeting will probably be a full day and consist of:

A. Presentation of Development Steering Process

B. Funds Flow Methodology

C. Red and Beige Book partitioning for more system focus - Commercial, Scientific, Small Systems, Iron, plus alternatives

D. Agree on follow up program

- Firm up System Teams and their missions by mid January.
- Get O^2D buy in end January and Product Line buy in early February
- Explain to rest of organization during February
- Add System Focus to Spring Red Book in April/May.

Attachments

SHP:ssc

APPENDIX I

ISSUES AND CONCERNS

Bill Heffner

1. What means System Management? For example-- How would the multiprocessor flow through Commercial Systems, Scientific Systems, Large Systems, Small Systems, etc.
2. O^2D Strategy is there; acknowledge it, clearly define it, and then manage it.

Steve Teicher

1. Let's agree that we have an overhead planning function, identify the benefits, and use it.
2. More business planning versus project planning, e.g., manufacturing considerations, support considerations, etc. should be included.
3. Who wants to know what and when in the planning process needs to be clarified.
4. Frame work for hearing and selecting alternatives needs to be clarified.

Ed Corell

1. Are we being honest with the Product Lines and with ourselves with our current level of planning.
2. The future may be more difficult to deal with if we keep old methods to meet expanding needs.
3. Zero sum budgeting pits one engineering group against another with non-productive results.

George Plowman

1. What we really need is an identified process for evaluating and making funding decisions and then give it time to mature.
2. Once we have an identified process we need continuity of that process. Last Spring we were working hard on an eight quarter rolling budget; this Fall we are working on an annual process of FY78 and FY79.
3. We need more strategy.
4. We start implementation before planning and this often sets higher expectations than can realized.

APPENDIX I

ISSUES AND CONCERNS

Bob Peyton

1. Longer view needed for what funding level is likely to be available.
2. Red and Beige Books good for visibility on Family Strategies.
3. We budget annually, and we spend quarterly; we should get the two in sync.

Bill Picott

1. No O^2D Strategy Frame Work in which to generate sub-strategy for product families.
2. Product Lines never really sign off on Red and Beige Books; therefore, they are never committed to them.
3. Business Plans - we need a process on how to generate them and measure against them. We need more system focus, but sub-system focus and component focus must not be lost in the process.

Mike Tomasic

1. Product Lines do not feel they have a proper balance of control over how O^2D spends the bucks.

Frank Sanjana

1. More logical and objective methods of funding projects is needed.
2. Some of our problems are (maybe) due to some semantics. For example, objectives, strategies, tactics get used interchangeably and differently by various people.
3. Let's agree on the expectation for this particular meeting (we stopped at this point and spent some time doing that).
4. Let's be sure that we get some hard follow up plans to this meeting so that it is not wasted.

APPENDIX I

ISSUES AND CONCERNS

Arny Goldfein

1. Identify by market segment where our products really are targeted and where our hedges are and where we have unnecessary exposure.
2. We must have a better process to develop a selected few future alternatives. That means we must look further out.

Jack Mileski

1. How to get more system focus without losing current sub-system and component focus is the issue.
2. Better quantitative measure of plans so we know when we get that. Product Management cannot get data integrity on actual product performance.

Bruce Delagi

1. Product Line Managers do not seem to be involved enough in the Development Steering Process.
2. Too much tactics, not enough strategic content in the Red and Beige Books.
3. More top down directions, at least on areas of concern are needed from marketing committee.

Ed Fauvre

1. Need to reevaluate the funding algorithms for R & D Applied Engineering for Software, CPU, Peripherals, etc.

APPENDIX II

RED BOOK PARTITIONING

Current: CPU, Peripherals, Software, Communications, Memory, LSI; and R & D.

Future: Systems, Sub-Systems, R & D

System Alternatives (Marketed related by size):

A. Commercial, Scientific, and Iron by size (three teams).

B. Commercial, Scientific, and Iron by size (three teams) plus a fourth to focus on Small Systems.

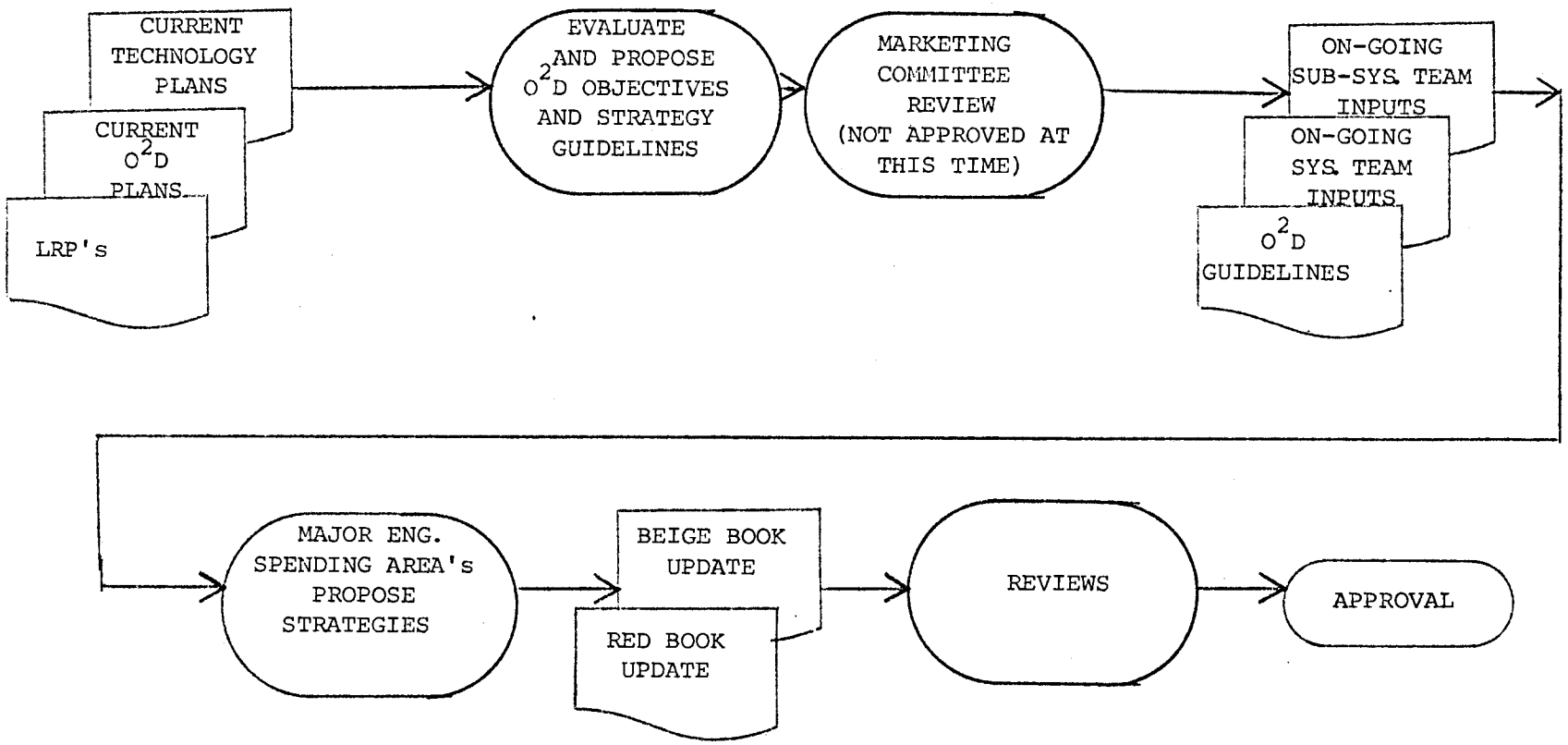
C. Time Sharing, Real Time, Transaction Processing, Multi-function and Iron by size (five teams).

Alternative "B" was chosen as the most likely one at the time and four chairmen were agreed on to do further evaluation on these cuts--Commercial, Picott; Scientific, Mileski; Iron, Tomasic; and Small Systems, Teicher.

We discussed Distributed Processing but did not come up with any answer on how to handle it in the Systems context. I have asked Plowman/Corben to address this at our January meeting.

APPENDIX III

GROSS OVERVIEW OF RED BOOK CYCLE



OBJECTIVE: Provide a vehicle between Central Engineering and the Product Lines that documents the interaction on Directional Strategy (Red Book) and Implementation Strategy (Beige Book).

PURPOSE: To coordinate and analyze market and technology inputs against existing plans and translate these into a revised set of strategy alternatives, recommendations, and rationals for Central Engineering implementation.

METHODOLOGY: An annual effort with a mid-year (Fall) review and position paper to set the platform for the next annual approval cycle (Spring). Plans will be generated by the implementators. The collective set of plans will be coordinated by a Strategic Planning agency within O2D.

LIST

P. Bauer	ML1/E38
B. Peyton	ML1/E63
E. Corell	ML1/E62
G. Saviers	ML1/E58
A. Goldfein	ML12/E51
F. Sanjana	ML5/E71
M. Tomasic	ML21/E81
S. Teicher	ML1/E65
B. Delagi	ML12/F41
G. Plowman	ML12/A62
E. Fauvre	ML12/E13
B. Heffner	ML5/E76
B. Picott	ML12/E13
J. Mileski	ML12/E13
R. Corben	ML12/E13
J. Bell	ML3/E41
M. Kandra	ML12/E13

cc:

G. Bell	ML12/A51
B. Puffer	ML1/E38
D. Clayton	ML5/E71
L. Portner	ML12/A62
B. Thompson	ML12/F41

This is a typical interchange of a problem that may or may not get resolved.

This one never did.

Product Lines did have the resources & authority to make these market/application-specific products. As a result we never built a credible low end set of products cause we never were allocated enough $. The $'s always went to high end for high return.

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* digital *
****

TO: GROUP VP COMMITTEE:

cc: OPERATIONS COMMITTEE:

DATE: THU 12 FEB 1981 14:25 EST
FROM: KEN OLSEN
DEPT: ADMINISTRATION
EXT: 223-2301
LOC/MAIL STOP: ML10-2/A50

SUBJECT: URGENT PROBLEM

I think we have a problem which has been going on for a long time, which I haven't seen clearly, and I think should be solved by the Group Vice Presidents Committee with the upmost of urgency.

I have long been dismayed as to why so many of our product line products have been poor, and why it has been so hard to pin down responsibility for them. I think I now understand the problem, and I'll leave it with you and your committee to, with all haste, find the solution.

Gordon Bell claims no responsibility for the products which he contracts with the product lines. He says they have to work with the "Golden Rule" principle, and the product lines have the goal. They try in vain to encourage the product lines to do wise things, but the product lines usually don't understand, and insist on doing it their way. Gordon has a list of seven or eight personal, professional or specialized, smart or almost smart terminals which he thinks were incompetently done and unnecessary. These include GIGI, Minc, and so forth. These were defined, ordered and often done by the Product Lines and he claims he never believed in them and if we had not done them, we might have had a computer that could take care of all the needs. I am frustrated by this statement, and feel we have to change our system for doing things.

The product lines, on the other side, claim they cannot be held responsible, because they claim they cannot get Engineering to do what they want, and when they do, it is always late.

The result, from my point of view, is that I can't hold anyone responsible, and I think that is the ultimate of poor management. This has to be changed immediately. (I am always fascinated to see that with the same product on those days when the product is good, everybody claims responsibility, and those days when the product looks amateurish, late, and uncompetitive, no one is responsible.)

A current example of this problem is the 278. The 278 is our 1982 new professional computer to compete with the first wave of Japanese personal computers. In many details, the product is very good. In many details, it looks quite amateurish. I've been, for a long time, trying to find the loop holes and find out who is responsible, but I'm apparently just upsetting people, and probably continue to be frustrated forever, because there is no one to be held responsible.

Please solve this problem in your committee.

KHO/er

****

TO: MARKETING C
AVRAM MILLER
BILL PICOTT

D: 21B 1 :5ST
EXT:6
LOC/MAIL STOP: ML12-1/A51

copy this page to Eng. Staff. tot.

M:RDBEcc: SI LYLE

MAR 4 1981

From: D. Bell 2/21/81

SUBJECT: URGENT PROBLEM: RESPONSIBILITY FOR LOW COST SYSTEMS

For our disussion at GVPC:

Independent of whether I have be able to help build better low end personal computing terminals, historically we have tried and generally have done poorly (market share, profitability,quality).

PRODUCT HISTORY

The products arena, over the past 6 years and currently:

Gen. Motors

poor Product Line Products

VT8/E (Reuters), VT14(originally GM for PDP-14)
VT30, 31, etc. by CSS for weaving, mimic diagrams, tv
VT15,GT40, GT60, Megatek (lab and engineering graphics)
VSV11 (Graphics and Image) LDP, now CSS
VT20,21,71,171, etc. for Typeset also Tektronix based
LA36/BSR, LA36/TU60, LA120/TU58 (AT&T), LA44, VT134
PDT130, PDT150 (for ADP)
Minc, Mini-Minc, TLC — customer driven
Gisi, Gisi 1.5
VT103 (TPG) — Terminals Prod. Group (Andy Kunbe)
DS315
11/23

} all created for customer-demand — i.e. in Product Line

— Product Line.

WHY IT HAPPENS

Our structure and the basic P/L Bill of Rights (which I do not advocate changing), created the problem. Some of the forces:

- .Customers specialized (caused 6)
- .Perceived specialized market need (caused about 20)
- .Perceived general purpose, high volume opportunity (5)
- .The components are available, and it's about the only piece of hardware that a P/L can afford to engineer
- .They are fun to start. It is the one product that can be built according to the classic model: marketing specifies and engineering builds it } — gB: Sure fire disaster!!
- .The market is perceived to be sufficiently different that no SP system can be built (Apple disproved this!) ... hence no common system was able to be defined
- .The engineering budget was not large enough to cover this evolving part ... for example, the whole WPS P/L had to be started up to start the ens. investment
- .Poor engineering leadership to recognize need, and propose it } gB respons.

SOLUTION

Now that we have recognized the problem, let's solve it.

- .Technology is changing making engineering cost higher, product costs lower, and unprofitabity clearer
- .We are doing a system to cover many of these areas
- .Near term, Engineering is taking responsibility for 278

- .Engineering will operate 'modified Golden Rule':
  - .Will operate with Business Plan and Phase Review
  - .Will set an outside assessment of product viability
- .Review the current terminal and PC's ... there are lots more lurking losers. Put the $'s in low end PC's!

Ted Johnson
2/23/81

PRODUCT LINES PRODUCTS
(Proposed Position)

PHILOSOPHY

As a company, we design and produce the best possible products with minimal overlap, in order to maximize our developent investment return across our customer base and markets.

Engineering will be responsible to present an overall plan for all products they will design and build, including product line products.

Engineering will be responsible for stating how their plan for corporately-funded products responds and differs from Product Group requests. Product Groups will have the opportunity to propose changes to the Operations Committee. If they have a convincing case for changes, Engineering will be asked to redo their specific plan, generally within the plans of a specific Engineering Group.

Overall, financial limits or interdependencies of engineering groups' plans may ultimately force changes to the overall plans of Engineering, but the goal is to reduce this to a minimum for the sake of stability (motivation, probability of meeting schedules).

PRODUCT LINE PRODUCTS

When Central Engineering is funded by a specific Product Line (or limited set of PLs) for a product, they have the responsibility to make their disagreements clear, after each side has thoroughly communicated about market and product details.

The Operations Committee will listen to the arguments. Once a decision is made reviewing the tradeoffs, Engineering is bound to fulfill the schedule and contract. Engineering managers for the products are responsible for the schedule and contract. PLs are responsible for the concept (market positioning), and Engineering is responsible for formal support of the approved plan.

Product Line products which will be engineered in the Product Lines themselves are subject to the final review and approval process (April LRP and regular final reviews). Engineering, with advance notice to review these products in the context of the corporate product set, wil have a formal opportunity to critique these products and a functional responsibility to pass on the quality of the design.

Footnote:

Individual opinions and recommendations on specific product plans, both marketing and design function, are strongly encouraged. They must, at a minimum, be sent to the Group VP Committee for visibility and consideration, care of the VP, Corporate Marketing.

Another problem which never got resolved.

****
* d i g i t a l *
****

Ken really supported coming with the 8 too long.

TO: STAN OLSEN

cc: *GORDON BELL

DATE: FRI 24 APR 1981 12:50 EST
FROM: KEN OLSEN
DEPT: ADMINISTRATION
EXT: 223-2301
LOC/MAIL STOP: ML10-2/A50

SUBJECT: WORD PROCESSING PRESENTATION AT OPERATIONS COMMITTEE MTG.

When you prepare a presentation on Word Processing for the Operations Committee, before you bring it to the Board of Directors, you might discuss how you will or how you have made a decision as to which of piece of equipment you do the standalone word processing on. It is not obvious whether we should ever change from the PDP-8 based system, and if you propose going to the 11-based system, I think it would be worth explaining why you picked the specific system you do pick.

I wanted to get rid of it — due to very high support and unprogrammability.

Note the last page of thoughts — for an article on Why we needed to get out of it.

KHO/er
KO1:S3.85

278 Memo
Death of the 8

****
* d i g i t a l *
****

TO: KEN OLSEN

cc: STAN OLSEN

DATE: SAT 25 APR 1981
FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: WORD PROCESSING PRESENTATION AT OPERATIONS COMMITTEE MTG.

Stan,
I hope you take the opportunity describe to the board the effects of architecture on programming complexity and on the ability to have effective higher level languages.

It is important for them to understand these effects as it relates to the cost of programming, the time and ability to provide certain features, and how these affect our competitiveness. Examples could be given at the assembler level, together with the investment cost (which is now about 10M in the 100K instructions, together with the incremental cost to add features). I would also recommend that these be presented in terms of the overall life cycle model.

As a second part as to why the 8 will not be viable "forever" you might explain to them the long term viablility of complete chip level systems based on industry standards, etc. and how price and volume have historically been related.

Also, you might present historical information on how effective we've been in the past in our ability to be competitive, to sell and to be profitable since the 8A in these marketplaces. You might also give the historical decsion which let to the 11, including the difficulty that Ken had in convincing Nick to do it. Also, note we were successful in this then, and that we do no longer redesign system level 8's.

If we are successful in getting our act together vis a vis the new computing terminal family, then you could very nicely show the learning curve effects on cost and why we would base subsequent systems on the 16-bit architecture both to get features and cost. The competitive architectures such as Wang (using the z80A ... capable of addressing more bits) might show at least empirically why there is a dilema. We might also discuss what appears to have been a unilateral decision by the operations committee to continue the 8 effort to the present non-cost-effective 278 and not get a cost-effective 16-bit product. I think this is a great opportunity to discuss this important issue with the board and to clarify our thinking.

To me, these are the important issues we should be working with the board on. I'm sure that Ken gets these issues at Ford eg. whether the Thunderbird is necessary given the Mark IV, Monaco, super Mustang, etc. The positioning of these relative to each other are far more important than getting something that

general statements about arch limits
monaco 6

overall, I'm surprised the question was addressed to you — we took over the

· Common Code
· high level !
· it isn't my decision
· unlucky
~~poor~~
· ct
· 8 not able to be used forever,
~~cost~~ · bounded
· we lost it, child could understand it W² ↔ 709
· 8 bit internal

· tech. bottoming (vis a vis) 256K
· our decision
· really poor — 278 design (portability)
· fundamentally obsolete
· learning curves on 1 vs 2!
· 8 bit vs 12 bit

will be really great and competitive with the Japanese and German cars.

Personally, the 8 was my first computer design, and if it lives forever, it will be the first computer to ever do that. However, if it doesn't, then I'll understand too.

I'm glad you have this incredible amount of time to discuss this policy stuff. To me, this means we are really in control of the market stuff and that we are so confident that the 278 is the greatest thing ever, and hence we will be able to redo it. Maybe I missed something, and I suspect you really don't want to bore the board with the tactics of between June 21 when we start shipping and the subsequent 3 years as to just how the system is going to be marketed and profitable.

B. O. Evans, from IBM gave us a pitch on the Japanese and one likely product is the 256Kbit ram. Given that the 8 can only address 32Kbits, and the cost of chips tends to evolve to the package cost, then in order to stretch the 8's viability out till this chip arrives (say in 84), we'd better start working on the mods to the 8 to accept it. Also, we'd better figure out how we can get another approach to programming, cause no way can we ever fill that amount of program space with useful functions or data. Alternatively, we can just sell what we have like crazy. You might indicate which approach you think we should adopt.

We have people who could help get you more data on this subject if you want. Hopefully the above will be useful, cause I think most of the issues are given.

Since our office architecture is not based on the 8, I think we might also get the whole software group involved in this too. They no doubt have other reasons, including inability of files, operating systems and languages. Hopefully though we don't have to get them involved because they are driven and look as if they will produce a very good product on the 11. To me, we should adhere to an adage: If bodiers are in motion, they should remain in motion, particularly if they are going in the right direction.

Frankly, I think we are going the right way:
produce and sell 8's, evolve it as long as it is competitive ...
 assuming it will make money and bring in the bread
so like hell to make a really great, next generation product...
 apple III (with 128K memory) has the potential to be a very good
 wps, and just like Visicalc made the apple 2, WPS could make the
 apple 3. That's what I'd do if I were running apple (but mostly
 those guys are a lot smarter than I, so it will at least be that good.

Let me know if I can help prepare you for the board.

Thoughts on the dilema of introducing 3 PC's, particularly the 8.

TECHNICALLY it's suicidal to continue with the 8 and do enhancements because the 8 addressing causes inherent complexity in what would be very simple programs. I can explain this in 10 minutes and would like to because it's something all of us MUST understand. It's also the reason why the 11 bottoms out when compared with VAX or the 68,000. What the technical limits mean are simply:

No rational SW effort front

.WE CAN NOT BUILD, LARGE, RELIABLE SOFTWARE ON THE 8!

.THE COST TO BUILD SOFTWARE IS OUT OF SIGHT. WPS has cost us in the neighborhood of 10 million for 100K instructions. I think this could have been done in less work (due to complexity). This means the cost per instruction is 100-200.

.The cost to add new instructions is also prohibitive. 2 million for less than 10,000 instructions, or 200 per instruction.

.The complexity also means unreliability hence not being able to produce in volume. Note the problems and dear Ken's surrounding the old WPS 200 that we are still experiencing. Ken vibrates on his own 200 there and its unreliability (and sharedness). This is simply a volume issue too. CSSE doesn't know how to cope with it.

.Worst of all, we program so slowly, the features makes us uncompetitive. No way can we track IBM who programs in PL/M and uses the 8086 for their stand alone WPS.

.There are a small supply of machine language programmers

.The benchmarks say that you can get work done faster on a Wang, independent of what we and our secretaries say.

BUSINESS-WISE, it's suicidal to continue it in anything but keeping it as a Word Processing terminal for shared system or a typewriter in the office market. Large disks, all the other things mean more expense and loss per system. From all appearances, a WP system seems to be regarded as a computer in that people expect enhancements.

I don't see why we can't use the CAT and do all the things the 8 would do and at the same cost. This would give us a good WPS base, rather than a flaky one. Of course, our long term strategy is a code that could run on CT and VAX. Maybe this could be extended to CAT since it's in a higher level language, albeit our own.

EXTENDING THE 8 INTO THE SMALL BUSINESS MARKET IT PROBABLY EVEN MORE SUICIDAL I don't see any way to get the kind of software that the market says it wants without really coupling into the software publishing world. The CP/M card may be a possibility, if the quality is there vis a vis interacting with the 8.

For the newcomer, the 8 is not the beginning, just the beginning of the end ala TRAX! A few customers could really give us a black eye in the same way TRAX did. There will eventually be expectations when all the limits get hit and all the cases get tried.

Bottom line

We are on a slow, expensive, road to nowhere. If anyone follows us, they will be sorry (and very angry with us).

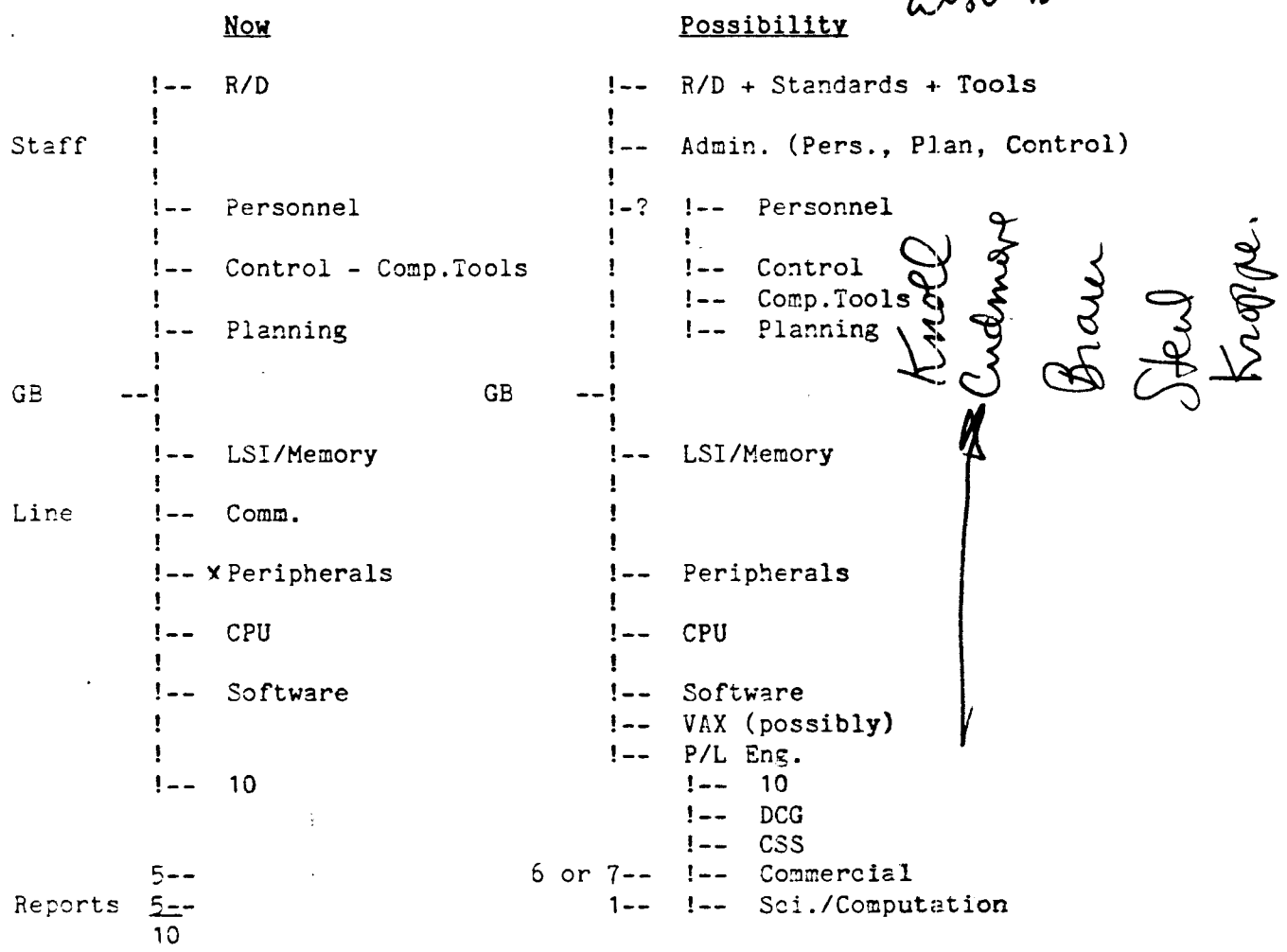
Digital Interoffice Memo

Subject: Possible Changes in Engineering Organization

To: Operations Committee
CC: Ed Schein

Date: 15 FEB 77
From: Gordon Bell
Dept: COD
Loc.: ML12-1 Ext.: 2236

also Bennett



The problems I'd like to solve:

0. Focus on details to routinize the planning and control via strong administration. Tune up the processes by making them DEC Engineering Standards. Establish formal reporting...akin to Corporation Brown Book!

1. Some formal organization communications, albeit matrixed to DCG, CSS, 10 (OK now), Commercial (OK now), and Scientific/Computation P/L's.

2. Line management with proposals, measure and review of Research and Advanced Development; Tools; Standards; and New Programs.

GB:ljp

COMPANY CONFIDENTIAL Fm: G Bell

DIGITAL Gordon Bell INTEROFFICE MEMORANDUM

TO: OPERATIONS COMMITTEE
CC: Ed Schein

DATE: February 4, 1977
FROM: Ken Olsen

Gordon Bell FEB 04 1977

SUBJ: BERMUDA WOODS

The items I would like to discuss at the Bermuda Woods are as follows:

.What should the organization look like when we are a $1B and $2B company? More segmentation of businesses.. Eng/Mkt./Mfg. together if practical.

.How are your jobs changing? How are you changing to meet new challenges? Are you supporting each other through the changes? — More int./ext. demands — Not... am tired — Not effected... yet.

.How are we to maintain integrated and in control with rapid growth? More formality / clear structures / processes + some top down direct.

.A review of planned changes in OOD organization. (see attachment)

.A discussion of space alternatives. In N.H. or 3rd Place (Conn./RI/Me.) Political or (eg. N.M./Ariz./Fla.)

.What should the characteristics of my replacement be? (see Wm's reply) ... Can we get someone?

.I propose that any product line not making 24% PLC only be allowed to grow 5-10% next year. New developing product lines, less than two years old, would be considered for exceptions.

Would you prepare an outline of your concept of our organization at $1B and $2B and why you have chosen it by February 14th. I have asked Bill to collect and distribute to you as advance thoughts for our discussions.

/a

Some more concentration on marketing.

Specifies a Good GE Manager.

+ "Someone" has to have understanding/knowledge of Computers and Computer Business.

Gordon Bell

digital

INTEROFFICE MEMORANDUM

TO: Operations Committee

Cc: Bill Thompson
OOD

DATE: March 2, 1977
FROM: Ken Olsen
DEPT: Administration
EXT: 2300
LOC/MAIL STOP:

SUBJ: CHANGES IN ENGINEERING

I would like to staff the Marketing Committee to supervise and run the budget of OOD. This means having a Marketing Vice President who, with a staff, not only supervises all marketing plans but supervises all engineering plans. Proposals for projects will come to the Marketing Committee through this Vice President for approval and will be reviewed each quarter.

Marketing then will be done by the Marketing Committee and not OOD.

We should have an Executive Secretary or Administrator for OOD who is very senior, very strong and can run all the administrative activities.

OOD should be broken into four, five or six pieces, each with their own accounting, so that one group over-runs or under-runs and not the whole, large OOD.

From now on, Project Managers should coordinate between software and hardware so that OOD is relieved of this chore.

There will be no meetings of OOD for six months to force the organization to delegate problems and to accomplish projects by organization.

All projects will then be run by the Marketing Committee with the Vice President of Marketing and no one person will have arbitrary power to turn on or turn off projects.

/d

March 2, 1977

Bill:

Ken would like the following three items put first on Monday's Operations Committee agenda, to run from 12 p.m. to 1 p.m., and would like only the "old" Operations Committee members to sit in on them.

1. Proposed Changes in OOD - Ken Olsen

2. Definition of Marketing VP - A.Knowles

3. Proposal for Administrator for OOD - G. Bell

I thought maybe Ailine could set the food up in Gordon's office and the Oper. Comm. could grab their lunch and meet in the conference room while the others ate their lunch in Gordon's office -- just a suggestion.

Thanks,

Peggy

G.Bell Mar.7,1977

BASIS OF CHANGES IN ENGINEERING

OPPORTUNITY TO:

- Improve interface and trust relationship with Product Lines.
- Improve performance against schedule commitments.
- Lower frustration among Gordon's Staff.
- Improve focus on longer range, fundamental engineering strategy issues.
- Improve attention to day-to-day operational and administrative requirements (e.g. the "SPACE" problem, budget surprises).

THE SOLUTION

Reorientation and restructuring of Engineering:

1. Full time senior manager for administration and operational issues: space allocation, budgeting, reporting and financial control, manpower planning and organizational development, operational control, program review, project review, schedule review, strategic planning.

2. Reduce meeting frequency so that operational details must be delegated to the line organizations and not (usually) worked at the staff level.
   - Forced decoupling of individuals to minimize interaction problems
   - Force Gordon's line managers to focus at a higher level

3. Refocus onto Corporate Engineering Strategy.
   - Technologies and Advanced Development
   - Longer term product and program (e.g., RAMP) strategies
   - Raise long term/short term investment trade-offs for M/C
   - Personnel review/management and organizational development

4. Redistribution of responsibilities.
   - Puffer - head of planning, control, personnel and engineering services
   - Hire Senior Mass Storage direct report
   - Move printing terminals, power and packaging to Clayton
   - ~~Consider Demmer as direct report~~
   - ~~Consider~~ low end/terminals direct report

5. Refined product planning/strategy setting process.
   - Cleaner interface with product lines
   - Better marrying of expectations and reality
   - Community of interest between engineering and product lines
   - Documented plans with visible control

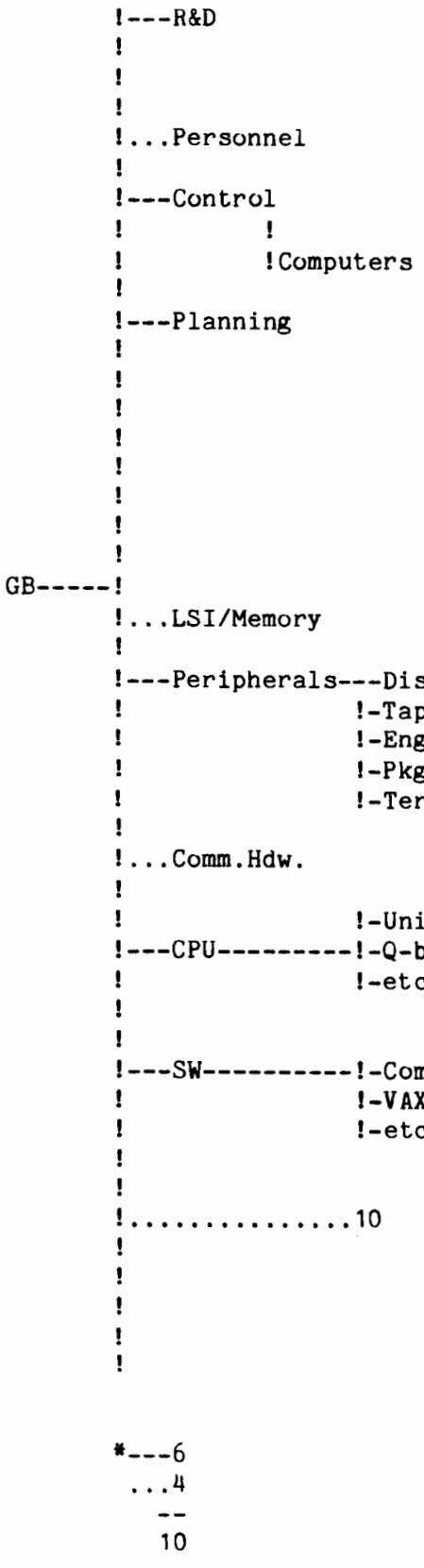
6. Quickly implement improved systems for financial reporting and control
   - Major program review
   - Enhanced, simplified planning and funds flow processes
   - Clear responsibilities for operational issues

7. Separate Bell Staff - Focus into two parts:

   - Operational Issues (the mundane and the practical)
     Delegate to the line except for issues which must be driven or focused at the highest level (under control of the new manager).

   - Engineering Strategy Issues
     Providing long term direction for growth and success of DEC's engineering activities, encompassing: strategy, direction, and organization.

Now*



*---6
...4
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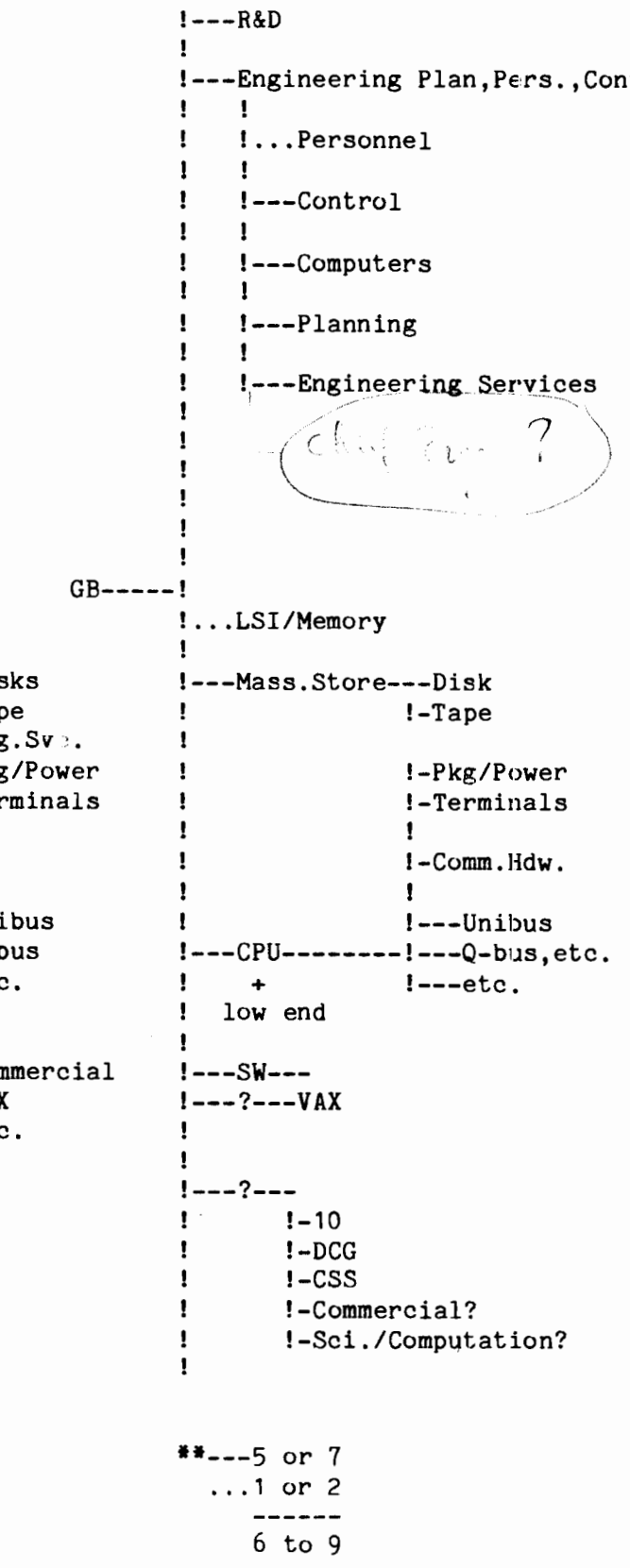
10

Proposed**



**---5 or 7
...1 or 2
------
6 to 9

OOD (Both sides)
Fyi

COMPANY CONFIDENTIAL

1

OPERATIONS COMMITTEE
Minutes of March 7, 1977

Attendees: Andy Knowles, Al Bertocchi, Gordon Bell, Win Hindle, Ken Olsen, Ted Johnson, Pete Kaufmann

Rotating Members: Jack Shields, George Chamberlain, Bill Hanson

Guests: Jack Gilmore, Bob Meese, Joe Meany, John Sims, Dan Infante, Jack Smith, George Silva

The minutes of the meeting of February 21, 1977 were accepted as written.

PROPOSED CHANGES TO OOD

Ken is pushing the basic concept that Engineering can not accomplish the dual role of watching its own budget and planning. This means a major change in the Marketing Committee to accomplish this.

Gordon reviewed his proposal to change his organization. Ken disagreed. He wants no meetings— he does not trust them and wants to avoid insignificant hassles. Bob Puffer is now motivated to take the administrative job.

Ken asked if Gordon would run Puffer's responsibility in Engineering in the interim. The answer was yes. Dick Clayton's responsibility will also expand. Dick should be told that terminals might eventually be split out. This was not expected to be a problem. It was also noted that Dick had added solid management strengths in last six months.

Ken's concern is that nothing will change— OOD will just put up some window dressing. Pete felt we could go forward. The Operations Committee agreed provided Gordon does the following:

- Add agreed to staffing of new guys
- Each has a separate budget, i.e. clear turf
- Eventually split mid-range and the low-end
- Give Clayton and Portner the message that they should manage their own projects and place more emphasis on the future.
- Personnel will report to Gordon

The Operations Committee approved the proposal based on the above conditions.

VICE PRESIDENT OF MARKETING

Ken then introduced the next subject, the Vice President of Marketing— not for decision but for discussion. Ken's goal is for the product lines and Engineering to propose, a Marketing Committee staff to do the preparation, and the Marketing Committee ultimately pass judgment. This means that the Marketing Committee actively decides on budget swaps, etc. Obviously, the

Marketing Committee can not do without appropriate support if the work is to be done properly. He also wants to collect marketing plans— our marketing types are very inexperienced, therefore, we need better plans. This could be done by the vice president of marketing.

Ken is concerned about what the overlap with Corporate Planning might be. He worries that we limit the organization by titles. We need an organization to get things done. It will require many senior people.

Pete thought the issue was to define what you want to plan, then identify how it should be done.

- Win thought the issue was:

  .Central place for short-range marketing plans held and reviewed
  .Interaction with product process (likes staff part, but uncomfortable with line)

- Ted felt we did have a process.

- Al felt Bill had developed a catalyst for planning— what was lacking was a strong review.

- Ken wants Bill to continue on as secretary of the Marketing Committee and keep the process honest.

- Ken likes a line manager doing a review of the plans. Ted felt having Helmuth Coqui on board and working for Bill would solve this.

Ken was in a hurry last week, but with the OOD problem solved he is now willing to wait a few weeks.

Gordon wants Andy to concentrate on the low end.

VICE-PRESIDENT'S REVIEW

No vice president's concerns were raised.

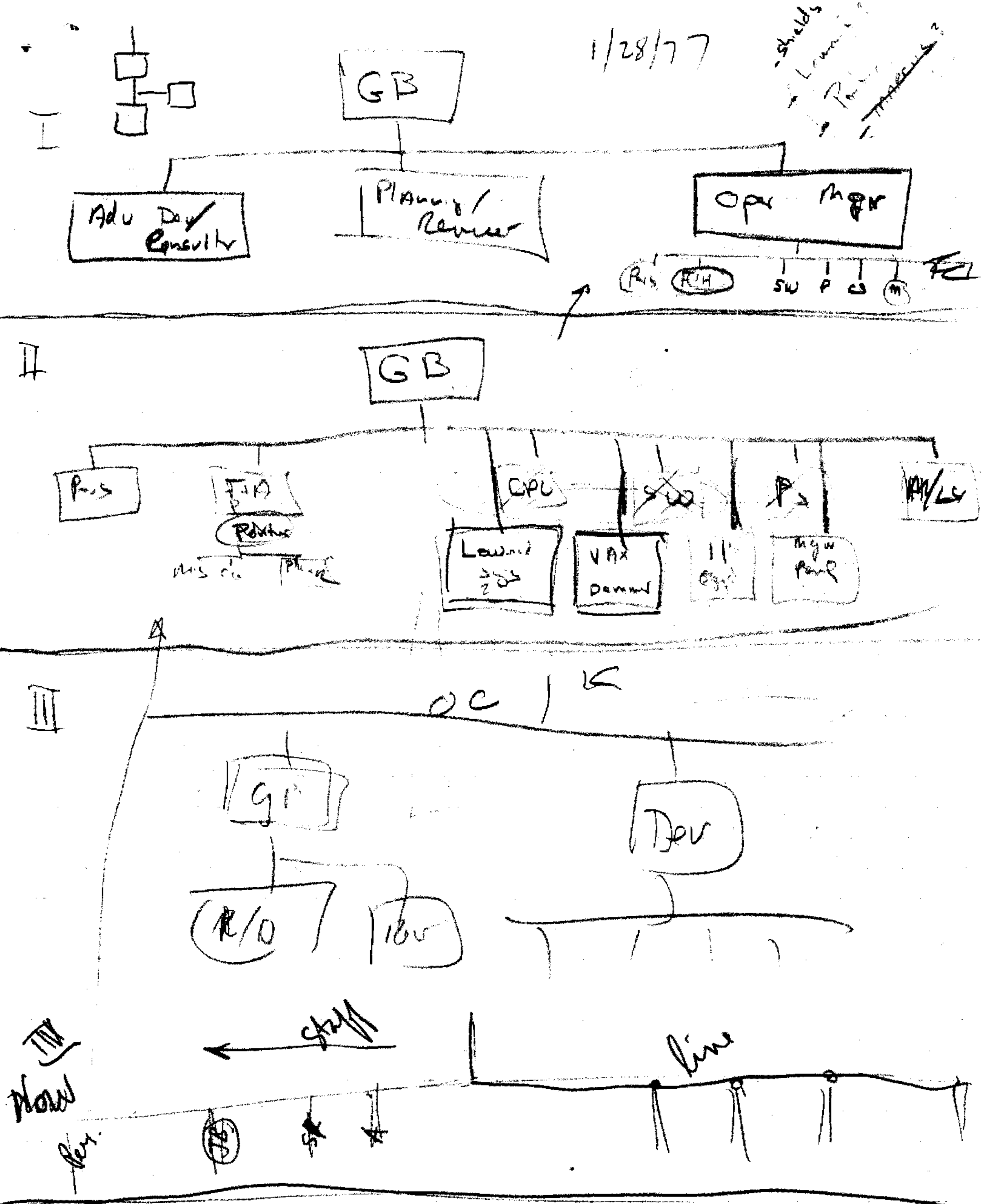
ON-LINE SYSTEMS LETTER

Ken reviewed his concerns over the On-Line letter. His basic concern is whether we respond to these complaints properly.

Ted discussed his concerns and procedures that attempt to handle these problems. Win felt the key issue is the effectiveness of the account management program. He thought it was interesting that account managers were fundamentally new people.

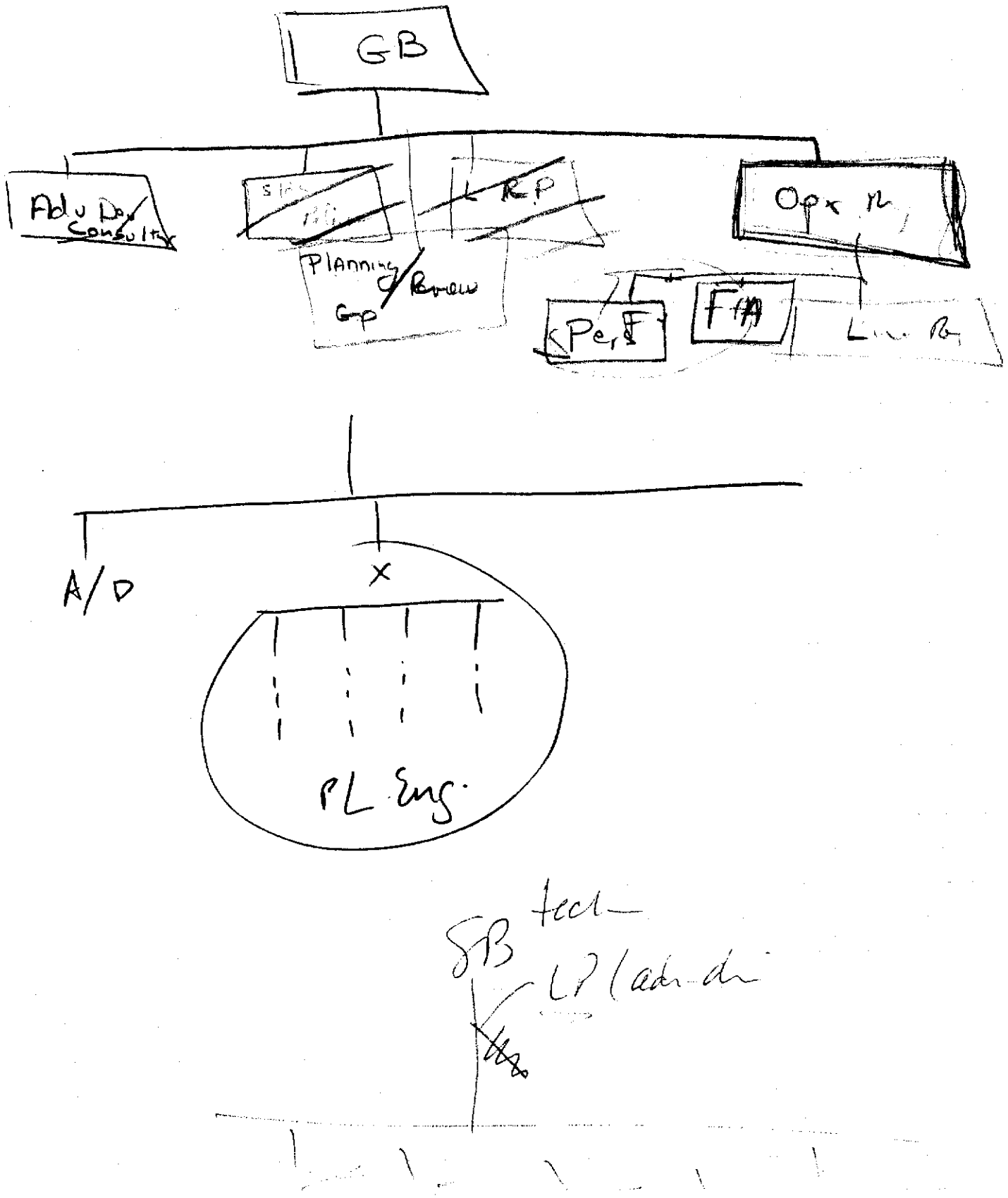
Jack Shields felt we may need a system for returning calls that do not involve service outlays. Ted agreed. In addition, he is pushing for a review of large accounts.

1/28/77

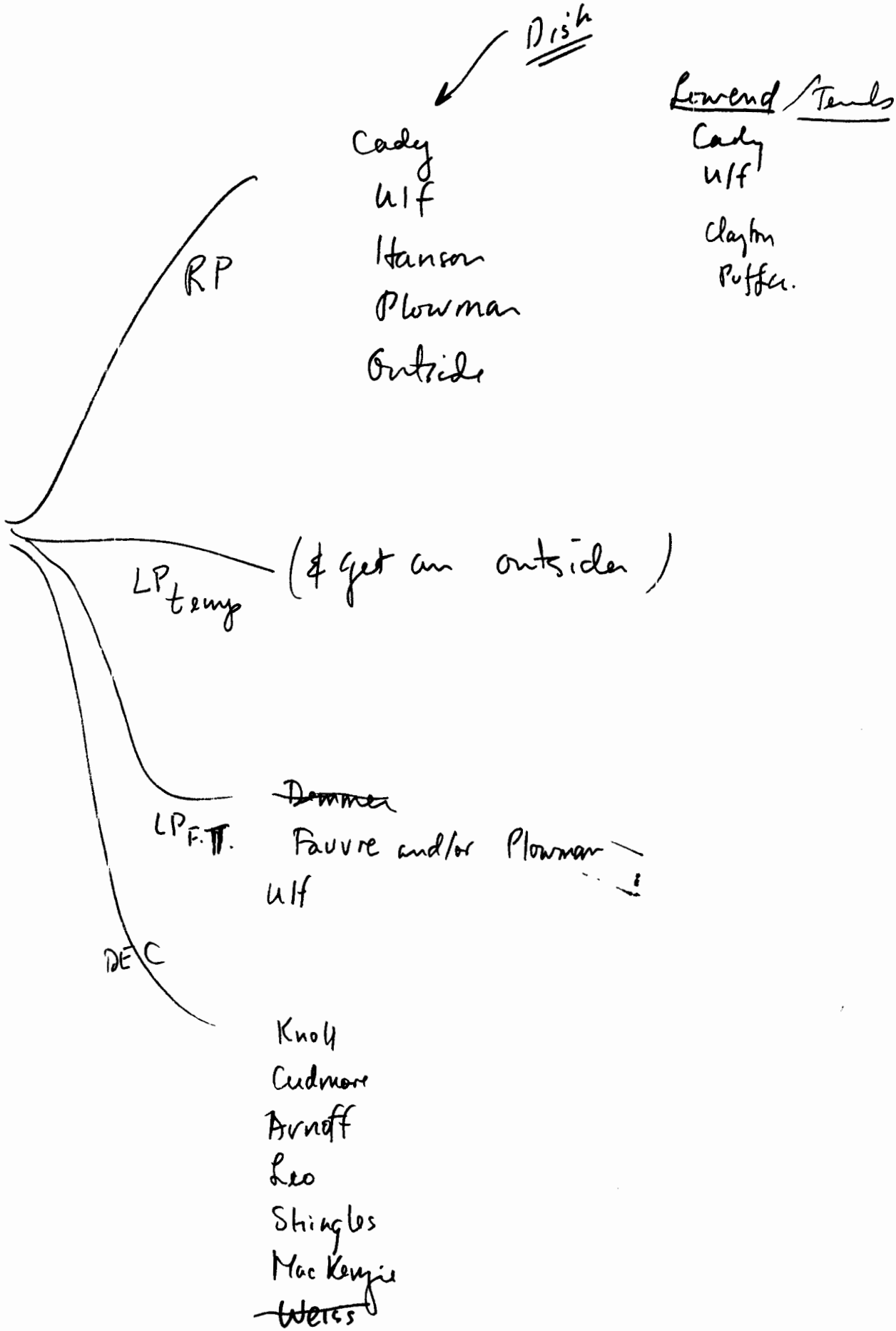


Thompson: OC model

GB Planning & personal change de affaires


GB
A/D
X
PL Eng.
tech
SB

	Jim Bell	Dave Mills
	Partner	Partner
What does KO want?		
Desire	detects fear in current jobs	wants change
Corp. Product Comm. ability		
Tech. ability	Better	
Trust	=	=
Conflict within OOD		Risk
Current job / Future jobs	solves a problem	Big job


Dish
Legend / Team
Cady
Ulf
Clayton
Puffer.
Cady
Ulf
Hanson
Plowman
Outside
RP
LP temp
(& get an outsider)
~~Dommer~~
LP F.T.
Fauvre and/or Plowman
Ulf
DE C
Knoll
Cudmore
Arnoff
Leo
Shingles
MacKenzie
~~Weiss~~

Vice President, Computer Systems Development (Dick Clayton)

...........Planning and Red Book (Frank Sanjana)
...........Finance (Larry Rasile)
...........Personnel (Mike Donnelly)

...........Systems Engineering (Peter van Roekens) ___)
...............System Mechanical Engineering & Support (Dick Gonzales)
...............System Performance Evaluation (Ralph Platz, acting)
...............Current Systems Engineering (Dick Testa)
...................Configuration Engineering (Jim Barclay)
...............Multiple CPU Systems (Malcolm Johnston)
...............System Interconnect Engineering (Howard Fineman)
...............PDP-11 Architecture (Ralph Platz)

...........UNIBUS 11 Engineering (Jim Marshall)
...............High End Systems (Bob Magers)
...............Low End Systems (John Sofio)
...............Engineering Technology (Bob Mitchell)

...........System/Product Management UNIBUS-11 (Mike Tomasic)
...............Medium-11 Systems, 11/04,05,10,34 (Bob Flynn)
...............Large-11 Systems, 11/35,40,45,55,60,70 (Janice Carnes)

...........Small Systems (Steve Teicher)
...............Finance (Bob Moss)
...............Current LSI-11 Products (John Clarke)
...............Interactive Terminals & Systems Group (Len Halio)
...............LSI-11 Product Management (Dezi Dezzani)
...........Advanced-11 Computer Chips (George Beason)
...............Fonz-11 (Mike Titelbaum)
...........PDP-8 Computer Systems (John Clarke)

...........Option Lists, Design Reviews (Dick Best, Carl Noelcke)

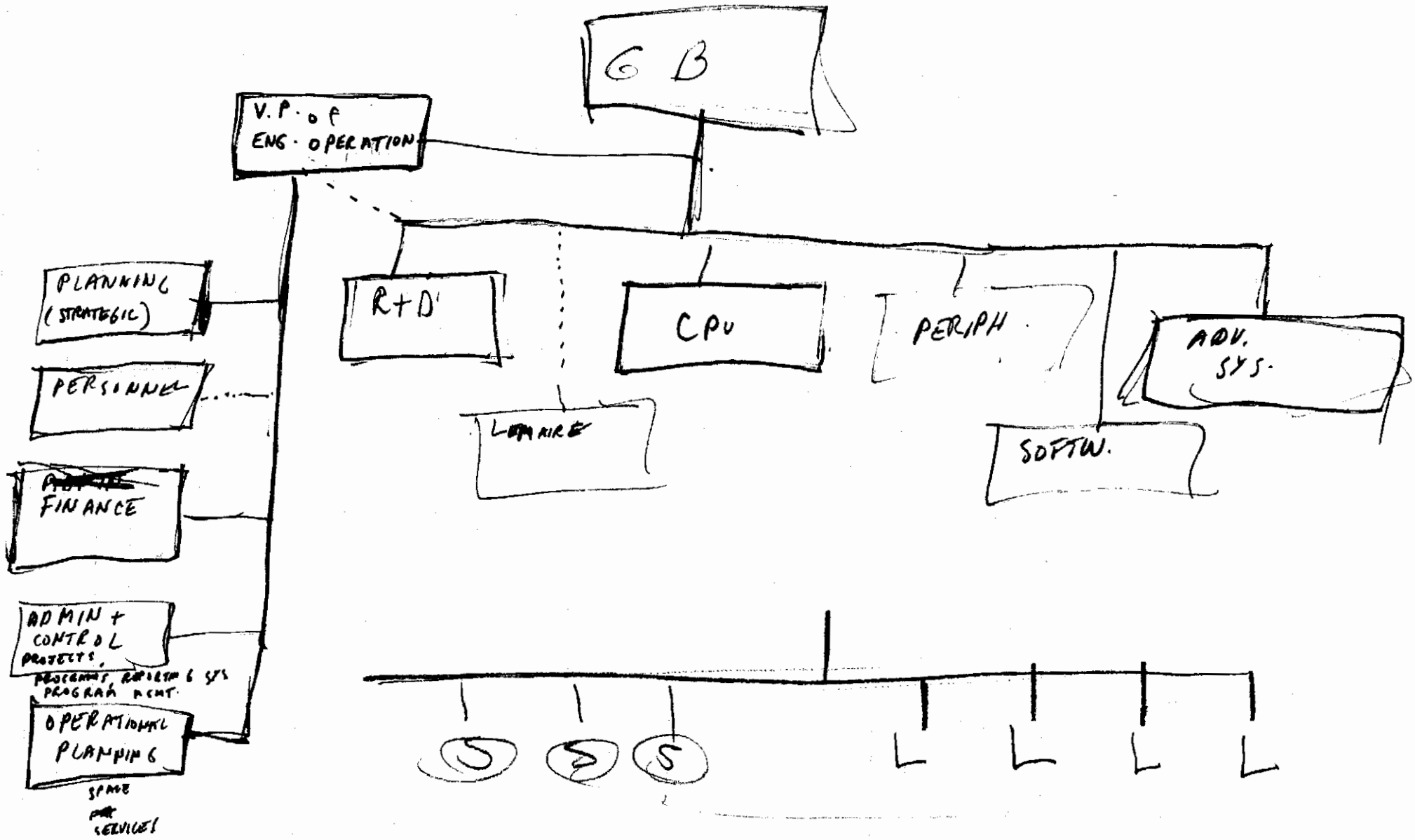
10 people

K. Koffee

Gordon
Just in case I haven't given you a current copy

Dick

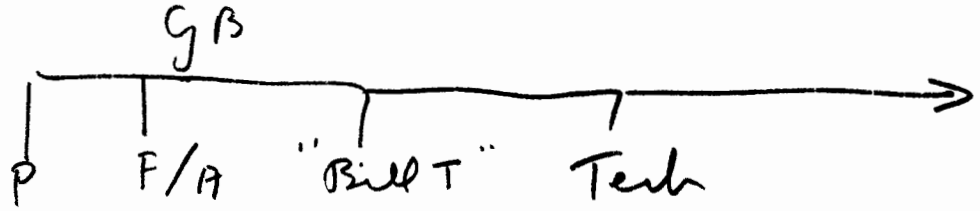
3/2/77


G B
V. P. of
ENG. OPERATION
PLANNING
(STRATEGIC)
PERSONNEL
FINANCE
ADMIN +
CONTROL
PROJECTS,
PROGRAM MGMT.
OPERATIONAL
PLANNING
SPACE
SERVICES
R+D
CPU
PERIPH.
ADV.
SYS.
SOFTW.

30 Jan 77

Maine (Jane Woods) 26.

A



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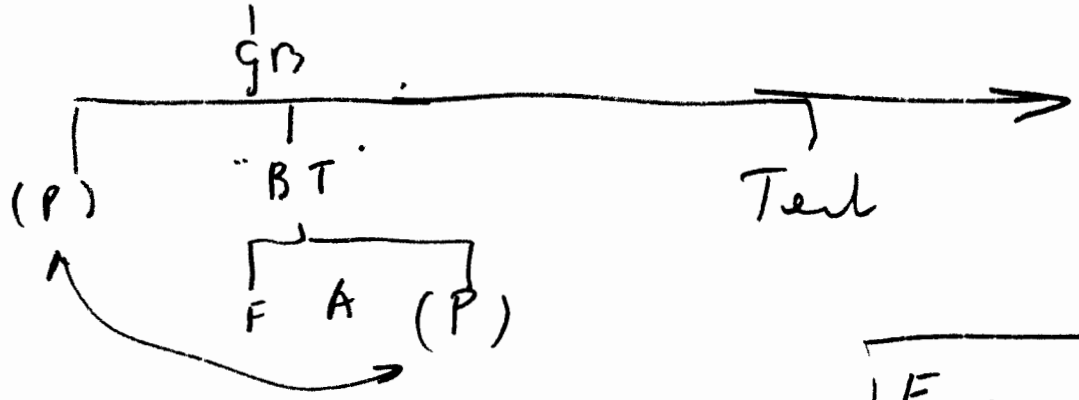

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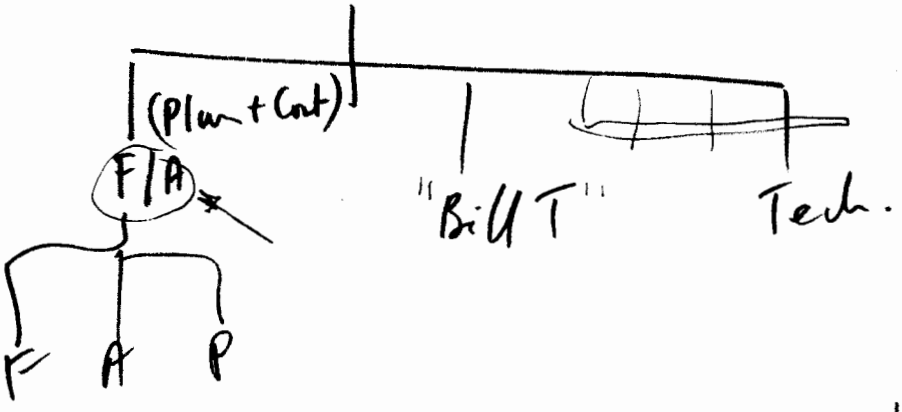

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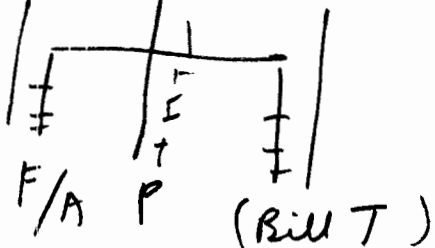

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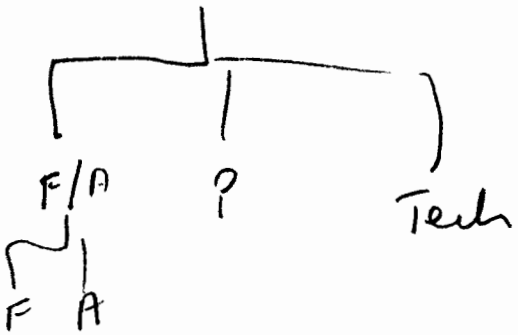
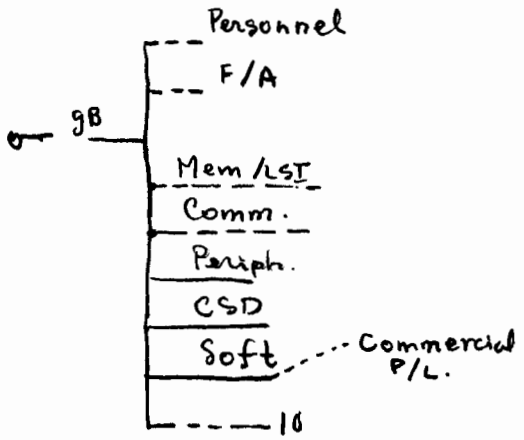


- Process / policies
- Prod Rev.
- Reports.



Current

(0) Co-operating divisions with some central sharing

(1) Split-OOD ::= (tape → SF; disk → Colo; CPU's → P/L)

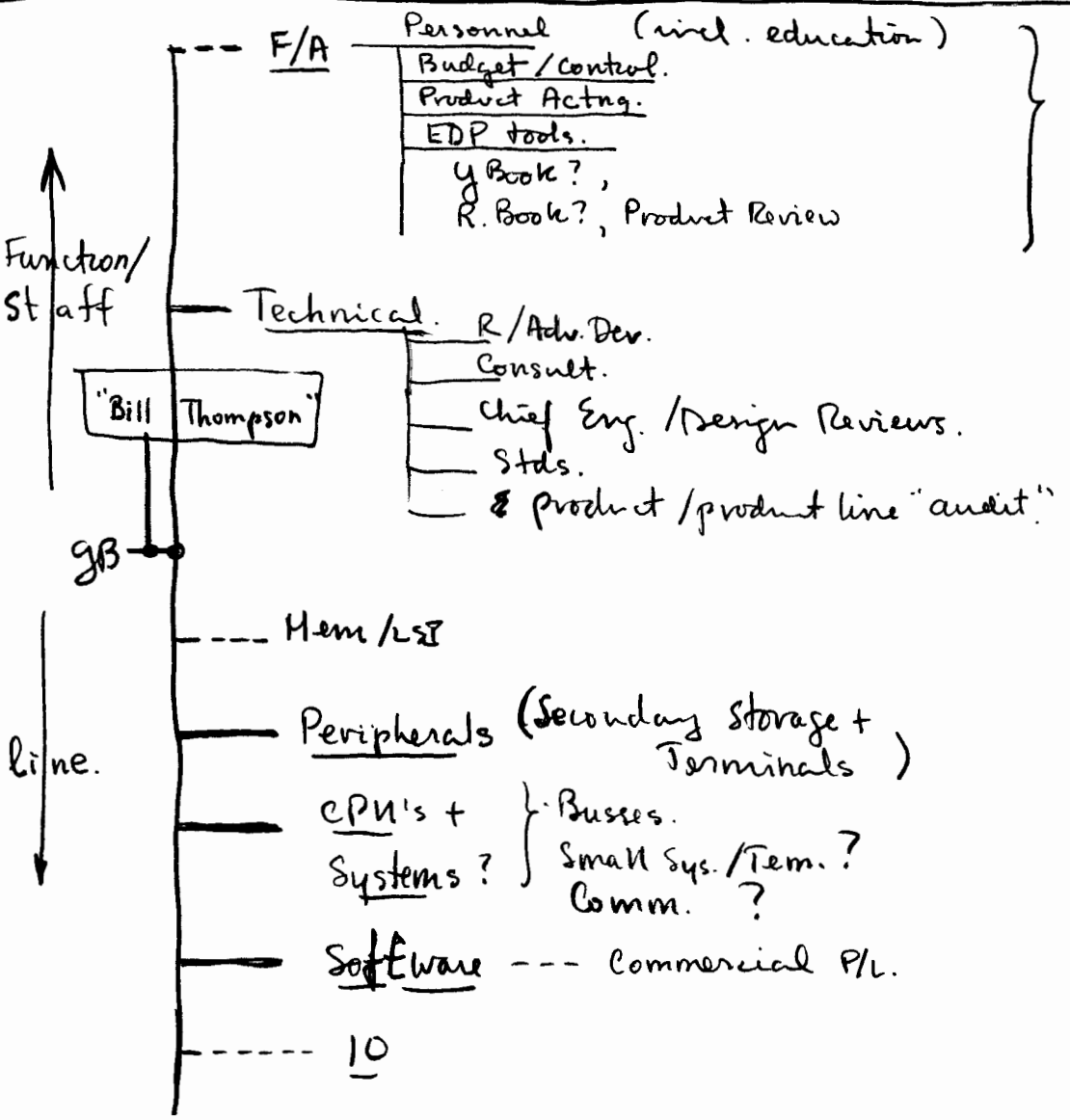
1A

a. up — gB — X (1:1 problem)

b. Over — gB; X (? or Lander prop.)

c. down — X — gB

(2) gB moves.

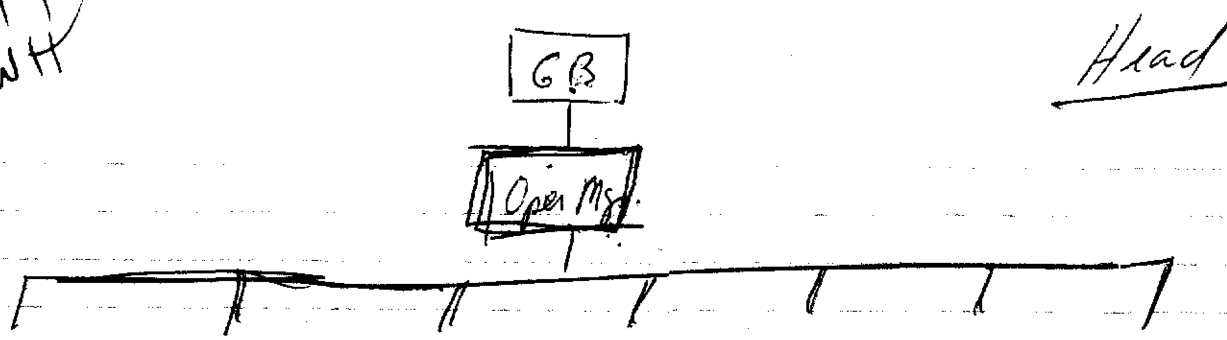


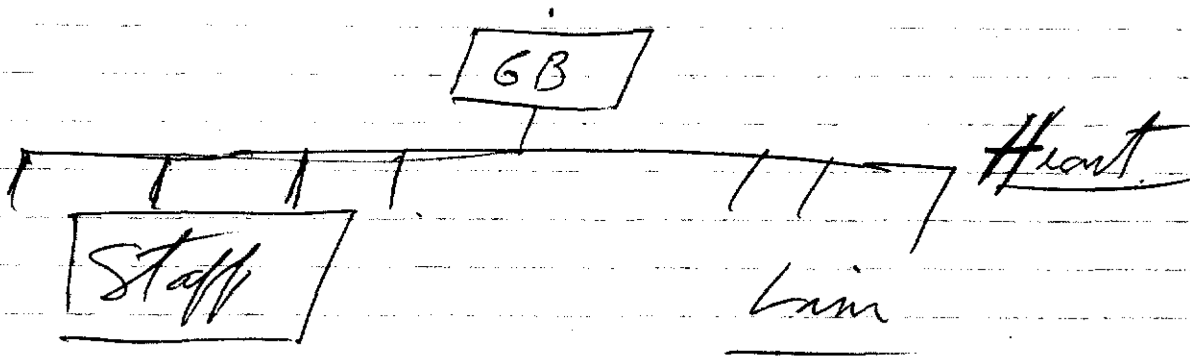
(3) Strengthened Staff/line "matrix"

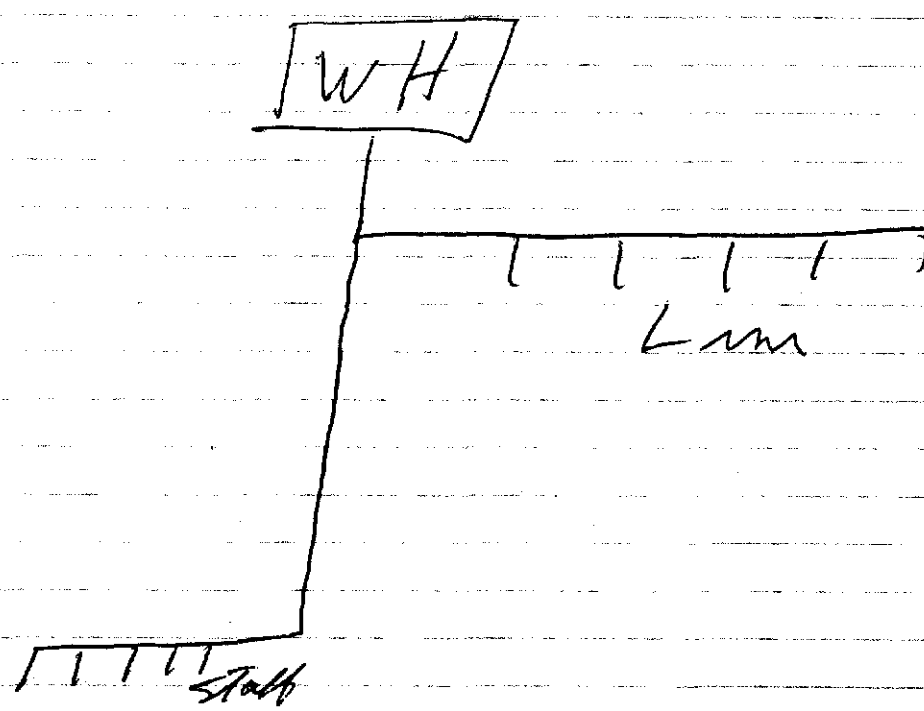
Some OOD Organizational alt's.

6/24/76.

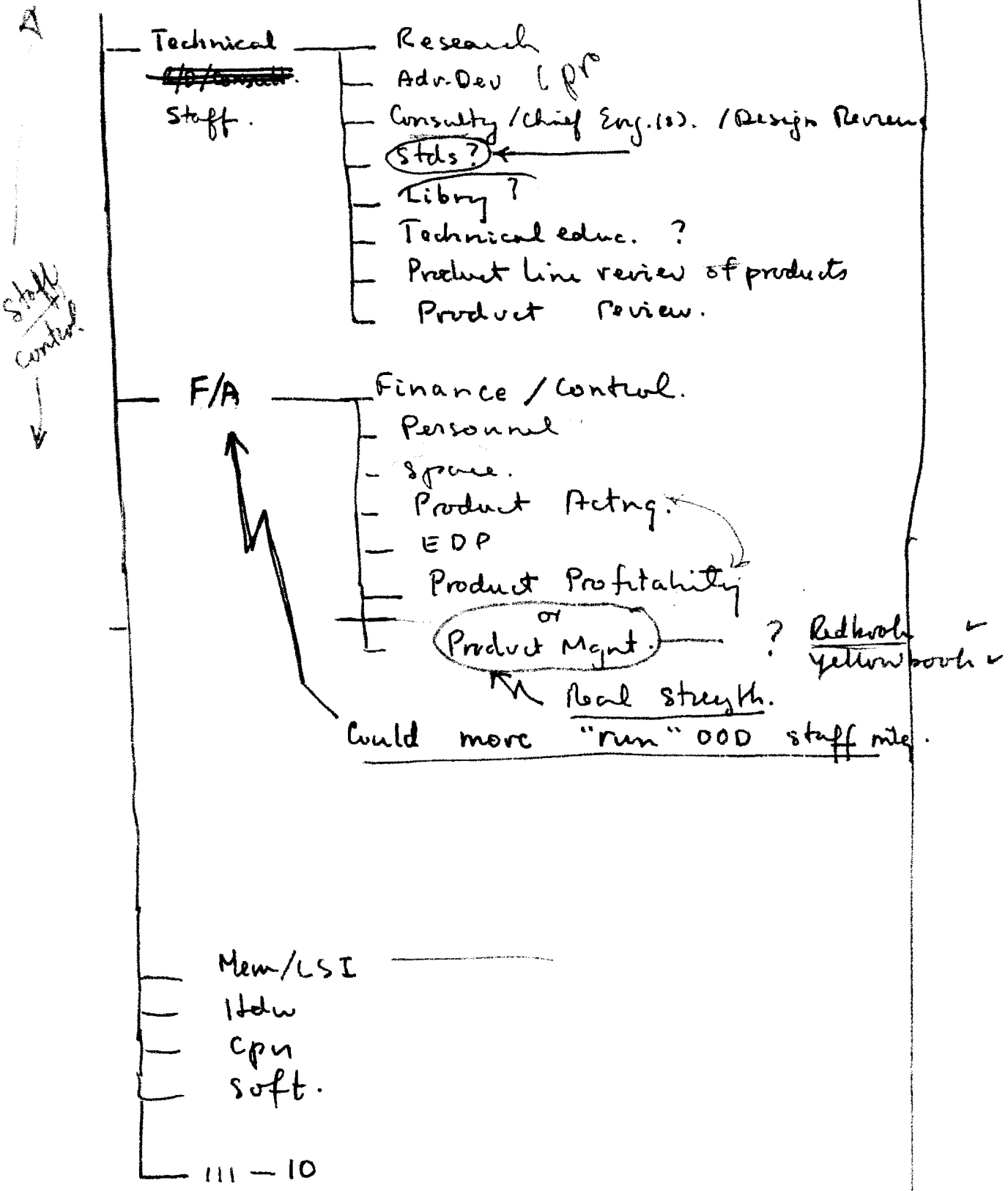
2/1/77
WH







Matrix alternatives Proposed Change 6/1/76



P/L interfaces? to fix:

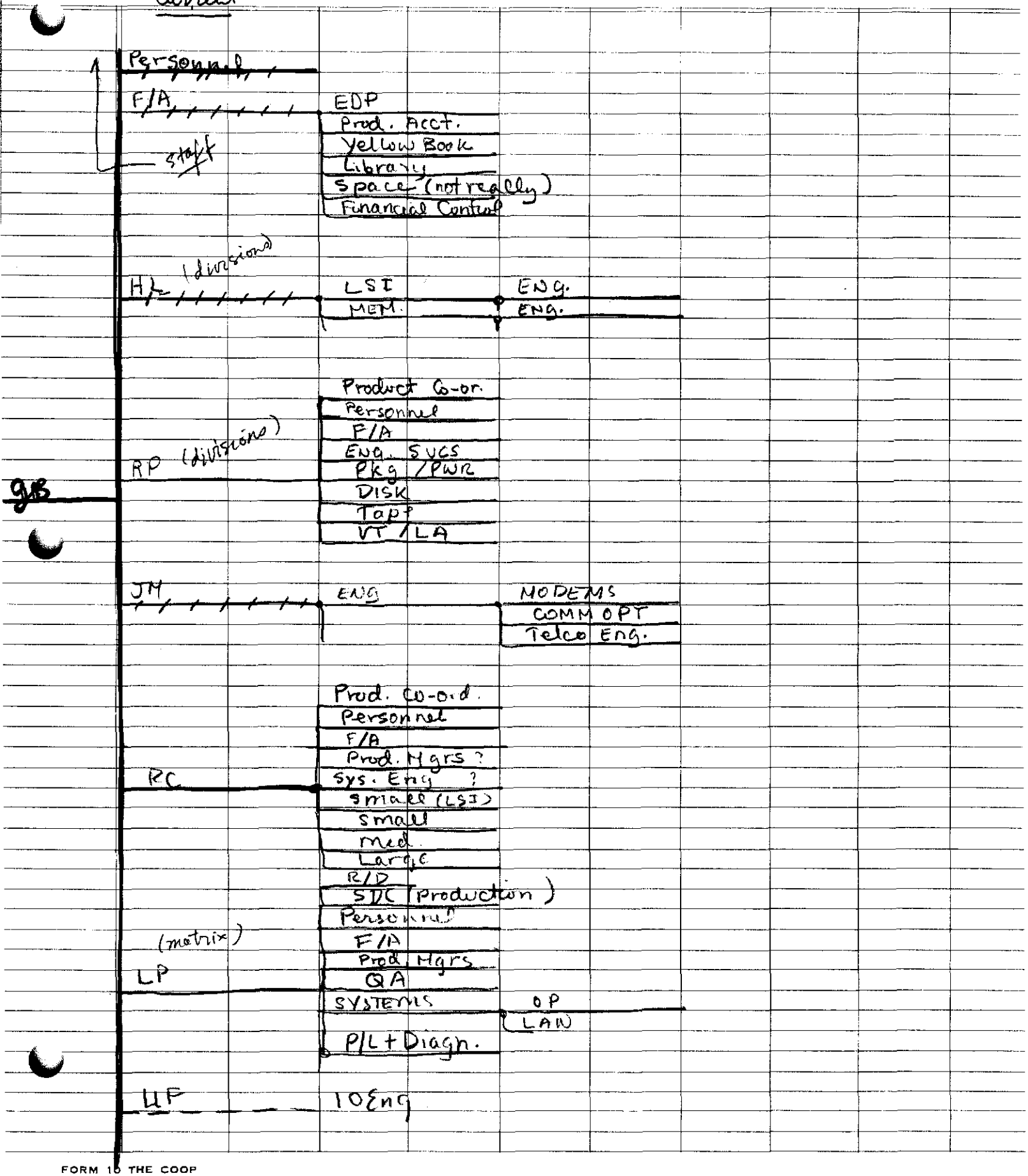
CSS;

IPG, LDP, EPG, EDU, ← "Science-based"

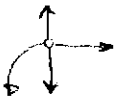
Bus, DCG - OK

5/31/76
gBell

Current



5/31/76



- out
- over to O.C.
- up (on)
- heavily matrixed
- divisionalization (as is)

- down as a member of OOD.

Problems now:

1. GB has no time for technical and/or running the place. — not even OOD, let alone PL checks. Lots of people, no resources.
2. No internal (cross VP) checks — only P/L's. (Run as a set of Dukedums. (boroughs)
3. Innovation in disk/tape vs. integration with factory
4. S of small systems as terminals absorb them.
5. • R & D / Consulting for Product checks
   • no Product profitability check
   • look at all products
6. Lack of interest in control, product profitability, organization. p/l interaction for RB.

Problems to Solve

⇒ t. G Bell.

More innovation in peripherals.

technical monitory.

- C.E.
- PL's.

decentralization

"better" mgmt.

Mfg. with K.O. 6/2/76

→ Got to get my time by ~~automatic~~ mgmt not by diverging it away

→ "Automatic mgmt." through checks/balances

→ Formal, clocked look at parts.

Set up regular mtgs. to understand

~~how~~ what the groups do, where they're going,

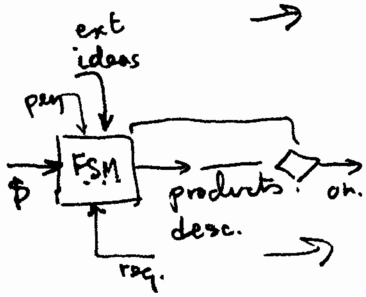
how they're run on a routine basis.

Pkg → P/S,

I don't know:

→ ~~[illegible]~~ Supervisors reporting to disk, tape, t's,

→ ~~[illegible]~~ what the key parameters are the measure their products by.



→ Products, patents.

→ how they go about deciding.

→ Budget. η = hg. control.

½ day ⇒ <u>financial</u>, <u>PM's</u>, <u>F/S</u>, <u>Mfg</u>.

~~[illegible]~~ <u>trivial</u>:

logic, electronics, pkg, pwr, trivial

languages, use,

applications, connections to people

electromech (Langmuir),

Servos, ~~[illegible]~~ r/w,

special kind of mech:

mount of mass.

- acupuncture
- flying heads.
- ~~[illegible]~~
- Transduction.
-

26 May
with Bill Thurber

Problems:

Don't we have enough "conflict" now as sellers to P/L's? Why another "internal" matrix?

Line

- CPU, Term, + Commun
- Disks + Tapes
- Memories, LSI
- SW

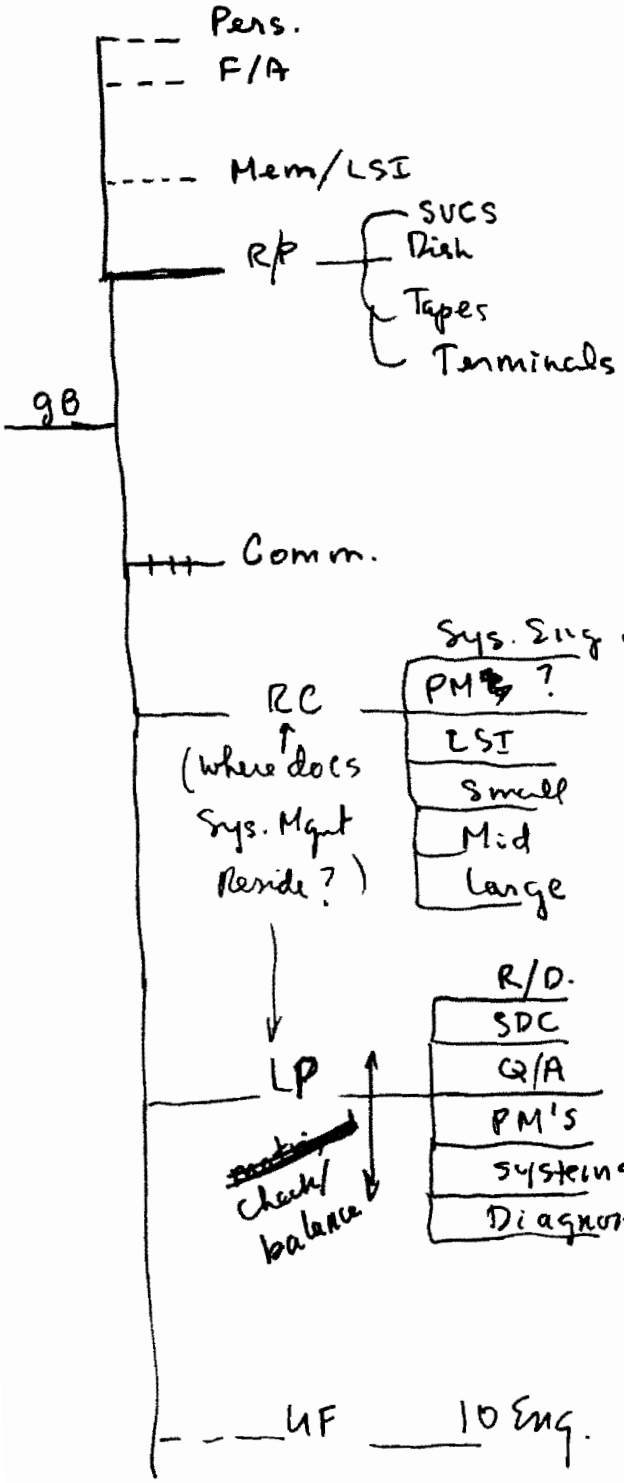
- Chief Eng ?
- Product line audit
- product audit
- consulting ✓
- Adv. Dev. ✓
- Research ✓
- Library ?
- Education ?

Staff

- Res, Planning + consultr PL integrating ("functional" Prod Mgrs)
- Personnel
- F+A (incl function)

Object: Move away one level from managing the product in order to influence the product development / process

Now



Problems 5/31/76

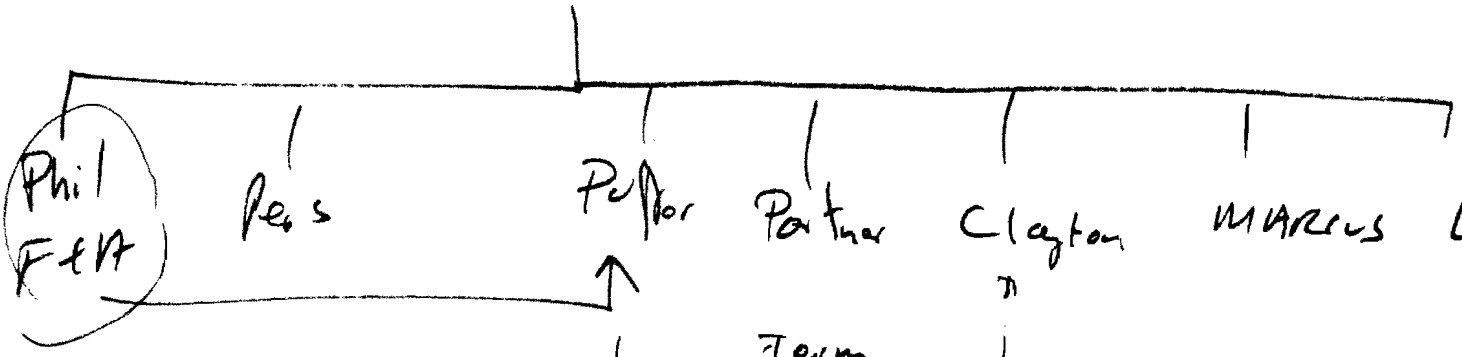
where is it physically are SVCS too central? Should PM's be central.

Can Sys. Engs. be for all Eng? PM's might be centralized

Partial move to mfg.

. align with systems
Could diagnostics move to cpu, F/s, Mfg.?

I



Adv
- Helps development of others - Clay, Puffer, Carroll
- Less involvement in F+M

Disadv
- Puffer better integration + to-do + small sys
- can Puffer play two roles
-

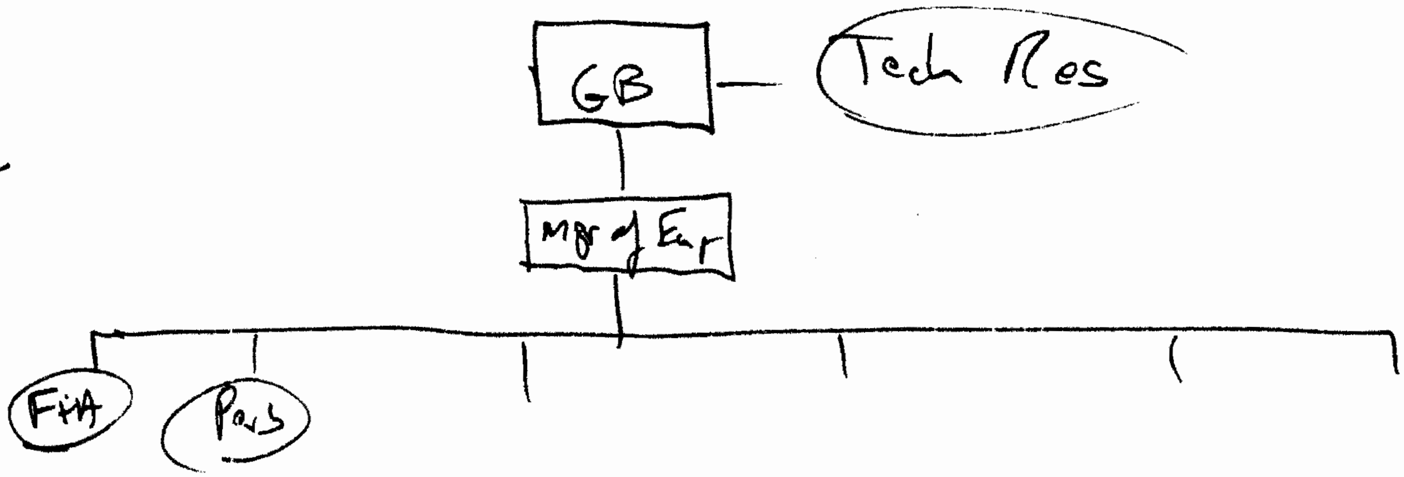
II

Alt I plus put Pers under Puff

Adv - Removed from detail

Disadv
- could Puffer go to Sal reunion
- Puffer not perceived as people sensitive

III



a. Functions — Technology

b. Tech.

→ c. now/hybrid — Funct + Tech — Tech — F & T.

---

now

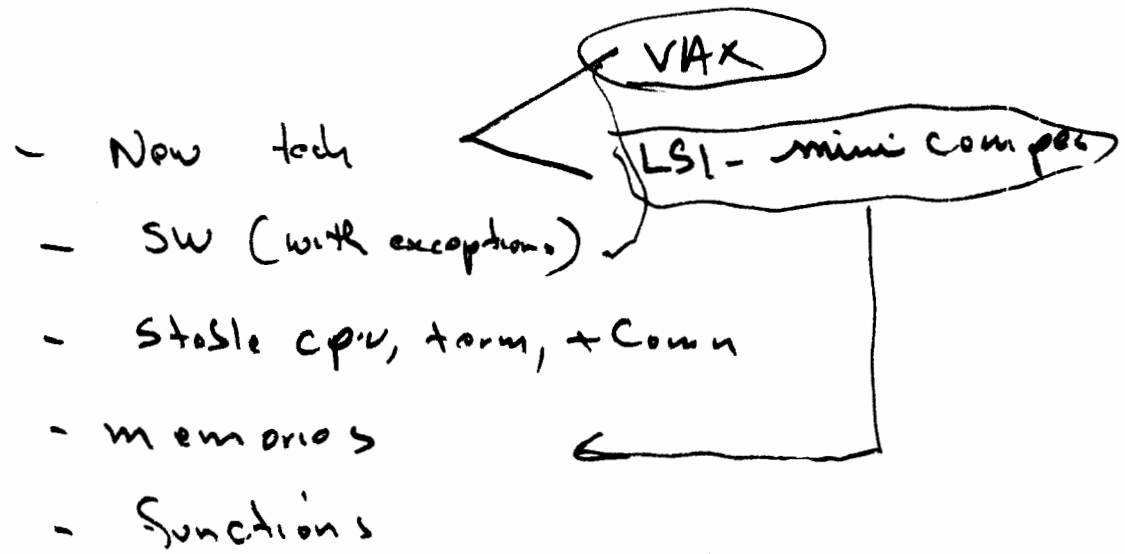
Functions: Adm. | Dist.

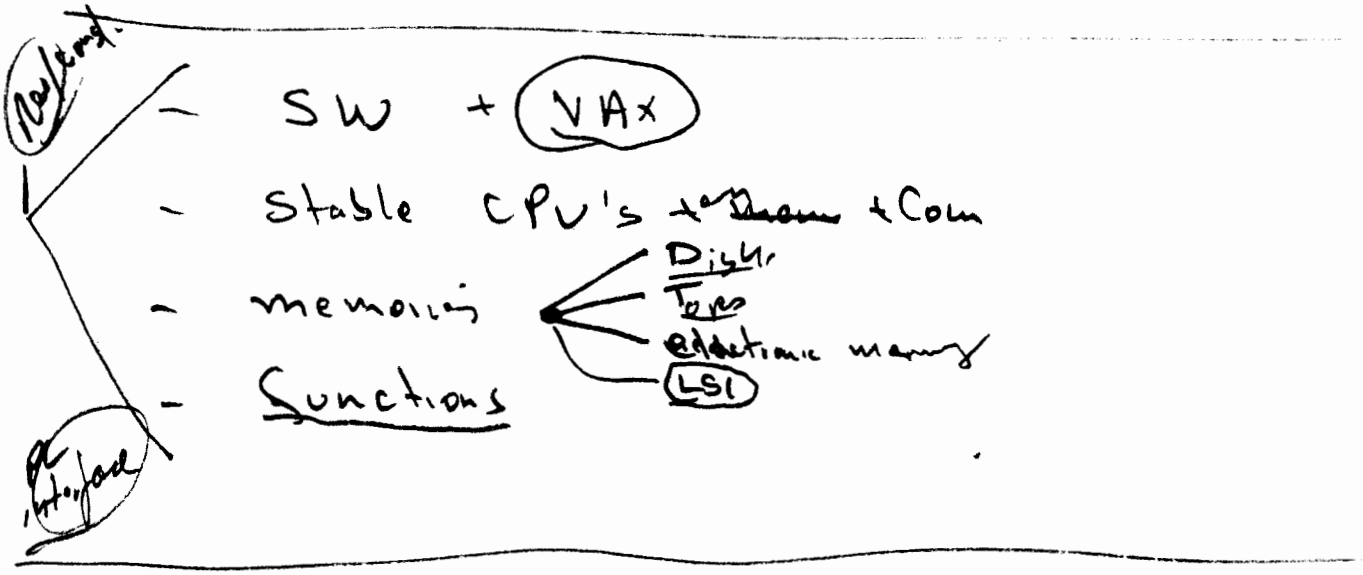
Hdw Suppt | P~~ff~~

~~Soft~~. Support | Soft

Both — standards | ~~Best~~

Tech: cpu, disks, - - - compilers, op sys.


VAX
LSI - mini comp
- New tech
- SW (with exceptions)
- Stable cpu, term, + Comm
- memories
- functions


- SW + VAX
- Stable CPU's + Comm
- memories
Disk
Tape
electronic memory
LSI
- functions

WT

		GB
Porter	+ best mgr -- least matrix (external) most " (internal)	- Good process mgr - PL interaction is good - running "most" good now - Successor (?)
Puffer	+ Good mgr + good admin - people sensitive - creative / interactive	GB (1st time) - too weak must have policies, disciplined - has not done SW
Clayton	+ most matrix - disciplined	GB (2nd time) → HW/SW sensitivity → PL sensitivity → Gentle style

	WT	
- Slate	✓	
- Spector	?	
- Mimicus	✓	
- Pascal	chair	
- Knoll	✓ Tech	
- CADX	✓	
- Plowman	? Know	Faure could do it
- Shipley		
- McKenzie		

placed

IN 117 (17)

Start up Tech/Pro

inter grps

- * VAX
- LSI - technology (includes

SW / Fo

- Languages
- OS
- Compilers
- Networks

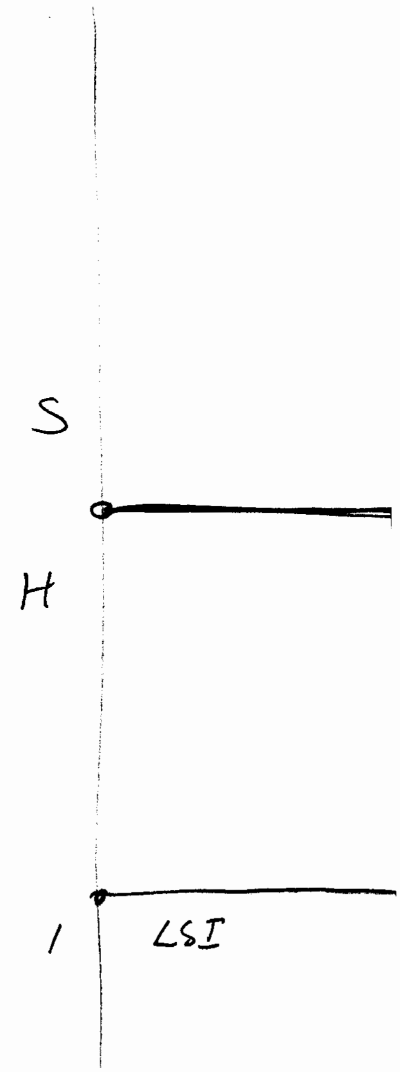
LSI-11

- Stable CPU's
- terminals - smart
- " - dumb

MEM

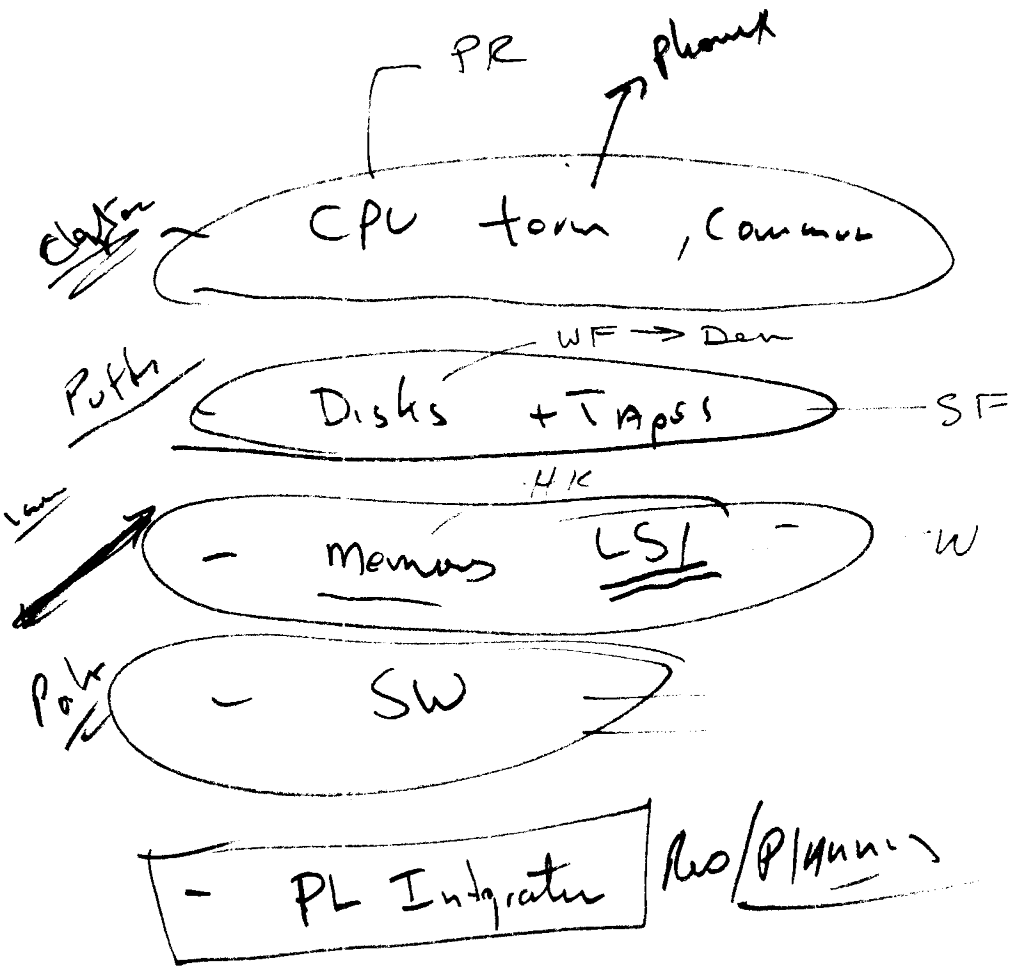
- Disks
- tapes
- Communications (very stable)

MEM - Memories (eloc)



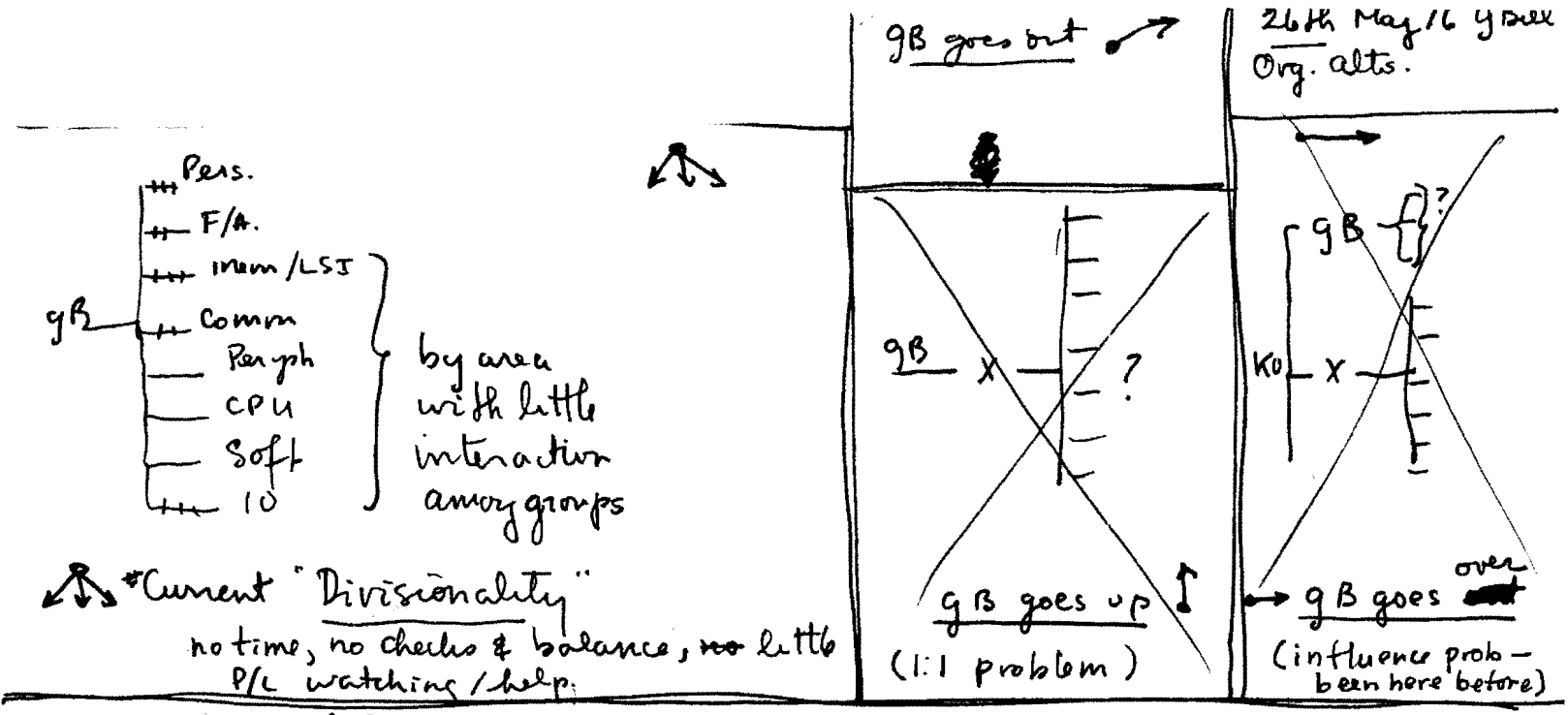
functions

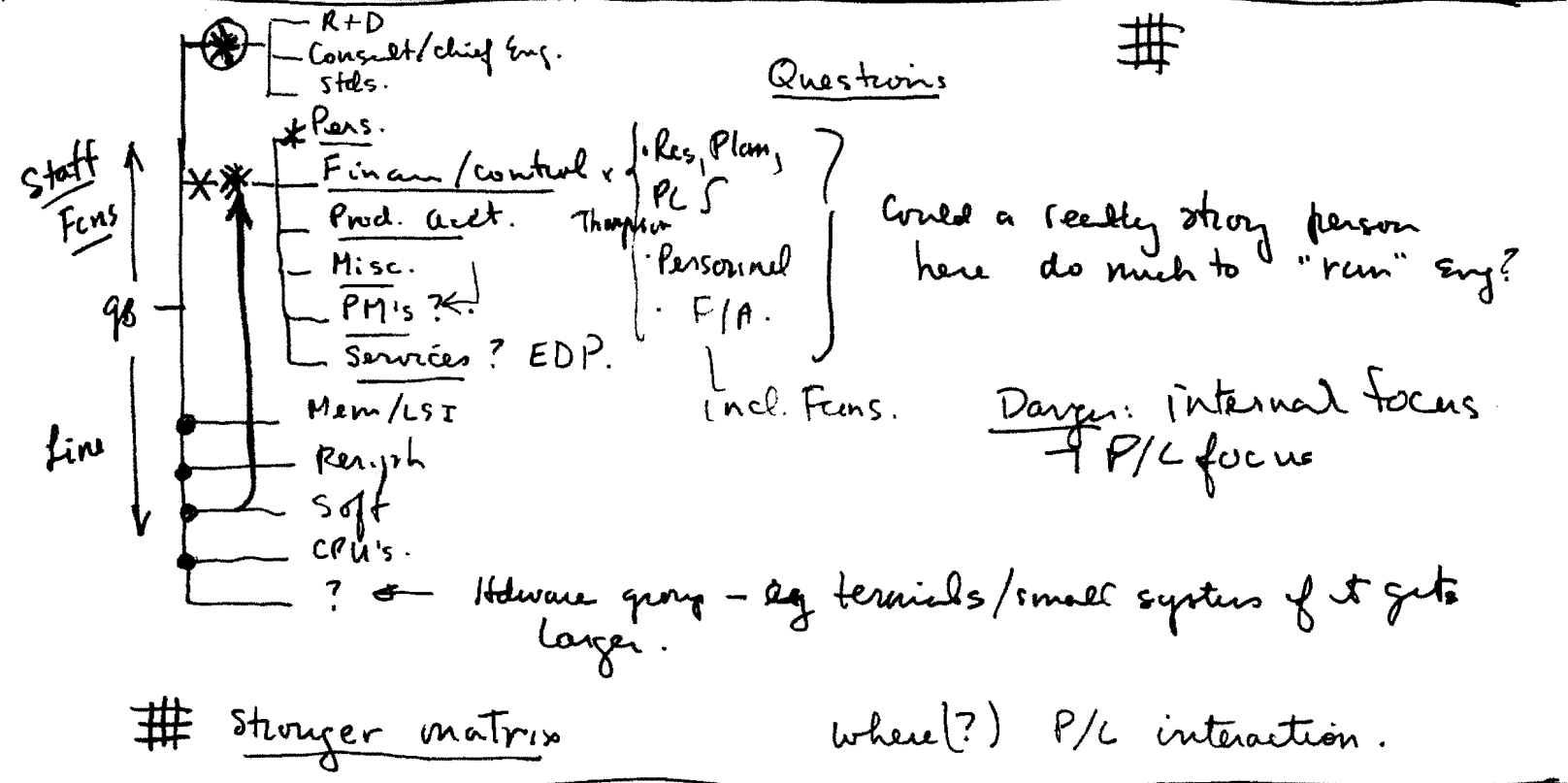
- Draft
- STD's
- CAD
- Model Shop
- Component tech
  - P + S
  - Packaging
  - Cabling

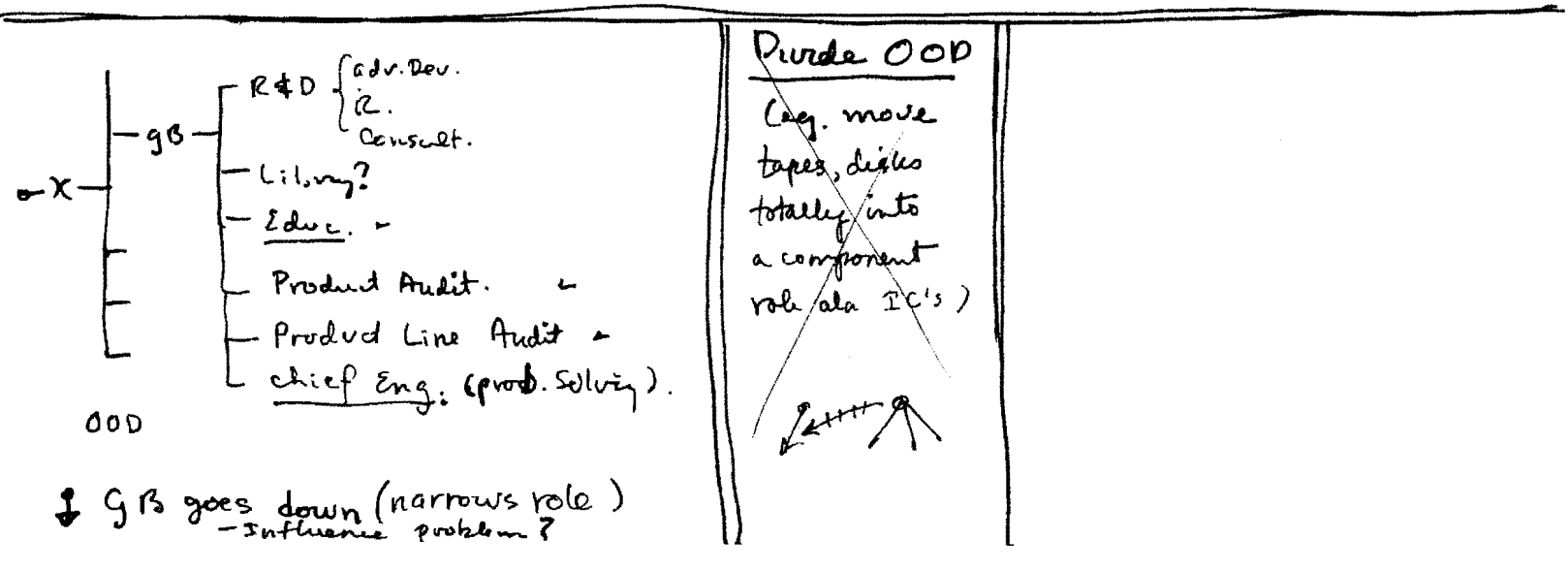


Pers

FAA


Pers.
F/A.
Mem/LSI
Comm
Periph
CPU
Soft
IO
GB
by area with little interaction among groups
"Current "Divisionality"
no time, no checks & balance, ~~no~~ little P/L watching/help.
GB goes out
GB
X
?
GB goes up
(1:1 problem)
26th May/6 yrs
Org. alts.
GB
KO
X
GB goes over
(influence prob — been here before)


R+D
Consult/chief Eng.
Stds.
Pers.
Finan/control
Prod. Acct.
Misc.
PM's ?
Services ? EDP.
Res, Plan, PL
Personnel
F/A.
Thompson
Staff Fcns
GB
Line
Mem/LSI
Periph
Soft
CPU's.
?
Questions
Could a really strong person here do much to "run" Eng?
Incl. Fcns.
Danger: internal focus ↑ P/L focus
Hdware group — big terminals/small systems if it gets larger.
stronger matrix
where (?) P/L interaction.


X
GB
R&D
adv. Dev.
IR.
Consult.
Library?
Educ.
Product Audit.
Product Line Audit
chief Eng. (prob. Solving).
OOD
GB goes down (narrows role)
— influence problem?
Divide OOD
Eg. move tapes, disks totally into a component role ala IC's)

CONFIDENTIAL

digital

INTEROFFICE MEMORANDUM

TO: Gordon Bell
Dick Clayton
Larry Portner
Bob Puffer

DATE: 10 June 1976
FROM: Bob Lander
DEPT: Controller's Dept.
EXT: 5051
LOC/MAIL STOP: PK3/F33

JUN 14 1976

SUBJ: Organization of Engineering Department

Being aware that you are currently discussing organization changes, I want to offer for your consideration, how I view your world and a possible new structure.

Attached is a proposed organization chart and on subsequent pages are some of my thoughts on same.

If you want more discussion on this, I'll be pleased to meet with you.

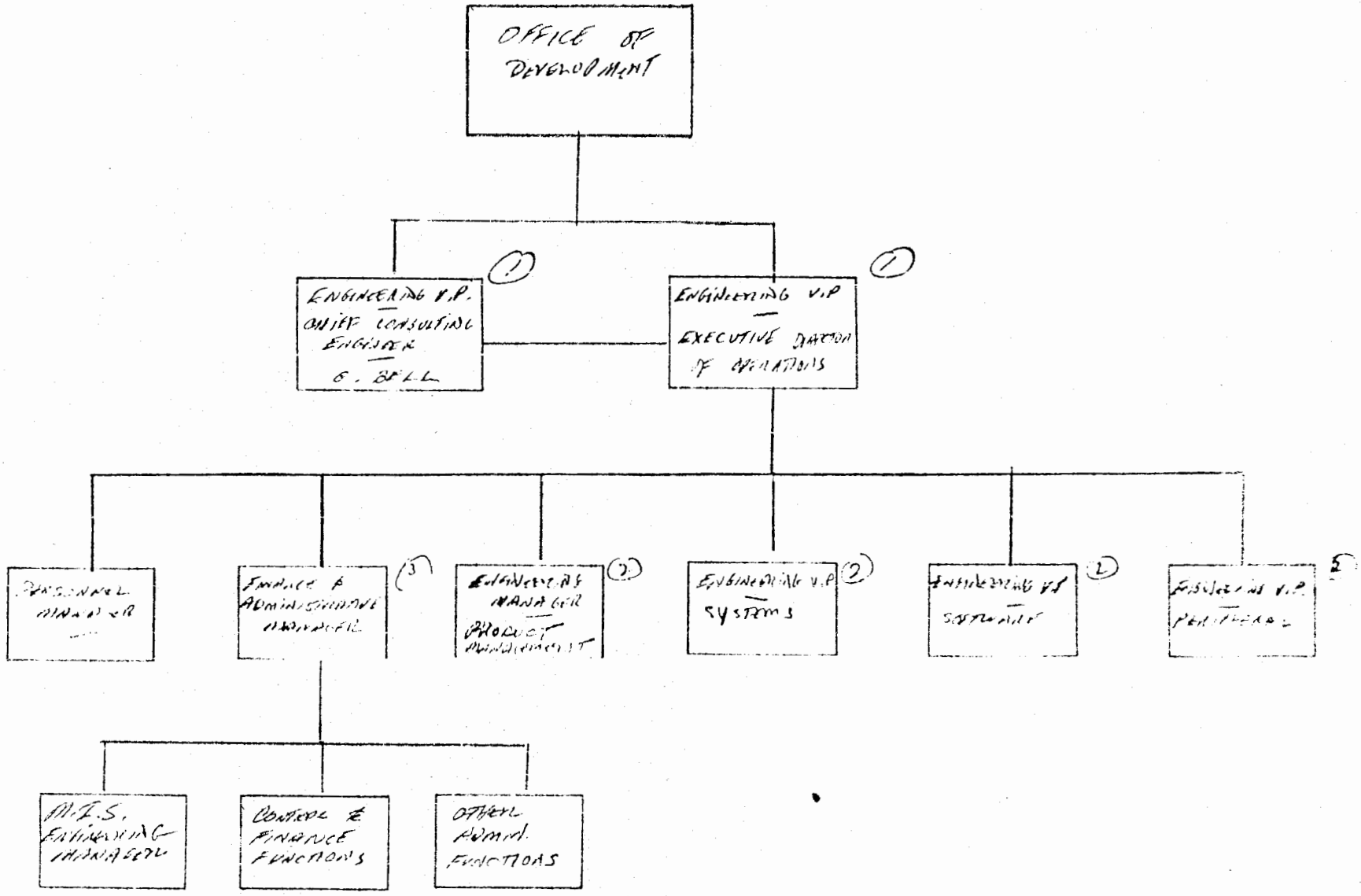
/jmb
attachments (2)

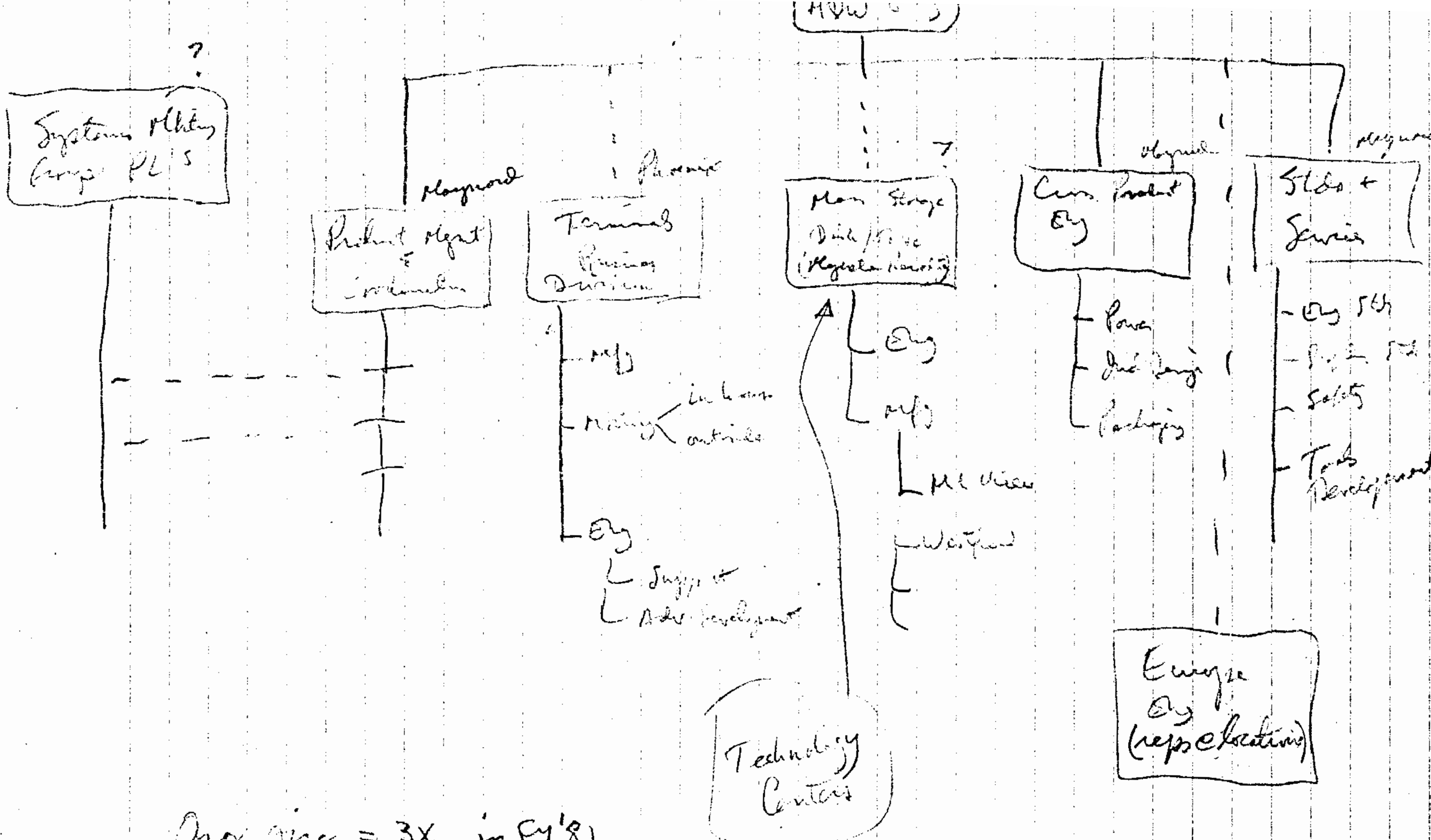
THOUGHTS ON ORGANIZATION CHART

1. I believe a restructuring of responsibilities affecting Gordon Bell should be considered. He should be designated as being the Chief Consulting Engineer and all administrative duties should be placed in the hands of a new Executive Director of Engineering Operations. I suggest that the individual to fill that role is available in-house. That person should be represented on the Operations Committee.

2. The existing three engineering groups should be altered so that all "Product/Project" Managers would be pulled out and structured under a new Engineering Manager. I believe one of the weakest roles being performed in the company today is that of the Product Manager. The job definition is very foggy and some of the current individuals are torn between trying to be Product Managers, as well as, Engineering Managers.

3. The position of Finance and Administrative Manager is one that should be filled by Arnie Goldfein. I believe he has the capability to do that job as I have structured it. If your group organizes in a different way, then the job for Arnie Goldfein will have to be redefined.


OFFICE OF DEVELOPMENT
ENGINEERING V.P. CHIEF CONSULTING ENGINEER G. BELL
(1)
ENGINEERING V.P. EXECUTIVE DIRECTOR OF OPERATIONS
(1)
PERSONNEL MANAGER
FINANCE & ADMINISTRATIVE MANAGER
(3)
ENGINEERING MANAGER PRODUCT MANAGEMENT
(2)
ENGINEERING V.P. SYSTEMS
(2)
ENGINEERING V.P. SOFTWARE
(1)
ENGINEERING V.P. PERIPHERAL
(1)
M.I.S. ENGINEERING MANAGER
CONTROL & FINANCE FUNCTIONS
OTHER ADMIN. FUNCTIONS



Org size = 3X in FY'81.

~~Nov~~ ~~Dec~~ ~~76~~ 75

DEC 75 Wood

Memo which Proposed "Central Eng" Bell 2/74

POSSIBLE ENGINEERING ORGANIZATION

Bell

- Personnel and Education
- Plans, Review, Measures
- Process and Standards
- Software
  - Systems
    - 8
    - 11-S
    - 11-L
      - Nets
    - Languages
    - Standards
  - Documentation
  - Applications
  - Software Support
  - Diagnostics
    - Field
    - Mfg./Eng.
- Options
  - Disks
  - Tapes
  - Printers + Unit Record I/O
  - PS (and Packaging?)
  - Support (draft, models, auto=design, repro)
- Systems
  - Small
    - LSI
    - 8
    - Terminal
  - Mid
    - 11/05
    - 11/40+
  - 11/45-11/85+
  - 10
  - 15
  - Adv. Dev.
  - Adv. Architecture
- PL Engineering

Kaufmann

- Housings Eng. & Mfg.
- Memories Eng. & Mfg.
- Cudmore
  - Testing
  - Components
  - Assembly Line Systems Eng.
- Process Eng.

This was the basis of Eng. that lasted till I left — and was basis of what exists today.

'73 10/87

It was basically the end of P/L structure when P/L's had their own engineering.

G. Bell
2/7/74

BURNING ISSUES ENGINEERING RE-ORGANIZATION SHOULD ADDRESS

0. Interface to markets; interface to manufacturing.

1. Low end computer products.

2. Including, terminals as low end products.

3. System products versus collection of options that happen at random.

4. Better integration of hardware software.

5. Compatibility. Also 11/11; 10/11; nets

6. Reliability and producibility.

7. LSI--getting there.

8. Semiconductor memories phasing and opportunities for faster machines.

9. Product range-funding.

10. By structuring a particular way, will we build obsolete products according to organization--thereby missing opportunities.

G. Bell
2/7/74

PROPOSED PRODUCT GUIDANCE AND STRATEGY COMMITTEES

Networks

8-Systems (Willis/Clarke)

11/05R (Teicher)

11-Midi (Delagi)

11/85 (Demmer)

10 (?)

Terminal Coordination (Devlin)

} Systems

Primary Memory (Lemaire)

Disk and Tapes (Saviers/Peyton)

Unit Recod I/O (Corell)

Analog/Digital (Peters/Savell/Wallack)

Power, Packaging (Rey/Nevala

} Components (options)

Ground Rules

1. Guidance for product planning and product management.
2. Advisory--generally chaired by 1 or more responsible line manager for product(s).
3. Consists of Engineer, Mfg. (2x2), Service, Sales, and using Product Line customers.
4. Manager responsible for profit; 2 wide open 1/2, 1, or 2 day Woods Meetings; a 3 year plan which is a maximum of 5 1/2 months obsolete; and a short plan for yearly product review.

ORGANIZATIONAL AND TERRITORIAL ISSUES

1. Packaging, power supplies, power distribution, shipping containers, environmental testing, metals engineering, design and mfg. of metals. Also, individual product group packaging. Strong central group with dotted line reporting to product, seems the way to go. We still can gain by more centrality. Less need to bend sheet metal is way to go.

2. Design automation. Central group (Vrablik) is beginning to function for PC boards, back panels, automatic insertion and data base. Splinters for Register Transfer simulation (programming), Logic Simulation (Gale), and Mask Generation (Gale-LSI).

3. LSI-Mfg.--Lemaire, Cudmore (Zeh-Amann), Teicher, Gale--doing lots on ad hoc basis, but really moving toward a strategy. Peters charter to do engineering; Lemaire to get chips and circuits.

4. Research. None with hardware building. Many groups prototype, almost all ideas get built. Little fundamental technology.

5. New products we are unable to identify now. Will this organization lock us in by structure and funding to miss new opportunities? Eg., scan graphics, voice response, OCR, desk calculators, computers packaged in terminals (smart terminals), floppy.

6. Terminals. Are these merely the form for our future low end computer packages? How do we sell them anyway? VT5-, VT5-Lab graphics, VT5- for typesetting, GT4-, (sell only: VT15, VT14, VT8), VT20 and VT20 follow-on, RT0-, RT90, CSS color, LA-. Issues: will new coordinating committee encourage/reduce overlap? How do we move to better products? Would some centrality allow us to hire a fundamentalist in human factors engineering, planning, and TV techniques? Is there any way to do it worse? We still only lose $250K/year in miss-products.

7. Memory. Move to adopt combined Mfg., Engineering, and Testing as per Bell-Kaufmann suggestion to Operations Committee memo?

8. Manufacturing and its Engineering. Assembly line design. How much centrality? Can these plans be reviewed by engineers who must interface to them? Component group?

9. Process Engineering. How can we stimulate development in automation for:

   Modules fabrication and testing
   FA&T
   Peripherals
   Power Supplies
   Memories

10. Synchronization with PDP-10. Customers for cabinets, power supplies, disks, terminals, tapes, software. Must interface to standards for networks and languages. What is interface to 11/85...would 10-land• kill it?

G. Bell
2/7/74

PROGRESS ON TOP-10 BOARD OF DIRECTOR's PROBLEMS (published Aug. 1973)

1. 11-programming--substantial progress on compatibility.

2. LSI--no progress, need strategist-implementer.

3. Floppy--doing. Moving to manufacturing drive.

4. RP disks--Doing. Maybe shouldn't as it impacts engineering funding.

5. Networks and multiprocessors--nets OK. Multiprocessors not OK.

6. High level languages--commitment to use BLISS; FOCAL in some diagnostics.

7. Small and Large-11's--are segmenting. Have started 11 development moving.

8. 8's and 11's--should we support both? Yes, seems to be answer--is probably right answer.

9. Consoles, packaging--move to common scheme for low-end. Concern and staffing is occurring.

10. Terminal types--progress to adopt VTXY.

11. Manufacturing-Engineering Committee is helping. Pete is more aggressive to build engineering expertise.

Fig. 1 Engin ng ORGANIZATION

	E*	T*	P*
HINDLE			
Central Eng.--Puffer			
PDP-11--Delagi			
Small--Teicher	5	4	
Large--Hughes	6	5	
Systems--Swanson	2	1	
Reliability--Ancona	5	5	
Bus Options--Dando	6	5	
Disks--Saviers	22	22	
Tapes--Lawrance	9	7	
Printing Terminals, Cards, & Paper Tape--Corell	12	11	
Engineering Services--Taya			
Auto.Draft--Elgin			
Model Shop--Gerelds			
Drafting--Reilly			
Reproduction--Gillette			
Software Eng.--Portner			
Products--Stone			
Staff Plan.--Wade			
Small Sys.--Elson			30
PDP-11--Van Roekens			60
Languages			
Applications			
Diagnostics--Horovitz			
Sys. IO--Conklin			25
Production Support			
Software Sup.--Schroeder			
Library (production)			
Research,Dev.,Consult.--Bell			5
Soft.Eng. Education			
CSS--Holman			
Maynard			
Eng.	20	22	18
Low Vol. Prod.	2	8	0
LA--Butler	4	5	5
Europe (UK)	8	7	5
Europe (Munich)	8	4	11
Australia	2	2	4
Japan	1	0	0
Canada	4	2	2
PDP-10--Leng			
KL10--Wilhelm	21	6	
Eng.--Atterbury			
KA,KI--Fagerquist	5	3	
Eng.--Ed Siegmann			
Advanced Systems--Hurley	4	7	

	E	T	P
S. OLSEN			
Terminals--Stockebrand	4	2	2
Typeset/Traditional--Lane			**
Eng.--Milton	1	0	24
Low Vol. Prod-Reed	2	21	11
Business PL--Jacobs			
Eng.--Ball	1	1	
Communications PL--Marcus			
Eng.--11 Comm. Prod.-Bastiani	6	8	
KNOWLES			
OEM PL			
PDP-8--Clarke	9	7	
PDP-16-Eggert	1	2	
LSI--Gale	6	4	2
Industrial PL--Vachon			
Eng.--Melvin			
K, Analog, Specials-Gordon	3	4	
PDP-14 & 14 Terminal--Ricketts	3	7	1
Modules PL			
Eng.--Moffa			
Terminal RT	1	2	
Remote Data	3	4	
Modules	5	5	
Computer-on-a-board--O'Loughlin			
LDP, EDU, Medi, Terminals PL			
LDP, terminals			
LDP Eng.--Budianski	6	3	
Graphics--Halio	4	5	
Medi			
Eng.	1	0	3
BELL			
Chief Eng.--Best			
Plans & Review--Laut			
Software Plan & Review--Teichholtz			
Power Supplies + Primary Memories--Savell			
Power Sup.+ Wiring--Rey	6	4	
Memories			
Core	3	4	
MOS	2	2	

*E=engineers, T=technicians, P=programmers
**Wiremen

GB
8/73

	E	T	P
KAUFMANN--Manufacturing			
Cent. Eng.--Cudmore	20	58	
Test Equip.Eng.--O'Connor	13	55	
Pack/Environ.--Lawrence	3	1	
Components--Amann	4	2	
Metals--St. Amour	25	2	
Mfg.Eng.--Bean	16		
Ind.Design+ME--Nevala	6	1	
Large Vol.Mfg.--Hanson	18	9	
(PR/Canada/Boards)			
Process-Cajolet	12	5	
Modules/Test/Special			
Systems--Smith	15	19	
Mfg./QC--Cady	4	8	
Core Memories--Lemaire	10	3	
Magnetic Heads	1		
Components	2	1	
Systems	7	1	
Peripherals (Westfield)	9	0	
Mfg. Eng.	6	0	

JOHNSON

Field Service--Shields
Busiek
Techniques, support Comm.,Tel.Co--Kalagher
IO Support--Yurick
Ind.,TPL,LDP,OEM 8--Dubay
OEM 11, 11/45,15--Karpowski
Testing Design & Mfg. for Depots--Zereski
Long

Attachment A--2/74 G. Bell

Figure 3

P. Laut
2/26/73
Revised: 3/14/73

DEGREES HELD BY
ENGINEERS AND TECHNICIANS

COST CENTER	V.P.	NO.	ENGINEERS % AS OR ABOVE	% BS OR ABOVE	% MS OR ABOVE	TECHNICIANS NO.	% AS OR ABOVE
392 Memory+PS	GB	12	75	67	16	6	16
359 DECSystem 10	WH	13	92	77	38	5	20
378/387 11/45+11	WH	19	89	84	58	17	29
379 Disks	WH	22	95	91	50	14	36
383 Printers	WH	13	100	92	62	7	14
384 MAGTape	WH	9	88	88	66	7	0
466 C.S.S. Engr.	WH	22	90	86	41	19	58
Sub-Total	WH	98	93	87	52	69	33
357 Logic Prod.	AK	10	60	50	0	8	25
363 IDAC	AK	4	100	100	75	2	0
380 LDP	AK	8	75	75	0	7	14
381 8 Central	AK	9	77	66	11	8	13
382 LSI	AK	7	100	86	57	0	0
388 PDP-14	AK	5	100	80	20	7	14
389 PDP-16	AK	2	100	100	50	2	0
Sub-Total	AK	45	82	51	22	34	15
330 Mech. Eng.	PK	3	100	100	0	1	0
331 Elec. Mfg. Eng	PK	14	86	57	7	0	0
332 Mech. Mfg. Eng	PK	7	57	43	0	0	0
339 Process Eng.	PK	12	58	58	16	2	0
Sub-Total	PK	36	69	58	8	3	0
302 Business Sys.	SO	1	100	100	0	0	0
303 Display	SO	1	0	0	0	2	0
305 Medical	SO	2	50	50	50	1	0
306 Typeset	SO	1	100	100	0	2	50
349 Communications	SO	6	83	66	33	7	14
376 Traditional	SO	2	100	100	0	2	50
Sub-Total	SO	13	76	69	23	14	21
Grand Total		204	84	72	34	126	25

Attachment D--2/74 G. Bell

LP
GB
MK

NOTES/COMMENTS FOR OPERATING OBJECTIVES REVIEW W/ LP + GB 4/3/80

Mitch Kur

I. IMPROVE FINANCIAL PLANNING, ANAL, FCSTG, METRICS

1. NEW BUDGET PROCESS - EBS II has been designed and released; the task force was headed by Ken Nisbet. It significantly improves EBS I by providing for cost center budgeting (headcount and expenses by account), discrete project budgeting, four levels of budgeting (two of which are "off-line" simulation type budget programs), five year horizon, historic data, & line mgrs (not just finance people) can use it. Starting 4/8/80 for FY 81 - 85.

2. METRICS - Significant work has been done in gathering historic data, but lack of resources in the Central Fin group kept us from additional progress. Still need to meet with selected OOD members and implement -- will probably slip from Q4 FY 80 to Q1 FY 81.

3. REPORTS - Controller's Report was designed and implemented as planned on schedule. Future effort needs to be directed at improving the report, making it more meaningful, and more timely.

4. PROD MGT SUPPORT
   a. Prod Fin Reporting - Started discussions with Prod Mgrs / Woodford to collect positions, ideas, needs. Expect a clearer goal set for this area by end of Q4 - early Q1.

b. BURP – Being used on all major hardware pgms. Presented to Product Pricing committee – they endorsed BURP analysis of all major products before pricing. Thompson expanded to Product Line Engrg products, too. Training pkg. late – but in final completion process. Ken still needs to implement a simple central control/status system to know what's been BURPED.

c. More comprehensive anal model – Not ready to do – want to deal with making present tools/models effective first.

d. 3.5 Report – Initial work done – it's scant & there's a lot to do here to refine & get the right data reported. Will be an ongoing project for Woodford, working with Lyle, Prod Mgrs, Hjerpe, Kur, & Corp interfaces to improve & refine within reason.

5. ENG. BUS. SYST ARCH – Woodford/Baker conducted OOD discussions/interviews, dealing with basic conceptual model, which has good acceptance. Some refinement to model now – Expect a detailed syst. design (by major module or sub-group) plan/schedule by end of Q4.

6. EVA COST CATH/MONITORING PROCEDURES – Part of arch. project above (#5). Part of the Labor reporting module.

II. Communicate/Educate Line Mgrs on Control & Fin. Role/Resp.

1. BASIC FIN. MODEL – It's done, but in pieces, not really pulled together in one model. We've communicated via various invitations to staff mtgs + OOD --- the 3/16 OOD Direct Report Dinner mtg, Ken to Fuller staff 4/1, Ken to Haberis Woods mtg 3/28, etc.

   Ken + staff will put together a comprehensive strategy statement for the current Corp book process -- we'll use graphic models if they make sense.

2. ENG. FIN. WORKSHOPS – Two were held in Spring of 1979 -- with signif. Personnel support. Wanted two more this year -- but pers. support + drive not there. Will partly offset with coffee sessions for small groups within finance + continued presentations at other (OOD's / line mgrs) staff mtgs.

III. IMPROVE PROFES. STRENGTH OF ORG.

1. HIRE COMPETENTS — DONE/DOING -- VERY LITTLE UNPLANNED TURNOVER IN ORG. LINE MGRS DON'T COMPLAIN -- ARE SUPPORTIVE -- RECOGN. FIN IN THEIR ORGS.

   [FUT -- NEXT 6 MOS -- POTENTIAL FOR T/O AT STAFF LEVEL IS HIGH]

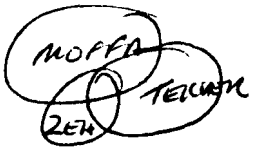
2. PARTIC. IN C.E. HUM. RES. PGM — Both Chaffey & Kur have been on Guy Finke's Committees (different ones), & contributed.

PRESENT + FUT. ISSUES

① OOD ORG - ANTIC Δ'S COMPLEXITY [FIN. FOCUSES WANT TO RUN]

↓

② VLSI ORG — POTENTIAL PROB



→ ? MANAGER
? OOD NEW MEMBER

[HOW TO SUPPORT FIN.]

③ TOPS (700 PEOPLE) / FACILITIES (250 PEOPLE) → LARGEST OOD ORG

- $20 M EXP.
- $30 M + CAPITAL
- SPACE PLNG

- OOD PROJ = FY80 7.3 M
- CC SPEND = 21 M

④ JUSTIF / STRAT. / APPROVAL SYSTEM FOR NON-DEVEL SPENDING EXPENSE + CAPITAL.

⑤ PROGRAM STATUS -- PIC. PGM REV
YELLOW BOOK
INTERNAL STATUS FOR {OOD / ENG / MGT}

⑥ FIN. "CENTRAL" ORG — MIS / CENT MGT SUPPORT / PLANNING-BUDGETING - CAP + EXP / SI'S SUPPORT (UNIQUE CORP. FIN. ROLE)
- VS -
LINE ORG SUPPORT / PROD MGT SUPPORT

ORG STRUCTURE + FUNDING MODELS

COPIES TO KUR STAFF —
PLEASE REVIEW — THESE WERE DISCUSSED & AGREED UPON BY OOD; THEY ARE AN EXTENSION OF OUR CONCRETE LIST.
MITCH 11/20/79

INTERACTIVE OPERATING OBJECTIVES

CENTRAL ENGINEERING FINANCE

MITCH KUR
Rev. November 6, 1979

KEY: Fin. Role

- P Primary
- S Support/Secondary

Priority

- VH Very High
- H High
- M Medium

2. IMPROVE FINANCIAL PLANNING, ANALYSIS, FORECASTING, AND MEASUREMENT CAPABILITIES

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
New Budget Process - Design and implement a revised discrete project budgeting system with a 2-3 year focus and a specific approval process. (A)	P	Ken Nisbet & Fin. Task Force	Bruce Stewart Si Lyle	Design cplt Q3,FY80 Impl.Q4,FY80 for FY81 & future budget	VH	More stable budget process, less hassle, far better financial planning.
Metrics - Determine metrics needs with OOD; plan to follow. (C-)	P	Jim Chiafery & FMs	OOD	Impl. by end of Q4,FY80 to use in FY81	VH	Ability to understand and measure accomplishment, progress, trends, and to identify and respond to adverse changes.
Reports - Develop package of meaningful monthly/quarterly fin. reports and graphs for Engineering VP's and OOD. (A-)	P	Joe Winn/ Jim Chiafery	M. Kur L. Portner G. Bell B. Stewart	Initial prelim. trial report at end of Q1FY80 Improve,refine, during Q2,FY80. Complete by end of Q2,FY80.	VH	Consistent control feedback on spending vs. budget for all Engrg.--Central Engrg. Project Rollup, Incurred Spending, G&A Spending, Manpower, & Capital--vs current emph. on Central Projects only.
Product Mgt. Support - a. Improve Product Fin. Reporting via a new or revised Prod. Fin. Statement System, with PM[4]. STARTED	P	Bob Woodford w/Emil Demikat	Si Lyle Sr. Prod. Mgrs. Curt Rawley Dick Becker PMS FA's John Fisher	To come - (Woodford started 10/22)	VH	Measurement (Corp.) of Product Contribution and/or profitability.

GOAL: I. IMPROVE FINANCIAL PLANNING, ANALYSIS, FORECASTING, AND MEASUREMENT CAPABILITIES cont.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
b. Implement BURP -- "ROI" Financial Tool for Product Investment analysis.	P	Curt Rawley, Dick Becker, PMS FA's	Sr. Prod. Mgrs. Si Lyle Larry Rasile	"Fixes" by end of Q2, FY80. Trn'g. pkg. by end of Q2,FY80	H	A technique forecasting returns on product investments; aids in deciding on which products to devel. and provides input to pricing decisions.
c. Evaluate and recommend a financial impact analysis model tool more comprehensive than BURP -- which evaluates induced spending on other projects/programs.	P 1/	(New Objective - not evaluated yet)				
d. Define product measurement input to the corp. 3.5 measurement report. (Short range, until 4a above is done.)	P	M. Kur, Si Lyle Curt Rawley, Dick Becker, Bob Woodford	John Fisher Win Hindle Sr. Prod. Mgrs. Shel Aronoff(?)	Initial recom.11/79 Initial Imp. related to Corp. Fin. interface.	H	Initiate focus by top corp. mgt. on product cut-product impact on sales/contribution/ profitability, more learning than controlling at this stage due to less-than-desirable accuracy. Lyle,Kur, to initially review w/Fisher, Hindle.
Engrg. Business Systems Architecture - Design a system for Engrg. Business feedback, control, reports for the 1980's, with PM[4] and Opr. Mgr., after defining, w/OOD,mgt. requirements.	P	Bob Woodford	Si Lyle, Bruce Stewart, Mitch Kur, OOD Members	(To come - Woodford started 10/22)	H	Plan for instead of react to the growth anticipated in the 80's -- so that stable systems are in place for planning, measuring, and controlling.
Review the effectiveness of the cost gathering/monitoring procedures	P	Jim Chiafery	Bruce Stewart Int. Audit Corp. Acctg.(?)	By 6/30/80	M-H	Identification of procedures requiring correction -- to improve accuracy of project costs.

II. COMMUNICATE WITH AND EDUCATE LINE MANAGERS ON THEIR "CONTROL" RESPONSIBILITIES AND THE FINANCE ORGANIZATION'S ROLE/RESPONSIBILITIES.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. Set up a basic model and explain the overall Engrg. Finance Program -- overall structure, how coordinated, major thrusts, interrelationships of finance activities and projects.	P	M. Kur	OOD	Cplt by Mar., 1980.	H	Improved understanding of Finance role and contribution to Engineering function.
2. Continue (and improve) Engineering Finance Workshops for Engrg. Line Mgrs, Supv, and other key people.	P	M. Kur & Staff	J. Meyer (T. Buckley) (Ann Tomyl) Engrg. Mgt.	At least two more sessions in FY80 between Nov. 1979 and June, 1980.	M-H	Educate Line Managers re: cost center reports, discrete project budget system, capital budget system, current financial picture for Engrg., financial projects, etc. Emphasis on "how to".

AL: III. IMPROVE THE PROFESSIONAL STRENGTH OF THE ENGINEERING FINANCE ORGANIZATION (AND THE ENGINEERING LINE ORGANIZATION)

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
. Hire highly competent people. (A)	P	Kur Staff	Engrg. Line Mgt.	Ongoing	VH	Strong fin. org. capable of professional business partnership with Engrg. Line Managers in budgeting, controlling, analyzing investments, and financial counselling.
. Participate in Central Engrg. Human Resource Planning Program. (A-)	S	Guy Fincke	Jim Chiafery, Mitch Kur	See Guy Fincke/John Meyer Program	→	→

July 1, 1979

ENGINEERING FINANCE

M.C. KUR

GOALS/PLANS/PROJECTS FOR FY'80

Priorities:
(H) High

A. Content, Objectives, Responsibilities

1. Improve the professional strength of the Engineering Finance organization.

(A) a. Plan and provide for financial career growth and promotional opportunities for high performers. Kur & Staff (H)

(A) b. Hire highly competent people. Kur & Staff (H)

(A) c. Provide for and encourage participation in development programs, both inside and outside the company. Kur & Staff (H)

2. Improve financial planning, analysis, forecasting, and measurement capabilities.

⇨ (A) * a. New Budget Process - Design and implement a revised discrete project budgeting system which has at least a two-year focus and a specific approval process. (Started in FY'79). Resp.: Ken Nisbet, plus task force. (H)

⇨ (A-) * b. Metrics - Develop metrics (including cc, project, manpower, space, capital, etc.) for both development groups and key service groups. Resp.: Jim Chiafery (Central), all F/M's (own areas). (H)

(A) c. Control FY'80 - The prime objective for FY'80 will be to insure that Central Engineering stays in control -- first, that it does not exceed its expense and capital budget, but with the caveat that potential problems of budget vs. schedule vs. project content are identified and exposed in advance by financial personnel, so that the appropriate total business tradeoffs may be made by line management at the "right" level in the corporation. Implicit is timely and accurate forecasting. Resp.: all. (H)

⇨ (A-) * d. Product Management Support - A P/M support F/A is needed in Large Systems. This financial team will work with a Process/Systems Specialist to improve and/or redesign the Product Financial Statements, develop product investment metrics, along with an increasing role in investment analysis and development of corporate new product introduction financial evaluations. Resp.: Curt Rawley, F/M's, PMSF/A's. (H)

e. Engineering Business Systems Architecture - Replace Curt Rawley in order to continue this longer range business systems development activity; combine with Product Financial Statement Systems project. Resp.: M. Kur. (H)

f. Engineering Finance Metrics - Analyze collected data and organize into a cohesive formal package for ongoing measurement and review. Resp.: M. Kur, Jim Chiafery. (H)

g. Tool Development - Provide investment analysis for tool development in EIS and Technology group. Resp.: Alan Silver and Mike Jean/Bruce Green.

h. Improve Reporting Tools for F/A's - Engineering assume responsibility for labor processing and cost center reporting, improved budgeting and discrete project reporting. Resp.: Jim Chiafery.

i. Strategic Planning - Improve/Strengthen the coupling between strategic planning and finance. Resp.: M. Kur, F/M's.

3. Do the "basics" better.

a. "Simplification" - Design and implementation of changes in accounting within the Simplification philosophy will be accomplished in FY'80 and FY'81. Included will be an analysis of current accounting/financial practices in each OOD member's organization and recommendations for improvement. Included will be reporting by OOD member on both project spending and "incurred" spending. An initial time-phased plan has been proposed. Resp.: Jim Chiafery, plus task force. (H)

b. Large Systems Development - Fully integrate Large Systems (financially) into Central Engineering. Resp.: Dick Leslie. (H)

c. Engineering Accounting/Finance Procedures - Document these in a simple, easy-to-read, manual. Resp.: Jim Chiafery.

d. Audit of "Basics" - Provide for ongoing audit of travel expenses, employee receivables, overtime, first class air travel, and other "basic" financial areas requiring particular discipline within Central Engineering. Resp.: Jim Chiafery.

e. M098 System - Refine to minimize inter-plant reconciliations and provide accurate ECO history; resolve any loose audit issues. Resp.: Ken Misbet.

* f. Decentralized Engineering Accounting -- An analysis (and justification, if justified) of the benefits of decentralization (Engineering ledger) - and/or of other alternatives -- is required before any major decisions and resource expenditures (not budgeted in FY'80) are made toward an Engineering ledger. Continue implementing remote site accounting and reporting in Colorado, Phoenix, Marlboro, and Hudson. Resp.: Jim Chiafery.

g. Finance Budget - Accomplish FY'80 goals within a total cc322 budget increase of 15% over FY'79.

4. Educate line managers relative to their "control" responsibilities vs. the controller's role -- as described in the Corporate Controller's Staff Goals.

a. Directly participate on OOD. M. Kur (H)

b. Continue Engineering Finance workshops (started in FY'79) for Engineering Line Managers, Supervisors, and other key people. Kur & Staff.

c. Communicate to all levels of management and keep them informed about Engineering Finance Charter and Engineering Finance organization structure. Kur & Staff.

* Highest FY'80 priority goals, as established with Bill Thompson and Larry Portner.

M.C. Kur
2/16/79

CENTRAL ENGINEERING FINANCE CHARTER

BASIC CHARTER STATEMENT: The Central Engineering Finance function is the financial business partner of Engineering Operating Managers and Product Managers, and is responsible

- to provide financial planning, analysis, audit, and control for Engineering operating units, for Engineering programs/projects, and for the support of product business plans and new product justification;
- to assist engineering Management in the financial evaluation of alternatives;
- to provide tools and analysis for assessing tradeoffs between budget, schedule, and functionality of development projects;
- to develop, support, and/or manage related administrative and financial business sytems and functions;
- to insure integration and coupling between Central Engineering and corporate financial objectives and plans; and
- to develop the financial team to support Engineering operating units.

MAJOR RESPONSIBILITIES:

A. FINANCIAL SUPPORT, PLANNING, AND CONTROL - ENGINEERING OPERATING UNITS

1. Develop Central Engineering Operating budgets and capital budgets, including appropriate control reports.
2. Insure integration between corporate budgets and Central Engineering budgets.
3. Coordinate with Central Engineering's strategic planning group in the quantitative evaluation of alternative strategies and in the structured presentation of quantitative data as part of the strategic plan.
4. Install and maintain systems to control actual expenses to plan, at project level, at cost center level, and at higher roll-up levels for both.

5. Identify problems in advance, and force resolution wherever necessary (at OOD and within corporation).

6. Be a part of the management team at each level, and be judged on the execution of the team's plan.

7. Provide financial training for non-financial Engineering personnel.

8. Develop measurements and metrics for evaluating Engineering operations.

9. Develop an improved budget system, to cover a minimum of two full fiscal years.

B. FINANCIAL SUPPORT, PLANNING, AND CONTROL - PRODUCT MANAGEMENT

1. Document the financial section of business plans, in conjunction with and approval of product manager(s).

2. Develop tools and provide resources to financially evaluate product and business plan alternatives, and to justify specific proposed new products.

3. Assist Product Manager in providing new product introduction cost evaluations for the corporation.

4. Develop and provide meaningful reports for measuring financial performance by product.

C. ADMINISTRATIVE SYSTEMS

1. Assist, as required, in space planning activities.

2. Support Engineering operating management and Personnel Department in manpower planning and forecasting, and develop controls for assuring accomplishment of plan and its integration with budgets.

3. Obtain (from other corporate sources) or provide selective analysis of competition (as agreed upon with Engineering Operating Managers and/or product managers).

D. RESPONSIBILITIES RELATIVE TO TOTAL CORPORATION

1. Insure Central Engineering financial plans are integrated with corporate financial plans.

2. Provide a system for allocating Engineering expenses to the Product Lines.

3. Provide input, support, and active participation in the development of corporate planning and financial processes (e.g. Simplification, new financial Redbook, overall budget process, accounting change task force, financial training courses, etc.).

4. Develop and implement a decentralization program for Central Engineering, in conjunction with corporate decentralization activity.

5. Protect those corporate assets under the responsibility of Central Engineering.

E. DEVELOPMENT OF THE FINANCE TEAM

1. Provide for training and continued educational development of financial personnel.

2. Insure high financial and interpersonal competence of new personnel.

3. Provide for continuous feedback to personnel of performance and development needs.

4. Institute a career development program providing for growth both within Engineering Finance and with other finance organizations within DEC.

ENGINEERING FINANCE

July 1, 1979
M.C. KUR

GOALS/PLANS/PROJECTS FOR FY'80

Priorities:
(H) High

A. Content, Objectives, Responsibilities

1. Improve the professional strength of the Engineering Finance organization.

   a. Plan and provide for financial career growth and promotional opportunities for high performers. Kur & Staff (H)

   b. Hire highly competent people. Kur & Staff (H)

   c. Provide for and encourage participation in development programs, both inside and outside the company. Kur & Staff (H)

2. Improve financial planning, analysis, forecasting, and measurement capabilities.

⇨ * a. New Budget Process - Design and implement a revised discrete project budgeting system which has at least a two-year focus and a specific approval process. (Started in FY'79). Resp.: Ken Nisbet, plus task force. (H)

⇨ * b. Metrics - Develop metrics (including cc, project, manpower, space, capital, etc.) for both development groups and key service groups. Resp.: Jim Chiafery (Central), all F/M's (own areas). (H)

   c. Control FY'80 - The prime objective for FY'80 will be to insure that Central Engineering stays in control -- first, that it does not exceed its expense and capital budget, but with the caveat that potential problems of budget vs. schedule vs. project content are identified and exposed in advance by financial personnel, so that the appropriate total business tradeoffs may be made by line management at the "right" level in the corporation. Implicit is timely and accurate forecasting. Resp.: all. (H)

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CHANGE CONTROL
PLANNING
SYS.
STRATEGIC PLANNER
SYSTEMS MAN
SUPPORT

BUDGET BOOK —
CHARTS BY GROUP
MANPWR VS PLAN
SPENDING (ORGANIZATION)

BUS. PLANS FOR DECISION MAKING

e. Engineering Business Systems Architecture - Replace Curt Rawley in order to continue this longer range business systems development activity; combine with Product Financial Statement Systems project. Resp.: M. Kur. (H)

WORK W. S.I.

f. Engineering Finance Metrics - Analyze collected data and organize into a cohesive formal package for ongoing measurement and review. Resp.: M. Kur, Jim Chiafery. (H)

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b. Large Systems Development - Fully integrate Large Systems (financially) into Central Engineering. Resp.: Dick Leslie. (H)

c. Engineering Accounting/Finance Procedures - Document these in a simple, easy-to-read, manual. Resp.: Jim Chiafery.

d. Audit of "Basics" - Provide for ongoing audit of travel expenses, employee receivables, overtime, first class air travel, and other "basic" financial areas requiring particular discipline within Central Engineering. Resp.: Jim Chiafery.

e. M098 System - Refine to minimize inter-plant reconciliations and provide accurate ECO history; resolve any loose audit issues. Resp.: Ken Nisbet.

MIKE T OHABIC - Docum. the D&U PROCESS F[illegible]

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g. Finance Budget - Accomplish FY'80 goals within a total cc322 budget increase of 15% over FY'79.

4. Educate line managers relative to their "control" responsibilities vs. the controller's role -- as described in the Corporate Controller's Staff Goals.

a. Directly participate on OOD. M. Kur (H)

b. Continue Engineering Finance workshops (started in FY'79) for Engineering Line Managers, Supervisors, and other key people. Kur & Staff.

c. Communicate to all levels of management and keep them informed about Engineering Finance Charter and Engineering Finance organization structure. Kur & Staff.

* Highest FY'80 priority goals, as established with Bill Thompson and Larry Portner.

INTERACTIVE OPERATING OBJECTIVES

CENTRAL ENGINEERING FINANCE

MITCH KUR
Rev. November 6, 1979

KEY: Fin. Role

P Primary
S Support/Secondary

Priority

VH Very High
H High
M Medium

GOAL: T.. IMPR[illegible] FINANCIAL PLANNING, ANALYSIS, FORECAS[illegible]NG, AND MEASUREMENT CAPABILITIES

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. New Budget Process - Design and implement a revised discrete project budgeting system with a 2-3 year focus and a specific approval process.	P	Ken Nisbet & Fin. Task Force	Bruce Stewart Si Lyle	Design cplt Q3,FY80 Impl.Q4,FY80 for FY81 & future budget	VH	More stable budget process, less hassle, far better financial planning.
2. Metrics - Determine metrics needs with OOD; plan to follow.	P	Jim Chiafery & FMs	OOD	Impl. by end of Q4,FY80 to use in FY81	VH	Ability to understand and measure accomplishment, progress, trends, and to identify and respond to adverse changes.
3. Reports - Develop package of meaningful monthly/quarterly fin. reports and graphs for Engineering VP's and OOD.	P	Joe Winn/ Jim Chiafery	M. Kur L. Portner G. Bell B. Stewart	Initial prelim. trial report at end of Q1FY80 Improve,refine, during Q2,FY80. Complete by end of Q2,FY80.	VH	Consistent control feedback on spending vs. budget for all Engrg.--Central Engrg. Project Rollup, Incurred Spending, G&A Spending, Manpower, & Capital--vs current emph. on Central Projects only.
4. Product Mgt. Support - a. Improve Product Fin. Reporting via a new or revised Prod. Fin. Statement System, with PM4.	P	Bob Woodford w/Emil Demikat	Si Lyle Sr. Prod. Mgrs. Curt Rawley Dick Becker PMS FA's John Fisher	To come - (Woodford started 10/22)	VH	Measurement (Corp.) of Product Contribution and/or profitability.

GOAL: I. ROVE FINANCIAL PLANNING, ANALYSIS, FORE STING, AND MEASUREMENT CAPABILITIES con

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
b. Implement BURP -- "ROI" Financial Tool for Product Investment analysis.	P	Curt Rawley, Dick Becker, PMS FA's	Sr. Prod. Mgrs. Si Lyle Larry Rasile	"Fixes" by end of Q2, FY80. Trn'g. pkg. by end of Q2,FY80	H	A technique forecasting returns on product investments; aids in deciding on which products to devel. and provides input to pricing decisions.
c. Evaluate and recommend a financial impact analysis model tool more comprehensive than BURP -- which evaluates induced spending on other projects/programs.	P	(New Objective - not evaluated yet)				
d. Define product measurement input to the corp. 3.5 measurement report. (Short range, until 4a above is done.)	P	M. Kur, Si Lyle Curt Rawley, Dick Becker, Bob Woodford	John Fisher Win Hindle Sr. Prod. Mgrs. Shel Aronoff(?)	Initial recom.11/79 Initial Imp. related to Corp. Fin. interface.	H	Initiate focus by top corp. mgt. on product cut-product impact on sales/contribution profitability, more learning than controlling at this stage due to less-than-desirable accuracy. Lyle,Kur to initially review w/Fisher Hindle.
Engrg. Business Systems Architecture - Design a system for Engrg. Business feedback, control, reports for the 1980's, with PM and Opr. Mgr., after defining, w/OOD,mgt. requirements.	P	Bob Woodford	Si Lyle, Bruce Stewart, Mitch Kur, OOD Members	(To come - Woodford started 10/22)	H	Plan for instead of react to the growth anticipated in the 80's -- so that stable systems are in place for planning, measuring, and controlling.
Review the effectiveness of the cost gathering/monitoring procedures	P	Jim Chiafery	Bruce Stewart Int. Audit Corp. Acctg.(?)	By 6/30/80	M-H	Identification of procedures requiring correction -- to improve accuracy of project costs.

4

GOAL: II. COMMUNICATE WITH AND EDUCATE LINE MANAGERS ON THEIR "CONTROL" RESPONSIBILITIES AND THE FINANCE ORGANIZATION'S ROLE/RESPONSIBILITIES.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. Set up a basic model and explain the overall Engrg. Finance Program -- overall structure, how coordinated, major thrusts, interrelationships of finance activities and projects.	P	M. Kur	OOD	Cplt by Mar., 1980.	H	Improved understanding of Finance role and contribution to Engineering function.
2. Continue (and improve) Engineering Finance Workshops for Engrg. Line Mgrs, Supv, and other key people.	P	M. Kur & Staff	J. Meyer (T. Buckley) (Ann Tomyl) Engrg. Mgt.	At least two more sessions in FY80 between Nov. 1979 and June, 1980.	M-H	Educate Line Managers re: cost center reports, discrete project budget system, capital budget system, current financial picture for Engrg., financial projects, etc. Emphasis on "how to".

GOAL: III. IMPROVE THE PROFESSIONAL STRENGTH OF THE ENGINEERING FINANCE ORGANIZATION (AND THE ENGINEERING LINE ORGANIZATION)

	OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIORITY	EXPECTED RESULT
1.	Hire highly competent people.	P	Kur Staff	Engrg. Line Mgt.	Ongoing	VH	Strong fin. org. capable of professional business partnership with Engrg. Line Managers in budgeting, controlling, analyzing investments, and financial counselling.
2.	Participate in Central Engrg. Human Resource Planning Program.	S	Guy Fincke	Jim Chiafery, Mitch Kur	See Guy Fincke/John Meyer Program	→	→

****
* d i g i t a l *
****

TO: GORDON BELL*
LARRY PORTNER

DATE: FRI 11 APR 1980 9:31 AM EST
FROM: SI LYLE
DEPT: CORP PROD MKTG
EXT: 223-7311
LOC/MAIL STOP: ML12-1 T39

SUBJECT: OBJECTIVES & GOALS FOR 4/16 MEETING >3

SL1/S2/2

OBJECTIVES/STATUS FROM 10/25/79

OBJECTIVES

1. Define and implement EBOD process

   - Definition of the entire process is still not done.

   - Some time and thoughts were lost in Andy to Bill transition.

   - Have tentative buy-in from Bill on SPU, strategy planning, EBOD calendar

   - SPU's up and running, but need calendar and more definitive statement of role from Bill, Larry and self

2. Establish appropriate Product Management job descriptions and levels.

   - Job descriptions and levels complete

   - Used in February/March salary planning

   - Awaiting Corporate approval

3. Establish working relationship with marketing and other functions.

   - Monthly systems meetings running since November 1

   - Product Management supporting PPC short term requests

   - Formal communication links need to be established

4. Establish an integrated long range planning cycle that couples systems/product markets and budget.

   - Starting point, integrated strategy and base plan content finished by April 10. Formatting, presentation and OOD review underway

   - Link between SPU's, EBOD, Product Line long range plans still has to be defined

- ECO process has yet to be established

5. Develop systems business plans

   - Starting point, experiment with linking product line demand forecasts with long range product plans - Orange book 3/80

   - Systems still needs OOD definition

6. Help specify MIS needs.

   - 2 field trips

   - Specifications need to be generated

   - Participated in design of color books and processes

In addition to working the issues associated with the above objectives, the following items have, or are being, completed.

1. Non disclosure package for systems and products for the Product Lines as requested by the Marketing Committee.

2. Start of Phase In/Phase Out Product Task Force as requested by Win.

3. Completion of Cost of Ownership Task Force as requested by Operations Committee.

4. Word Processing transition issues.

   - Preliminary work associated with budgeting products and staff with Stan

   - Jack Gilmore transition into Central Engineering

   - Start of OFIS product plan

   - Fire fight field issues

5. Provide moral support and direction through one on ones with Bob Dockser and Jim Barbour.

6. Involved with the sell of Systems Management within OOD including starting systems management task force.

7. Participate in sales situations with Raytheon, Boeing, Aires Ltd. and MacDonald Douglas.

8. Participated in U.S. regional and district managers sales meetings.

9. Worked funding issues for a number of items including special issues of sales update, IAS, handbooks, DEC 10/20 promotion.

Current Objectives

Strategic Planning

- Get present document through product line and EBOD approval cycle - June 3, 1980

- Use present strategic plans document as base and define process using SPU's and product line long range plans to synchronize market and product strategic plans - June 3, 1980.

- Define content and format for Redbook - July

Product Planning

- Get present base plan through product line and EBOD approval cycle - June 3, 1980.

- Put control process in place to keep base plan up to date and trigger project/product/program reviews - June 3, 1980

- Define Phase 0 offical review process similar to PPC - July 1980

- Define business plan format associated with type of product and phase - July 1980

- Provide product planning guide to long range planning process - August 1980

- Review each major product/program at PMC on a 5 year basis for implementation of strategy, customer needs, and competitiveness

Marketing

- Improve engineering/product management/PPC interaction

- Define time-table and methods of implementing PPC announcement criteria - August 1980

- Participate in product group managers meeting on a regular basis

Systems Management

- Work definitive issues across OOD

- Run Systems Management Task Force

- Implement PPC systems pricing announcement criteria

- Continue Orange book

- Work Phase In/Phase Out product issues as chairman of

INTEROFFICE MEMORANDUM

TO: OOD

CC: Mike Gutman, Per Hjerppe, Bernie Lacroute, Jack Mileski, Stan Pearson, Bruce Stewart

DATE: 3 October 1979
FROM: Si Lyle
DEPT: Corporate Product Marketing
EXT: 7311
LOC/MAIL STOP: ML12-1/T32

SUBJECT:

OCT 2 1979

Attached is the package which includes some of the suggestions that came up during our meeting last week.

/mhm

Attachment

Distribution:

Gordon Bell	ML12-1/A51	Bill Johnson	ML12-3/A62
Dick Clayton	ML12-2/E71	Mitch Kur	ML12-2/A16
Jim Cudmore	ML1-5/E30	John Meyer	ML12-1/A11
Bill Demmer	TW-D19	Grant Saviers	ML3-6/E94
Ulf Fagerquist	MK1-2/E78	Larry Portner	ML12-1/T32
Sam Fuller	ML3-5/H33		
John Holman	ML12-2/T36		

ORGANIZATION - CORPORATE PRODUCT MARKETING

CHARTER

The role of the Systems Manager in the Product Marketing organization is to develop system plans and to see that they are implemented by all functional organizations. The planning shall include inputs from the marketing groups, corporate marketing, and engineering and will be focused on the saleability, cost of ownership, and gross profit of the system.

The role of the Product Manager in the Product Marketing organization is to develop product plans which meet the requirements of the system plans and market plans, if the product is to be sold as a stand-alone product. The product plans will meet the same criteria as the system plans.

The Systems and Product Managers will be part of a line product marketing organization and shall also report to the appropriate engineering manager to assure technology coupling and managing the engineering interface with the other functional departments.

THE JOB

The jobs within product management are undergoing a transition to become much more marketing oriented with an emphasis on external factors such as competition, market opportunities, and customer cost of ownership. The jobs will also take on an increased responsibility for measuring and taking steps for improving the profit of each product (system).

Jobs within product marketing will be developed to lead to promotion within product marketing as well as promotion to senior jobs in other functions, particularly marketing groups.

FUNCTIONS

Planning

Product marketing is responsible to maintain a formal four step planning process for all systems and products.

The four steps are:

a) Market opportunities reviewed by Product Marketing Committee (PMC) and the marketing groups (M/G).

b) Strategic market plan reviewed by PMC and the engineering board of directors (EBOD).

c) System/product business plan reviewed by PMC, Office of Development (OOD), M/G and EBOD.

d) Implementation plan reviewed by PMC and OOD.

Processes

Product marketing is responsible for the processes needed to handle a product (system) from the business planning stage through to announcement. This includes the interfacing between all functional groups.

The EBOD process is used to review strategic direction and set major budget goals.

The Program Review process is used to coordinate the business plans of the groups with the status of the program.

Marketing

Product marketing is responsible for the development of the following items to simplify the selling of all products.

a) Simplified data sheet and price lists

b) Product positioning statement

c) Market focus (by market and/or strategic market groups)

d) Competitive analysis

e) Pricing proposal

f) Announcement plan

Financial

Product marketing is responsible for the review of all systems and products to determine financial impact and cost of ownership with particular emphasis on gross margin, start-up expenses, profit and yields. Investment decisions are to be based on financial models which include profit and cash flow analysis.

GOALS

1. Develop a product/system marketing team that is focused on the specification of needs, and all facets that affect the profitability of the product/system during its total life.

2. Develop where necessary and continue to improve existing processes for

   a) "contracts" and forecasting with marketing groups,

   b) co-ordination of central engineering strategy, and

   c) management of engineering role in EBOD.

3. Develop where necessary and continue to improve existing process for system strategies and plans that

   a) account for the sales/marketing environment and expected changes within that space during the life of the system,

   b) position each system within DEC's total offering, and

   c) include field service and manufacturing input at the start of each project, within context of systems family.

4. Develop a set of product strategies

   a) products will be categorized an sold as stand-alone or sold as part of system and/or stand-alone,

   b) the product strategies for stand-alone products will be the same as 3a to 3c, and

   c) products sold as only part of system will be governed by system strategy.

5. Make systems and products easier to sell by developing

   a) easy to use systems price lists,

   b) Data Sheet Product Notebook, and

   c) a co-ordinated literature plan.

6. Reduce the cost of ownership by

   a) reducing the number of different components in products,

   b) designing field service and manufacturing needs into the product,

   c) developing a total plan for the entire life of a product/system and

   d) planning mid-life kickers at the outset of a project.

7. Increase gross margin by

   a) developing pricing plans for the life of product,

   b) reducing start-up and on-going support costs, and

   c) making necessary financial trade offs across all factors affecting the cost of goods sold.

8. Measure the P & L and cash flows of all systems and stand-alone products over th entire life of the product system.

SML-10/2/79
/mhm

SHORT TERM OBJECTIVES -

1. Define and implement EBOD process.

   a) Definition

      - conceptual scheme approval October 29
      - flow chart process November 8
      - review process OOD November 15

   b) Implementation

      - select procedure (Harvard 10 Step) November 16
      - start to establish SPU's PMC November 22

2. Establish appropriate Product Management Job Descriptions and levels.

   a) Determine number of levels October 11
   b) Prepare Job Descriptions October 31
   c) Personnel review (Don Ames) November 15
   d) Review at OOD (John Meyer) November 30
   e) Corporate approval December 30
   f) Adjust Managers classification January 15
   g) General Announcement January 30
   h) Define role of systems/product managers November 30
   i) Integrate systems/product managers role with systems/program managers December 31.

3. Establish working relationship with marketing and other functions.

   a) Define a working forum October 20
   b) Set-up and run monthly corporate meeting - first one November 1
   c) Deal with short term issues raised by PPC
      review process needs October 29
      design process
      implementation process December 31

SML:10/24-25/79
20 1979

4. Establish an integrated long range planning cycle that couples systems/ product markets and budgets.

   a) Review present planning commitments October 18
   b) Review staffing impact October 25
   c) Establish SPU's - start November 22
   d) Determine 5 year revenues by
      - service/equipment
      - architecture 5 types
      - functionality - December 4
   e) Determine method of reviewing revenue impacts coupled to P/L forecasts. November 30.

5. Develop systems business plans.

   a) Select a product to be used to establish a complete system business plan November 30
   b) Develop cursory system plan December 30
   c) Test systems contract with P/L's January 30
   d) Develop full system plan. March 1
   e) Enter into contracts with all functions. May
   f) Expand to other systems.
   g) Select 1 product to test impact model. December 31
   h) Establish planning goals and staff. December 31
   i) Target total integrated plans. June 30
   J. Prepare redbook to present forecast. February 1.

6. Help specify MIS needs.

   a) Review external approaches. Bruce, Mitch November 30
   b) Produce statement of needs December 15

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CENTRAL ENGINEERING PERSONNEL CHARTER

MISSION STATEMENT - To participate with management and employees, both as a direct contributor and as a consulting resource, in creating an environment which promotes innovation, Affirmative Action and assures effective utilization of individual and organizational resources in conjunction with Corporate philosophy, goals, and objectives.

Personnel will provide capabilities which enable Central Engineering to:

- Provide strategies and plans for attracting, retaining and developing a competent workforce.
- Establish a linkage between organization requirements and individual needs.
- Monitor the impact of decisions and conditions on organizational effectiveness and employee morale.
- Develop programs and processes which provide for effective communication among employees.
- Treat employees fairly and in a manner consistent with Company policies.
- Conform with legal requirements.
- Develop, support and manage related administrative and personnel programs, systems and tools
- Influence, participate with, and insure integration of Central Engineering and Corporate Personnel objectives and plans.

J. Meyer
June/79
MS 22

J. Meyer
9/10/79

PERSONNEL GOALS

1. Provide day to day Personnel Services to employees.

   a Employee Relations/Communications

   b Salary/Benefits Administration

   c Training and Development Support

   d Administration/Monitoring of EEO/AAP

   e Employee Activities

   f Community Relations

   g Policy interpretation and administration

   h Health Services

   j Special projects needed by individual organizations

2. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

3. Provide organization development to line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

5. Create and maintain management awareness of Compensation/Benefits programs; how they are developed; how they are utilized within their respective organization; how effective they are and how to bring about program changes.

6. Develop and maintain an effective Employee Information System.

7. Collaborate with and support Corporate Personnel and other DEC Personnel Departments.

8. Provide a competent Personnel Department that is capable of supporting the Engineering group.

MS043

J. Meyer
9/19/79

PERSONNEL GOALS and FY'80 OPERATING OBJECTIVE SUMMARY

(Detail on individual department plans)

1. Provide day-to-day Personnel Services to employees.

A Employee Relations/Communications

Provide an environment whereby line managers and supervisors develop an increasing ownership for employee relations.

Insure that administrative systems and procedures are designed in such a way that local supervisory responsibility and control is fostered.

Begin to initiate a change in Personnel's role from problem solving to consulting: Analyze and review:

1) those functions which are performed by supervisors and managers

2) those functions performed by Reps which should be performed by supervisors and managers

3) those functions which should be performed by Reps.

Insure formal and informal sensing techniques are in place within the groups. Continue installation of group meetings where management and subordinates come together to talk.

Update the Tewksbury Employee Handbook. Modify and enhance orientation program.

Assist internal movement of employees within Central Engineering and DEC.

Consultant/Senior Consultant job descriptions, qualifications and Review Process.

Begin development of an assimilation program for new employees: Develop task force; Design Program; Implement Phase I and Evaluate.

Tewksbury Sensing Process: Design; Initial implementation; Modify design and Second implementation.

Continue meetings of new hires and group managers.

Invite and coordinate participation of employees on issues relating to SpR and Hudson moves.

B Salary/Benefits Administration

Conduct and/or have conducted at least one supervisory training session on Compensation at each Engineering location.

Revise current equal pay audit procedure; continue audits under revised procedure.

Design communications network among supervisors, employees and personnel group to aid in program development and implementation.

Continuation of Phase II of management job slotting project.

Review and/or write job descriptions within Engineering job families.

Special study of product/program management job family.

Exception spending, planning, implementation, program monitoring.

Exempt pay program administration: program monitoring, assessment of effectiveness, propose modification, implementation of next years program.

Non-exempt pay program analysis: Program monitoring, assessment of effectiveness, propose modifications, implementation of next years program.

Technician study: job descriptions/evaluation/structure analysis and revision as needed.

C Training and Development Support

Provide supervisory training modules on: Compensation, EEO/AA, Interviewing skills, Continue Discipline Documentation, and Finance Training programs. Evaluate M.T.O.

Communicate Technical courses/catalogs on-site.

Develop and implement programs to educate all users to their role in the S & P process which will gain more effectiveness and efficiency. Some examples of these programs are: Interviewing skills workshops; "State of the Marketplace" communications; and "How the administrative system works."

Definition of H.R.P. & D. Dept. training responsibilities.

D Administration/Monitoring of EEO/AAP

Review organization EEO/AA goals with OOD Staffs.

Develop and implement proactive Affirmative Action sourcing programs to help increase our representation of minorities and women in the C.E. organization.

Continue Male/Female Workshops where applicable.

E Employee Activities

Maintain present programs.

F Community Relations

Continue developing and understanding our responsibilities for this activity - primarily at Tewksbury and Spitbrook.

G Policy interpretation and administration

Participate in formulating policies across Engineering and DEC.

H Health Services

Investigate and propose an Employee Assistance program at Tewksbury. Monitor installation of Health Services Unit at Spitbrook Rd.; hire nurse to operate.

Continue involvement with Mill Health Services Unit.

J Special projects needed by individual organizations

Participate in Hudson and Spitbrook Road facility development and moves.

Participate in the redesign of the Engineering Review Board and ensure consistency across DEC and Engineering.

2. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

Define and begin installation of a Human Resource Planning and Development Program across Central Engineering.

Develop an HRP&D Program Plan (3-5 years)

Develop and initiate a process to understand and review C.E. technical and management needs 3-5 years out.

Propose an FY'81 plan and budget for H.R.P.

Develop and install a process for development planning and review for OOD members and their direct reports.

Continue the improvement of the Human Resource Process within CSD.

Improve content and purpose of the Human Resource Spring Woods

Improve quality content of salary reviews.

Begin Performance review program in SSD.

Establish quarterly review process for staff's direct reports and their direct reports.

Begin (1) level down development review for: Software, Tech. Director, Group level Software.

Definition of H.R.P.&D Dept. training responsibilities.

3. Provide organization development line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

Continue the integration of key groups into/with other organizations ie:

Formally identify Steils' and Glorioso's staff with respective Engineering Development groups.

Support project manpower flow between MSD groups (Adv. Dev., Prod. Dev., S.W. and Hydra)

Develop Terminals organization plan and communicate integration of Printer and Video.

Assist in defining charters and relationships between SSD and LSI group.

Establish an on-going sensing program to test the environment and to give data to management. Tewksbury is being used as test site.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

Establish an effective Internal Transfer process.

Develop, implement and monitor consistent administrative systems and metrics for the C.E. Staffing and Placement Organization.

Develop and administer the College Relations and College Recruiting Programs.

Develop and implement programs to educate all users to their role in the S&P process which will gain more effectiveness and efficiency. Some examples of these programs are: Interviewing skills workshops; "State of the Marketplace: communications; and "How the administrative system works."

Develop and implement proactive Affirmative Action sourcing programs to help increase our representation of minorities and women in C.E. organization.

H.R. planning process to understand C.E. technical and managerial needs 3-5 years out: Design, Implement, Review results.

5. Create and maintain management awareness of Compensation/Benefits programs:

How they are developed

How they are utilized within their respective organization

How effective they are

How to bring about program changes

Conduct and/or have conducted training in Comp/Ben at various locations.

Design communications network to aid in development and implementation of Comp/Ben programs.

Establish a company visit program with 12-14 companies to talk about engineering and engineering related jobs. Visit 2-3 companies per quarter.

6. Develop and maintain an effective Employee Information System.

Personnel Information System:

Conduct C.E. needs analysis
Scope out system specifications
Develop maximum utilization of System 1022
Augment Corporate programs with compatible Engineering programs.
Continue and expand use of Personnel Activity Reports.

7. Collaborate with and support Corporate Personnel and other DEC Personnel Departments.

Manage the Staffing and Placement Function across Central Engieering while integrating into Corporate Programs and Goals.

Scope managment positions: Continuation of managemenet slotting project.

Personnel Training program for DEC personnel department.

Individual development plans for OCD members.

Corporate O.D. Thrust: Consulting group; Functional O.D. Mgrs.; Al Fitz.

6. Provide a competent Personnel Department that is capable of supporting the Engineering group.

Be fully staffed.

Develop and review with management site department plans for Hudson and Spitbrook Rd.

Department management:

What are we going to do for ourselves?

How are we going to review goals and objectives?

What is our management process?

Consulting skills training to C.E. professional Personnel staff.

MS045

J. Meyer
11/29/79

CENTRAL ENGINEERING PERSONNEL DEPARTMENT
OPERATING OBJECTIVES - FY'80

1. Human Resource Planning

Objective	Completion Date
HRP&D Program Plan	
Model/philosophy statement	10/31/79
Overall goals (3-5 yrs. out)	10/31/79
Annual objectives for each year	10/31/79
Activities for each year	10/31/79
Staffing/organization plan for HRP&D function	1/31/80
Individual development plans for OOD members and their direct reports	6/30/80
HRP process to understand C.E. Technical and managerial needs 3-5 years out:	
Product strategy and supporting technology plans	1/31/80
FY81 planning/budgeting process	6/30/80

2. College Recruiting and Relations

Continue the development of the College Recruiting and College Relations Programs that support present and future staffing requirements.

Develop, implement and monitor systems and processees to provide C.E. the opportunity to hire 200 new grads in FY80	6/30/80
Develop plan focusing initially on 9 colleges	4/30/80
Implement plan	6/30/80

3. Spitbrook Road and Hudson facility plans and moves

Provide leadership and plans for the group moves that will minimize disruption to work and family life for affected employees resulting in a high degree of employee satisfaction and a termination rate not higher than organization average.

3. Spitbrook Road and Hudson facility plans and moves - continued

Objective	Completion date
Invite participation of employees on issues relating to SBR move	Q1 80
Formulate move policies consistent with employee needs and business objectives	Q1 80
Administer policy consistent with goal	On-going
Provide a continuity of quality personnel service during transition of employees to SBR	Q1,Q2 80

4. Assimilation Program for new Engineering employees

Assemble task group	12/31/79
Design initial program	3/1/80
Implement first part	4/30/80
Evaluate	6/30/80

5. Help managers understand and execute personnel responsibilities

Continue module on Discipline and Documentation	Q3 80
Provide modules on:	
Compensation	Q4 80
EEO/AA	Q4 80
Interviewing skills	Q4 80
Establish an on-going sensing program in Tewksbury to test the environment and to give data to management. Work with management to analyze and interpret data and action plans	Q3 80
Insure that administrative systems and procedures are designed in such a way that local supervisory control is fostered.	Q4 80

MS057
cs

Engineering
Personnel
Administration

J. Meyer
9/26/79

OPERATING OBJECTIVES WHICH ARE COMMON ACROSS THE CENTRAL ENGINEERING ORGANIZATION

1. Human Resource Planning

2. College Recruiting and Relations

3. Spitbrook Road and Hudson facility plans

4. Spitbrook Road and Hudson employee moves

5. Assimilation Program for new Engineering employees

6. Help managers understand and execute personnel responsiblities

mso47

J. Meyer
9/19/79

PERSONNEL GOALS and FY'80 OPERATING OBJECTIVE SUMMARY

(Detail on individual department plans)

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Continue Male/Female Workshops where applicable.

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Maintain present programs.

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Develop and install a process for development planning and review for OOD members and their direct reports.

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Improve content and purpose of the Human Resource Spring Woods

Improve quality content of salary reviews.

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Establish quarterly review process for staff's direct reports and their direct reports.

Begin (1) level down development review for: Software, Tech. Director, Group level Software.

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Establish an on-going sensing program to test the environment and to give data to management. Tewksbury is being used as test site.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

Establish an effective Internal Transfer process. Means?

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Establish a company visit program with 12-14 companies to talk about engineering and engineering related jobs. Visit 2-3 companies per quarter.

6. Develop and maintain an effective Employee Information System.

Personnel Information System:

Too much

Conduct C.E. needs analysis
Scope out system specifications
Develop maximum utilization of System 1022
Augment Corporate programs with compatible Engineering programs.
Continue and expand use of Personnel Activity Reports.

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Personnel Training program for DEC personnel department.

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Corporate O.D. Thrust: Consulting group; Functional O.D. Mgrs.; Al Fitz.

9. Provide a competent Personnel Department that is capable of supporting the Engineering group.

Be fully staffed.

Develop and review with management site department plans for Hudson and Spitbrook Rd.

Department management:

What are we going to do for ourselves?

How are we going to review goals and objectives?

What is our management process?

Consulting skills training to C.E. professional Personnel staff.

MS045

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Department Goals/Objectives				
1. Complete FY'80 Objectives development	Personnel Managers Operating Managers	Q1	1	
2. Review Department/Personnel Objective with Portner, Bell and Davis.	Meyer, Davis, Bell, Portner	Q1	1	
3. Establish a Quarterly Review process for: 1. Individuals 2. Interdependent objectives	Meyer	Quarterly	2	
4. Participate in OOD and Corp. Personnel Program reviews	OOD: Meyer, Fincke, LaValle Pers: To be defined (?)	To be defined To be defined	3 3	
5. Develop FY '81 Objectives	Meyer and Direct Reports	Q4	1	
Department Management/Administration				
1. Direct Report interaction	Meyer	Monthly		
a. Bi-monthly staff meeting	Meyer/Staff		2	
b. Monthly Rap (catch-up/consult)	Meyer/Individual	Monthly	3	
c. Individual Planning - Present job - Future	Meyer/Individual	Semi-annually	1	
d. Quarterly WOODS	Staff	Quarterly		

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Department Mgmt./Admin. - continued				
2. Internal department communication and sensing	Meyer/All department employees			
a. Develop plan for FY'80	Meyer/Staff	Q2	2	
b. Implement	Meyer	Q2	2	
c. Evaluate	Meyer/Staff	Q3/4	2	
3. Budget Administration (goal±10%)				
a. Quarterly review of budget status	Meyer/Chiafrey	Quarterly	3	
b. Resolve FY'80 budget issues				
- Mass Storage	Meyer	Q1	3	
- Merrimack	Kelleher	Q1	2	
- Employment	LaValle	Q1	1	
c. Develop FY'81 budget	Meyer/Staff	Q4	3/2	
4. Longer Range Planning				
a. Participate in OOD and Corp. Personnel discussions which will help me develop some ideas	Meyer	on going	3	
b. Topic at future WOODS	Meyer/Staff	Q3(?)	3	
5. Insure there are individual development plans for all dept. employees	Meyer/Staff	Q3	1	

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Dept. Mgmt./Admin. continued				
6. Staff Personnel Manager openings in Storage Systems, Medium Syst. and Large Systems	Meyer, LaValle and responsible OOD member	Q2	1	
FY'80 Program Focus				
1. Support HRP program development and implementation	Meyer/Fincke/Bell/Portner	on going	1	
2. Support College Relations Recruiting program development and implementation	Meyer/LaValle/Goring	on going	1	
3. Work on the "1985" Personnel Plan	Shel Davis Staff	on going (?)	3	
4. EEO				
- Continued implementation of M/F workshops	Meyer	on going	3	
- Develop plan for greater focus in OOD on EEO issues	Meyer/Weathers	Q3	2	
5. Test the concept of Mini-Seminars	Meyer/Jenks/Hiss/OOD	Q3	2	
6. Support the development of a plan for an Employee Assimilation program	Meyer/Hiss	Q4	3/2	

DEPARTMENT ENGINEERING PERSONNEL ADMINSTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Miscellaneous				
1. Work on Mfg/Eng. Committee with John Holman	Meyer/Holman	on going	3	
2. Participate on Personnel Policy Committee	Meyer	on going	3	
3. Get out to the various Engineering locations more	Meyer	on going	3	
Personal Objectives				
1. Figure out what I want to do in the next 2-3 year time frame	Meyer/Davis/Portner	Q2	2	
2. Get a broader view of DEC not just Engineering	?	Q4	3	
3. Get away from here for 2 whole weeks	Meyer	Q4	1	
4. I want to visit Europe				

To be developed

GOALS

SOFTWARE ENGINEERING AND

TECHNICAL DIRECTOR

PERSONNEL

JA SEPT, 1979
EVISED
/25/79

GOAL: TO PROVIDE LEADERSHIP AND PLANS FOR THE GROUP MOVES TO SPIT BROOK ROAD THAT WILL MINIMIZE DISRUPTION TO WORK AND FAMILY LIFE FOR AFFECTED EMPLOYEES RESULTING IN A HIGH DEGREE OF EMPLOYEE SATISFACTION AND A TERMINATION RATE NOT HIGHER THAN ORGANIZATION AVERAGE.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. INVITE PARTICIPATION OF EMPLOYEES ON ISSUES RELATING TO SBR FACILITY MOVE.	VM	Q1(80)	NONE	
2. FORMULATE MOVE POLICIES CONSISTENT WITH EMPLOYEE NEEDS, BUSINESS OBJECTIVES.	VM	Q1(80)	DONNELLY MEYER F & A KURTZ ALBRIGHT	
3. ADMINISTER POLICY CONSISTENT WITH GOAL.	VM JK		MEYER	COMPLAINTS, TERMINATIONS, TRANSFERS OUT.
4. PROVIDE A CONTINUITY OF QUALITY PERSONNEL SERVICE DURING TRANSITION OF EMPLOYEES TO SBR.	VM	Q1 and Q2(81)	JK D. MACDONOUGH RANDI LOVE SOFTWARE MGMT. A. LAVALLE	

GOAL: TO IMPLEMENT PRIORITY MODULES OF HUMAN RESOURCE PLANNING PROGRAM; INCREASE MANAGEMENT FOCUS AND HELP UNDERSTAND FUTURE STAFFING AND EMPLOYEE DEVELOPMENT NEEDS.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. BEGIN (1) LEVEL DOWN DEVELOPMENT REVIEWS:				
FOR SOFTWARE	JK	Q2	GROUP (FINCKE) & CORP. (LEBLEU)	
FOR TECH. DIRECTOR	JK	Q3	HRP	
GROUP LEVEL SOFTWARE	ALL	Q3		
2. IMPLEMENT MANPOWER PLANNING PROGRAM.	JK	ONGOING	GROUP/OOD	

GOAL: TO WORK WITH CENTRAL ENGINEERING PERSONNEL GROUP IN THE DESIGN AND IMPLEMENTATION OF IMPROVED PROGRAMS FOR ORIENTATION AND ASSIMILATION OF NEW EMPLOYEES IN THE ORGANIZATION, REDUCE CULTURE SHOCK; INCREASE PRODUCTIVITY, AND UNDERSTANDING OF ROLE AND JOB FUNCTION.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. TO CONTINUE MEETING OF NEW HIRES AND GROUP MANAGERS.	DEPT. (ALL)	ONGOING	GROUP MANAGERS	
2. TO COLLABORATE AND CONTRIBUTE IN DESIGN OF INTEGRATED PROGRAMS FOR ORIENTATION AND ASSIMILATION OF EMPLOYEES.	DEPT. (ALL)	?	GROUP HRP	
3. TO PROVIDE CONSULTING SERVICES AS REQUIRED FOR SPECIAL PROGRAMS TO MEET ORGANIZATION NEEDS.	DEPT.	ONGOING	GROUP HRP (?)	REDUCED TURNOVE OF UNDER 2 YEAR

GOAL: TO CONTINUE AND EXPAND THE PERSONNEL TRAINING PROGRAM FOR SUPERVISORS; IMPROVE THE ABILITY OF THE SUPERVISOR TO MANAGE PEOPLE ISSUES.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. CONTINUE MODULE ON DISCIPLINE AND DOCUMENTATION.	VIV, MARY	Q3		
2. PROVIDE MODULE(S) ON: 1. COMPENSATION 2. EEO/AA 3. INTERVIEWING SKILLS	" "	Q4	GROUP/CORP. STAFF	

GOAL: TO CONTINUE TO BUILD A DEPARTMENT OF SKILLED PERSONNEL PROFESSIONALS WHICH IS CAPABLE OF TRANSFERRING THOSE SKILLS TO LINE MANAGEMENT; WHICH HELPS TO PRESERVE THOSE VALUES WE WANT TO PRESERVE AND WHICH SENSES THE NEED FOR AND IS A CONDUIT OF POSITIVE CHANGE IN INDIVIDUALS AND ORGANIZATIONS.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. TO HAVE MEANINGFUL TRAINING DEVELOPMENT PLANS FOR EACH EMPLOYEE.	JK	Q2		HIGHER MORALE
2. TO BE FULLY STAFFED 1. VM REPLACEMENT 2. TD 3. MK 4. PROVIDE STAFFING AND ORG. PLAN FOR SBR PERSONNEL	JK JK/VM	NOV. 79 DEC. 79		Y/N
3. TO EMPHASIZE SUPERVISORY TRAINING AS PRIORITY GOAL FOR GROUP.	ALL/DEPT.	ONGOING	MEYER BJ SF	
4. TO RECRUIT SKILLED PERSONNEL STAFF FOR SPITBROOK SITE.	VM JK	Q1(81)	BUDGET	Y/N
5. TO DEVELOP NETWORKS AND REPORTS WHICH HELP SENSE ORGANIZATION STATE.	ALL	Q4		

GOAL: TO ESTABLISH A LEADERSHIP ROLE IN THE ORGANIZATION(S) IN THE DOMAIN OF EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION RESULTING IN MINORITIES AND WOMEN IN MORE VISIBLE AND HIGH IMPACT ROLES.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. REVIEW ORG. EEO/AA GOALS WITH BJ AND FULLER STAFFS.	JK	Q1	S & P	GOALS MET
2. FEMALE AWARENESS TRAINING FOR BJ AND FULLER STAFFS.	JK	Q2	BJ, SAM, MEYER	Y/N
3. ESTABLISH MANAGERIAL ACCOUNTABILITY FOR GOALS.	ALL	Q2	BJ, SAM	IMPROVED SALARY REVIEWS FOR SUPER., MGRS.
4. FILL NEXT OPENING ON BJ STAFF WITH FEMALE.	JK	?	BJ	Y/N
5. INCLUDE EEO/AA MODULE IN SUPERVISORY TRAINING.	ALL	Q4	MAYBE EEO DEPT.	Y/N

FY'80 GOALS

GOAL: I.

DIRECTLY CONTRIBUTE TO ORGANIZATIONAL DEVELOPMENT STRUCTURE AND ITS STRATEGY FOR THE FOLLOWING:

& OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. By continuing the integration of key groups into another's organization i.e., formally identify Steil's and Glorioso's staff into respective engineering development groups.	Mike Donnelly & Cathy Klinck	Line Mgmt.	On-going	High	
B. Terminals: Have organization plan development and communicate integration of Printer & Video.	Mike Donnelly	Clayton, Halio, Williams, Klinck	Q2	High	
C. Semi-Conductor Contributor to define the charters, relationships and interfaces and processes needed for future successes.	Mike Donnelly	Key Mgrs., Finn, Klinck	Q4	Medium	
1. Hold series of exploratory meetings using outside consultant incorporating LSI, Micro, & Microvax.	Mike Donnelly	Jenks	Q1 & Q2	High	

FY'80 GOALS

GOAL: I. (Continued)

ORGANIZATIONAL DEVELOPMENT STRUCTURE

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
D. R&D Group - Hold series of group meetings for the purpose of re-focusing, rechartering, and providing a more definite research oriented group.	Mike Donnelly	Ulf Fagerquist, Jim Bell & Group's Mgmt.	Q4	High	

GOAL: II.

THE HUDSON MOVE PROVIDES AN IDEAL OPPORTUNITY TO IMPLEMENT CORPORATE PERSONNEL AND EMPLOYEE RELATIONS GOALS.

& OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR ORGANIZATION	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Policy Development: 1. Consistency with other engineering moves. 2. Consistent administrative procedures. 3. Minimize the burdens on employees.	Mike Donnelly & Cathy Klinck	C.E. Personnel	On-going	High	
B. Communications: 1. Maximize employee participation in process through individual contributor committee, secretaries meeting.	Cathy Klinck	Line Mgmt. & Donnelly	Q1	High	
2. Ensure upward and downward communication within organizations that are moving.	Line Mgmt.	Mike Donnelly & Cathy Klinck	On-going	High	
3. Establish newsletter, bulletin boards, group meetings to communcate information about the move.	Cathy Klinck	Donnelly, Line Mgmt., Facility Planning	Q2	Medium	
C. Employee Relations: 1. Motivate managers to understand their importance and responsibility	Mike Donnelly & Cathy Klinck	Line Mgmt.	On-going	Medium	

FY'80 GOALS

GOAL:

HUDSON MOVE (Continued)

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
C. Employee Relations: (Continued)					
2. Move the maximum number of employees with the minimum amount of disruption.	Line Mgmt., Donnelly	All Line Mgmt.	On-going	Low	
3. Individuals who will not go.	Cathy Klinck	Line Mgmt.		Low	
a. Employment role is transfer process.	Cathy Klinck	John DiPietro	On-going	Low	

FY'80 GOALS

GOAL: III.

CONTINUE THE IMPROVEMENT OF THE HUMAN RESOURCE PROCESS WITH CSD

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN LINE MANAGEMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Improve content and purpose of the Human Resource Spring Woods.	Mike Donnelly	Klinck, Fincke, & Line Mgmt.	Q2 & Q3	High	
B. Improve quality content of salary reviews.	Mike Donnelly, Cathy Klinck	Line Mgmt.	Q1	Medium	
C. Reinforce performance review process in Low End.	Mike Donnelly & Cathy Klinck	Line Mgmt. and Joey Hiss	Q2	High	
D. Establish quarterly review process for staff's direct reports and their direct reports.	Mike Donnelly	Klinck, Fincke, Line Mgmt.	Q3	Medium	

FY'80 GOALS

GOAL: IV.

HELP MANAGERS UNDERSTAND AND EXECUTE THEIR RESPONSIBILITY AS MANAGERS, ESPECIALLY WITH RESPECT TO EMPLOYEE RELATIONS

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Local control and responsibility.					
1. Salary administration.	Cathy Klinck	Donnelly, Line Mgmt.	Q1	Medium	
2. Requisition accountability.	Cathy Klinck	Donnelly, Line Mgmt.	Q1	Medium	
B. Provide forums and information workshops around:					
1. Policy & procedures revision as they come out.	Mike Donnelly & Cathy Klinck	-	On-going	Low	
2. Announcement and communication from Corporate Personnel. i.e., wage guidelines and their relationship to DEC.	Mike Donnelly & Cathy Klinck	Don Ames	Q2	Medium	
C. Do need assessment in CSD staff as to how you evaluate a manager, especially with respect to employee relations.	Mike Donnelly	Klinck, Fincke, & CSD Staff		Medium	
1. Present to staff and design workshop.	Mike Donnelly	Klinck, Fincke, Jenks	Q2	Medium	
2. Hold workshop and	Mike Donnelly	Jenks	Q3	Medium	

1. ESTABLISH A HUMAN RESOURCE PLANNING AND DEVELOPMENT PROGRAM WITHIN THE GROUPS.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
ESTABLISH A HUMAN RESOURCE PLANNING AND DEVELOPMENT PROGRAM WITHIN THE GROUPS.					
A. PARTICIPATE IN THE DESIGN OF A HUMAN RESOURCES PLANNING/ FORECASTING SYSTEM;	ALL	GUY FINCKE, PERSONNEL MGRS.	Q3, 1980	HIGH	PROGRAM TO BE IMPLEMENTED AT BUDGET PASS
B. PARTICIPATE IN THE DESIGN AND IMPLEMENTATION OF AN OOD HUMAN RESOURCE REVIEW/ DEVELOPMENT PLANNING PROGRAM.	ALL	"	Q4, 1980	HIGH	TO BEGIN A TOT DEVELOPMENT PLANNING PROGR WITHIN CENTRAL ENGINEERING

2. PROVIDE AN ENVIRONMENT WHEREBY LINE MANAGERS AND SUPERVISORS DEVELOP AN INCREASING OWNERSHIP FOR EMPLOYEE RELATIONS.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
PROVIDE AN ENVIRONMENT WHEREBY LINE MANAGERS AND SUPERVISORS DEVELOP AN INCREASING OWNERSHIP FOR EMPLOYEE RELATIONS.					
A. CONTINUE PARTICIPATION IN THE DEVELOPMENT OF A SUPERVISORS POLICIES AND PROCEDURES TRAINING PROGRAM.	CHRIS WINCHESTER, WALTER LEFLORE	MID-RANGE PERSONNEL AND SOFTWARE PERSONNEL	Q3, 1980	MEDIUM	CONTINUED DEVELOPMENT O SUPERVISORY TRAINING MODU
B. INSURE THAT ADMINISTRATIVE SYSTEMS AND PROCEDURES ARE DESIGNED IN SUCH A WAY THAT LOCAL SUPERVISORY CONTROL IS FOSTERED.	BILL KELLY	DON AMES AND PERSONNEL MANAGERS	Q4, 1980	MEDIUM	EFFECTIVE PERSONNEL SYS REPORTS

3. CONTINUE THE EXPANSION OF A MANAGEMENT/ EMPLOYEE COMMUNICATIONS PROGRAM.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
CONTINUE THE EXPANSION OF A MANAGEMENT/EMPLOYEE COMMUNICATIONS PROGRAM:					
A. INSURE FORMAL AND INFORMAL SENSING TECHNIQUES ARE IN PLACE WITHIN THE GROUPS (WORKING WITH TEWKSBURY IN DESIGNING A SELF-ADMINISTERED FORMAL SUPERVISORY SENSING SYSTEM);	WALTER LEFLORE	TEWKSBURY PERSONNEL	UNKNOWN	HIGH	THE ESTABLISHMENT OF AN EFFECTIVE VERTICAL SENS SYSTEM WITHIN EACH ORGANIZATION.
B. IMPROVE INFORMATION FLOW WITHIN GROUPS. (JOHN HOLMAN ATTENDING STAFF MEETINGS WITHIN AND ACROSS THE ORGANIZATIONS. JOHN'S DIRECT REPORTS IMPROVING THE VISIBILITY DOWNWARD WITHIN THEIR OWN ORGANIZATIONS.	ALL	LINE MANAGEMENT	ON-GOING	MEDIUM	MORE EFFECTIVE COMMUNICATIONS UP AND DOWN WITH THE ORGANIZATION

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INTEROFFICE MEMORANDUM

TO: John Holman

DATE: September 17, 1979
FROM: Bill Kelly *Bill*
DEPT: Personnel
EXT: 223-3962
LOC/MAIL STOP: ML3-6/E95

cc: Paul Bennett, Walter LeFlore, John Meyer, Chris Winchester

SUBJECT: KEY PROJECT REPORT FOR FY '80

PROJECT NAME	RESPONSIBLE PERSON	START DATE	ESTIMATE TO COMPLETE	STATUS, ISSUES, ETC.
EEO Planning	All Personnel	Q4, '79	Q1, '80	Completed
EEO Quarterly Review	All Personnel	Q2, '80	on-going	Process to be defined
Monthly Salary Reviews	All Personnel	monthly	on-going	Revised tickler system to the line by April '80
Engineering Exception Planning	All Personnel	Sept. '79	Oct. '79	Major communications effort needed
WC 4 Salary Planning	All Personnel	Jan. '80	March '80	To be defined
WC 2 Salary Planning	All Personnel	April '80	June '80	To be defined (probable consolidation of WC 2/WC 4 sal. planning during FY '80
Personnel Support for Tech. Ops./ Finance	Bill Kelly	Sept. '79	Oct. '79	Reorganization of Personnel Support
Human Resource Planning & Development	Bill Kelly & individual Reps	Q1, '80 (for 2 programs)	Q3, '80 & the end of Q4,'80	Program is in the development cycle
Supervisory Training Program Development	Bill Kelly & individual Reps	FY '79	Q4, '80	Two additional training modules to be defined

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EPARTMENT

OALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
INCREASED EMPHASIS ON A COMMUNICATION EFFORT					
O Employee Handbook	Dick/Cammy	Facility Staff	Q2	H	Provide new employees with a handbook containi information on this facility, its organization company history and avai able employee services.
O Modify and enhance Orientation program	Dick/Cammy	Joey Hiss	Q3 & Q4	M	Evaluation and analysis of current process and make recommendation.
O Sequential Training Modules, i.e. Interviewing Skills, EEO, Discipline	Joe	D&MS Staff plus all viable resources as needed	Q3	H	Implement Training programs to satisfy a need for new supervisors and managers.
O Employee Assistance Program - E.A.P.	A^2/Cammy	MK/NI/AC as needed	Q4	L	To provide Tewksbury emp loyees with a referral service to enable them t deal with problems inter fering with Job Perform
O Group Meetings Vehicles: Tapes, Breakfast sessions, buffet lunch	Rodger/Dick	Bill Demmer	Q2	H	Increase employee aware ness of DEC Products an Strategies and ensure communication and intac groups or cost centers.
O Communicate Technical courses/catalogs on-site	Rodger	Judy Jurgens/ Bedford/library	Q2	M	Increase ease by which people can learn avail- ability of courses at I

GOALS AND OBJECTIVES

DEPARTMENT

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
O Programs Medical - CPR, Breast checks Lunch at the Movies	Cammy/Rodger/Dick	Cross-facility community-local professionals everywhere	Q2	M	Outline of Medical, Educational and Entertain programs to be offered TW FY80. Provide entertainment during winter months, to educate employees about preventati medicine and to stimula thinking on appropriate topics.
2. SUPPORT THE EFFORT TO ESTABLISH A COLLABORATIVE AND SUPPORTIVE ENVIRONMENT ACROSS TEWKSBURY AND CENTRAL ENGINEERING					
O Establish an effective Internal Transfer process	Dick/Joe	Rep's forum and employment staff	Q3	M	Design a formal procedu for internal transfers facilitate process, les employee frustration ar clarify Personnel's rol
O Support the project/ manpower flow between groups Adv. Dev. - Development Hydra - Software	A^2	D&MS Staff	Q4	H	Decrease turnover
O Participate in formulating policies across Engineering and support Spitbrook move	A^2	Meyer's Staff	Q2	H	To transfer move infor mation and experiences to other Reps in order improve move process i Central Engineering.
O Participate in HPP TW	Rodger	Guy and D&MS Staff	FY 81	H	As defined

GOALS AND OBJECTIVES

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DEPARTMENT

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
O Participate in the redesign of the Engineering Review Board and ensure consistency across DEC and Engineering	Rodger	Engineering Mgmt. and Personnel Reps	Q3	M	Upgrade process
3. ESTABLISH AN ON-GOING SENSING PROGRAM TO TEST THE ENVIRONMENT AND TO GIVE DATA TO MANAGEMENT a) Ongoing diagnosis b) Work with Mgmt. to analyze and interpret data and plan action items	A^2	Corporate Resources (Guy/Joey/Outside Consultant)	Q3	H	Develop an on-going sensing technique that is easily maintained and is of value to Mgrs. in analyzing morale and environment.
4. QUARTERLY D&MS PERSONNEL STAFF MEETINGS TO REVIEW GOAL STATUS, FACILITY METRICS, COMP. STATUS AND EEO STATUS	Joe	D&MS Personnel Staff	Q2	H	Keep on schedule
5. DEPARTMENT MANAGEMENT WHAT ARE WE GOING TO DO FOR OURSELVES DEVELOPMENT PLANS	All		Q2	H	Better Department Management

DEPARTMENT L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Manage the Staffing and Placement function across Central Engineering while integrating into Corporate Programs and Goals					
A. Develop closer ties within C.E. S & P by starting with a Team-Building Session	Armand	Jan Eddy Sr. C.E. S & P Staff Members	10/79	High	Better communication, coordination and collaboration
B. Define Accountabilities and Responsibilities of Site and Staff S & P Functions	Armand	Sr. C.E. S & P Staff Members Site S & P Mgrs. and/or Pers. Mgrs.	1/80	Medium	Clarify roles leading to more effective S & P effort.
C. Develop, implement and monitor consistent administrative systems and metrics for the C.E. S & P Function	Armand	S & P Staff Rossi & Staff	3/80	High	More efficiently run S & P function
D. Contribute to Corporate S & P Goals and Programs	Armand	John Meyer George Rossi Group S & P Mgrs.	Ongoing	High	A more effective, collaborative S & P function
E. Contribute to C.E. Personnel Goals and Programs	Armand	John Meyer & Staff C.E. S & P Staff	Ongoing	High	A more effective, collaborative C.E. Personnel function

DEPARTMENT CE. ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Continue the development of the College Recruiting and College Relations Programs that support present and future staffing requirements					
A. College Recruiting - Develop, implement and monitor systems and processes to provide C.E. the opportunity to hire 200 new grads in FY'80	Jane	Deanna S & P Reps Personnel Dept. Line Organization Corp. College Rels	6/80	High	Complete 85% or more of objective
B. College Relations					
- Develop plan focusing initially on 9 colleges	Jane	Deanna Armand	12/79	High	Approved by OOD
- Implement plan	Jane	Deanna Pers. Dept. Line Organization Corp. College Rels	3/80	High	Increased hires of top students

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
III. Develop and implement proactive Affirmative Action programs aimed at increasing our representation of minorities, women and handicapped at all levels in the C.E. organization					
A. Hire a person to focus on this area for C.E.	Armand	John Meyer Pers. Mgrs. AA Function	1/80	High	Person on board
B. Develop operating plan	New Person	Armand S & P Reps Personnel Dept. Line Management AA Function	4/80	High	Approval from Personnel, Line Management, AA Dept
C. Implement plan	New Person	Armand S & P Reps Personnel Dept. Line Management AA Function	6/80	High	Increased representation of minorities, women and handicapped at all level in C.E.

DEPARTMENT CE ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
IV. Participate in Human Resource Plans and Programs as they develop					
A. Be a contributing member of at least one of the task forces	Armand	Guy Task Force	6/80	High	As stated in HRP & D Goals
B. Provide additional help as needed	Identified S & P Rep (s)	Armand Guy Task Force	?	?	As stated in HRP & D Goals

DEPARTMENT C L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
V. Develop and implement programs to educate all users to their role in the S & P process					
A. Run a minimum of 1 Interviewing Skills Workshop by Site (3 in the Mill)	S & P Reps	Armand C.E. Personnel Dept.	6/80	High	- Increased skills of interviewers - Better quality hires
B. See Internal transfer Goals and Objectives (VI)					

DEPARTMENT C... ENGINEERING STAFFING & PLACEMENT FY'80 9/26/7

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Improve internal transfer process for employees within C.E. and DEC					
A. Develop education module for hiring Mgrs/Supvs and employees as to the systems and processes	Joe Hart	C.E. S & P C.E. Personnel Phil Sardella		Medium	Approval of Meyer Staff and Group S & P Staff
B. Implement module separately or as part of other programs (i.e. Supv.Training, employee assimilation)	Joe Hart	C.E. S & P C.E. Personnel Phil Sardella		Medium	All employees (not just old timers) feel the same opportunity for growth in DEC

DEPARTMENT CE L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
II. Participate, as part of a task force, in the development and implementation of an employee assimilation program					
A. Provide S & P Rep(s) as needed in the task force	Chris Larkin Jane Goring	Joey Hiss Armand	?	Medium	New employees make a smoother entry into DEC

9/24

COMPENSATION/BENEFITS/ADMINISTRATION GOALS

I. Create and maintain a management awareness of Compensation/Benefits programs:

- How they are developed.
- How they are utilized within their respective organization.
- How effective they are.
- How to bring about program changes.

II. Develop and maintain an effective management information system encompassing Compensation/Benefits and general Personnel information.

III. Create and maintain an effective benefit communication network designed to aid in program development and program implementation.

IV. Develop and maintain a system for bringing about the proper balance between external market salaries and internal job relationships.

V. Provide a smooth working administrative organization for carrying out various Compensation/Benefits programs and provide the technical and management direction to ensure programs are continuously updated.

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Compensation/Benefits Training					
A. Conduct and/or have conducted training at various levels.	Don	Algar and Personnel Mgrs.	On-going.	High	Better understandi on the part of Man agement and Person
B. Conduct equal pay audits.	Don/Lynne	Personnel	On-going.	Medium	Ensurance of equal pay treatment.
II. Personnel Information System					
A. Conduct Central Engineering needs analysis. Resources needed.	Don/Theresa	Management/ Personnel	End FY 80.	Medium	Identified needs.
B. Develop maximum utilization of System 1022.	Don/Lynne	Management/ Personnel	End Q3.	High	Regular use of 102
C. Scope out system specifications.	Don/Theresa	Management/ Personnel	------	Medium	------
D. Augment Corporate programs with compatible Engineering programs.	Don/Theresa	Management/ Personnel	------	Medium	------
E. Reports (Personnel Indexes).	Lynne	Management/ Personnel	On-going.	High	Regular meaningful reports.

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
II. Benefits Communications					
A. Design communications network to aid in program development and implementation.	Don/Theresa	Personnel	On-going.	Low/Medium	Well communicated and understood Benefits programs. A better understandi of how programs ar developed.
IV.					
A. Engineering job survey.	Don	Personnel	On-going.	3 visits per quarter	A clearer understa ing of survey data
1. Establish a company visit program with 12-14 companies to talk about engineering and engineering related jobs.					
B. Scope management postions.	Don	Personnel	October ~~September~~ 79	High	Recommendations fo proper leveling.
1. Continuation of Phase II of slotting exercise.					
C. Job description review.	Algar	Personnel/ Management	On-going.	High	Issuance of useful descriptions.
1. Review and/or write job descriptions within Engineering job families.					

ALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
. Consultant/Senior Consultant 1. Job descriptions. 2. "Review Board". 3. Qualifications.	Don	Personnel/ Management	October 79.	~~High~~ to/medium	Better understandin of the jobs; the process for classification and the approval process.
. Special study of product/program management job family. 1. Develop descriptions. 2. Conduct survey. 3. Recommend leveling.	Don/Algar	Personnel/ Management	December 79.	Tied to how soon new manager gets organization squared away.	New job descriptio proper levels; reclassification of incumbents.
. Stock grant program. 1. Allocation.	Don/Lynne	Corporate Comp./ Personnel	03.	Medium	Smooth run and meaingful program.

COMPENSATION/BENEFITS/ADMINISTRATION

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Exception spending. 1. Planning. 2. Implementation. 3. Program monitoring	Don	Personnel	October 79.	High	Generally improved salary/market position of Engineering salaries.
B. Exempt pay program analysis 1. Program monitoring; 2. Program effectiveness. 3. Program modifications. 4. Program implementation.	Don/Algar	Personnel/ Corporate Comp.	December 79 - March 80.	High	1980-81 pay program which satisfies Compensation needs of Engineering Management and employe
C. Non-Exempt pay program analysis 1. Program monitoring 2. Program effectiveness. 3. Program modifications. 4. Program implementation.	Don/Algar	Personnel/ Corporate Comp.	March 80 - June 80	High	1980-81 pay program which satisfies Compensation needs of Engineering Management and employe

COMPENSATION/BENEFITS/ADMINISTRATION

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
1. Technician study. 1. Job descriptions/ evaluations/struc- ture.	Algar	Personnel	April 80.	High	Clear understandinc of what needs to be done in the tech- cian area to ensure continued eompeti- tivesness and inter nal equity.

HUMAN RESOURCE PLANNING AND DEVELOPMENT DEPARTMENT LONG RANGE GOALS

1. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

2. Provide organization development to line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

3. Coordinate our Department efforts with appropriate Corporate Personnel resources. In addition, collaborate with other DEC Personnel Departments.

GF:amt
9/25/79

HUMAN RESOURCES PLANNING AND DEVELOPMENT DEPARTMENT FY'80 OBJECTIVES

Objectives	Completion Date	P.R.	Support	Priority	Results
In support of Goal I (H.R.P. & D.)					
1. H.R.P. & D. Program Plan (3-5 yrs.):		Guy	John Meyer Joey Hiss Jim Walker Personnel Mgrs. Larry Portner	H	-Provide a context in which to understand why we are doing a certain activity when we do it. -Larry and O.O.D. are commited to the effort and understand their roles for FY'80. -Provide a means for assessing where we are at any given point in time.
a. Model/philosophy statement.	10/31/79				
b. Overall goals (3-5 yrs. out).	10/31/79				
c. Annual objectives for each year.	10/31/79				
d. Activities for each year.	10/31/79				
e. Staffing/organization plan for H.R.P. & D. function.	1/31/80				
2. Individual development plans for O.O.D. members and their direct reports.	6/30/80	Guy	Larry Portner John Meyer Ron LeBleu Task Group Personnel Mgrs. Gordon Bell Liz Aberdale	H	-A documented awareness of their current strengths/ development needs, aspirations and what is needed to get there. -A feeling that the Corp. is working to help them with their careers. -A heightened awareness of the complexity and value of career development planning. -An increased commitment to this area in FY'81 including a full-time perso in H.R.P.&D. Department. -Consistent processes being used by C .E. and at the Corporate level.

Objectives	Completion Date	P.R.	Support	Priority	Results
3. H.R.P. process to understand C.E. technical and managerial needs 3-5 yrs. out:		Guy	Larry Portner John Meyer Task group Jim Walker Personnel Mgrs. Project Mgrs. O.O.D.	H	-A better understanding of the H.R. needs/assumptions/ issues related to the Product Strategy and the major H.R. Programs that need to be started in FY'81 to support it. -A more accurate estimate of our H.R. needs in FY'81. -H.R.P. & D. budgeting for FY'81 by O.O.D. and by the H.R.P. & D. Department.
a. Product Strategy and supporting technology plans.	1/31/80				
b. FY'81 planning/budgeting process.	6/30/80				
4. Assimilation program for new employees:		Joey	Employment Dept. Personnel Mgrs/ Reps. Guy Fincke John Meyer External Consultant. Line Mgrs. Other DEC Resources.	M	-New employees make a smoother entry into DEC. -Personnel staff develop program skills.
a. Assemble task group.	12/31/79				
b. Design initial program.	3/1/80				
c. Implement first part.	4/30/80				
d. Evaluate	6/30/80				
In support of Goal II (O.D.)					
5. O.D. consulting to O.O.D.	6/30/80	Guy (support role)	John Meyer (P.M.) Steve Jenks Joey Hiss Personnel Mgrs.	M	-A functioning C.E. O.D. Strategy Group. -O.O.D. is helped in accomplishing some of their goals and/or resolving some key organizational issues. -John Meyer feels supported in his consulting role.

Objectives	Completion Date	P.K.	Support	Priority	Results
6. Group-focused O.D. consulting (e.g. team-building, charter definition, conflict resolution):		Joey	Guy Fincke John Meyer Personnel Mgrs./ Reps. External Consultants Corporate resources	H	-Personnel Mgrs./Reps. develop their skills in this area. -H.R.P. & D. Department is viewed by personnel and line staff as an effective resource in this area (i.e. can provide direct support or can be a broker for outside resources).
a. Investigate potential projects and develop a plan for remainder of year.	1/1/80				
b. Provide consulting.	6/30/80				
7. Engineering seminars:		Joey (support role)	Steve Jenks (P.M.) John Meyer Guy Fincke Mike Donnelly	H	-Improves management systems/ processes for achieving the Product Strategy.
a. Decision-making.	3/31/80				
b. Interface management.	6/30/80				
8. Tewksbury sensing process.	6/30/80	Joey (support role)	Annette Albright (P.M.) Guy Fincke Wit Raymond	M	-Bill Demmer feels he has a better sense of employee attitudes at Tewksbury. -Sufficient actions are taken to justify the data collection efforts. -Tewksbury is self-sufficient in administering an ongoing sensing process. -This is a prototype process for the rest of C.E.
In support of Goal III (Corporate)					
9. Corporate Internal O.D. consulting Group.	6/30/80	Guy (member)	Al Fitz (P.M.) John Meyer Joey Hiss	M	-"Big ticket" items start to get worked across DEC. -Internal O.D. people help one another. -Al Fitz feels support.

SUPPLEMENTARY LISTS

I. Human Resource Planning and Development Department Objectives dropped since Squam Lake Meeting:

A. Competency profile for O.O.D. level jobs.

B. Consulting skill training for personnel generalists (i.e. no formal workshop training but hopefully informal training will occur via consulting projects).

C. Joey's participation in Corporate Personnel Training Task Group (i.e. need an alternate).

D. M.T.O. Evaluation (i.e. Guy is no longer project manager and plays a minimal support role).

E. Wilkof Study (i.e. Guy only plays a minimal support role).

II. Other potential Human Resource Planning and Development objectives not included in FY'80:

A. Human Resource Planning and Development:

1. Support local (e.g. Software) Human Resource Planning efforts.

2. Career planning/development process for Central Engineering Personnel staff.

3. Career planning help for line staff (e.g. for "displaced" employees).

4. Support supervisory policies/procedures training efforts.

B. O.D.:

1. Support general interface work with other functions (e.g. manufacturing, product lines, customer service).

2. Supporting O.O.D. on several of their goals (e.g. 3, 7, 8, 9, 10, 15, 20).

3. Developing a general sensing/communications strategy for Central Engineering.

4. Developing a strategy for Male/Female awareness training for Central Engineering.

III. Guy Fincke's management objectives for FY'80:

1. Assimilation program for Joey.

2. Annual objectives for Joey and Ann.

3. Quarterly review on objectives for Joey and Ann.

4. Quarterly report to John Meyer on key activities and accomplishments.

5. Individual development plans for Joey and Ann.

6. Annual performance reviews for Joey and Ann.

7. Annual salary reviews for Joey and Ann.

8. Recruit additional staff.

9. More visibility with Gordon, Larry and other O.O.D. members.

GF:amt
9/25/79

+---------------+
| d i g i t a l |
+---------------+

INTEROFFICE MEMORANDUM

TO: Larry Portner/Gordon Bell

DATE: 7 April 1980
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 9765
LOC/MAIL STOP: ML3-6/E94

SUBJ: FY'80 OBJECTIVES

Attached are my comments on my FY '80 Objectives. I understand that we will discuss these on April 16th.

ems
attachment

FY80 OBJECTIVES - STORAGE SYSTEMS DEVELOPMENT

GOAL: leadership...competitive products

- implement Redbook
  - o strategy essentially unchanged
- major programs <=2 quarters late
  - o R80 against this stop. RP07 may overrun, TU78 ok
- 75% overall on schedule
  - o tough goal, longer planning focus is helping
  - o implementing phase review process to help
- removeable media tactics defined - five DECUS participants - ongoing
  - o on target, process was productive
  - o strong systems focus @ low end
  - o tactics have reasonable stability
- IR100 award - apply in FY80
  - o done, RL02
- trade journal articles - 1 per quarter
  - o ok, but still lots of missed opportunity; need to stimulate R80 team, RX04, RP07, TU78
- competitive pricing on new products
  - o ongoing, RM05 looks very good

GOAL: management structure and process...commitments... expectations....results

- new FY80 Beige Book by Jan 1
  - o cancelled, except for revised FY '80 bugets
- better FY81 Redbook, start Q3
  - o underway, on schedule
- clear "functional requirements" - all new products
  - o done, good process, need to improve quality and consistency
- project reviews on six week cycle
  - o ongoing, implemented, quality dramatically improved, Mfg. starting to use effectively
- "programs" defined by end Q2
  - o only one for storage is new architecture, which continues to look good

GOAL: product line and systems groups support

- quarterly status to group VP's and/or staff
  - o not done, in process of getting scheduled now, Andy's 4/11/80
- systems participation in six week reviews by Q3 end
  - o need to have a better process, this one is wrong. software is participating in CX and communications are valuable
- clear systems interfaces by Q3 end
  - o thought that "systems focus" was ok. Now know expectations are divergent. Am writing our view. Our charter says what we mean.

GOAL: technology centers

- joint engineering/manufacturing plan by Q3 end
  - o good program, 1 qtr. slip with overal OOD plan, best process in OOD
- approval in Q4
  - o double, but dependent on OOD & Corporate strategies

GOAL: human resource development

- hire 40 college graduates in FY80
  - o on target, may overhire
- do functional college recruiting
  - o ok, ME hire going exceptionally well
- clear college level "joining up" process by Q4 end
  - o have outline and people thinking about it, but not implemented
- in - systems load test all new products by Q3 end
  - o moderate progress, software folks are helping (RM80). Still need more ownership by Storage Eng. managers. Have a TM78 plan.

GOAL: internal organization

- fill CX opening by Nov 15
  - o complete (Lignos)
- fill floppy/cartridge tape by 1 Jan
  - o complete (Bauer)
- quarterly woods meetings of Storage staff
  - o Q2, Q3 done. Q4 scheduled
- minimize conflict ML/CX,PD/AD,PD/PM
  - o significant progress, "team" is building, issues delegated to subcommittees, issues now legitimate, need closure

GOAL: stable....exciting....environment

- low end tactics by Q2 end
  - o done, ongoing process working with Shanzer, Webber
- >=3 technology dumps per year - ongoing
  - o done, next one May 12, 13
- get into semi mainstream - use gate arrays in a project
  - o CX committed to do one ASAP & follow up with CAD tools
- Adv. Development initiated in CX in Q2
  - o Jack Brown in place and hiring
- help with mechanical CAD
  - o contracted with other groups (terminals, sm. sys.) to provide support
- half of logic engineers learn logic CAD this year
  - o SUDS generally in use in CX, terminals ordered for ML

GOAL: track technologies

- implement planning function - done Q1 increased staff Q3
- build metrics/models - ongoing
- expand forecast model to memory - Q2
  - o complete
- high end model/options by end Q3
  - o complete, presenting to Ulf, Busiek, will schedule Gordon
- meet twice per year with major suppliers
  - o ongoing, meetings ok, need to develop a more formal process to survey non-suppliers, especially outside USA

GOAL: measure....as customers measure....and evolve

- do market research - plan by Q3
- DECUS surveys - ongoing, panel on storage at Chicago

GOAL: Increase market share...field merge

- all products dock merge certified at P.A.
  - o almost hopeless
- continue proposing to DCG - 1 "special" disk in FY80
  - o starting to push R80 looks like we have an excellent opportunity with CDS, also T & E floppy. Need to help them understand the market.

Grant Saviers
October 22, 1979

Updated Comments
April 4, 1980

CHARTER
STORAGE DEVELOPMENT

Storage Development is responsible for developing storage products that support the objectives of the corporation by meeting the needs of the Systems Groups and Product Line organizations.

1. Develop and manage the corporation's technology and product strategy for storage devices.

2. Insure jointly with the Systems Groups that the strategy is consistent with our systems goals and is as competitive as is feasible in the storage marketplace.

3. Implement the strategy by acquiring and/or developing technology, components, devices, drives, attachments, and subsystems. Develop quality products for the System Groups for systems integration and secondarily for Components Marketing if sold as a component.

4. Assist the Systems Groups and Components Marketing in their projects that tightly integrate standard high volume components, devices, or drives into systems or customer applications. Aggressively insure the use of standard products across the broadest range of applications.

5. Develop innovative products and subsystems to well-defined interfaces, interconnects, or software standards that are consistent with corporate architectural standards. The form, fit, and functional definition of subsystems are a joint responsibility with the Systems Groups.

6. Actively assist the corporate move to a Systems focus via joint efforts with the Systems Groups in planning, analysis, and definition of storage functions, technology, and products.

7. Be the primary focal point within the corporation for understanding the storage products, plans, technologies, and capabilities of storage suppliers and systems competitors.

8. Provide the product focussed business management of storage products for the corporation via Product Management.

9. Establish a partnership with Storage Manufacturing that is responsive to the strategy and flexible in meeting the needs of our customers.

10. Strategically manage the relationship with Storage suppliers and lead our efforts to establish licensing, technology, or product exchanges.

Grant Saviers
Sept. 1979

LACEY'S BOOK

GOALS - STORAGE DEVELOPMENT

(approximate priority order)

1. Develop or acquire leadership or at least competitive storage components, devices, and attachments across the product spectrum as rapidly as possible; these products should primarily match the systems needs of the corporation and secondarily, should be saleable as components. Recognizing that generally IBM has a dominating lead, we should excel first at the low-end and quickly extend this competitive position upwards.

2. Be recognized as leaders by our customers relative to our systems, third party, and selected components competition.

3. Have management structure and process that makes good commitments, explicitly sets the expectations of those groups that are dependent upon us, and then insures that the commitments are met.

4. Establish Product Line and Systems Groups support, so that we are responsive and competitive in providing the products that are needed.

5. Continue to establish joint siting of engineering and manufacturing as technology centers, managing them for outstanding performance, for rapidly advancing process intensive technologies.

6. Have an aggressive human resource development program that focuses on minority and female development and implements the majority of our recruiting at the college graduate level.

7. Emphasize the quality, reliability, and ease of use in the implementation of our products.

8. Have a clear internal organization that is simple and effective at its interfaces.

9. Take prudent risks and create a stable, stimulating, and exciting environment that is fun for "winners" to work in.

10. Track storage technologies and select a hierarchy of winners for the systems that we sell.

11. Measure ourselves as our customers measure us and evolve our metrics as our markets evolve.

12. Increase our market share by encouraging the establishment of broader distribution channels and field merging of storage products at both the subsystems and component levels.

Grant Saviers
Sept. 1979

FY80 OBJECTIVES - STORAGE SYSTEMS DEVELOPMENT

GOAL: leadership...competitive products

- implement Redbook
- major programs <=2 quarters late
- 75% overall on schedule
- removeable media tactics defined by Q2 end

GOAL: recognized leaders by customers

- five DECUS participants - ongoing
- IR100 award - apply in FY80
- trade journal articles - 1 per quarter
- competitive pricing on new products - ongoing

GOAL: management structure and process...commitments... expectations....results

- new FY80 Beige Book by Jan 1
- better FY81 Redbook, start Q3
- clear "functional requirements" - all new products
- project reviews on six week cycle - ongoing
- "programs" defined by end Q2

GOAL: product line and systems groups support

- quarterly status to group VP's and/or staff
- systems participation in six week reviews by Q3 end
- clear systems interfaces by Q3 end

GOAL: technology centers

- joint engineering/manufacturing plan by Q3 end
- approval in Q4

GOAL: human resource development

- hire 40 college graduates in FY80
- do functional college recruiting
- clear college level "joining up" process by Q4 end
- inventory personnel for development programs by Q3 end
- development programs for all managers by Q4 end
- two performance appraisals/year for all exempt levels by end of Q3

GOAL: quality, reliability, ease of use....products

- push Field Service for written strategy by ???
- internal standards for physical customer interfaces - Q3
- systems load test all new products by Q3 end

GOAL: internal organization

- fill CX opening by Nov 15
- fill floppy/cartridge tape by 1 Jan
- quarterly woods meetings of Storage staff
- minimize conflict ML/CX,PD/AD,PD/PM

GOAL: stable....exciting....environment

- low end tactics by Q2 end
- >=3 technology dumps per year - ongoing
- get into semi mainstream - use gate arrays in a project
- Adv. Development initiated in CX in Q2
- help with mechanical CAD
- half of logic engineers learn logic CAD this year

GOAL: track technologies

- implement planning function - done Q1
- build metrics/models - ongoing
- expand forecast model to memory - Q2
- high end model/options by end Q3
- meet twice per year with major suppliers - ongoing

GOAL: measure....as customers measure....and evolve

- do market research - plan by Q3
- DECUS surveys - ongoing

GOAL: Increase market share...field merge

- all products dock merge certified at P.A.
- continue proposing to DCG - 1 "special" disk in FY80

Grant Saviers
October 22, 1979

Grant Saviers

INTERDEPENDENT OBJECTIVES - STORAGE X OOD

implement Redbook - Sam & Bill must get interconnects settled and hardware implemented.

removeable media tactics defined by Q2 end - Good progress to date, but will require existing resources through Q2 by Dick, Bill, and Ulf.

clear "functional requirements" - all new products - Dick, Bill, and Ulf should provide customer usage, functional requirements, and the hardware/software alternatives to meet the needs. We need clear models and metrics as targets for technology solutions.

systems participation in six week reviews by Q3 end
clear systems interfaces by Q3 end - We want dedicated, capable, visible, management level representation and interface to foster trust and communication with Dick, Bill, Ulf, and when appropriate BJ and Sam.

human resource development - John, I need a personnel manager! And staff!!!!

p[illegible] Field Service for a written strategy by ??? - Si should help.

systems load test all new products by Q3 end - A discipline that should be improved. John should make this process clear.

get into semiconductor mainstream - use gate arrays in a project
Jim could do more internal selling. Bill & Ulf should be more missionary when it's time for others to jump in. Dick, our micro development tools should be as good as Intel's.

help with mechanical CAD - Work with John H. to develop an OOD philosophy and strategy.

half of logic engineers learn logic CAD this year - John should make this easier and insure that hardware/software works and can be installed at reasonable cost and effort.

expand forecast model to memory - Probably GIGO applies now. Si should generate a credible systems forecast process and close with Product Lines on the numbers.

Grant Saviers October 22, 1979

BDS/7

+---------------------------+
! d ! i ! g ! i ! t ! a ! l ! interoffice memorandum
+---------------------------+

SUBJECT: LATEST ADDITION OF OPERATIONS CHARTER AND GOALS

OCT 2 1979

TO: OOD

DATE: October 2, 1979
FROM: Bruce Stewart
DEPT: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-5432

Attached is the latest edition of the Charter and Goals for Operations. I have included, to the best of my knowledge, all the comments and sussestions which were asreed to at the Jungle.

If you have any further comments or sussestions which you would like to be reviewed, please forward them to me by October 14 as I would like to cast this in concrete after that date.

Thanks.

/ma

24

OOD
Larry Portner ML12-1/T32
Gordon Bell ML12-1/A51
Dick Clayton ML12-2/E71
Jim Cudmore ML1-5/E30
Bill Demmer TW/D19
Ulf Fagerquist MR1-2/E78
Sam Fuller ML3-5/H33
John Holman ML12-2/T36
Bill Johnson ML12-3/A62
Mitch Kur ML12-2/A16
John Meyer ML12-1/A11
Grant Saviers ML3-6/E94
Si Lyle ML12-1/T32

OPERATIONS CHARTER

Context:

It has become apparent to the Central Engineering organization that Digital has entered and is moving in a world computing scene characterized by compounding complexity. New technologies, corporate growth, expanding markets, expanding product sets and an increase in inter-group dependencies have all contributed to the complexity.

Central Engineering accepts that complexity in all of the above areas is on the increase, and management techniques and organization structures must evolve to handle this complexity.

The advant of the Central Operations activity as part of OOD along with the PM4 are the latest of the changes to help Central Engineering cope.

Scope:

The primary function of the Central Operations activity will be to define and implement the minimum, but sufficient, set of measurement and planning criteria to allow for the sensitive and sensible management of Central Engineering. The measurement and planning criteria will be arrived at by augmenting rather than replacing existing systems and techniques.

Among the items which Central Operations intends to influence are:

- Planning process and completeness
- Review methods for products, programs and options
- Change control for working documents
- Dependency management
- Budget to performance coordination

In all the above it is Operations role to develop and administer the process, not to do it. The doing is a line management responsibility. In all of Central Operations activities, we will endeavor to build on existing process and minimize bureaucratic overheads.

It is intended that the Operations' activity will bring about behavioral change which will allow each individual to do his or her job better. Success will allow the Corporation to better understand and deal with the development associated problems.

OPERATIONS GOALS

1. To evolve new systems or processes from existing systems or processes which will facilitate the achievement of the Central Engineering management strategy.

2. To educate managers as to the requirements for plans and planning.

3. To inspect plans for status and viability.

4. To coordinate inter-group activities in such a way as to cause reviews to be held in the event of significant mismatches.

5. To coordinate inter-group plans to ensure completeness and consistency.

6. To install review mechanisms that will allow for problem identification and resolution.

7. To install escalation procedures which will alert Central Engineering management to the need for review.

8. Via the PM4 ensure that dependent parts of the Company are aware of problems in Central Engineering which may impact their performance.

9. To coordinate Operations activities in each group with Central Operations.

10. To administer the management process (planning calendars, budget calendars, Red Book, Yellow Book, etc.

11. To help establish budget to achievement measurement techniques.

/ma

CENTRAL OPERATIONS OBJECTIVES FOR FY80

1. TO HIRE TWO STAFF CAPABLE OF ACTING AS MANAGEMENT SYSTEMS CONSULTANTS BY JANUARY 1980.

2. TO ESTABLISH THE ADMINISTRATIVE STRUCTURE TO HANDLE PLAN REPOSITORY, CHANGE CONTROL, AND REPORTING BACK BY JANUARY 1980. THIS STRUCTURE WILL ALSO PRODUCE A STATUS BOARD/REPORT WHICH WILL ALLOW FOR STATUS CHECKING AT ANY TIME BY MARCH 1980.

3. TO ADMINISTER THE RED BOOK, BEIGE BOOK, YELLOW BOOK, BUSINESS PLANS, AND PRODUCT PLAN SUMMARIES BY MARCH 1980. THIS WILL INCLUDE REGISTRATION, CHANGE CONTROL, AND THE NECESSARY CHECKS AND BALANCES TO ENSURE THE RELATIONSHIP BETWEEN THESE PROCESSES.

4. TO ACT AS AN AUDIT ACTIVITY ON MANAGEMENT PROCESS AND RECOMMEND CHANGE WHERE NECESSARY. ON GOING.

5. TO ENSURE THAT INTELLIGENCE EXISTS WHICH CAN LOOK AT DEPENDENCIES AND PLAN VIABILITY BY JANUARY 1980. IT IS INTENDED THAT THE PEOPLE FROM #1 ABOVE WILL BE CAPABLE OF PERFORMING THIS ACTIVITY. THIS OBJECTIVE WILL LOOK AT ALL PLANS WHICH WE HAVE FOR COMPLETENESS AND SANITY AS WELL AS ENSURING THAT DEPENDENCIES ARE CONTROLLED WHERE NO SYSTEM OR PROGRAM FOCUS EXISTS.

6. WORKING WITH LARRY PORTNER TO ESTABLISH AN ESCULATION MECHANISM BY FEBRUARY 1980.

7. TO TAKE THE AGREED REVIEW PROCEDURE FORWARD AND SET UP A LIST OF PROGRAMS AND FREQUENCIES BY JANUARY 1980.

8. WORKING WITH SI LYLE AND LARRY PORTNER, ESTABLISH A DOCUMENT SET AND APPROVAL PROCEDURE FOR CENTRAL ENGINEERING BY DECEMBER 1979.

9. COMMUNICATE #8 AND SEE IT WORKING IN CENTRAL ENGINEERING BY JUNE 1980.

10. TO ESTABLISH A FUNCTIONAL OPERATIONS ORGANIZATION ACROSS CENTRAL ENGINEERING BY DECEMBER 1979. THE INTENT HERE IS TO FOCUS ON THE MANGEMENT SYSTEMS/PROCESSES ACTIVITIES IN EACH ORGANIZATION AND PROVIDE A DISCUSSION/ACTION FORUM.

11. VIA 10 TO START ELIMINATION OF DUPLICATE ACTIVITIES BY MARCH 1980.

12. WITH MITCH KUR START AN ACTIVITY TO MEASURE PROJECT ACHIEVEMENT VERSUS PROJECT SPEND BY JANUARY 1980. THIS OBJECTIVE INCLUDES EVALUATION OF THE CURRENT FINANCIAL REPORTING MECHANISM WITH AN EYE TOWARD CHANGE WHERE NECESSARY. ACTUALLY REPORTING ON THIS BASIS WILL BE TARGETED FOR FY81.

DBS1/16
10/31/79

13. TO ASSESS THE RESULTS OF THE REVIEW PROCESS WITH GORDON BELL AND LARRY FORTNER AS TO COST VERSUS BENEFIT BY JUNE 1980.

14. TO CONTINUE TO WORK WITH THE LINE UNITS TOWARD COMPLETE MANAGEMENT SYSTEMS IN THEIR INDIVIDUAL AREAS. ONGOING.

PERSONAL GOALS
CONTENTS

WS102/7 Updated: 7/13/79

OOD	SECRETARY	EXTENSION	MAILSTOP	
GORDON BELL	MJ	2236/2237	ML12-1/A51	2
DICK CLAYTON	MARYLYNN MORIN	3638/4352	ML12-2/E71	1
JIM CUDMORE	MARIE MANGAN	2393/5328	ML1-5/E30	1
BILL DEMMER	KATHY JOHNSON	247-2111/2112	TW/D19	3
ULF FAGERQUIST	ANN PESKIN	6408/5129	MR1-2/E78	1
SAM FULLER	DIANE SECATORE	247-2131/2129	TW/A08 ML12-2	7
JOHN HOLMAN	JUNE MCARTHUR	223-5533/5507 ~~PA5-W104~~ T36		4
BILL JOHNSON	FAITH SCIRE	3982/7725	ML12-3/A62	8
MITCH KUR	VICKI TRAVIS	6883/3039	ML12-2/A16	2
JOHN MEYER	CAROLINE SPENCE	2633/2906	ML12-1/A11	8
LARRY PORTNER	MARILYN ARBUCKLE	2471/2217	ML12-1/T32	4
GRANT SAVIERS	BETTY SCANSAROLI	9765/4520	ML3-6/E94	

DC

digital

INTEROFFICE MEMORANDUM

TO: Larry Portner

DATE: 31 July 1979
FROM: John Holman
DEPT:
EXT: 3-5533
LOC/MAIL STOP: ML12-2/T36

SUBJECT: My personal agenda

Key items on my personal agenda are

1. Fill Financial, Personnel openings for managers.
2. Absorb Vonada, Verostic into organization.
3. Get cost center signature authorization straightened out. We could come to a grinding halt.
4. Get Paul Bauer to make up his mind.
5. Revitalize our RFI/EMI activity. Ken's suggestion of a consortium meeting is an excellent one. It could identify:
   A. Issues
   B. Talent
   C. Corporate Direction
6. Pick a name for our group. Any ideas?
7. Tewksbury Power & Packaging Leadership.
8. P.C. Technology owner should be identified soon. I feel that this problem belongs to me via Tays, Lawrence.
9. Carefully review the basis of each budget to establish my agreement. I feel uneasy allowing people to hire additions.
10. Get Jerry Butler up to speed in CSS as quickly as possible.

/jm

digital interoffice memorandum

AUG 6 1979

SUBJECT:

TO: O^2D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
~~DEPT~~: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

To

While we're busy focusing on getting our goals, charters, objectives and the like sorted out, I have this gnawing concern that we may let something important slip through the cracks in the short and intermediate term aspects of managing our business, particularly in areas that have new occupants in the key jobs. I believe that we need to reaffirm quickly what our major focus should be for the next six months. I'm sure there are issues in Sam Fuller's space that relate to technology and architecture; John Holman, I'm certain, has a set of issues that have the potential, unless understood, to squeeze us in a capacity bind for critical services. Major strategic issues lie within the domains of each of the line organizations and in particular I'd like to highlight those that are spread across several organizations - these are the ones that everyone assumes that someone else is going to take care of. Specific examples here may be Distributed Processing, the HYDRA program, and I'm sure there are others.

In this context, would each of you please just drop me an informal note giving me your current list of items that are on the top of your personal agenda or should be on the top of the O^2D agenda for us to keep our finger on while we move forward in longer term directions.

- Getting the adv. Dev activities in µproducts and semi Mfg restructured to insure we make key programs happen — VENUS (MCA), PUSART (HMOS)
- Process for better product/LSI planning linking

L.

(1)

| d | i | g | i | t | a | l |

interoffice memorandum

SUBJECT:

JUL 2 [illegible]

TO: O^2D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
DEPT: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

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- S/W ARCHITECTURE, (Venus/VAX/Comet/Nebula & other compatability)
- Dist. Processing Program Office,
- TRAX
- CARREER Development
- RSTS/SCS
- Peripheral/SW interface
- S/W services/S/W interface

(1)

digital interoffice memorandum

AUG 6 1979

SUBJECT:

TO: O²D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
~~DEPT~~: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

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- Process for better product/LSD planning linking

L.

Digital

INTEROFFICE MEMORANDUM

AUG 16 1979

TO: Larry Portner

DATE: 13 August 1979
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 9765
LOC/MAIL STOP: ML3-6/E94

SUBJ: PERSONAL AGENDA ITEMS (Q1)

1. Develop an organization strategy jointly with Portner and Bell (underway).

2. Commence implementation of reorganization (Riggle and Gutman finding out about it).

3. Establish a periodic program review system (discussed with staff - no plan as yet).

4. Get TU/TM78 to critical Mass and meet commitments (offers out, have a plan).

5. Work with Removable Media Task Force to develop the strategy (underway).

6. Continue to observe, learn, listen, understand the OOD process. Work at developing the relationships.

7. Start working the Product Line interface (meet with Marcus' staff, 8/28/79.

8. Hire some top talent. (Hired Ed Burke - starts 8/20/79).

9. Follow up on CDC 7/25/79 meeting. Meet with STC, MRX, and ISS. (Legal doing non-disclosure.)

10. Solidify Gordon's position on HSC. (Fuller to publish note.)

11. Get LRP dialogue started with Puffer (meeting of our staff on 9/26/79).

Grant

Eng. Staff, Bob Glorioso

Ron Smart - 1/19/82

FYI Gordon

Our #1 problem.

DIGITAL'S PHILOSOPHICAL BUSINESS BASIS

Reaffirm Historical Business Philosophy

1. Metrics

   Individuals and groups have goals including clear, comprehensive metrics of success and are measured against them regularly.

2. Responsibility

   Managers are totally responsible for their plans: for making them, for getting approvals, for executing them, for getting others' commitments and for considering others' limitations. Managers are trained and selected to take this kind of responsibility.

3. Investment Decisions

   Plans and changes to plans are approved on the basis of what is best for the company as a whole in its business environment. That is, individual investment decisions are constrained to an overall portfolio of P/G, Product and Geographic businesses.

Changes Necessary in the Implementation of This Business Philosophy

1. Better Metrics

   Develop and use more effective Metrics for evaluating plans and performance - metrics which ensure corporate performance is achieved through individual performance against those metrics - metrics which are simple for individuals to compute, but robust enough to apply internationally without ambiguity and withoug manager-to-manager confusion.

2. Manager Training & Selection

   Train managers to understand the comprehensiveness of their responsibilities and to develop the skills to work on that basis.

3. Corporate Capability Development

   Clean up the proposal and approval process so that decision making is more automatic and learning rates are accelerated.

mr

To: Eng. Staff.

Arnie's MBO. Can you use it?

cc: Arnie, Ken.

FYI

There ~~xxx~~ slides were presented to the OC at the Woods on Thursday.

Gordon.

MANAGE WELL

→ A. Goldfein

1. BILL OF RIGHTS

   SUPPORTED BY:

2. OBJECTIVES AND KEY RESULTS/PLANS

3. SYSTEMATIC STATUS REPORTING/MEASUREMENT

4. REGULAR ONE-ON-ONE'S

✓

EVERYONE IN SEG/CAD HAS A RIGHT TO BE WELL MANAGED

YOU HAVE THE RIGHT TO:

- HAVE A JOB THAT CHALLENGES YOU TO THE LIMITS OF YOUR PROFESSIONAL ABILITY
- KNOW WHAT YOUR MANAGEMENT THINKS YOU SHOULD BE DOING
- KNOW HOW YOUR WORK RELATES TO DIGITAL'S BUSINESS AND YOUR ORGANIZATION'S PLANS
- KNOW WHAT YOUR MANAGEMENT THINKS OF YOU AND YOUR WORK
- HAVE ENOUGH RESOURCES TO DO YOUR JOB
- HAVE AS MUCH OPPORTUNITY FOR JOB-RELATED PERSONAL GROWTH AND LEARNING AS YOU CAN SUCCESSFULLY HANDLE
- BE COMPETITIVELY REWARDED FOR YOUR WORK
- HAVE A CLEAR UNDERSTANDING OF YOUR CAREER OPTIONS AND PATH

(NOTE: THE MANAGEMENT "RITUALS" OF O & KR AND REGULAR ONE--ON-ONE'S GUARANTEE THAT YOU CAN GET CALIBRATED AS FREQUENTLY AS YOU NEED.)

****
DIGITAL
****

INTEROFFICE MEMORANDUM

TO: SEG/CAD Users

DATE: 11 January 82
FROM: Arny Goldfein
DEPT: SEG/CAD
EXT: 225-4926
M/S: HL2-2/J13
DECNET: ELSIE::GOLDFEIN

SUBJECT: SEG/CAD, Objectives and Key Results
Q2 FY82, Rev. 0

I. Increase speed, reliability, maintainability of the CHAS custom-MOS integrated design system, while extending it's functionality to include schematic entry (DECDRAW), RTL simulation (DECSIM), and graphic output from circuit simulation (SPICE).

A. Publish a revised CHAS architecture document. (2/20)

B. Publish performance analysis study of CHAS Version 2. (1/31)

C. Release CHAS Version 2.1 with bug fixes and some performance improvements. (1/20)

D. Implement architectural changes to CHAS data base, menu-actor interface, and actor dispatching in CHAS Version 3. (3/20 field test)

E. Publish CHAS Version 3 interface specifications that detail the CHAS/DECDRAW, CHAS/DECSIM, and CHAS/GRAPES interfaces. (2/20)

F. Release CHAS Version 3 field test on CHIPS and SHORTY. (3/20)

II. Provide MOS design engineers with a production quality MOS schematics drawing system (DECDRAW). The delivered tool should meet the users requirements for scheduling and function.

A. Install and demonstrate DECDRAW Version 1.0 on CHIPS, SHORTY and NANCEY. (2/15)

B. Install and demonstrate DECDRAW Version 2.0 on CHIPS, SHORTY and NANCEY. (4/1)

III. Improve behavioral modelling by allowing use of models which are independently compiled and introduce MOS simulation (modelling all known MOS signal states/failure modes) and Fault Simulation (concurrent fault simulation, verifying test effectiveness) into DECSIM.

A. Distribute to SCORPIO a version of DECSIM containing: (2/3) /

(1) Terminal debugging for behavioral models using the WATCH command.

(2) Simulation of timing in behavioral models.

(3) Compilation of behavioral models containing timing statements.

(4) LOAD command able to load microcode into simulation memory.

B. Publish a design specification for MOS simulation. (2/26) O

C. Publish a functional specification and plan for fault simulation in DECSIM, including statements on ATG. (3/15) 1/2

D. Test the currently written code for fault simulation within DECSIM. (3/30) /

IV. Provide NAUTILUS and memory engineering a placement and routing system for TI's 2000 gate array (TAT020) for production use in Q2, FY83 and for EMMA.

A. Publish results of comparison between DEC's and TI's placement and routing tools using TI's 800 gate array (TAT008). (1/31) /

B. Publish results of comparison between DEC's and TI's placement and routing tools using TI's 2000 gate array (TAT020). (3/31) O

C. Publish plan for production layout system. (2/28) /

D. Load FINCUT placement results into IDEAS layout editor. (3/26) O

V. Provide and support tools to allow automatic checking of layouts to help designs currently in progress work on first pass, and start development of aids for the next generation of designs.

A. Release ZMOS NCA rules file. (2/1) /

B. Release ZMOS GDS2 rules file. (2/15) O

C. Release MOSAIC NCA rules file. (2/1) /

D. Release user operable version of ERC with user guide. (2/7) /

E. Release user operable version of NCC with user guide. (2/15) /

F. Publish preliminary IV functional spec. (2/1) /

G. Publish design spec for HDRC. (3/15) /

VI. Supply the SCORPIO, BI, and VT200 circuit design engineers with an improved set of MOS device equations for use with our circuit simulation program SPICE.

A. Release the intrinsic MOS model equations (MOS 4). (1/18) /

B. Release the enhancement MOS model equations (MOS 5). (2/15) /

C. Release the depletion MOS model equations (MOS 6). (3/15) O

VII. Decrease the time and cost of developing a new semiconductor process while increasing the reliability and yield of the new processes.

A. Publish a plan to support the SUPREM process simulation program. (2/22) /

B. Achieve a successful compilation of the MINIMOS MOS device simulation program on a VAX 11/780. (3/15) /

C. Achieve a successful run of a MINIMOS test case. Use the ZMOS 2 micron N-channel device structure as a test case. (4/5) O

SEG/CAD Objectives and Key Results
Q2 FY82, Rev. 0

KEY RESULTS

Key Results		Orig. Date	1/18 1	1/25 2	2/1 3	2/8 4	2/15 5	2/22 6	3/1 7
	CHAS								
I. A.	Architectural Docu.	2/20	2/20	2/20	2/20	2/20	2/20	(2/26)	(3/3)
B.	Performance Analysis	1/31	1/31	1/31	(2/2)	{2/3}			
C.	V2.1 Release	1/20	(1/22)	{1/22}					
D.	Version 3 Field Test	3/20	3/20	3/20	3/20	3/20	3/20	3/20	(4/26)
E.	Version 3 Interface Specs	2/20	2/20	2/20	2/20	2/20	2/20	(2/26)	(3/3)
F.	Version 3 Field Test	3/20	3/20	3/20	3/20	3/20	3/20	3/20	(4/26)
	DECDRAW								
II. A.	Install V1.0 on CHIPS	2/15	2/15	2/15	2/15	2/15	2/15	(2/15)	(2/15)
B.	Install V2.0 on CHIPS	4/1	4/1	4/1	4/1	4/1	4/1	4/1	4/1
	DECSIM								
III. A.	V1.0 Release	2/3	2/3	2/3	2/3	{2/3}			
B.	Publish MOS Spec	2/26	2/26	2/26	2/26	2/26	(3/12)	(3/12)	(3/12)
C.	Fault Sim. Func. Spec.	3/15	3/15	3/15	3/15	3/15	3/15	3/15	3/15
D.	Test current Fault Sim.	3/30	3/30	3/30	3/30	3/30	3/30	3/30	3/30
	Auto Layout								
IV. A.	Publish TAT008	1/31	{1/12}						
B.	Publish TAT020	3/31	3/31	3/31	3/31	(4/23)	(4/23)	(4/23)	(4/23)
C.	Production System Plan	2/28	2/28	2/28	2/28	2/28	2/28	2/28	(3/15)
D.	FINCUT into IDEAS	3/26	3/26	3/26	3/26	3/26	drop		
	Layout Verification								
V. A.	ZMOS/NCA Rules File	2/1	2/1	2/1	(2/15)	(2/15)	{2/15}		
B.	ZMOS/GDS2 Rules File	2/15	2/15	2/15	2/15	(2/17)	(2/17)	(2/17)	(2/17)
C.	MOSAIC Rules File	2/1	2/1	{2/1}					
D.	Release ERC	2/7	2/7	2/7	(2/15)	{2/15}			
E.	Release NCC	2/15	2/15	2/15	2/15	2/15	(2/19)	{2/22}	
F.	IV Functional Spec	2/1	2/1	(2/8)	(2/8)	2/15	{2/12}		
G.	HDRC Design Spec	3/15	3/15	3/15	3/15	3/15	3/15	3/15	3/15
	Circuit & Technology Simulation								
VI. A.	Release SPICE with MOS4	1/18	(2/22)	(2/22)	(2/22)	(2/22)	(2/22)	{2/22}	
B.	Release SPICE with MOS5	2/15	(3/1)	(3/1)	(3/1)	(3/1)	(3/1)	(3/1)	(3/8)
C.	Release SPICE with MOS6	3/15	(4/1)	(4/1)	(4/1)	(4/1)	(4/1)	(4/1)	(4/1)
VII. A.	Publish SUPREM supt. plan	2/22	2/22	2/22	2/22	2/22	2/22	(3/1)	{3/1}
B.	MINIMOS Compile on 11/780	3/15	3/15	3/15	3/15	3/15	3/15	3/15	3/15
C.	Run MINIMOS test case	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5

From: FITZ 5-MAR-1982 10:45
To: PETERS
Subj: Revised OKRs, change some of the 4/26 dates?

FROM: JGbnoffPeters Date: 4-MAR-82
SUBJ: Objectives and Key Results (revised to reflect schedule slip)

I. Modify my CHAS routines PLOT and ASSEMBLE to use new database access and i/o routines.

A. working routines in CHAS by 4/26

II. Reduce hierarchical circuit data (from DECRAW) to single level circuit data for use by SPICE.

A. Distibute design spec on 2/15 [3/1]

B. working implementation by 4/26
(SPICE runs on smashed circuit data)

III. Integrate Ron Maxwell's assemble program into CHAS. This will offer an alternative to (block connection by) DECDRAW, and an alternative floor planning tool.

A. Publish functional spec for reviewing 2/15 [3/4]

B. Publish design spec for reviewing 2/22 [3/4]

C. Working implementation by (3/20) 4/26
(Maxwell's assembler runs as part of CHAS)

IV. Investigate the possibility of adding a Versatec plotter to CHAS in later versions.

A. Publish feasability report 3/31

this objective and key result has been dropped, due to lack of time

V. Fix, pass on to the correct developer, or document restriction for all bugs assigned to me within 2 weeks of reciept.

OKR progress chart as of March 5

Key Results	Orig. Date	2/1	2/8	2/15	2/22
Modify CHAS routines	3/20	3/20	3/20	3/20	3/20
SMASH design spec	2/15	2/15	2/15	(2/22)	(3/1)
SMASH implemented	3/8	3/8	3/8	3/8	3/8
MAXwell's func spec	2/15	2/15	2/15	(2/22)	(3/1)
MAXwell's design spec	2/22	2/22	2/22	(3/1)	(3/1)
MAX integrated	3/20	3/20	3/20	3/20	3/20
Versatec investigate	3/31	3/31	3/31	3/31	3/31

Key Results	Orig. Date	3/1	3/8	3/15	3/29
Modify CHAS routines	3/24	(4/26)			
SMASH design spec	2/15		[3/3]		
SMASH implemented	3/8	(4/26)			
MAXwell's func spec	2/15			[3/4]	
MAXwell's design spec	2/22			[3/4]	
MAX integrated	3/24	(4/26)			
Versatec investigate	dropped due to lack of time before V3 release				

The changes in date on the specs is a result of time spent on fixing bugs for the V2.2 release, and because the CHAS database spec was not out, which I needed to specify how SMASH and MAX will run in CHAS. The date changes to 4/26 reflect the CHAS schedule slip.

00 BURT DECGRAM ACCEPTED/ S 1757 0 01 14-JUL-80 00:27:18

****
* d i g i t a l *
****

TO: JACK SMITH

cc: OOD:
OPERATIONS COMMITTEE:

DATE: SUN 13 JUL 1980 11:24 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: A BETTER? SEGMENTATION OF MFG/ENG/MKT(IN SOME INSTANCES)

It feels like we could have a cleaner coupling between manufacturing and engineering. Also, we need a better segmentation of product flow among the plants. There is an assumption that each major product grouping is quite vertically integrated, at least back to include modules and special packaging. Since we are stressing point of manufacture and field integration, the organization is set up to focus on this.

Although this structure is focused mainly on the Manufacturing Engineering coupling. In several cases it could conveniently extend to couple to the product lines, such that it would be possible to have a segmented business unit of manufacturing, engineering, and one or more product lines. In nearly all cases, products sold on the open market would also be sold internally as part of larger systems (eg. terminals). Note these groupings:

Group name	Customers	Suppliers
Semiconductors	MS, T, S, M, L	Ext. too
Phys. interconnect	"	
Microprocessors	Ext., S, M	Semis, Phys. I/C
Mass store (MS)	Ext.?,T, S, M, L	Semis, PIC
Communications and networks	Ext.?,PLs	Semis, PIC
Terminals and T-based systems	Ext, PLs	Semis, Phys. I/O, MS
Small	PLs	Micros, MS,
Medium	"	Semis, PIC, MS
Large	"	"

Semiconductors (M/E)
Behavior is like a semiconductor supplier! Supplies chips and occasionally a set of chips carrying out a well defined function and mounted in a single or multi-chip carrier.
.The big issue is how to segment this to set the necessary charter protection among MOS, Bipolar TTL, and Bipolar ECL?
.Also, how do we tradeoff between manufacturing and engineering resources (product ships versus new products)?

Physical Interconnect and Packaging (M/E)
This group would develop and sell this components (chip carriers, boards, modules, and back planes) to both develop groups and to plants. It would operate a manufacturing facility in which automation is tested and it would work on leading edge processes that are not done in a specific product group. This might

Organization

Comments on presentation:
Lots of Questions; Smith / Davis / Bell to reframe it.

Builds on OEM principle that made us great OR: Sell direct + End user to stay "honest" technologically!
Solves FAT prob.

Mutated Systems: ones that evolve from a common base.

min (# groups; # interdependencies; get h.v. segmentation)
→ i.e. get rid of shit (fringes).

Test

Distribute control

include: very low cost PI or PIP, the high performance packaging needed in Venus/2080, and chip carriers. It would have: component development, cad development, process development, and test development. I would like to see us try to segment this effort and see whether such a group could exist. Some questions:
.What would it include?
.How does it couple to the plants?
.To the groups it serves?
.How is it funded? (The measures of this technology are quite clear!)
.How much of power?
.How much of packaging?
.How much is in the higher level-of-integration groups? ETC.
This is very important to look at, but very tough to do (assuming the people are not emotional about looking at it.)

Microprocessor board and box-level components (M/E/Mkt)
Fundamentally this group would develop module-level components for higher level systems sold through the PL. It would also sell its components so that a Small systems group could build conventional End user and OEM products complete with disks, comm., etc. Other systems groups would buy modules.
.Should we look at it, given the opportunity of it all coming together in Hudson?

Mass Storage (M/E)
Clearly a seperate entity.
.With the purchase of new board shop, is there a way to further clean up the interface so that modules are in their purview too; i.e. how can we get them to a fully stand-alone vertically integrated division and out of the rest of the M/E planning, etc.?
.Should the low end be part of the Terminals activity? (probably not, given the work needed to deal with better video; comm., intelligence and sw).
.I'm still convinced that it is desirable and maybe even necessary to sell disks on the open market to be truly good here,
.How can we get a look at this objectively?
.How can we get a better interface between disk and the systems groups to avoid building expensive, segmented sub-systems (ala floppy)?
.Getting right DM package ala the RL's?
.Dealing with what I describe as Type IV packages (where all the stuff is in one cab. and we currently need FAT)?
.Why aren't these built into the disk instead of a CPU plant?
.Taking advantage of the HSC such that this is also the high end 11 system rather than returning it to NE for FATing?

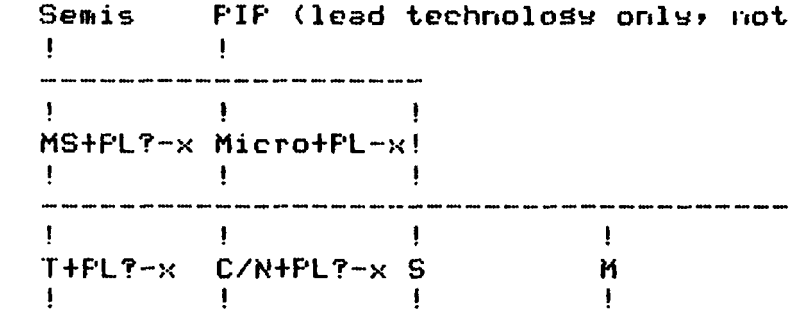
Communications and Networks
With the new interconnect structure and the increased focus on networking, it would be very good to have a strong emphasis again on these products within all parts of the organization, including the field. In some ways, the product strategy lessens the product focus need because all products must have built in connections. There will be more emphasis in terms of: communications concentrators ala Mercury (part of Hydra and other products), Hydra itself is structured this way, Gateways to IBM,

x.25, and the phone companies, and voice switching. Electronic mail systems per se might be sold through this channel. This group would supply standards to other systems and products per se.
.What is the best way to provide this focus?
.What is its product charter?
.How are M and E coupled?
.Is there a need for a better PL focus?

Terminal and Terminal Based Systems (M/E/MKT)
This one is clear I hope. I'm deadly afraid of seperating dumb and smart and intelligent, cause they are just a few Kilobytes of RAM away from one another and differ by whether there is secondary memory or not. In the not too distant future, I see the convergence of all our current dumbs to have local intelligence and sufficient secondary memory, versus being all dumb. This follows the Xerox and Datapoint models to a certain extent. At any rate, the customers are: all systems, Terminals PL, most of WPS, and Retail.
.How can these best be coupled to form a business unit?
.How to segment into various price and function ranges? .
.How to integrate the base software?
.The applications software?
.Is there a need to have the mass store as part of the group?

System groups (M/E)
Currently this is a disaster by every conceivable measure: inventory, cost, time to get something to market, forecasting, order processing. Jack's edict that we are not going to have any more FAT, but instead are going to ship from point of manufacture beginning in year ?, is the beginning of what should bring about this change. We still must deal with the turning of the corner of what we produce as components and what some customers and PL's, believe is an ala carte approach to building systems. The interconnect fully supports this approach! Some of the questions:
.How many, and what is the segmentation? (by type, $-amount, architecture, technology?)
.How is the corner turned so that PL's "feel" their inventory?
.What are the rules to deal with "specials" ... which I think are minimum?
.How to plan the transition associated with the products and back up if there are any slips?

Diagrammatically, the product flow, through the various M/E and possible M/E/Mkt groups to PLs would be as follows:



```
        !
        OEM and End user PL
        !
        x
```

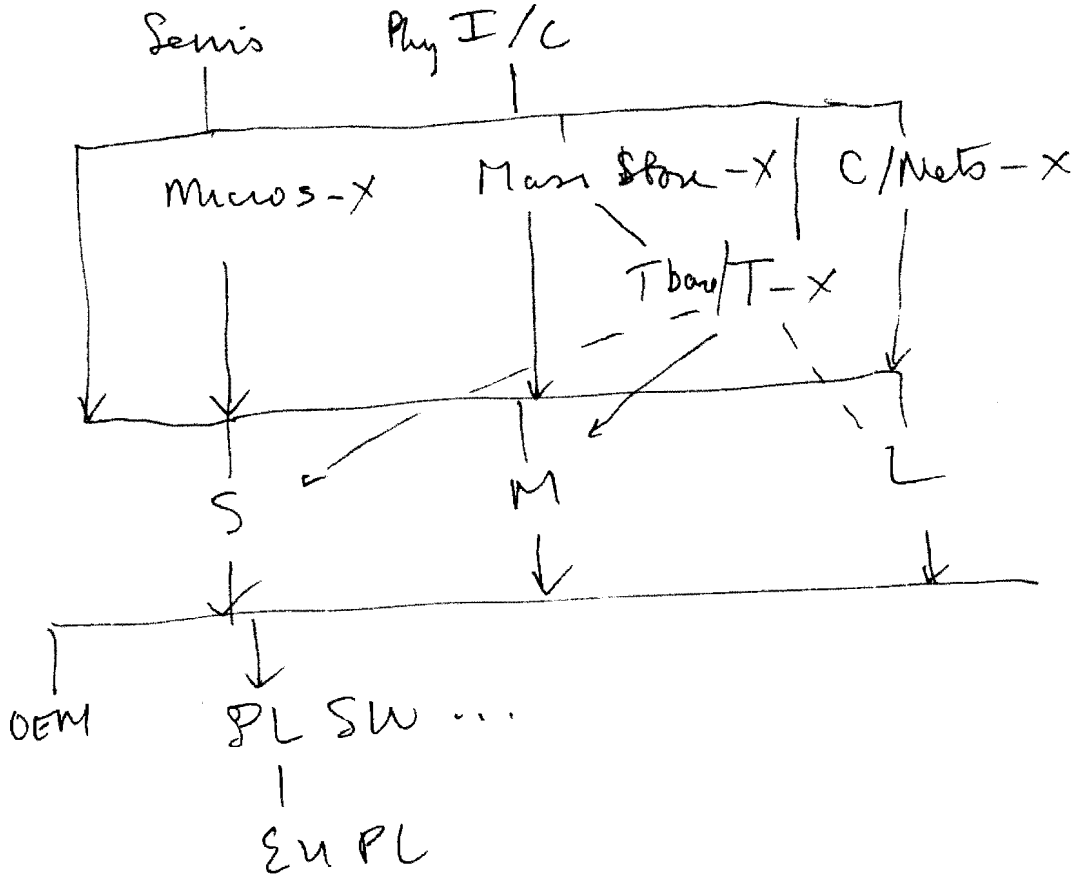
x = customer

This is hardly meant to be final, but is rather something we might discuss from. I think it would acccomplish better interfaces and more autonomy among the groups.

What you folks think?

Hopefully it might help in the Woods discussion on Wed./Thur., although it only deals with trying to segment a small part of our world. Again, please don't take it as final. (There is another memo that deals with the various dimensions I use to work on segmentation.)

O/C Presentation



****
* d i g i t a l *
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TO: LARRY PORTNER

cc: JOHN MEYER

DATE: SUN 13 JUL 1980 11:08 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: CONFIDENTIAL MINUTES OF 7/10/80 MTG.

Minutes of Bell, Portner, Meyer Meeting 7/10/80

Strategic Planning Manager Definition
Focus on longer time frame to aid A/D and help establish questions for each of the areas. More than technical: includes tradeoffs between machines, people and make/buy. Si deals 0-3 years. This is longer (maybe out to 90). Again, doesn't do the work, but sets the responsible groups to do it. Would try to work the Japan problem. (The Gallactic Product Strategy). Note that in writing this up, I generated the memo on the Four Dimensions to Segment our Products and Work on them. Also, the memo on the Organization Structure Proposal.

We discussed each of the organizations. This yielded some thoughts on how much time we are requiring from each member and how much they have to really do work. I did a time analysis that showed that I have only 20% discretionary time, the rest is all used up with what are either explicit or implicit meetings. This does not include my time for reading or writing or any more than a few non-scheduled meetings. WE ALL HAVE A PROBLEM HERE! The matrix organized people just have to be hurting bad. I suggest we get everyone to do a time analysis. I'll send mine around as an example. All OOD member organizations are too wide in a conventional span of control sense. Our relationship where 2 people run things in a somewhat segmented way may be necessary.

STATUS OF VARIOUS GROUPS
BJ-very wide, what's Dockser do?, should some of the systems work be with the systems groups?

MK- Job scope is bigger than performance, we want more than just control, we want educator, intellectual and tool builder

Holman-coupling to Mfg? Space planning is a bitch!

SF-growing well, all used up though. Any way to get back to technical review role? Could be valuable in A/D of new machines? Architecture is happening.

Cudmore-group is building nicely, need a push to address some of questions in Intel memo

Clayton-overlap with mid, needs focus on chips, and terminal systems, opportunity to couple T and T-based Small Systems, I'd like help in Semi strategy wrt Intel, needs architecture, A/D, should software be in here more?, better coupling to Delagi

possible?

Demmer-lots on the plate, overlap with Small, Lots of money and not enough output, maybe too much complexity among Hydra and Pearson and Rodgers, who's doing MLK to 780?

Ulf-sucked A/D dry, research management, now into execution with risks abounding, problem of interfacing to mid and to interconnect to get the right product components, problem in the Suvax and PBS area that frustrates GB

Grant-things seem to be happening the right way.

ORGANIZATIONAL TOPICS:
.Organizational tuning is needed: who does what wrt stategy?

.Can we better structure MSD and I/C better by breaking apart?)

.Should we put all CPU-based systems together?

.How can we better align with Mfg? (note org. proposal)

.Should we seperate all the systems planning from development to avoid the milling effect? (Can we do it without losing the commitement? How can we do it with fewer people and get better results? The situation vis a vis J is awful!

STRATEGY REVIEW
.When is the next OOD wide Program Review?

.The Rosing REview of strategy with 20-25 technical leaders is strongly recommended!

.GB discussed a System Strategy Review body to look at all Product plans wrt strategy. (Per, Rodgers, Husvedt, Sam and/or Strecker, Rosing and Jud)

.Strategy needs to be re-evaluated, in light of today's conditions of slips, etc. i.e. how are we coming?

BETTER MANAGEMENT
.No knowledge of how we tradeoff among expenses, capital, labor, space and equipment. We need to build much better tools to aid managers!

.What is Job definition of Direct Report?

.What is site, function and product space decsions to fit strategy requirements?

.How can we interact with OOD members to find out what they are doing and what they need from us and how they are really doing? LP/GB will have an organization review which is now being scheduled. Includes: space, resources, budget, organization, projects, phase transitions, EBOD/SPU interaction. Assumes Win looks at operational issues of schedules, budgets of projects.

ORGANIZATIONAL DISCUSSION

Gordon and Larry (2)

Line developement (6-8)
- Semis (dotted)
- Mass storage
- Software
- Terminal and Terminal based systems
- (Small)
- Mid
- (Communications and Networks)
- Large

Functional organization (6-8)
- Personnel
- Finance
- (Administraton)

- Tech Direct
- (Strategy mgr)
- TOPS
- Manufacturing Engineering (dotted)
- Product management and marketing

Note the potentially large size of the group: 14-18. Even the development portion is getting awfully large. The inevitablity of an even larger staff function is assured!

00 BURT DECGRAM ACCEPTED S 1420 O 32 13-JUL-80 23:16:54

****
* d i g i t a l *
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TO: OOD:

cc: PER HJERPPE

DATE: SUN 13 JUL 1980 11:10 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: 4 SEGMENTATION DIMENSIONS FOR OUR PRODUCTS AND WORK

I spend a lot of time trying to structure what we do. For the last few years, I've been using this 4 dimensional space of: Level of integration (the what), the size (scale) of what we build; where we are in the life of what it is we are building; and the activity (or what it is we do).

SEGMENTATION DIMENSIONS
Note the 4 dimensions, which we need to continually refine and hold as our segmentation for engineering and manufacturing organizations:

Level of integration:
H/S-chips, chip carrier, module, backplane, box, cabinet, hardware system/ operating system (including files and communications), language, generic tools, application;

Hardware price of the things (components or systems) we sell: (hand held .4-1, Terminal based 2.5-6.25, stackable 6.25-16, cabinet(s) 16-40, 40-100, interconnected cabinet 100-250-625, multiple computers using CI 250-625-1.6M);

Phase (life-time):
Basic research, Research, Advanced development, Development, Support, Enhance, and Obsolescence;

Activity:
.Component design, sometimes we call it the technology (the thing- whether it be a chip or a word processing system. We must stick with the notion that one person's system is another person's component... hence we only make components.),
.Engineering Process (how can designers use it as a component in the next highest level a design),
.Manufacturing Process (how do you make it?),
.Manufacturing test process (how do you know it works?),
.Maintainence Process (How can it be made to work over its lifetimes?),
.Market process (How do we define it during its various phases and sell it?),
.Management processes (how do we organize, manage and interface to one another to get the work done?)

TOP-DOWN APPROACH (MFG./ENG./MKT. SEGMENTS)

The taxonomy is only useful if it allows us to segment our activities. We are extremely lucky in having growth, because it is comparatively trivial to manage charters. On the other hand, left alone, there will be overlaps and underlaps in an area where the new product opportunities abound (eg. WPS, voice on packet switching networks, small systems growing into terminals). I think we ought to use the remainder of the summer to sort this out. Let me suggest two approaches: top down- we look at a cleaner manufacturing/engineering divisional structure; bottom-up, we look at overlap, underlap, and new opportunities.

Significant manufacturing-engineering (and occasionally marketing coupling). I don't want to muck in the divisional space, all I want is to STREAMLINE each group's charter and to have a clear relationship with all other groups as a buyer or seller.

This is the background thinking that led to the organizational proposal today.

What you think?

****
* d i g i t a l *
****

TO: JOHN F SMITH @CLEM
EST

cc: see "CC" DISTRIBUTION

DATE: THU 21 FEB 1980 12:26 PM

FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1 A51

SUBJECT: CATEGORIES OF SYS. TYPES (>1 PAGE)

SUBJECT: Categories of Systems Types by Housing (and Potential Build Process) and System Assembly Process Alternatives

System Types (By Housing)

At our next meeting, let's lie on the fact that we have to "type" the systems by category and work on them in a segmented way.

Currently everything is a single glob, and very hard to work with.

Type	Housing type	Examples
I	Hand held	translator, memo writers, calculators
II	Terminal	VT103, VT138, PDT 110, LA124
IIIa	Table top, bench top or floor standing	PDT150
IIIb	Desk	VT78, VT278
IIIc	Cart	MINC
IV	1 or more connected Cabs (not broken apart)	11V03, 11T23, 11/44 RL
V	Type IV, but with free-standing peripherals	11/44 with RK, RM, RP; 11/780, KL, 20's
VI	Multicomputer in room housing	combinations of type V

the troublesome types! (cause complexity in 1 cabinet)

Types III-IV include free standing terminals in addition to any Processor-Memory-K Controller Basic Component.

There are many issues based on type, for example:

We have a problem with type IV systems from a logistic viewpoint with respect to the disks. All the systems have a problem when we deal with the vast array of communication controllers and cables. We have to decide how the various internal controllers for disks especially and memory are spec'd and added. How the cables are distributed. Etc.

How's this for the system types?

Manufacturing Process

We need a similar set of definitions for the manufacturing processes. Are there anymore of them:

Two Stage, FAT Based

1. Conventional FA & T. (Call it FAT) - stationary build and test.

2. Also called S.I & T. (Call it SIT)

3. CSI for a small + medium systems which moves product on an auto line or a build to order basis.

4. MSI?

5. Cold Staging?

6. Dock Merge?

All these currently now run at least one disk and none are true dock merge!

Direct Volume Ship, No FAT Plant

7. Site Merge by Field Service.

8. Site Merge by customer.

I don't feel there are good definitions of these processes. Can we get them?

GB:swh
GB1.S2.7

"CC" DISTRIBUTION:

LARRY PORTNER	DICK CLAYTON	ULF FAGERQUIST
GRANT SAVIERS	JOHN HOLMAN	BILL DEMMER
DAVE KNOLL @CLEM	DAVE THORPE @CLEM	DENNIS O'CONNOR @CLEM
WILL THOMPSON @CLEM		

digital

interoffice
memorandum

SUBJ: **SYSTEM DEFINITIONS**

TO: OOD

Date: 5/29/80 Thu
From: Gordon Bell
Dept: OOD
MS: ML12-1/A51 Ext:

223-2236

EMS: @CORE

System: an assemblage or combination of things or parts forming a complex or unitary whole.

Computer system: a collection of computer system components forming a unitary whole.

Computer system component types:

- PMK basic component- the processor (including its options), primary memory and controllers (including communications, secondary memory and tertiary memory controllers and special interfaces to other transducers such as line printers) to interconnect with the other components

- Ms- secondary memories (eg. disks)

- Mt- tertiary archival memories (eg. tape)

- Transducer terminals, T's- hard copy and soft copy terminals

- Other T's including line printers, A/D equipment, etc. and special product line equipment

- Software including diagnostics, Operating System, Languages, Databases, network control and interface, and generic text processing. Application software from product lines.

- Manuals of all types.

- Other documentation.

- Cables for the interconnection of components when not included with each of the components

WHAT IS A SYSTEM'S ENGINEER?
The person who takes the responsibility for designing, assemblying, controlling, and making sure the components all work as a whole. Currently, we have no one exactly taking on this responsibility but the CPU design groups have agreed to take on this role. This means accepting and handling the special hardware and software that comes from the various product lines and computer special systems. Right now, the responsibility seems to be distributed among the system's groups, any group adding a component, and the FAT plant where they try to build what a customer is led to believe he can order.

WHY IS THE SYSTEM ENGINEER WITHIN A CPU GROUP?
It has to be somewhere and it is fundamentally oriented toward managing the collection of hardware and how it is assembled. The configuring and cabling is mostly centered around the PMK base, and it should be even more centered this way. It clearly provides the housing and control for nearly all our products. It is not software, and it is not mass storage and it is not the collection of terminals. It is not so arbitrarily aligned with the group who makes the processor, because:

A system name (i.e. the collection of components) historically within DEC and elsewhere bears the name of the processor model number (eg. 4341, 370/148, 2050, VAX 780), but it occasionally bears the name of the Operating System (VMS, UNIX, RSTS...all with modifiers describing the specific machine (eg. 11/70) the Operating System it is running on). Our users all order configurations centered around a particular CPU/Operating System pair and now we are trying to have a limited secondary memory offering that is also associated so that a particular system name will be a triplet of CPU/Operating System/Disk type.

SYSTEMS ARE CORRELATED WITH PROCESSOR, OS (AND USE PATTERN) AND SECONDARY/TERTIARY MEMORY
This all makes sense because the following are correlated:

.processor-type $\tilde{=}$ speed it executes programs and number of users it serves. This is also correlated to the bus speed or type. (Currently we organize by bus type Q vs. U.)

.amount of primary memory and processor speed (Amdahl says 1 Mbyte/Mip) is dependent on the OS and Pc speed.

.operating system, the memory used and the number of users

.amount secondary and tertiary memory per user

Dependent Variables are Price and Package

.the system price AND most importantly:

.the physical size of the system (and how it is packaged)!

(NOTE, a system could therefore be named or identified by any of component types or even the package!)

MEMORY SIZE BANDS TO SEGMENT SYSTEMS
That is, all these vary together in a constant of proportionality fashion. In 75, I showed that if one knew the amount of primary memory (or similarly the processor speed or name), this was sufficient to know how the system was used (Operating system type, whether single function, or general purpose timeshared) because all other factors were correlated with this. Remember that the mass storage of a system is roughly about 1/3 the cost, the terminals about 1/3, and the processor about 1/3. Note in the low end, we are looking at a 1500 system of which 500 is for floppies used as secondary or tertiary memory, the terminal which is pro-rated at about 500, and the procesor and primary memory is

about 500! This also holds for the larger system, but things can deviate when there are a lot of terminals not in actual use as in a timeshared system, and it can vary if there is a large database where there is a disproportionate amount of archival storage. This model is is still pretty accurate...eg. I predicted about 19K for 1 Mbyte, in 1980 not knowing that IBM was going to come in very aggressively to lower prices, otherwise, the price model would be more accurate, and higher. The important results of the paper are given below:

G. Bell System Price Model (3/75)

System price ($) per byte of main memory

$$= 3 \times 5 \times 8 \times .005 \times .79^{\,t-1972} \times \text{no. of bytes}$$

$$= .6 \times .79^{\,t-1972} \times \text{no. of bytes}$$

where

3 is markup (roughly)
5 is fact that about 1/5 of system is primary memory
8 is 8 bits/byte
.005 is cost of a bit in 1972
.79 is 21% price decline per year for memory
1972 is base year

Some systems prices at various times using the GB 3/75 model:

Bytes	Use	1980$	1982$
1		.091	.057
100	calculator	9.1	5.7
8K	dedicated fixed	745	467
65K (Qbus limit)	1 user interactive	5.9K	3.7K
256K (Ubus limit)	n user, 1 applic.	23.9K	14.9K
1M	Small, gpt/s	95.4K	59.8K
2M (11/70 bus limit)	mid, gpt/s	190.8K	119.5K
8M	large gpt/s	763K	478K

for prep timesharing

PRICE BAND TO SEGMENT SYSTEMS

Last year, I convinced us all to use price bands that varied by factors of 2.5 so that 3 of the bands gave a factor of 16, and each system group is responsible for particular bands. Only one machine is positioned per band in order to get a better spreading of machines and to limit the numbers from what IBM was doing when the positioned machines at x2 price and x3 performance intervals. This would also get us to focus on the lower cost too. The price bands (K$) are:

micro	.16-.4-1.0
small	1.0-2.5-6.25-16 (3 ranges, but computers only fit top band)
MSD	16K-40K-100K (2 ranges)
LSG	100K-250K-625K (1 range, with second for 10/20)

CABINET TYPES (CORRELATED WITH PRICE TO SEGMENT SYSTEMS)
Now, if we use the system cabinets to correlate with use, in 1980, we get the following table:

	Type Package	Technology	Pc	Price ($K) (Examples)	Mp Size	Ms Size
I	Hand Held	CMOS	8 bit;12 bit	.4 - 1.0(?)	8K	Solid State
II	Terminal (1 user) fixed or portable	MOS/CMOS	Tiny/Fonz (VT103 →)	2.5 - 6.25 (PDT 50) (Techmate)	65K	Floppy integral
III	Stackable (1 user) a. bench top b. desk top (1 applic.) c. cart-based d. floor (1 applic.)	MOS	Fonz (PDT-MINC) (PDT) (MINC) (VT78, Datasystem 315)	6.25 - 16	256K	Floppy, RL
IV	Cabinet(s) (n users) (Integral cabling)	Bipolar; fast MOS	Bit slice, Fonz	16-40-100 (11/03-11/60)	1M	<RK07 (Calpots)
V	Intercon-nected cabinets (n users) (one component/cab)	Bipolar/ECL Gate arrays	Custom;	100-250-625 1M-8M (≥ 11/70) (all 11's with ≥RK07)		≥RK07
VI	Set of cabinet based computers	-	- (Hydra)	250-625-1.6K	-	

GB1.S4.16

digital

interoffice
memorandum

SUBJ: **Systems 1970-1990**

TO: Jack Smith, ML1-4/A54

CC: Dick Clayton, ML12-2/E71
Bill Demmer, TW/D19
Ulf Fagerquist, MR1-2/E78
Sam Fuller, ML3-5/H33
John Holman, ML12-2/T36
Dave Knoll, ML1-4/P14
Dennis O'Connor, ML1-4/P14
Larry Portner, ML12-1/T32
Dave Rodgers, TW/C04
Grant Saviers, ML3-6/E94
Will Thompson, ML1-5/E29
Dave Thorpe, ML1-4/P11

Date: 2/26/80 Tue
From: Gordon Bell
Dept: OOD
MS: ML12-1/A51 Ext: 223-2236
EMS: @CORE

Here's a cut at the systems between now and 90. Note - we're going to have more than ever before! It doesn't include: the interconnect or Type II and III* systems - but only rack/stack, and free standing. Also it doesn't deal with the standalone high end communications (Mercury) and Mass Storage (HSC50) computers; i.e. Hydra isn't counted as a separate system even though they'll be built this way.

The interconnect structure is going to have some effect:

1. The BI, new backplane, interconnect is basically just a UNIBUS replacement, but will help in being less unbounded and easier to test.

2. The CI, Computer Interconnect, is really just a very high speed DECnet link - but may require testing as a large, Type VI. Large systems, will be built as combinations of Type V, PMK Kernel components (2080, Venus, 780, COMET) AND the HSC50 Computer for Mass Store with associated disks and tapes AND communications controllers (Mercury).

3. The NI is a high speed DECnet link. It will affect systems by:

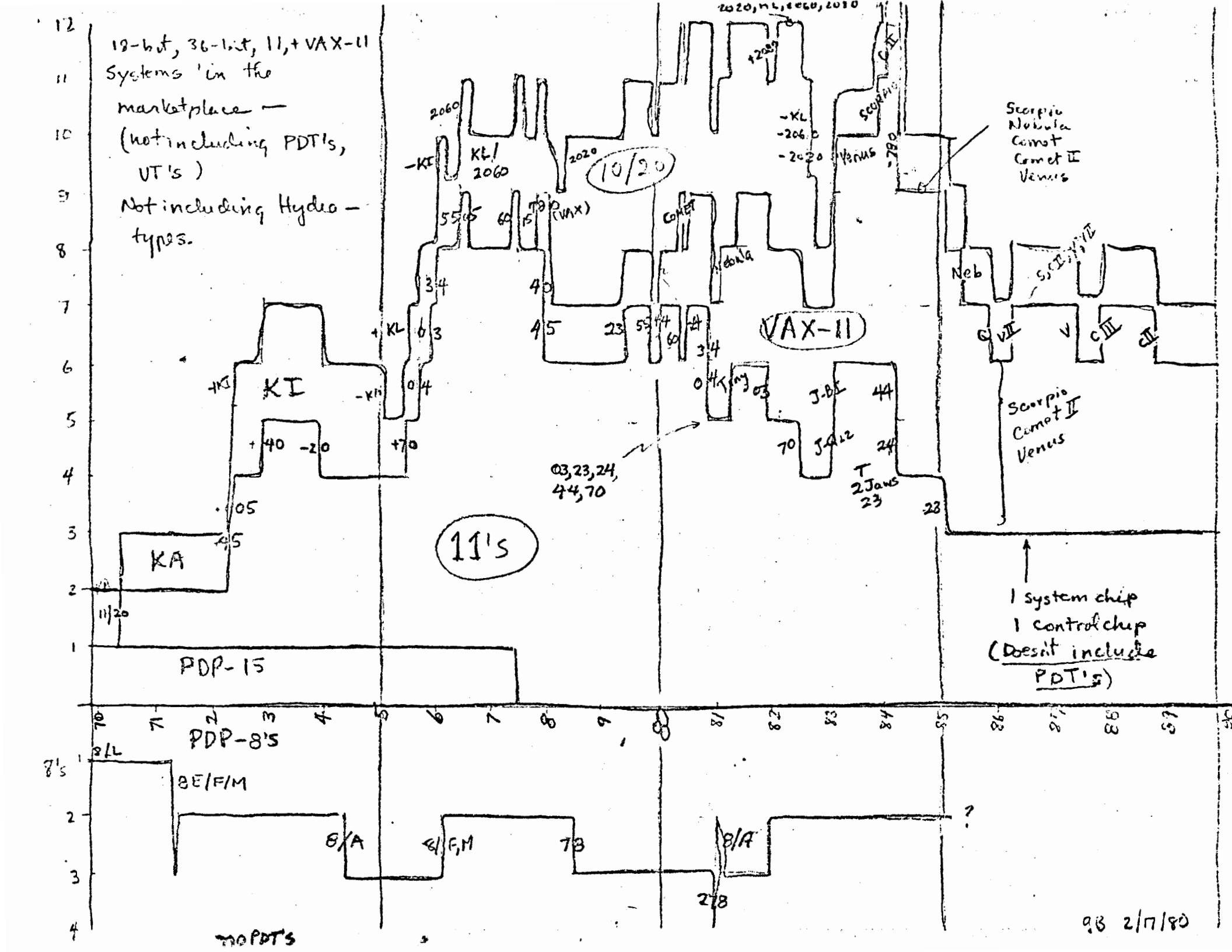
    a. Eliminating communication controller in systems thereby easing the pain of configuring you go through now. However, this will pop out somewhere else as it is necessary to interconnect to non-DEC systems and non-DEC links (current communication) by some standalone box.

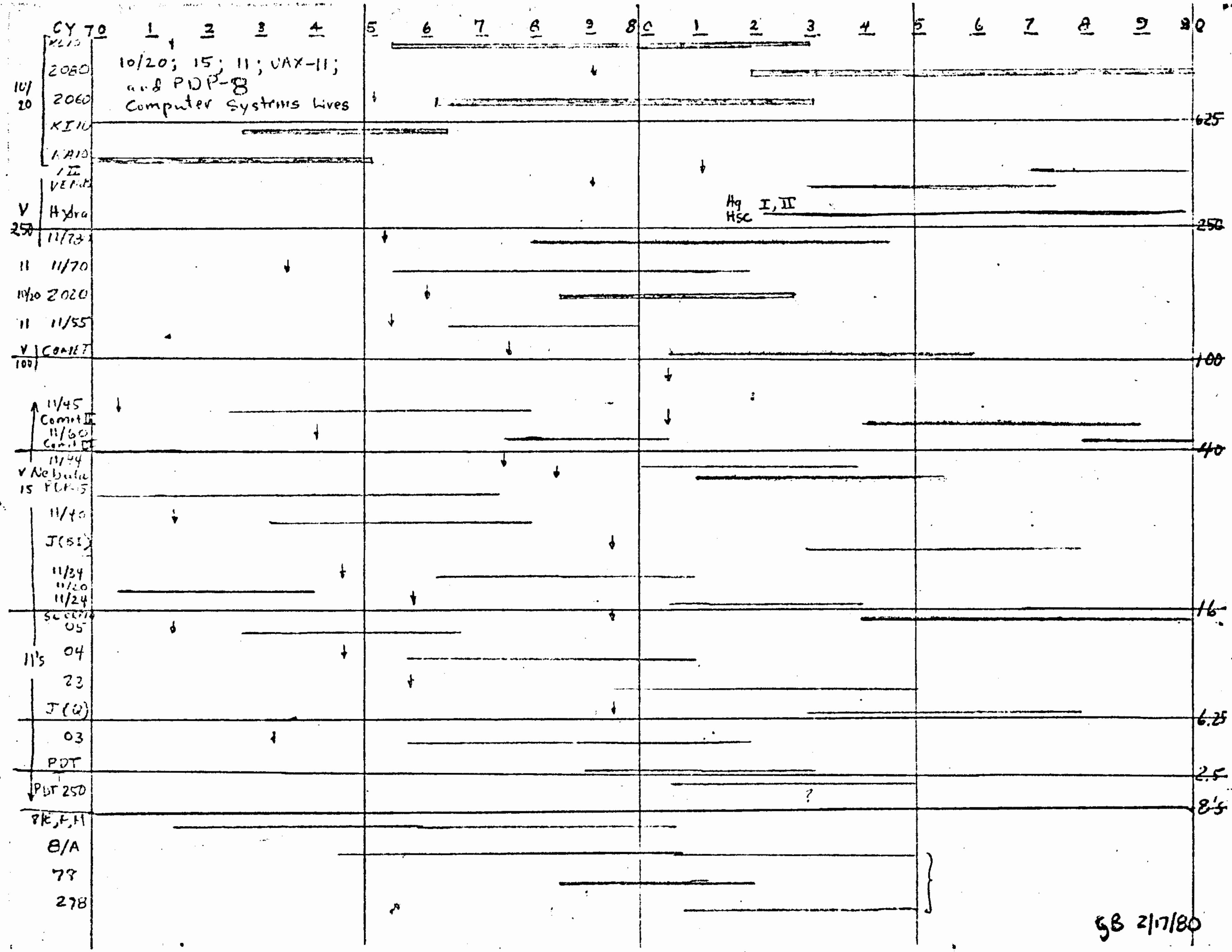
b. Allowing simpler cabling in a hi fi like approach for systems of Types III and possibly Type IV.

*System Types are:

I	Hand held
II	Terminal held (PDT 110, VT103)
IIIa	Table top, bench top, (inst. case), floor stand (PDT-150)
IIIb	Desk (now 19" mtg, possible going to file drawer width standard of 14+"
IIIc	Cart (MINC)
IV	1 or more connected cabs with internal mtg. of disks (11/23T with RX, 11/44 RL)
V	1 or more connected cabs for PMK Base (Processor-main Memory-Controller for comm, disks, options) with free standing Mass Storage Components.
VI	Multicomputer systems (Hydra)

GB:swh
GB1.S2.17
Attachment


18-bit, 36-bit, 11,+ VAX-11 Systems in the marketplace — (not including PDT's, VT's)
Not including Hydra-types.
11/20
KA
KI
KL/2060
10/20
VAX-11
11's
PDP-15
PDP-8's
8/L
8E/F/M
8/A
8/F,M
8/A
?
no PDT's
Scorpio
Nebula
Comet
Comet II
Venus
Scorpio
Comet II
Venus
1 system chip
1 control chip
(Does it include PDT's)
03,23,24,
44,70
T
2Jaws
23
28
9B 2/7/80


10/20; 15; 11; VAX-11; and PDP-8 Computer Systems Lives
CY 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4 5 6 7 8 9 90
2080
2060
KI10
KA10
Hydra
Hq HSC
I, II
11/73
11/70
2020
11/55
COMET
11/45
Comet II
11/60
11/44
Nebula
15 PDP-15
11/40
J(81)
11/34
11/20
11/24
05
04
11's
23
J(Q)
03
PDT
PDT 250
8K,F,M
8/A
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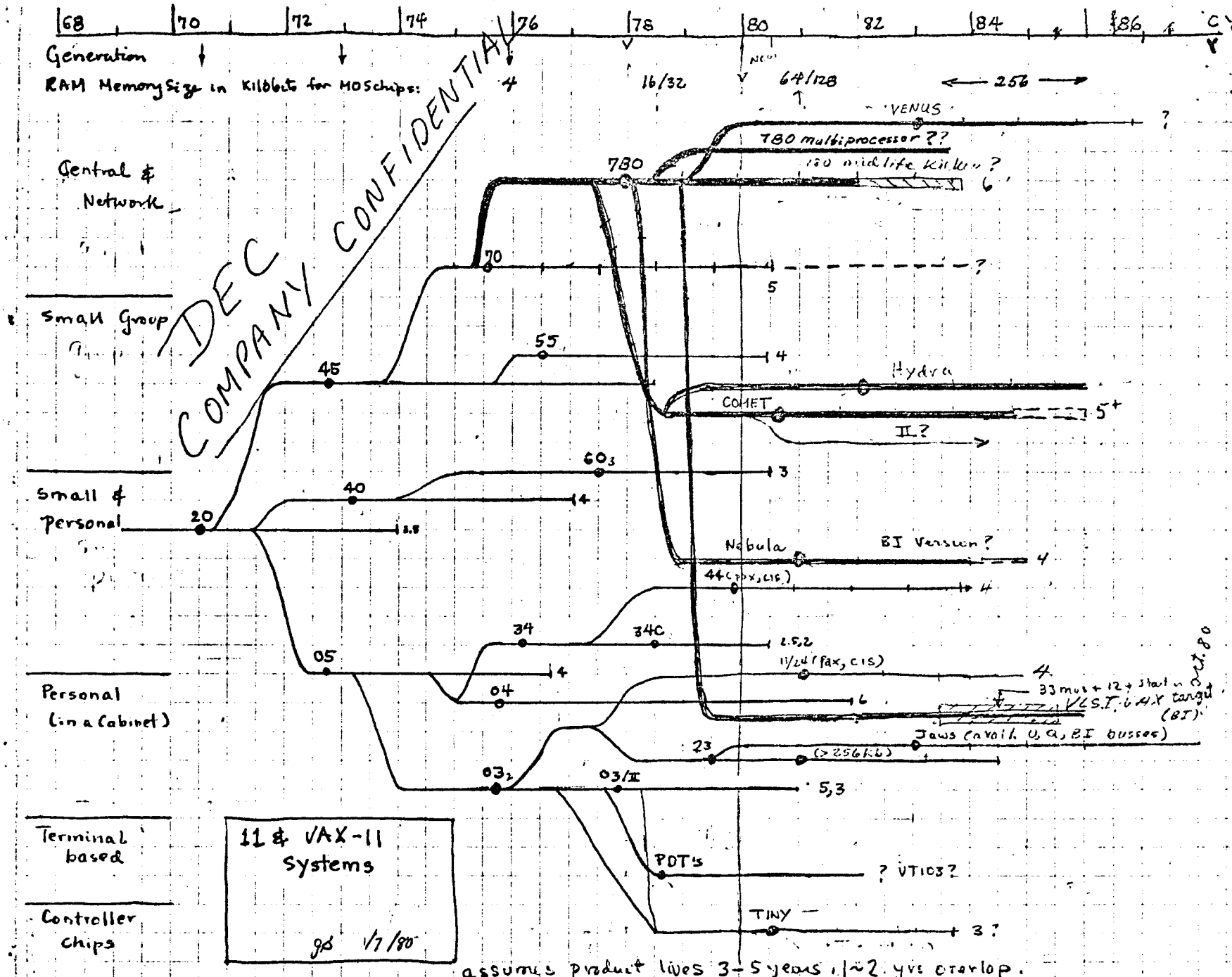
8's
GB 2/17/80


68
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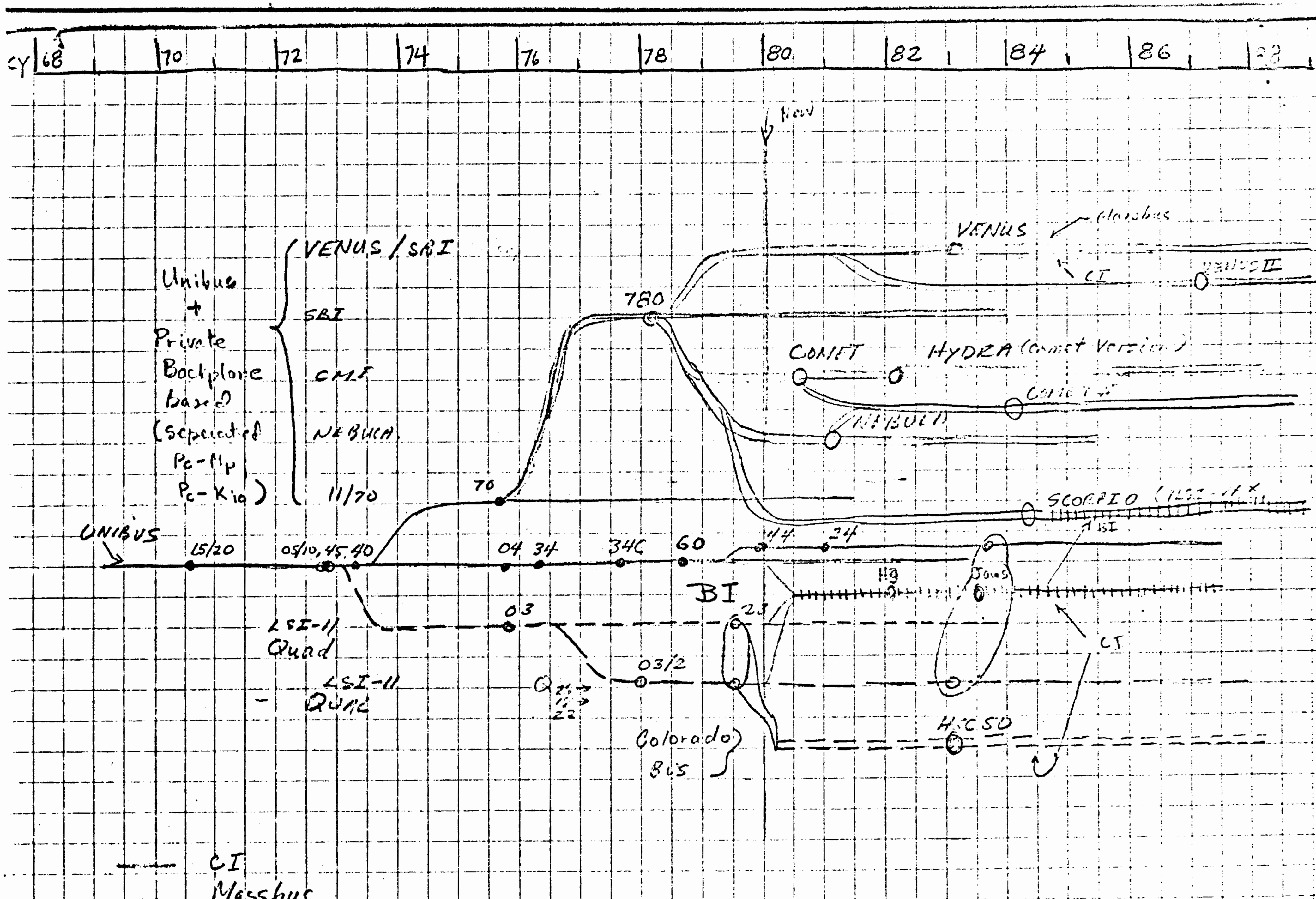
84
86
CY
Generation
RAM Memory Size in Kilobits for MOS chips:
4
16/32
64/128
256
DEC COMPANY CONFIDENTIAL
Central & Network
Small Group
Small & Personal
Personal (in a Cabinet)
Terminal based
Controller chips
VENUS
780 multiprocessor??
780 midlife kicker?
780
70
5
55
4
45
Hydra
COMET
5+
II?
60₃
3
40
4
20
2.5
Nebula
BI Version?
4
44 (pdx, cis)
4
34
34C
2.5,2
05
4
11/24 (fax, cis)
4
04
6
33 mos + 12 + start up
V.L.S.I. 64X target (BI)
Jaws (avail. U, Q, BI busses)
23
(>256Kb)
03₂
03/II
5,3
PDT's
? VT103?
TINY
3?
11 & VAX-11 Systems
gs 1/7/80
assumes product lives 3-5 years, ~2 yrs overlap.



11 & VAX-11 Bus / Structure Tree
(not including NI and Disk Bus)

GB 1/1/80

More thoughts on Systemness: Demmer responsible for Systems Configs/Engrng all orders built to Configuration Rule Book; others go to engineering. Config Eng. Process deals with Intro + Steady-State

Exceptions:
- rules wrong
- 1 or 2 – special eng to test/verify + special charges.
- special configs for Telco, Shuttups, etc.

where new options are added.

****
* d i g i t a l *
****

TO: STEVE COLEMAN
SHEL DAVIS
WIN HINDLE
LARRY PORTNER
JACK SMITH

DATE: SUN 27 JUL 1980 11:16 AM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: MANUFACTURING/ENGINEERING SEGMENTATION AND COUPLING. WHAT NEXT?

I got sort of a weak approval and support to pursue the thinking on segmentation that I gave at the OC Woods. Shel was to be a moderator/catalyst with Jack and I. Jack, Larry and I met on this once and given that Jack is moving toward a similar segmentation, we agreed to be supportive on two fronts:

Bill Hanson is most likely to do the Systems Job, now spread across the request commit, cpu, general manufacturing and FAT organizations. As such, our various systems by size managers will work on how to best align and support. Given that there are 3 of them, then one of us will act as a focal point. Now, Pete Van Roekens is working on a list of our joint problems and how to best connect (clear, still seperated, but aligned, and have knowledge of what the other group is and what their processes are).

We are giving a clear message to Thompson and Holman to get their collective acts together with respect to what belongs in manufacturing engineering (processes, CAM), in engineering (products and technology and CAD), and what is in the specific product engineering groups and what belongs in the plants.

Have read Jack's notes on how he is proposing to organize and find there is really pretty good agreement of what I proposed as a segmentation (really aligned with product).

Smith proposed orgs.	Bell model
Components	Semiconductors and Physical Interconnect
Mass store	Mass store divison with direct sales
Terminals	Terminals and terminal based systems with direct sales
	A group to handle comm and networks
Systems	Small, medium and large groups
Staff and brain trust	
Far East	
External mfg.	

Fundamentally, I support the two changes and want us to push forward on the coupling of terminals and terminals based systems among manufacturing, engineering and appropriate parts of the marketing groups. Also, I would hope that they can be encouraged to relocate out of NE in the long term, starting a co-location soon as a method of encouraging coupling and segmentation.

There is also a question of helping take some of the load off

manufacturing so that we can get organized to be a high volume supplier. Currently, we have a number of low volume and special products and the Field Service plant mixed in with the high volume part. Given that the Japanese are coming, I think it is essential to at least put these in a seperate catagorie so that the Components, Terminals, Mass Storage and Systems groups are pure, lean and mean! Traditionally, these other efforts simply take time (say only 5 or 10%) that might better be used in longer range planning. Perhaps a better writing of CSS and TPL charters to handle this in what could also be a total business context is certainly appropriate. Given that Stan is so pro-division, then having him manage these as divisions might make sense (take over some of the low volume graphics, PDP-8 systems, and other low volume specials). We ought to look at what the best way to manufacture the PL low volume products too! (Perhaps a place in a FAT plant or even outside).

In this same regard, I am now scared to death of what we are doing/planning in a total manufacturing plant (1/4 billion in '81) because I don't understand how it relates to what we expect our revenue stream to be in the future. I know that we plan our engineering on the basis of future projections of revenue and it appears: OUR PROJECTIONS AND ACTUAL SHIPS ARE COMPLETELY MISALIGNED. That is, we spend engineering on the basis of projections and we actually ship other things! But this is minor compared to what we induce in manufacturing. Therefore, it is essential to spend the summer trying to get this segmentation because, let's face it the manufacturing plant and inventory is really where the money goes and we had better align by group to segment this, rather than getting this one big ball of wax once a year that we have no understanding of in terms of how capacity and business are related.

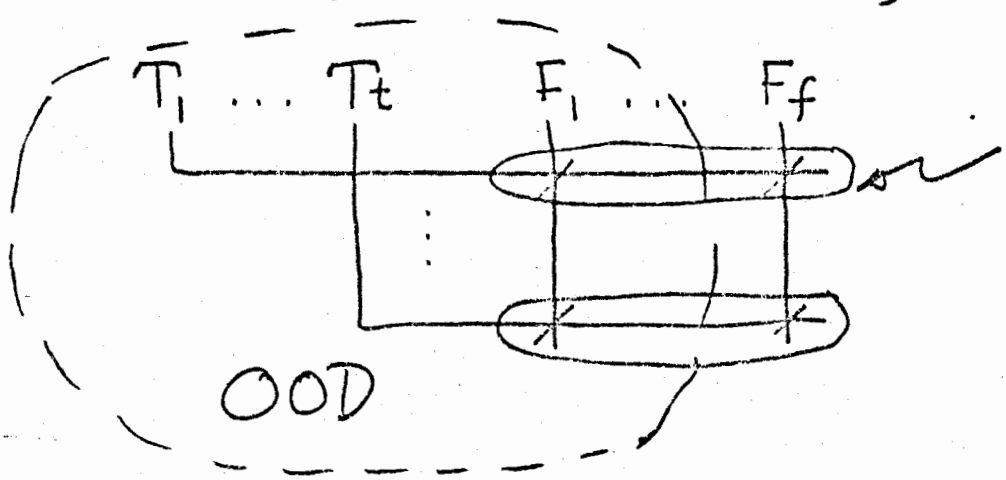
There were a series of questions that the OC members had which I would like to get from Steve's minutes. These ought to be incorporated in a working document which explores this set of changes. Jack has done an excellent job of listing what he wants to preserve and what some of the goals are for what he is proposeing. Likewise, I want to state goals, constraints, and what we are trying to maximize/minimize (the objective function) in any kind of change. Currently, I hope to spend time on this in August.

Shel, I think you could also help here.

Do we want to proceed?

How Are We Organized? PEOPLE GB May 9, 197

- Functionally by skills (eg. drafting) and by technology (eg. disk mem.) with Matrix Mgmt. via Technology using Skills



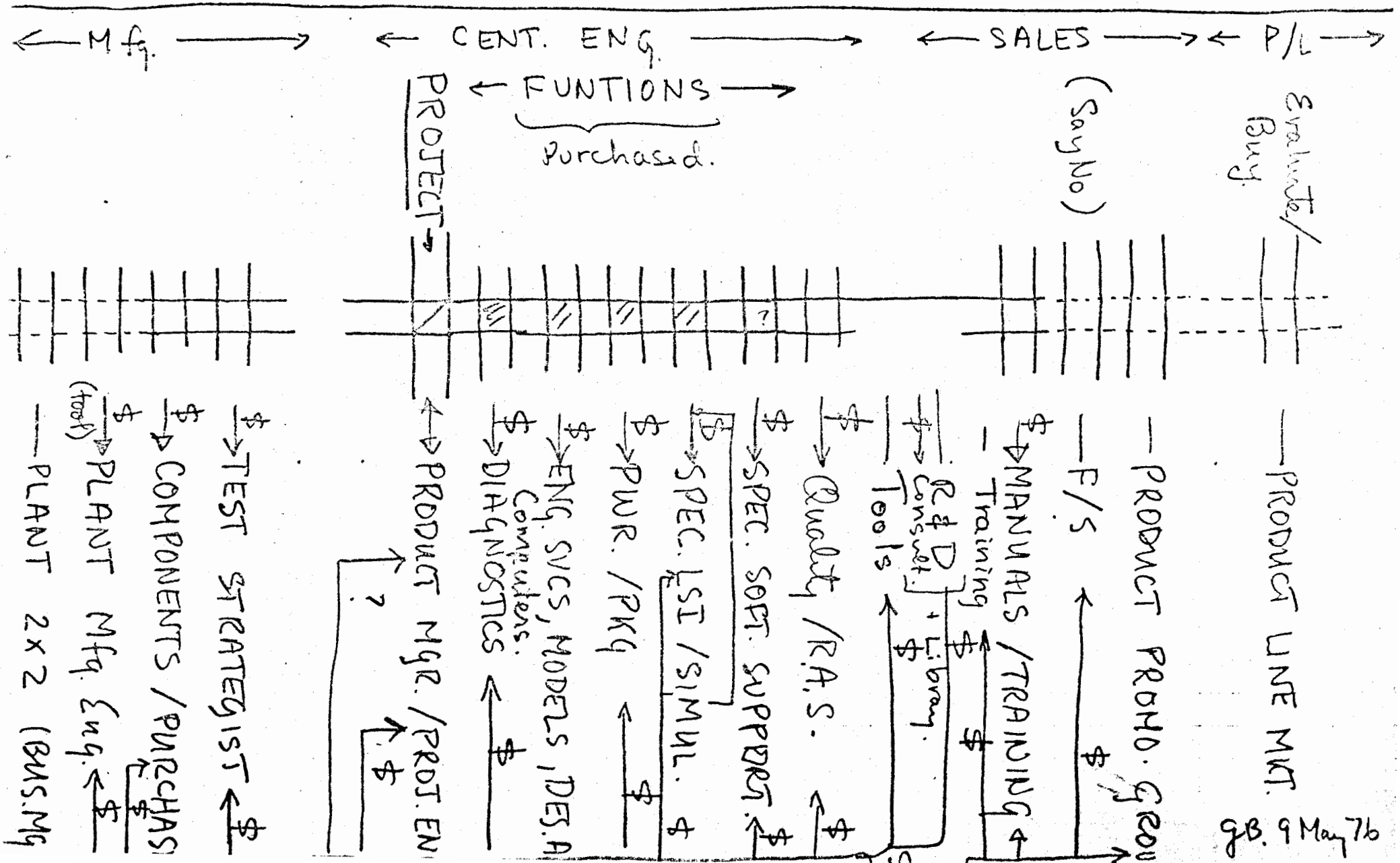
How do we Measure Output?

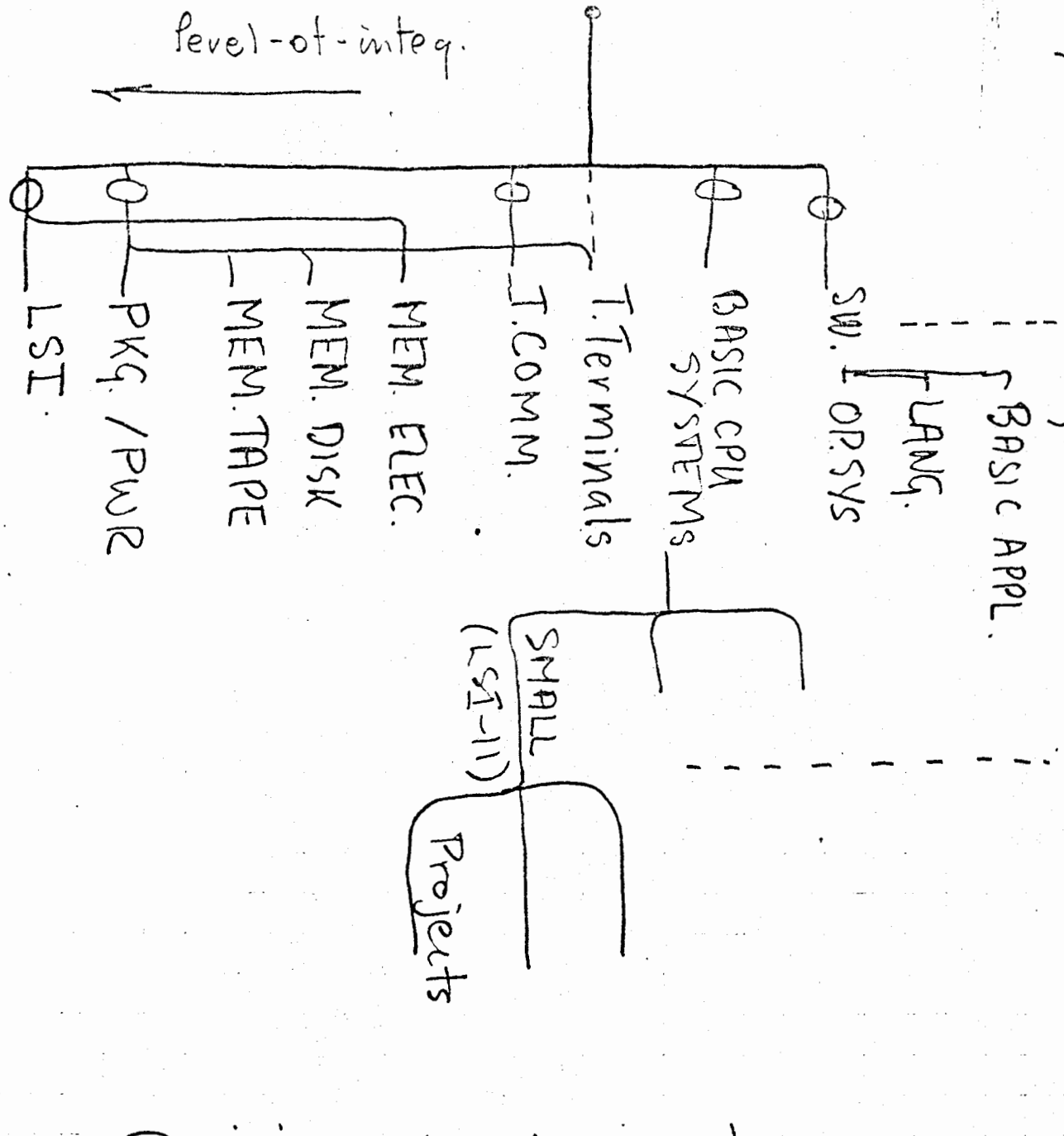
- Mostly by "success" of product ≈ NOR!
  - Schedule
  - $. develop and $. cost
  - Performance of Product (eg. reliability, function, ...
  - Rarely as / agreement.
  -
- Gut feel
  - Truly useful • Does it feel good? (weak link)
  - Adds evaluation dimension
  - Doesn't lose Sales for Other Systems.

Project MATRIX

Projects are formed from Matrix of functional/product skills.

(Matrixed person has: 2 bosses, lives with project, skill orientation) and Many functions are outside Central Eng.





Proposer / Decider

(Producer) (Consumer)

OOD → MC+P/L

Allocation of Products by: SIZE / technology / time (5) / Tools

[Rev. by Products Comm.]

Technology Group → MC+P/L

-Alloc. into Projects (size etc.)

[Review by PSG's]

Project → OOD/MC/P/L

-Mgmt. of Product Design

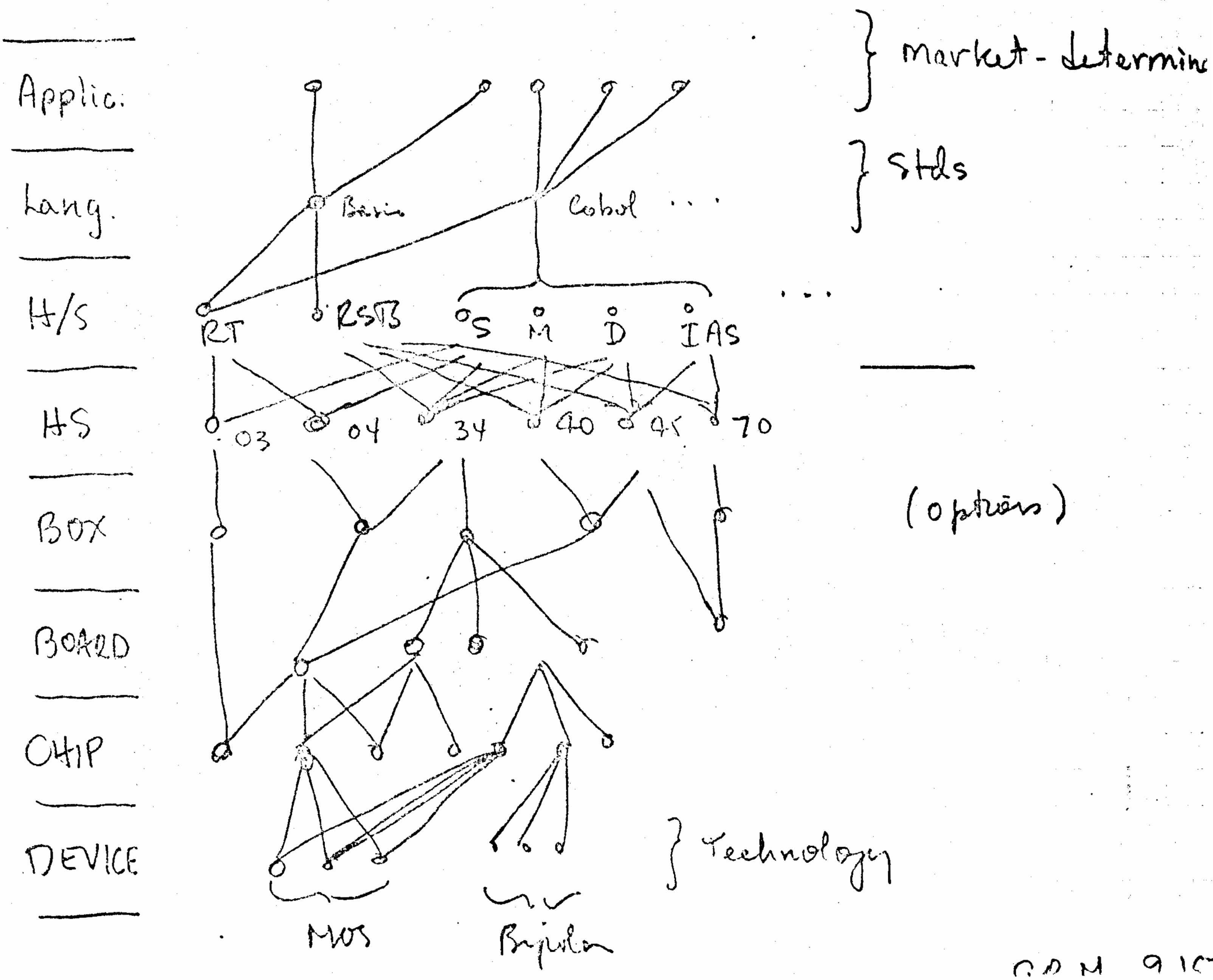
[Bus. Plans]

Decision-making at 3-levels of OOD (OOD-Technology Area-Project)

GB May 9, 1976.

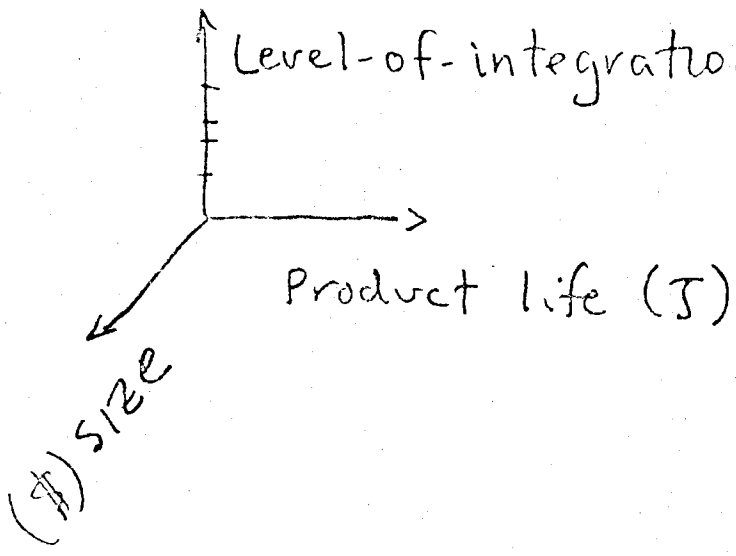
: Allocate Resources in Size, life cycle (T), level-of-int

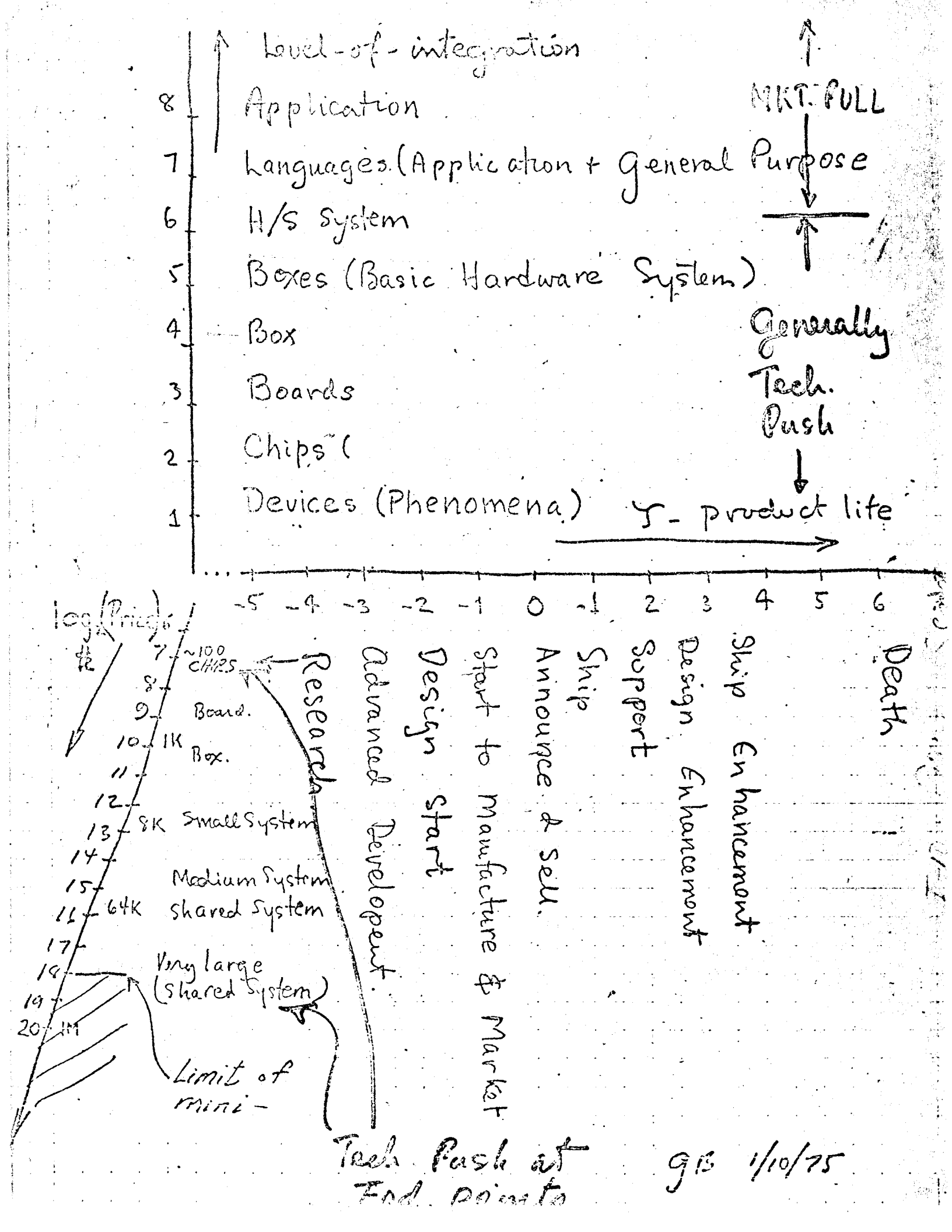
Computer System Development IS A **Network** (NOT JUST A Tree-structured HIERARCHY) OF 8 DISTINCT LEVELS. (IN ESSENCE, A PROJECT MAY DEPEND ON 1 OR MORE SUBPROJECTS AND A PROJECT MAY AFFECT SEVERAL SUCCESSOR PROJECT



CGM 9.1?

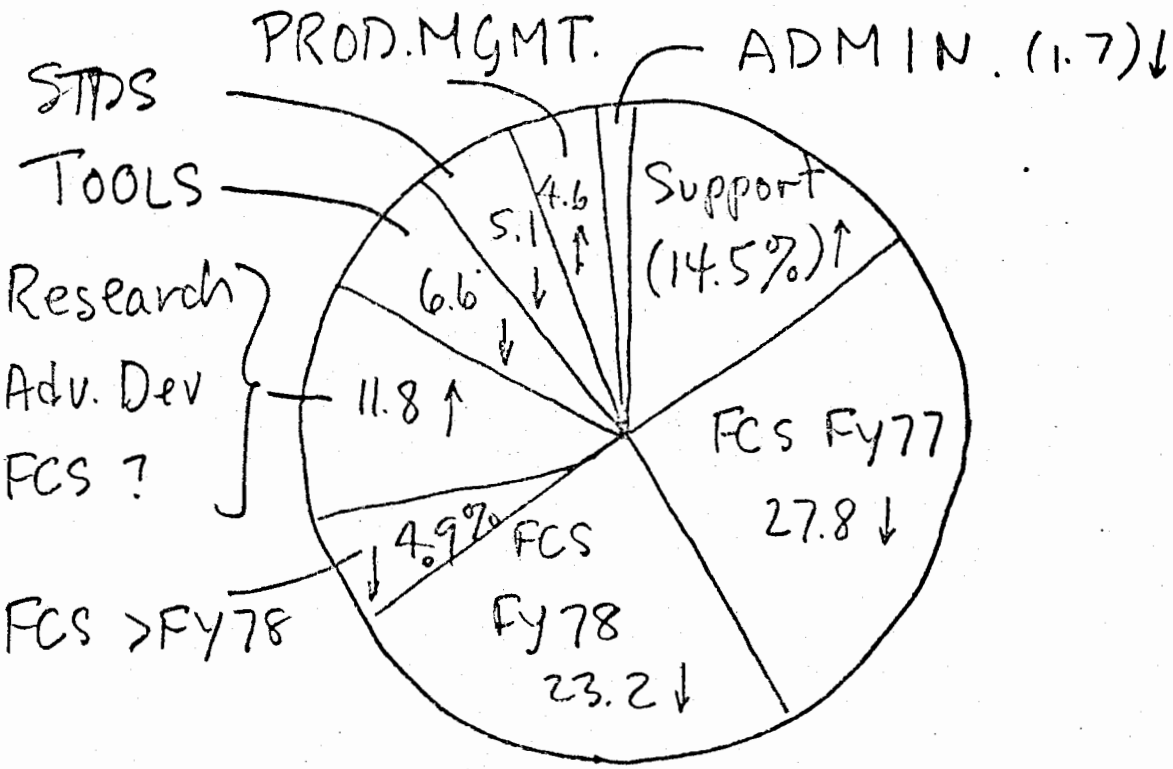
OOD MGMT IS FUNDAMENTALLY RESOURCE ALLOCATION IN SPACE



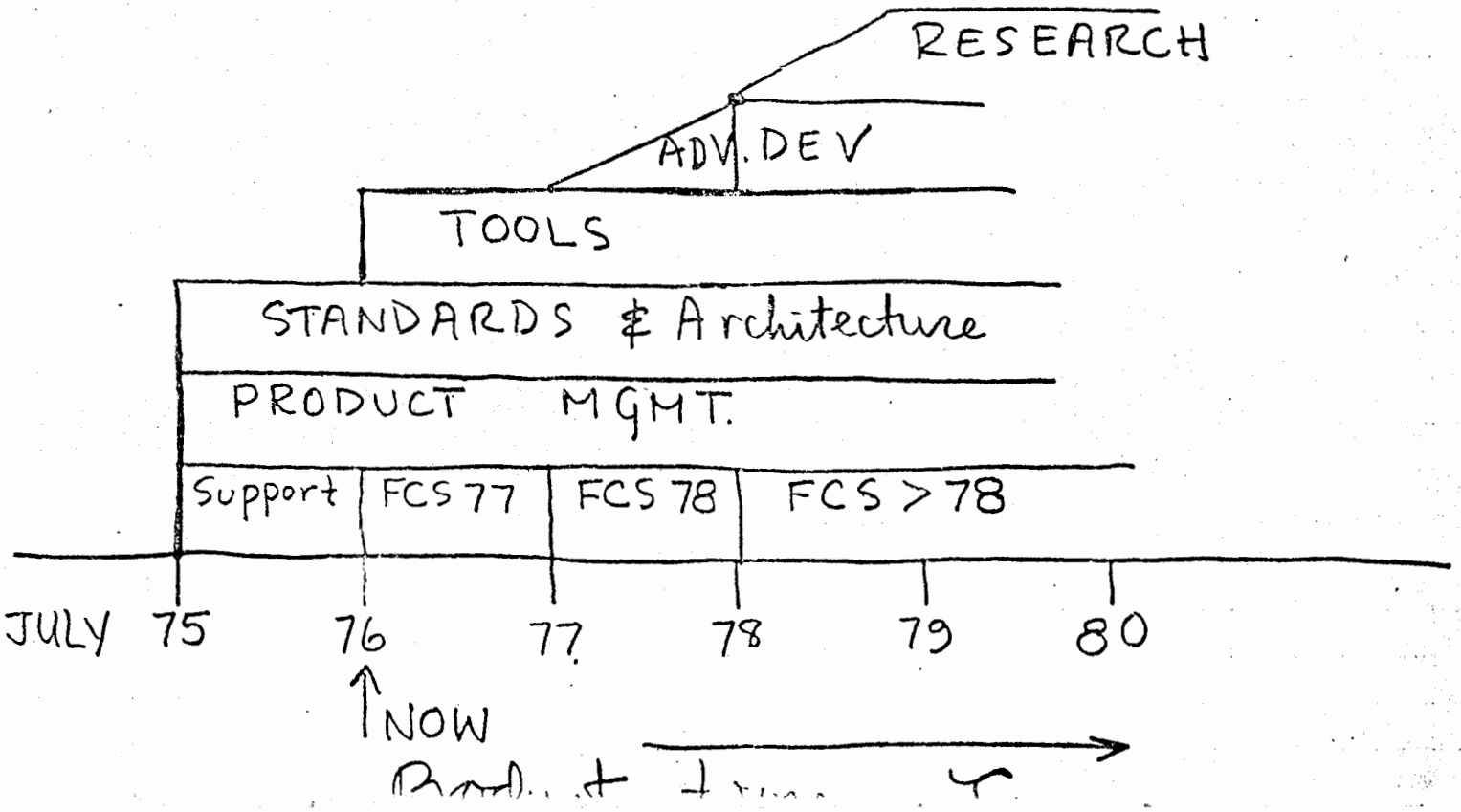

Level-of-integration
8 Application
7 Languages (Application + General Purpose
6 H/S System
5 Boxes (Basic Hardware System)
4 Box
3 Boards
2 Chips
1 Devices (Phenomena)
MKT. PULL
Generally Tech. Push
τ - product life
-5 -4 -3 -2 -1 0 1 2 3 4 5 6
Research
Advanced Development
Design Start
Start to Manufacture & Market
Announce & Sell
Ship
Design Enhancement
Support
Ship Enhancement
Death
log (Price)
~100 CHIPS
Board
1K Box
8K Small System
Medium System
64K Shared System
Very large (Shared System)
1M
Limit of mini-
Tech Push at End points
GB 1/10/75

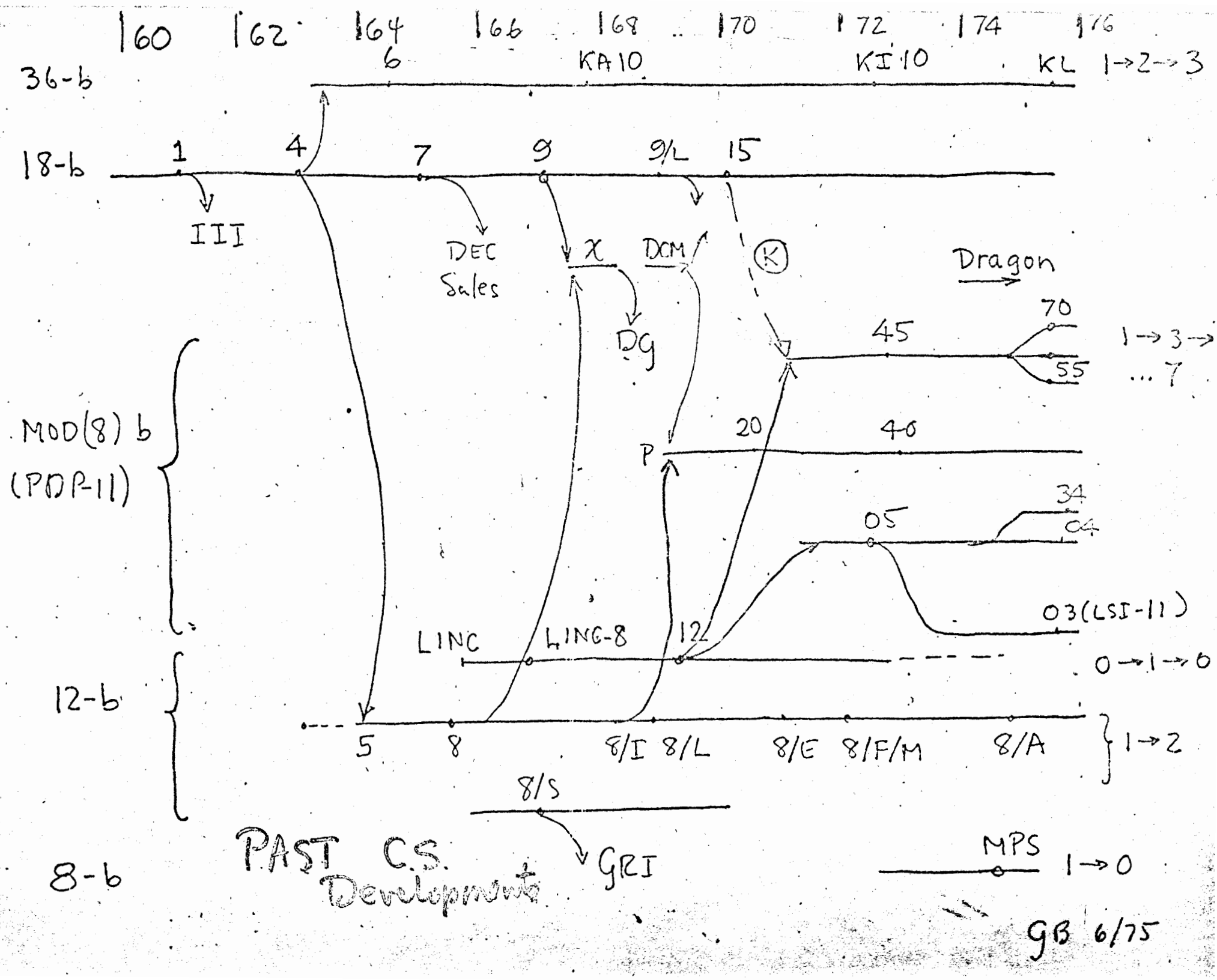
Resources Measurement Categories in time (T) dimension.

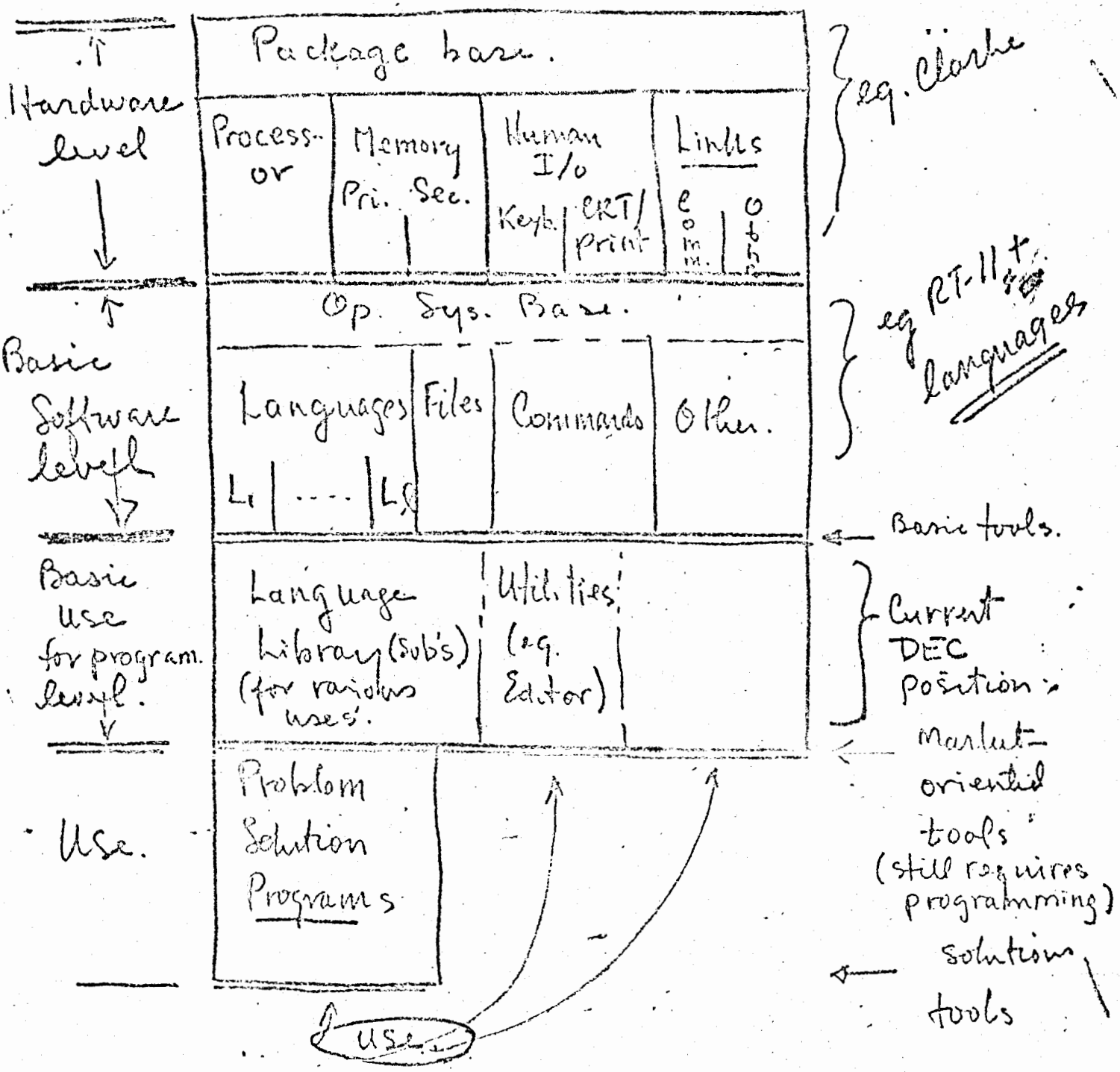
gb
May 9, 197

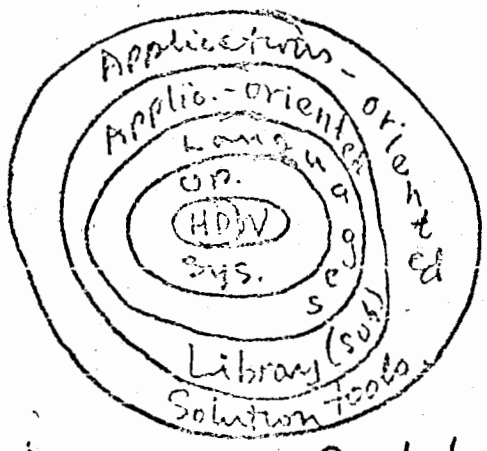


FY 77 Budget. (Trend FY 78)




160
162
164
166
168
170
172
174
176
36-b
6
KA10
KI10
KL
1→2→3
18-b
1
4
7
9
9/L
15
III
DEC
Sales
X
DCM
K
Dragon
DG
70
45
55
1→3→
...7
MOD(8) b
(PDP-11)
20
40
P
34
05
04
03(LSI-11)
LINC
LING-8
12
0→1→0
12-b
5
8
8/I
8/L
8/E
8/F/M
8/A
1→2
8/S
GRI
MPS
1→0
8-b
PAST C.S.
Developments
GB 6/75





Levels of Machines - Partitioning

gB 21 Sept 1975

PROCESS

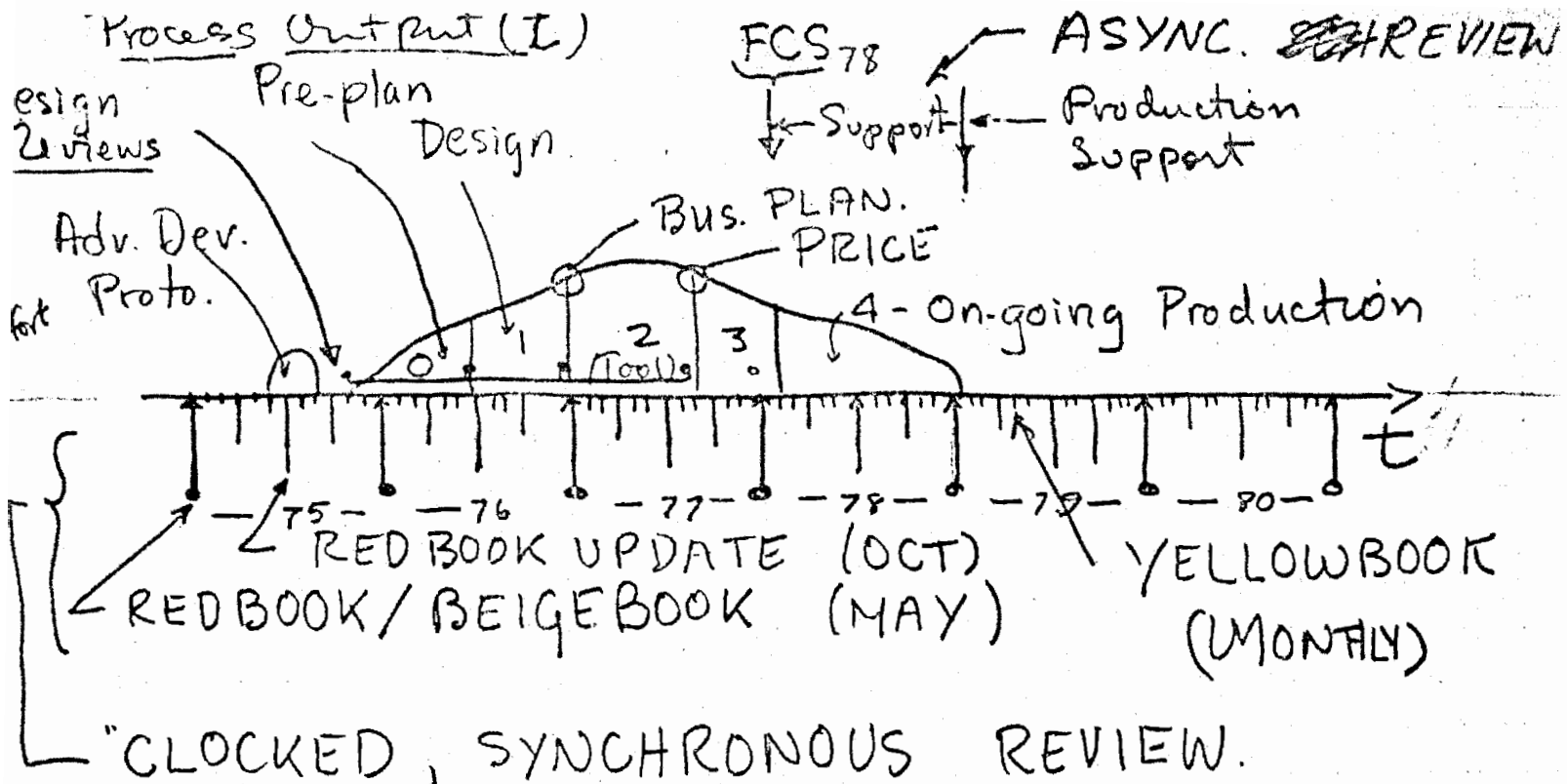
TIME-YEARS (T)

multi-disciplin

PROCESS	SOFTWARE (OS, LANGUAGES)	CPU (LARGE)	DISK
basic idea → RESEARCH	0-20	1-10	1-10
→ DISCLOSURE PATENTS			
proto { TECHNOLOGY ADVANCED DEVELOPMENT	1/2-2	1-2	1-2
→ PEOPLE (ISS, MRX)			
(schedulable) DEVELOPMENT	1-2	1-2	>2
→ TOOL-UP	$\frac{1}{4}$-2	ANNOUNCE MKT DEMAND	ANNOUNCE MKT DEMAND
TEST, TOOL & DIT	1/4-1/2	1/2-1	1
→ FCS	1~2		
SHIP	1/4-1/2	1/4-1/2	1/4-1/2
EDUCATE & USE	1/2-5	1/2	0
	MKT DEMAND		

Commod.

Education / [illegible]
(mkt)



Project Effort vs. time.

Reviews:

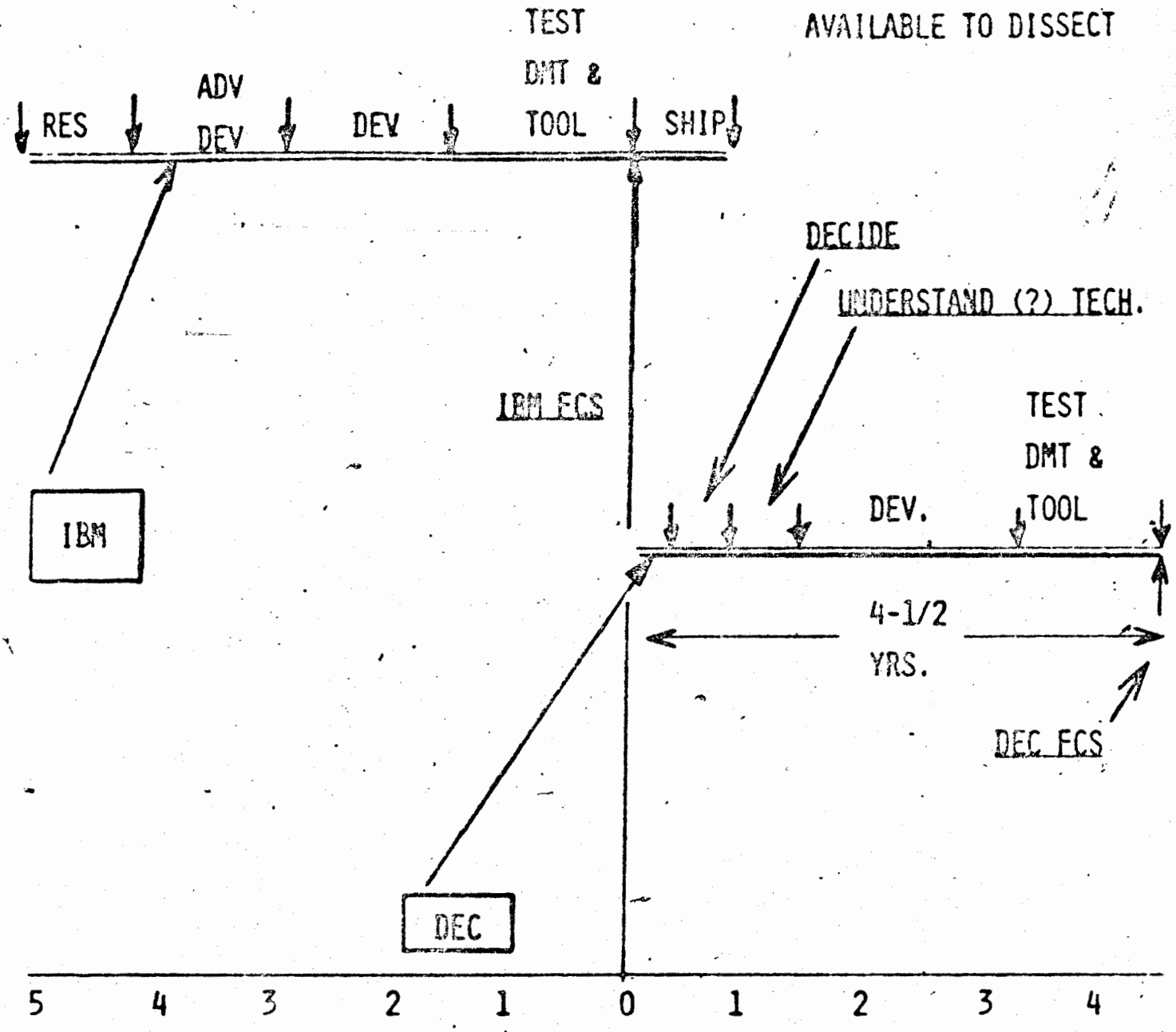
SYNCHRONOUS

- Redbook
- Redbook update
- Yellow Book (status update)

Asynchronous (Project Based)

- Prototype (Adv. Dev.). {Idea Generation}.
- Prel. Plan. {Alternatives to Select from}.
- Design Reviews (Measures/monitors Project)
- Business Plans (Reviews)
  - 2 page (to go into design)
  - To go ahead
  - To produce
  - To build/sell.
- PSG monitor

GB May 9. 1976.



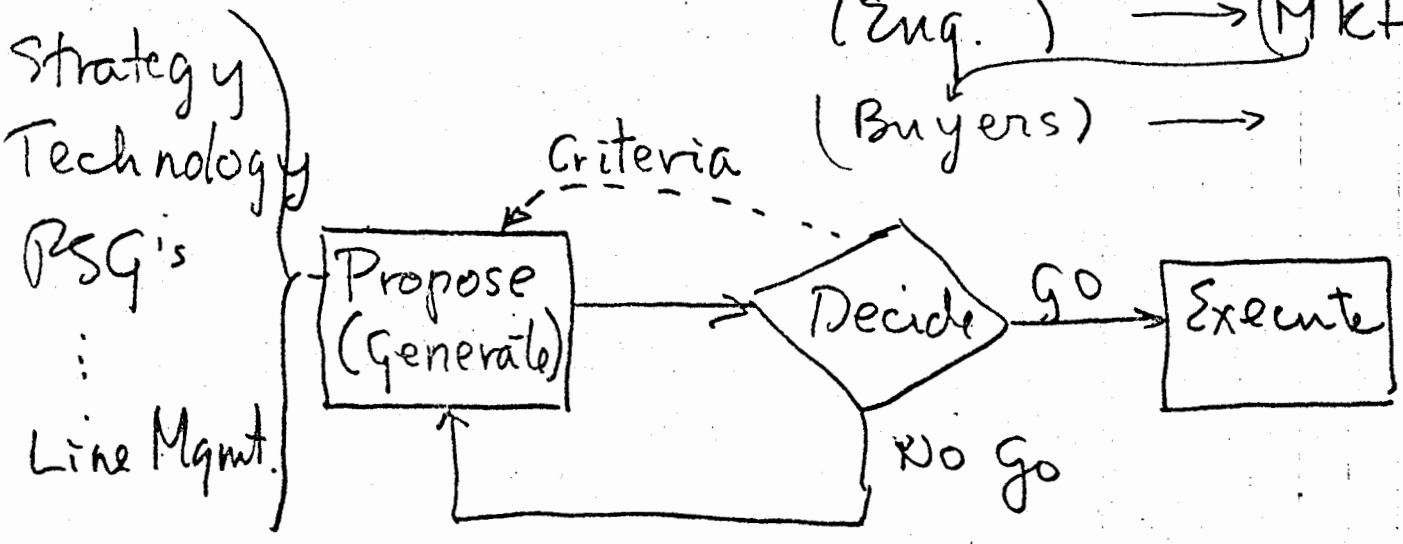
TIMES FOR IBM/DEC DISKS

DECISION-MAKING WITHIN OOD

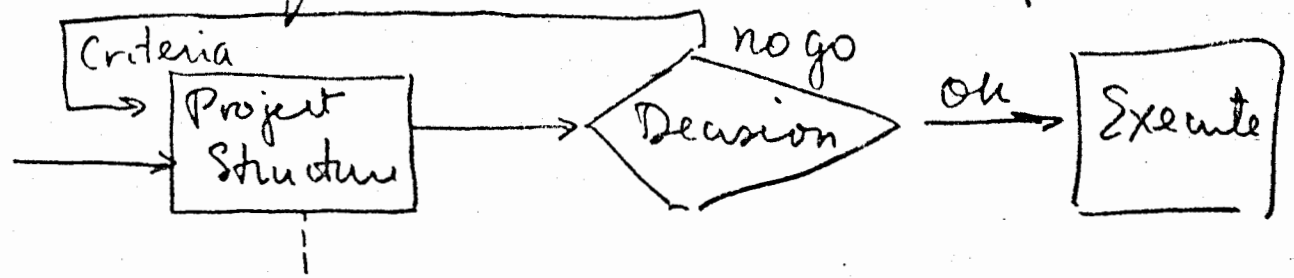
GB
May 9, 1976

- Fundamentally no Substitute for Hi-Q. Person(s)
- Basically decisions are made according to Model set forth by Ken and Op. Comm.
- Carry forward notion of a (decision) process & attempt to form structures (Organize) such that: Individuals can propose and have decided such that individuals are responsible to do. (i.e. he who plans, does).

- Process requires: Producers → Consumers
  (generators) → (Testors)
  (Designers) → (Evaluators)
  (Eng.) → (MKters)
  (Buyers) → →



(General) Techniques for Decision-making May 9, 1976



Inputs (Comm.) ——→ monitor fcn.

- 5 year strategic plans, (Budget Allocation)
  Redbook. ; Meetings
  DEC Stds. / Policies / processes (eg. approval process).
  DEC Goals (roi program).
  Competitive ideas
  Technology base: R&D; Idea; Invention
  → Market Requirement (need). Psg.
  Specify Action ... i.e. Tell 'em. + Manage

STRUCTURE / MANAGE {Team, Task force, Committee, Indiv.
Organiz. Engineering. / Matrix / Move People (skills)
Educate / Train
Consultants. Or Get 1 or 2 Good People.

Monitor
Yellow books, Redbooks, PSG's.

Decision
Specify Problem, Goals, Constraints, Evaluation Criteria

(tradeoffs)

GB 9 May 72

Problems in Decision-making

We are significantly Market driven (via PSG's, MKters, etc.).
As we get larger, it is harder to Recover from poor MKT-based (Persons) ~~D&R~~ Recommendations vs. Tech. risk.

Examples:

→ Don't write down Goals, etc. hence instability
→ Don't move out far enough (mP)
→ Don't understand new mkt. (LSI-11)
→ Don't understand Systems we'll Sell (eg. Size on 11/70)
→ Don't understand changing mkt. (optimize R~R vs. Real Performance).
→ "Mill Around", No Clear decision/Test (CIS).
→ Overall the developers want to be heros ... i.e. building anything is OK. and avoids risk of Project Cancel. (eg. Unicorn)
→ Don't understand risk of a fully peopled company. Mfg. ... F/s. — hence minimum product cost, max. user (etc.) cost.

CONTROL (DECISIONS) VIA FUNDING gfs 9 May 72

- PROJECT DIRECT (Hdw., SOFT, Hdw+Soft.)
  Memory (electronic, disk, tape), Comm., terminals, CPU's, Operating Systems, Languages.

- PROJECT SUPPORT (Fully purchased Services)
  Drafting, Model shops, Consulting, Computers, EDP.

- PROJECT SUPPORT WITH TECHNOLOGY BASE
  LSI, PKG., POWER, DIGGNOSTICS, QUALITY
  – Purchasing, Components, testing, tool-up
  – Manuals, Training.

- Open loop
  Tools, Standards, Research, Adv. Dev.
  Library, Program Library.
  Field Service, Software Support, Training.

Digital Interoffice Memo

Subject: Mentors: Can They (help) Solve Our Training Problem?

To: Gary Jewks/John Meyer

CC: OOD
Dave Brauer
Ed Roberts
Ed Schein

Date: 18 JAN 77
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

F/U 2/1

The model used to identify certain types of individuals in R&D organizations probably applies to other organizations and disciplines. The categories are simply a mapping of other, very complex attributes about the person. The particular categories are in reality the set of values for a single attribute which we might call a person's basic function within an organization.

The functions are also identical to those of man-made information processing systems, i.e., computers.

Note, the pure information processing functions within a computer are:

L - links; pure information transmission channels
T - transducers; (doesn't change information) only encoding
M - memory; stores information
S - switches; a variable set of links
K - control; finite state machines which take input, and evoke control outputs
P - processing (takes information, an algorithm) and creates new information)
C - computer; combination of above

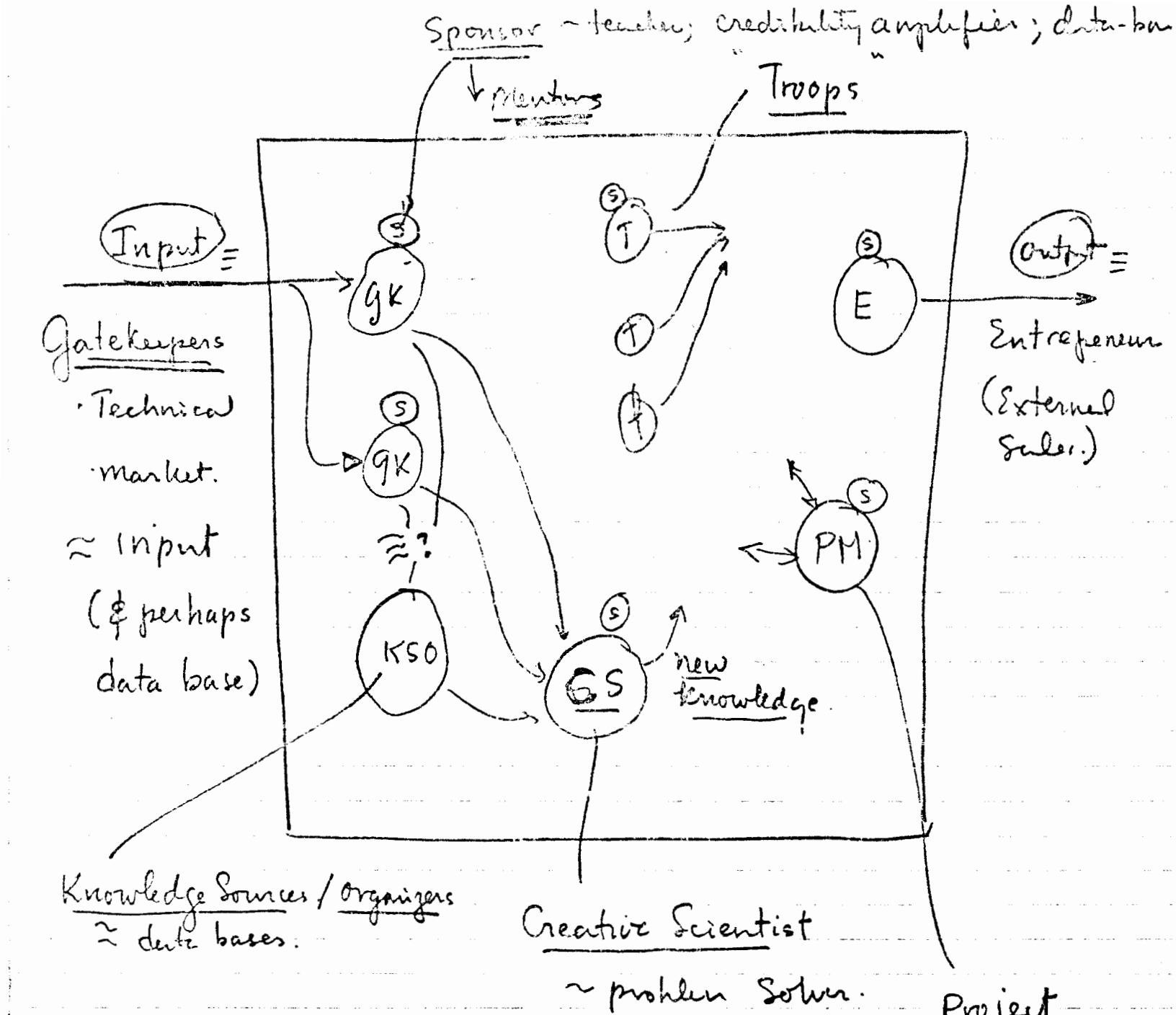
Therefore, the categories mapped into the above are:

Gatekeepers - basically input T's, M's; and some S's
Knowledge sources - basically M's and some S's (are these Gatekeepers)
Creative Scientists - P possibly with lots of M
Entrepeneur - basically output T and S (back to group)
Sponsor - T/L + M (to amplify another component)
Project Management - K
Troops - any function (usually L's, S's, T's with some small M)

Can we use mentors/sponsors to significantly decrease introduction time? Without the trauma?

GB:ljp

Attachment



Anti-Sponsors ?

Anti-troops ? (dv - work).

DS - destructive Scientist does - work.

D I G I T A L INTEROFFICE MEMORANDUM

DIST:	Dave Brauer	PK3-1/A32	Gary Jewkes	ML12-1/A11
	Ed Roberts	MIT	Ed Schein	MIT
	Jim Bell	ML3-4/E41	Dick Clayton	ML3-3/E71
	Ulf Fagerquist	MR1-2/E78	Arnie Goldfein	ML12-2/A16
	Henry Lemaire	ML1-4/A97	Julius Marcus	PK3-1/M29
	John Meyer	ML12-1/A11	Stan Pearson	ML12-3/E13
	Larry Portner	ML12-3/A62	Bob Puffer	ML1-3/E38

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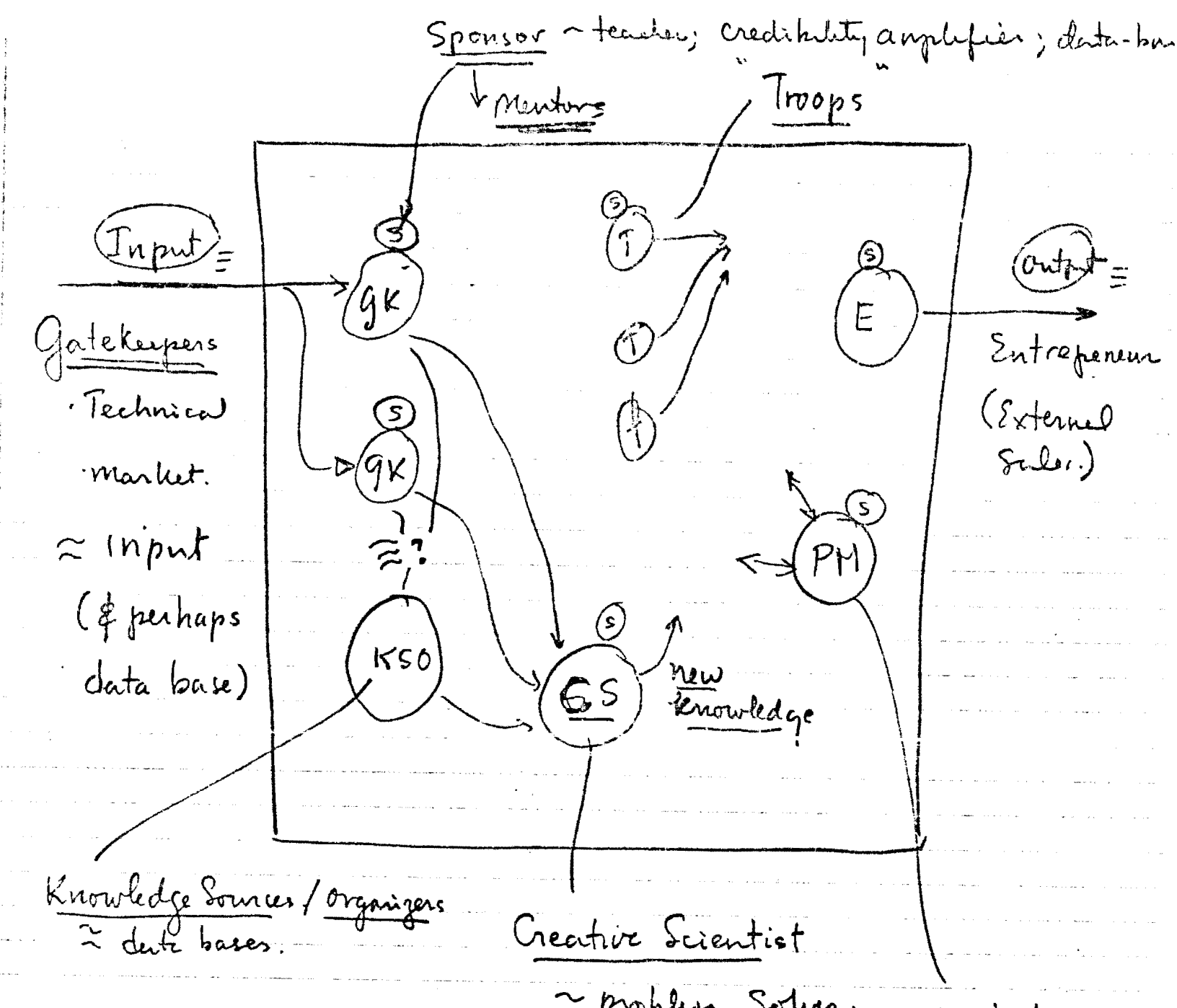

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	John Meyer	ML12-1/A11	Stan Pearson	ML12-3/E13
	Larry Portner	ML12-3/A62	Bob Puffer	ML1-3/E38

Table gp. Groups Characteristics

	Computer Architects	Engineer/Designers (Implementators)	Programmers	Marketing	Sales
Time Horizon	historical (what's worked/failed); $\nearrow$ 10 years into future	past implementations; current technology + (0~4) years	current techniques, (0 ± 3 years)	6 months to few weeks	few days~ few weeks
Activity	predict future technology (materials) to build from; set goals + framework; predicates implementable designs over time. Knows how to adapt.	select technology and techniques to build from to achieve goals	takes ISP and translates to other machines as dictated by a market/use contract	takes general machines, converts into specific uses either with words or with special software, interfaces, etc.	takes products in stock and sells to a customer in a given region.
Goals/ Measure.	implementability over time horizon against alternative architectures	development and product cost, reliability, performance, MTTR, overtime horizons for project plan.	achieves size and reliability at scheduled time. No clear performance goals.	product sales and marketing expense in line with profit objectives.	$ sales
Primary Interface (degree of interaction)	implementors, users, marketers, programmers (low)	all + production, users, and service (very high)	marketing use and service (low)	users, implementors, programmers and sales. (moderate)	user and marketers (low)
Simplicity of goals	fuzziest; long time scale; lots can go wrong to get off hook			measures specific; success/ failure vague	highly specific
Complexity of object X depth	2	3	1	4	5
Requirements	conservative; reads and writes; integrative; highly disciplined	very conservative; may read; used to working in large groups most disciplined	not conservative; may read; highly individualistic	not conservative; relatively individualistic; reads trade press	permissive, individualistic

THE ORGANIZATION

GENERAL CHARACTERISTICS OF SPECIFIC GROUPS

Table qp shows some of the groups, together with their characteristics. Nearly all the people, including sales and marketing people, have hardware or software engineering backgrounds. Hamming once characterized an engineer as one who achieves his goal by first turning to science, failing that he turns to mathematical tools, and finally failing mathematics, he turns to the seat of his pants. I similarly characterize us as--given a goal of going to the moon: as a last resort we are willing to climb on top of one another to form a bridge. I believe engineering is the most highly disciplined of any profession because the non-human interpretable goals and measures are crisp and clear. We are simply measured in terms of whether some arbitrary object works correctly, and judgement is relatively outside the human realm. Nearly all other disciplines have fuzzy goal sets and success is judged by others. There are an infinite number of ways some true measure of success (or failure) can be interpreted opposite (i.e., there are an infinity of excuses).

In the various other disciplines within the organization, people get rewards in shorter (or longer as the case of architecture) time scales, and who want more ambiguity in

their goals, and more freedom (less discipline) in their work. Probably the most free (and creative) group of engineers are salesmen, because of the short time scale and range of inventions they must deal with (e.g. why their product is better; why their proposal didn't meet a customer's deadline).

All of these disciplines deal in fundamental design and these activities will be presented below, followed by a section on the nature of architecture, both generally and as it related to the PDP-11.

The final section will discuss the interaction of the various groups and their affect on the computers DEC has produced.

DESIGN AND DESIGN(ERS)

Although we like to believe that design is a highly analytic, totally rationale discipline, the contrary often seems true. With computer design and implementation there is an ever abundance of new materials and techniques to draw from, hence, there are many designs and much innovation. On the other hand, there are many techniques which most engineers/designers are rarely aware of because of their short term focus and there is a reluctance of using parts that are not available vis a vis the trade publications.

Also, due to large numbers of interfaces, risk is to be avoided in materials and techniques because the exogenous organizations supply enough risk.

Nearly all design activities i believe are characterized by a specific design ideology. While I believe a good designer may switch between the ideologies, it appears to be rare. A safer style of management is to not tempt fate by asking a designer to change ideology.

The three types of design are based on economical and performance considerations, and the nature of this tradeoff is shown in Figure DS. Note, that one starts at Ø cost and performance, proceeds to add cost, to achieve a base (minimum level of functionality). At this point, certain minimum goals are met: for the computer, it is simply that there is program counter, and the simplest arithmetic operations can be carried out. It is easy to show (since the days of the Turing machine) that only 1 or 2 instructions are required, and from these, any program can be written. From this minimal point, performance increases very rapidly in a step fashion (to be described later) for quite sometime (due to fixed overhead of memories, cabinets, power, etc.) to a point of inflection where the cost-effective solution is found. At this point, performance continues to increase until another point where the performance is maximized. At this point, continuing implies physical constraints are exceeded, and the machine

becomes unbuildable, hence, has no performance.

Note, that there are actually a family of these curves for various levels of functionality (e.g. 4K memory machines). That is, to obtain the functionality of very large scale computer, which is beyond the cost limit of the curves, is infeasible.

Similarly, to obtain only the performance of a small computer from a much larger computer, than there it has a similar shape, but the base cost is much greater, and the cost limits are greater. A relationship of this type also holds for a given computer as it is modified over its lifetime; that is, we don't design a single point in the cost/performance phase plot, but rather a given computer takes on many configurations of over its liftime; and from a manufacturer's viewpoint, a given model is available in a set configuration. Thus, the design problem is to understand the distribution of configurations.

In this section, however, we are only interested in how the designer perceives the design task in the space (context) of Figure DS.

There is a general tendency of all designers to n+1 (i.e., incrementally add to the design forever). No design is so complete, that a redesign based on the knowledge of the design, can't improve it; hence, there is a natural tendency to always change the design to look for a more

optimum point and provide more functionality for the set of components. The tendency to n-1 the design is less severe, i.e., take out one more component, while keeping the functionality.

In programming design this has been observed on the PDP-8, since it is organized in pages of 128 words. As a result, programming is done in integral pages, with a program always fitting on a single page. One would expect that the programming cost would be higher; clearly the size of programs tends to be smaller on the PDP-8 due to the enforced paged discipline.

Now assuming the curve represents an ensemble of designs, then there are three design ideologies practiced by designers; and these correspond to the types of designs that we say have been implemented, given the technology in the technology section:

1. Building the mini(mal) computer, i.e., the least costly design. Here, fortunately, there are design guidelines to help. A computer is packaged on a set of printed circuit boards, and each time one more is added, a certain overhead cost is incurred; while adding a part to the board is expensive, it is relatively cheap in comparison to the board. (DEC'S boards are roughly 8-1/2" x 15"--a hex, although they can be made in increments of 8-1/2" x 5". For processors, the increments are usually in terms of an integral number of

hex boards to make the processor. Note, the various designs have been oriented to achieve a 1 board processor, and upon succeeding, then getting a complete computer on 1 board. The LSI 11 has a processor with 4K words of memory on a quad size (2/3 of hex) board. For minimal systems, designs, the packaging constraints provide the nicest design constraints. It is clear when success is achieved. In fact, note that we now clearly mark the beginning of the 4th generation as being the first time a processor is put on a single silicon die.

2. Cost/effective design. This style of design is clearly the most difficult, since there are no clear cut constraints. Since the size is usually not bound, and slight additions give great incremental gains in performance, the phenomenon of n+1'ing is ever present. Nearly all the mid-range designs are invariably larger than they set out to be initially...and it's usually the right thing to do, from a total system standpoint. The n+1'ing occurs as the designers get into the details of the design and find it's more difficult than expected, or that there are slight perterbutions that provide more performance.

3. Maximum performance designs. These designs are the most interesting, but they always imply a significant risk, although the design is somewhat easier because the object is to provide the greatest performance, subject

to certain buildability constraints. One is building with a new technology, new techniques, or putting more together than ever before. The results are usually the same: the system is late; it costs more than expected; the performance is somewhat less than expected; and it is likely that no buildable design will result (the ILLIAC IV is the most visible example). Semour Gray formerly of CDC, is the only designer who has consistently worked at this point (i.e. CDC 6600-7600 series). With very complex management techniques, a large team can work effectively (e.g. IBM'S large machines), but as a rule, the success of very large machines has been limited. The 11/45 (although significantly smaller than existing large machines) was an exception to the above rules...in a sense some luck was involved in choosing the TTL/SCHOTTKY technology, right at the point it would be barely available (a year earlier project start would not have allowed the machine to be built). On the other hand, the trick in deciding on projects is to select lucky people.

ARCHITECTURE

A key design discipline is computer architecture. While architecture was initially defined by Brooks et al as the machine as seen by the user, devoid of its physical

characteristics, I believe this is too limited. Architecture includes the definition of the ISP together with the various PMS structures that will be built. Unfortunately, there is a connotation of computer architecture, as being like conventional architecture. There are similarities, however. Computer architecture has more basic principles to build from, and the designs can be better measured; nevertheless, the computer architect, like the conventional architect can easily suffer from violating given constraints (e.g., usually cost), specifying unbuildable designs, and being non-quantitative in machine measurement and using beauty, esthetics, and symmetry to describe a machine.

The two usual problems of architecture: inexperience and second-systemitis. The first problem is simply a resources problem: are there people available, what are their backgrounds, can a small group work effectively on architectural definitions? Perhaps most important is the principal, that no matter who the architect, the design should be clearly understood by at least one person.

Second-systemitis is the phenomenon of defining a system on the basis of past system history. Invariably, the system solves all past problems...bordering on the unbuildable. The most classic case of this is the IBM Stretch, being the second system after the 704/709. Even today, Stretch remains the most elaborate machine (except the still

non-functional CDC STAR) in terms of the vastness of the data-types and operations it performs.

One can observe second systemitis on the various PDP-8 designs. Each succeeding design solved the most recent problems of the previous design; of course, the remembered problems were that the previous design could not be built in large or small configurations. Oscillatory designs resulted: every other PDP-8 design was larger than the last; and the alternate ensuing design reduced the previous design. Observe: 8 (relatively large); 8/S (very small and slow); 8/I (large); 8/L (cost-reduced 8/L); 8/E (large); 8/(F,M) (small); and 8/A (small) breaking the oscillatory tradition...however, it is being extended now to compensate for smallness.

Some of the PDP-11 architecture was initially carried out by a single individual (HMcF) together with the author supplying various design principles at Carnegie-Mellon University. Two of the useful ideas: the UNIBUS, and the use of general registers in a substantially more general fashion (e.g. as stack poiinters) came out of earlier work by the author (GB) at CMU and were described in COMPUTER STRUCTURES (Bell and Newell, 1971). During the detailed design emelioration, 2 persons (HMcF, and RC) carried the architectural specifications.

Although the architectural activity of the 11/20 proceeded in parallel with the implementation, there was less

interaction than in previous DEC designs whereby the first implementation and architecture were carried out by one person. As a result, a slight penalty is paid to build subsequent designs, especially vis a vis microprogramming.

As the various models began to be built outside the original PDP-11/20 group, nearly all architectural control (RC) disappeared, and the architecture was managed by a number of disjoint people, and design resided with no one person! A similar loss of control occurred in the design of the peripherals after the basic design; the result challenges the most clever programmer.

THE ORGANIZATIONAL ENVIRONMENT FOR THE PDP-11

DEC oscillates between a market- and product-orientated organization. Because the growth rate has been 30-40% per year, the organization has to constantly change because the number of people doubles every two years (i.e. 1/3 of the people have been with the organization less than a year).

At the time of the PDP-11 designs, DEC was organized along product line groups; each was a tightly integrated group of marketing and engineering people responsible for specifying and designing products. There has always been centralized selling and manufacturing. Now there is also centralized engineering, with marketing being applications- and

customer-oriented rather than machine oriented (i.e. product oriented).

Therefore, in the 1967 timescale, there were actually 5 tightly integrated (non-destructable) groups:

1. PDP-10, building large scale timeshared machines, and fundamentally a different company with little interaction with other products; the 10 group was the strongest and understood architectural control, but had no interest except implementing higher performance machines.

2. PDP-15 (18-bit) a relatively strong group at the time and the obvious place to build a 16-bit machine, especially in the mid range; the PDP-15 series was constant cost and tended to be optimized for cost performance; however, any alternative design would clearly compete with the PDP-15. The engineering leadership changed from implementation to implementation, and there was no understanding of architectural continuity.

3. PDP-8, was a tight group and had a fair understanding of architecture; however, the tightness inhibited communication outside. It was oriented to minimal cost designs, occassionally producing high performance products (e.g., TSS/8 for timesharing, and fast floating point).

4. PDP-8/S, actually just a single point, by a single individual and outside the PDP-8 grouping; an attempt to get a much lower cost PDP-8 and "show" the PDP-8 engineers how it should be done. (Fairly unsuccessful since it gave up too much performance).

5. LINC-8, a group oriented to building machines which were sold into the biomedical and laboratory market--the strongest engineering group outside PDP-10. These machines were really the most "systems-orineted" with a good human interface I/O (a CRT), special analog front ends, and a file system based on DECtape. The LINC came from MIT'S Lincoln Laboratory, hence, there was conflict as to whether we should continue to build it or to switch software to the PDP-8. Note, the compromizes over time were to build the PDP-8 into the instruction set as the PDP-12.

Therefore, at the time, there was little or no understanding about architecture because of inexperience. Also, there was no notion of architecture for a range of products.

The first designs for 16-bit computers came from a group placed under the PDP-15 management (a marketeer, without an engineering background). It was called PDP-X, and did include a range. As a range architecture, it was better thought out than the later PDP-11, but didn't have the innovative aspects. Unfortunately, the group which came from the tightly integrated PDP-8, and from the PDP-9 (which

was late into production) had some credibility, and competence, but was intimidating. The group also managed to convince everyone that the machine was potentially as complex as the PDP-10 (which it wasn't); but since no one wanted another large computer disconnected from the main business, it was a sure suicide. The marketing management had no understanding of the machine. Since the people involved in this design may have simultaneously designed Data General, it's unclear what would have happened had it not been shut off.

As the PDP-X project folded and the DCM (for Desk Calculator Machine for security) project started up, nearly everyone was some what paranoid, since Data General had been formed and was competing with a much scaled down 16-bit computer. Hence, there was no communication with the other groups as to just what the machine would be. Although the Product Line Manager for the PDP-8 (and a former engineer) had the responsibility this time, the project manager was a mathematician/programmer. The results were disasterous, because there was no operation as a team, no notion of architecture, and range. None of the people on the project are with DEC today. After a period of inactivity, another manager (RC) was put in charge to get something out. He had managed the PDP-8 group after it had migrated to the PDP-X project. Work proceeded for several months based on the DCM and we had a project review of DCM at CARNEGIE-MELLON in ------. The design was presented to me and I had invited

Bill Wulf. The DCM review took only a few minutes, since we couldn't get interested in the design. Aside from a general dullness, and feeling that it was too little too late to compete, it was difficult to program (especially by compilers). However, it's benchmark results were good. (It had been tuned to the benchmarks, hence couldn't do anything else well.) One of the designers (HMcF) brought along the kernel of an alternative, which turned out to be the PDP-11. We worked on the design all weekend, and phoned the manager on Sunday night to recommend that we switch to the basic 11 design.

At this point, there were reviews to ameliorate the design, and each suggestion, in effect, amounted to an n+1; the implementation was proceeding in parallel (JO'L) and since the logic design was conventional sequential, consisting of a number of boards, and to be cost-effective it was difficult to tradeoff extensions. Also, the design was constrained with boards and ideas held over from the DCM. (The only safe way to design a range is simultaneously do both high and low end designs.) I spent the summer at DEC, trying to free up op code space, and increasing (n+1'ing) the UNIBUS bandwidth (with an extra set of address lines), and outlining alternative models (see figure which we have to find). This formed the basis of plans for subsequent machines.

The advent of large, read-only memories, made possible the

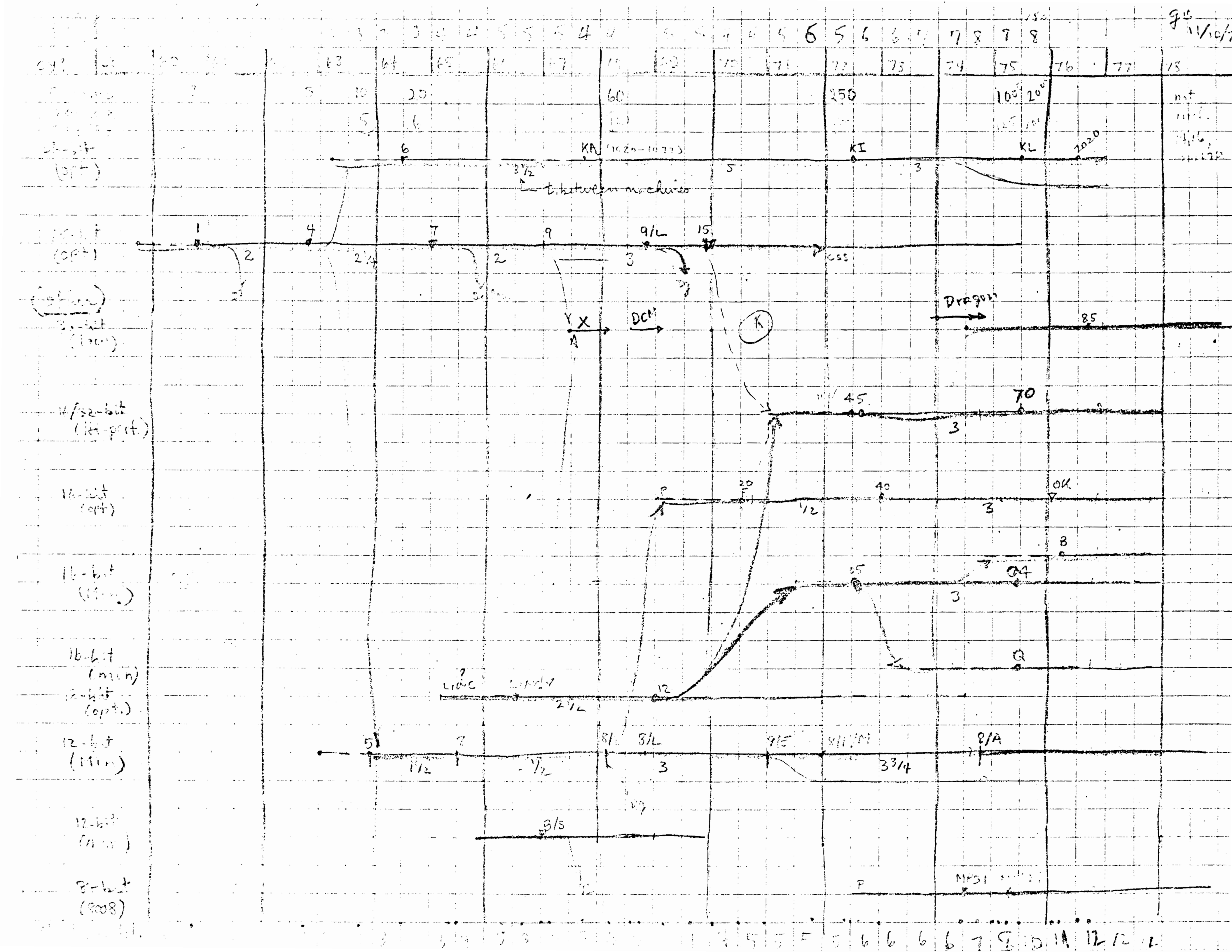
various follow-on designs to the 11/20. Figure "Models" sketches the cost of various models versus time, with lines of consistent performance. This very clearly shows the design styles (ideologies). The 11/40 design was started right after the 11/20, although it was the last tocome on the market (the low and high end had higher priority to get into production as they extended the market). Both the 11/04 and 11/45 design groups went through extensive buy in processes, as they came into the 11 by first proposing alternative designs. In the case of the 11/45, a larger, 11-like 18-bit machine was proposed by the 15 group; and later, the linc engineering group proposed an alternative design which was subset compatible at the symbolic program level. As the groups considered the software ramifications, buy-in was rapid. The large 11-like machine was fairly traumatic for the people involved made a very nice design (the PDP-K). As we see in the chart, the minimum cost-oriented group has two successors providing lower cost (yet higher performance); and same cost with the ability to have larger memories and perform better. Note both of these came from a backup strategy to the LSI-11. These come from larger read-only memories, and increased understanding of how to implement the 11.

The 11/70 is, of course, a natural follow on to extend the performance of the 11.

Table gp. Groups Characteristics

(MJ Do you have satisfactory entitled Technology ?

	Computer Architects	Engineer/Designers (Implementators)	Programmers	Marketing	Sales
Time Horizon	historical (what's worked/failed); > 10 years into future	past implementations; current technology + (0~4) years	current techniques, ~~past (0 ±2 years)~~ (0 ± 3 years)	6 months to few weeks	few days~ few weeks
Activity	predict future technology (materials) to build from; ~~set goals &~~ framework; predicates implementable designs over time. Knows how to adapt.	select technology and techniques to build from to achieve goals	takes ISP and translates to other machines as dictated by a market/use contract	takes general machines, converts into specific uses either with words or with special software, interfaces, etc.	takes products in stock and sells to a customer ~~here~~ in a given region.
Goals/ Measure.	Implementability over time horizon against alternative architectures	development and product cost, reliability, performance, MTTR, overtime horizons for project plan.	achieves size and reliability at scheduled time. No clear performance goals.	product sales and marketing expense in line with profit objective	$ sales
Primary Interface (degree of interaction)	implementors, users, marketers, programmers (low)	all + production, users, and service (very high)	marketing use and service (low)	users, implementors, programmers and sales. (moderate)	user and marketers (low)
Simplicity of goals	fuzziest; long time scale; lots can go wrong to get off hook	~~$~~		measures specific; success/ failure vague	highly specific
Complexity of object & depth	2	3	1	4	5
Requirements	conservative; reads and writes; integrative; highly disciplined	very conservative; may read; used to working in large groups most disciplined	not conservative; may read; highly indivicualistic	not conservative; relatively individualistic; reads trade press	permissive, ~~reads trade and gossip publications,~~ individualistic



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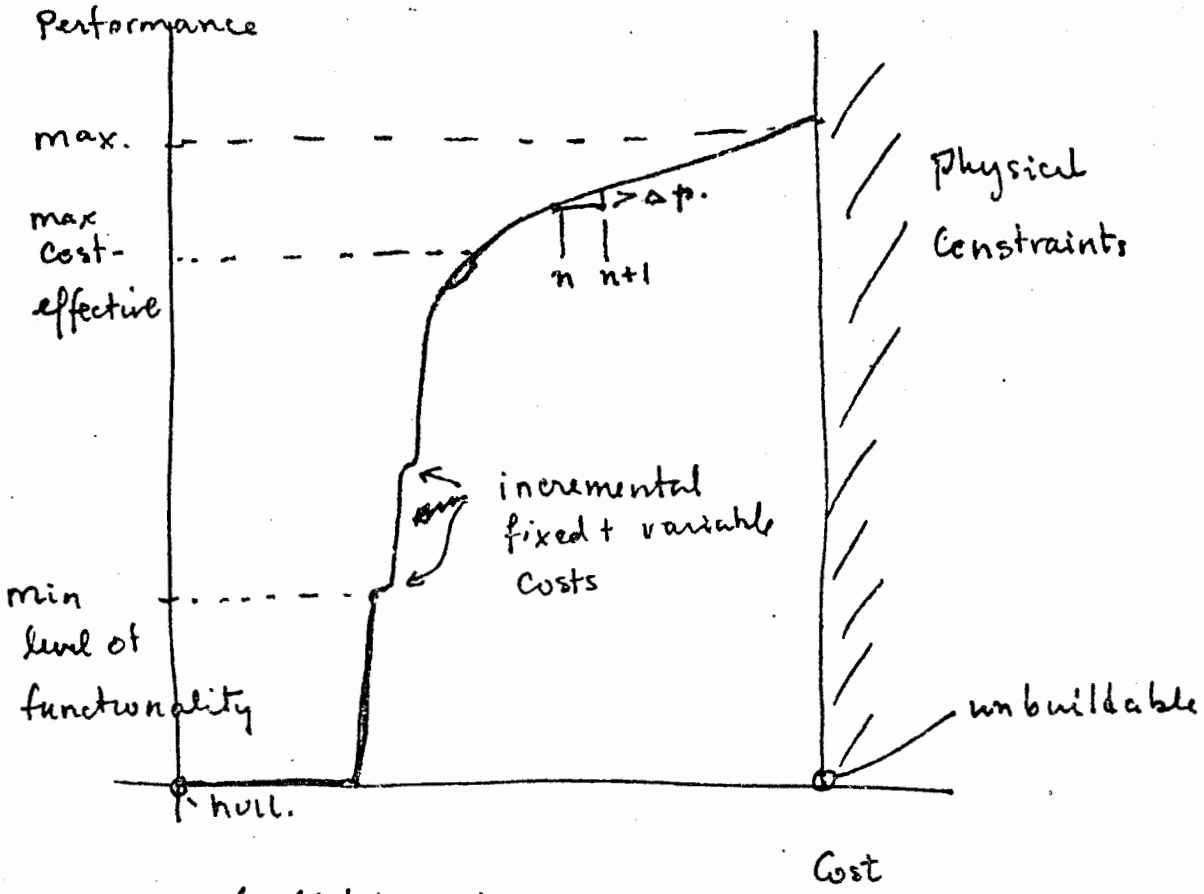


Fig. D.S. Characterizing Design styles (ideologies) in terms of cost and performance &

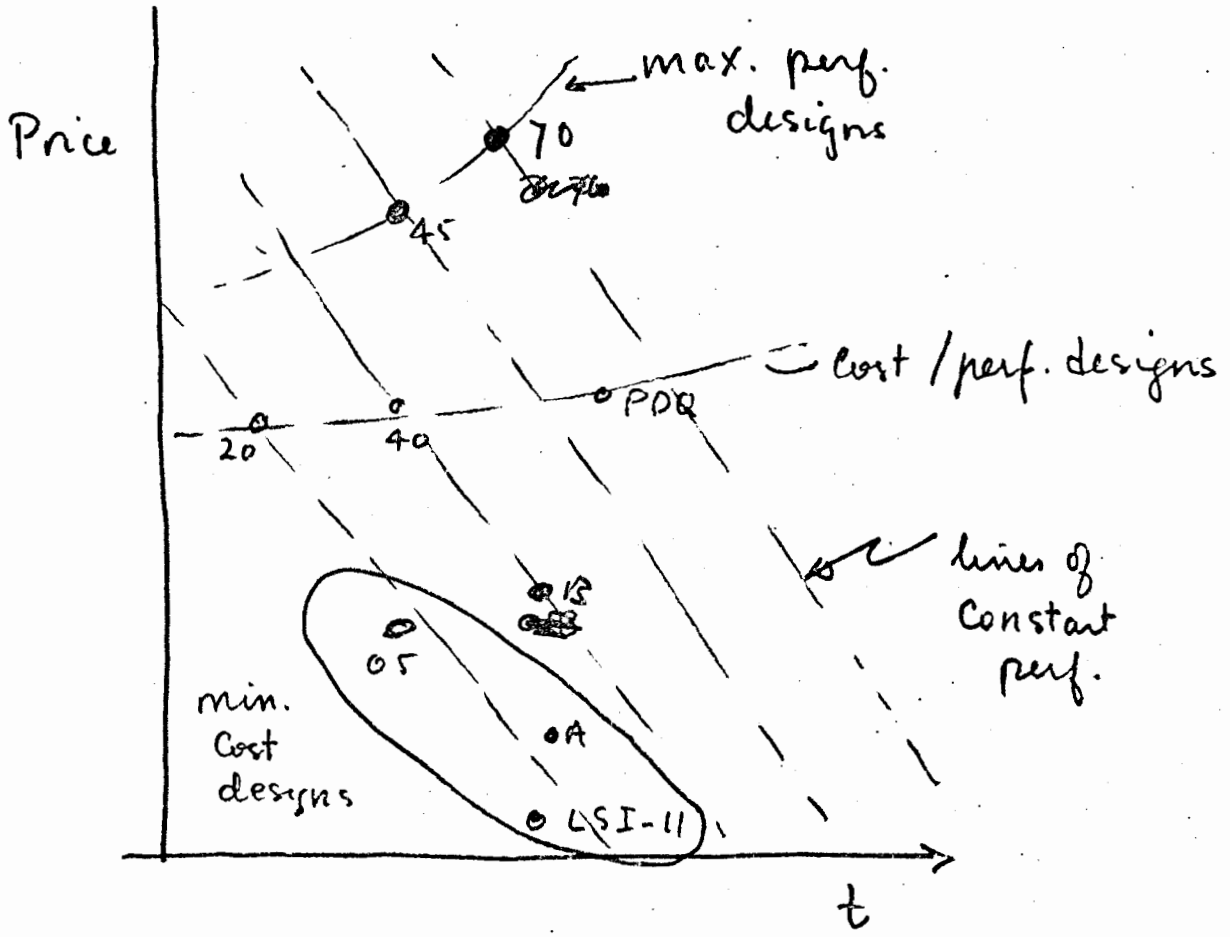


Fig. Models. PDP-11 Models Price vs time with lines of constant performance.

Growth

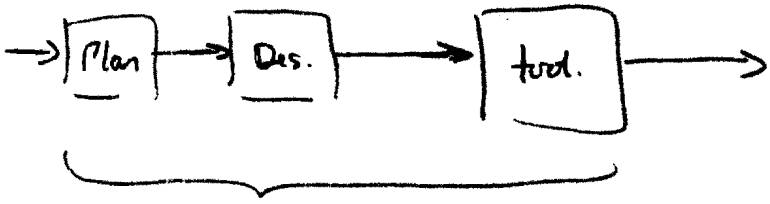
covers mistakes
allows for (encourages) much mobility
→ people can seek level,
occasionally go beyond.
org. large enough to have overlap, hence
~~people~~ incorpt. groups can be worked around
like a rock in a stream.

openness.
risktaking.
info. is carried fastest
[whole money versus formal link
when people move orgs among].

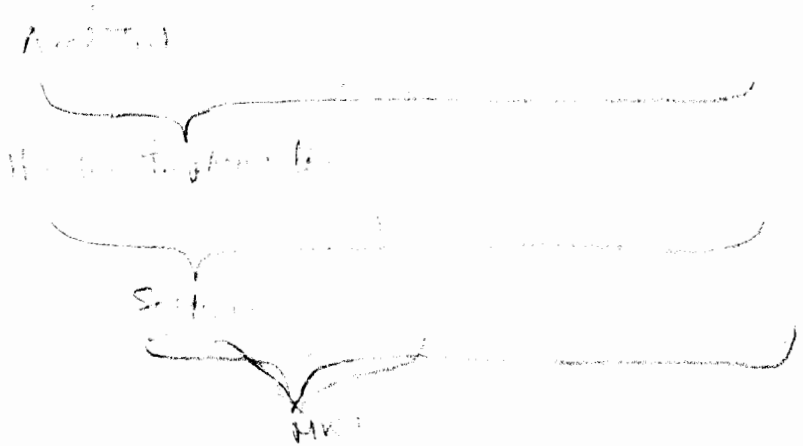
less protection of charters, hence products
can cross boundries.

spend less time on the charter; more
on the thing.

Note:



$3\frac{1}{2}$ yrs ≡ period of the output.



t. Scale
of
People

BOSTON UNIVERSITY

College of Engineering

EK 513 - COMPUTER ARCHITECTURE
Semester II, 1975-76; Th., 6:00-10:00 PM
Instructor: J. W. Willhide, Assistant Dean and Associate Professor of Systems and Computer Engineering
Text: Stone, Harold S., INTRODUCTION TO COMPUTER ARCHITECTURE, Science Research Associates, Inc., 1975

Week	Topic
1	Historical Development of Computing Structures - Families/Technology Concepts
2	Data Representation and Computer Arithmetic
3	Instruction Set Design/Addressing - Approaches & Techniques
4	Introduction to Simple Computation Structures
5	Control - Centralized, Microprogrammed and Distributed
6	Memories and Memory Hierarchies - Approaches/Convenience/Performance
7	Memories and Memory Hierarchies - Approaches/Convenience/Performance
8	Memories and Memory Hierarchies - Approaches/Convenience/Performance
9	Input/Output Processing
10	Microprogramming - A More Advanced Look
11	Stack Computers
12	Increasing Performance - Overlap and Pipelining
13	Increasing Performance - Multiprocessors, Array Associative Processors
14	High-level Language Processors

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-Hardware/firmware architectural interactions
-Microcomputer system architecture
-Input/output architecture
-High-speed computers
-Multiprocessors
-Distributed processors
-Networks
-High-level language machines
-Architecture measurement and evaluation
-Hardware description languages
-Computer architecture education
-Hardware/operating system integrated design
-Special-purpose architectures

Authors are requested to submit five copies of a completed manuscript to Program Chairperson by 1 August 1976.

Conference Chairperson

Dr. Bruce Wald, Superintendent
Communications Science Division
Naval Research Laboratory
4555 Overlook Avenue
Washington, D. C. 20390

Program Chairperson

Professor Harold S. Stone
Electrical and Computer Engineering Department
University of Massachusetts
Amherst, MA 01002

Program Committee

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Course No. 401

COMPUTER ARCHITECTURE

DESCRIPTION

This course is designed for engineers, computer scientists, and data processing managers who need a better working knowledge of the principles of computer architecture. The course will include a review of the concepts of computer science. It will provide an in-depth coverage of the characteristics and design principles of input/output, arithmetic and control units, and their incorporation into the design of a special-purpose digital computer. There is no prerequisite for this course; however, a degree in engineering or computer science would be helpful.

TOPICAL OUTLINE

First Day

Introduction to computer systems
Review of number systems and arithmetic operations
Information coding and error control coding
Logic functions, operations and implementation
Basic logic units

Second Day

Introduction to computer architecture
Addressing, formatting and sequencing
Memories
Input/output devices
Channels
Programming systems
Assemblers, compilers and interpreters
Multiprogramming and time sharing
Microprogramming

Third Day

Arithmetic units
Serial and parallel arithmetic, floating point arithmetic
Memories: types and characteristics
Input/output device characteristics
Analog to digital and digital to analog conversion

Fourth Day

The control unit
Distributed and centralized control
Ward formats and instruction repertoire
Instruction and operation sequencing
Microprogrammed control units

Fifth Day

Digital computer design
Formatting
Addressing and instruction set
Arithmetic and logic units
Control and input/output
Timing

INSTRUCTORS

Michael B. Feldman, Ph.D., is Assistant Professor of Engineering and Applied Science at George Washington University. He has taught computer science at the University of Pennsylvania and has served at the Educational Testing Service in Princeton, New Jersey, for four years as an in-house consultant for programmer and computer-room productivity improvement, compiler development, and interactive programming tools. He has recently returned from Europe where he was acting as Staff Consultant to the President of the Samson Automation Service Centre in the Netherlands, Holland's oldest and largest independent computer service bureau and software house. Dr. Feldman's current research interests lie in the design of problem-oriented programming languages. He has designed and implemented such languages for experimentation with abstract sequential machines, specification of statistical analyses, and construction and scheduling of classical batch job streams.

Hermann J. Helgert, Ph.D., Associate Professor of Engineering and Applied Science, GWU, has worked as a research engineer at Cornell Aeronautical Laboratory in Systems and Communication Theory and was a member of the electrical engineering faculty at Clemson University. Prior to joining GWU he spent two years as a Senior Resident Research Associate at NASA/Goddard Space Flight Center working on problems of source and channel coding for satellite communications systems. He has been a consultant to NASA, the Naval Weapons Laboratory, and Diebold Company and has published papers on information theory, communications, and coding.

Arnold C. Meltzer, D.Sc., is Professor of Engineering and Applied Science at George Washington University and currently Chairman of the Department of Electrical Engineering and Computer Science. He is co-author of the text *Principles of Digital Computer Design*, Vol. I (1975) and currently writing Volume II. He was a Ford Foundation Faculty Fellow with IBM during 1970-71 and an NSF Faculty Fellow 1967-68. He is a member of IEEE and ACM. He has been a consultant on the design of large computer systems to several U.S. government agencies and has published several papers in the field. His current interest is in the design of large telecommunication/data base systems.

Abd-elfattah M. Abd-alla, Ph.D., is Associate Professor of Engineering and Applied Science at George Washington University. Dr. Abd-alla, an Egyptian by birth, was awarded an M. S. in Electrical Engineering at Alexandria University, Egypt, in 1963, and a Ph.D. in computer science at the University of Maryland in 1969. He is the author of a number of publications on computer operations and design, and is the co-author, with Arnold C. Meltzer, of *Principles of Digital Computer Design* Vol. I (Vol. II is in preparation.)

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The fee for the course is $425. This includes lecture notes and supplies. Make checks and purchase orders payable to GWU, Continuing Engineering Education. Free parking is provided. Participants may delay payment until arrival.

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Orientation will be at 8:15 a.m. on the first day; classes will meet from 8:30 a.m. to 4:15 p.m. daily in Room 641 of the new University Library, 2130 H Street, N.W. (corner of 22nd and H), Washington, D.C.

CERTIFICATE

Those attending the full course will receive a Certificate of Completion.

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Continuing Education Units (3.0) will be awarded for the satisfactory completion of this course. Developed by a national task force, the CEU is a uniform unit of measurement for recording substantive noncredit learning in qualified continuing education programs. It provides a standardized means for business, industry, and government to measure in-service education. A permanent transferable record is maintained of CEUs awarded.

Fig. ~~Table of Gain (or Loss) Changes for Various~~
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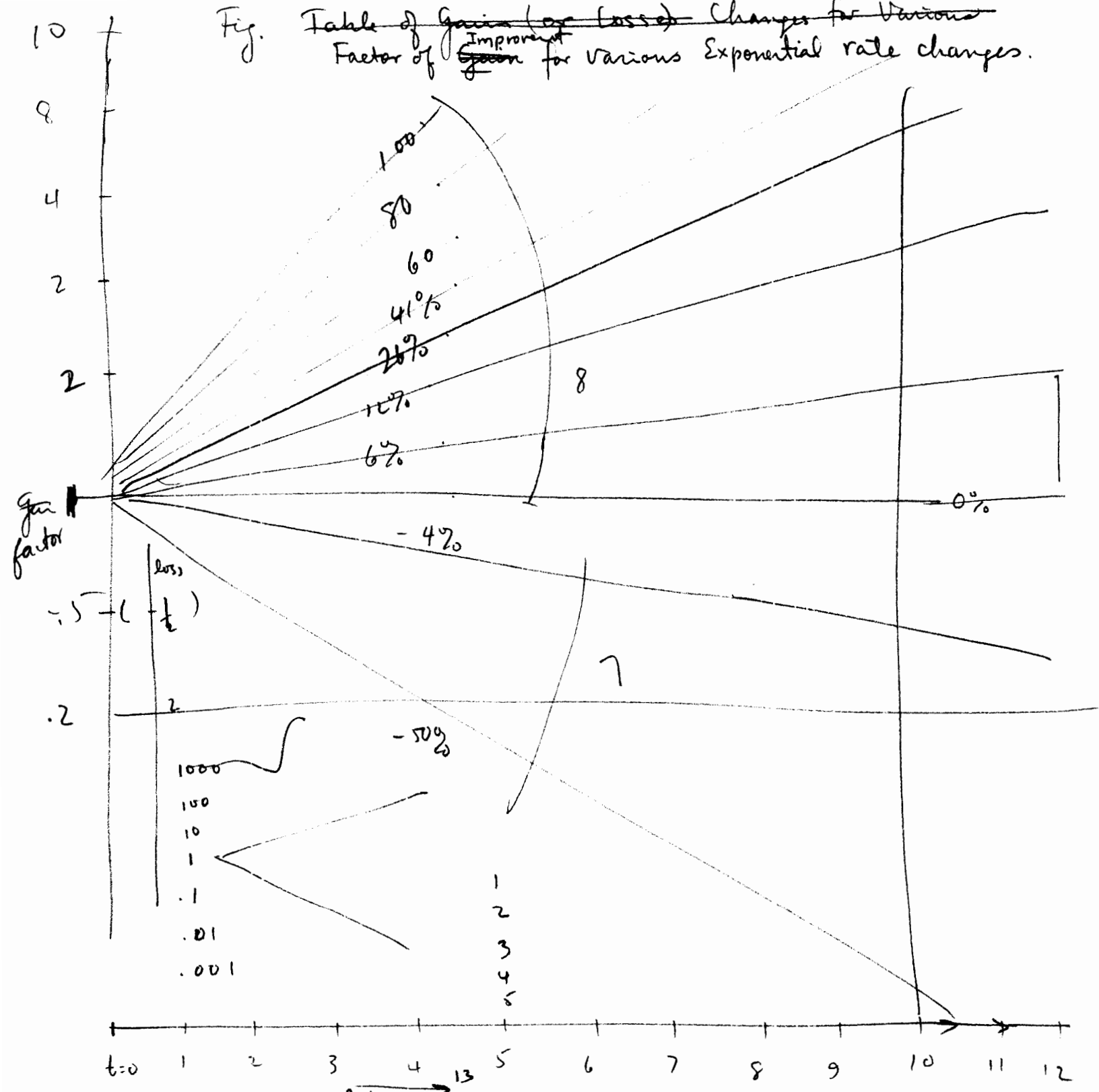

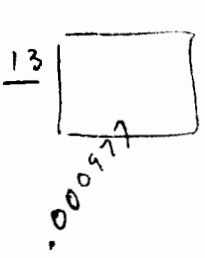

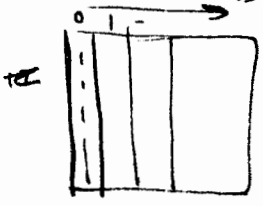

$G = 1.0^{t} \propto t$

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$\frac{1}{1.06} = .943 = 5.7$

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$\frac{1}{1.41} = .709^2 = 31\%$

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digital

March 22, 1976

Professor Thomas Kilburn
Department of Computer Science
The University of Manchester
M13 9PL
Manchester, ENGLAND

Dear Professor Kilburn:

It was nice talking with you and Professors Sumner and Edwards...especially the issue you raised as to the utility of multiprocessors versus multicomputers for large programs. I discussed this with Allen Newell and would like to urge you to formulate this as a conjecture so that it can be considered more widely. My intepretation of your statement (poorly stated) is:

It is pointless to understand the design of a shared memory multiprocessor (e.g. 16) computer system for large, compute-bound programs because a program can be decomposed and executed in a multiple (e.g. 16) computer system which has a fairly simple intercommunication mechanism (e.g. high speed message oriented).

> Furthermore, for a computation center environment encountering a range of jobs, the more loosely coupled system is preferred because there can be a static partitioning of functions, thus minimizing overhead.

This viewpoint is also reinforced because the large, compute-bound user gets little computing on a larger system, and hence he could run longer on a slower system.

It seems perhaps the crux of the issue may be on whether or not a user is permitted to utilize all of the processors or computers at a given time. If he can have them all, then it seems there is a significant problem involved with the decomposition so that it can run in parallel. Your main point was that there was not much parallelism that was easy to exploit, and hence when there was parallelism, problem parts are easy to assign to multiple machines.

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Whether there is scientific interest seems to revolve around two aspects: the amount of parallelism in a problem, and the ease of exploiting it; and more pragmatically, the system costs including delay times to get the machines, design costs, performance, and costs of alternative processors.

I suspect we have radically different cost models, and these are the basics of whether there is a problem worth of study or not. My cost model is simple. People have been trained to program in a sequential fashion (e.g. FORTRAN) and there is a large base of programs. Doing anything to an operational program is prohibitive in cost. I also assume that there is much parallelism in most programs (e.g. the DO loop) and furthermore it is relatively easy to detect and be decomposed into programs for parallel execution on a number of processors which share a common memory. Computer design costs are very expensive, and the easiest way to get a machine that is 16 times the power of a smaller processor is to simply put 16 of the processors together...i.e. solve the performance need by production, not new designs. Furthermore, the very large processors are always about 3 years late. By backing off the design and providing only 1/2 the power, one can get .5 X 3 CPU-years work before the later machines appear. Then at the 3 year time, a second processor is added which brings the machine up to full power. When you consider the added reliability, design costs, etc., then significantly more computing gets done. (As you can see, my biases are mainly toward instructions per month not instructions per second.) Whether we have a difference of opinion or whether we are just working on different problems, may be a function of the shape of various costs curves, I suspect.

In returning here, I wrote down some problems interesting to me (and DEC) which might be of interest to your students:

It seems to me, we urgently need a program which can build and analyze a data flow graph of arbitrary programs. Such a program would take an arbitrary program, determine the amount of parallelism it has, and given some assumptions about fork, join and operator times, determine the speed up with various parallel processing schemes. The multicomputer versus multiprocessor question is really a difference in the grain size (i.e. how much computing is done between synchronization points and the cost to partition the problem).

Just as students learn to program by reading other person s programs, it might be useful to do some comparitive design analysis by critiqueing the various 10 or so implementations of our PDP-11 models.

I'm intrigued as to how much it would cost to make higher speed versions of the PDP-11. You have skills there we don't have for high performance machines. In doing this, how would multiples of these compare with the performance and cost of MU5?

How would one evolve the PDP 11 to increase the memory address space and still provide compatibility?

We would be interested in seeing variant models of the PDP-11 such that there is no storage, transmission or processing of information that is unchecked. Furthermore there would be automatic checking and reporting of many failures. What would this design goal do to the cost, serviceability and performance of various models?

Again, I enjoyed last Tuesday's visit with you and the other members of the Manchester faculty. If you're in the U.S., I hope you'll visit us.

Sincerely yours,

Gordon Bell
Vice President, Engineering
Professor, Computer Science
Carnegie-Mellon University
(on leave)

GB:mjf

CC: Allen Newell
Bill Wulf
Sam Fuller

why minis; problems; questions

get DEC stuff

Book Outline:

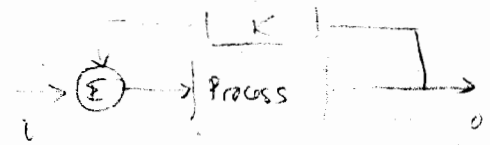
Intro overview

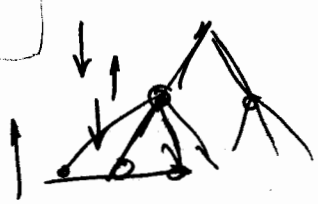
Technology.

- Use Segmentation: Applications

- Human Organization

D





- PMS structures

Implementation

ISP

Op. Sys.

Language.

Intro.

- whole scheme
- levels-of-integration
- disciplines
- archetypes, prototypes, factories

Human Organiz + process

Appendix: · PMS and ISPS papers.
· PDR-11 ISPS description

mP; design

Prw	Tech;	PMS;	ISP;	user segment
↓	↓	↓	↓	
1	1	2	1	

(x 2)

⟹ 11/70 Cache:

Some aspects of multiprocessor structures..

Kind:

Is there a set of design protocols for arch.

~~[illegible]~~

Environment: pressure.

→ • Goals for new architectures...

→ • PDP-11: VAX.

~~(Great ideas)~~

→ Ennumeration of great ideas for use in C's..

→ Problems in ~~ranging~~ building-a-range

→ CIS | ...

→ Organizational Environments for building C's.

Evolution of { i/o control; with technology

~~Effects~~

The constituent

Effects of technology on PMS structure

~~sizes of the building-blocks stru~~

~~past, present, future~~

→ Pio, interrupts.

→ Kio

→ mP.

→ nets.

~~u??ve"v9o[1)u^ju k:"xzi"g4p"zq?"v I"G4P"ZQ?"V [1 U"G~~

Von Hippel - Dom. Role of Users (in Sci Inst Innov.)

1. 3/4 of successful, innovative projects are initiated in resp. to a percept of user need for an innov., rather than a technological opportunity to achieve them

2. Accum understand of user need is the factor which discriminates most strongly between success + unsuccess projects

fig Fig 1 Typ. steps in innov diffusion

Table 4 →

	% User Dom.
Basic Inst	100.
Maj imp	81.
Minor	70.

[illegible]

	% user Dom
Corp's first cmtz	100
addition to line	71%

← lots of movement of people

Fig 2 + 3

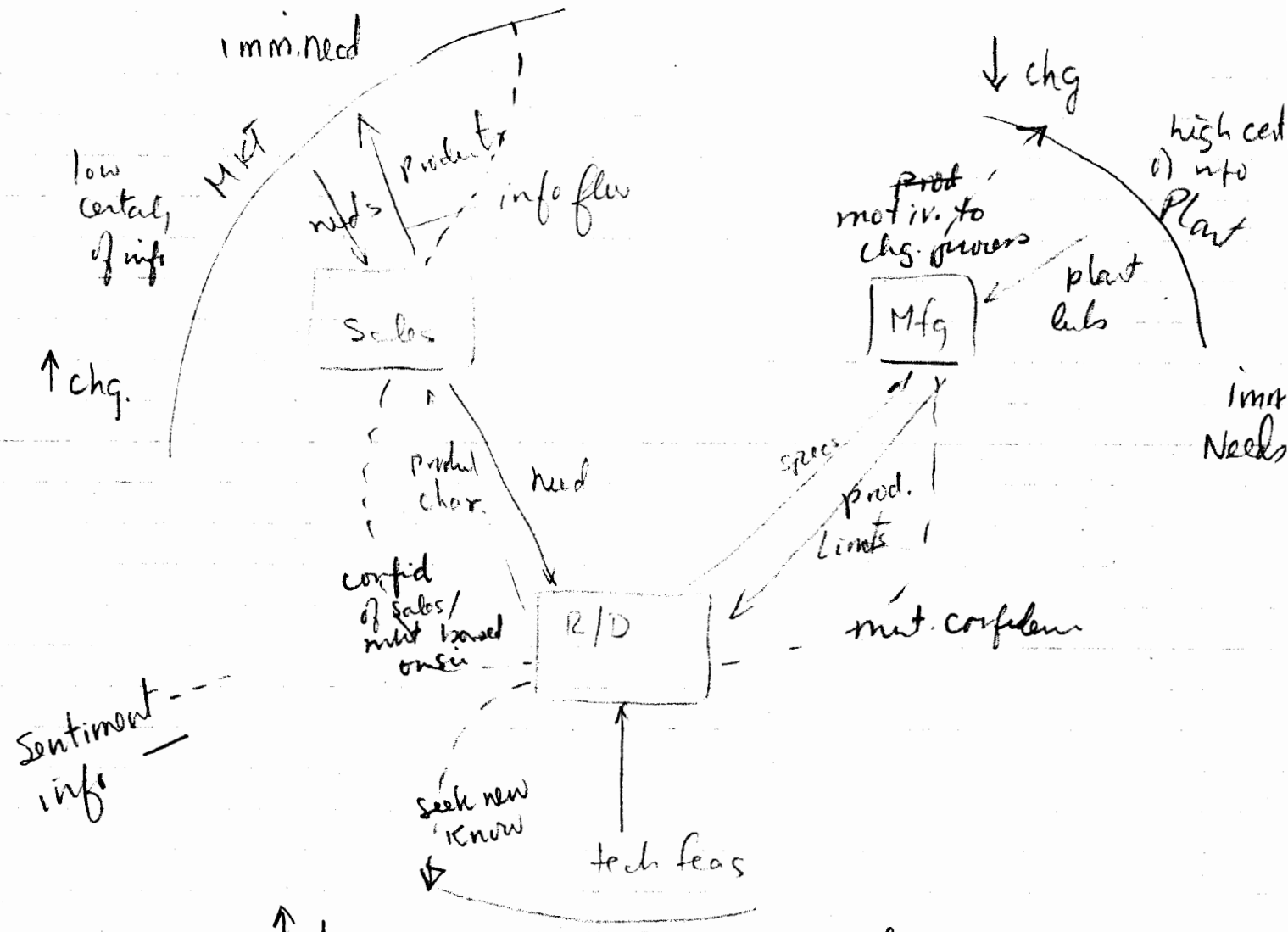
Co. Size in $M	userdom
≤1	100
≤10	50
≤100	69
≤1000	86
>1000	100

– where → Predom. at ~~users~~ universities, some labs vs. individ + Co's

people ← / ↓ literature

– ~~25~~ ~ 30% of major innov. by 1 user in each area.
– substantially the same ~~inst~~ invent. was commercialized

Org. for Product Innovation Lorsch + Lawrence
HBR V43, VF 65



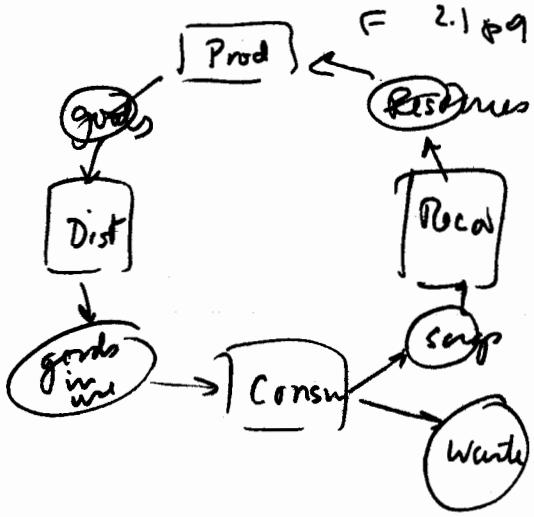
low certainty info

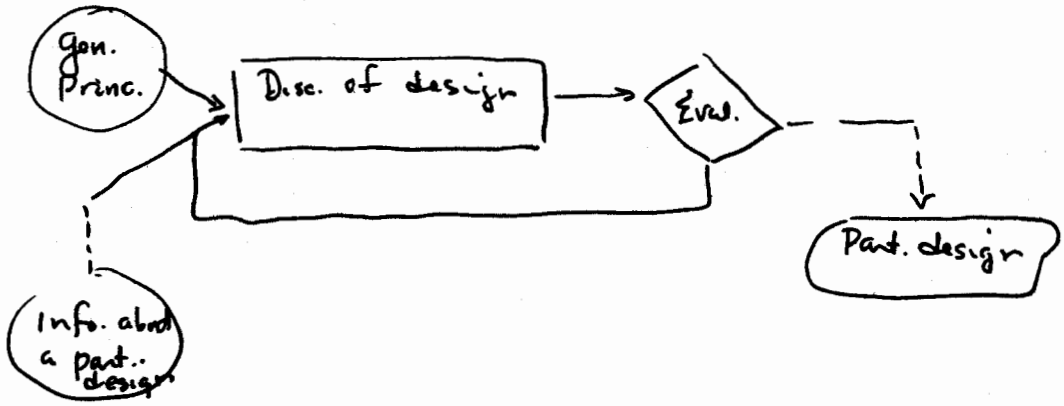
	Dept Str	Orient toward time	Orient. to others	Orient to env.
R/D	low	long	permissive	Sci.
Sales	med	short	..	mkt
Prod	high	..	directive	plant

Intro. To. Design

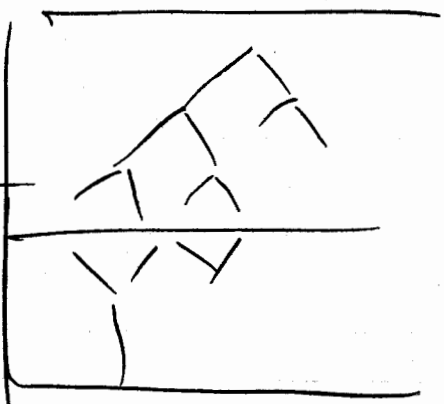
Design by evolution

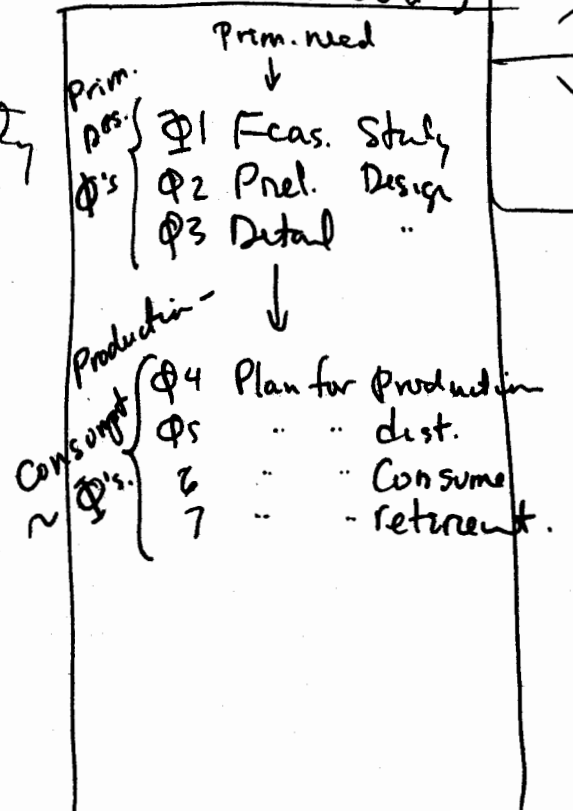
" " innovation





Need.
Realizability
Ec. Worthwhileness
Fin. Feas.
Optimality
Design Criteria
Morphology (Abstract → Concrete)
Des. process.
Sub. probs.
Reduct. of uncertainty
Ec. Worth of Evid.
Base for Decis.
Mtn. Communic
Communication





→ ~~Lead~~ Jewkes

~~Architect~~

Learner.

Specialist.

Mentor.

Leader.

stage of time.

→ Creative Scientist / Engineer.

Information Gatekeeper

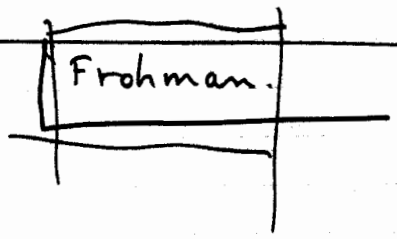
Entrepeneur / Product Champion

Sponsor.

Project Manager.

Technical Marketeer.

Workers of the troops.



Creation comes from
slack resources

Digital C15 Interoffice Memo

To: Dick Clayton
Malcolm Johnston
Ralph Platz
Larry Portner

Date: 16 AUG 76
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

Subject: CIS - Surely we can make decisions more easily (and better) than this!

This is a draft. Please comment on it and whether it should be circulated. I prologue here with about 3/4" x 8 1/2" x 11" of paper, containing over 40 documents, including only 1 firm, detailed proposal which have been written over the last 6 months (about 1/2 this last month). This is probably only 1/2 the documents and represents only a small fraction of the work. There must have been 800 person-hours of meetings, perhaps 1 or 2 person-years of work in the projects on proposing something, and many person-years of background by people who have implemented operators already.

Having personally spent several hours in meetings being asked to approve something from groups usually 6+ people who have about the same, limited knowledge about the design as myself (I've called in more informed people in all cases), I'm somewhat frustrated because:

0. No Top Down Goals

My Problem. It's clear now: In the current range/set of machines DEC must have hardware to win with!

1. No General Market/Language Direction

The process really points out the abysmal performance in marketing by a lack of language needs definition in the business marketplace. (The only worse performance was by the engineering groups with uncreative responses to this non-definition.) In essence the instability occurs because we aren't clear on the need/use in APL, BASIC, COBOL, DIBOL, FORTRAN, MUMPS, and RPG for the various price ranges for all time. Ideally, we want high performance for all languages over all price ranges (all machines) for all time. This will ultimately lead us to supporting all data-types in hardware if we allow things to evolve. Hardware support of Fortran by the 11 models is an example with no plan but evolving to: no support, EAE(on 11/20); and then simultaneous FPP, EIS, and FIS support. While one can say this is really dumb (particularly since the best compiler only supports FPP), it may be shown to be cost-effective or timely...and it illustrates the capability of macros to support almost any hardware.

2. Evaluation Criteria Missing

One person said we should do strategy k+1 (of n where k<<n) for marketing (not technical) reasons. (We're currently doing strategy k+1). His statement, designed to sell the strategy without question was totally vacuuous. Everything we do is for marketing reasons--but can't we be more specific? Of the pile, only 1 or 2 pieces addressed the criteria for selection. None explicitly address long term, strategic market need. Based on the inputs from the implementors of Dibol, it's easy to ask whether adding these data-types will increase performance; aren't we interpretor bound and (there are no compilers involved)? It should be noted that adding these data-types is substantially more complex than Fortran, since computation, file and memory storage, and i/o conversion is involved. Hence the mix will drastically effect the performance (Fortran benchmarks just compute on numbers, usually).

3. Negligible Number of Alternatives Generated

The alternatives really were bad, incomplete and limited. Too early there was a convergence to 3 alternatives, only 1 of which appears to be documented enough to judge. Of the pile, only one memo was a proposal detailed enough to discuss (ironically the second document I have, dated 1/27/76.) It has been accepted, somewhat modified as the Dibol Instruction Set for the LSI-11. I doubt if the proposal for a new data-type can come from any more than 3 people (and preferrably 2 persons)--the output by a larger group is nil. Ironically all the LSI-11 hardware Dibol work has been by 3 persons (I believe). My hunch is that our market strategy of grab what falls into our lab and be in all markets will take us into the support of at least all the languages mentioned above. Thus, all data-types currently known will be recognized by either software or hardware, and the decision as to the specific hardware support (on a given machine for a given language) will evolve. We must ask do we let it evolve in a natural way, on a demand basis, or do we assume it will happen and define a framework (or policy) so that the software and hardware architecture can evolve with less hassle? (In other words let's stop fighting and sit back and enjoy it...and lead in cost/performance having the right support for the data-types a language needs, rather than forcing the programmers to use something else...and then going to slow interpreters because they say it doesn't matter since the data-types aren't interpreted (this chicken/egg argument costs a factor of 10 or 20) in speed.

Until recently we didn't consider doing more than one and we didn't consider combining Zoned and leading (and/or trailing) separators as a single data-type.

Note, on LSI-11 the string instructions take about 500 words ($20 cost), the zoned or leading separate about 500 words ($20), and packed decimal about $20. The costs for other machines are probably about the same. If we had space, putting them all in might be best, but on the other hand, will any language but Dibol ever be used on the LSI-11?

4. Undefined Process - Hence the Mob Scene

The whole process was too people and too paper intensive with meetings and opinions, which seem to have no underlying basis, and thus result in unstable recommendations (since there is no consistent evaluation criteria).

More disturbing in the meetings, is the mistrust, and hence the need for the mass of misinformed people to enter the fray simply to vote. Many of the people I talked with knew we must have data-type X, but don't know what a data-type is, nor have any idea of the implementation cost or resulting performance. Surely, whether one is an individual contributor or a manager, and whether part of an engineering group or a marketing group, as individuals we must be smart enough to insist that the process be fundamentally good, and hence allow us to do what we do well--not participate in a free for all and rendering the idiotic, redundant statements we do. (It's clear to me we are very fat as a company with many heat generators and only a few light generators.) It doesn't bother me to see the one shot suggestions or comments (it's part of the DEC Bill of Rights), it's the part-time experts who appear to meet, discuss, with what I see as no new information, and then go away frustrated to what must be a job, somewhere. Surely, they're not just professional meeting goers?

Another frustration is that there appears to be much orthogonality in the list of people working on and deciding on these designs. It appears to be like a big game which anyone can walk by, get a few memos, comment on, leave and then come back later. I only see a few people who have used their time effectively based on either technical or problem solving performance or being smart enough to stay away from it.

5. Better Engineering Management Needed

This activity just has to reflect our universally poor management. This mob fills the vacuum of a line management function in hardware and software engineering which should gather inputs about need, and then keep ahead with the right products which will keep us ahead in the marketplace (by having low cost, benchmark winning hardware and software). The line architectural function which recommends the hardware-software tradeoff is missing, distributed or abdicated.

In short we have to lead in both software and hardware...not defend!

Summary

0. Overall

   a. What is problem? (see attached tables)

   b. What are alternatives?

   c. Cost/performance for each?

1. Market

   a. What languages are in use now and likely to be in future for each range of machines?

   b. What performance is needed?

   c. What are the benchmarks in terms of files, computation and conversion?

2. Software

   a. What are the representations the languages require together with their operators? the conversions among data-types?

   b. What exists now?

   c. How is data transferred among machines, languages and files?

   d. What are levels of support desired by hardware?

   e. (When) do we need descriptors?

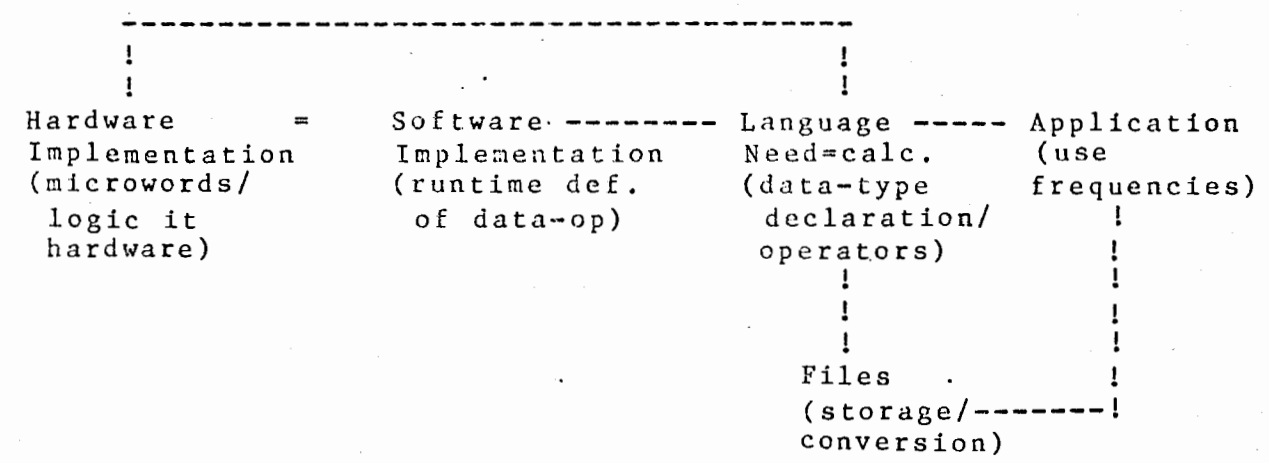
3. Hardware

   a. What is performance and cost for various data-types/opeartors? additional ones?

   b. What are constraints for existing and new machines?

   c. What basic methods? Unique data-type as languages dictate? Conversion to binary (1 data type) for each language need?

Interaction Among Various Structures



The Design Process

See figure attached. How do we identify and install processes early enough?

Range of Alternatives in Increasing Degree of Hardware Support

0. Storage representation only.	least hardware/ all software
1. + move op. data-type (high % use)	
2a. + conversion to another data-type (to perform operations)	minimum # data-types -requires big runtime
2b. + comparisons (for logicals)	
3. + higher frequency ops. (+, -, some conversion for array access)	
4. Complete set of opeartors for high utilization	place software in hardware
5. Complete set of operators for each + conversion	
6. Descriptor based data-type with conversion [all hardware support for 0.]	minimal software

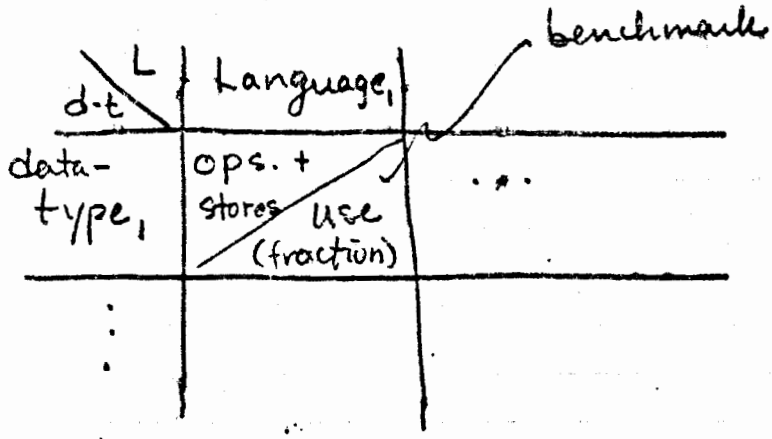
Epilogue

Although this long (somewhat redundant) monologue may appear to indicate a frustration, the experience has been invaluable to me as an observer in gaining understanding about problem-solving processes and working with and identifying a few truly competent people. Let's use this base (case study) to significantly increase our productivity (i.e., one competent person could have formulated, generated the alternatives, and evaluated them in either the elapsed time or certainly 1/10 the expended time of this mob) and lower frustration.

I hope the commercial instruction set data-types problem is defined and under control.

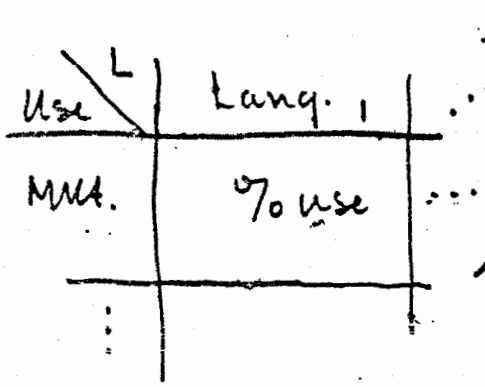
GB:ljp

Attachments (2)



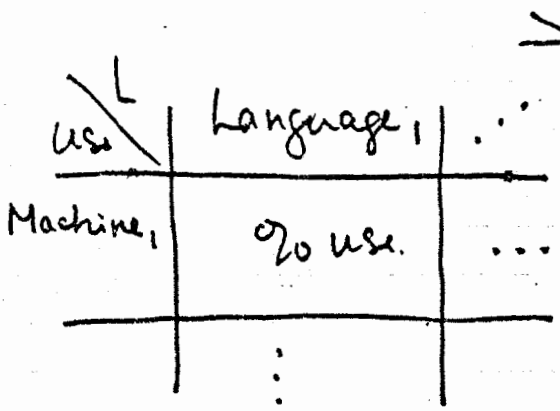
Specified by:
a. Standards of Language
b. Use

Problem in terms of languages, their data-types, and use



Language use % with market vs. time

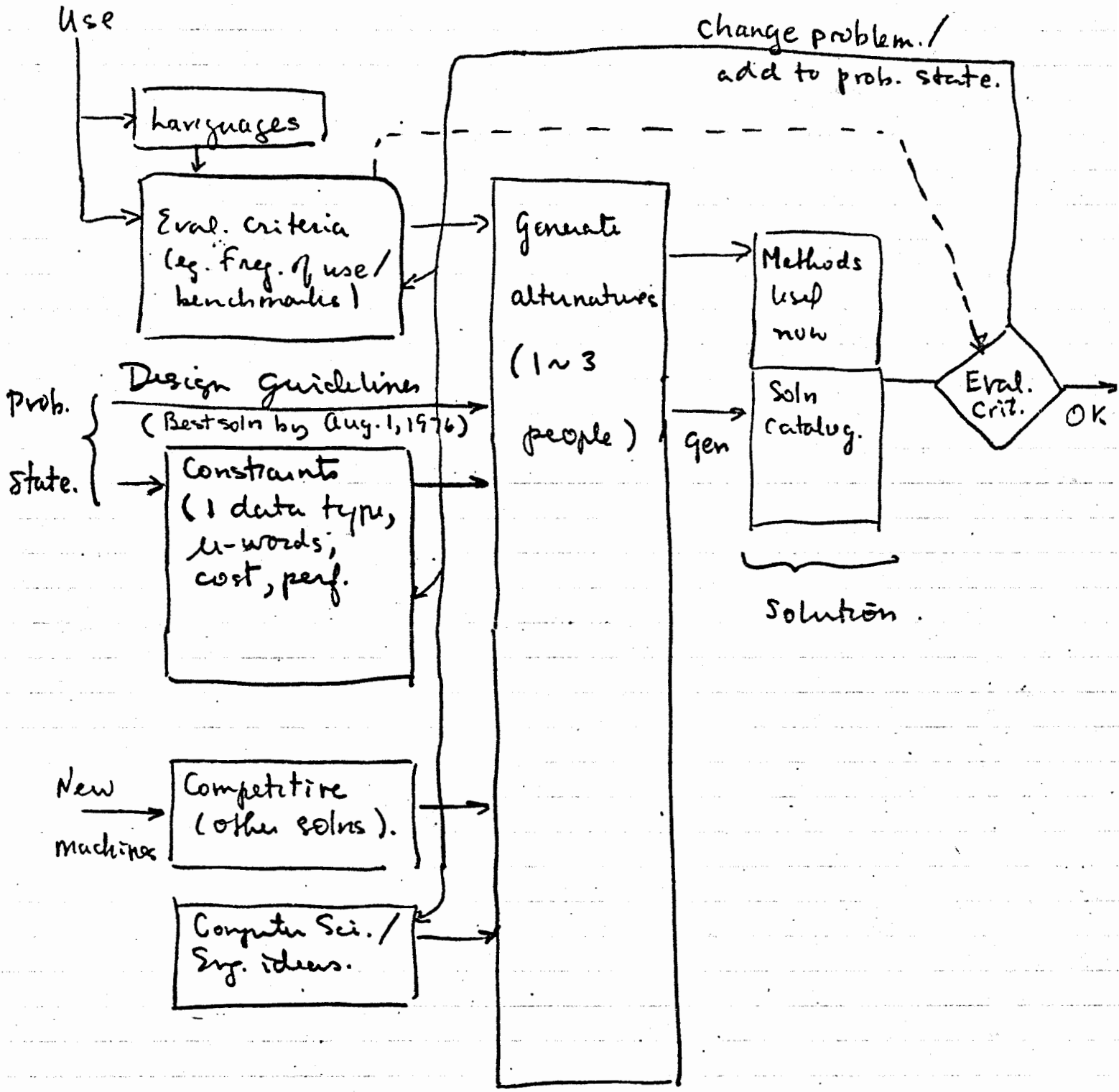
Implied need for machine use in mkt.



(Needed to decide which machines support a given data-type

Language use % with machines vs. time.

Problem in terms of support for a data type, and machine (given markets) versus. time.



Design Process To Generate Alternatives.

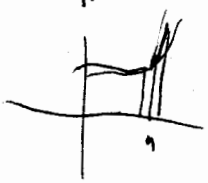
Human organization of designers, builders, sellers and distributors (environment)

Scientists, hardware/software engineers, architects, and marketers--general.

Three styles of engineers: cost, perf., cost/perf.; Organization theory is not changing the ideology of groups/people but setting up those and knowing that the response is highly predictable. Similarly, don't give products to groups with wrong ideology.

Attitudes as they affect design and use.

Specific styles of design and the models.



Architectural control - Unibus i/o, evolution, Unibus enforces some discipline, poor layout of devices registers, ambiguous specs cause multi-implementations, can't really be just a document - has to be a judge.

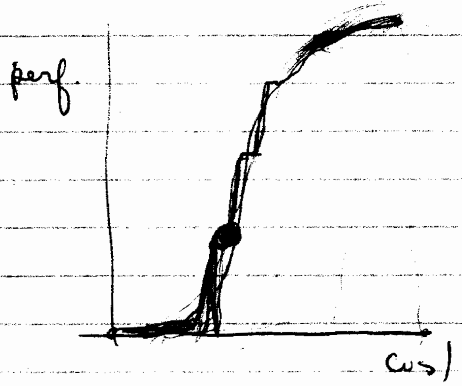
Human Organizations to evaluate buy and use (environment)

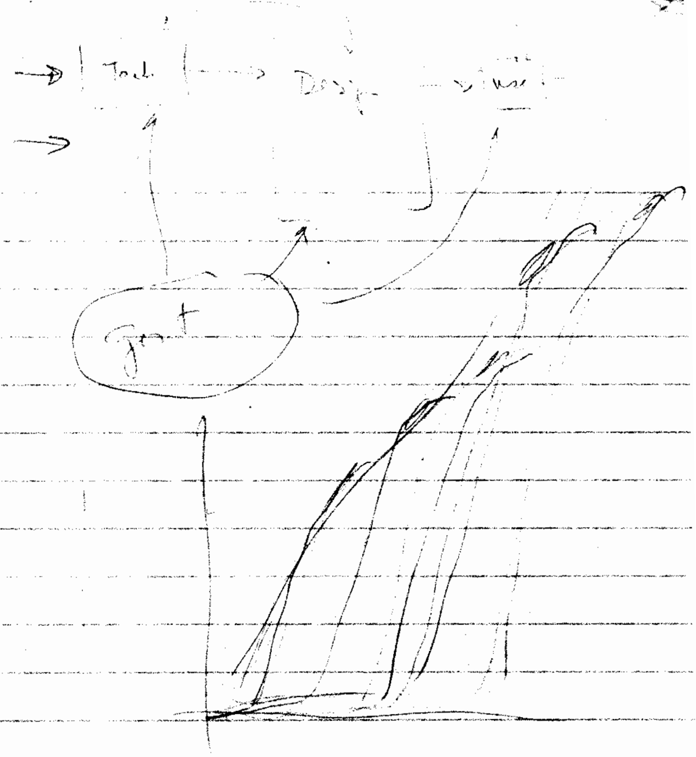
Users and the education problem: 2 books.

Competitive environment.

Concept: Stored Prog.
+
Technology < Semiconductors. / Disks |T

- Learning.
- Demand.
-



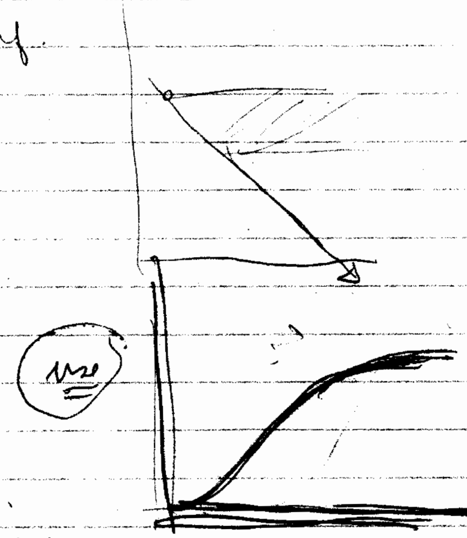


Performance: - raw time
- operations
- (...)
- System throughput.

~~Micros~~

- (mini)mal — smallest cost; const perf.
- connected
- new structures.

Micros — another (mini)mal machine
- a packaging.



Synth Bus. Lab - AEC, Military.
University:
comm.
Industrial (conservative nature of mfg.)

Software → Full Engineering Discipline

understanding — express problem. (eg. grammar)
Science.

↓

"Design discipline" —

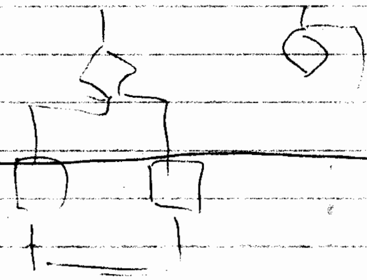
measures, training, laws, proofs., highly stylistic & design (like ckt design) synthesize process, eg. RLC filters.

production releases,

Economics.

[illegible]

languages → design rules, templates, Planarity of flowcharts.



Breakthroughs: Increased reliability.
" Security.
Better utility human engineering
" understanding (performance).

Initially just worried about getting a product at all.

Networks are inevitable econ. consequence of ↑ machines

Human Organization

Very conservative — because there is enough uncertainty in dealing with all the rest of groups internally.

- Engineers — short term oriented, highly disciplined, single goal — schedule, cost, reliability, producibility, performance, some combination
  Use to design + implementation including external interface — home and foreign. Encourage knowledge of use!
  Three types: cost, perf, cost/perf

Hamming: of constrained than rest of parts.

- Scientists: Eng. who can read, occasionally more objectivity
  serious analysis.
  needed to get any long term change

System Gen — Architects — like [illegible] counterpart, fuzzy goals, but some ideal in mind's eye
  Don't really land

- Programmers — tough time in getting all together, much more individualistic
  - Op. Sys. — similar phenomenon as with machine designers
  - Language — Basic everyone built one
  - Applic

Getting all synch is difficult, dangerous unless constraints and Cost goals are clearly stated together with a means of tradeoff eval.

Interface / Unibus came out of this — need more

Marketing — Very short term oriented, int. fact with profit — nearly ≡ to sales function. Former engineers

Sales — highly technical — eng. training

TANSAFL

~~Engineering~~ Adages

✓ No oil on surface —

✓ without a potential diff. nothing flows

✓ Lawyers are the semantic accountants
If lawyers are going to rule us, then maybe they should be educated.

✓ 3 kinds of engineers:

Gyroscope — people get lost in depth — can't return to right level.

✓ Marketing people are engineers who can't make it.
✓ Mgmt place to go when you're too old to work.
✓ Breadth vs Depth constant = Dilettant product

EMW. ✓ Drive + capability = K.

K Watch out for the professionals. ✓ Amateurs are more fun — no matter what —

~~$ vs fame~~

$ × freedom = ~~[illegible]~~ K.

$

fr

fame = ~ drive.

→ Lucky — I take them.

→ If I were to put a man on moon, engineers would stand on each other's shoulders

Hamming → Eng. turn to sci → math → seat of pants

Engineers do trivia — learn to invent
use others work.
part has gone down.

Gordon

Digital Interoffice Memo

Subject: CENTRAL ENGINEERING CHANGES

To: Operations Committee
Product Line Managers
Engineering Managers

Date: 22 MAR 77
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

Over the past year, it has become apparent that the organizational structure in Central Engineering needs to be modified to meet the general corporate growth and improve our ability to meet customer and product development needs. In reviewing this problem, the following goals were defined:

1. improve product and strategy alternatives for Marketing Committee approval;

2. improve interface relationships with Product Lines;

3. improve financial, control, planning and administrative system;

4. improve performance against schedule commitments; and

5. improve focus on longer range, fundamental engineering strategy issues.

Based on these goals we are restructuring Engineering. The following changes will take place over the next few months and be completed by the start of FY'78. The task to date has been centered at the overall group restructuring. As specific operational decisions are made, they will be communicated through Group Managers.

1. Bob Puffer will assume responsibility for Central Engineering Administration (including Personnel, Planning, Finance, Control and Engineering Services).

2. I will bring Tape and Disk Groups together as a Mass Storage Group under my direction.

3. Dick Clayton will assume management responsibility for the Terminals group and the Power and Packaging group.

4. Larry Portner will formalize a significant overhaul of the present "Red Book" planning process between the Marketing Committee, Product Lines and Central Engineering. The goals of this change are to have:

   . mostly system and product focus;

   . cleaner interfaces with the Product Lines and Marketing Committee;

   . better marrying of customer and engineerings expectations and reality;

   . the right community of interest between engineering and product lines;

   . documented plans with visible control; and

   . overall less hassle through better segmentation.

5. Refocus Corporate Engineering Management (my staff).

   Operational Issues

   . delegate more decision making latitude to the line Vice Presidents; and

   . provide greater administrative support and build an administrative system to support in future growth.

   Engineering Strategy Issues

   We will concentrate attention on the long term direction for growth and success of DEC's engineering activities. This will encompass: strategy, direction and organization. The parts include:

   . highlight long term/short term investment trade-offs for Marketing Committee decision making;

   . technologies and advanced development;

   . longer term product and program (e.g., RAMP) strategies; and

   . organizational planning and development.

GB:ljp

D I G I T A L INTEROFFICE MEMORANDUM

DIST:

Dick Clayton	ML3-3/E71
Julius Marcus	PK3-1/M29
Hank Allard	ML5-2/E93
Phil Arnold	ML1-3/E58
Al Avery	ML3/E35
Ted Baker	MR1-2/E69
Paul Bauer	ML1-3/E38
Bob Bean	ML5/E76
Leo Bennett	ML1-1/E24
Len Braberg	ML3-5/E35
Al Brown	PK3-1/M12
Jerry Butler	PK1/P84
Janice Carnes	ML3-3/E71
Joe Chenail	WX
Peter Christy	ML12/A62
John Clarke	ML1/E60
Peter Conklin	ML12-3/E80
Dave Cotton	ML12/E13
Brian Croxon	ML21-2
Bill Demmer	ML3-5/E35
Rattan Dhar	MR1-2/E78
Mike Donnelly	ML3-3/E71
Paul Durbin	Natick
Al Erny	MR1-1/P91
Ed Fauvre	ML21/E20
Howard Fineman	ML3-3/E67
Mike Flaherty	NA
Bob Flynn	ML21/E81
Lorrin Gale	ML1-2/E61
George Gerelds	ML5-3/E22
Carl Gibson	ML12/E13
Jim Gillett	Phoenix
Arnie Goldfein	ML3-2/A16
Bill Green	ML1-2
Steve Gutz	ML21/E20
Len Halio	ML5-2/E93
Ron Ham	ML5/E40
Jim Harnedy	ML21/E20
Bill Heffner	ML5/E76
Dick Hill	MR1-1/M74
Marty Hoffman	ML5/E40
Jim Hughes	ML12/E51
Bob Jack	ML1-3/E58
Malcolm Johnston	ML21-1/E81
John Jorgensen	MR1-1/M74
Dave Kiarsis	MR1-1/M74
Bernie Lacroute	ML3-5/E35
Tony Lauck	PK3-1/M10
Henry Lemaire	ML1-4/A97
Dick Best	ML3-2/A16
Don Alusic	PK3-1/M29
Jega Arulpragasam	ML5-2/E56
Paul Badum	DV (Boulder)
Vince Bastiani	ML5-3/E43
Bill Bazemore	ML12/E51
Jim Bell	ML3-2/E41
Ron Bingham	MR1-2/E85
Dick Brewer	ML5-3/E12
John Buckley	PK3-1/M29
Roger Cady	NT
Frank Cassidy	ML1-5/P53
Ed Christiansen	MR1-2/E78
Dick Clark	ML4-2/E27
Walter Colby	ML3-3/E71
Rick Corben	ML12/E13
Don Crowther	ML5/E72
Bob Daley	ML21/E20
Dezi Dezzani	ML5-2/E93
Bill Doll	ML12/E13
Tom Donovan	PK3/E15
Al Dziejma	ML5-3/E12
Ulf Fagerquist	MR1-2/E78
Heinz Findeisen	ML1-3/E63
Brian Fitzgerald	PK3-1/M33
Jim Fleming	ML3-6/E42
Bob Gafford	ML5/E40
Wayne Galusha	ML1-3/E58
Abe Gershnow	ML1-3/E62
John Gilbert	ML5-2/M40
Richard Glantz	MR1-2/E37
Dick Gonzales	ML6/E66
Mike Gutman	ML21-2/E32
John Haldeman	MR1-1/M74
Martin Hall	PK1
Bill Hanson	ML1-4/P11
Frank Hassett	ML5/E40
John Hess	ML1-3/E63
George Hoff	MR1-2/E47
Marv Horovitz	ML21/E10
Len Hughes	ML3-5/E35
Bill Johnson	ML5/E77
Bob Jones	MO/P53
Chet Ju	ML1-3/E63
Oleh Kostetsky	ML11/E52
Clem Lamarre	NT
Jim Lawrence	ML8-4/E86
Demetrios Lignos	ML3-6/E94
Tomas Loefgren	MR1-2/E17
Richard Loveland	ML12/E13
Peggy Maas	ML5-3/E12
Jake Magee	Natick
Dave Mahoney	Natick
Bill McBride	MR2-4/E14
Ray Melanson	ML4-2/E90
John Meyer	ML12-1/A11
Jim Mills	MR1/E37
Roy Moffa	MR2-1/M64
John Murray	Natick
Steve Orr	ML1-3/E58
Stan Pearson	ML12-3/E13
Bob Peyton	ML1-3/E63
Ralph Platz	ML3-3/E67
Dick Plutnicki	Worcester
Horace Prindle	MR1-1/E46
Larry Rasile	ML3-3/E71
Tom Rhodes	ML12/A62
Sheldon Robinson	ML12/E13
Ken Russ	ML3-6/E42
Brian Samuels	MR1-1/M74
John Sartory	ML4-2/E27
Grant Saviers	ML1-3/E58
Bill Segal	ML21/E20
Steve Sholkin	ML1-4/A97
Jeff Singer	MR1/E37
Kevin Smith	ML1-3/E58
John Sofio	ML21-1/E81
Keshava Srivastava	ML1/E58
Tom Stockebrand	AQ
Phil Tays	ML11-4/E53
Nate Teichholtz	ML12/E13
Walter Tetschner	ML5-3/E12
Mike Tomasic	ML3-3/E71
Pete VanRoekens	ML3-3/E71
Ed Vrablik	ML1-1/E24
John Wanamaker	ML11-2/E83
Art Williams	ML5-3/E12
Ed Wright	ML11/E52
Cary Wyman	MR1/E37
Dick Yen	Taiwain
Ted Zajdel	PK3-1/M12
George Lord	ML1-2/E60
Si Lyle	MR1-1
Joe Madden	ML4-5/E23
Bob Magers	ML3-3/E54
Jim Marshall	ML3-3/E71
Ed McDonough	ML1-4/A97
Mike Mensh	NT
Jack Mileski	ML12/E51
Bob Mitchell	ML3-3/E54
Bill Munson	ML12/E13
Bob Niro	PK3-1/M34
Jackie Pakarinen	MR1/E75
Dian Pekin	ML12/E13
Bill Picott	ML12/E13
George Plowman	ML12/A62
Roger Pothier	MR1-2/E74
Tom Rarich	ML12/E51
Paul Rey	ML8-4/E86
Mike Riggle	ML1-3/E58
Bob Rottmayer	ML1-3/E58
Al Ryder	ML3-3/E71
Frank Sanjana	ML3-3/E71
Bob Savell	ML5-2/E50
Dave Schroeder	PK3-1/M33
Jack Sharp	MO/P53
Ed Siegmann	ML1-3/E53
Bill Smith	WF
LeRoy Smith	ML4-2/E27
Pat Spratt	ML12/E13
Gil Steil	MR1-2
Richard Svirsky	Natick
Steve Teicher	ML5-2/E93
Dick Testa	ML21-1/E81
Mike Titelbaum	ML1/E65
Charles Turley	MR1/E37
Walt Vignault	ML3-3/E71
Jim Wade	RE
Jane Ward	ML12/A62
Mel Woolsey	ML12/E13
Mike Wurster	ML5-3/E12
John Xenakis	MR1-1/M74
Chuck Youse	ML1-3/E63

Copies to OOD for Woods + Nat

Draft
Nassij

SUMMARY OF SPACE STRATEGIES

The following is a summary of the space strategies submitted by the Operations Committee members. The details of these strategies are included in the individual Operations Committee members sections following this summary.

GORDON BELL

- Maintain System Engineering, VAX, Central R&D, Central Standards, Administration, and a portion of Unibus Systems and Software Subsystems in the Mill.
- Locate Disk, Tape and Small Storage, & SDC with manufacturing.
- Locate Terminals, Small Systems, Commercial Software, Scientific and Industrial Software, and a portion of Unibus Systems and Software Subsystems with the Product Lines.
- Locate Hardware Services, and Software Services with user groups.

AL BERTOCCHI

- Maintain direct reports and Corporate HDQ groups in greater Maynard.
- Relocate service groups with F&A users and eventually relocate Revenue Accounting, Accounts Payable, Employee Expense Reports and Payroll.

WIN HINDLE

- Maintain LCG in Marlboro.
- Maintain Corporate Personnel, OEM, LDP, IPG, EPG and John Holman and his staff in greater Maynard.
- Locate CSS U.S. in Merrimack (East) and Santa Ana.

March 8, 1977

TED JOHNSON

- Maintain Corporate Sales and Services, NORAM management, Corporate Promotions, GIA, and Sales Training management in Maynard.
- Locate Sales and Services "Clusters" in "Mini-Maynards" with Marketing and Development groups.
- Locate Customer Education outside greater Maynard (Boylston or other).
- Maintain Field Service Logistics Operations in Woburn.

ANDY KNOWLES

- Locate DCG and specific Central Engineering groups in common facility near Maynard, i.e. Eastern Massachusetts/ Southern New Hampshire.
- Maintain DCG warehouse in Marlboro area.
- Locate a DCG warehouse in Phoenix and Europe.

KEN OLSEN

- Maintain office and staff in 12-1 and eventually occupy 12-B and Building 10.

STAN OLSEN

- Locate all Commercial Product Groups in Merrimack, N.H. including those groups currently in Maynard, Nashua and Hudson, N.H.

March 8, 1977

add problem of interchange of disciplines

Gordon

Digital Interoffice Memo

Subject: Moving Parts of Engineering to New Hampshire (Some Alternatives)

To OOD
Oleh Kostetsky

Date: 9 SEP 76
From Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

CC: OC
Jim Bell
Dave Brauer
Al Pfyffer

Some thoughts for your perusal and comment.

Oleh, Bob and I are going to put together the 5-year organizational plan (organization, people, function, place (space)-who, what, where) for OOD).

Oleh will get the space and size numbers for OOD groups together and we'll examine the alternatives (seeing what they imply). A schema for representing the alternatives in terms of the intercommunication within engineering is given in the first figure. It permits the moves to be considered in terms of the interactions.

The first section posits general principles which I'd very much like your reaction to. We should attempt to get agreement on the principles (goals and constraints) and then specific moves (designs) will fall out.

The second section shows some alternatives. I'd like to get some more alternatives, their numbers, and then tabularize the pros and cons to select one.

General Principles

0. Maynard - place to decentralize from. Eventually, may only be:

   a. Overall PMS, ISP, Network Lanugages, Architectural Standards.

   b. Standards storage. (Co-locate with developt user)

   c. Central R&D with tracking of all Advanced Development which co-locates with products.

   d. Central Library.

   e. Central Product Review and Product Accounting.

   f. FS RAM Engineering Techniques and Document Standards.

   g. EDP and Product Monitoring Project tool development

   h. Basic power, emission, package design and standards.

   i. Systems management. / system testing / performance.

j. PRgm

1. Since integration of FS with hardware drastically affects maintenance costs, all groups should supply space for appropriate FS (RAI) people. All groups should supply space for documentation.

2. Specialized, market-pull products should be developed with the market group.

   a. Applications and Application Libraries.
   b. Market-related languages (BASIC?, COBOL, DBIS DIBOL, FORTRAN FOCAL, RPG).

3 Operating systems and hardware co-location because:

   a. Continued tradeoff of software into hardware.

   b. Diagnostics and handlers are essentially operating systems/hardware and FS tradeoffs.

   c. By placing Operating Systems with Business or Scientific Group might insure that there will be no commonality of Operating Systems across markets.

4. Technology - push components should tend to be developed near factories with the process:

   a Printing mechanisms - not the user interface part.
   b. Disk platters, and transducers.
   c. Tape transducers.
   d. Semiconductor processing.
   e. Board fabrication and logic testing.

5. Final level product packaging power, logic, functional specs, etc. are basically technical push and will be with development groups.

   a. This implies there is support from LSI, packaging and power.

   b. Memories could split-up and locate a part with each hardware group. As cpu becomes even more memory intensive, the need is great to know how to build memory hierarchy (MOS/CCD or MOS/Bubbles) which are highly cpu dependent.

6. When techical push/market pull coincide, they could be co-located.

   a. Krypton. (problem: all groups Sci/Bus use these and co-location may jeopardize commonality).

   b. VT/LA.

   c. Communication Systems (Hardware and Software).

7. In addition to the Business and Scientific System focii, we would do well to consider a communications switching systems focus:

   a. All communications hardware and operating systems support.

   b Multiplexors and remote concentrators with line printers, etc. end-use products...across all markets.

   c. Packet-switched systems...due to near term inevitability.

   d. DECNET and its conventions.

   e Terminal support.

   f. Not terminals, as they are relatively independent of the switching.

Some Alternatives

1. Consider the base products as shown in the first figure. The intercommunication among the various products can now be shown. Use this base and postulate your own plan!

2. The current plan has the Business Products, Terminals, and LSI-11 Boards market-only going.

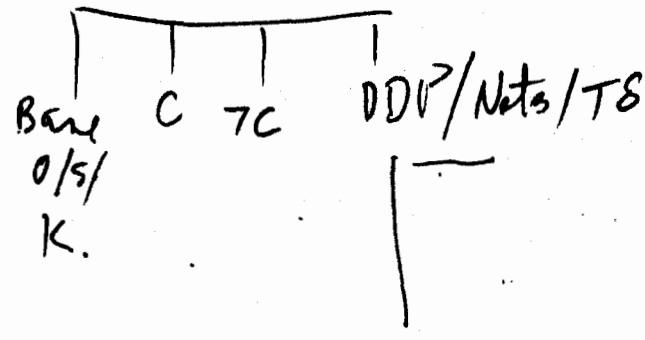
3. Move Terminals + Communications. This would place engineering near marketing in both cases.

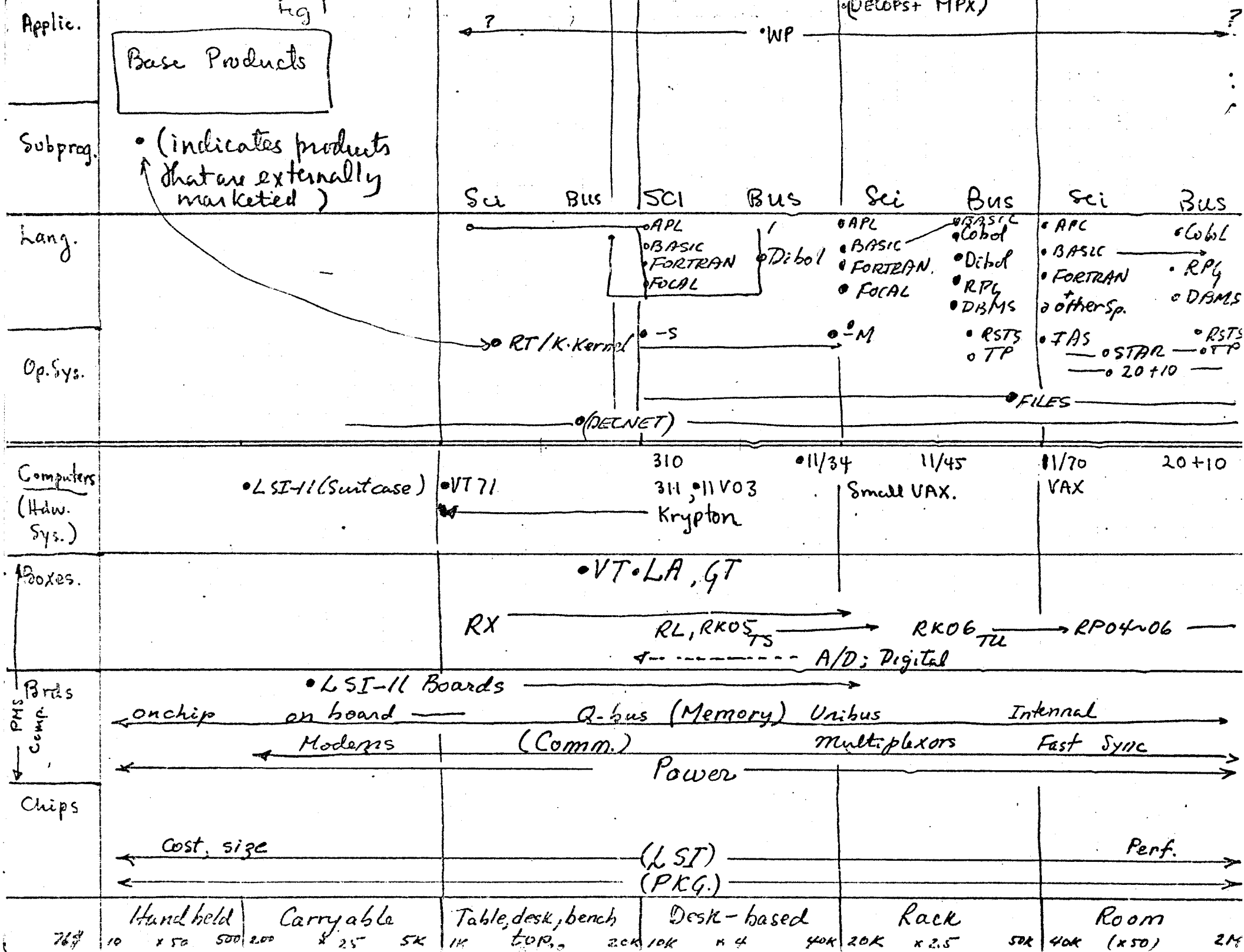
4. Move Terminals and Low End (LSI-11 boards and/or Krypton) This would insure a more business orientation for Krypton It's not necessary (perhaps not even desirable) to have the LSI-11 boards and Krypton together. Communications could also move when necessary.

5 Move VAX and Communications since VAX will be the main system growth. It will more naturally solve the 32-bit problem in the scientific market hence, could get a more business orientation.

GB:ljp

Attachments

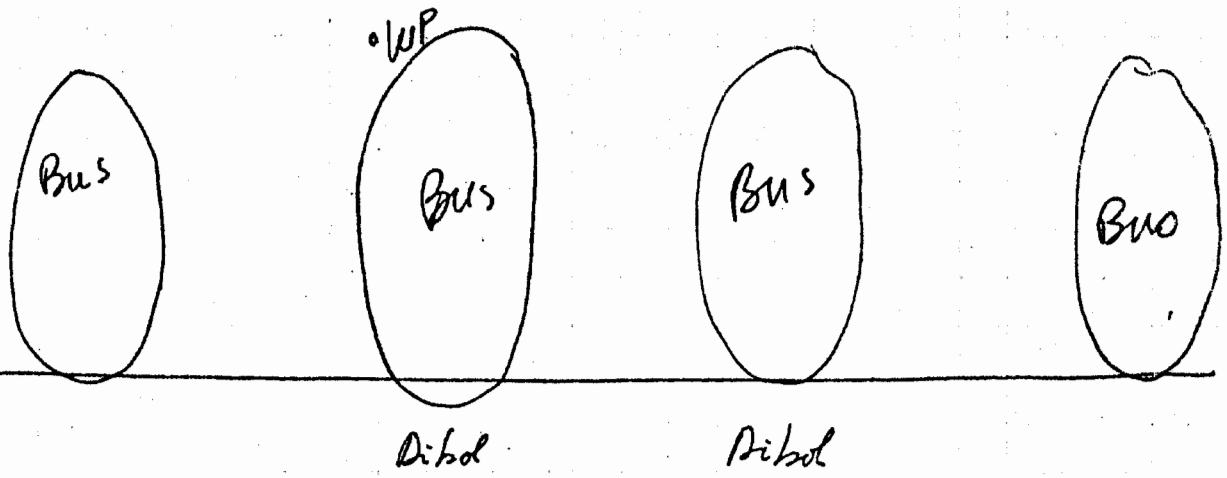



Applic.
Base Products
Subprog.
• (indicates products that are externally marketed)
Lang.
Op.Sys.
Computers (Hdw. Sys.)
Boxes.
Boards
PMS
CSMC
Chips
Sci
Bus
SCI
Bus
Sci
Bus
Sci
Bus
• APL
• BASIC
• FORTRAN
• FOCAL
• Dibol
• Cobol
• RPG
• DBMS
• RT/K Kernel
• -S
• -M
• RSTS
• TP
• IAS
• STAR
• 20+10
• FILES
• (DECNET)
• LSI-11 (Suitcase)
• VT 71
310
311, • 11V03
Krypton
• 11/34
11/45
Small VAX.
11/70
VAX
20+10
• VT • LA, GT
RX
RL, RK05 TS
RK06 TU
RP04-06
A/D; Digital
• LSI-11 Boards
on chip
on board
Q-bus (Memory)
Unibus
Internal
Modems
(Comm.)
multiplexors
Fast Sync
Power
Cost, size
(LSI)
(PKG.)
Perf.
Hand held
Carryable
Table, desk, bench top
Desk-based
Rack
Room
76#
10
x 50
500
200
x 25
5K
1K
2CK
10K
x 4
40K
20K
x 2.5
50K
40K
(x 50)
2M

Applications

Current Plan
- no commitment
- Existg Bus-oriented

Fig 2



Op. Sys and Languages

Basic Hardware and Hard. Cog.

VT71

LSI-11 Enhancements.
• VT/LA enhancements (Moffa)

Bus Pkg

Bus Pkg

Components.

| Carryable | Desk-top | Desk-base | Rack | Room |

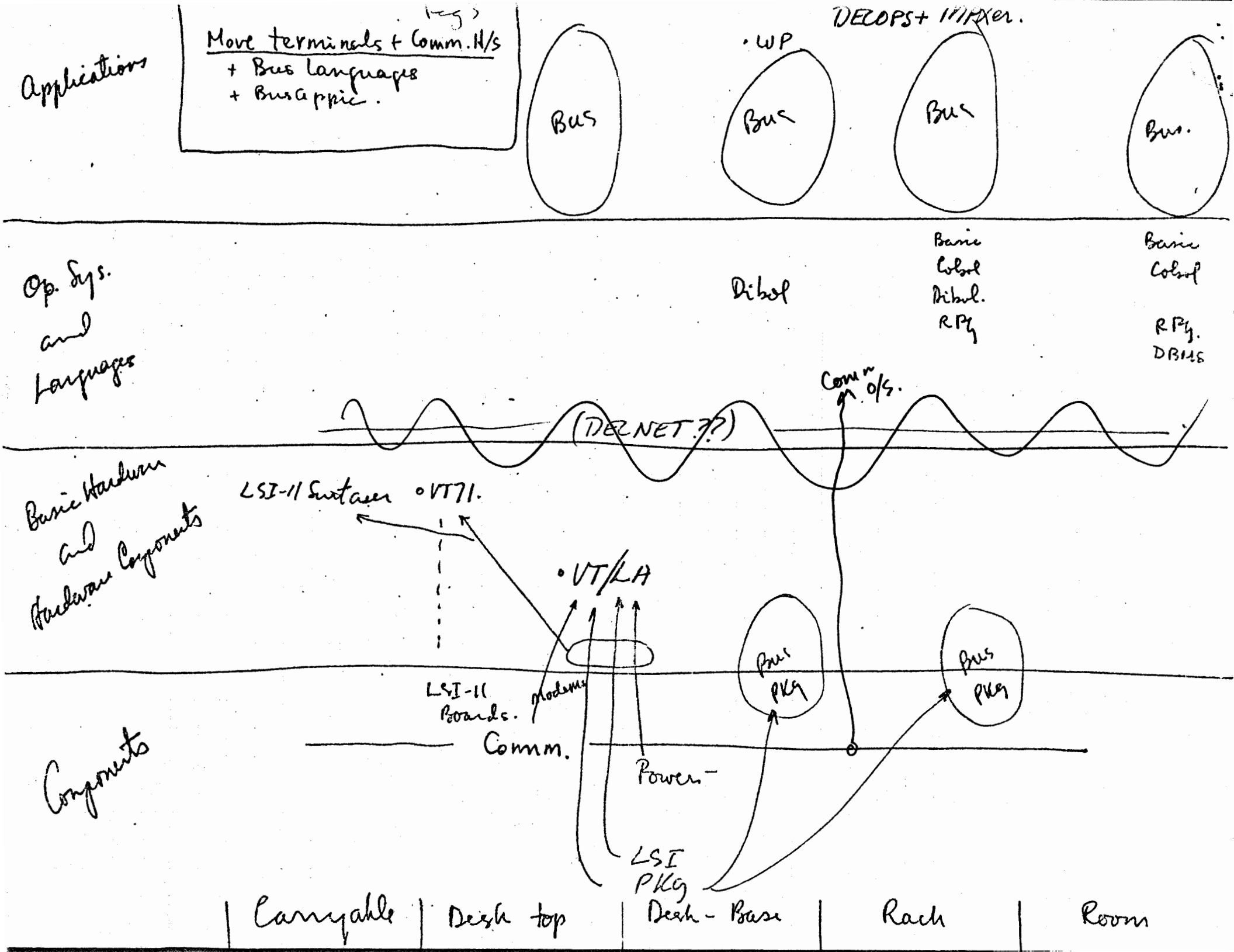

Applications
Move terminals + Comm. H/s
+ Bus Languages
+ Bus Applic.
Bus
WP
Bus
DECOPS + MIXER.
Bus
Bus.
Op. Sys. and Languages
Dibol
Basic
Cobol
Dibol.
RPG
Basic
Cobol
RPG.
DBMS
(DECNET??)
Comm. O/S.
Basic Hardware and Hardware Components
LSI-11 Systems
VT71.
VT/LA
Bus PKG
Bus PKG
LSI-11 Boards.
Modems
Components
Comm.
Power
LSI PKG
Carryable
Desk top
Desk - Base
Rack
Room

Fig 4

Move low end and terminals
+ Bus Languages
+ RSTS
+ Bus Applications
+ Bus Op. Sys.

Applications

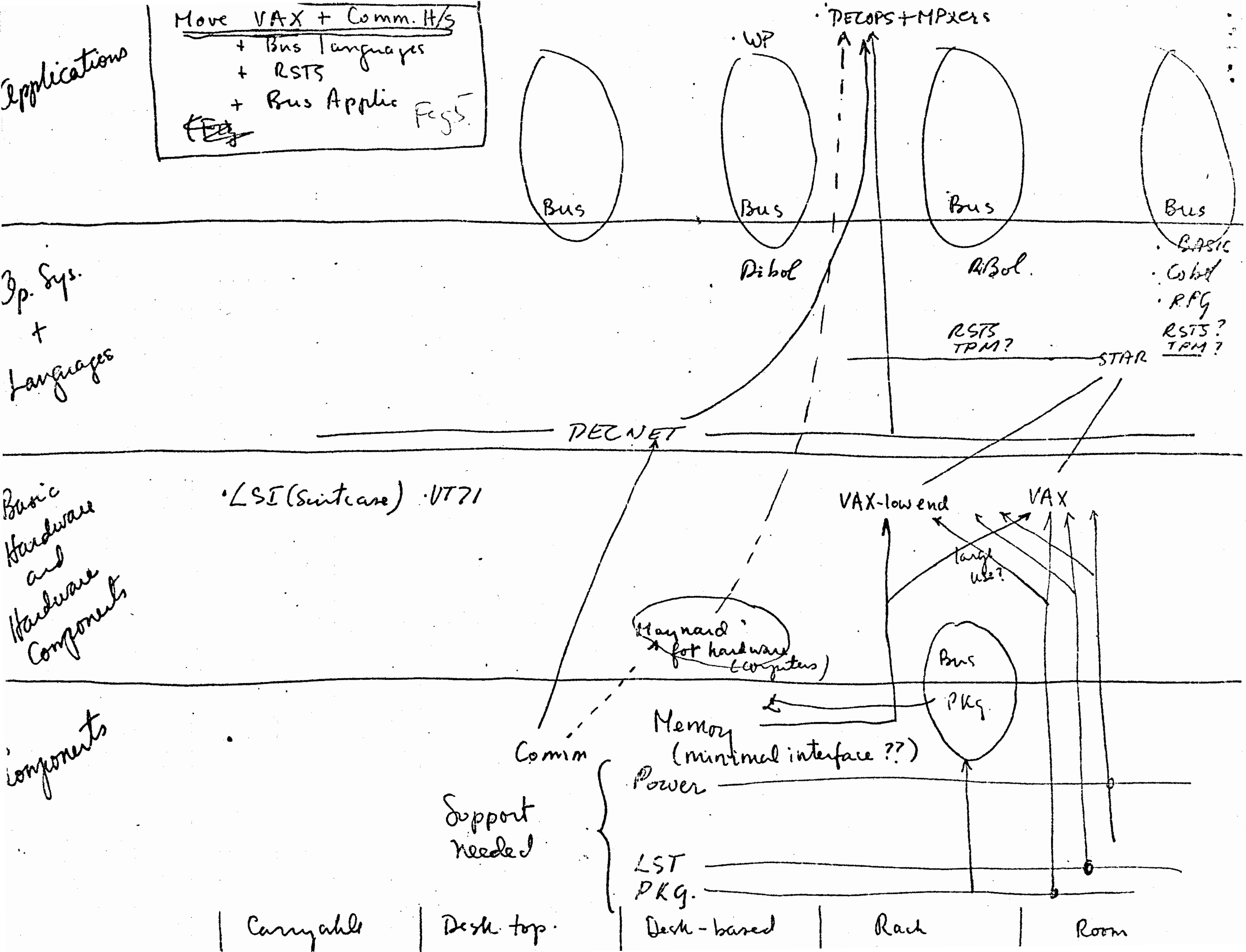
Op. Sys and Languages

Basic Hardware Systems and Components

Components

·WP
·Dibol.
·Dibol
·BASIC?
·Cobol?
·RPG?
·RSTS?
·TPM?
·RT/K Kernel.
·RSTS?
·TPM?
·LSI-11 (Suitcase)
·VT71
·Krypton
Note not necessarily together!
·VT
·LA
·LSI-11 Boards
Memory?
Power?
LSI?
PKG?
Bus
Bus
Bus
Bus
Bus Pkg.
Bus Packaging
Note Some Support Required.

| Carryable | Desk-top | Desk-based | Rack | Room


Move VAX + Comm. H/S
+ Bus languages
+ RSTS
+ Bus Applic
Fcg5
Applications
WP
DECOPS + MPxers
Bus
Bus
Bus
Bus
Op. Sys. + Languages
Dibol
Dibol
BASIC
Cobol
RPG
RSTS?
TPM?
RSTS?
TPM?
STAR
DECNET
Basic Hardware and Hardware Components
·LSI (Suitcase) ·VT71
VAX-low end
VAX
large use?
Maynard for hardware (computers)
Bus
Pkg
Components
Comm
Memory (minimal interface ??)
Support needed
Power
LST
PKG.
Carryable
Desk top
Desk-based
Rack
Room

GENERAL GROWTH TRENDS AND ORGANIZATION SOLUTIONS

1. LOWER LEVEL OF INTEGRATION $\Rightarrow$ LSI FOR COST

   $\Rightarrow$ LSI FOR PERFORMANCE

2. HIGHER LEVEL OF INTEGRATION $\Rightarrow$ APPLICATIONS

3. MORE (CLEAR) CHARTER SEGMENTATION (I.E. IN FACTORY/ MARKET/PRODUCT) $\Rightarrow$ BETTER CENTRALIZED

   PLAN, ROLL-UP, CLEAR STANDARDS, GOALS, AND PLAN TESTING/TRACKING $\Rightarrow$ STAFF AND TOOLS!

4. MANUFACTURING $\Rightarrow$ FOCUSED VERSUS DEFOCUSED FACTORY?

GB
11/6/75

NEW TECHNOLOGIES TO BE ASSIGNED, WATCHED, AND ASSIMULATED

(IN PRIORITY) *-REQUIRES ORGANIZATIONAL/PERSON CHANGE

*COMPUTERS THAT ARE ULTRA RELIABLE, DON'T FAIL, AND/OR REPAIR THEMSELVES ⇒ FS/ENG./R&D

SEMICONDUCTOR TECHNOLOGY ⇒ STRENGTHEN ASAP IN CPU + SEMI GROUPS

ELSI FOR LARGE COMPUTERS

ELSI FOR SMALL COMPUTERS

*TERMINALS (HIGH QUALITY PRINTING, ALL TERMINALS ⇒ GRAPHICS) ⇒ ?

*TERMINALS:DETERMINE SMART/DUMB BOUNDRY ⇒ ADV. DEV. + TERMINALS

*MULTI-PROCESSOR/MULTI-COMPUTERS SYSTEMS ⇒ PROJECT HOME NEEDED!

VIRTUAL MEMORIES--HIGH AND ESPECIALLY LOW END ⇒ ADV. DEV.+ GROUPS?

*MOVEMENT OF HARDWARE/SOFTWARE BOUNDRY TO MORE COMPLEXITY IN

HARDWARE ⇒ COMM, DISKS, TAPE, TERMINALS + ADV. DEV.

*MEMORY HIERARCHIES IN SUB-SYSTEM ⇒ DISK SUBSYSTEMS GROUP.

ULTRA RELIABLE SOFTWARE ⇒ ADV. DEV.??

BETTER HUMAN ENGINEERING ⇒ R & D? TECHNICAL AUDIT?

ADVANCED MEMORIES: CCD, ELECTRON BEAM ⇒ ADV. DEV.?/ MEMORY GROUP

TV TECHNOLOGY (CABLES, VIDEO DISK, COLOR MOUNITOR) ⇒ ADV.DEV.

HIGH SPEED, LOW COST, SERIAL LINK (E.G. CATV, FIBERS, COMP) ⇒ ?

COMPUTER USE IN OFFICE ⇒ ADV.DEV. + BUS PRODUCTS + COMM.

BETTER INTERFACE TO CONTINUOUS (ANALOG) DOMAIN ⇒ ADV.DEV.

SIGNFICANTLY EASE USE OF COMPUTERS (E.G. APPLICATIONS PROGRAM GENERATION) ⇒ R.

VOICE I/O ⇒ R

GB
11/6/75

INTER-GROUP INTERFACES

0. GENERAL TECHNIQUES

PEOPLE ROTATION

USE CONTROLS ($)

COUPLE VIA MATRIX TO OTHER ORGANIZATION

SEGMENT BUSINESS TO DECOUPLE ENGINEERING (I.E. DECENTRALIZE --COUPLE ENGINEERING TO A "DIVISION")

PHYSICAL LOCATION

1. MANUFACTURING

HOW DO WE SUPPORT DEFOCUSED FACTORIES?

MOVEMENT OF PEOPLE TO SUPPORT AND/OR DESIGN AT THE FACTORY IN COMMODITY (I.E. TECHNOLOGY)-ORIENTED AREAS (E.G. DISKS, TAPE, DUMB TERMINALS, MEMORY)
MUST CO-HABIT WITH MFG.ENG. (TEST ENG., PROCESS ENG., ETC.)

2. PRODUCT/LINE

HOW DO DESIGNERS HAVE UNDERSTANDING OF USE? (ROTATION AND P/L TASKS)

CHARTS

MUST MATRIX WHERE COMMUNICATION IS POOR!

WILL BECOME A JUNGLE WITH "50 PRODUCT LINES"
NEED CLOSER LIAISON WITH P/L ENGINEERING

3. FIELD SERVICE

QUALITY ADV. DEVELOPMENT

RAISE interest

JOINT BUY-IN MATRIX
Emphasis on serviceability

4. SOFTWARE SUPPORT (SEE F/S)

5. CSS ⇒ MATRIX

USE AS EARLY WARNING AND ADV. DEVELOPMENT GROUP.

6. EUROPE AND CANADIAN PRODUCTS!

GB 11/6/75

DEC-EXTERNAL-GROUP INTERFACES

1. TECHNOLOGY ⇒ GENERALLY ORGANIZE TO "MONITOR AND BUY"
   (AD HOC NOW)

   SEMICONDUCTORS ⇒ MORE DESIGNS OUTSIDE

   MAGNETICS ⇒ CATCH-UP!

   NEW DEVICES ⇒ ?

   PROGRAMS ⇒ SET TO STIMULATE THIS MARKET AND SUPPLY
   PATENTS BUYOUT

2. EXTERNAL STANDARDS ⇒ ?? GROUP CENTRALIZED

   SAFETY (UL, CSA, VDE)

   EMI

   INFORMATION PROCESSING (ANSII, ISO, CCITT)

   INTERFACES OF HARDWARE (NBS, CBEMA, GSA)

   LEGAL

3. CUSTOMER (HOW/DOES HE USE OUR MACHINES?)

GB
11/6/75

INTRA-ENGINEERING INTERFACES

(AND GROUP PROBLEMS)

Process — Poor on control.

Product Mgr. / $ Emphasis on products profit

ADV. DEV. ↑ poor. Both

GETTING ACCEPTANCE OF VARIOUS PRODUCTS (TECHNOLOGY TRANSFER)

ESTABLISHING THIS FUNCTION IN VARIOUS GROUPS.

DEVELOPMENT

BETTER SYSTEMS FOCUS

HARDWARE/SOFTWARE CO-LOCATION

H/S CONTROL EXPERIMENT (VAX) HIGHLY MATRIXED

ARCHITECTURE CONTROL AND PLAN ⇒ WHERE??

BETTER DISKS ⇒ PEOPLE

BETTER DISKS AND MEM SUB-SYSTEM ⇒ NEED SYSTEM PEOPLE

LOW END PRODUCT PLETHORA ⇒ ~~MM~~ FUNCTION

HIGH END PLAN ⇒

SUPPORT

SEE MANUFACTURING

GB (CAN HE) (DOES HE WANT) TO "RUN" SUCH AN ORGANIZATION?

GB
11/6/75

TRAINING

GENERAL BUSINESS ($, MARKET, PLANNING, SCHEDULING, RESOURCE ALLOCATION)

MARKETING AND P/L AWARENESS ⟹ ROTATION THROUGH P/L'S

(ESPECIALLY IMPORTANT AS OUR BUILDERS DRIFT AWAY FROM BEING USERS).

ALSO, TAKE ON P/L CONTRACTS IN CE

TECHNICAL

EVENTUAL RETRAED (WITH SLOWER GROWTH)

HARDWARE PEOPLE LEARN MORE SOFTWARE

NEW SKILLS FOR BOTH LOWER LEVEL INTEGRATION

HIGHER LEVEL OF INTEGRATION REQUIRES INDUSTRY ORIENTATION (E.G. BANKING, MANUFACTURING)

PEOPLE ⟹ LESS-ORIENTATION

MANUFACTURING SKILLS

GB
11/75

Gordon Bell

FEB 18 1974

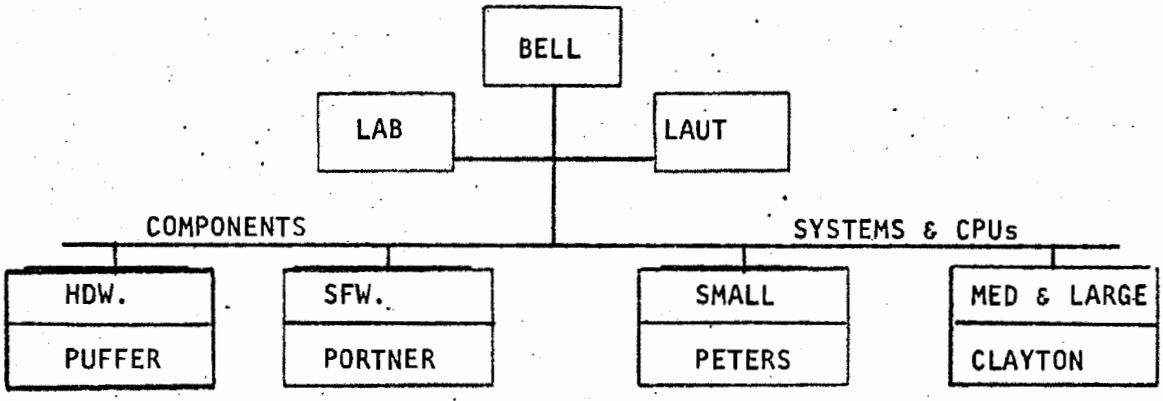
MINUTES OF BERMUDA WOODS MEETING
FEBRUARY 10, 11, 12, 1974

Those present: Ken Olsen, Win Hindle, Ted Johnson, Andy Knowles, Gordon Bell, Al Bertocchi, Pete Kaufmann

Secretary: John Fisher

1. CONCLUSIONS

A. ENGINEERING -- The Central Engineering organization was agreed to as follows:



Implementation steps are as follows:

1. Win will discuss with Clayton.

2. Win, Gordon and Andy will announce to Puffer, Portner and Peters.

3. Gordon will pull together group to define the next level of the organization.

4. Changes will be gradually implemented and completed by July 1, 1974.

B. MARKETING -- Approved the startup of Andy's Component Business and a change in the VP responsibility for OEM, Industrial and LDP. The changes will be made in the following steps:

1. Andy will begin a low-key startup of his "new Product Group" in Marlboro. He will finalize his plans for (1) organization, (2) marketing, (3) budget, (4) name, (5) logistics, (6) engineering and (7) people.

MARKETING (continued)

2. Responsibility for OEM, LDP and Industrial will be transferred to Win and completed by July 1, 1974. The division of the 11/45 group will also be accomplished by July 1, 1974.

3. The February Board of Directors meeting will consider the appointment of new VPs and/or O.C. members.

4. Group VPs will emphasize strengthening the Product Line organizations in the context of creating strong Marketing Divisions focused towards one of the primary DEC businesses of:

   Components

   OEM

   End-User

   Government (some day)

C. Discussion of the 1975 growth strategy was deferred to the March Budget meeting.

A summary of the detailed discussions follows:

2. ENGINEERING

The following points were made regarding the Central Engineering organization headed by Gordon:

1. Everybody wants Gordon to sound the alarm if administrating the large group becomes a significant distraction.

2. Gordon will have a small group for new ideas using creative guys like Stockebrand and Kronenberg.

3. After considerable discussion directed toward Clayton heading up the entire Systems Group, it was agreed that Peters heading up a Small Systems Group would be a better utilization of our talents.

ENGINEERING (continued)

4. Gordon and his people will define the detailed organization in the context of the suggested organization outlined in Appendix 1. (They will also suggest changes required by Peters' resignation.)

5. With the exception of Tom's Terminal, no change was made to the Engineering now being done in the Product Lines. Ken asked Gordon to continue to look at Centralizing things like A/D, RTs and COMM.

6. The Finance Department should cut the business by Products and Systems as well as Markets to measure the effectiveness of the Central Engineering Group.

7. Modified algorithms for Organization and Funding are attached as Appendix 2.

3. COMPONENTS BUSINESS

Approval of Andy's Components Business finalizes cutting the business by terms as well as by Markets, i.e., Components, OEM and End-User. The following points were made:

1. Andy will be selling the same products as the rest of the Company but without services or software.

2. His goals will be to (1) get our share of the components business, and (2) keep end-user product lines (offering end-user services) out of the components business.

3. Ted anticipates difficulty in maintaining a field split between Components, OEM and End-user terms, and when he works this through he will discuss it with the O.C. Andy will use 66K FT^2 in the Marlboro Tower, split evenly between warehouse and administrative space for Marketing, Finance and Engineering. By mid-1976 he expects to have a 15K FT^2 warehouse and depot in the West and Mid-West.

4. Each of the VPs agreed to assist Andy in staffing his proposed organization outlined in Appendix 3.

5. Andy listed the following areas for which he will develop detailed plans:

A. Organization
   a) Plan
   b) Schedule
   c) Execution
   d) Report to O.C.

POSSIBLE ENGINEERING ORGANIZATION

- Personnel and Education
- Plans, Review, Measures
- Process and Standards
- Software
  - Systems
    - 8
    - 11-S
    - 11-L
      - Nets
    - Languages
    - Standards
  - Documentation
  - Applications
  - Software Support
  - Diagnostics
    - Field
    - Mfg./Eng.
- Options
  - Disks
  - Tapes
  - Printers + Unit Record I/O
  - PS (and Packaging?)
  - Support (draft, models, auto=design, repro)
- Systems
  - Small
    - LSI
    - 8
    - Terminal
  - Mid
    - 11/05
    - 11/40+
  - 11/45-11/85+
  - 10
  - 15
  - Adv. Dev.
  - Adv. Architecture
- PL Engineering

Kaufmann

- Housings Eng. & Mfg.
- Memories Eng. & Mfg.
- Cudmore
  - Testing
  - Components
  - Assembly Line Systems Eng.
- Process Eng.

Stockbroad support.

Phil
Lorrin LSE

Goals
new CPU + system
integrate 11 family & family control

G. Bell
2/7/74

Measure

Nov 74

BURNING ISSUES ENGINEERING RE-ORGANIZATION SHOULD ADDRESS

0. Interface to markets; interface to manufacturing.
1. Low end computer products.
2. Including, terminals as low end products.
3. System products versus collection of options that happen at random.
4. Better integration of hardware/software.
5. Compatibility. Also 11/11; 10/11; nets ok
6. Reliability and producibility. better
7. LSI--getting there.
8. Semiconductor memories phasing and opportunities for faster machines.
9. Product range-funding.
10. By structuring a particular way, will we build obsolete products according to organization--thereby missing opportunities?

started ~~Sept~~ 74

To do

Better still need improving.

optimize → 1. local hill-climbing Δ disks; 2. hardware-software tradeoffs

Optimization of products

Lacking fundamental co-ord. between hard|soft|system

RS

Dumb things, Hassle content (clearer who's doing what)

~~Perceived~~ 1-level. optimized

Better productivity
a. People training
b. better products
c.

overly focus on low-level

Identify conflicts

G. Bell
2/7/74

PROPOSED PRODUCT GUIDANCE AND STRATEGY COMMITTEES

NOV

Networks

8-Systems (Willis/Clarke)

11/05R (Teicher)

11-Midi (Delagi)

11/55

11/85 (Demmer)

10 (?)

Systems

+ RT
mini
Lang
user

Terminal Coordination (Devlin)

Primary Memory (Lemaire)

Disk and Tapes (Saviers/Peyton)

Unit Recod I/O (Corell)

Analog/Digital (Peters/Savell/Wallack)

Components (options)

Power, Packaging (Rey/Nevala)

LSI
Alpha tools, PDP-10

R+D
Mfg.
Diag

Ground Rules

1. Guidance for product planning and product management.

2. Advisory--generally chaired by 1 or more responsible line manager for product(s).

3. Consists of Engineer, Mfg. (2x2), Service, Sales, and using Product Line customers.

4. Manager responsible for profit; 2 wide open 1/2, 1, or 2 day Woods Meetings; a 3 year plan which is a maximum of 5 1/2 months obsolete; and a short plan for yearly product review.

G. Bell
2/7/74

o Software — hardware organization.

ORGANIZATIONAL AND TERRITORIAL ISSUES

1. Packaging, power supplies, power distribution, shipping containers, environmental testing, metals engineering, design and mfg. of metals. Also, individual product group packaging. Strong central group with dotted line reporting to product, seems the way to go. We still can gain by more centrality. Less need to bend sheet metal is way to go.

2. Design automation. Central group (Vrablik) is beginning to function for PC boards, back panels, automatic insertion and data base. Splinters for Register Transfer simulation (programming), Logic Simulation (Gale), and Mask Generation (Gale-LSI). (Diagnostics) and (Mfg) too. 6 groups.

3. LSI-Mfg.--Lemaire, Cudmore (Zeh-Amann), Teicher, Gale--doing lots on ad hoc basis, but really moving toward a strategy. Peters charter to do engineering; Lemaire to get chips and circuits.

4. Research. None with hardware building. Many groups prototype, almost all ideas get built. Little fundamental technology.

5. New products we are unable to identify now. Will this organization lock us in by structure and funding to miss new opportunities? Eg., scan graphics, voice response, OCR, desk calculators, computers packaged in terminals (smart terminals), floppy.

6. Terminals. Are these merely the form for our future low end computer packages? How do we sell them anyway? VT5-, VT5-Lab graphics, VT5- for typesetting, GT4-, (sell only: VT15, VT14, VT8), VT20 and VT20 follow-on, RT0-, RT90, CSS color, LA-. Issues: will new coordinating committee encourage/reduce overlap? How do we move to better products? Would some centrality allow us to hire a fundamentalist in human factors engineering, planning, and TV techniques? Is there any way to do it worse? We still only lose $250K/year in miss-products.

7. Memory. Move to adopt combined Mfg., Engineering, and Testing as per Bell-Kaufmann suggestion to Operations Committee memo?

8. Manufacturing and its Engineering. Assembly line design. How much centrality? Can these plans be reviewed by engineers who must interface to them? Component group?

9. Process Engineering. How can we stimulate development in automation for:

   Modules fabrication and testing
   FA&T
   Peripherals
   Power Supplies
   Memories

10. Synchronization with PDP-10. Customers for cabinets, power supplies, disks, terminals, tapes, software. Must interface to standards for networks and languages. What is interface to 11/85...would 10-land kill it?

G. Bell
2/7/74

PROGRESS ON TOP-10 BOARD OF DIRECTOR's PROBLEMS (published Aug. 1973)

1. 11-programming--substantial progress on compatibility.
2. LSI--no progress, need strategist-implementer.
3. Floppy--doing. Moving to manufacturing drive.
4. RP disks--Doing. Maybe shouldn't as it impacts engineering funding.
5. Networks and multiprocessors--nets OK. Multiprocessors not OK.
6. High level languages--commitment to use BLISS; FOCAL in some diagnostics.
7. Small and Large-11's--are segmenting. Have started 11 development moving.
8. 8's and 11's--should we support both? Yes, seems to be answer--is probably right answer.
9. Consoles, packaging--move to common scheme for low-end. Concern and staffing is occurring.
10. Terminal types--progress to adopt VTXY.
11. Manufacturing-Engineering Committee is helping, Pete is more aggressive to build engineering expertise.

Fig. 1 Engi[illegible]ng ORGANIZATION

	E*	T*	P*
HINDLE			
Central Eng.--Puffer			
PDP-11--Delagi			
Small--Teicher	5	4	
Large--Hughes	6	5	
Systems--Swanson	2	1	
Reliability--Ancona	5	5	
Bus Options--Dando	6	5	
Disks--Saviers	22	22	
Tapes--Lawrance	9	7	
Printing Terminals, Cards, & Paper Tape--Corell	12	11	
Engineering Services--Tays			
Auto.Draft--Elgin			
Model Shop--Gerelds			
Drafting--Reilly			
Reproduction--Gillette			
Software Eng.--Portner			
Products--Stone			
Staff Plan.--Wade			
Small Sys.--Elson			30
PDP-11--Van Roekens			60
Languages.			
Applications			
Diagnostics--Horovitz			
Sys. 10--Conklin			25
Production Support			
Software Sup.--Schroeder			
Library (production)			
Research,Dev.,Consult.--Bell			5
Soft.Eng. Education			
CSS--Holman			
Maynard			
Eng.	20	22	18
Low Vol. Prod.	2	8	0
LA--Butler	4	5	5
Europe (UK)	8	7	5
Europe (Munich)	8	4	11
Australia	2	2	4
Japan	1	0	0
Canada	4	2	2
PDP-10--Leng			
KL10--Wilhelm	21	6	
Eng.--Atterbury			
KA,KI--Fagerquist	5	3	
Eng.--Ed Siegmann			
Advanced Systems--Hurley	4	7	

	E	T	P
S. OLSEN			
Terminals--Stockebrand	4	2	2
Typeset/Traditional--Lane			**
Eng.--Milton	1	0	24
Low Vol. Prod-Reed	2	21	11
Business PL--Jacobs			
Eng.--Ball	1	1	
Communications PL--Marcus			
Eng.--11 Comm. Prod.-Bastiani	6	8	
KNOWLES			
OEM PL			
PDP-8--Clarke	9	7	
PDP-16-Eggert	1	2	
LSI--Gale	6	4	2
Industrial PL--Vachon			
Eng.--Melvin			
K, Analog, Specials-Gordon	3	4	
PDP-14 & 14 Terminal--Ricketts	3	7	1
Modules PL			
Eng.--Moffa			
Terminal RT	1	2	
Remote Data	3	4	
Modules	5	5	
Computer-on-a-board--O'Loughlin			
LDP, EDU, Medi, Terminals PL			
LDP, terminals			
LDP Eng.--Budianski	6	3	
Graphics--Halio	4	5	
Medi			
Eng.	1	0	3
BELL			
Chief Eng.--Best			
Plans & Review--Laut			
Software Plan & Review--Teichholtz			
Power Supplies + Primary Memories--Savell			
Power Sup.+ Wiring--Rey	6	4	
Memories			
Core	3	4	
MOS	2	2	

*E=engineers, T=technicians, P=programmers
**Wiremen

GB
8/73

	E	T	P
KAUFMANN--Manufacturing			
Cent. Eng.--Cudmore	20	58	
Test Equip.Eng.--O'Connor	13	55	
Pack/Environ.--Lawrence	3	1	
Components--Amann	4	2	
Metals--St. Amour	25	2	
Mfg.Eng.--Bean	16		
Ind.Design+ME--Nevala	6	1	
Large Vol.Mfg.--Hanson (PR/Canada/Boards)	18	9	
Process-Cajolet Modules/Test/Special	12	5	
Systems--Smith	15	19	
Mfg./QC--Cady	4	8	
Core Memories--Lemaire	10	3	
Magnetic Heads	1		
Components	2	1	
Systems	7	1	
Peripherals (Westfield)	9	0	
Mfg. Eng.	6	0	

JOHNSON

Field Service--Shields
Busiek
Techniques, support Comm.,Tel.Co--Kalagher
10 Support--Yurick
Ind.,TPL,LDP,OEM 8--Dubay
OEM 11, 11/45,15--Karpowski
Testing Design & Mfg. for Depots--Zereski
Long

Figure 3

P.Laut
2/26/73
Revised: 3/14/73

Attachment D--2/74 G. Bell

DEGREES HELD BY
ENGINEERS AND TECHNICIANS

COST CENTER	V.P.	ENGINEERS NO.	ENGINEERS % AS OR ABOVE	ENGINEERS % BS OR ABOVE	ENGINEERS % MS OR ABOVE	TECHNICIANS NO.	TECHNICIANS % AS OR ABOVE
392 Memory+PS	GB	12	75	67	16	6	16
359 DECSystem 10	WH	13	92	77	38	5	20
378/387 11/45+11	WH	19	89	84	58	17	29
379 Disks	WH	22	95	91	50	14	36
383 Printers	WH	13	100	92	62	7	14
384 MACTape	WH	9	88	88	66	7	0
466 C.S.S. Engr.	WH	22	90	86	41	19	58
Sub-Total	WH	98	93	87	52	69	33
357 Logic Prod.	AK	10	60	50	0	8	25
363 IDAC	AK	4	100	100	75	2	0
380 LDP	AK	8	75	75	0	7	14
381 8 Central	AK	9	77	66	11	8	13
382 LSI	AK	7	100	86	57	0	0
388 PDP-14	AK	5	100	80	20	7	14
389 PDP-16	AK	2	100	100	50	2	0
Sub-Total	AK	45	82	51	22	34	15
330 Mech. Eng.	PK	3	100	100	0	1	0
331 Elec. Mfg. Eng	PK	14	86	57	7	0	0
332 Mech. Mfg. Eng	PK	7	57	43	0	0	0
339 Process Eng.	PK	12	58	58	16	2	0
Sub-Total	PK	36	69	58	8	3	0
302 Business Sys.	SO	1	100	100	0	0	0
303 Display	SO	1	0	0	0	2	0
305 Medical	SO	2	50	50	50	1	0
306 Typeset	SO	1	100	100	0	2	50
349 Communications	SO	6	83	66	33	7	14
376 Traditional	SO	2	100	100	0	2	50
Sub-Total	SO	13	76	69	23	14	21
Grand Total		204	84	72	34	126	25

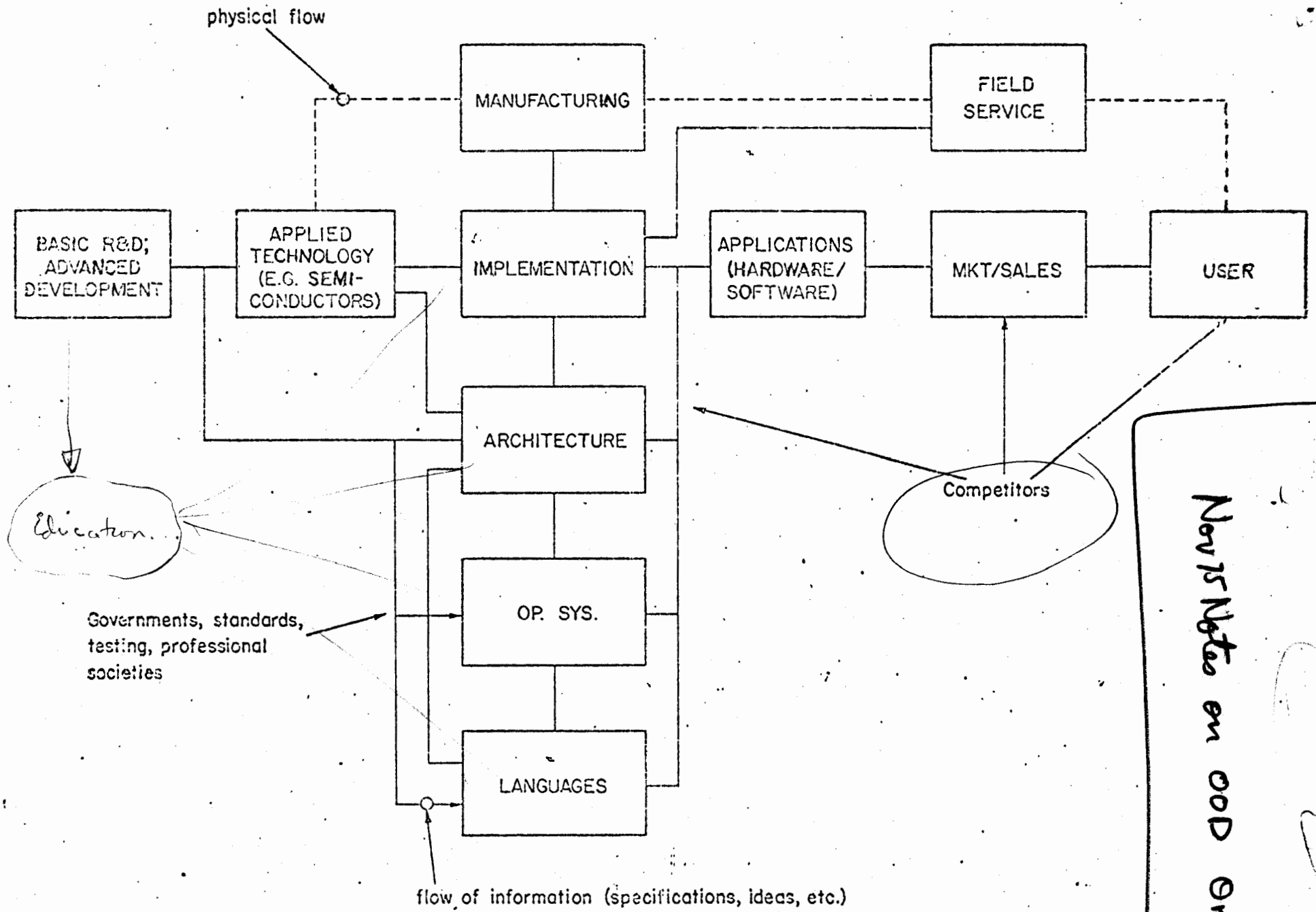
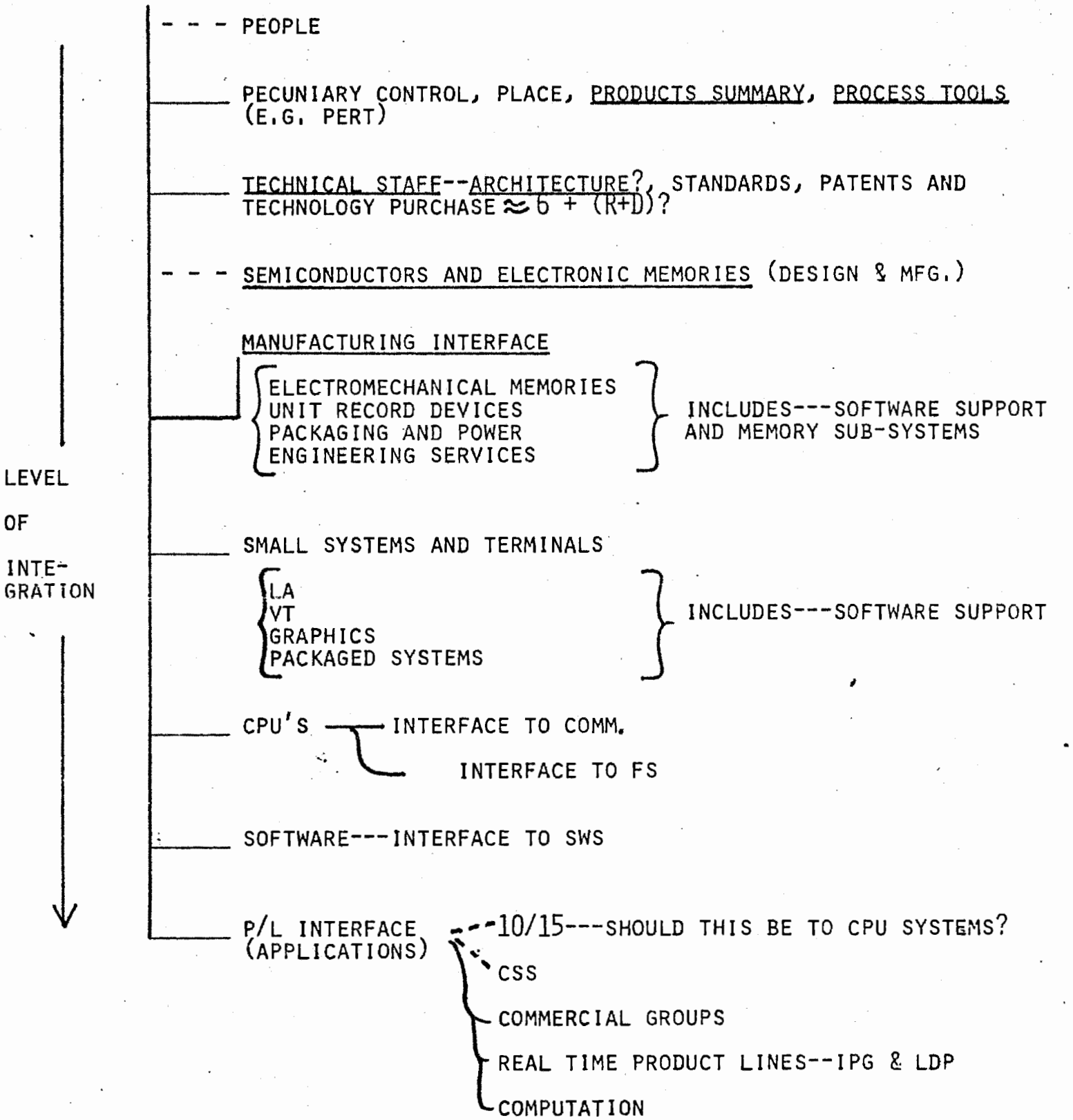


Figure Org. STRUCTURE OF ORGANIZATION AFFECTING A COMPUTER DESIGN

Nov 15 Notes on OOD Org.


- - - PEOPLE
PECUNIARY CONTROL, PLACE, PRODUCTS SUMMARY, PROCESS TOOLS (E.G. PERT)
TECHNICAL STAFF--ARCHITECTURE?, STANDARDS, PATENTS AND TECHNOLOGY PURCHASE ≈ 6 + (R+D)?
- - - SEMICONDUCTORS AND ELECTRONIC MEMORIES (DESIGN & MFG.)
MANUFACTURING INTERFACE
ELECTROMECHANICAL MEMORIES
UNIT RECORD DEVICES
PACKAGING AND POWER
ENGINEERING SERVICES
INCLUDES---SOFTWARE SUPPORT AND MEMORY SUB-SYSTEMS
LEVEL OF INTE-GRATION
SMALL SYSTEMS AND TERMINALS
LA
VT
GRAPHICS
PACKAGED SYSTEMS
INCLUDES---SOFTWARE SUPPORT
CPU'S
INTERFACE TO COMM.
INTERFACE TO FS
SOFTWARE---INTERFACE TO SWS
P/L INTERFACE (APPLICATIONS)
---10/15---SHOULD THIS BE TO CPU SYSTEMS?
CSS
COMMERCIAL GROUPS
REAL TIME PRODUCT LINES--IPG & LDP
COMPUTATION

9=7+2---

GB
11/75

digital interoffice memorandum

Subject: OOD Goals (and Objectives) FY80 [and how we did against them]

To: Ken Olsen

Date: 8/7/79 [edited 8/26/80]
From: Gordon Bell/Larry Portner
Dept: OOD
Loc: ML12-1/A51 Ext: 223-2236/2471

CC: OOD, OC

Grade (Bell/Portner)
Goal - (8/7/79)
Performance (8/16/80)

0.
B- Build products as per Red Book (show 3 years and 5 years till end of life)
C and corporate strategy.
B- Manage according to budget and schedule.
D Poor schedule performance. Spent over budget, but understand why.
Operations organization installed and helping. There's good plans.
We have a fundamentally new and consistent phase planning process.
A- Stability, yet excitement.
Turnover is relatively low. Projects are stable, aggressive and exciting. We decommited TRAX (~~C~~ D) and 11/70mP (A-).

1.
A- System orientation: make Small, Medium and Large Systems independent and
B+ the planning centers.
New system configurations reflect this.
B Have really clear charters and contracts by site, with only minimum
B+ central support and inter-dependence.
Power and packaging are coupled, -physical interconnect proceeding.
B The systems centers will work with Mass Storage, Semiconductors to the technologies they need for their viability.
A Mass storage product manager is resident and coupled.
C There is a process to couple users to producers of MOS and Bipolar.

2.
B- Significantly couple with the product line engineering groups where joint products and planning is essential for avoiding replication, insuring compatibility and leveraging base investment.
We sit on the group product line staffs!

3.
B+ Start to move to applications, versus base systems focus as per Product Strategy on the basis of measured funding by level of integration.
OFIS program for WPS and EMS is a major accomplishment.
Groups and components are going on the Personal Vax.

4.
A- Continue to improve EBOD, PMC, product marketing support through PMMMM.
A EBOD is working. Programs for product marketing in place.
B- Aggressively support marketing organization and improve coupling.
B+ Coupling through staffs. Doing product positioning vs market.
B- Use the contract process for product decisions and pricing.
This has been established.
Showed by example, through Venus, of a comprehensive plan which includes all aspects of the product's life!
F Review product profitability against the plans.

5.

A- Build a first class architecture identification, specification, and
A control function such that the Corporate Product Strategy can be implemented.

All groups exist, with connection to Technical Director.

A Make the Network Interconnect charter of Medium Systems a key interface and control organization.

Happened very well! We have the structures coming along to build and interconnect computers for the next 10+ years.

B- Establish Small Systems and Terminals architecture.

Being exercised and tested now.

6.

B+ Keep our people and make DEC an exciting place to work and have high morale.

see 1

B- Get a human resources plan (HRP) so that we are able to have a resevoir of technical and managerial talent.

The Individual Development Planning part of the HRP is working.

C- Have available, almost trained replacement managers for two senior levels of engineering.

This review hasn't happened yet.

7.

B+ Get metrics for all products and processes permitting a better method of
C resource allocation based both on position and strategic need (market).

Several Redbooks (sets of plans) have been formed; including CAD and Performance Analysis.

An Interconnect Task Force has started to work on this critical area. Very high quality product positioning data and benchmarks are available in nearly every area.

8.

B- Review for all our groups at least annually.
A-

We had a 2 day major program review and set up a review cycle. We have started to review every group based on the Beige Books.

9.

F Review our ability to produce reliable, quality software in a timely, cost-effective fashion.

Did not do. Intend to use the review process above. However, we do have a clear plan, together with some advanced development.

10.

B+ Review our R and D position by getting advanced development in
C development groups.

The RAD Committee reviews. Nearly every group has an A/D function! The R and D group is now R and more research oriented.

B+ Get plans for 80's show possible 85 products.
C

The systems in the mid and high end have been layed out till 90. We need this for semis, disks, terminals and low end. Ok till 85.

11.

B+ Increase overall effectiveness by managing the Engineering and
C Manufacturing interdependency.

Had first joint meeting! Strong intent, less progress. Have common issues list and people working on them. Have proposed a segmentation and coupling which must me consistent with Manufacturing reorganization.

****
* d i g i t a l *
****

TO: OPERATIONS COMMITTEE:

DATE: TUE 24 JUN 1980 9:57 AM EDT
FROM: WIN HINDLE
DEPT: CORPORATE OPERATIONS
EXT: 223-2338
LOC/MAIL STOP: ML10-2/A53

SUBJECT: INDIVIDUAL GOALS, OBJECTIVES AND PRIORITIES

DIGITAL INTEROFFICE MEMORANDUM

TO: Operations Committee

DATE: 6/24/80 Tue 9:27:02
FROM: Win Hindle/Shel Davis
DEPT: Corporate Operations/
Personnel

EXT: 223-2338/223-2838
LOC: ML10-2/A53/PK3-1/C21

SUBJ: Individual Goals, Objectives and Priorities

We will be spending one day in the July, August, and September WOODS discussing each others individual goals, objectives, and priorities. In the past two years, we have found this takes about one and one-half to two hours per person and each year we ended up saying it was a good process that was well worth the time.

The format will be very simple; each of us should first hand out a brief statement of our FY80 goals, objectives, and priorities and briefly review how we did (about one-half hour). Then each of us should hand out a statement of goals, objectives, and priorities for the coming year and lead a discussion with the group for one to one and one-half hours. The values of these discussions has been in the interaction that takes place.

For the July WOODS, Jack Shields, Al, Stan, and Bill Long should be prepared for their review and discussion.

In August, Ted, Andy, Steve, and Shel should be reviewed during one day of the WOODS.

Then in the September WOODS, Win, Julius, Bill Thompson, and Jack Smith should be reviewed.

Gordon will be scheduled for the October WOODS.

WRH/SD:bwf

****
* digital *
****

TO: *GORDON BELL

cc: KEN OLSEN

DATE: FRI 11 JUL 1980 11:23 AM EDT
FROM: BARRY BURNS
DEPT: CORP COMP/BENEFITS
EXT: 223-4656
LOC/MAIL STOP: PK3-1/C18

SUBJECT: INDIVIDUAL PERFORMANCE REVIEWS - FY80

As was done last year, Ken would like to meet with each of his direct reports for an hour or so to review FY80 performance against goals. Ken also has asked that Win participate in each review, as he did last year.

We'll work out a schedule for the meetings beginning in mid-August. In the meantime, you should do whatever is necessary to be prepared to discuss FY80 results. You will not need to submit a memorandum as you did last year.

8 Sept.

AUG 1 1980

+---------------+
: d i g i t a l :
+---------------+

INTEROFFICE MEMO

TO: Operations Committee

Date: 31 JUL 80
From: Ken Olsen
Dept: Administration
MS: ML10-2/A50 Ext: 2301

SUBJ: YEARLY JOB REVIEW

As we go through the reviews in the next month, at the start of each presentation I'd like to have each individual make a list of five or six of the most important things that he feels the company is doing or has to do. Next, I'd like to have him list what his contribution is to these things - first of all, as part of his job description and secondly as a member of the Operations Committee.

I think these should be part of our written comments and part of the discussion. Those who have already given their reviews should add written answers to these questions.

I'm going to recommend to the Board of Directors that pay raises to the Operations Committee not be issued until all of these reviews are done. This may delay things a little but it will also put pressure on us to get them done quickly.

mn
10.108

digital interoffice memorandum

Subject: My Role In The Six Most Important Things the Company Has to Do!

To: Ken Olsen
CC: Operations Committee
OOD

Date: 8/16/80
From: Gordon Bell
Dept: OOD
Loc: ML12-1/A51 Ext: 223-2236

HAVE REALLY GREAT PRODUCTS (Fundamentally responsible)
continuing: support the plan in Red and Beige Books
evolution: get quick resolution on VT/PDT/Gigi for low end
revolution: Interconnect and The Personal VAX
recover/lead: get organization and products for the office!
build fundamental technology base: physical interconnect, semis and disks

UNDERSTANDING THE TRUE COMPETITION: Japan, IBM, and new micro-based systems
Get the Japan competitive analysis and understanding-action groups going. Have a "Stratton" around Manfacturing and Engineering that targets these competitors. Get disk, semi, terminal and system M/E pairs to Japan! Evaluate the inevitable competition based on the emerging lines of very fast, large address-space microprocessors enabling higher performance/cost.

STREAMLINE OUR ORGANIZATION to have a single stage, FAT-less product flow to halve the inventory and double the turns based on point of mfg. and field merge. Improve product quality, minimize system configurations, pare old products and discourage mutations, provide a system to permit salesman to order "legal" systems (those specified, tested to work and can be built), and get the right product/plant/organizational structure which supports the manufacturing reorganization.

BETTER ORGANIZATION by location, coupling and decoupling (Operations Committee? responsibility. Offer a framework (cauldron) and plan. Encourage the troops to make (bubble up) a proposal.)
Have proposed a framework and got support to meet with Jack and Shel. We are organizing engineering to be better aligned with various business units based on technology (manufacturing) and market (product lines). Support a terminals and terminals based systems grouping. Improve Mass Storage coupling by review of plans. Significantly improve semiconductor M/E grouping. Align systems appropriately with new Mfg. organization.

IMPROVE ADMINISTRATIVE SYSTEMS: Order processing and product flow control seem to require a different structure. (Lend encouragement and moral support)

TOTAL RESOURCES (CAPITAL/EXPENSES, PEOPLE, SPACE, AND COMPUTERS) BASED MANAGEMENT FOR PRODUCTS versus engineering expense-based resource allocation
EBOD is to do this review. Couple and check the Manufacturing and Engineering plans. Do a detailed example for Mass Storage to understand.

GB1.S6.5

Glossary

A/D- Advanced Development- a group within each development group whose goal is to show feasibility by building working breadboards

Beige Book- all project plans and resources for each group for next 3 years

CAD- Computer Aided Design. Covers use of computers to engineer computers and includes every aspect from simulation to analysis and design

Computer Engineering- book by Bell, McNamara and Mudge for detailed definintion

Computer System Component- the part, we call an option, from which a Computer System is built. The components types are: CPU's (which is actually the processor, primary memory, and controllers for other options), secondary memories (currently disks), tertiary memories (currently tapes), printing and CRT-based terminals, and special hardware options. Other components include the software, cables, and all documentation.

EBOD- Engineering Board of Directors (subset of Marketing Committee responsible for reviewing and approving product development strategy

EMS- Electronic Mail System for creating, storing and sending messages to all persons who are subscribers to the system.

FAT- Final Assembly & Test- manufacturing site where various parts from high volume are collected, inventoried and assembled to fill customer orders

Field merge- computer system component or option that is part of a larger system that the customer buys. The option or product is capable of being built in a high volume manufacturing plant, shipped to the customer and connected to the systems by Field Service (and eventually by the customer) with the expectation that the combined system will work. This also denotes method of manufacturing.

GIGI- a product designed for Education marketplace which is a CRT controller packaged in a keyboard. The next version of the prouduct includes the processor and primary memory.

Individual Development Plan- a career plan made by individual with manager

Interconnect Task Force- group to assess position in Physical Interconnect (see below) and recommend how we improve it. Encompasses the technology, capabilities of CAD and of plants to manufacture the technology

Large Systems Development Group- responsible for systems selling for over $250K

M/E- manufacturing and engineering

Mass Storage Group- products used for secondary and tertiary memories. Includes disks, tapes, magnetic bubbles, video recorders

Mid and high end disks- disks for mid and large systems

Mid Range Systems Development Group- responsible for systems in range $16K-$250K

Network Interconnect- the means by which all our terminals and computer systems are connected together. This includes the network structure called Ethernet which we are jointly specifying with Intel and Xerox.

OFIS- a set of projects including word processing and electronic mail for use in offices

PDT- a small system that packages processor, primary memory, secondary memory, terminal and communications options together in a co-ordinated fashion

Performance Analysis Group- responsible for measuring and understanding why products perform the way they do

Personal VAX- a VAX computer oriented to a single user which has a 1000 line, high resolution CRT

Physical Interconnect- the scheme by which Integrated Circuits are coupled together. This area covers chip substrate carriers, printed circuit boards, backplanes, and cabling. See Computer Engineering book for details.

PMC- Product Manager's Committee- Si Lyle, Product Marketing Manager, staff
PMMMM- Si Lyle, Product Marketing Manager for all products
Point of Manufacture- a manufacturing organizational structure which Jack Smith is implementing that eliminates FAT plants such that various computer system components are built in high volume plants and field merged
Product Strategy- same as Red Book
Red Book- development strategy with past and future products for Product Lines
Research- group mostly concentrated in a single group. Oriented to several focussed projects, such as building a secure computer system, a personal computer system or a Database system that can be queried via forms. Projects are not oriented to making a particular product, but oriented to getting results or building an experimental breadboard by which a product can be made.
Small Systems and Terminals Engineering- all products up to $16K selling price
Stratton- an annual, three day meeting of 250+ representatives of all the engineering groups. Plans and direction are presented for many of the groups. Video teleconferencing was used to extend audience by 250.
System (or Computer System)- an assemblage or combination of parts (or computer system components which we call options) forming a unitary whole. Note this is the standard dictionary definition as applied to computers.
Technical Director- part of Office of Engineering. Responsible for Performance Analysis, Architecture, Standards and Advanced Development.
TRAX- a transaction processing system for commercial market. Very good specifications, but poor implementation. Delivered only 12 and withdrew it.
VAX- our 32-bit computer architecture, also used to mean the total system we have introduced as the VAX-11/Model 780 running the Virtual Memory System software (VMS)
Venus- follow on VAX Model 780 that will sell for about $250K
VT100- a CRT-based terminal that connects to a computer system
WPS- a Word Processing System
11/70mP- a multiprocessor computer system based on the 11/70 designed to provide both performance and higher reliability and availability. Described in Computer Engineering book. A superb product, but came in behind schedule. Sales on the VAX picked up and as a result we decided not to market it.

Gordon

digital

interoffice
memorandum

TO: Operations Committee
Board of Directors

CC: Office of Development (OOD)

Date: 9/3/80 Wed
From: Gordon Bell
Dept: OOD
MS: ML12-1/A51 Ext: 223-2236
EMS: @CORE

Subject: Engineering and Gordon Bell's Annual Review and Fiscal 81 Goals

Attached please find:

1. OOD Goals (and Objectives) FY80 [and how we did against them]

2. OOD Goals (and Objectives) FY81

3. My Role in the Six Most Important Things the Company Has to Do!

4. Glossary of Abbreviations and Terms Used in the Attached Documents

To be discussed at the September 17, 1980 Woods and for the Board of Director's information.

GB:swh
GB1.S6.34

digital

interoffice memorandum

SUBJ: ~~OOD~~ Goals (and Objectives) FY81

TO: Ken Olsen, ML10-2/A50

CC: Operations Committee
OOD

Date: 9/3/80 Wed
From: Gordon Bell/Larry Portner
Dept: OOD
MS: ML12-1/A51/ML12-1/T32
Ext: 223-2236/2471
EMS: @CORE

OOD Goals (and Objectives) FY81

0. Build products as per Beige Book (shows 3 years and project end of life). Update and clarify the corporate strategy in the Red Book and rate us. Manage according to budget and schedule.

1. Continue to build a systems organization around products by size, and have clear alignment with various manufacturing sites, focusing on problems. Streamline Engineering (reinforce accountability and facilitate decision making) in terms of Product Development Engineering (PDE) and Office of Engineering (OE) such that more people are working in PDE with less matrixing. The OE will manage by formal review approval and inspection versus hassle. Build a single packaging/power/physical interconnect (PPPI) organization with a clear charter which is understood by product groups and plants.

2. Increase the percentage of software spending for applications and increase the number and quality of groups in this area.

3. Keep our people and make an exciting environment with high morale. Get a human resource plan that is well understood within organization. Have trained, replacement managers for two senior levels of enigneering.

4. Review all groups annually as per their Beige Books. Review selected programs as appropriate. Especially review our ability to design and build software systems.

5. Review past product performance against plan so that we can better understand resource allocation, especially consider induced investment and ability to manufacture in a timely fashion. Review new products in terms of total resources (expenses, capital, computers, space and people).

6. Increase overall effectiveness by managing the Manufacturing and Engineering interdependency. Cooperate in the Manufacturing reorganization to assure the best coupling for planning and execution (product introduction).

7. Establish a long term strategic frame work to guide our investments in technologies, products, and related processes.

GB:swh
GB1.S6.35

CHARTERS

LP2/33

O O D C H A R T E R

- Formulate, propose, and implement the Corporate product strategy.
- Provide the organizational framework for maintaining an effective Engineering activity within DEC, consistent with the goals and philosophies of the organizations.
- Maintain a work environment and leadership image that will continue to attract and retain the high caliber, innovative people necessary for our growth and success.
- Ensure a competitive product posture for DEC.
- Own those technologies key to our success.
- Build products to meet needs of Marketing, while maintaining technology driven product innovation.
- Minimize technical risk by programs for advanced development and technology tracking.
- Provide visibility and review for non-Central Engineering activities.
- Provide product marketing services to the product lines.
- Establish and maintain required coupling with Manufacturing and Service organizations.
- Understand industry and competitive behavior.
- Minimize project risk by maintaining appropriate project and program management and control systems.
- Manage the balance between predictability, innovation, individual initiative, and control.

Larry Portner
September 1979

/ma

GOALS

d	i	g	i	t	a	l

Subject: OOD Goals (and Objectives) FY80

To: Operations Committee

CC: OOD

Date: 8/7/79
From: Gordon Bell/Larry Portner
Dept: OOD
Loc: ML12-1/A51/ML12-1/T32 Ext: 2236/2471

0. Build products as per Red Book (show 3 years and 5 year till end of life) and Corporate Product Strategy. Manage according to budget and schedule. Stability, yet excitement.

1. System orientation: make Small, Medium, and Large Systems independent and the planning centers. Have really clear charters and contracts by site, with only minimum central support and inter-dependence. The systems centers will work with Mass Storage, Semiconductors to get the technologies they need for their viability.

2. Significantly couple with the product line engineering groups where joint products and planning is essential for avoiding replication, insuring compatibility and leveraging base investment.

3. Start to move to applications, versus base systems focus as per Product Strategy on the basis of measured funding by level of integration.

Continue to improve EBOD, PMC, Product Marketing Support through P^4M. Aggressively support marketing organization and improve coupling. Use the contract process for product decisions and pricing. Review product profitability against the plans.

5. Build a first class architecture identification, specification, and control function such that the Corporate Product Strategy can be implemented. Make the Interconnect charter of Medium Systems a key interface and control organization. Establish low end architecture.

6. Keep our people and make DEC an exciting place to work and have high morale. Get a human resources plan so that we are able to have a resevoir of technical and managerial talent. Have available, almost trained replacement managers for two senior levels of engineering.

7. Get metrics for all products and processes permitting a better method of resource allocation based both on position and strategic need (market).

8. Review for all our groups at least annually.

9. Review our ability to produce reliable, quality software in a timely, cost-effective basis.

10. Review our R and D position by getting advanced development in development groups. Get plans for 80's show possible 85 products.

Increase overall effectiveness by managing the Engineering and Manufacturing interdependency.

GB:swh
Attachment

GB0004/27

digital interoffice memorandum

Subject: OOD Goals FY79 and Performance Against Them as of 7/28/79

To: Operations Committee
CC: OOD, Barry Burns

Date: 6/13/78; Updated: 7/28/79
From: Gordon Bell
Dept: OOD
Loc: ML12-1/A51 Ext: 223-2236

ORIGINAL PERFORMANCE AGAINST GOAL

0. Build products as per Red Book.
   Product Strategy and needs caused changes, else ok.
   Manage according to budget and schedule.
   Underspent by 2M (indirectly causing slips)
   Hold organization together in face of lower growth (budget), and evolving market organizational changes.
   Organization, new people, Larry and charters feel very good now, despite changes. Turnover is still low.

1. Improve management process by clarifying organganization and organizational boundries.
   Major improvement this year. Next year will be better.
   Includes technical director function,
   Solid and necessary to get Strategy going. Other parts of organization are considering similar roles.
   communication engineering,
   Have it together finally under Demmer (Plowman).
   commercial engineering,
   Fauvre left, Daley is really good. Product position is improving rapidly (eg. Cobol, TRAX).
   CAD,
   Are finally getting there...still needs work.
   physical interconnections (PIC),
   OK, but still can improve in direction and coupling to systems groups and to manufacturing.
   small systems,
   Really great...have got it together.
   architecture,
   Very strong, and must be for our future.
   diagnostics,
   Being decentralized, also strong central technology.
   microprogramming/microprocessor support.
   Finally we have a good group (Bill Segal).

2. More development dollars (from base systems) into applications in line with group product line strategies.
   Are holding base systems. Resisted many new base systems. Must move to more applications as per goal. Need measures to manage resources.

3. Work to make EBOD,
   Feelings about EBOD were mixed. Si, Larry, and Andy are committed to make it much better.
   Marketing, and
   VAX was moved to Tech. Prod. need to do this elsewhere.
   Long Range Planning more effective.
   Finally have two year planning horizon...next year we must go to 5 years!

4. Get strategies and metrics for all products and processes with outside comparative data!
   The RAD Committee has made this work quite well. Most areas have measures of goodness.

5. Make the Product Managers more effective.
   The PM Committee formed and solved several problems in planning, systems definition, product introduction, and role definition. Si Lyle managing this should really make for an effective organization...we're ready.

6. Focus processes and design factories for:
   LO (NMOS and by-out microprocessors) I/C,
   Pretty good, note Fonz and future direction
   Mid (Bipolar and HMOS) I/C;
   COMET, our first gate array work, had surprises.
   Hi (ECL and follow-on) I/C,
   We depend on Motorola, our CAD looks good.
   Marvelous Module Making Machine - 4M (so as to reduce product cost turn around).
   Didn't touch this one. Probably can't.
   DECnet moves into distributed processing (production versus craftspersons), and
   Shipped Phase II. We lead, but IBM's moving up fast. Still want more technology here.
   Software (implementation language, interface management, piece parts, portability, verification, and performance analysis/measurement).
   Made progress in all parts, especially performance.

7. Establish some inter-group forum for team building across all of engineering (especially those in P/Ls). Communicate products and requirements so as to identify duplication and basis for future building.
   We did not do this. It needs to be done and now I have much more support in CE and PL's (eg. Stan and Bruce) to improve next year.
   Engineering management should understand products.
   I feel better that they must and do.

8. Formalize management, especially planning and review process for non-product part of OOD budget.
   Tools and RAD are working very well. Will be more specific next year by area (eg. project management).

9. Make Research and Advanced Development more effective.
   Excellent coupling to Small, some in Mid, little in Large and Software. Finally people are seeing how to and why to build advanced development of their own.

10. Given that we can't excel in all products/technologies, make a statement as to just what we are good at and intend to dominate.
    The Product Strategy came from this goal (and visits last summer to customers). The result is more focus in engineering.

Personal Goals...described after the fact

1. Make an everlasting organization which is composed of quite independent parts, several of which have to work together, independent of much energy from me.
   This is finally happening...or I don't see it isn't. The main gain is seeing several next generation people (10-20 years younger) to raise quality.

2. Make a substantial technical contribution and delay technical obsolescence as long as possible. (Know where I am obsolete!) The temptation is always to define and assign.
   The strategy took much energy. There are little things, but I want to do more.

3. Build an interesting environment for understanding computing.
   Have encouraged Digital Press, am trying to get a hi quality museum with surrounding talks and papers so that our people can interact with some great people.

4. Stimulate basic research in computing.
   Served on NSF panel arguing experimental use of computers. Advise IRCAM (computers in music). Selective talks. NSF referee. On NAE nominating committee.

5. Understand a few business and engineering management issues.
   Visited Japan. Wrote and presented a paper on it internally, at Dartmouth conference on innovation, and at Harvard Japan study group that included Ambassador Reischauer (under Vern Alden's sponsorship).

GB:mjf

OOD GOALS FY 80 (GENERATED BY OOD) 8/2/79

Products and Plans

0. Build products as per Red Book and Corporate Product Strategy. Manage according to budget and schedule. Stability, yet excitement. (GB only)

1. Ownership/Leadership by OOD to a clear, written Product Strategy, showing 3 year plans and projected end of life to 5 years, with a committed implementation plan and supported by underlying technical (technolgy) plans.

2. Lead to get all Corporate Product Development plans explicit and aligned with important strategy dimensions (eg. quality, ease of use, compatibility, networking).

3. Understand how we are competitively measured in terms of total cost (to buy, service and operate) effectiveness and establish a strategy for positioning (whether leadership or not).

Systems Emphasis

4. Clear, unambiguous systems responsibility and focus with organizational simplicity and clout to execute.

   Explicitly understand, contribute to and support the base technologies of mass storage and semiconductors necessary for the effective systems.

Product Market and Quality

6. Be perceived as #1 by our customers in product quality and ease of use.

7. Be the most desireable alternative to IBM.

8. Be demonstratively and viably unique in the type of solutions we offer, recognizing that once we achieve leadership we will be imitatated.

9. Establish programs that contribute to ease of doing business with DEC.

10. Provide a strong Product Business focus. Use the contract process and review history of products.

Engineering Processes

11. Develop an understanding of the Design Processes for Technology, Tools, Processes and Competition.

12. Develop an R and D strategy for DEC in the 80's.

13. Identify and eliminate the barriers and hassles within our processes to enhance productivity.

Interfaces among all engineering, service and manufacturing

14. Increase DEC effectiveness by managing the interdependency between Engineering and Manufacturing.

15. Develop an joint goal sets with Customer Service Organization to enhance DEC effectiveness.

16. Establish a collaborative and supportive environment across the engineering organization. Concentrate on modelling this behavior within OOD.

Personnel and People

17. Establish and maintain a positive, "people oriented" environment.

18. Make the company feel good about engineering by demonstrating capability, responsiveness and performance.

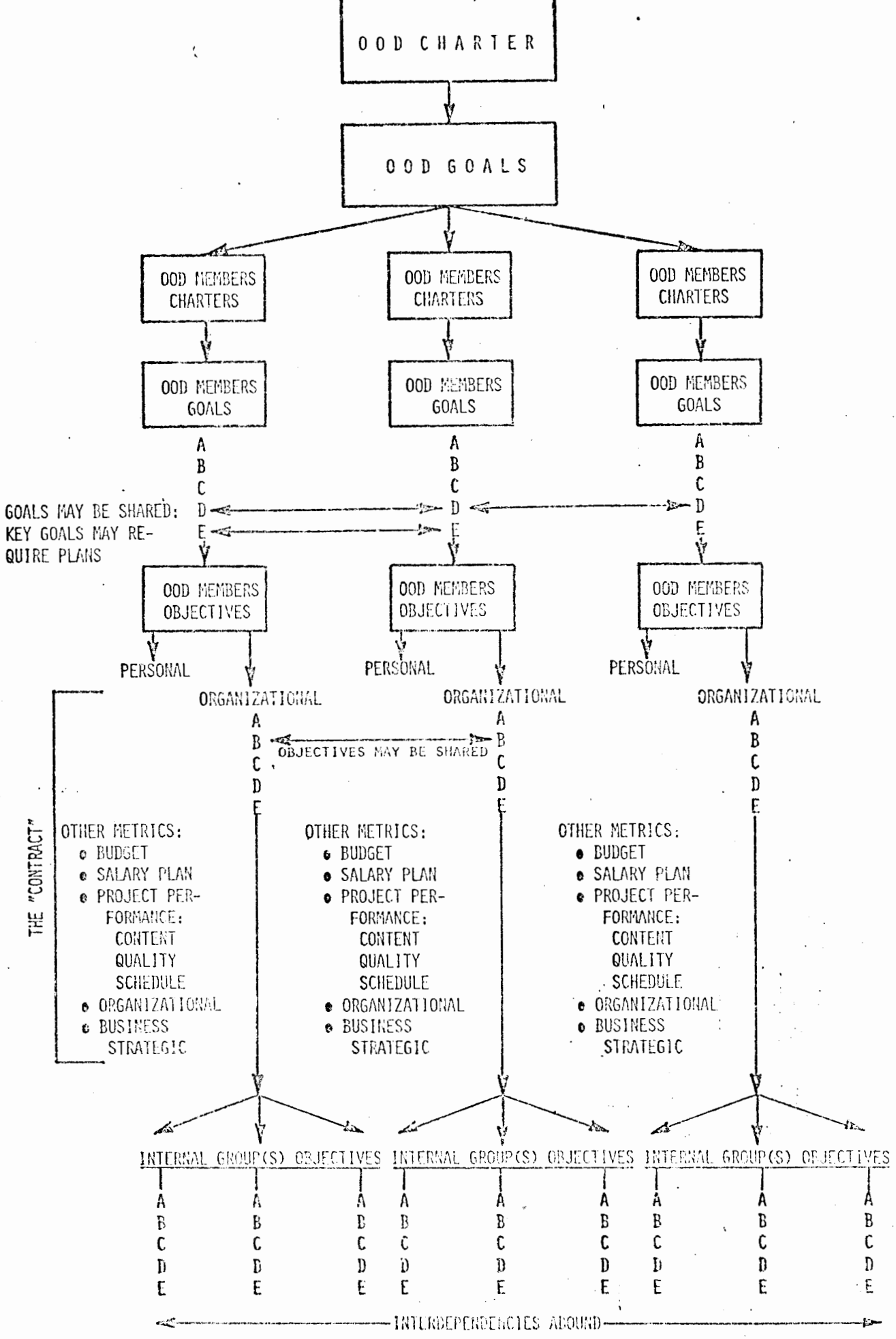
19. Sponsor an environment that allows and encourages entrepeneurial and creative behavior.

20. Understand our future staffing need 3-5 years out and develop specific programs that address those needs.

A MANAGEMENT SYSTEM FOR CENTRAL ENGINEERING

- HAVE A STRATEGY.
- HAVE STRATEGY MANAGER FOR EACH ELEMENT OF OOD STRATEGY.
- USE "CONTRACTS" TO DEFINE ORGANIZATIONAL ROLE, MEASURE ORGANIZATIONAL PERFORMANCE.
- IDENTIFY KEY PROGRAMS FOR SPECIAL ATTENTION.
- REQUIRE AND INSPECT RELEVANT PLANS
  - WORK PLANS
  - BUSINESS PLANS
  - OTHER
  - INITIAL REVIEW FOR VIABILITY, INTERDEPENDENCY
  - PROGRESS REVIEWS
- DEFINE EXCEPTION MANAGEMENT PROCESS FOR NORMAL ACTIVITIES. UNIFORM PROCEDURES AS/IF REQUIRED FOR SYNCHRONIZATION, INSPECTION.
- REVIEW RESULTS

PORTNER
9/13/79


OOD CHARTER
OOD GOALS
OOD MEMBERS CHARTERS
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OOD MEMBERS CHARTERS
OOD MEMBERS GOALS
OOD MEMBERS GOALS
OOD MEMBERS GOALS
A B C D E
GOALS MAY BE SHARED: KEY GOALS MAY RE-QUIRE PLANS
OOD MEMBERS OBJECTIVES
OOD MEMBERS OBJECTIVES
OOD MEMBERS OBJECTIVES
PERSONAL
ORGANIZATIONAL
OBJECTIVES MAY BE SHARED
THE "CONTRACT"
OTHER METRICS:
• BUDGET
• SALARY PLAN
• PROJECT PER-FORMANCE:
CONTENT
QUALITY
SCHEDULE
• ORGANIZATIONAL
• BUSINESS STRATEGIC
INTERNAL GROUP(S) OBJECTIVES
INTERDEPENDENCIES ABOUND

Bell/Portner

Clayton

****
DIGITAL
****

DC#25.14

I N T E R O F F I C E M E M O R A N D U M

TO: Gordon Bell
Larry Portner

DATE: October 22, 1979
FROM: Dick Clayton
DEPT: CSD
EXT: 3-3638
LOC/MAIL STOP: ML12-2/E71

SUBJECT: Personal Objectives

Gordon and Larry, these are primarily change issues at my level for which the detailed changes are essentially in place and moving. It specifically does not include various program, products, etc. which are within the responsibility of my managers and which are not "changing". Do you want that sort of thing too (I hope not). This list avoids things presently in the opportunity, search mode. Would you please feedback how you want to use this information, what is the risk reward process?

****
DIGITAL
****

DC#27.17

I N T E R O F F I C E M E M O R A N D U M

TO: Gordon Bell
Larry Portner

DATE: 4/4/80 Fri 14:29:57
FROM: Dick Clayton
DEPT: CSD
EXT: 3-3638
LOC/MAIL STOP: ML12-2/E71

SUBJECT: Comments Relative to Personal Objectives, October 1979

PRODUCT

- Tiny System (PDT 50)
  A start has been made here primarily as a result of Gaubatz, Strauss, Miller and Floppy Group activities. The present market focuses on this system are extremely diffuse and still substantially below any acceptable budget cutoff lines.

- LQP Strategy
  The strategy has been restated and refocused to include common architecture with line printers. Our only active product focus remains LA24 High Resolution Dot Matrix. Another activity is below the budget cutoff line. Send LQP

- Schedule
  Terminals' products were rescheduled and refocused coincidence with Bill Picott and Joe DeMarinis coming on board.

ORGANIZATION

- Terminals
  Picott, DeMarinis, and Haney have made major dents in the top levels of the Terminals' Organization. Bill and Gil have jointly installed a high quality major focus on external architecture as seen by Software via the activities of Tom McIntrye. The Advanced Development Manager for the Terminals Group is still needed to work the final issues of internal Terminal Architecture (especially around the LA200) and the interaction between the corporate communications activity and the Terminals communications activity.

- LA24 full-time manager
  Walt Tetschner is clearly doing that these days. Video Support Process is closed as planned.

- Video Support Process closed as planned.

- Low End Technical Director
  I have consciously backed off on this because of the evolving organization, both in respect to Semiconductors and Terminals. I have tried to avoid hardening the present CSD organization so we have maximum flexibility going into the future. Our rearrangements of georgraphic strategies is dragging beyond the time where this is workable.

- Southwest Printer Development
  This essentially was deferred to higher level processes of divisionalization, etc.

PROCESS

- 3 Strategic Planning Units
  We have clearly installed the three part CSD Organization to achieve this and have made tremendous progress in this direction. In general, I feel super good about the leadership that CSD has provided for SPU activity. The lack of support for all but Herb Shanzer's efforts has been a real frustration.

- CSD Management Process
  I feel very good about this from an CSD internal point of view. The installation of a decentralized management process within the three groups has been achieved and the groups are executing effectively. In general the management process has been preceding the OOD level detail demands and this has caused some amount of rework, duplication and frustration. Ron Cadieux's work is becoming more visible.

- Quarterly "Business Focus"
  We have achieved good results in the Chips and Terminals area mostly because of identifiable customers and identifiable manufacturing. The system operation has move more slowly. The concept of group business focus is presently not supported at the OOD level. My sense is this is an issue which especially for Chips and Terminals I need, but from a corporate point of view we won't achieve this focus for another 2 or 3 years.

OTHER

- Hudson II is happening.
- European Product Development Targets are quite well focused on Graphics and Communications. Jim Wade has been doing a good job here.
- Clayton/Esten meetings have been happening.
- We have made a fair amount of progress between Engineering and Manufacturing in all groups. The concept of cross coupled staff meetings was not implemented and does not seem appropriate at the moment. There is too much internal drive and focus in both manufacturing and engineering to achieve this in today's environment.
- BOD Presentation achieved my internal goal (bounded, ease of use, balance).
- The European visit was moved out to mid May.
- The European Beige Book has converged nicely and we seem to be long past the fall wars of C.S.S. and product planning is evil.

HUMAN RESOURCE PROCESS

- Replacement Strategies: Very little overt visible work is done here because of the instability above in both the Semiconductor structure and Terminals Division structure questions.
- Olsen/Delagi Process: I don't perceive a very active role in this one. To the best of my knowledge that was worked by Gordon and Larry on several dimensions and I dont' recognize any access to the data during any of the diliberations. We did mobilize a fair amount of support to Bruce as it relates to finishing up the PDT and some of the Task Force work on the 1000 terminal.

ADDED ITEMS

- Hudson move replan. Hang in and keep pressing for Mill strategy before people start bailing.

- Semi Development Management
  The move change forces a more integrated management process by summer. Jim either must do it, or back away and let me solve it, Needs crisp boss focused on the trio (McGill, Metzer).

- Semi Development Budget
  In October I didn't really expect our October EBOD Strategic request would drag into May (can't be right all the time).

- Terminals Funding
  Combination of OOD funding choice, Chalmers and Strauss leaving and Bill Picott coming on board make the environment very different; hence, a demand for increased management activity. It will work.

- Fll Manufacturing Slip
  We have lost about 15 weeks relative to our expectations of last February-March. Outside source worked, but Worcester had lots of problems. Customer commitments not blown, but missed market opportunity. Will get about 12,000 Chip Sets instead of 20,000 by end of FY 80.

- Interconnect Management
  The corporate interconnet process seems marginally effective from a management viewpoint. It seems to demand more maturity and technical skill than readily available from Herb's group. The convergence and refocus of the program has caused much frustration BI, Q22, NI, etc. Expectations seem greatly beyond skills in many areas including CSD.

PL) Product responsibility

Measurable Personal Objectives
Meet with 95% probability, clearly measurable

October Priority		April Priority	Objective	Date
			Product B	
2	B	1	Tiny System team starting (PDT 50) (PDT constant function successor)	3-30-80
4	B	3	LQP Strategy restated / add serial LQP (Diablo)	1-30-80
2	B	x	Restate Terminals product schedule (slips)	11-30-79
	C		- Lasting T strategy	
	C		- Products goals / Direction in T/S²	
			Organization	
	A		- Products goals / direction in Micros	
1	A	x	Terminals Manager, Video Manager, Terminals Archictecture	12-30-79
2	A	x	LA24 full time Manager	12-30-79
1	A	x	Video Support Process closed	1-30-80
2	B	2	Install Low End Technical Director	3-30-80
3	D	3	Southwest Printer Development Proposal Decision	12-30-79
	C		T/SS A/D mgr. Lost	
	C		**Process** (Architecture for µ (Tiny), others, T, SS; Graphics Arch.)	
	C			
2	A	1	3 strategic planning units installed (Chips, Terminals, Sys.)	11-30-79
1	A	1	CSD Management Process Presentation	2-28-80
3	B	2	Start Quarterly "Business Focus" using Chips, Terminals, Systems as a focus. Begin Quarterly Manufacturing, Marketing, Engineering, Service working meetings for operational issues. A trial process to give people a sponsored sense of business.	2-15-80
			Joint Graphics with P/L's, CSS	
			Other — Joint S² with Comml. / Tech. / Corp. Prod.	
1	A	x	Break ground for Hudson II	3-30-80
2	B	2	Europe Product Development target closed	4-30-80
2	A	2	4 Personal scheduled meetings/quarterly with Esten	now
2	B	4	Joint Manufacturing/Engineering working staff meetings per a plan	12-30-80
1	B	x	Do quality job on BOD presentation	11-22-79
? 2	B	x	Visit European Engineering	
2	A	x	European Engineering Red/Beige Book presentation @ OOD	11-15-79
			Human Resource Process	See OOD Plan
1	C	?	Replacement Strategies	Open
2	C	4	Olsen/Delagi Process	Open
			Added Items	
4	B	1	Semi Engineering Shadow Management	
3	A	1	Semi Development Budget Process	
4	B	1	Terminals Funding Strategy Change (P.L.)	
4	B	1	Replan Hudson/Mill Move	
0	B	?	Division Proposal	
4	C	1	Southwest Move	
4	B	2	F11 Manufacturing Slip	
3	C	1	Interconnect Installation → Q22 Arch	
	A		Ron Cadigue Hire	

RJC Original 10/22/79, Revised 4/6/80

Measurable Personal Objectives
Meet with 95% probability, clearly measurable

Product

Tiny System team starting (PDT constant function successor)	3-30-80
LQP Strategy restated	1-30-80
Restate Terminals product schedule (slips)	11-30-79

Organization

Terminals Manager, Video Manager, Terminals Archictecture	12-30-79
LA24 full time Manager	12-30-79
Video Support Process closed	1-30-80
Install Low End Technical Director	3-30-80
Southwest Printer Development Proposal Decision	12-30-79

Process

3 strategic planning units installed (Chips, Terminals, Sys)	11-30-79
CSD Management Process Presentation	2-28-80
Start Quarterly "Business Focus" using Chips, Terminals, Systems as a focus. Begin Quarterly Manufacturing, Marketing, Engineering, Service working meetings for operational issues. A trial process to give people a sponsored sense of business.	2-15-80

Other

Break ground for Hudson II	3-30-80
Europe Product Development target closed	4-30-80
4 Personal scheduled meetings/quarterly with Esten	now
Joint Manufacturing/Engineering working staff meetings per a plan	12-30-80
Do quality job on BOD presentation	11-22-79
Visit European Engineering operation	12-30-79
European Engineering Red/Beige Book presentation @ OOD	11-15-79

Human Resource Process	See OOD Plan
Replacement Strategies	Open
Olsen/Delagi Process	Open

October 1979

COMPUTER SYSTEMS DEVELOPMENT

CHARTER:

FOR SMALL SYSTEMS (PDP-8, PDP-11, AND VAX), TERMINALS, PROPRIETARY MICROPROCESSOR ARCHITECTURES, AND GRAPHICS PROVIDE A STEADY STREAM OF PRODUCTS SUCH THAT DIGITAL IS GENERALLY CONSIDERED A WINNER IN PRODUCTS BELOW $16K*. IN ADDITION TO SPECIFIC PRODUCT DEVELOPMENT, PROVIDE AND MANAGE CORPORATE PLANNING, ADVANCE DEVELOPMENT, AND WHERE APPROPRIATE, "MARKETING" FUNCTIONS ASSOCIATED WITH THE ABOVE PRODUCT AREAS.

SPECIFICALLY INSTALL AND MAINTAIN EFFECTIVE SYSTEM MANAGEMENT FUNCTIONS THAT ENCOMPASSES MASS STORAGE, BASE SOFTWARE, COMMUNICATIONS PACKAGING, CPU'S, ETC. INTO A PLANNED SET OF SYSTEMS RELEASED TO THE MARKETPLACE VIA DIGITAL PRODUCT LINES.

PROVIDE CORPORATE STRATEGIC FOCUS AND SUCH DEVELOPMENT AS REQUIRED FOR LINE PRINTERS AND NON IMPACT PRINTERS.

MANAGE EXPANSION OF EUROPEAN ENGINEERING FROM SOFTWARE TO DRIVE EUROPEAN FOCUS ON CORPORATE PRODUCT PLANNING AND BEGIN A FOCUSED HARDWARE DEVELOPMENT.

BEGIN LIMITED JOINT PRODUCT DEVELOPMENT (AND MANUFACTURING) WITH DEC FAR EAST.

DEFINITIONS:

SYSTEM: EXECUTES MOST OF AN APPLICATION TASK MOST OF THE TIME

TERMINAL: ONE OR MORE USER INTERFACES THAT ARE PHYSICALLY SEPARABLE FROM A SYSTEM SUCH THAT WHEN THEY STAND ALONE THEY CAN'T EXECUTE MOST OF AN APPLICATION TASK MOST OF THE TIME. THE BOUNDARY BETWEEN TERMINAL AND SYSTEM IS BECOMING FUZZY FOR 10% OF THE BUSINESS, JUST HAVE TO MANAGE IT.

CHIPS: PROPRIETARY ARCHITECTURES SUCH AS 1 TO 4 CHIPS PDP-11'S AND VAX. IO ONLY AS EXPLICITLY IDENTIFIED.

*"TYPICAL SELLING PRICE OF MINIMUM SALEABLE AND USEABLE SYSTEM (I.E. NOT FULL EXPANDED).

(TARGETS TO MEET AND/OR CHANGES TO BEGIN)

PRODUCT

MEET PLANNED SCHEDULES AND BUDGETS
TERMINAL ARCHITECTURE FEELS GOOD
NIP PRODUCT STARTED
COMMUNICATION STRATEGY IS OK
80% OF FY 81 SHIPMENTS DON'T GET FA&T'D
BEGIN FOCUS FOR ZERO INSTALLATION COST RSX, RSTS, & RT BASED SYSTEMS.

PROCESS

DEVELOP SYSTEM PLANNING PROCESS
RECOGNIZABLE OPERATIONAL MANAGEMENT CONTROL SYSTEM
2-5 YEAR PLANNING IN Q2 (TEAM PROCESS, POTS RESTARTED)
BUSINESS FOCUS INCLUDING COST, VOLUMES, PHASE IN AND OUT. BOTH BY PRODUCT AND EACH OF THREE GROUPS
SUPPORT PROCESSES DEFINED FOR MULTI PLANT KERNEL PRODUCTS
ARTICULATE AND USE "PROGRAM TOOLS" ESPECIALLY FOR SCORPIO, L70, TERMINALS.

PEOPLE

LEAD OOD IN KEY PROGRAMS (COLLEGE ACCLIMATION HUMAN RESOURCE PLANNING, MATRIX REVIEWS, ETC.)
STABLE POSITIVE ENVIRONMENT THAT IS TECHNICALLY STRONG
DO HUDSON MOVE WELL.

MANUFACTURING & SERVICE INTERDEPENDENCIES

MUCH IMPROVED FOCUS WITH MICROPRODUCTS
CONTINUE TEAM BUILDING WITH DICK ESTEN'S STAFF
TIGHTEN TIES WITH SOFTWARE & HARDWARE SERVICE (PROBABLY FOCUSED ON INSTALLATION AND LIFE CYCLE COST.)

MARKETING

SUBSTANTIALLY IMPROVE TEAM BEHAVIOR WITH STAN OLSEN'S COMPUTER PRODUCTS GROUP
MOSTLY OK COMMERCIAL AND TECHNICAL PRODUCTS
COUPLING TO OFFICE OF THE PRESIDENT.

ORGANIZATION

FINISH REORGANIZATION (TERMINALS MANAGER)
TERMINALS ARCHITECTURE
ADD MANUFACTURING FOCUS
3 MAJOR GROUPS SUBSTANTIALLY INDEPENDENT (SYS., TERM., CHIPS)
MOVE TO FULL TIME TECHNICAL DIRECTOR
CONTINUE TO BROADEN SYSTEM SKILLS OF SYSTEMS GROUP

RSE 9/19/79

****
*DIGITAL**
****

DC#25.14

I N T E R O F F I C E M E M O R A N D U M

TO: Gordon Bell
Larry Portner

DATE: October 22, 1979
FROM: Dick Clayton
DEPT: CSD
EXT: 3-3638
LOC/MAIL STOP: ML12-2/E71

SUBJECT: Personal Objectives

Gordon and Larry, these are primarily change issues at my level for which the detailed changes are essentially in place and moving. It specifically does not include various program, products, etc. which are within the responsibility of my managers and which are not "changing". Do you want that sort of thing too (I hope not). This list avoids things presently in the opportunity, search mode. Would you please feedback how you want to use this information, what is the risk reward process?

Measurable Personal Objectives
Meet with 95% probability, clearly measurable

- Budget issue
- Org. proposal to SW
-

Product

Tiny System team starting (PDT constant function successor)	3-30-80
LQP Strategy restated	1-30-80
Restate Terminals product schedule (slips)	11-30-79

Organization

Terminals Manager, Video Manager, Terminals Archictecture	12-30-79
LA24 full time Manager	12-30-79
Video Support Process closed	1-30-80
Install Low End Technical Director	3-30-80
Southwest Printer Development Proposal Decision	12-30-79

Process

3 strategic planning units installed (Chips, Terminals, Sys)	11-30-79
CSD Management Process Presentation	2-28-80
Start Quarterly "Business Focus" using Chips, Terminals, Systems as a focus. Begin Quarterly Manufacturing, Marketing, Engineering, Service working meetings for operational issues. A trial process to give people a sponsored sense of business.	2-15-80

Other

Break ground for Hudson II	3-30-80
Europe Product Development target closed	4-30-80
4 Personal scheduled meetings/quarterly with Esten	now
Joint Manufacturing/Engineering working staff meetings per a plan	12-30-80
Do quality job on BOD presentation	11-22-79
Visit European Engineering operation	12-30-79
European Engineering Red/Beige Book presentation @ OOD	11-15-79

Human Resource Process

See OOD Plan

Replacement Strategies	Open
Olsen/Delagi Process	Open

Cudmore

MAY 2 1980

+----------------+
+ d i g i t a l + INTEROFFICE MEMO
+----------------+

TO: Gordon Bell/Larry Portner

Date: 1 MAY 80
From: Jim Cudmore
Dept: LSI Admin.
Ext.: 225 4487
MS: HL

SUBJ: **FOLLOW-UP ON FY '80 OPERATING OBJECTIVES FOR LSI GROUP**

Below is a brief summary of our progress against the operating objectives established in Q1, FY '80, and attached is more detailed analysis of the specific Microproducts goals.

- Program Management
  - have program managers for all planned programs (MCA hired, not on board) and PUSART, ICCS.
  - during Q3 established business plans and formal monthly reports.
  - during Q4 formed quarterly business plans review start.
  - major staffing accomplished, function starting to be felt.

- Planning Process
  - MOS Strategy Committee established and functioning several months - Roy Moffa, Chairman - primary focus on custom microproducts - need to shift to logic also.
  - BiPolar Strategy Committee established - first meeting 5/9 - Brian Croxon, Chairman - representatives from MS, LCG, MSD, LSI - focus is planned on all BiPolar logic implementations (custom and std.).
  - we're started, but need to sharpen focus and accellerate progress.

FOLLOW-UP ON FY '80 OPERATING OBJECTIVES (Continued)

MICROPRODUCTS SPECIFIC

- Achieve critical mass (build workforce) - have significantly staffed MOS circuit group, Advanced Development some progress, spectacular CAD success, no progress in MOS architecture (Gunther).
  - attrition rate was >20% in Q3 FY79, will be <2% for FY '80.
  - MPD population

77	78	79	80	81
86	92	95	148	

    College hires:

-	-	-	20	39 (goal)

  - same management team as one year ago.
  - "Piece of Rock" budgeting being implemented.

- Fast Turnaround
  - CX to do its own layout of 400 gate array in CX, in May.
  - CAD tools significantly improved - gate array manual published.

- MOS Development
  - HMOS will be in place for the chips being designed.
  - 2 micron - were late, new test chip being done - Micro VAX tied to process - will make real progress in '81.

- BiPolar Development
  - MOSAIC - we're late but technically strong and will be O.K.
  - interface with LCG going very well.

- Structured Design
  - CALMOS works but is poorly implemented.
  - have a dedicated project team and the base CAD tool - this is going to really pay off.

- Miscellaneous
  - have initiated formal technical training - visiting professor half-day seminars, VLSI design course, established technical library.

FOLLOW-UP ON FY '80 OPERATING OBJECTIVES, Continued:

- SAGE II, TUMS, VOTE, now one team working well collaboratively.
- Co-location of MPD and chip's group of CSD in HL Phase II an important step to improve communications and workflow.

Overall, I'd give us a B for the year.

mm
Attachments

GOAL - STABILIZE/BUILD WORK FORCE...CRITICAL MASS

OBJECTIVE	STATUS
o MOS Circuit Design area - add three senior designers.	o A senior MOS Design Manager and four designers have been hired. Two junior level MOS designers joined us and two senior Bipolar designers are being re-trained and have MOS design projects.
o In the Advance Development area need to add two device engineers.	o One device engineer has been added. Requisition exist for yet two more, which I expect to fill by end of Q4.
o In the CAD area need to add two senior software engineers in areas of circuit simulation, DRC, (Design Rule Checking), and IV (Interconnect Verify).	o We have actually exceeded this goal by hiring three senior software engineers instead of two: Llanda Richardson joined in Sept. 79 and became the Circuit Simulation Technical Leader. Len Dalton joined in Oct. 79 as the Layout Verification Tools Group Leader. Bob Hamilton joined in Nov. 79 as the Senior Software Engineer for IV Software.
o In Systems and Logic Design area need to add two MOS Architect/Logic Designers.	o To date we are unable to locate and hire two individuals with specific MOS Architecture experience.

OBJECTIVE	STATUS
o Reduce attrition to 10% for FY '80	o We did even better than our goal! Annualized % for terminations from DEC (exclusive of internal transfers) is 2 1/2 %.
o Get to one year's visibility project planning. (Absolutely necessary to retain a critical mass of senior people.)	o Currently we are actively pursuing this activity as part of the "Piece of the Rock" proposal. A total summary of all spending has been proposed by MPD to our Central Engineering users for FY81. (7,157K) We are now in the process of getting feedback from the OOD members and their managers. We are shooting to have the first cut feedback by the first week of May. However with budget at anticipation on the horizon this process of securing committed funds might drag longer.

GOAL - FAST TURNAROUND

OBJECTIVE	STATUS
o Be able to export the 200/400 gate array design system to engineering satellites by the end of FY'80.	o Pass #1 export is currently scheduled for May 30 to Colorado with MINCUT as placer and IDEA as Router (Comet KLUDGE System). Phase 2 project plan is being developed and will include FINCUT as Placer and Chariot as the router.
o All post processing tools will be operable on DECsystem 10 by the end of January (DRC, IV, Plotting and P.G. tape generation).	o IV and Plotting Software were completed in March '80 and have been running successfully. o DRC is just completed (Apr. '80) and is being installed at various sites. The delay was mainly due to obtaining a multi-site license for the software. o PG Tape Generating Software (SHRINK) has been purchased from NCA. We found some problems during our test and acceptance. NCA has a commitment to fix the problems and deliver a good copy of the software in May '80.
o Mincut Placement will be completed by the end of January.	o FINCUT (MCA MINCUT) prototype was completed in Feb.'80 and the production release was made in Apr. '80. FINCUT's results were so great that we decided to build PINCUT (PC board placement based on FINCUT Algorithms) PINCUT is expected to be ready in Jun. '80.
o Chariot routing will be complete by end of Q4 FY '80.	o We have made a tremendous progress on this challenging goal. We expect to have a full-blown prototype CHARIOT system, ready-to-be tried out on actual chips, in Jun '80. We expect to have a first production release in Dec '80.

GOAL - ORGANIZE STAFF FOR ADVANCED DEVELOPMENT

OBJECTIVE	STATUS
MOS DEVELOPMENT	
HMOS	
o Operable HMOS CKT simulator by Feb.'80	o Milestone was met, but with an initial version; this version is now being enhanced to better meet designers' needs.
o Process development/transfer will be completed by the end of FY '80.	o Solidification of effort of starting up process in HL is needed; this issue is being worked. Process development effort @ WX appears to have been satisfactory. Objective is now to have process at HL satisfactory for prototyping of PUSART chip by 11/80. Characterization effort will continue when HL-processed lots become available.
2u NMOS	
o Preliminary 2u process with poly resistors poly interconnects and refractory metal will have target design rules (unverified) by Q4 FT'80. VLSI VAX is the target product.	o Several revision of target design rules have already been published. Process goal is now more aggressive; now aiming for 2 levels of aluminum interconnect with poly resistors on first level of poly.
o HMOS test chips modified for 2u structures in the Q4 FY'80 to Q1 FT'81 time frame.	o Plan was changed; a totally new design for test chip is being done. Completion date remains same. Work being done by Dobberpuhl.

OBJECTIVE	STATUS
o Preliminary circuit models and simulation tools (including short channel effects) available in Q2 FY'81.	o On tract. This will be a larger task than initially expected. Production of final models targetted for Q4 FY'82. 80% confidence models for SLIC should be available in Q3-Q4 FY81 time frame. A totally new model in the simulator may have to be developmed for the final result.
BIPOLAR DEVELOPMENT	
o Transfer the MOSAIC I process into Hudson for MCA second sourcing and evolve it to a 2u feature-size process (MOSAIC II).	o Present goal is the first part of the objective only -- the development/ transfer of MOSAIC I 2u enhancement is expected to be done, but there is no project plan for this activity in FY81; 2u effort will commence in FY82. Adam Shepela is leading the MOSAIC I transfer/ development effort.
o P.G. tape (of modified T04 test chip) should be completed by February FY'80. Major milestones without Motorola contract:	o Modified T04 was completed in Sept. FY80. A totally new test chip design will be completed in June 1980.
o Process recipe by Q2 of FY''81	o Have a compatible process recipe today.
o Conservative design rules by Q2 FY81	o On schedule.
o MOSAIC I performance design rules by Q1 FY'82.	o Should have models for predicting circuit performance by Q1 FY82.

OBJECTIVE	STATUS
o Get Motorola contract, so:	o Contract signing expect May 5, 1980.
o Immediate design rules with MOSAIC I performance	o These three items are tied to contract signing, and are approximately on schedule; if anything, ahead of schedule if contract is signed before June 1.
o MCA II development begins much sooner.	
o MCA chips begin ship from HL in Q2 FT'82.	

GOAL - REAL STRUCTURED DESIGN GAMEPLAN

OBJECTIVE	STATUS
o Have a structured FTA design process using HMOS technology which fits between COMET/MCA and VLSI VAX in level of integration, with LS performance, and development cost and time similar to COMET. o Prototype process will be demonstrable by the end of FY"80 (DLART may be target chip) and ready for export to design satellites by mid-FT'81. o 2-3K gate equivalents o LS Prop speeds for average loading o 17 week chip development for $50K (from logic complete and including masks).	o At this point, we have determined that the ROADRUNNER approach is feasible. A major requirement was that the dye size using this approach, not exceed handcrafted dye sizes by more than 50%. Using DLART as a test design and HMOS standard cells optimized for Calmos, we have designed a chip that is between 100 and 112% the size of the DLART as designed by AMI using handcrafted design techniques. We were able to totally auto-place and auto-rout this chip in less than a day. However, we have run into major problems with Calmos and at this point are only able to determine that their algorithms are very useful, but we have many problems with the software itself; including improper handling of I/O, impractical number of cells supported with less than 500 cells, lack of sufficient and accurate user documentation, as well as a large number of software bugs. It is unlikely that we will be able to use Calmos within the next year as a tool to design IC's. A possible alternative we are currently pursuing, is the use of GAELIC and Calmos so that we can be able to place and rout large functional blocks by Dec. '80. This would include power and ground distribution. The strategy is to use Calmos to lay out large functional blocks and then use GAELIC to interconnect the PLA's, I/O cells, and the large functional blocks. We are currently rethinking the project schedule for ROADRUNNER in the light of the larger CAD effort than we originally expected. However, we still see a very positive outlook for this approach.

digital

INTEROFFICE MEMORANDUM #J3.72

TO: OOD

CC: LSI Staff

DATE: 11 OCT 79
FROM: Jim Cudmore
DEPT: LSI Administration
EXT: 223 2393
LOC/MAIL STOP: ML 1-5 E 30

SUBJ: ONE MORE TIME ON GOALS/OBJECTIVES FOR LSI GROUP IN FY '80

Attached find the LSI group goals - FY '80 (9/10/79) unchanged, and a refined set of operating objectives for those goals of primary interest/impact to the engineering community.

mm
Attachments

LSI GROUP GOALS - FY '80

OVERALL

- Significantly improve visibility, understanding and interaction with other Mfg. and Eng. groups - vis a vis plans, status, performance.
- Form a partnership with the right Central Eng. organizations to jointly plan/drive the evolution of semiconductor logic families and technologies (MOS, MICROPROCESSORS/CSD, ECL/LCG, T_2L_S/MSD, RAM/MASS STORE)

MICROPRODUCTS

- Stabilize/build workforce to critical mass through better management and longer-term work loading plans.
- Make the fast turnaround (200, 400 gate array) a real service.
- Organize and staff for Advanced Development.
- Develop a real structured design gameplan (based on Micro-VAX).
- Have more programs (chips, CAD, etc.) that are successes - on time and seen as winners.

MANUFACTURING

- Successfully manage start-up of the Hudson facility in a manner that provides a <u>solid base</u> for future operations.
- Improve operations in Worcester facility toward being significantly more predictable (costs, yields, cycle-times etc.) with major, improvement in prototype service.
- Manage the organization and resources to meet the process development needs (HMOS, MOSAIC) more aggressively.

LSI GROUP GOALS - FY'80

ACQUISITION & TEST -

- Establish a forecasting system for better coupling of component demand with product manufacturing needs.
- Increase effective test capacity to provide a safety "cushion" (more vendor test, smarter test, AQL etc.)
- Establish much longer-term commitments with vendors to insure future availability of components.
- Significantly improve delivery performance, average> 90% weekly by Q'4.

OPERATING OBJECTIVES FOR LSI GROUP
(Which primarily impact Engineering)

These objectives relate one/one to the preceding LSI group goals (Overall and Microproducts.)

GOAL - Better visibility.....understanding with....Eng.

Objectives

- Establish program management to provide a total plan and single interface on major chip programs:
  - P.M. assigned to LSI-11, F-11 now
  - " " " TINY 11 by mid Q2
  - " " " J11 by end Q2
  - " " " COMET by November
  - " " " MCA by beginning Q3
  - Simple, clear, reporting structure and info. flow by mid Q3 (= PERIODIC REPORTS ON WHAT IS, ISN'T HAPPENING)

GOAL - A partnership with...Cent. Eng.....jointly drive technology evolution.....

Objectives

- Establish a joint planning process, improve relationships and confidence: (— PROCESS PLANS (INF. ACT. — PLANS FOR SUPPLY, MFG/SUPPLIER PRODUCT TECH.)
  - Proposal on structure by end of Nov.
  - Process in place in Q3 being debugged
  - By end of Q4, "partners" agree this is a <u>real</u> success and did materially improve FY '81 plans.

GOAL - Stabilize/build work force...critical mass

Objectives

- MOS Circuit Design area - add three senior designers
- In the Advance Development area need to add two device engineers
- In the CAD area need to add two senior software engineers in areas of circuit simulation, DRC, (Design Rule Checking), and IV (Interconnect Verify).
- In Systems and Logic Design area need to add two MOS Architect/Logic Designers
- Reduce attrition to $\leq$ 10% for FY '80.
- Get to one year's visibility project planning. (Absolutely necessary to retain a critical mass of senior people.)

GOAL - Fast turnaround.....

Objectives

- Be able to export the 200/400 gate array design system to engineering satellites by the end of FY '80
- All post processing tools will be operable on DECsystem 10 by the end of January (DRC, IV, Plotting and P.G. tape generation)
- Mincut Placement will be completed by the end of January.
- Chariot routing will be complete by end of Q4 FY '80

GOAL - Organize staff for Advanced Development...

Objectives - MOS Development...

HMOS:

- Operable HMOS CKT simulator by Feb. '80
- Process development/transfer will be completed by the end of FY '80

2μ NMOS:

- Preliminary 2μ process with poly resistors, poly interconnects and refractory metal will have target design rules (unverified) by Q4 FY '80. VLSI VAX is the target product.
- HMOS test chips modified for 2μ structures in the Q4 FY '80 to Q1 FY '81 timeframe.
- Preliminary circuit models and simulation tools (including short channel effects) available in Q2 FY '81.

Objectives - Bipolar Development...

- Transfer the MOSAIC I process into Hudson for MCA second sourcing and evolve it to a 2μ feature-size process (MOSAIC II).
- P.G. tape (of modified T04 test chip) should be completed by February FY '80. Major milestones without Motorola contract:

  - Process recipe by Q2 of FY '81
  - Conservative design rules by Q2 FY '81
  - MOSAIC I performance design rules by Q1 FY '82

  - Get Motorola contract, so:

  - Immediate design rules with MOSAIC I performance
  - MCA II development begins much sooner
  - MCA chips begin ship from Hudson Q2 FY '82

GOAL - Real structured design gameplan.....

Objectives

- Have a structured FTA design process using HMOS technology which fits between COMET/MCA and VLSI VAX in level of integration, with LS performance, and development cost and time similar to COMET
- Prototype process will be demonstrable by the end of FY '80 (DLART may be target chip) and ready for export to design satellites by mid-FY '81.

  - 2-3K gate equivalents
  - LS Prop speeds for average loading
  - 17 week chip development for $50K (from logic complete and including masks).

Demmer

****
* d i g i t a l *
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Probs: Sponsorship of Hydra

TO: GORDON BELL*
LARRY PORTNER

DATE: FRI 28 MAR 1980 2:41 PM EST
FROM: BILL DEMMER
DEPT: DISTRIBUTED MID-SYS
EXT: 247-2112
LOC/MAIL STOP: TW D19

SUBJECT: CURRENT STATUS ON D&MS OBJECTIVES

Systems-wise - poor.

The updated D&MS objectives follow.

DISTRIBUTED & MID-RANGE SYSTEMS (D&MS)

GOALS AND OBJECTIVES

GOALS	OBJECTIVES		CURRENT STATUS
STABILIZE AND IMPLEMENT THE MID-RANGE SYSTEMS STRATEGY			poor B
. MEET THE FOLLOWING SCHEDULES FOR ANNOUNCE AND SHIP:			
C — 11/44	A-Q2	S-Q3	COMPLETE. A-11/79 SHIP-3/80 DRT issue
B E — 11/74MP	A-Q3	S-Q3	CANCELLED
B — 11/24	A-Q1	S-Q1	SLIP 1 QTR. to Q2
B — COMET	A-Q1	S-Q1	ON TARGET — Very late.
. ESTABLISH CREDIBILITY IN BEING PREDICTABLE TO MEET SCHEDULES AND BUDGETS AND IN ESTIMATING PRODUCT COSTS.			HIRED OPNS. MGR TO ASSIST IN CONTROLS. ESTABLISHED QTRLY REVIEWS OF BUDGETS (ON TARGET) AND ADDED FINANCE HELP IN PRODUCT COSTING ACTIVITIES.
EXPAND THE SCOPE OF THE MID-RANGE SYSTEMS STRATEGY TO BECOME A COMPLETE BUSINESS SYSTEMS STRATEGY THAT INCLUDES THE EXTERNAL COMPETITIVE ENVIRONMENT.			Poor! C+ B-
. HAVE AN FY81 STAFFING PLAN THAT SUPPORTS PERFORMING THE FULL SYSTEMS MANAGEMENT FUNCTION.			USING HRP EFFORT AND EVOLVING SKILL MIX CHANGE TO START.
. IDENTIFY THE MINIMUM SET OF MANAGEMENT INFORMATION/ CONTROL SYSTEMS NEEDED TO AID THE SYSTEMS INTEGRATION PROCESS BY Q3.			INSTALLATION OF PROGRAM MGRS HAS BEEN KEY STEP THUS FAR. EXPECT TO SUPPLEMENT THEIR TOOLS ONCE OPNS. MGR BECOMES EFFECTIVE. — Lost Magens
. BEGIN UTILIZING LIFE CYCLE COST MODELS FOR DESIGN TRADEOFFS BY Q4.			HAVE INITIATED THIS INFORMALLY ONLY. CORP. PRICING PROCESS NOT LIKELY TO BE SUPPORTIVE THIS YEAR. — poor
. INITIATE DOCK MERGE OF 11/780			AN FY80 PROCESS ESTABLISHED TO

SYSTEMS BY YEAR END.	SEPARATE ORDERS INTO FULL DOCK MERGE, PARTIAL DOCK MERGE (25% FA&T TIME FOR NON-DOCK MERGE-ABLE ITEMS), AND NORMAL FA&T. HALF DOZEN FULL DOCK MERGE SHIPS SO FAR, OVER 100 PARTIAL.
. HAVE A FINANCIAL SUPPORT FUNCTION THAT NOT ONLY PLANS AND CONTROLS (JOINTLY WITH LINE MANAGEMENT) DEVELOPMENT EXPENSES AND CAPITAL, BUT ALSO PROVIDES FINANCIAL ANALYSIS OF EXISTING AND PROPOSED SYSTEMS.	HAVE RUN MAJOR FINANCIAL ANALYSIS ON KEY SYSTEMS (es COMET) AND EVEN SOME OPTIONS (es DMR).
Bill Demmer (10/24/79)	(3/28/80)

GOALS	OBJECTIVES	CURRENT STATUS
ESTABLISH THE CORPORATE LEVEL HARDWARE AND SOFTWARE ARCHITECTURE MECHANISMS FOR INTERCONNECTION TO/FROM ANY DIGITAL INTELLIGENT UNIT ALONG WITH THE APPROPRIATE MARKETING SCENARIOS.		
	• DEVELOP THE DETAILED ARCHITECTURE FOR THE BASIC INTERCONNECTION MECHANISMS.	
	WITHIN THE CABINET - Q3 WITHIN THE ROOM - Q2 WITHIN THE BUILDING COMPLEX-Q4	BI SPEC COMPLETE Q3 CI SPEC COMPLETE Q2 NI SPEC ON TARGET FOR Q4
	• BY Q2 DEFINE THE ARCHITECTURE PROCESS AND STAFFING FOR THE BASIC INTERCONNECT MECHANISM.	PUBLISHED INTERCONNECT PROGRAM PLAN IN Q2. THE PLANNING PROCESS HAS REQUIRED A 1 MONTH ACCELERATION IN Q3.
	• BY Q3 DEFINE THE MAJOR SYSTEM TOPOLOGIES DIGITAL WILL NEED TO SUPPORT WITH ITS DISTRIBUTED PROCESSING CAPABILITIES.	FULLER ARCHITECTURE TASK FORCE DUE TO PUBLISH BY END OF Q3. AGREEMENT REACHED WITH TASK FORCE.
	• INSURE THE IMPLEMENTATION OF THE INTERCONNECT STRATEGY ACROSS THE SMALL, MID-RANGE, AND LARGE SYSTEMS.	COMPLETED. A MORE PROACTIVE ROLE WAS REQUIRED IN OTHER SYSTEM & SUBSYSTEM AREAS.
IMPLEMENT A SET OF HARDWARE AND SOFTWARE PRODUCTS TO SERVE AS AN INITIAL NUCLEUS OF THE CORPORATION'S LONG TERM THRUST IN DISTRIBUTED PROCESSING.		
	• ANNOUNCE PHASE III DECNET IN Q2 ALONG WITH INITIAL SUPPORT OF X.25 PUBLIC NETWORKS.	MAJOR ANNOUNCEMENT OF PHASE III IN Q3 INCLUDING X.25 COMMITMENT.
	• BEGIN SHIPMENT OF PHASE III DECNET ON RSX11M IN Q3.	INTO SDC-1/80 OUT OF SDC-3/80
	• PUT TOGETHER A STRATEGY OF INTERCONNECTIONS TO IBM SYSTEMS BY Q4 WITH EMPHASIS ON SNA INTERFACES.	NEAR TERM STRATEGY UNDER REVIEW BY PRODUCT LINES. LONG TERM TO BE INTEGRATED WITH OUR DISTR. PROCESS PROGRAM PLAN.
	• SHIP AT LEAST ONE SNA INTERFACE PRODUCT THIS YEAR ON RSX11M.	INTO SDC-4/80 EXPECTED OUT OF SDC-6/80

Bill Demmer (10/24/79) (3/28/80)

GOALS	OBJECTIVES	CURRENT STATUS
INITIATE AND MAINTAIN AN ADVANCED DEVELOPMENT PROGRAM THAT WILL ENSURE A COMPETITIVE SET OF SYSTEMS PRODUCTS AND WILL YIELD TOOLS/PROCESSES FOR PRODUCTIVITY IMPROVEMENTS.		
	• HAVE ONE OR MORE ADVANCED PRODUCT/TOOL DEVELOPMENT PROJECTS READY TO BECOME PART OF THE FY81 PRODUCT DEVELOPMENT OR TOOL UTILIZATION STRATEGY.	SEVERAL KEY PROJECTS WILL BE READY FOR PRODUCT DEVELOPMENT IN FY81 (SUVAX, NEBULA JR, MICROCODE COMPILER, & A VAX SIMULATOR).
	• IN Q2 HAVE A DEFINED ADVANCED DEVELOPMENT STRATEGY THAT INCLUDES PROJECTS TARGETED FOR DEVELOPMENT IN FY82 AND BEYOND.	THE NAUTILUS PROGRAM ESTABLISHED IN Q2 THAT MOVES INTO DEVELOPMENT IN FY82 AS A COMET FOLLOW ON SYSTEM.
	• BY Q3 ESTABLISH A MORE FORMAL SET OF TIES WITH R&D TO SEEK JOINT EFFORTS ON SOME PORTION OF THE ADVANCED DEVELOPMENT STRATEGY.	THE REDIRECTION OF R&D HAS NARROWED THIS TIE TO PROFESSION BASED SYSTEM ACTIVITIES.
COMPLETE THE REORIENTATION OF THE TEWKSBURY FOCUS TOWARDS DISTRIBUTED AND MID-RANGE SYSTEMS.		
	• ACTIVELY PARTICIPATE IN THE CENTRAL ENGINEERING HUMAN RESOURCES PLANNING PROGRAM.	THIS IS JUST GETTING STARTED AND IS 1-2 MONTHS LATER THAN PLANNED TO GET NEW PERSONNEL MANAGER ON BOARD TO LEVEL THE EFFORT.
	• DEFINE AND TEST SOME SAMPLING PROCESS TO CALIBRATE OUR PROGRESS BY Q3.	THE SAMPLING PROCESS HAS BEEN DEFINED AND WILL BE IMPLEMENTED IN Q4 USING CROXON'S GROUP.
	• LIMIT ATTRITION TO 5% FOR 2 AND ABOVE PERFORMERS.	TEWKSBURY ATTRITION FOR 1/2 PERFORMERS AROUND 2%.
	• BY Q3 HAVE A MULTIYEAR ORGANIZATIONAL DEVELOPMENT PLAN AGREED TO BY THE D&MS STAFF.	IN PROCESS, EXPECT TO HAVE COMPLETE IN Q4.
	• HAVE A PERSONNEL ORGANIZATION THAT WILL BE INNOVATIVE IN ASSISTING THE TRANSITION PROCESS AND WILL ACTIVELY WORK TO MAKE THE ENVIRONMENT ONE THAT PEOPLE WILL ENJOY WORKING IN.	NEW PERSONNEL MANAGER (FEB) AND EMPLOYMENT SUPERVISOR (MAR) HAS RESULTED IN THE PERSONNEL FUNCTION NOT TAKING THE LEADERSHIP ROLE IN THE TEWSKBURY TRANSITION IN SKILL MIX THUS FAR.

Bill Demmer (10/24/79) (3/28/80)

GOALS.	OBJECTIVES	CURRENT STATUS
DEVELOP AND MAINTAIN A LONG TERM PLAN FOR THE MID-RANGE SYSTEMS.		
	. HAVE A BUSINESS STRATEGY THAT REFLECTS THE DESIRED GOALS FOR D&MS OVER THE NEXT SEVERAL YEARS.	HIRED LONG RANGE PLANNER TO DO THIS, BUT Q3 PLANNING PROCESS EFFORT HAS LIMITED TIME SPAN TO 3 YEARS THUS FAR.
	. BY Q3 HAVE AN ADVANCED TECHNOLOGY PLANNING PROCESS THAT COMBINES THE POSSIBLE BUSINESS SCENARIOS WITH THE POTENTIAL TECHNOLOGY CAPABILITIES TO DRIVE THE ADVANCED DEVELOPMENT STRATEGY.	THIS PROCESS WAS IN PLACE IN Q2, BUT OUR SHORT-TERM PLANNING PROCESS HAS CAUSED DELAY IN GETTING THE BUSINESS SCENARIOS.

Bill Demmer (10/24/79) (3/28/80)

BD(1.47)

DISTRIBUTED & MID-RANGE SYSTEMS (D & M S)

CHARTER

- THE NEW SYSTEM MANAGEMENT FUNCTION, FOR THE SMALL, MEDIUM AND LARGE SYSTEMS, INCLUDES RESPONSIBILITY FOR ALL ASPECTS OF PLANNING, PROGRAM MANAGEMENT, BUSINESS MANAGEMENT AND THE QUALITY THROUGH THE ENTIRE LIFE-CYCLE OF ALL THE HARDWARE, SOFTWARE AND SERVICE COMPONENTS THAT MAKE UP THE COMPLETE SYSTEM PRODUCT.

- DEVELOP AND IMPLEMENT DIGITAL'S PRODUCT STRATEGY FOR 11 & VAX ARCHITECTURE BASED SYSTEMS IN THE $15,000 TO $100,000 SYSTEM PRICE RANGE.

- DRIVE DEVELOPMENT OF COST/PERFORMANCE TECHNOLOGY FROM THE CIRCUIT DESIGN LEVEL THRU THE PRODUCT LEVEL PACKAGING.

- ARCHITECTURE AND DESIGN OF THE MECHANISMS AND TECHNOLOGY BUILDING BLOCKS FOR INTERCONNECTIONS (HARDWARE AND SOFTWARE) TO/FROM ALL DIGITAL INTELLIGENT UNITS. IMPLEMENTATION OF SOME INITIAL SET OF THESE.

- OWNERSHIP OF THE DISTRIBUTED PROCESSING PROGRAM THAT SETS THE CORPORATE DIRECTION AND PLANS FOR ACHIEVING DIGITAL'S GOALS IN DISTRIBUTED PROCESSING.

- ESTABLISH THE CORPORATE STRATEGY AND ARCHITECTURE FOR THE COMMUNICATION HARDWARE AND SOFTWARE FUNCTIONS AND BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE BROADLY USED PRODUCT SET.

- INTEGRATE ALL OF THE DIGITAL ENGINEERING ACTIVITIES TO ACHIEVE THE ABOVE SYSTEMS ORIENTED MISSIONS.

- PROVIDE PROGRAM LEADERSHIP FOR THESE SYSTEMS ACROSS ALL FUNCTIONS NEEDED TO ASSURE ACHIEVEMENT OF OUR MARKETING AND FINANCIAL GOALS.

BILL DEMMER
7/31/79 (Revised 10/16/79)

digital

INTEROFFICE MEMORANDUM

TO: OOD
D&MS Management Staff

DATE: 5 November 79
FROM: Bill Demmer
DEPT: D&MS
EXT: 247-2111
LOC/MAIL STOP: TW/D19

NOV 6 1979

SUBJ: UPDATED GOALS AND OBJECTIVES

Attached you will find an updated version of the Distributed & Mid-range Systems (D&MS) Goals and Objectives.

Bill

Attachment

DISTRIBUTED & MID-RANGE SYSTEMS (DMS)

GOALS AND OBJECTIVES

STABILIZE AND IMPLEMENT THE MID-RANGE SYSTEMS STRATEGY

- MEET THE FOLLOWING SCHEDULES FOR ANNOUNCE AND SHIP:

11/44	A-Q2	S-Q3
11/74MP	A-Q3	S-Q3
11/24	A-Q1	S-Q1
COMET	A-Q1	S-Q1

- ESTABLISH CREDIBILITY IN BEING PREDICTABLE TO MEET SCHEDULES AND BUDGETS AND IN ESTIMATING PRODUCT COSTS.

EXPAND THE SCOPE OF THE MID-RANGE SYSTEMS STRATEGY TO BECOME A COMPLETE BUSINESS SYSTEMS STRATEGY THAT INCLUDES THE EXTERNAL COMPETITIVE ENVIRONMENT.

- HAVE A FY81 STAFFING PLAN THAT SUPPORTS PERFORMING THE FULL SYSTEMS MANAGEMENT FUNCTION.

- IDENTIFY THE MINIMUM SET OF MANAGEMENT INFORMATION/CONTROL SYSTEMS NEEDED TO AID THE SYSTEMS INTEGRATION PROCESS BY Q3.

- BEGIN UTILIZING LIFE CYCLE COST MODELS FOR DESIGN TRADEOFFS BY Q4.

- INITIATE DOCK MERGE OF 11/60 SYSTEMS BY YEAR END.

- HAVE A FINANCIAL SUPPORT FUNCTION THAT NOT ONLY PLANS AND CONTROLS (JOINTLY WITH LINE MANAGEMENT) DEVELOPMENT EXPENSES AND CAPITAL, BUT ALSO PROVIDES FINANCIAL ANALYSIS OF EXISTING AND PROPOSED SYSTEMS.

ESTABLISH THE CORPORATE LEVEL HARDWARE AND SOFTWARE ARCHITECTURE MECHANISMS FOR INTERCONNECTION TO/FROM ANY DIGITAL INTELLIGENT UNIT ALONG WITH THE APPROPRIATE MARKETING SCENARIOS.

- DEVELOP THE DETAILED ARCHITECTURE FOR THE BASIC INTERCONNECTION MECHANISMS.

  WITHIN THE CABINET - Q3
  WITHIN THE ROOM - Q2
  WITHIN THE BUILDING COMPLEX - Q4

Bill Demmer (10/24/79)

- BY Q2 DEFINE THE ARCHITECTURE PROCESS AND STAFFING FOR THE BASIC INTERCONNECT MECHANISMS.

- BY Q3 DEFINE THE MAJOR SYSTEM TOPOLOGIES DIGITAL WILL NEED TO SUPPORT WITH ITS DISTRIBUTED PROCESSING CAPABILITIES.

- INSURE THE IMPLEMENTATION OF THE INTERCONNECT STRATEGY ACROSS THE SMALL, MID-RANGE, AND LARGE SYSTEMS.

IMPLEMENT A SET OF HARDWARE AND SOFTWARE PRODUCTS TO SERVE AS AN INITIAL NUCLEUS OF THE CORPORATION'S LONG TERM THRUST IN DISTRIBUTED PROCESSING.

- ANNOUNCE PHASE III DECNET IN Q2 ALONG WITH INITIAL SUPPORT OF X.25 PUBLIC NETWORKS.

- BEGIN SHIPMENT OF PHASE III DECNET ON RSX11M IN Q3.

- PUT TOGETHER A STRATEGY OF INTERCONNECTIONS TO IBM SYSTEMS BY Q4 WITH EMPHASIS ON SNA INTERFACES.

- SHIP AT LEAST ONE SNA INTERFACE PRODUCT THIS YEAR ON RSX11M.

INITIATE AND MAINTAIN AN ADVANCED DEVELOPMENT PROGRAM THAT WILL ENSURE A COMPETITIVE SET OF SYSTEMS PRODUCTS AND WILL YIELD TOOLS/PROCESSES FOR PRODUCTIVITY IMPROVEMENTS.

- HAVE ONE OR MORE ADVANCED PRODUCT/TOOL DEVELOPMENT PROJECTS READY TO BECOME PART OF THE FY81 PRODUCT DEVELOPMENT OR TOOL UTILIZATION STRATEGY.

- IN Q2 HAVE A DEFINED ADVANCED DEVELOPMENT STRATEGY THAT INCLUDES PROJECTS TARGETED FOR DEVELOPMENT IN FY82 AND BEYOND.

- BY Q3 ESTABLISH A MORE FORMAL SET OF TIES WITH R&D TO SEEK JOINT EFFORTS ON SOME PORTION OF THE ADVANCED DEVELOPMENT STRATEGY.

COMPLETE THE REORIENTATION OF THE TEWKSBURY FOCUS TOWARDS DISTRIBUTED AND MID-RANGE SYSTEMS.

- ACTIVELY PARTICIPATE IN THE CENTRAL ENGINEERING HUMAN RESOURCES PLANNING PROGRAM.

- DEFINE AND TEST SOME SAMPLING PROCESS TO CALIBRATE OUR PROGRESS BY Q3.

- LIMIT ATTRITION TO 5% FOR 2 AND ABOVE PERFORMERS.

- BY Q3 HAVE A MULTIYEAR ORGANIZATIONAL DEVELOPMENT PLAN AGREED TO BY THE D&MS STAFF.

- HAVE A PERSONNEL ORGANIZATION THAT WILL BE INNOVATIVE IN ASSISTING THE TRANSITION PROCESS AND WILL ACTIVELY WORK TO MAKE THE ENVIRONMENT ONE THAT PEOPLE WILL ENJOY WORKING IN.

DEVELOP AND MAINTAIN A LONG TERM PLAN FOR THE MID-RANGE SYSTEMS.

- HAVE A BUSINESS STRATEGY THAT REFLECTS THE DESIRED GOALS FOR D&MS OVER THE NEXT SEVERAL YEARS.

- BY Q3 HAVE AN ADVANCED TECHNOLOGY PLANNING PROCESS THAT COMBINES THE POSSIBLE BUSINESS SCENARIOS WITH THE POTENTIAL TECHNOLOGY CAPABILITIES TO DRIVE THE ADVANCED DEVELOPMENT STRATEGY.

Fagerquist

UF002/5

digital

Interoffice Memorandum

TO: Gordon Bell
Larry Portner

DATE: 24 MAR 1980
FROM: Ulf Fagerquist
DEPT: LS Development
EXT: 231-6408
LOC/MAIL STOP: MR 1-2/E78

SUBJ: OPERATIONAL REVIEW

This is my evaluation of progress against the goals we agreed on in Q2.

LSG OPERATIONAL REVIEW

Overall Evaluation

I think we met the goals that we set at a reasonable level.

I believe that there are several areas where I could have done more, especially in transferring the system management knowledge we have in the LS Groups.

The operational issues last year have taken most of our time and little contribution has been given to the rest of the OOD Team.

Some exceptions, where I believe we have done better than expected:

Venus Task Force and the System Program Management Task Force could have a high leverage across OOD. Also our flow through funded support of APL 32, ADA, DAWN and the single user VAX were important. The key advantage of flow through funding is that it saves management time to initiate the right thing, not for use as a control tool.

I still think that the decision to provide systems groups with 10% flow through for use to stimulate funding (Research and Advanced Development) is right and should be implemented.

In summary, there is a lot of room for improvement especially in areas with dependencies across OOD and other functions.

OBJECTIVES FOR LARGE SYSTEMS GROUP FOR FY80 - Ulf Fagerquist

Reference Goal 1. Meet the goals stated in the committed plans.

Objectives:

a. Agreement to formal reference plans by OOD in Q2.

b. Quarterly update to Red Book and Beige Book unless for major deviation to plan.

c. Operate with the following meaning of the plans:

Red Book is the formal document prepared by PM stating their commitment of funded strategy and specific product/service results on which business groups should base their short-and long-range plans.

Beige Book is the formal document prepared by EM stating their commitments in funded programs and specific results on which PM can base their Red Book commitments.

Reference Goal 2 Provide an environment in which people are able to perform at their highest potential of output and creativity which increases job satisfaction and improves contribution.

a. Clear charter for each group to build 3 year goals by Q2.

b. Agreement with BJ about long-range charter for Marlboro Software Engineering to provide stability by Q2.

c. Plan and program to upgrade the basic skills in people managememnt by Q2 to implement Q3/Q4.

d. Stabilize 2080 goals and 3 year budget by Q2.

e. Five-year business plan for 36-bit products approved by Q3.

f. Red Book/Beige Book goals at supervisor level

and part of performance evaluation for each employee by Q3.

g. System program managememnt role, process and tools defined and committed as part of OOD operations process by Q3.

h. Responsibility charting of system program management roles between engineering and manufacturing by Q3 and coordinate with J. Holman.

i. Human resource planning process including development of replacements for all levels of managers - coordinate with J. Meyer by Q3.

Reference Goal 3 Ensure that DEC is in a position to have all those processes, methods, skills and technologies available to develop and deliver at the right time, new and future high-end DEC Systems, the best in cost-of-ownership and customer satisfaction in those markets DEC elects to have leadership.

a. Each function has the scenario for the next 3 years and plan on how to get resources - plan Q3 and funded Q4.

b. Cost-of-ownership model for large systems by Q3 and as operational planning tool Q4.

c. Customer satisfaction model for VENUS in Q3 for verification of program goals against competition Q4.

Reference Goal 4 Provide active support to other groups that can help make any and all goals in Digital's overall product strategy happen; primarily the commitment to make the VAX/VMS Systems become the main product in all DEC's markets; second, to give highest priority to the implementation of Digitlal's distributed system structure and easy customer movements to VAX Systems.

a. Develop industry scenario for technologies and customer uses in LSG product area and use to test our current strategy Q2.

b. Reestablish customer advisory group within DECUS to better understand 1983-1987 customer movement - Q3 for report Q4.

c. With OOD establish 90% targets for strategy implementation by Q3.

Reference Goal 5 — Provide the Large System Strategy and get the implementation of this strategy committed to explicit action plans in all functions throughout Digital as part of Digital's overall product strategy.

a. Update the Red Book 1980-1985 and include two possible scenarios for test by Q2.

b. Obtain commitment to funded explicit action plans to support the LSG Strategy on:

INTERCONNECT Plans Q2 - funding Q3 with B. Demmer.

SOFTWARE Plans Q3 - funding Q4 with BJ

MASS STORAGE Plans Q3 - funding Q4 with G. Saviers.

Reference Goal 6 — Develop "VENUS" as the principal high-end DEC System product for all DEC markets and the growth path for the PDP-11 and 11/789 customer base.

a. Have updated system business plan and cursory implementation plan approved as part of phase 0 and 1 by Q3.

Reference Goal 7 — Develop the 2080 to maintain DEC leadership in time-sharing and be the compatible growth alternative for the DEC10/20 customer base.

a. Have system business plan and cursory program plan approved in phase 0 and 1 by Q3.

Reference Goal 8 — Develop "interconnect" to make it attractive for existing DEC10/20 to add VAX Systems, as well as the 2080, via DEC networks and interconnect for all markets and applications.

a. Develop jointly with BJ and Demmer a five-year scenario for evolution of technologies and application uses of distributed systems to give visibility to need for long lead-time investments in knowledge (research) and skills (experience). Possibly also explore market trends that would require us to initiate application oriented venture experiments with personal computing and work-stations - first cut Q3 - initial funding Q4.

Reference Goal 9 — Converging of DEC10/20 to VAX movement with ease, through common language definitions, common implementation where feasible, common user-level

utilites and data conversion routines. For each new DEC-20 of VAX customer, as time progresses, make the movement between systems more attractive.

a. Establish realistic goals with BJ by Q2.

b. Prepare detailed software requirements relative to competition as evolves during the next ten years to accomplish goals for customer shift in initial and add-on purchases of high-end systems during this period -have initial plan Q2.

c. Process to monitor customer purchase pattern for various pre-defined market/applications profiles by Q4.

Reference Goals 10 Manage product business plans such that the right customer expectation is set by marketing and sales that the expected goals are met in products and services delivered.

a. Agreement with Si to process through which highest possible visibility can be given to progress against plans to give early warning to problems and avoid surprises also.... establish a formal process make PM/EM equally responsible for project commitments - this to reduce risk of overcommitments - plan byQ2 and Q3 in operational mode.

ap

GOALS

1. Meet the goals stated in the committed plans.

2. Provide an environment in which people are able to perform at their highest potential of output and creativity which increases job satisfaction and improves contribution.

3. Ensure that DEC is in a position to have all those processes, methods, skills and technologies available to develop and deliver at the right time, new and future high-end DEC Systems, the best in cost-of-ownership and customer satisfaction in those markets DEC elects to have leadership.

4. Provide active support to other groups that can help make any and all goals in Digital's overall product strategy happen; primarily the commitment to make the VAX/VMS Systems become the main product in all DEC's markets; and second, to give highest priority to the implementation of Digital's distributed system structure and easy customer movements to VAX Systems.

5. Provide the Large System Strategy and get the implementation of this strategy committed to explicit action plans in all functions throughout DIGITAL as part of Digital's overall product strategy.

6. Develop "VENUS" as the principal high-end DEC System product for all DEC markets and the growth path for the PDP-11 and 11/780 customer base.

7. Develop the "2080" to maintain DEC leadership in timesharing and be the compatible growth alternative for the DEC10/20 customer base.

8. Develop "interconnect" to make it attractive for existing DEC10/20 to add VAX Systems, as well as the 2080, via DEC networks and interconnect for all markets and applications.

9. Converging of DEC10/20 to VAX movement with ease, through common language definitions, common implementation where feasible, common user-level utilities and data conversion routines. For each new DEC-20 or VAX customer, as time progresses, make the movement between systems more attrative.

10. Manage product business plans such that the right customer expectation is set by marketing and sales and that the expected goals are met in products and services delivered.

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GOAL 1: MEET GOALS STATED IN COMMITTED PLANS.

PROGRESS: I have seen the key goal for FY80 to manage the shift in investment to 32-bit products within the Large System product area.

VENUS: The transition of Venus has been accomplished. The program team is now in place and reasonably cohesive and effective. Problem-solving has been open with good involvement and help from all parts of the company.

Phase 1 reached with broad cross-functional consensus and participation. We are late in getting to Phase 2, our goal was February, now it is April. The MCA and packaging are still in an advanced development stage. Several technologies in these areas must still be verified to work. Unacceptable risks are MCA/I^2L/Spec and MCA sockets.

Acceptable contingency plans for each of the unacceptable risks required to pass from Phase 1 to Phase 2.

SUMMARY: Venus will not be on firm development ground until July, and there is still high risk for major redesign due to technology.

NEW GOAL: I need to understand why it will take us 10-years from the decision to use ECL (1972) until we see the second generation ECL (MCA/I^2L) in prototype. Are we already (very) late in Venus II or on the wrong track altogether?

36 BIT The triple jump task to manage the integration of the "LCG Division" into DEC (handed me by John Leng), drive the new corporate strategy towards VAX with OOD and reset the 36-bit product expectation (P/L, Sales, customers and Engineering) from a $15M to a $9M, investment level has been an excellent OJT experience but one that knocked me over more than once!

The situation today is that we have recovered an "out of control" situation through several project cancellations - COBOL 79, TPS20, Minnow, Dolphin, etc. - and are now back to a more focused plan around the 2080.

The timing of the corporate strategy has helped tremendously.

KL reliability has improved significantly (reduction of downtime by more than a factor of two in fifteen-months) through the KLSEP Program with FS.

The 2080 appears to be an innovative opportunity created by a very small team (again). Another opportunity is "Tiny", the CPL to PL/1 upgrade by Xenakis, and Chroma with Melanson the innovator of the MEA/I^2 and Dave McClure (who created and coded 80% of ANF10).

SMP10 appears to be a breakthrough in performance and reliability - started 2 1/2 years ago - with two people, Jim Fleming and Tony Wachs.

Bill McBride has done a good job of pulling together a very fragmented development team (software and hardware), but Product Management did collapse when the investment shift hit and has been carried very much single-handedly by Per. The process of rebuilding this group has a high priority and the first goal is credibility with the Product Lines.

NEW GOAL: Understand how to apply what we learn from the 36-bit development process in other groups in DEC. I view this group's role to be (become) LSG Advanced Systems Engineering (first spin-off is the Advanced Development of PBS under Hurley).

OVERALL: I have no basis for evaluating the performance during the past twelve months. To me there are several areas where mistakes were made and others where miracles happened. I learned a lot, I think.

The major frustration is that I cannot seem to get across the fundamental (as I see it) elements of a system management process. I feel I have "experience" (= made a lot of mistakes through the years), but still see OOD and others re-invent the wheel and are about, in my view, to make or force me to make the SAME MISTAKES AGAIN.

I do not think we have to dream up a system management process from the top and implant it through forced surgery top down, but do we have patience, time and energy to do it in any other way?

Effectiveness:

Within LSG: 2

OOD and beyond: 5

GOAL 2: ENVIRONMENT WITH JOB SATISFACTION AND IMPROVED CONTRIBUTION.

PROGRESS: The organizational structure with two system program groups under Hoff and McBride, supported by all other groups - Sawin, Finance; Sur/Kreidermacher, Operations; Rezac, Marlboro Site Services - feels good.

The agreement to have the Marlboro Software Group to build PBS is an important step towards the VAX transition.

The Product Management organization has several junior people that need training and help. Renewal and recharge of motivation next six-months.

The decision to have Len Kreidermacher focus 100% on the System Managememnt Program and Product Management processes has paid off even beyond LSG.

I am impressed by his progress in integrating work between FS, Mfg and Engineering groups as part of the Venus Task Force.

EVALUATION: We have lost some key contributors during the year, but overall came through in reasonable strengths. We have made contributions beyond the LS Group.

LSG:	3
OOD and beyond	2

GOAL 3: ENSURE COMPETITIVE POSITIONING FOR DEC IN HIGH-END PRODUCTS.

PROGRESS: I think we are on the right track with MCA/I^2L, but am not sure. Need to see progress to understand that we can make it happen within the next three-months.

The pipeline architectue on the 2080 is promising and should apply to Venus II.

Chroma which explores custom LSI (goals) should help us understand trade-offs in CAD in semiconductor technologies and future of Macro cell or custom design approaches.

Ease of use (timesharing) knowledge applied to PBS could be a key technology transfer to VAX.

Our decision to volunteer and provide flow through funding to (advanced) software engineering in ADA, DAWN and Single User VAX saved us from many hours of painful negotiations to get done what appears to be right.

EVALUATION: I cannot see any other viable technology path for Venus except more complex structure and standard parts (a la 2080). Ground work for Venus II may be there in time? Software flow through funding the right decision, even if left with higher pain within the hardware groups.

LSG: 2 - 4 ? June is the date in court

OOD: 2

GOAL 4: MAKE THE NEW CORPORATE STRATEGY HAPPEN.

PROGRESS: Most of our Management energy has to be consumed to drive the Corporate Strategy while still providing leadership in the traditional businesses. The transition was too fast to lead, yet have people follow, especially in the 36-bit. DECUS integration with positive feedback can be expected by the end of calendar 80.

EVALUATION: LSG: 3

OOD: 2

GOAL 5: DEVELOP AND GET APPROVAL OF LARGE SYSTEM STRATEGY.

PROGRESS: We now have a balanced strategy as part of the base plan process. Both Venus and the 2080 are outside the original requirements, but feels more realistic. Venus is budget bound beyond July 1980 and the 2080 is budget bound now. The 2080 fits well as the KL follow-on and does not overlap Venus the way a 2020 replacement product would.

Approval still to go.

EVALUATION: LCG: 2-3

OOD: 3-4

GOAL 6: VENUS PLAN - PHASE 0 AND PHASE 1 BY Q3.

PROGRESS: Phase 0 done; Phase 1, 1-2 months late.

EVALUATION: LSG: 3

GOAL 7: 2080 PLAN - PHASE 0 AND PHASE 1 BY Q3.

PROGRESS: Phase 0 and Phase 1 in Q4. Due to lack of Engineering Manager and lack of Product Manager - both now in place.

EVALUATION: LSG: 4

GOAL 8: INTERCONNECT PLAN WITH B.J. AND DEMMER Q3 AND Q4.

PROGRESS: On schedule, still doubt that the product cost expectations can be met. Weak software interaction improved with PBS project.

EVALUATION: 3+

GOAL 9: CONVERGENCE OF 10/20 CUSTOMERS WITH VAX.

PROGRESS: Languages now better aligned with APL, FORTRAN extended, PL/1 compatible future PASCAL and push COBOL 79 VAX back-end (maybe also ADA VAX back-end).

Major shift from homogenets to heterogenets could accelerate the 10/20/VAX integration by several years.

Very optimistic about the good people interaction and common interest between VAX and the 10/20 groups. This is key to common goals here.

EVALUATION: LSG: 2

Beyond LCG: 2

GOAL 10: MANAGE CUSTOMER EXPECTATION.

PROGRESS: We have no (painful) customer problems compared to the 10-15 per week with endless KL crises just twelve-months ago.

I believe we have reset expectations of future 36 products.

Still concerned that we (DEC) could get carried away by the 2080 expectation. WE MUST FOCUS ON THIS THREAT NOW! NO COMMITMENTS UNTIL PROTOTYPE RUNS. PIPELINES ARE COMPLEX AND UNPREDICTABLE.

EVALUATION: LSG: 3

OOD: 3

TEAM DECISION ANALYSIS (modified from "Matrix Organization of Complex Businesses).

I = Prime Responsibility for Starting or Stimulation Action.

P = Has to be Consulted/Heard (to allow push-back or escalation of issues).

D = Final Decision for Full Execution (could be many signatures needed).

E = The One Person (by name, never a committee) who does it.

C = Checks whether decisions are followed up in quality, timing and cost (indicates who is expected to inspect what is expected!).

A = Has the authorization to sponsor proposal/decision to next level for review, approval, decision, etc.

O or Yellow Mark = Action has been explicitly demonstrated to have taken place.

() = Optional (not necessary, but advised).

LSG: GOAL 1

"Meet goals stated in committed plans"

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DENNER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	WILL THOMPSON	JIM CLEMONS	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
1a. Get approval to one plan Q2		(D)		(D)	(I) (E) (A)	(P)	(P)	(P)		(P)						(I) (P)							
1b. Quarterly update of Red Book		D	D		A D											I A D	P_{32}	P_{36}		C			E
QUARTERLY UPDATE OF BEIGE BOOK				D												I A D	E_{32}	E_{36}	P	C			
1c. Get commitment to definition of Red Book, Beige Book		D	D	A D	I A D	P	P	P	P	P	P	P	P	P	P	I A D	P	P	P	E			P

LSG: GOAL 2

" ENVIRONMENT WITH JOB SATISFACTION AND IMPROVED CONTRIBUTION "

OPERATIONAL OBJECTIVES	COMMITTEES			O²D													LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLAYTON	BILL JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	WILL THOMPSON	JIM CUDMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
2a. Clear charter Q2				C	(D) D			● D			P D	P D				● D C	● ●	(E) D	(E) D	(E) D	(E) D	(E) D	● D
2b Marlboro fwa charter Q2				C				● D								● C			(E) D				
2c. Human resource plan Q2 implement Q3/Q4				C	P			(P)			(P)	● (P)				●	P	P	(P)	● P	(P)	P	●
d Stabilize 2080 and 3 year budget Q2		C D	C A D	D	C A D						●					● ● (A) D	(P)	●	●	●	(P)	●	(E)
e Five year product business plan for 36bit Q3		C D	C A D	D	C A D						P					● C A D		P C			P		E
f Red/Beige book understood at supervisor level and part of performance evaluation Q3.					P D			P D			P D	P D				● C D	E	E	P	● P	P	P	E
g. System Prgr mgmt role Q3	● D			● D	● D	● D	● D	P D	● ● D	● D	● D	● D	P D	P D	● D	● ● A	●	●	P	●	P	P	P
h. Eng-mfg responsibility chart Q3				P					E A				E PA	P		I E	P			E			
i. Human resource planning same as 2c																							

LSG 6083

Ensure competitive position for Large Systems —

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP							
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL LEMMER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY BEZAC	PER HJERPPE	
3a. Each function has 3 year scenarios and plan how to get there Q3 / Q4 funding		D	P D A	P	P			P			P					C D A	E	E	E	E	E	E	
3b. Cost of ownership model* for large systems Q3 and as operational planning tool in Q4 *) (Life cycle cost model)	D	P A D	P A D		P A D						P A A		P			A	P E	P	E		P	E	
3c. Customer satisfaction model for Venus in Q3 for verification of program goals against competition Q4	D	P A D	P A D		P A D											A C	E		E			E	

LSG GOAL 4

» make the corporate strategy happen

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D													LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL JENNER	DICK CLAYTON	BILL JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	WILL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
4a. Industry scenario for technologies and customer uses of LSG products – Q2		C D	P A C D		C A											C A	P E	P			P	(P)	C E
4b. Reestablish customer advisory group within DCUS Q3 report Q4			C P		C A											C	P	C E					E
4c. With OOD establish 90% likely target for IMPLEMENTATION of the new strategy Q3		C D	C A	D		D		D		D			P D	P D		D							

LS/1 GOAL 5

» develop and get approval to LS strategy »

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLINTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM TIDMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAMIN	ROY REZAC	PER HJERPPE
5a. Update the Red Book 1980-1985 and include two possible scenarios by Q2		D	C A D		C A D											C A D	P A	P A	P		P	P	H E
5. Obtain commitment for funded explicit action plans to support LS strategy in;																							
INTERCONNECT :		C D	C A D	D	A D	B A D										B A D	B	E					
SOFTWARE : 32		C D	C A D	D	A D			P C A D								P A D			(P)				
SOFTWARE : 36		C D	C A D	D	A D			P C A D								P A D							
MASS STORAGE		C D	C A D	D	A D					P A D						P A D	P						

LSG GOAL 6

GOAL 7

GOAL 8

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLAYTON	BERT JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
6a. "have Venus plan Phase Ø and 1			P	P	P	P		P								A D	A		(P)			P	
7a "have 2080 plan phase Ø and 1			P	P	P											A D	P	A	P			P	
8a. "software and interconnect plan scenarios" Q3/04				P	P	P		P								A D	P	E A				(P)	P

LSG. GOAL 9
» Competitive position of 10/20 and VAX »

LSG GOAL 10
"Manage customer expectations"

OPERATIONAL OBJECTIVES	COMMITTEES			o²b												LARGE SYSTEMS GROUP							
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DENNER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	WILL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
9a. Establish realistic VAX – vs 10/20 goals (10/20 for Timesharing) Q2		D	P A D	C	P A D			(P) A D								(P) A D C		P E	P			(P)	P A
9b. Software requirements compared to competition for next 10 years Q2								P								(P) A D C	P	P	P			(P)	E A
9c. Have process to monitor customer purchase pattern to various predefined market/applic profiles by Q4					P D											I A D	(P)	(P)					E A
10a Agreement with PM for visible process to protect against enhancements – Q2/Q3					(P) A D											(P) A D	P	P	(P)	(P)			E A

ORGANIZATION - CORPORATE RESEARCH GROUP

CHARTER

- Provide DEC with the knowledge gained from research activities, inside and outside DEC, from which DEC might see new products, services and uses of computing.
- Provide Corporate Library services.

GOALS

1. Provide the leadership to ensure a corporate-wide competitive research process for DEC.
2. Provide a committed research strategy for new, not yet chartered, product and process areas.
3. Provide an environment which attracts the best people DEC needs.
4. Become recognized as the leading group in ability to influence and contribute to DEC's overall strategy and the creation of future businesses.
5. Provide a decentralized corporate-wide library services operation of a quality in par with library services in comparable corporations, but at a lower cost.

OBJECTIVES

STRATEGY

- Have available a 1980 strategy for DEC with product ideas for the period from 1985 to 1990 and two possible scenarios for computing needs by the year 1990.

  Reviewed with OOD by October 15.

PROGRAMS

- Obtain commitment to the University Liaison Program by October and have it fully operational by December.

- Have a program organization for implementing system research on a broad functional basis (OIS, factory of future, VMS across size, range, etc.)

  Implemented in Q3.

PROJECTS

- Meet goals stated in committed project plans. ..

- Have each of the projects in the programs classified as Research, Advanced Developmemt and Product Development....

  as of today,

  as of December 1979, and

  as of June 1980.

  Complete by September 14.

- Have identified which DEC function and who within this function each research project will be transferred, and by when as it completes the research phase.

  Complete by the end of Q1.

- Have measurable objectives for each of the projects with milestones for reports of final and interim results.

  Complete by the end of Q1.

SERVICE

- Establish goals for the library in metrics that allows comparison with the outside.

  Complete Q1.

- Establish strategy and operations model for the consulting services activities that allows us to better make longer-term investments in skills, methods and with metrics for comparison with outside alternative services.

  Complete by Q2.

ORGANIZATIONAL

- Define FY81 organizational structure and charters to be fully implemented by July 1980.

  Complete target organization in October; and detailed plan for implementation ready in December.

- Plan that commits us to specific skill hiring plan, tied to projects.

  Complete in Q2.

ap

CORPORATE RESEARCH OPERATIONAL REVIEW

We are on schedule for the reviewal of the Research Group and its working climate.

The current size (in number of people) is ideal for FY81 to allow management skills, processes and the research facilities to be upgraded to balance the needs.

The 50% growth in the number of people the past year has taken its toll in motivation and quality of work in the group.

The new program direction in PBS and the "Factory of the Future" feels good.

GOAL 1: HAVE AVAILABLE A 1985-1990 SCENARIO. (OOD October 1979).

PROGRESS: Some isolated ideas have been developed. The planning process has been weak. The action has been to formally establish the Planning and Program function under Bob Glorioso to drive this. Stratton Mountain Planning has also been used to focus on longer-range issues.

EVALUATION: Group: 3

Outside influence: 5 (expect to be improved with Stratton)

GOAL 2: HAVE UNIVERSITY PROGRAM IN PLACE Q2.

PROGRESS: Met goal. The performance well over expectation. Expansion to external research centers co-located with University Research Group will be proposed Q4.

EVALUATION: Contribution within group: 3

Influence Outside Group: 2+

GOAL 3: HAVE PROGRAM ORGANIZATION FOR SYSTEM RESEARCH ON A BROAD FUNCTIONAL BASIS Q3.

PROGRESS: On target with the new organization. The key programs, PBS and "Factory of the Future" are gaining momentum. "Office Programs" a big question - should we discontinue?

EVALUATION: Effect within group: 3

Effect outside group: 3
(Expect significant improvement within 3-months.)

GOAL 4: MEET GOALS STATED IN COMMITTED PLAN.

PROGRESS: Improvement in the project management process made with documented plans and formal reviews. Technology transfer plans and timing is still not visible enough. Satisfactory results in Small Systems and visible improvements in languages.

EVALUATION: Effect within group: 3

Effect outside group: 4+

GOAL 5: CLASSIFY AND FORECAST STATUS OF RESEARCH READY FOR ADVANCED DEVELOPMENT AND DEVELOPMENT.

PROGRESS: Plan complete - need to be worked to implementation and tracking.

EVALUATION: 3

GOAL 6: IDENTIFY TO WHICH DEC FUNCTION AND WHO WITHIN THIS FUNCTION WILL BE THE "TECHNOLOGY CUSTOMER" OF THE RESEARCH PROJECTS.

PROGRESS: Same as 5.

EVALUATION: 3

GOAL 7: HAVE MEASURABLE OBJECTIVES OF EACH PROJECT WITH MILESTONES FOR REPORTS.

PROGRESS: Same as 5.

EVALUATION: 3

GOAL 8: ESTABLISH GOALS FOR LIBRARY THAT ALLOWS FOR COMPARISON WITH THE OUTSIDE.

PROGRESS: Completed; strategy and plan for action based on these results are next. Some difficulties in establishing the identity of library exists. Expansion of activities progress on plan.

EVALUATION: 3+

GOAL 9: Establish strategy and operationsmodel for consulting services activities.

PROGRESS: Very little progress. Will be done as part of the reorganization in Q4.

EVALUATION: 5

GOAL 10: DEFINE FY81 ORGANIZATION CHARTER AND STRUCTURE TO BE FULLY IMPLEMENTED BY JULY 1980.

PROGRESS: Ahead of target. The dual structure of Planning/ programs and skill center managememnt feels good. This allows a more shallow structure that allows more involvement with individual people contributors and less of a general research administrative management.

I believe that we can also restore a balance between the people resources and the support and processes needed to do quality work.

EVALUATON: 2-3 (need Q4 to be sure)

GOAL 11: HUMAN RESOURCE PLAN IN LINE WITH PROJECT NEEDS.

PROGRESS: People environment out of balance with space, computer services and lab facilities.

Current size (number of people) probably optional for FY81 and use funds to upgrade environment.

EVALUATION: 4 (should be 3 by end of year.)

TEAM DECISION ANALYSIS (modified from "Matrix Organization of Complex Businesses).

I = Prime Responsibility for Starting or Stimulation Action.

P = Has to be Consulted/Heard (to allow push-back or escalation of issues).

D = Final Decision for Full Execution (could be many signatures needed).

E = The One Person (by name, never a committee) who does it.

C = Checks whether decisions are followed up in quality, timing and cost (indicates who is expected to inspect what is expected!).

A = Has the authorization to sponsor proposal/decision to next level for review, approval, decision, etc.

O or Yellow Mark = Action has been explicitly demonstrated to have taken place.

() = Optional (not necessary, but advised).

OBJECTIVES FOR LARGE SYSTEMS GROUP FOR FY80 - Ulf Fagerquist

Reference Goal 1. Meet the goals stated in the committed plans.

Objectives:

a. Agreement to formal reference plans by OOD in Q2.

b. Quarterly update to Red Book and Beige Book unless for major deviation to plan.

c. Operate with the following meaning of the plans:

Red Book is the formal document prepared by PM stating their commitment of funded strategy and specific product/service results on which business groups should base their short-and long-range plans.

Beige Book is the formal document prepared by EM stating their commitments in funded programs and specific results on which PM can base their Red Book commitments.

Reference Goal 2 Provide an environment in which people are able to perform at their highest potential of output and creativity which increases job satisfaction and improves contribution.

a. Clear charter for each group to build 3 year goals by Q2.

b. Agreement with BJ about long-range charter for Marlboro Software Engineering to provide stability by Q2.

c. Plan and program to upgrade the basic skills in people managememnt by Q2 to implement Q3/Q4.

d. Stabilize 2080 goals and 3 year budget by Q2.

e. Five-year business plan for 36-bit products approved by Q3.

f. Red Book/Beige Book goals at supervisor level

and part of performance evaluation for each employee by Q3.

g. System program managememnt role, process and tools defined and committed as part of OOD operations process by Q3.

h. Responsibility charting of system program management roles between engineering and manufacturing by Q3 and coordinate with J. Holman.

i. Human resource planning process including development of replacements for all levels of managers - coordinate with J. Meyer by Q3.

Reference Goal 3 Ensure that DEC is in a position to have all those processes, methods, skills and technologies available to develop and deliver at the right time, new and future high-end DEC Systems, the best in cost-of-ownership and customer satisfaction in those markets DEC elects to have leadership.

a. Each function has the scenario for the next 3 years and plan on how to get resources - plan Q3 and funded Q4.

b. Cost-of-ownership model for large systems by Q3 and as operational planning tool Q4.

c. Customer satisfaction model for VENUS in Q3 for verification of program goals against competition Q4.

Reference Goal 4 Provide active support to other groups that can help make any and all goals in Digital's overall product strategy happen; primarily the commitment to make the VAX/VMS Systems become the main product in all DEC's markets; second, to give highest priority to the implementation of Digitlal's distributed system structure and easy customer movements to VAX Systems.

a. Develop industry scenario for technologies and customer uses in LSG product area and use to test our current strategy Q2.

b. Reestablish customer advisory group within DECUS to better understand 1983-1987 customer movement - Q3 for report Q4.

c. With OOD establish 90% targets for strategy implementation by Q3.

Reference Goal 5 — Provide the Large System Strategy and get the implementation of this strategy committed to explicit action plans in all functions throughout Digital as part of Digital's overall product strategy.

a. Update the Red Book 1980-1985 and include two possible scenarios for test by Q2.

b. Obtain commitment to funded explicit action plans to support the LSG Strategy on:

INTERCONNECT Plans Q2 - funding Q3 with B. Demmer.

SOFTWARE Plans Q3 - funding Q4 with BJ

MASS STORAGE Plans Q3 - funding Q4 with G. Saviers.

Reference Goal 6 — Develop "VENUS" as the principal high-end DEC System product for all DEC markets and the growth path for the PDP-11 and 11/789 customer base.

a. Have updated system business plan and cursory implementation plan approved as part of phase 0 and 1 by Q3.

Reference Goal 7 — Develop the 2080 to maintain DEC leadership in time-sharing and be the compatible growth alternative for the DEC10/20 customer base.

a. Have system business plan and cursory program plan approved in phase 0 and 1 by Q3.

Reference Goal 8 — Develop "interconnect" to make it attractive for existing DEC10/20 to add VAX Systems, as well as the 2080, via DEC networks and interconnect for all markets and applications.

a. Develop jointly with BJ and Demmer a five-year scenario for evolution of technologies and application uses of distributed systems to give visibility to need for long lead-time investments in knowledge (research) and skills (experience). Possibly also explore market trends that would require us to initiate application oriented venture experiments with personal computing and work-stations - first cut Q3 - initial funding Q4.

Reference Goal 9 — Converging of DEC10/20 to VAX movement with ease, through common language definitions, common implementation where feasible, common user-level

utilites and data conversion routines. For each new DEC-20 of VAX customer, as time progresses, make the movement between systems more attractive.

a. Establish realistic goals with BJ by Q2.

b. Prepare detailed software requirements relative to competition as evolves during the next ten years to accomplish goals for customer shift in initial and add-on purchases of high-end systems during this period -have initial plan Q2.

c. Process to monitor customer purchase pattern for various pre-defined market/applications profiles by Q4.

Reference Goals 10 Manage product business plans such that the right customer expectation is set by marketing and sales that the expected goals are met in products and services delivered.

a. Agreement with Si to process through which highest possible visibility can be given to progress against plans to give early warning to problems and avoid surprises also.... establish a formal process make PM/EM equally responsible for project commitments - this to reduce risk of overcommitments - plan byQ2 and Q3 in operational mode.

ap

Put Baly in folder notebook

MAR 27 1980

UF002/5

digital

Interoffice Memorandum

TO: Gordon Bell
Larry Portner

DATE: 24 MAR 1980
FROM: Ulf Fagerquist
DEPT: LS Development
EXT: 231-6408
LOC/MAIL STOP: MR 1-2/E78

SUBJ: OPERATIONAL REVIEW

This is my evaluation of progress against the goals we agreed on in Q2.

LSG OPERATIONAL REVIEW

Overall Evaluation

I think we met the goals that we set at a reasonable level.

I believe that there are several areas where I could have done more, especially in transferring the system management knowledge we have in the LS Groups.

The operational issues last year have taken most of our time and little contribution has been given to the rest of the OOD Team.

Some exceptions, where I believe we have done better than expected:

Venus Task Force and the System Program Management Task Force could have a high leverage across OOD. Also our flow through funded support of APL 32, ADA, DAWN and the single user VAX were important. The key advantage of flow through funding is that it saves management time to initiate the right thing, not for use as a control tool.

I still think that the decision to provide systems groups with 10% flow through for use to stimulate funding (Research and Advanced Development) is right and should be implemented.

In summary, there is a lot of room for improvement especially in areas with dependencies across OOD and other functions.

GOAL 1: MEET GOALS STATED IN COMMITTED PLANS.

PROGRESS: I have seen the key goal for FY80 to manage the shift in investment to 32-bit products within the Large System product area.

VENUS: The transition of Venus has been accomplished. The program team is now in place and reasonably cohesive and effective. Problem-solving has been open with good involvement and help from all parts of the company.

Phase 1 reached with broad cross-functional consensus and participation. We are late in getting to Phase 2, our goal was February, now it is April. The MCA and packaging are still in an advanced development stage. Several technologies in these areas must still be verified to work. Unacceptable risks are MCA/I^2L/Spec and MCA sockets.

Acceptable contingency plans for each of the unacceptable risks required to pass from Phase 1 to Phase 2.

SUMMARY: Venus will not be on firm development ground until July, and there is still high risk for major redesign due to technology.

NEW GOAL: I need to understand why it will take us 10-years from the decision to use ECL (1972) until we see the second generation ECL (MCA/I^2L) in prototype. Are we already (very) late in Venus II or on the wrong track altogether?

36 BIT The triple jump task to manage the integration of the "LCG Division" into DEC (handed me by John Leng), drive the new corporate strategy towards VAX with OOD and reset the 36-bit product expectation (P/L, Sales, customers and Engineering) from a $15M to a $9M, investment level has been an excellent OJT experience but one that knocked me over more than once!

The situation today is that we have recovered an "out of control" situation through several project cancellations - COBOL 79, TPS20, Minnow, Dolphin, etc. - and are now back to a more focused plan around the 2080.

The timing of the corporate strategy has helped tremendously.

KL reliability has improved significantly (reduction of downtime by more than a factor of two in fifteen-months) through the KLSEP Program with FS.

The 2080 appears to be an innovative opportunity created by a very small team (again). Another opportunity is "Tiny", the CPL to PL/1 upgrade by Xenakis, and Chroma with Melanson the innovator of the MEA/I^2 and Dave McClure (who created and coded 80% of ANF10).

SMP10 appears to be a breakthrough in performance and reliability - started 2 1/2 years ago - with two people, Jim Fleming and Tony Wachs.

Bill McBride has done a good job of pulling together a very fragmented development team (software and hardware), but Product Management did collapse when the investment shift hit and has been carried very much single-handedly by Per. The process of rebuilding this group has a high priority and the first goal is credibility with the Product Lines.

NEW GOAL: Understand how to apply what we learn from the 36-bit development process in other groups in DEC. I view this group's role to be (become) LSG Advanced Systems Engineering (first spin-off is the Advanced Development of PBS under Hurley).

OVERALL: I have no basis for evaluating the performance during the past twelve months. To me there are several areas where mistakes were made and others where miracles happened. I learned a lot, I think.

The major frustration is that I cannot seem to get across the fundamental (as I see it) elements of a system management process. I feel I have "experience" (= made a lot of mistakes through the years), but still see OOD and others re-invent the wheel and are about, in my view, to make or force me to make the SAME MISTAKES AGAIN.

I do not think we have to dream up a system management process from the top and implant it through forced surgery top down, but do we have patience, time and energy to do it in any other way?

Effectiveness:

Within LSG: 2

OOD and beyond: 5

GOAL 2: ENVIRONMENT WITH JOB SATISFACTION AND IMPROVED CONTRIBUTION.

PROGRESS: The organizational structure with two system program groups under Hoff and McBride, supported by all other groups - Sawin, Finance; Sur/Kreidermacher, Operations; Rezac, Marlboro Site Services - feels good.

The agreement to have the Marlboro Software Group to build PBS is an important step towards the VAX transition.

The Product Management organization has several junior people that need training and help. Renewal and recharge of motivation next six-months.

The decision to have Len Kreidermacher focus 100% on the System Managememnt Program and Product Management processes has paid off even beyond LSG.

I am impressed by his progress in integrating work between FS, Mfg and Engineering groups as part of the Venus Task Force.

EVALUATION: We have lost some key contributors during the year, but overall came through in reasonable strengths. We have made contributions beyond the LS Group.

LSG:	3
OOD and beyond	2

GOAL 3: ENSURE COMPETITIVE POSITIONING FOR DEC IN HIGH-END PRODUCTS.

PROGRESS: I think we are on the right track with MCA/I^2L, but am not sure. Need to see progress to understand that we can make it happen within the next three-months.

The pipeline architectue on the 2080 is promising and should apply to Venus II.

Chroma which explores custom LSI (goals) should help us understand trade-offs in CAD in semiconductor technologies and future of Macro cell or custom design approaches.

Ease of use (timesharing) knowledge applied to PBS could be a key technology transfer to VAX.

Our decision to volunteer and provide flow through funding to (advanced) software engineering in ADA, DAWN and Single User VAX saved us from many hours of painful negotiations to get done what appears to be right.

EVALUATION: I cannot see any other viable technology path for Venus except more complex structure and standard parts (a la 2080). Ground work for Venus II may be there in time? Software flow through funding the right decision, even if left with higher pain within the hardware groups.

LSG: 2 - 4 ? June is the date in court

OOD: 2

GOAL 4: MAKE THE NEW CORPORATE STRATEGY HAPPEN.

PROGRESS: Most of our Management energy has to be consumed to drive the Corporate Strategy while still providing leadership in the traditional businesses. The transition was too fast to lead, yet have people follow, especially in the 36-bit. DECUS integration with positive feedback can be expected by the end of calendar 80.

EVALUATION: LSG: 3

OOD: 2

GOAL 5: DEVELOP AND GET APPROVAL OF LARGE SYSTEM STRATEGY.

PROGRESS: We now have a balanced strategy as part of the base plan process. Both Venus and the 2080 are outside the original requirements, but feels more realistic. Venus is budget bound beyond July 1980 and the 2080 is budget bound now. The 2080 fits well as the KL follow-on and does not overlap Venus the way a 2020 replacement product would.

Approval still to go.

EVALUATION: LCG: 2-3

OOD: 3-4

GOAL 6: VENUS PLAN - PHASE 0 AND PHASE 1 BY Q3.

PROGRESS: Phase 0 done; Phase 1, 1-2 months late.

EVALUATION: LSG: 3

GOAL 7: 2080 PLAN - PHASE 0 AND PHASE 1 BY Q3.

PROGRESS: Phase 0 and Phase 1 in Q4. Due to lack of Engineering Manager and lack of Product Manager - both now in place.

EVALUATION: LSG: 4

GOAL 8: INTERCONNECT PLAN WITH B.J. AND DEMMER Q3 AND Q4.

PROGRESS: On schedule, still doubt that the product cost expectations can be met. Weak software interaction improved with PBS project.

EVALUATION: 3+

GOAL 9: CONVERGENCE OF 10/20 CUSTOMERS WITH VAX.

PROGRESS: Languages now better aligned with APL, FORTRAN extended, PL/1 compatible future PASCAL and push COBOL 79 VAX back-end (maybe also ADA VAX back-end).

Major shift from homogenets to heterogenets could accelerate the 10/20/VAX integration by several years.

Very optimistic about the good people interaction and common interest between VAX and the 10/20 groups. This is key to common goals here.

EVALUATION: LSG: 2

Beyond LCG: 2

GOAL 10: MANAGE CUSTOMER EXPECTATION.

PROGRESS: We have no (painful) customer problems compared to the 10-15 per week with endless KL crises just twelve-months ago.

I believe we have reset expectations of future 36 products.

Still concerned that we (DEC) could get carried away by the 2080 expectation. WE MUST FOCUS ON THIS THREAT NOW! NO COMMITMENTS UNTIL PROTOTYPE RUNS. PIPELINES ARE COMPLEX AND UNPREDICTABLE.

EVALUATION: LSG: 3

OOD: 3

CORPORATE RESEARCH OPERATIONAL REVIEW

We are on schedule for the reviewal of the Research Group and its working climate.

The current size (in number of people) is ideal for FY81 to allow management skills, processes and the research facilities to be upgraded to balance the needs.

The 50% growth in the number of people the past year has taken its toll in motivation and quality of work in the group.

The new program direction in PBS and the "Factory of the Future" feels good.

GOAL 1: HAVE AVAILABLE A 1985-1990 SCENARIO. (OOD October 1979).

PROGRESS: Some isolated ideas have been developed. The planning process has been weak. The action has been to formally establish the Planning and Program function under Bob Glorioso to drive this. Stratton Mountain Planning has also been used to focus on longer-range issues.

EVALUATION: Group: 3

Outside influence: 5 (expect to be improved with Stratton)

GOAL 2: HAVE UNIVERSITY PROGRAM IN PLACE Q2.

PROGRESS: Met goal. The performance well over expectation. Expansion to external research centers co-located with University Research Group will be proposed Q4.

EVALUATION: Contribution within group: 3

Influence Outside Group: 2+

GOAL 3: HAVE PROGRAM ORGANIZATION FOR SYSTEM RESEARCH ON A BROAD FUNCTIONAL BASIS Q3.

PROGRESS: On target with the new organization. The key programs, PBS and "Factory of the Future" are gaining momentum. "Office Programs" a big question - should we discontinue?

EVALUATION: Effect within group: 3

Effect outside group: 3
(Expect significant improvement within 3-months.)

GOAL 4: MEET GOALS STATED IN COMMITTED PLAN.

PROGRESS: Improvement in the project management process made with documented plans and formal reviews. Technology transfer plans and timing is still not visible enough. Satisfactory results in Small Systems and visible improvements in languages.

EVALUATION: Effect within group: 3

Effect outside group: 4+

GOAL 5: CLASSIFY AND FORECAST STATUS OF RESEARCH READY FOR ADVANCED DEVELOPMENT AND DEVELOPMENT.

PROGRESS: Plan complete - need to be worked to implementation and tracking.

EVALUATION: 3

GOAL 6: IDENTIFY TO WHICH DEC FUNCTION AND WHO WITHIN THIS FUNCTION WILL BE THE "TECHNOLOGY CUSTOMER" OF THE RESEARCH PROJECTS.

PROGRESS: Same as 5.

EVALUATION: 3

GOAL 7: HAVE MEASURABLE OBJECTIVES OF EACH PROJECT WITH MILESTONES FOR REPORTS.

PROGRESS: Same as 5.

EVALUATION: 3

GOAL 8: ESTABLISH GOALS FOR LIBRARY THAT ALLOWS FOR COMPARISON WITH THE OUTSIDE.

PROGRESS: Completed; strategy and plan for action based on these results are next. Some difficulties in establishing the identity of library exists. Expansion of activities progress on plan.

EVALUATION: 3+

GOAL 9: Establish strategy and operationsmodel for consulting services activities.

PROGRESS: Very little progress. Will be done as part of the reorganization in Q4.

EVALUATION: 5

GOAL 10: DEFINE FY81 ORGANIZATION CHARTER AND STRUCTURE TO BE FULLY IMPLEMENTED BY JULY 1980.

PROGRESS: Ahead of target. The dual structure of Planning/ programs and skill center managememnt feels good. This allows a more shallow structure that allows more involvement with individual people contributors and less of a general research administrative management.

I believe that we can also restore a balance between the people resources and the support and processes needed to do quality work.

EVALUATON: 2-3 (need Q4 to be sure)

GOAL 11: HUMAN RESOURCE PLAN IN LINE WITH PROJECT NEEDS.

PROGRESS: People environment out of balance with space, computer services and lab facilities.

Current size (number of people) probably optional for FY81 and use funds to upgrade environment.

EVALUATION: 4 (should be 3 by end of year.)

TEAM DECISION ANALYSIS (modified from "Matrix Organization of Complex Businesses).

I = Prime Responsibility for Starting or Stimulation Action.

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A = Has the authorization to sponsor proposal/decision to next level for review, approval, decision, etc.

O or Yellow Mark = Action has been explicitly demonstrated to have taken place.

() = Optional (not necessary, but advised).

LSG: GOAL 1

"Meet goals stated in committed plans"

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D													LARGE SYSTEMS GROUP							
	OPERATIONS COMMITTEE	EBOD	SPU	GORDON/LARRY	SI LYLE	BILL ZEMER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM CLEMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPE	
1a. Get approval to base plan Q2		D		D	I E A	P	P	P		P						D P								
1b. Quarterly update of Red Book		D	D		A D											I A D	P_{32}	P_{36}		C			E	
QUARTERLY UPDATE OF BEIGE BOOK				D												I A D	E_{32}	E_{36}	P	C				
1c. Get commitment to definition of Red Book Beige Book		D	D	A D	I A D	P	P	P	P	P	P	P	P	P	P	I A D	P	P	P	E			P	

LSG: GOAL 2

» ENVIRONMENT WITH JOB SATISFACTION AND IMPROVED CONTRIBUTION »

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DENNER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM CUDMORE	SAM FULLER	JEF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
2a. Clear charter Q2				C	P D			P D			P D	P D				D C	P P	P D	P D	D	D	D	D
2b Marlboro FWR CHARTER Q2				C				D								C			D				
2c. Human resource plan Q2 implement Q3/Q4				C	P			(P)			(P)	(P)					P	P	(P)	P	(P)	P	P
d. STABILIZE 2080 and 3 year budget Q2		C D	C A D	D	C A D						P					D	P	P	P	P	P	P	P
e Five year product business plan for 36bit Q3		C D	C A D	D	C A D						P					C A D		P C			P		E
f Red/Beige book understood at supervisor level and part of performance evaluation Q3.					P D			P D			P D	P D				C D	E	E	P	P	P	P	E
g. System Progr mgmt role Q3	D			D	D	D	D	P D	D E	D	D	D	P D E PA	P D P	D	A I E	P		P	E	P	P	P
h. Eng-mfg responsibility Chart Q3				P																			
i. Human resource planning Same as 2C																							

LSG Goal 3

Ensure competitive position for Large Systems —

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP							
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL REMER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY BEZAC	PER HJERPPE	
3a. Each function has 3 year scenario and plan how to get there Q3 / Q4 funding		D	P D A	P	P			P			P					C D A		E	E	E	E	E	E	
3b. Cost of ownership model* for large systems Q3 and as operational planning tool in Q4 *) (Life cycle cost model)	D	P A D	P A D		P A D						P A D		P			A		P E	P			P	E	
3c. Customer satisfaction model for Venus in Q3 for verification of program goals against competition Q4	D	P A D	P A D		P A D											A C	E	E						

LSG GOAL 4

"make the corporate strategy happen

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLAYTON	BILL JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM GUMMOE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAMIN	ROY REZAC	PER HJERPPE
4a. Industry scenario for technologies and customer uses of LSG products – Q2		C D	P A C D		A											A	P E				P	(P)	E
4b. Reestablish customer advisory group within DCUS Q3 report Q4			C P		C A												P	E					E
4c. With OOD establish 90% likely target for IMPLEMENTATION of the new strategy Q3		C D	C A	D		D		D		D			P D	P D		D							

LSG GOAL 5

» develop and get approval to LS strategy »

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP							
	OPERATIONS COMMITTEE	EBOD	SPU	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLAYTON	[illegible] JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM GILMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAMIN	ROY BEZAC	PER HJERPPE
5a. Update the Red Book 1980-1985 and include two possible scenarios by Q2		D	C A D		A D											A D	P A	P A	P		P	P	E
b. Obtain commitment for funded explicit action plans to support LS strategy in;																							
INTERCONNECT :		C D	C A D	D	A D	A D										A D		E					
SOFTWARE : 32		C D	C A D	D	A D			P C A D								P A D			(P)				
SOFTWARE : 36		C D	C A D	D	A D			P C A D								D							
MASS STORAGE		C D	C A D	D	A D					P A D						P A D	P						

ISG GOAL 6

GOAL 7

GOAL 8

OPERATIONAL OBJECTIVES	COMMITTEES			O^2D												LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK DALTON	BILL JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	NEIL THOMPSON	JIM CUSMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
6a. "have Venus plan Phase Ø and 1			P	P	P	P		P								P A	A		(P)			P	
7a "have 2080 plan phase Ø and 1			P	P	P											A	P	A	P			P	
8a. "software and interconnect plan scenarios" Q3/Q4				P	P	P		P								A	P	E A				(P)	P

LSG. GOAL 9
» Continued operation of 10/20 and VAX »

LSG GOAL 10
"manage customer expectations"

OPERATIONAL OBJECTIVES	COMMITTEES			D^2D													LARGE SYSTEMS GROUP						
	OPERATIONS COMMITTEE	EBOD	SPC	GORDON/LARRY	SI LYLE	BILL DEMMER	DICK CLAYTON	BERT JOHNSON	JOHN HOLMAN	GRANT SAVIERS	MITCH KUR	JOHN MEYER	WILL THOMPSON	JIM GIDMORE	SAM FULLER	ULF FAGERQUIST	GEORGE HOFF	BILL MCBRIDE	DICK SNYDER	STEVE SUR	DAVE SAWIN	ROY REZAC	PER HJERPPE
9a Establish relative VAX vs 10/20 goals (10/20 for Timesharing) » Q2		D	P A D	C	P A D			P A D								A D C		P E	P			(P)	P A
9b. Software requirements compared to competition for next 10 years Q2								P								A D C	P	P	P			(P)	E A
9c. Have process to monitor customer purchase pattern to various predefined market/applic profiles by Q4					P D											I A D	(P)	(P)					E A
10a Agreement with PM for visible process to protect against surprises — Q2/Q3					P A D											A D	P	P	(P)				E A

DIGITAL

INTEROFFICE MEMORANDUM

TO: Gordon Bell
Larry Portner
John Meyer

CC: OOD

DATE: August 31, 1979
FROM: Ulf Fagerquist
DEPT: LSG
EXT: 231-6408
LOC/MAIL STOP: MR 1-2/E78

SUBJ: LARGE SYSTEM'S CHARTER AND GOALS

These are my revised statements for my charter and goals.

I view the two key problems for me to resolve, and where I need your advice and help, is in the cross-goal setting with other OOD members.

An agreement to the concept that the 36-bit Product Line is converging with the -11 and VAX, towards a total interconnect DEC System. This convergence requires a commitment to investments primarily in Distributed System and Software, and a joint 36-bit goal among all OOD members.

The most important task is VENUS and its system implementation across functions. I will use the Program Management process with responsibility for the entire implementation of the Product Business Plan, approved by PM4. I should be held accountable (together with PM4) for the implementation of the Marketing/Sales Plan as well as the Development Plan with the goal of customer satisfaction over the product life.

ap

LARGE SYSTEM GROUP'S GOALS

ORGANIZATION - LARGE SYSTEM GROUP

CHARTER

- The two primary purposes of the Large System Group are to develop system products and to provide system management of products sold to customers as complete systems.
  - New VAX architecture based systems in the price range of $100,000 to $250,000 for average initial purchase of a complete working system.
  - All TOPS-10/20 compatible architecture based systems.
- The new system management function, for the small, medium and large systems, includes responsibility for all aspects of planning, program management, business management and the quality through the entire life-cycle of all the hardware, software and service components that make up the complete system product.

GOALS

- Meet the goals stated in the committed plans.

- Provide an environment in which people are able to perform at their highest potential of output and creativity which increases job satisfaction and improves contribution.

- Ensure that DEC is in a position to have all those processes, methods, skills and technologies available to develop and deliver at the right time, new and future high-end DEC Systems, the best in cost-of-ownership and customer satisfaction in those markets DEC elects to have leadership.

- Provide active support to other groups that can help make any and all goals in Digital's overall product strategy happen; primarily the commitment to make the VAX/VMS Systems become the main product in all DEC's markets; and second, to give highest priority to the implementation of Digital's distributed system structure and easy customer movements to VAX Systems.

- Provide the Large System Strategy and get the implementation of this strategy committed to explicit action plans in all functions throughout DIGITAL as part of Digital's overall product strategy.

- Develop "VENUS" as the principal high-end DEC System product for all DEC markets and the growth path for the PDP-11 and 11/780 customer base.

- Develop the "2080" to maintain DEC leadership in timesharing and be the compatible growth alternative for the DEC10/20 customer base.

- Develop "interconnect" to make it attractive for existing DEC10/20 to add VAX Systems, as well as the 2080, via DEC networks and interconnect for all markets and applications.

- Converging of DEC10/20 to VAX movement with ease, through common language definitions, common implementation where feasible, common user-level utilities and data conversion routines. For each new DEC-20 or VAX customer, as time progresses, make the movement between systems more attrative.

- Manage product business plans such that the right customer expectation is set by marketing and sales and that the expected goals are met in products and services delivered.

ap

CORPORATE RESEARCH

GROUP MANAGER: Jim Bell

CHARTER:

- Provide DEC with the knowledge gained from research activities, inside and outside DEC, from which DEC can produce new products, services and uses of computing.
- Provide Corporate Library services.

GOALS:

- Provide leadership in influencing and contributing to DEC's overall strategy and the creation of future businesses.
- Provide a committed research strategy for new, not yet chartered, product and process areas.
- Provide an environment which attracts the best people for DEC's needs.
- Provide high quality, decentralized corporate-wide library services in a cost-effective way.

STRATEGY:

- Focus our efforts on the research programs listed below, and transfer our research results to advanced developers and developers in other groups.
- Build prototype systems to display multiple research results.
- Computerize the library to provide quality service cost-effectively.

RESEARCH PROGRAMS:

- Office Information Systems Program - Ken King
- Language, Data Base & Applications Program - George Poonen
- Distributed Processing Program - Rick Peebles
- Architecture Program - Lloyd Dickman
- Microcomputers Program - Don Gaubatz
- Terminals Research Program - Charle' Rupp
- Small Systems Program - Fernando Colon Osorio
- University and External Research Program - Dick Eckhouse
- Library Program - Ralph Coffman

STAFFING: 55 Research & 16 Library

COST: $3.5M Total

- Research $2.8M, including $.5M consulting (Q1 $50 K under budget)
- Library $400K (unresolved future budget problems)
- University Relations $250K (initial year funding of $155K by TPG)

OFFICE INFORMATION SYSTEMS RESEARCH PROGRAM

PROGRAM LEADER: Ken King

DESCRIPTION:

- The Office Information Systems Program is concerned with the use of computer technology in an office environment to assist the office worker in the creation, distribution, storage, and retrieval of information.

GOALS:

- Extend DEC experience in non-text items like speech and graphics.
- Understand user interface requirements for future office systems.
- Influence company strategy in future office markets.

STRATEGY:

- Develop working prototype hardware/software systems
- Use above systems to work interface issues
- Monitor university and outside research in this area

PROJECTS (PROJECT LEADERS):

- OIS Architecture (Ken King)
- Voice Output (Martin Minow)
- Speech Input (Paul Thordarson)
- Office Graphics (Open)
- FAX/image/voice (Rick Kalin)

STAFFING: 5 people + 3 openings

COST: $357K (FY80), $500K (FY81)

LANGUAGES, DATA BASE AND APPLICATIONS

PROGRAM LEADER: George Poonen

DESCRIPTION:

- The orientation of this program is to study and perhaps abstract some general principles or techniques which are applicable to a large number of software applications.

GOALS:

- Provide DEC with state-of-the-art experience in software engineering, pprogramming languages, and database technology.
- Understand the needs of software applications developers.
- Act as a source of in-house expertise in the software engineering, programming language, and database areas.

STRATEGY:

- Investigate theoretical aspects of practical application problems.
- Develop working prototypes to demonstrate the feasibility of important concepts.
- Remain abreast of the state-of-the-art.

PROJECTS (PROJECT LEADERS)

- STEP (Earl Van Horn)
- Very High Level Languages - DAWN (Ed Lowry)
- Compiler Technology - ADA (Ike Nassi)
- Data Base Technology (Fred Maryanski)

STAFFING: 8 people + 3 openings

COST: $520K (FY80), $715 (FY81)

Distributed Systems Research Program

Program Leader: Rick Peebles

DESCRIPTION:

The Distributed Systems research program is focussed on the architecture of distributed systems and networks.

GOALS:

- Work with Software Engineering management and development groups to assure a coherent set of distributed system products.
- Explore possible architectures for distributed systems and experiment with relevant technology to determine its applicability to our products.
- Effect technology transfer into software development groups.
- Assist in the formation of advanced development programs in development groups.

STRATEGY:

- Work with Software Engineering to establish a long range planning group.
- Design and implement a prototype for a distributed system architecture to demonstrate the concepts and identify potential barriers.
- Work with a customer (Manufacturing Information Systems) to evaluate the proposed architecture and to gain experience with a set of real problems.
- Sponsor external research (IRIA) that will explore alternative approaches.
- As advanced development is put into place in development groups, extend the time horizon of the research to explore longer range questions.

Projects (Project Leaders):

- ADAPT (R. Peebles)
- Back-End DBMS (J. Passafiume)
- Distributed TRAX (R. Peebles, J. Talmadge, F. Howell)
- MIS Requirements (R. Peebles)
- Network Architecture (S. Wecker)

Staffing: 4.5 people + 2 openings + 1 sabbatical visitor

Cost: $380,500 (FY80), $422,500 (FY81)

COMPUTER SYSTEM ARCHITECTURE RESEARCH PROGRAM
PROGRAM SUMMARY

PROGRAM LEADER: Lloyd Dickman

DESCRIPTION:

The research program is concerned with understanding the design of computer architectures and the implementation of computer systems. Research investigations concentrate on issues having significant long term benefit, with correspondingly high short term risk.

GOALS:

- Maintain expertise in computer system architecture and those related areas which exert significant influence upon it.
- Define long range problems whose solutions will benefit from new knowledge and techniques.
- Identify sources of new research results.
- Conduct original research investigations where specific knowledge is not available.
- Demonstrate application of new architectural concepts to product development.
- Provide timely insights, low risk evaluation and influence for planning and development.

STRATEGY:

- Characterize existing architectures.
- Explore functions which require a new architectural foundation.
- Explore alternate computer structures and organizations.
- Broaden the range of computer system implementation.
- Support architecture planning and management functions.

PROJECTS:

- Data Security.
- Architecture Characterization.
- System Level Architecture.
- High Performance Computing.
- High Integrity Computing.

STAFFING: 3 research staff members + 4 openings

COST (FY80 estimate):

- $220K Research Group funding.
- $ 90K GSG sponsored personnel.
- $ 50K GSG provided capital equipment.

6 November 1979

MICROARCHITECTURE & MICROCOMPUTERS RESEARCH PROGRAM

PROGRAM LEADER: Donald A. Gaubatz

DESCRIPTION:

- The Microarchitecture & Microcomputers Research Program is concerned with recovering the greatest return on Digital's investment in PDP-11 and VAX-11 LSI system processors while simultaneously exploiting the semiconductor industry's investment in LSI peripheral chips.

GOALS:

- Create a viable approach to I/O for a microVAX single board computer.
- Create a single-CPU low end system architecture which is relevant to intelligent terminals (PDTs) and stand-alone systems.
- Maintain compatibility between bussed and bounded systems.
- Exploit the DEC-unique microcontroller technology (F-11, J-11) in mass storage controller applications.

RATEGY:

- Couple PDP-11 Integrated System Architecture concepts to MICROVAX.
- Develop Peripheral Support Circuit (PSC-11) prototype.
- Develop breadboard for cost-reduced mass storage (RX02,..) hardware emulation.

PROJECTS:

- INTEGRATED SYSTEMS ARCHITECTURE
- MICROVAX I/O
- COST-REDUCED PDP-11 SYSTEMS
- T-11 EXTENSIONS, PHASE II
- F-11, J-11 MICROCONTROLLER
- LSI CPU MICROCODE DEVELOPMENT

AFFING: 2 people + 2 openings (FY80), + 3 openings (FY81)

COST: $217K (FY80), $455K (FY81)

TERMINALS RESEARCH PROGRAM

PROGRAM LEADER: Charle' R. Rupp

DESCRIPTION:

- The Terminals Research Program is concerned with the investigation of computer architecture issues relating to the configuration and design of future DEC hard and soft-copy terminals. This program is also concerned with the exploration of alternative technologies for the print-forming, visual display and operator entry devices in future terminals.

GOALS:

- Define and demonstrate the architectural alternatives for terminals which include graphics and enhanced text as base capabilities.
- Demonstrate an example of terminal architecture which has extensibility to intelligent terminal and stand-alone terminal operation.
- Demonstrate the usability of at least one non-CRT display and at least two non-keyboard entry devices.

STRATEGY:

- Develop working prototypes
- Develop demonstration software as appropriate

PROJECTS:

- VIDEO IMAGING ARCHITECTURE
- ADAPTIVE TERMINAL ARCHITECTURE
- ALTERNATE TERMINAL TECHNOLOGIES

STAFFING

- 3 people + 1 opening (technician)

COST:

- $280K (FY80), including $170K external funding
  $410K (FY81)

FUNDING (FY80):

- $170K (non-CRG); $110K (CRG)

PROGRAM NAME: SMALL SYSTEMS PROGRAM

Program Leader: F.C. Colón Osorio

Description: This program consists of three related projects directed towards the solution of some of DEC's most pressing problems in the Low End. The projects within the program vary in nature and scope. For example, while the LE Software Support project is restricted to consulting, the TU58X project is certainly an advanced development project, while the D^2FMP project is oriented towards research in the distributed processing and operating system partition (modularization) areas.

Goals:

- Acquire an understanding of the impact of semiconductor technology advances, specifically the microprocessor on a chip, on the implementation, architecture (organization, interconnect, etc.), software, and peripheral devices of the future.
- Influence the Company's strategy on the design and specification of distributed systems. Specifically, the interconnect structure and in the area of software segmentation.
- Support the development of software tools in the low end at DEC.
- Investigate the applicability of distributed systems concepts to DEC's traditional business areas.

Strategy:

- Develop a working multiple microprocessor prototype where the concepts of software segmentation can be tested.
- Provide the necessary tools to generate and support code for microprocessors efficiently.
- Permeate through the Corporation ideas and concepts supporting distributed processing.

Projects and Leaders: D^2FMP - F. C. Colón Osorio
Stand-Alone TU58 - Eric Peters
Low End Software Support - John Morse

Staffing: Four people plus one opening

Funding: Internal (Corporate Research) and external sources, totalling $273.5K.

EXTERNAL RESEARCH PROGRAM

Program Leader: Dick Eckhouse

Description:

- The External Research Program solicits and manages the external research activities that utilize expertise and resources outside of the corporation.

Goals:

- Bring external research results (tools and prototypes) into the corporation so that they may influence the development of future products.
- Encourage the use of DEC products in the research community so as to increase the number of projects that utilize DEC hardware and software, as well as the number of people (faculty and students) experienced with DEC products.

Strategy:

- Identify important research topics and centers of excellence.
- Initiate contracts with these centers.
- Monitor contract and work to increase the communications flow.

Deliverables/Schedule:

1. Submit proposal to the operations committee for approval and equipment funding ($5,000,000) -- Q1.
2. Conclude contracts with universities to which informal commitments have been made -- Q1, Q2.
3. Initiate review process using the contract review board -- Q1.
4. Using contract review board write summary report on selected research areas and identified institutions to fund in these areas -- Q3.
5. Develop and fund ten research contracts -- Q1 to Q4.
6. Meet with twenty potential research contractors -- Q1 to Q4.
7. Provide equipment forecast for FY 81 -- Q4.
8. Hire Secretary and Administrative Assistant to support function -- Q2.
9. Attend two sales meetings for sponsoring product lines to enlist their support -- Q3.
10. Attend three conferences to build rapport with universities -- Q2, Q3.

Staffing: Dick Eckhouse, Administrative Assistant(open), Secretary(open)

Cost: $155K (FY80), $250K (FY81)

CORPORATE LIBRARIES SYSTEM

PROGRAM LEADER: Ralph Coffman

SCOPE: The Corporate Libraries System is a networked organization with the Corporate Library, Maynard, responsible for developing, testing, implementing, and monitoring information services throughout the twelve branch libraries, other remote locations, special groups, and projects corporate-wide.

GOALS:

- Provide quality library services cost-effectively to all Digital functions and locations.
- Provide materials, services, and training to help Digital personnel perform their jobs more effectively by improving their ability to access needed information.

STRATEGY:

- Define long-range phased program and short-range projects to solve low-risk components.
- Anticipate Digital information requirements and facilitate information transfer to remote sites through existing corporate or external networks. Projects: FAX, 11/70 based library applications.
- Exploit new or existing databases and coordinate employee access to them with branch information specialists. Projects: DBMS, SDI, Information Center.
- Educate Digital employees and provide relevant training materials (brochures, AV programs, and handbooks) necessary. Projects: Handbook, Promotional Package.

PROJECTS: $40K, total

- SDI
- DBMS
- 11/70 Networking
- Handbook
- Information Center,
- FAX
- Promotional Package
- Acquistions/Serials
- Cataloging

STAFFING: 16 people in Maynard supporting 12 branch libraries

COSTS: $590K ongoing plus $40K one-time projects. Budget is $480. For alternative actions see separate sheet.

Fuller

— Exchange [illegible]
— Bring in grade sheets for prev. years

| d i g i t a l |

interoffice memorandum

Act as technical leader

Subject: Material for April 3 Review

To: Gordon Bell
Larry Portner

Date: 3/25/80 Tue 15:59:53
From: Sam Fuller
Dept: Systems, Arch., & Technology
Ext.: 8-223-4562
Loc.: ML3-5/1

Attached are five items I think cover the performance assessment and review topics for our meeting next Wednesday.

1. General Assessment of Technical Director's Group
2. Assessment of my personal performance
3. Post Q3 Review of SA&T FY80 operating objectives
4. Charter, Goals, and Objectives for SA&T (Nov. 28, 1979)
5. Standards Goals and Objectives, 6 February 80.

Richness
- Ability [illegible]
- going beyond

aggressive set of objectives

I'll plan to move to a format that integrates my assessment of operating objectives on the same sheet of paper as the operating objective itself, but for this pass the only way to meet our deadline was to give them to you separately.

(I'm doing this against a deadline of leaving to talk at a Performance Woods Meeting so I may show up Wednesday with a few corrections or additions to what you see here.)

Not doing:
→ No Concept ~~Tech leadership~~ of Arch. in Low End and Terminals and graph +
→ Chief Eng. ? ? (role in Venus)

		A	B	C	I	?
13	A-	4	6	1	2	
14	S	5	3	1	4	1
13	PL	3	7	—		3
11	TS	1	4	1	3	2

(7) Bonus grades —
- XCON
- Hg review

+---------------+
| d i g i t a l |
+---------------+

i n t e r o f f i c e
m e m o r a n d u m

Subject: General Assessment of Technical Director's Group Q3 FY80

To: Gordon Bell
Larry Portner

Date: 3/25/80 Tue 12:16:43
From: Sam Fuller
Dept: Systems, Arch., & Technology
Ext.: 8-223-4562
Loc.: ML3-5/H33

I have just completed the detailed assessment of all the operating objectives for SA&T. Overall, I believe SA&T has done well in Q3, to use grades I would say B+ to A- average with a manageable number of incompletes.

The written objectives cover most of what is being done, but a few key efforts not included are:

- Tracking and sponsoring the VAX configuration effort (XCON). Some involvement by SA&T has been essential to coordinate with manufacturing and make sure the funding and (even more importantly) engineering responsibilities have been accepted within development groups.

- The software architecture for our new interconnects made major progress in Q3. Only part of the value of the effort will be seen in the report in April. Better understanding and a common set of concepts is now beginning to exist between base systems software and the network group.

- Reorganization of technology assessment group to provide more management focus and fix weakest section in current organization.

- Moving ahead with Mill/Merrimack teleconferencing link.

The Architecture Group is doing a respected, credible job. The key to their continued viability is the hiring effort in Q3/Q4. I believe the prospects look good for hiring the necessary additional people.

The Systems Performance Group continues to run smoothly. Given feedback from development groups and my own assessment, I am moving toward more attention to the quality and utility of results and responsiveness to development and central strategy needs. We also need to get distributed performance groups working more in support of each other rather than as separate fiefdoms. This last item will take time and patience.

In the Office of Technology, my assessment is that we are using Kotok (and Strecker) very effectively for technical review and exploring alternative technical solutions. CAD strategy is making slow but steady progress. Support for RAD/TRAD committee is working much better than nonsupport of a year ago. Advanced Development Program needs to be explicitly defined and reviewed.

Overall, the staff is (just) beginning to be able to work together as a team. My direct reports come from very different backgrounds and perspectives but often have extensive knowledge of other areas in SA&T. (E.g., Strecker's prior performance work, Kotok's knowledge of architecture, Keating and Kotok on standards, etc.)

If the staff needs strengthening in any area, (and it does) it is in general management. As a result, "dotted line" reports have been added to staff over the past half year (Keating, G. Johnson, E. Gianetto) to get the necessary broader perspective and add people with good management ability and insight to the staff. Now that I have personnel support I'm planning in Q4 to get more explicit and open feedback from each staff menber on their perception of SA&T operations.

+---------------+ interoffice
| d i g i t a l | memorandum
+---------------+

Subject: Assessment of Personal Objectives, Q3 FY80

To: Gordon Bell
Larry Portner

Date: 3/25/80 Tue 14:37:40
From: Sam Fuller
Dept: Systems, Arch., & Technology
Ext.: 8-223-4562
Loc.: ML3-5/H33

Fundamentally, the bulk of my time and attention is spent managing SA&T. The organization is now in a steady state operation. I believe the group no long feels in startup mode. Throughout Q3 I have been able to address a sequence of organizational issues of substance with the goal of strengthening the group. Specifically,

- Working with Terry Potter to continue his excellent control and planning in the performance group and to focus more clearly on the actual quantitative results and specific insights needed by the development group. None of his previous managers pushed in this direction. The VAX positioning and competitive data that is or will be available on announcement of the 11/44, VMS R2, and Comet are some examples.

- Moved Dan Goor, and TAI in general, next to the competitive analysis work in Potter's group to focus more management attention on the weakest area in SA&T.

- Moved Bob Kusik from continually working "people process" issues to getting a draft of the CAD Redbook out. I believe the process issues have improved by having a concrete task to work on.

- Began to work with Bill Strecker on management issues as opposed to purely technical development issues. (Long term Bill clearly should be leading a small, high quality advanced development or applied research team.)

- Supported Alan Kotok as he reviews and uncovers problems in major projects in Marlboro and Tewksbury. (I think Alan has been very effective in the past quarter in comm. strategy, Mercury review, and interconnect in general.)

- Moved dotted line reports, Keating and Glenn Johnson, into more visible roles within staff to help give needed depth to staff.

In addition to managing SA&T, I continue to spend time on the following things that I believe make me more effective as a Technical Director. It is probably good for us to discuss them explicitly as I am seeing a tendency to loose sight of these efforts as the management demands of SA&T continue to press for my time.

1. RAD Member. This is a nontrivial part of the week, averaging a half day per week. I think it's important for me to be directly involved in RAD for FY80 to both understand what makes it work (and at times not work) and to install the necessary staff support so that the RAD members are not lost in paper work and the RAD committee does a responsible job of reviewing proposals and ongoing A.D. Both objectives will be accomplished by the end of FY80 and at that time I plan to resign from RAD after finding a suitable replacement.

2. Sponsor for the XCON (VAX Configuration Project). Until committed program plans are in place for XCON in manufacturing and order processing and hardware and porgramming support within engineering is in place I will continue to push on open issues and get the necessary commitments. This effort has very high potential payoff. Tewksbury is beginning to see the value of XCON and as they are now taking on increased repsonsibilities I can begin to reduce my own direct involvment.

3. Personally led the Interconnect Software Architecture effort in February, amounting to about a half time commitment for the month. Given the history, personality differences, and wide gap in technical approach, I believe we had no choice but for me to be directly involved in this initial definition phase.

4. Personally scoped, led, and revised the Standards report to OOD to ensure closure. (It wasn't going to make it as a pure consensus process.)

5. Led the Mercury review meeting, and pre-meeting work, to a constructive conclusion March 21.

6. Revised my chapter on Performance Evaluation in the textbook Introduction to Computer Architecture. To be published later this year.

7. Continued contact with CMU, Stanford, and other universities. (Though this is dropping off as demands of SA&T increase).

8. To address question within engineering as to what the Technical Director's group does, structured talk at OOD Framingham meeting to make my group's value to engineering as clear as possible.

Below are the set of personal objectives we discussed at our January 30, 1980 review meeting.

Priority	Assessment	Personal Objectives
1	B	1. Strengthen general management skills via experience and some training.
2	B	2. Maintain and broaden technical expertise. - Limited but nonzero paper publication. - Talk at some universities. - Interact with individual contributors on technical, as well as process issues. - Drive a few topics.
2	C+	3. Get the Technical Director's direct reports working together as a team. Right now they come from very different parts of DEC. 3a. Get all parts of SA&T reviewed and working well.
3	A	4. SA&T is not understood by the rest of DEC. Education job required.
?	?	5. Long Term Goals: - Lead some aspect of the Research efforts here at DEC. - Manage some significant product development.
2	B	6. Make the most important technical strategies work rather than thrash.
1	I	7. Get a systems architecture development/control process defined and working.
3	C	8. Get technology push operating in a balance with the market pull (e.g., Lyle).
1	A/I	9. Recruit in the architecture area.

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interoffice memorandum

Subject: Post Q3 Review of FY80 Operating Objectives

To: Gordon Bell
Larry Portner

Date: 3/25/80 Tue 13:24:16
From: Sam Fuller
Dept: Systems, Arch., & Technology
Ext.: 8-223-4562
Loc.: ML3-5/H33

Next year I'll try for a more integrated format of goals, objectives, and performance against objectives but for this review let me simply comment on performance against objectives and ask you to refer back to statement of objectives in my Nov. 28, 1979 document.

Priority	Assessment	Architecture
2	C	A1.1 This is formally being pursued by L. Gale as he works in the EMOC. It is a part of his own job goals so it is no longer unstaffed and unfunded. Progress will be paced by the rate of progress of EMOC. I believe L. Gale is/will be one of the stronger advocates on the EMOC.
2	A	A1.2 With hiring of standards people for MK, Spitbrook, and TW this objective is being accomplished. Following another quarter of education and planning, FY81 objectives will be more specific in this area.
2	B	A1.3 Progress good here. Will be better when EMOC and OOD gets consistant phase reviews and design reviews in place. In past quarter SA&T has had important (at least vocal and visible) input to 2080, Venus, Mercury, J11, IPA780, and MSCP reviews (no doubt an incomplete list).
2	A	A2.1 Good. Key areas of architecture memory management, MBA, CI port all made significant progress. In addition, xxx "minor" corrections and clarifications of VAX architecture written and reviewed by VAXB.
3	B	A2.2 Must hire before we start here. Original plan is to begin in Q4. Given hiring expectations and Nebula availability, I now believe it will be started during H1 of FY81.

2	B-	A2.3 Completed memory management (to conform to VMS de facto decisions) MBS. Uncompleted: UBA.
1	A+	A2.4 Excellent progress here. AXE program has had major impact on quality of Comet's implementation of VAX architecture. Unexpected positive impact on 11/780, runtime library, SRM and even in one case VMS. Progress on Nebula paced by Nebula schedule. Last month established a base plan for moving AXE from an experimental program to an operational program in FY81. Operational effort now a joint undertaking with D&MSD and hiring/stffing seems to be on schedule.
1	B/I	A3.1 Dependent on hiring. Large number of interviews in architecture group in Q2. 4(?) offers now outstanding and interviews are continuing. Expect necessary PDP-11 person in place by end of FY80.
1+	A/I	A4.1 Major effort in interconnect software architecture this quarter. Looks good. Will understand quality of work that is now done when we review and ratify with systems architecture group.
--	I	A4.2 This objective put on hold at Nov. meeting when you chartered the Interconnect Software Architecture group and related Systems Architecture effort. I would still like to do this but no commitment at present.
3	I	A4.3 Poor statement of objective. I can say we have started but I cannot say we've reached any significant milestone. No real progress here. Will update objective and review expectations before next review.
3	B	A4.4 Done. Really a minor objective.
1	B+	A5.1 Have initiated significant advertising and recruiting effort in Q3. Q4 will tell the value of our efforts. I think we are in good shape here.

Priority	Assess-ment	Standards
		(Based on our Jan. 30 discussion and an SA&T woods meeting, the operating objectives were revised and the new objectives are listed for reference in attachment 5.)
1	A-	S0.1 Accomplished. Report written, distributed and approved by OOD. We are now well into phase of implementing the recommendations in report. FY81 objectives will reflect specific activities designed to strengthen and clarify standards work in SA&T and TOPS.
2	A	S1.1 Six key CCITT, ISO and IEEE committees now have DEC representatives.
2	A	S1.2 Done. Hired G. Robinson.
2	C+	S1.3 Done in Floating Point. Started with Interconnect, Fortran, Cobol.
1	B	S2.1 Working pretty well on ongoing basis. EMOC will help make this easier.
3	I	S2.2
2	I	S2.3
--	--	S2.4 Done. Small item.
2	I	S2.5 Important to get moving here. Will target Q1 FY81.
2	B+	S3.2
2	A	S3.3 Done. On schedule.
?	?	S4.1 (I simply lack information here. Will recheck.)
2	A	S5.1 P. White elected to X3/X4 Secretariat Management Committee. Liasion established with NBS.
1	B(?)	S6.2 Work ongoing.

Priority	Assessment	Performance Analysis
3	A	P1.1 Progress excellent. Rollins Turner driving this. Review in Q2 impressive. Need new milestones to measure this ongoing effort.
2	B	P1.2 Objective somewhat vague. Add "specifically drive product position metrics into Venus/Hydra and follow up via product review and under contract provide tools to estimate system performance." to operating objective. Initial progress good on Venus, adequate on Hydra.
3	--	P1.3 Planned to begin in Q4.
2	A	P2.1 Progress good. Have held woods for performance community (not just SPA) and have had quarterly cross-group review.
3	B	P2.2 Good but could be better.
1	A-	P7.1 Completed IBM System/34 analysis. Now taregeted to have VAX-11/780 and Comet compared to HP 3000 and IBM 4331 by Comet announcement. (Very tight schedule but clearly the right thing to be done.)
1	B	P7.2 Most of this work scheduled for completion in Q4. Did push up some positioning on 11/780. (You saw the curves on the OOD afternoon meeting in Framingham.)
2	B+	P4.1 Good progress and feedback to Venus group. Staffing in Hydra has caused some delays here.
2	B (A+ to SRI)	P4.2 Going very well. Expanded scope to include VMS/UNIX comparison (with central funds). Using recent SRI report to drive/accelerate effort. (Aside, what I'd really like to do here is give SRI a few more Megabytes of memory and MBA's and get them to do more on their VMS/UNIX comparison.)
1	--	P5&6 On schedule. Completion times in Q4.

1	B	P8.1 Excellent progress with ECS and ESG workloads. Pending disaster with critical commerical workload. This is a case where we (SPA) are probably being too "matrixed" and need to get clearer commitments or do it ourselves.
2	B+	P8.2 Excellent progress. 4331 coming in ahead of schedule. (Richard Case makes meeting objectives in this area much easier. Now need to begin to plan for 4331-followon work.)
3	--	P3.1 Just starting. Running as planned.

Technical Strategies

1	B	T1.1 Accomplished. Both appropriate administration and financial support in place for RAD. Being extended to the other technical review committees. In general, this is enabling RAD members to be more effective technical reviewers and provide better constructive feedback to our Advanced Development efforts.
3	I	T1.2 Not done. Behind schedule.
2	C-/I	T1.3 Not done. Behind schedule. Ad hoc funding methods using RAD for technical review allocated the FY80 funds.
2	B-	T2.1 This has taken the specific direction of writing and reviewing "chapters" on CAD, Performance Evaluation, and Interconnect. We need but have not started yet a chapter on technology (LSI). Will need to work with PMC and TOPS to resolve full table of contents of a Redbook II. I perceive this spring is not the time to do this. Suggest this becomes an FY81 objective in H1.
2	C	T2.1A The "Redbook II" of last summer has been extensively revised and was published in January 1980 as the "State of Technology" report. Major improvements from July 79 to January 80. More improvements needed before decision to proceed to publish a State of Technology report in Q3 FY81. Restructured organization to focus attention and review here.

1	B+	T3.1 First edition of CAD Redbook out. Plans going in place for second edition this summer to include a coherent as opposed to the de facto CAD strategy. I believe it was a major accomplishment to get this first draft out.
1	B	T3.2 Adequate progress here. Multiplicity of players. We are pushing to resolve the BI/Q22 issue. Interconnect Program understands I still don't perceive my group can step to the side here yet. Still too many loose ends.
3	A	T3.3 Done. Steve Gutz funded and is working on software technology. Plan to have report and recommendations in Q1, FY81.
2	--	T4.1 (New) Specifically, develop a business plan including strategy, scope, tactics and detailed plans. The detailed plans should be down to extreme detail so as to help manage our focus. (end Q4)
		<u>Foster Innovation and Advanced Development</u>
3	I	I1.1 This objective pushed to Q4. After 1/2 year, finally hired a good personnel rep (Maureen Culliton). Now we have the staff to provide the necessary follow through and begin to move ahead.
3	I	I2.1 Same comment as I1.1.

S.H. Fuller
revised 11/28/79

CHARTER FOR THE SYSTEMS, ARCHITECTURE AND TECHNOLOGY GROUP

Provide the leadership in the basic technical areas and processes necessary for the development of DEC's future products. SA&T manages the architecture and standards process for both hardware and software; develops and coordinates performance analysis activities; leads in the creation and integration of technical strategies; and identifies and sponsors needed new tools and technologies. SA&T is managed by the Technical Director.

Architecture and Standards

- o Identify the key architectures and standards necessary for DEC to succeed in our present and future markets.
- o Actively maintain and evolve these interfaces to maximize the leverage of engineering development on new systems.
- o Assure products under development are reviewed for conformance with relevant architectures and standards. Clearly identify areas of incompatibility as early as possible.
- o Set the direction for future architectures and standards.

Performance Analysis

- o Provide corporate leadership in development of technical performance metrics, data collection/analysis tools and methodology.
- o Evaluate and record the performance of DEC products against each other and our primary competitors using the technical metrics.
- o Review and assist other performance programs as required.
- o Develop and apply techniques to optimize and tune DEC systems through the product life cycle.
- o Integrate and coordinate performance activities and strategies throughout DEC to provide maximum cooperation and transfer of information.

Technical Strategies

- o Develop and review technical product strategies, technology and tools.
- o Review new base technologies and competitive products. Understand how these new developments impact our ongoing strategies. Sponsor the introduction of the right new technologies.

revised 11/28/79

GOALS FOR SYSTEMS, ANALYSIS AND TECHNOLOGY GROUP

Architecture

A1.(H) Assure all major hardware and software projects are reviewed for conformance with key architectures, standards, and technical strategies. Develop validation techniques to improve our ability to test conformance.

A2.(H) Manage the VAX-11 architecture with the knowledge it is DEC's mainstay machine language architecture for the next 20 years.

A3. Manage the PDP-11 architecture with the knowledge it is an excellent, mature machine language architecture for small applications. It should not evolve to overlap with VAX-11 size applications.

A4.(H) Identify and manage other architectures/standards/interfaces DEC should use given the following constraints:

- o Maintain maximal freedom for implementors.
- o "Firewall" as much of Engineering and Customer development investments as possible.
- o Understand how to establish architecture control for all these key architectures (with Software Engineering).

A5. Initiate advanced development in the architecture area such that VAX remains a viable architecture $\geq$ 20 years.

Standards

S1.(H) Ensure continuity and representation on important national and international standards committees.

S2.(H) Ensure, to the limits of DEC ability, that external and DEC standards will be technically sound and that they will have a positive impact on our customers.

S3.(H) Strengthen the voluntary standards process to minimize government regulations.

S4. DEC should take the initiative in the early definition stages of ANSI and government standards.

S5. Manage the evolution of DEC hardware and software standards.

S6. Insure that development groups participate in and support appropriate standards.

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S7. Ensure that we give accurate information to customers about conformance to standards.

Performance Analysis

P1.(H) Define/assist/review principal performance metrics for DEC systems and major components. Use metrics to set goals for new products. Review products under development on these metrics.

P2.(H) Continue to provide means of coordinating performance methods, tools and studies.

P3. Investigate and develop methods to analyze the performance of Data bases and networks.

P4.(H) Conduct performance analysis and modeling support for various organizations within DEC. (This is cross funded.)

P5. Continue to develop hardware/software performance measurement tools for a variety of our products as needed to carry out performance studies.

P6. Begin development of data analysis tools to reduce and interpret performance data.

P7.(H) Conduct specific measurement and analysis studies of select products in order to determine how our products compare to each other and our primary competitors. (Majority of this is cross funded.)

P8. Set up a product positioning process and a competitive analysis lab.

Technical Strategies

T1.(H) Develop processes to review/guide investments in advanced development, analysis, and tools. Do this by providing leadership and direction for the technical committees: RAD, Cross Systems, CAD Committee, Software Tools, and Engineering Committee.

T2. Produce Redbook II and make it as effective for management overview and decision making as Redbook I now is. Identify the important hardware and software technologies for DEC's continued success. Evaluate where we are on each of these technologies. Recommend and sponsor action (or non-action) to get where we need to be.

T3. Work on the most critical technical strategies.

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Processes to Foster Innovation and Advanced Development

I1.(H) Establish open lines of communication between Consulting Engineers and technical director. Establish an active role for consultants in technical decision making at DEC.

I2. Make Engineering a more exciting/attractive place for high quality, technical talent.

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OPERATING OBJECTIVES FOR SA&T

The objectives given below are numbered to match SA&T goals. E.g., AX.Y is the Yth objective corresponding to goal AX. In a number of cases, success of the objective is dependent on a crossOOD committee and in such cases the committee is stated rather than an OOD group.

Architecture

	Joint With	Time
A1.1 Get Architecture and Standards conformance as part of Hardware and Software reviews. (Unstaffed/ unfunded).	Operations	FY80
A1.2 Work with SQM on conformance testing in programming languages and data interchange.	S/W Eng.	Q2-lang. Q3-data
A1.3 Participate in review process for projects that implement important standards or architectures.	OOD	ongoing
A2.1 Continue the architecture management of the VAX-11 architecture.	VAXB	ongoing
A2.2 Develop the neccesary addition tools and initiate the architecture characterization of the VAX-11 architecture.	--	Q4
A2.3 Complete the writing of SRM. Specifically, document the defacto architecture features in the memory management and I/O areas.	--	Q2
A2.4 Establish an architecture verification procedure for the VAX-11 architecture. Build on the success of the AXE program for Comet.	--	Q2 (Comet) Q4 (Nebula)
A3.1 Continue and strengthen architecture management of the PDP-11 Architecture.	--	Q3
A4.1 Develop the needed I/O Architecture for our future products.	Dist. Proc.	Q3
A4.2 Identify the set of DEC's key architectures and a process for their management.	S/W Eng.	Q2

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	Joint With	Time
A4.3 Start to understand the economic impact of standards conformance/ nonconformance	Finance	Q3
A4.4 Recommendation on which FIPS we will follow.	--	Q3
A5.1 Hire 1 to 2 people and get advanced development activity started in Architecture group.	--	Q4
Standards		
S0.1 Resolve organizational interdependence, holes, and overlap with Technical Operations Group (John Holman).	TOPS	Q2
S1.1 Get representation on ANSI Communications committees, ANSI I/O Interface committee and CCITT.	Dist. Proc., Eur. Eng.	Q2/Q3
S1.2 Establish an industry standards hardware function within CC 366.	--	Q3
S2.2 Define the DEC strategy for each industry standards committee and operate against that strategy for FY80.	S/W Eng., CSD, MSD, MS, LSG	Q2/Q3
S3.1 Support DECUS participation on ANSI committees.	--	ongoing
S4.1 Become the NBS contact with DEC. Input to NBS 5-year plan.	--	Q2
S4.2 Get DEC involved in definition of ANSI and ISO distributed systems architecture and distributed database standards and guidelines.	Dist. Proc./ S/W Eng.	Q3
S5.1 Get existing DEC architectures to be DEC STDS. (VAX SRM, VAX Calling Standard, Escape Registration, ODS-2).	S/W Eng., Eng. Comm.	Q3/Q4
S5.2 Maintain existing DEC language committees (COBOL, BASIC, PASCAL). Analyze need for committees on standards for other languages marketed by DEC.	S/W Eng.	ongoing

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	Joint With	Time
S6.1 Ensure that relevant development groups have approved standards objectives in their beige books.	--	Q2
S6.2 Establish standards office in Tewksbury/Spitbrook.	--	Q2
S6.3 Continue to publish updates to Software Standards Notebook, Standards Summary, and standards sections of Systems Software Information. Investigate automated standards index.	--	ongoing as scheduled
S7.1 Inform salespeople via Sales Update, Product Line information bulletins, standards information in SPD's. Investigate automated conformance data.	--	Q2, Q3, Q4

Performance Analysis (in priority order)

	Joint With	Time
P1.1 Develop performance metrics for the real time market place to be used in support of the product positioning efforts.	--	Q3
P1.2 Use the product positioning metrics (used in existing products) in analyzing design tradeoffs.	--	Q4
P1.3 Identify and develop other performance metrics usable in product positioning such as "functionality', ease of use, etc.	--	Q4
P2.1 Continue developing the performance newsletter, performance library, quarterly half-day symposiums, performance notebook, performance steering committee, and various other performance communication efforts.	--	ongoing
P2.2 Keep abreast of the current performance techniques and in touch with University/Government/Industry to be aware of current research in performance analysis techniques.	--	ongoing

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	Joint With	Time
P7.1 Conduct specific measurement and analysis studies on HP and IBM. In particular, conduct performance measurements of HP and IBM's time-sharing capabilities.	Competitive Analysis Committee	ongoing
P7.2 Conduct specific measurement and analysis studies on DEC-related products which are either prototyped or currently exist. The intent of these studies is to provide simple display of our products price/performance in different environments and hardware/software configurations. Most are cross-funded. Central funded studies are:	TW-Product Management	ongoing
11/23 RSTS/e V7		
11/23 RSX11M		Q4
11/34 RSTS/E V7		Q4
11/34 RSX11M		Q4
P4.1 Conduct modeling/analysis support to Hydra, Venus, and other new systems. Develop a reliability and performance tool in support of Hydra.	Hydra/Venus	ongoing
P4.2 Develop a technique to size and tune DEC products. Prototype it on UNIX since Telco funded.	Telco Eng.	Q4
P5&6 ~~P6&7~~ Performance Tool development		
VMS Event Trace		Q4
Portable RTE	LSG (Depace)	Q4
Diamond 11/780 Interface	S/W Tools	Q4
General Trace Reduction for Analysis	--	Q4
RTE Data Reduction	--	Q4
VMS Workload Char. Tool	--	Q4
P8.1 Obtain "corporate" representation benchmarks of specific market areas used for product positioning.	--	ongoing
P8.2 Coordinate the acquisition of competitive systems where appropriate in order to set up a corporate competitive analysis lab.	Competitive Analysis Committee	ongoing

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		Joint With	Time
P3.1	Identify the scope of performance problems in networking our systems and conduct some studies in our lab which will help identify what tools and methods are needed. In addition, investigate the use and limitations of our current data collections tools in a network environment (DIAMOND, SIM11, RTES, etc.) Then work to coordinate network performance analysis.	--	ongoing

Technical Strategies

		Joint With	Time
T1.1	Review and provide necessary administrative support for operations of RAD committee.	RAD	H1
T1.2	Review charter of Engineering Committee and get it revitalized.	T.O.	Q2/Q3
T1.3	Make the Cross-Products Committee operational in Q2 FY80 and review proposal and allocate funds by February 1980.	--	Q2
T2.1	Review and accelerate Redbook II development in Q2 FY80. Publish next Redbook II with purpose of making it as useful for management and investment decisions as Redbook I.	T.O.	Q2/Q3
T3.1	Establish a CAD strategy and program for engineering development and have it in place in time for FY81 funding decisions.	T.O. & MPD	Q2/Q3
T3.2	Continue to assist Distributed Processing Group in Interconnect. Specifically, get a decision on whether or not to use Ethernet for NI; get initial BI specification agreed to by end of Q2 FY80; scope the LSI efforts that must be put in place to support the NI, BI, and CI.	Dist. Proc.	FY80

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		Joint With	Time
T3.3	Charter one or two software engineers to develop an overview of essential software technologies. In particular, focus on ongoing advanced development activities and work with S/W Engineering on which ones should be initiated.	S/W Eng.	Q2/Q3

Processes to Foster Innovation and Advanced Development

I1.1	Inventory our personnel strengths and weaknesses in all the important technical areas.	--	Q3
I2.1	Develop and propose some specific actions to make DEC more exciting for technical talent.	Personnel	H2

Revised 6 Feb 80
Pat White

STANDARDS GOALS AND OBJECTIVES

GOALS

S1 (H) Ensure, to the limits of DEC ability, that external and DEC standards will be technically sound and will have a positive impact on our products.

S2 (N) Ensure that development groups participate in and support appropriate standards. Review all major products for standards conformance.

S3 Ensure that we give accurate information about product conformance to customers and to DEC employees.

S4 DEC should take the initiative in the early definition stages of industry and government standards.

S5 Strengthen the voluntary standards process to minimize government regulation.

S6 Manage the evolution of DEC hardware and software standards.

OBJECTIVES		Joint With	Time
S0.1	Resolve organizational overlap, interdependence, and holes with TOPS (John Holman).	TOPS	Q2
S1.1	Get representation on ANSI communications committees, I/O Interface, and CCITT.	Dist. Proc. Eur. Eng.	Q2/Q3
S1.2	Establish an industry standards hardware function within CC 300.	-	Q3
S1.3	Define DEC strategy for each industry committee and operate against that strategy.		Q2/Q3
S2.1	Get standards review as part of Hardware/Software reviews.	Operations	Ongoing

S2.2	Conformance test systems for high priority industry standards.	SQM	Q2 lang Q3 data
S2.3 *	Create a plan to incorporate standards objectives in development beige book.	OOD*	*Q3
S2.4	Establish standards office in Tewksbury/Spitbrook.	-	Done Q2
S2.5 *	Develop a framework for evaluating the economic impact of standards conformance.	Finance	Q3
S3.1 **	Determine status of conformance to ISO software standards.	S/W Eng.	Q3/Q4
S3.2	Inform sales people via Sales Update Product Line information bulletins. Standards information in all SPD's. Update FIPS conformance chart.		
S3.3	Continue to publish Standards Summary, Software Standards Notebook, and standards section of SSI. Investigate automated standards index.		ongoing as scheduled
S4.1	Get DEC involved in definition of ANSI, ISO, CCITT distributeed architecture.	Dist. Proc.	Q3
S5.1 *	Support user participation in industry committees. Fee waivers for unfunded user organizations.	-	ongoing
S6.1	Get existing DEC architecture to be DEC Stds. (VAX SRM, VAX Calling Standard, Escape Registration, CDS-2).	S/W Eng.	Q3/Q4
S6.2	Maintain existing DEC language committees (COBOL, BASIC, PASCAL) Analyze need for other language committees.	S/W Eng.	ongoing

* revised
** new objective

DELETIONS FROM NOVEMBER 1979 VERSION

S.1 Ensure continuity and representation on important national and international standards committees.

Reason: This is really a means of achieving our second goal of ensuring that external standards are sound and have a positive impact on our products. Being on a committee is not a goal in itself.

A4.4 Recommendation on which FIPS we will follow.

Reason: Part of larger objective of incorporating standards objectives in development strategies.

S3.1 Suuport DECUS participation on ANSI Committees.

Reason: Not a measurable objective.

S4.1 Become NBS contact with DEC.

Reason: Trival.

+---------------+ interoffice
| d i g i t a l | memorandum
+---------------+

Subject: Development Planning Document for Sam Fuller

To: Gordon Bell
Larry Portner

Date: 30 May 80
From: Sam Fuller
Dept: Systems, Arch., & Technology
Ext.: 8-223-4562
Loc.: ML3-5/B53

Below are my responses to the nine questions asked in the IDP report (page 4 of IDP is attached).

1. Log of Positions Held to Date:

   - Technical Director and Group Manager of the Systems Architecture and Technology Group, Central Engineering; June 1979 to present.
   - Senior Engineering Manager of the VAX/PDP-11 Architecture Group, Central Engineering; January 1978 to June 1979.
   - (For education and employment prior to Digital, see attached resume.)

2. Significant Developmental Experiences:

   - Organizational development and management of the Systems Architecture and Technology group. June 1979 to present.
   - Leading and/or participating in ad hoc task forces: Hydra, Interconnect, VAX Port Architecture, Interconnect Software Architecture, etc.
   - General management, leadership, and fund raising in Washington for the Cm* project (CMU), 1975 - 1977.
   - Designing and then running the performance evaluation effort on C.mmp (CMU), 1973 - 1976.
   - Conceptual definition of and then leading the architecture evaluation work for Army/Navy CFA project, 1975 - 1977.
   - University committee work: curriculum committee, undergraduate program, new computer system evaluation, etc.

- o Participation on assorted National Science Foundation, National Institute of Health, Department of Defense and IEEE review groups.
- o Writing a PhD thesis, 1971 - 1972.
- o Course at Stanford University on Managing Research and Development, 1970.
- o Working within the IBM (1971) and Hewlett Packard (1969) research labs.
- o Working in the Department of Defense R&D labs, 1967 - 1968.

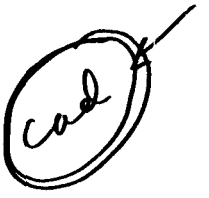
3. Examples of successful job performance:

1. VAX architecture evaluation program. Skills: motivated to solve an immediate problem (debugging Comet microcode); willingness to push ahead in the face of various technical criticism.
2. VAX system configuration program. Skills: recognizing how a new and untried tool could be applied to a new problem; willingness to sponsor a new idea.
3. Driving DEC task forces to conclusion. Skills: willingness to write; pushing on follow-through; ability to guide direction of task force.
4. Major, successful review of Cm* project in June 1977. Skills: pull a loosely knit group together to complete, measure, document, then demonstrate a major piece of applied research.
5. Architecture metrics for Army/Navy Study. Skills: Motivation to solve/quantify immediate problem, willingness to push ahead in the face uncertainties.
6. Forty plus technical articles. Skills: continually exploring new ideas; technical writing; analytic models; interest in developing, measuring, and reporting on prototype computer systems (e.g. C.mmp and Cm*).
7. PhD thesis on drum and disk performance. Skills: analytic (mathematical) methods; motivation to collect real data rather than assume idealized distributions; technical writing; programming; independently motivated.

4. Current Job Responsibilities:

- o General management of SA&T (major responsibility).
- o Technical review of major, high risk efforts. (Either lead review myself of organize a review group.)
- o Initiate new programs (both inside and outside SA&T, e.g. XCON, AXE, Fiber optic ICCS, Ethernet, etc.).
- o Recruit and hire key technical contributors.
- o Provide technical perspective to OOD discussions and reviews.

5. Basic Skills:



Technical:

Hardware: good
Architecture: strongest
Mechanical: average
Optical: average
Applied mathematics: strong
Programming systems: strong
Applications programming: average

Management:

Planning: average
Leading: strong
Organizing: average
Control: weak
Measure: average

Innovation:

Idea generation: strong
Idea sponsorship of other's ideas: strongest
University contact/review: strong

6. Goals and Aspirations:

- o Initiate, lead and drive to successful conclusion new concepts that result in a product or design process.
- o Recruit the brightest people.
- o Develop and nurture a group capable of being innovative and productive.

Success is accomplishing one and hopefully more than one of the above and getting some recognition for the accomplishment.

7&8. DEC of the future and assignments I might have. (I've combined 7 and 8 since I'm not sure how to treat either one separately.)

- o Strengthening of the architecture (software plus hardware) function within engineering and leading that group as part of SA&T.
- o Organization of systems engineering/systems techniques group that would include performance, testing, systems modeling for reliability, availability, etc, and developing it as a part of SA&T.
- o Develop and lead a rejuvenated research group.
- o Watch for opportunity to manage through to shipment some hardware or software product.

call

I believe I can take on the above items at basically year intervals.

9. Development Needs/Plans:

- o I've taken two management development seminars since coming to DEC. I believe I should consider taking several more.
- o I don't believe it makes sense for me to take any more technical courses. However, I probably should continue and maybe increase my attendance at major conferences and visits to universities.

agree

Customers too

Stanford: Military (· Sonar · cruise Missle) → Couldn't it be extended; — Couldn't it be coupled

: CFA

No success criteria

VITA

Samuel H. Fuller

October 5, 1977

General Information

Address:	3208 Science Hall Department of Computer Science Carnegie-Mellon University Pittsburgh, PA 15213
Phone:	(412)-578-2574
Birthdate:	June 1, 1946
Marital Status:	Married
Number of children:	Three
Citizenship:	U.S.A.
Social Security Number:	362-50-1540

Education

University	Attended	Degree	Field
University of Michigan	1964-1968	B.S.	Electrical Engineering
Stanford University	1968-1969	M.S.	Electrical Engineering
Stanford University	1969-1972	Ph.D.	Electrical Engineering and Computer Science

Employment

Associate Professor of Computer Science and Electrical Engineering, Carnegie-Mellon University, 1975 to present.

Assistant Professor of Computer Science and Electrical Engineering, Carnegie-Mellon University, 1972-1975.

Areas of Professional Interest

Computer Architecture, Performance Evaluation of Computer Systems, and Multiprocessor Computer Structures.

Consulting Activities

Digital Equipment Corporation, Maynard, MA, 1974-1975, 1977.
Naval Research Laboratory, Washington, DC, 1973-.
Compu-guard Security Systems, Pittsburgh, PA, 1975-1976.
National Cash Register Corporation, Cambridge, OH, 1975.
Duquesne Systems, Inc., Pittsburgh, PA, 1975-.
U. S. Army Redstone Arsenal, AL, 1976-1977.
U. S. Army Electronics Command, Ft. Monmouth, NJ, 1975-.
Honeywell Information Systems, Phoenix, AZ, 1977.

Summer Positions

National Security Agency, Fort Meade, MD, 1967, 1968.
Hewlett Packard Laboratories, Palo Alto, CA, 1969.
IBM Thomas J. Watson Research Center, Yorktown Heights, NY, 1971.

Professional Societies and Activities

Member of ACM and IEEE.
An editor of the Computer Systems Department (Measurement/Performance Evaluation) of the Communications of the ACM, 1972-.
Chairman of the Subcommittee on Storage System Analysis of the IEEE Computer Society Technical Committee on Mass Storage, 1973-1975.
Member of IEEE Task Force to Define Curriculum in Computer Architecture, 1974-1975.
Member of the Hardware Systems Panel of the NSF Computer Science and Engineering Research Study (COSERS), 1975-1977.
Member of the Office of Naval Research Review Panel, 1976-.
Member of the Committee on Recommendations for the U. S. Army Basic Scientific Research, 1977-.
Editor (with Gordon Bell and Daniel Siewiorek) of the special issue of the Communications of the ACM on the evolution of major computer architectures to appear, January, 1978.

Honors and Fellowships

General Motors Scholarship, University of Michigan, 1964-1968.
Scott Paper Co. Award, University of Michigan, 1966-1968.
National Science Foundation Fellowship, Stanford University, 1968-1970.
Hertz Foundation Fellowship, Stanford University, 1970-1972.
Tau Beta Pi; Eta Kappa Nu; Phi Kappa Phi; Sigma Xi.

Publications

(Unpublished papers included where material is not otherwise available; reprints included where they appreciably increase accessiblilty.)

1. S. H. Fuller, Orthogonal Versus Array Computing, Tech. Note 4, Digital Systems Lab., Stanford University, Stanford, California, October 1970.

2. S. H. Fuller, T. P. Price, N. C. Wilhelm, "Measurement and Analysis of a Multiprogrammed Computer System," IEEE Workshop on Measurement and Performance Evaluation, Argonne, Illinois, October 1971.

3. S. H. Fuller, The Analysis and Scheduling of Devices Having Rotational Delays, Ph.D. dissertation, Stanford University, Stanford, California, August 1972.

4. S. H. Fuller, "An Optimal Drum Scheduling Algorithm," IEEE Trans. on Computers, Vol. C-21, No. 11, November 1972, pp. 1153-1165.

5. S. H. Fuller, "Performance of an I/O Channel with Multiple Paging Drums," ACM SIGME Symposium on Measurement and Performance Evaluation, Palo Alto, California, March 1973, pp. 13-21.

6. S. H. Fuller and R. C. Chen, The I/O Port Architecture for Computer Modules, Departments of Computer Science and Electrical Engineering Technical Report, Carnegie-Mellon University, Pittsburgh, Pennsylvania, March 1973.

7. S. H. Fuller, R. J. Swan and W. A. Wulf, "The Instrumentation of C.mmp: A Multi-(Mini)-Processor," 6th IEEE Computer Society Conference (CompCon 73), San Francisco, California, March 1973, pp. 173-176.

8. C. G. Bell, R. C. Chen, S. H. Fuller, J. Grason, S. Rege, and D. Siewiorek, "The Architecture on Application of Computer Modules: A Set of Components for Digital Design," 6th IEEE Computer Society Conference (CompCon 73), San Francisco, California, March 1973, pp. 177-180.

9. H. S. Stone and S. H. Fuller, "On the Near-Optimality of the Latency-Time-First Drum Scheduling Discipline, " Communications of the ACM, Vol. 16, No. 6, June 1973, pp. 352-353.

10. S. H. Fuller, J. G. Gaschnig, and J. J. Gillogly, Analysis of the Alpha-Beta Pruning Algorithm, Department of Computer Science Tech. Report, Carnegie-Mellon University, Pittsburgh, Pennsylvania, July 1973.

11. D. D. Chamberlin, S. H. Fuller, and L. Y. Liu, "A Page Allocation Strategy for Multiprogramming System with Virtual Memory," IBM Journal of Research and Development, Vol. 17, No. 8, September 1973, pp. 404-412.

12. S. H. Fuller and D. K. Stevenson, "The Performance Monitor for C.mmp," 11th Annual Allerton Conference, Urbana, Illinois, October 1973.

13. S. H. Fuller, "An Annotated Reading List for a Course in Computer Structures," SIGARCH Computer Architecture News, Vol. 2, No. 3, October 1973, pp. 30-34.

14. S. H. Fuller and D. P. Siewiorek, "Some Observations on Semiconductor Technology and the Architecture of Large Digital Modules," IEEE Computer, Vol. 16, No. 10, October 1973, pp. 14-21.

15. D. P. Bhandarkar and S. H. Fuller, "Markov Chain Models for Analyzing Memory Interference in Multiprocessors," ACM/IEEE First Annual Symposium on Computer Architecture, Gainesville, Florida, December 1973, pp. 1-8.

16. S. H. Fuller, D. P. Siewiorek, and R. J. Swan, "Computer Modules: An Architecture for Large Digital Modules," ACM/IEEE First Annual Symposium on Computer Architecture, Gainesville, Florida, December 1973, pp. 231-239.

17. S. H. Fuller, "Minimal-Total-Processing-Time Drum and Disk Scheduling Disciplines," Communications of the ACM 17, 7, July 1974, pp. 376-381. Also available in the Fourth SIGOPS Symposium on Operating Systems Principles, Yorktown Heights, NY, October 1973, pp. 36-43.

18. S. H. Fuller and F. Baskett, "An Analysis of Drum Storage Units," Journal of the ACM, Vol. 22, No. 1, January 1975, pp. 83-105.

19. S. H. Fuller, Analysis of Drum and Disk Storage Units, Springer-Verlag, New York, NY, 1975. (This is a revision and reprinting of 1972 Ph.D. dissertation.)

20. S. H. Fuller,"Computer Structures," in P. Freeman, Software Systems Principles: A Survey, SRA, Menlo Park, CA, 1975, pp. 19-64.

21. S. H. Fuller, "Performance Evaluation," in H. S. Stone (ed.), Introduction to Computer Architecture, SRA, Menlo Park, CA, 1975, pp. 512-565.

22. M. V. Marathe, and S. H. Fuller, "Hardware Aids to Performance Evaluation," Journal of Computer Science in India 5, 2, June 1975, pp. 13-17.

S. H. Fuller, "Recent Developments in Multiprocessor Computer Systems," CALCOLO Vol. XII, No. 1, June 1975, pp. 35-58.

24. S. H. Fuller, V. R. Lesser, C. G. Bell and C. Kaman, "Microprogramming and Its Relationship to Emulation and Technology," Infotech State of the Art Report 23, Infotech Information Limited, Maidenhead, England, 1975. (Also appeared in the 7th Annual SIGMICRO Conference, Fall, 1975.

25. P. Drongowski, S. H. Fuller, and T. Dopirak, "Emulating the Data General NOVA on the PDP-11/40: a Case Study," 11th IEEE Computer Society Conference (Fall CompCon 75), September 1975.

26. G. E. Rossman, C. G. Bell, F. P. Brooks, M. J. Flynn, S. H. Fuller, and H. Hellerman, "A Course of Study in Computer Hardware Description," IEEE Computer 8, 12, December 1975, pp. 44-65.

27. S. H. Fuller, G. T. Almes, W. H. Broadley, C. L. Forgy, P. L. Karlton, V. R. Lesser, and J. R. Teter, "PDP-11/40E Microprogramming Reference Manual," Department of Computer Science Technical Report, Carnegie-Mellon University, Pittsburgh, PA, January 1976.

28. P. L. Karlton, S. H. Fuller, R. E. Scroggs, T. E. Kaehler, "Performance of HB[k] Trees," Communications of the ACM 19, 1, January 1976.

29. S. H. Fuller, "A Cost-Performance Comparison of C.mmp and the PDP-10," ACM/IEEE Symposium on Computer Architecture, January 1976.

30. S. H. Fuller and G. A. Mathew, "Implementing Microprogram Storage with PLA's," ACM SIGARCH Computer Architecture News, Vol. 5, 2(June 1976), pp. 6-11.

31. S. H. Fuller and P. N. Oleinick, "Initial Measurements of Parallel Programs on a Multi-Mini-Processor," 13th IEEE Computer Society International Conference, Washington, DC, September 1976, pp. 358-363.

32. R. J. Swan, S. H. Fuller, and D. P. Siewiorek, "The Structure and Architure of Cm*: a Modular, Multi-Microprocessor," Computer Science Research Review 1975-1976, Department of Computer Science, Carnegie-Mellon University, Pittsburgh, PA, September 1976, pp. 25-48.

33. S. H. Fuller, T. M. McWilliams, and W. H. Sherwood, "CMU-11 Engineering Documentation," Department of Computer Science Technical Report, Carnegie-Mellon University, Pittsburgh, PA, 1976.

34. S. H. Fuller, "The PMS Notation," in Encyclopedia of Computer Science, A. Ralston and C. L. Meek (eds.), Petrocelli/Charter, New York, NY, 1976.

35. S. H. Fuller, V. R. Lesser, C. G. Bell, and C. Kaman, "Microprogramming and Its Relationship to Emulation and Technology," IEEE Transactions on Computers, Vol. C-25, No. 10, October 1976, pp. 1000-1009. (This is a reprint of the 1975 Infotech article.)

36. S. H. Fuller, H. S. Stone, and W. E. Burr, "Selection of Candidate Computer Architectures and Initial Screening," Volume II of Final Report of the Computer Family Architecture Selection Committee, Army Electronic Command, Ft. Monmouth, NJ, December 1976.

37. S. H. Fuller, W. E. Burr, P. Shaman, and D. Lamb, "Evaluation of Computer Architectures via Test Programs," Volume II of Final Report of the Computer Family Architecture Selection Committee, Army Electronic Command, Ft. Monmouth, NJ, December 1976.

38. S. H. Fuller, "Direct Access Device Modeling," Infotech State of the Art Conference on Performance Modeling and Prediction, Infotech International Ltd., Maidenhead, England, May 1977, pp. 175-212.

39. S. H. Fuller, H. S. Stone, and W. E. Burr, "Initial Selection and Screening of the CFA Candidate Computer Architectures," NCC77, pp. 139-146.

40. S. H. Fuller, P. Shaman, D. E. Lamb, and W. E. Burr, "Evaluation of Computer Architectures via Test Programs," NCC77, pp. 147-160.

41. T. M. McWilliams, S. H. Fuller, and W. H. Sherwood, "Using LSI Processor Bit-Slices to Build a PDP-11 - a Case Study in Microcomputer Design," AFIPS Conference Proceedings/1977 National Computer Conference, Vol. 46, 1977.

42. R. J. Swan, S. H. Fuller, and D. P. Siewiorek, "Cm* - a Modular, Multi-Microprocessor," NCC77, pp. 637-644, 1977.

43. S. H. Fuller, A. K. Jones, and I. Durham (eds.), "Cm* Review, June 1977," Department of Computer Science Technical Report, Carnegie-Mellon University, Pittsburgh, PA, July 1977.

44. S. H. Fuller and W. E. Burr, "Measurement and Evaluation of Alternative Computer Architectures," to appear in IEEE Computer, Vol. 10, 10, October 1977.

45. M. Marathe and S. H. Fuller, "A Study of Multiprocessor Contention for Shared Data in C.mmp," to appear in the ACM SIGMETRICS Conference, Washington, DC, November 1977.

46. J. Dennis, S. H. Fuller, and R. J. Swan, "Impact of Computer Hardware Research on Software Technology," to appear in Research Directions in Software Technology, MIT Press, December 1977.

47. S. H. Fuller and P. F. McGehearty, "Minimizing Latency in CCD Memories," to appear in the IEEE Transactions on Computers, Vol. C-27, 6, January 1978.

48. S. H. Fuller, J. Ousterhout, L. Raskin, P. Rubinfeld, P. Sindhu, and R. Swan, "Multi-Microprocessors: an Overview and Working Example," to appear in the Proceedings of the IEEE, February 1978.

S.H. Fuller
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CHARTER FOR THE SYSTEMS, ARCHITECTURE AND TECHNOLOGY GROUP

Provide the leadership in the basic technical areas and processes necessary for the development of DEC's future products. SA&T manages the architecture and standards process for both hardware and software; develops and coordinates performance analysis activities; leads in the creation and integration of technical strategies; and identifies and sponsors needed new tools and technologies. SA&T is managed by the Technical Director.

Architecture and Standards

- Identify the key architectures and standards necessary for DEC to succeed in our present and future markets.
- Actively maintain and evolve these interfaces to maximize the leverage of engineering development on new systems.
- Assure products under development are reviewed for conformance with relevant architectures and standards. Clearly identify areas of incompatibility as early as possible.
- Set the direction for future architectures and standards.

Performance Analysis

- Provide corporate leadership in development of technical performance metrics, data collection/analysis tools and methodology.
- Evaluate and record the performance of DEC products against each other and our primary competitors using the technical metrics.
- Review and assist other performance programs as required.
- Develop and apply techniques to optimize and tune DEC systems through the product life cycle.
- Integrate and coordinate performance activities and strategies throughout DEC to provide maximum cooperation and transfer of information.

Technical Strategies

- Develop and review technical product strategies, technology and tools.
- Review new base technologies and competitive products. Understand how these new developments impact our ongoing strategies. Sponsor the introduction of the right new technologies.

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- o Assure development projects are reviewed for consistency with product and technology strategies.
- o Understand how new technologies should be introduced in Engineering, Manufacturing, and Field Service.

Processes to Foster Innovation and Advanced Development

- o Sponsor the technical review committees: RAD, CAD Comm., Cross Systems Committee, Software Tools.
- o Sponsor Consulting Engineers and other "technical gatekeepers".

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GOALS FOR SYSTEMS, ANALYSIS AND TECHNOLOGY GROUP

Architecture

A1.(H) Assure all major hardware and software projects are reviewed for conformance with key architectures, standards, and technical strategies. Develop validation techniques to improve our ability to test conformance.

A2.(H) Manage the VAX-11 architecture with the knowledge it is DEC's mainstay machine language architecture for the next 20 years.

A3. Manage the PDP-11 architecture with the knowledge it is an excellent, mature machine language architecture for small applications. It should not evolve to overlap with VAX-11 size applications.

A4.(H) Identify and manage other architectures/standards/interfaces DEC should use given the following constraints:
- o Maintain maximal freedom for implementors.
- o "Firewall" as much of Engineering and Customer development investments as possible.
- o Understand how to establish architecture control for all these key architectures (with Software Engineering).

A5. Initiate advanced development in the architecture area such that VAX remains a viable architecture $\geq$ 20 years.

Standards

S1.(H) Ensure continuity and representation on important national and international standards committees.

S2.(H) Ensure, to the limits of DEC ability, that external and DEC standards will be technically sound and that they will have a positive impact on our customers.

S3.(H) Strengthen the voluntary standards process to minimize government regulations.

S4. DEC should take the initiative in the early definition stages of ANSI and government standards.

S5. Manage the evolution of DEC hardware and software standards.

S6. Insure that development groups participate in and support appropriate standards.

S7. Ensure that we give accurate information to customers about conformance to standards.

Performance Analysis

P1.(H) Define/assist/review principal performance metrics for DEC systems and major components. Use metrics to set goals for new products. Review products under development on these metrics.

P2.(H) Continue to provide means of coordinating perfomance methods, tools and studies.

P3. Investigate and develop methods to analyze the performance of Data bases and networks.

P4.(H) Conduct performance analysis and modeling support for various organizations within DEC. (This is cross funded.)

P5. Continue to develop hardware/software performance measurement tools for a variety of our products as needed to carry out performance studies.

P6. Begin development of data analysis tools to reduce and interpret performance data.

P7.(H) Conduct specific measurement and analysis studies of select products in order to determine how our products compare to each other and our primary competitors. (Majority of this is cross funded.)

P8. Set up a product positioning process and a competitive analysis lab.

Technical Strategies

T1.(H) Develop processes to review/guide investments in advanced development, analysis, and tools. Do this by providing leadership and direction for the technical committees: RAD, Cross Systems, CAD Committee, Software Tools, and Engineering Committee.

T2. Produce Redbook II and make it as effective for management overview and decision making as Redbook I now is. Identify the important hardware and software technologies for DEC's continued success. Evaluate where we are on each of these technologies. Recommend and sponsor action (or non-action) to get where we need to be.

T3. Work on the most critical technical strategies.

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Processes to Foster Innovation and Advanced Development

I1.(i1) Establish open lines of communication between Consulting Engineers and technical director. Establish an active role for consultants in technical decision making at DEC.

I2. Make Engineering a more exciting/attractive place for high quality, technical talent.

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OPERATING OBJECTIVES FOR SA&T

The objectives given below are numbered to match SA&T goals. E.g., AX.Y is the Yth objective corresponding to goal AX. In a number of cases, success of the objective is dependent on a crossOOD committee and in such cases the committee is stated rather than an OOD group.

Architecture -

		Joint With	Time
A1.1	Get Architecture and Standards conformance as part of Hardware and Software reviews. (Unstaffed/ unfunded).	Operations	FY80
A1.2	Work with SQ4 on conformance testing in programming languages and data interchange.	S/W Eng.	Q2-lang. Q3-data
A1.3	Participate in review process for projects that implement important standards or architectures.	OOD	ongoing
A2.1	Continue the architecture management of the VAX-11 architecture.	VAXB	ongoing
A2.2	Develop the neccesary addition tools and initiate the architecture characterization of the VAX-11 architecture.	--	Q4
A2.3	Complete the writing of SRM. Specifically, document the defacto architecture features in the memory management and I/O areas.	--	Q2
A2.4	Establish an architecture verification procedure for the VAX-11 architecture. Build on the success of the AXE program for Comet.	--	Q2 (Comet) Q4 (Nebula)
A3.1	Continue and strengthen architecture management of the PDP-11 Architecture.	--	Q3
A4.1	Develop the needed I/O Architecture for our future products.	Dist. Proc.	Q3
A4.2	Identify the set of DEC's key architectures and a process for their management.	S/W Eng.	Q2

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	Joint With	Time
A4.3 Start to understand the economic impact of standards conformance/ nonconformance	Finance	Q3
A4.4 Recommendation on which FIPS we will follow.	--	Q3
A5.1 Hire 1 to 2 people and get advanced development activity started in Architecture group.	--	Q4
Standards		
S0.1 Resolve organizational interdependence, holes, and overlap with Technical Operations Group (John Holman).	TOPS	Q2
S1.1 Get representation on ANSI Communications committees, ANSI I/O Interface committee and CCITT.	Dist. Proc., Eur. Eng.	Q2/Q3
S1.2 Establish an industry standards hardware function within CC 365.	--	Q3
S2.2 Define the DEC strategy for each industry standards committee and operate against that strategy for FY80.	S/W Eng., CSD, MSD, MS, LSG	Q2/Q3
S3.1 Support DECUS participation on ANSI committees.	--	ongoing
S4.1 Become the NBS contact with DEC. Input to NBS 5-year plan.	--	Q2
S4.2 Get DEC involved in definition of ANSI and ISO distributed systems architecture and distributed database standards and guidelines.	Dist. Proc./ S/W Eng.	Q3
S5.1 Get existing DEC architectures to be DEC STDS. (VAX SRM, VAX Calling Standard, Escape Registration, ODS-2).	S/W Eng., Eng. Comm.	Q3/Q4
S5.2 Maintain existing DEC language committees (COBOL, BASIC, PASCAL). Analyze need for committees on standards for other languages marketed by DEC.	S/W Eng.	ongoing

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	Joint With	Time
S6.1 Ensure that relevant development groups have approved standards objectives in their beige books.	--	Q2
S6.2 Establish standards office in Tewksbury/Spitbrook.	--	Q2
S6.3 Continue to publish updates to Software Standards Notebook, Standards Summary, and standards sections of Systems Software Information. Investigate automated standards index.	--	ongoing as scheduled
S7.1 Inform salespeople via Sales Update, Product Line information bulletins, standards information in SPD's. Investigate automated conformance data.	--	Q2, Q3, Q4

Performance Analysis (in priority order)

	Joint With	Time
P1.1 Develop performance metrics for the real time market place to be used in support of the product positioning efforts.	--	Q3
P1.2 Use the product positioning metrics (used in existing products) in analyzing design tradeoffs.	--	Q4
P1.3 Identify and develop other performance metrics usable in product positioning such as "functionality', ease of use, etc.	--	Q4
P2.1 Continue developing the performance newsletter, performance library, quarterly half-day symposiums, performance notebook, performance steering committee, and various other performance communication efforts.	--	ongoing
P2.2 Keep abreast of the current performance techniques and in touch with University/Government/Industry to be aware of current research in performance analysis techniques.	--	ongoing

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	Joint With	Time
P7.1 Conduct specific measurement and analysis studies on HP and IBM. In particular, conduct performance measurements of HP and IBM's time-sharing capabilities.	Competitive Analysis Committee	ongoing
P7.2 Conduct specific measurement and analysis studies on DEC-related products which are either prototyped or currently exist. The intent of these studies is to provide simple display of our products price/performance in different environments and hardware/software configurations. Most are cross-funded. Central funded studies are:	TW-Product Management	ongoing
11/23 RSTS/e V7		
11/23 RSX11M		Q4
11/34 RSTS/E V7		Q4
11/34 RSX11M		Q4
P4.1 Conduct modeling/analysis support to Hydra, Venus, and other new systems. Develop a reliability and performance tool in support of Hydra.	Hydra/Venus	ongoing
P4.2 Develop a technique to size and tune DEC products. Prototype it on UNIX since Telco funded.	Telco Eng.	Q4
P5&6 Performance Tool development		
VMS Event Trace		Q4
Portable RTE	LSG (Depace)	Q4
Diamond 11/780 Interface	S/W Tools	Q4
General Trace Reduction for Analysis	--	Q4
RTE Data Reduction	--	Q4
VMS Workload Char. Tool	---	Q4
P8.1 Obtain "corporate" representation benchmarks of specific market areas used for product positioning.	--	ongoing
P8.2 Coordinate the acquisition of competitive systems where appropriate in order to set up a corporate competitive analysis lab.	Competitive Analysis Committee	ongoing

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		Joint With	Time
P3.1	Identify the scope of performance problems in networking our systems and conduct some studies in our lab which will help identify what tools and methods are needed. In addition, investigate the use and limitations of our current data collections tools in a network environment (DIAMOND, SIM11, RTES, etc.) Then work to coordinate network performance analysis.	--	ongoing

Technical Strategies

		Joint With	Time
T1.1	Review and provide necessary administrative support for operations of RAD committee.	RAD	H1
T1.2	Review charter of Engineering Committee and get it revitalized.	T.O.	Q2/Q3
T1.3	Make the Cross-Products Committee operational in Q2 FY80 and review proposal and allocate funds by February 1980.	--	Q2
T2.1	Review and accelerate Redbook II development in Q2 FY80. Publish next Redbook II with purpose of making it as useful for management and investment decisions as Redbook I.	T.O.	Q2/Q3
T3.1	Establish a CAD strategy and program for engineering development and have it in place in time for FY81 funding decisions.	T.O. & MPD	Q2/Q3
T3.2	Continue to assist Distributed Processing Group in Interconnect. Specifically, get a decision on whether or not to use Ethernet for NI; get initial BI specification agreed to by end of Q2 FY80; scope the LSI efforts that must be put in place to support the NI, BI, and CI.	Dist. Proc.	FY80

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	Joint With	Time
T3.3 Charter one or two software engineers to develop an overview of essential software technologies. In particular, focus on ongoing advanced development activities and work with S/W Engineering on which ones should be initiated.	S/W Eng.	Q2/Q3

Processes to Foster Innovation and Advanced Development

I1.1 Inventory our personnel strengths and weaknesses in all the important technical areas.	--	Q3
I2.1 Develop and propose some specific actions to make DEC more exciting for technical talent.	Personnel	H2

Holman

digital

INTEROFFICE MEMORANDUM

TO: Gordon Bell, Larry Portner

DATE: 26 March 1980
FROM: John Holman
DEPT: Technical Operations
EXT: 3-5533
LOC/MAIL STOP: ML12-2/T36

SUBJ: RAP Information

Please find an attachment of commentary against goals and objectives. The overall grade appears to be an A- based on the following:

Responsibilities	-	-A
Objectives Negotiated	-	-A
Other Accomplishments	-	A

We have put a lot of emphasis on advance development in Straka and Tays' groups. They are building this activity and are making sure that it is part of the planning.

The key thing for me to resolve in Q4 is a way to delegate more responsibility for planning and administration while getting higher quality space plans.

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/jm
Attachments

ATTACHMENT

RAP SESSION - OTHER ACCOMPLISHMENTS

1.	Metric in Engineering Services	-	First pass installed. Results end of Q3.
2.	Sit Managers Engineering Services Team	-	Installed and working.
3.	CAD/VAX Steering Group	-	Installed and getting feedback to Abel.
4.	Re-assign CIS Interface	-	Transferred from Bauer to Straka.
5.	Improve Board Density	-	Done with TWIGY.
6.	Install 2020 PCLS	-	Done.
7.	Set up Outside PC Vendor	-	Done with Algorex.
8.	Get TUMS Accepted	-	Jaws II & Venus have received, at their request, co-residents.
9.	CAD Tools Acceptance Testing	-	Process & Status. Now written.
10.	CAD Tools Release and Distribution Procedure	-	Documentation now before Software. Colorado Springs is problem site.
11.	Get on Top of CAD Tools Problem	-	SPR List & Control is now part of standard process.
12.	DEC X/11	-	Functional Spec. for next major review is out.
13.	VAX Diagnostic Supervisor	-	Release 2.0 is in progress.
14.	Interface with Manufacturing BOM	-	Batch BOM done. Installation by Manufacturing is badly slipping.
15.	Engineering Orientation Manual	-	Published
16.	Littleton Site	-	Proposed building I - 100k ft^2 II - 240k ft^2
17.	Andover	-	Proposed buildings I - 240k ft^2
18.	Mill	-	Located three potential annex buildings. MDC, R&D, Syst. Test and others looking. Committed to accomodate Shanzer & Steil

RAP SESSION - OTHER ACCOMPLISHMENTS

19.	CAPITAL PLAN	- Have obtained VAX to fill critical Q4 need.
20.	CAPITAL PLAN	- Have obtained Win's commitment to get capacity for "N" years of needs.
21.	System Program Manager Job Description	- Done - March.
22.	Establish System Parameter Test	- Absorbed Bruce Smith in December.
23.	Release Five Year Power Supply Strategy	- Done
24.	Propose Regulations/Test Policy to OOD	- Approved in March.
25.	Operating Within Budget?	- Yes.
26.	Major Slips	- None.
27.	Major Spending Variance	- MPS over by $300K (schedule advance and under-estimate).

John Holman
3/26/80

23 March 1980

Objectives	Responsible	Support Needed From	Goal Supported	Completion Date	Priority	
Develop Long Range Plan for TOPS	Holman	OOD, Bauer, TOPS Staff	2	~~Q4~~ Q1	High	May be 1 qtr late
Develop Engineering Facilities Mgt. Strategy/Philosophy	Bauer	OOD, Op.Comm.	2	~~Q4~~ Q1	High	Partly developed
Resolve Standards Leadership Maintenance, Review & Dissemination Tasks	Holman	Fuller	5, 8	Q2	High	Done! Engineering committee needs to be redefined.
Develop a Human Resource Planning function that addresses Organization, Needs, EEO, Training, etc.	Kelly	Meyer, Fincke/ Personnel Mgrs.,	11	Q3, FY80	High	Discussions started. Not yet implemented
Decentralize Engineering Services	~~Sartory~~ Reilly	Clayton, Saviers	3	Q4 -	Medium	Still planning on this. Saviers is further along.
Develop "Simulation" center of Competence	Straka/Beaven	Cudmore, Patel, Abel	6	Q3	High	Done! Works very well
Develop EC configuration control process that addresses multi-plant manufacture of products	Reilly	Clayton, Thompson	16		High	
A. Study B. Propose				~~Q3~~ ~~Q4~~ or ~~Q1~~		Met with Joe McGinnis several times. Needs more sponsorship from Clayton.
Put program in place to assure that we meet FCC rule (Section 15.838)	Tays	Digital	17	Q3	Very High	Project/Program approved facility plans really.
Reduce variances and complexity of current financial methods, system, and procedures	Knowles	TOPS Staff	9	Q3	High	Good progress here. Variances are low. There is better understanding of all financials. Need more work on work for hire reporting. Signature Authorization/Loops significantly improved

COMMENTS by JH
23 Mar 1980

	Objectives	Responsible	Support Needed From	Goal Supported	Completion Date	Priority	
	Develop a better manufacturing interface(cont'd)						
A	F. Assist Mfg. in developing a new process plant in Maynard	Tays	Mahoney	10,16	Q3	Medium	Manufacturing killed the idea. We're now working on co-location ideas.
	G. Address issues that affect all OOD	Tays	Saviers, Demmer, Clayton, Fagerquist	5,16	Q4	Medium	System Parameter Testing in place.
	H. Develop an interface with Component Engineering	Holman (initially)	Crouse	5,16	Q4	Medium	Discussions with Metzger & Cavanaugh started. Nipped budget request early.
A	I. Sponsor joint staff mtgs. with Mfg., Eng., once per month	Holman	Thompson	10,16	Q2, On going	Medium	On going. Content & team feeling is improving.
A	J. Develop a list of key interface/process issues and manage to resolve them	Mark Olsen	Thompson	16	Q2	High	List exists. Needs more input.
	Achieve Improvements in the Mill						
A	A. Finish cafeteria	Bauer, Mahoney	-	15	Q2	High	Finished
B	B. Increase construction staff to enable more timely response to customer needs	Mahoney	-	15	Q3	High	Hiring. Projects moving faster now.
	Develop a mechanical interconnect strategy						
A	A. Employ a manager	Lawrence	OOD, Prod & Dev. Mgrs.	13	Q3	High	Jim Mavs hired
A	B. Develop IC study	Saheley	OOD	13	Q3	High	Done. Need to put more design attention into 1984 chip carriers.
	Develop techniques to train Functional Mgrs.						
B	A. Training through consultant	Holman	-	4	Q3	High	Study/Survey designed by Jenks will review at April Woods
	B. Liaison with sites	Mgrs., Holman	OOD	4	Q4	Medium	Functional Meetings taking place Have management support for site operations mgrs committee
	C. P.R. education						
	Training Program	Melanson	Meyer	4	Q4	High	On hold until better definition
A	— Engr. Orientation Guide	Kurta			Q3	High	DONE! Great job.

INTEROFFICE MEMO

Comments by J.H.
23 March 1980

TO: Larry Portner/Gordon Bell

10 December 1979

FR: John Holman

SUBJECT: TOPS OBJECTIVES

Objectives	Responsible	Support Needed From	Goal Supported	Completion Date	Priority	Comments
Develop an Improved P.C. Design Operation						
A. Straighten out short term operational problems through audit, review and revision	Reilly/ ~~Sartory~~	Design Eng. Mfg. Process Eng.	3	Q3/Q4	High	Improvement in board. Turn around perceived but data from Metrics available in April
B. Improve PC design tools High Density Better Visibility & Predictability	Straka	Sam Fuller, OOD, Clayton, Fagerquist	7	Continuing	High " "	Holf supp. "Venus project feeling better" Major effort to upgrade systems.
C. Assess compensation practice & propose revision	Kelly	Compensation	11	Q3, FY80	High	Studies are done. Not yet installed until WCZ salaries.
D. Set up a good system of metrics	Reilly	Line mgt.	8	Q4, FY80 & future	High	Metrics in place. Needs operation & fine tuning
E. Improve PC tools support activity	Straka	CADSE, Mech. Design Eng.	7	Q4, FY80	High	Significant improvement MSL Layout now. Fine line in.
F. Improve climate through mgt. training, OOD support, employee recognition, mgt. sponsorship	~~Sartory~~, Kelly, Reilly	Eng. Inf., Holman	11	Q4, FY80	Medium	Survey taken. Ideas being considered for implementation. Employee coffees w Holman.
G. More predictable CADNet operation	Reilly	Holman	12	Q2, FY80	High	CADNet xfred to Crowther. Expanding Memory. Working Network problems. Off shifting.
Develop a Better Manufacturing Interface						
A. Review M & E Charter/Membership	Holman	Sam Fuller, Will Thompson	16	Q3	High	Not Finished
B. Co-chair M & E Committee with Will T.	Holman	O^2M, O^2D	16	Q2	High	Done. Needs implementati[on]
C. Fix operational problems with Eng. Serv. Mfg. soft tools and mfg. producibility group	~~Sartory~~ Reilly		16,17	Q3/Q4 FY80	High	Have commits from Greeny. Metrics will be the proof.
D. Develop a quick reaction prototype process such as 6 layer multilayer	Abel	M. Horovitz	16,17	Q3, FY80	High	CAD Done. Mfg's ball. SITE TRAINING REQ'D.
E. Improve EPLS operation	Hittell	Holman, OOD, Mfg. (Lynch)	16	Continuing	High	- Changed Charter - Operation is more credible - Taking over mgt. of System - High employee turnover

Good Mfg BOMS on EPLS weekly. Auto CAD → EPLS now.

Put in Bob in Notebook

digital

INTEROFFICE MEMORANDUM

TO: Gordon Bell, Larry Portner

DATE: 26 March 1980
FROM: John Holman
DEPT: Technical Operations
EXT: 3-5533
LOC/MAIL STOP: ML12-2/T36

SUBJ: RAP Information

Please find an attachment of commentary against goals and objectives. The overall grade appears to be an A- based on the following:

Responsibilities	-	-A
Objectives Negotiated	-	-A
Other Accomplishments	-	A

We have put a lot of emphasis on advance development in Straka and Tays' groups. They are building this activity and are making sure that it is part of the planning.

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John Holman
3/26/80

INTEROFFICE MEMO

Comments by J.H. 23 March 1980

TO: Larry Portner/Gordon Bell

10 December 1979

FR: John Holman

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COMMENTS by JH
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A	B. Develop IC study	Saheley	OOD	13	Q3	High	Done. Need to put more design attention into 1984 chip carriers.
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B	A. Training through consultant	Holman	-	4	Q3	High	Study/Survey designed by Jenks will review at April Woods
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23 March 1980

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A	Resolve Standards Leadership Maintenance, Review & Dissemination Tasks	Holman	Fuller	5, 8	Q2	High	Done! Engineering committee needs to be redefined.
C	Develop a Human Resource Planning function that addresses Organization, Needs, EEO, Training, etc.	Kelly	Meyer, Fincke/ Personnel Mgrs.,	11	Q3, FY80	High	Discussions started. Not yet implemented
	Decentralize Engineering Services	~~Sartory~~ Reilly	Clayton, Saviers	3	Q4	Medium	Still planning on this. Saviers is talking along.
A	Develop "Simulation" center of Competence	Straka/Beaven	Cudmore, Patel, Abel	6	Q3	High	Done! Works very well
C	Develop EC configuration control process that addresses multi-plant manufacture of products A. Study B. Propose	Reilly	Clayton, Thompson	16	~~Q3~~ ~~Q4~~ or ~~Q1~~	High	Met with Joe McGinnis several times. Needs more sponsorship from Clayton.
B	Put program in place to assure that we meet FCC rule (Section 15.838)	Tays	Digital	17	Q3	Very High	Project/Program approved facility plans really.
A	Reduce variances and complexity of current financial methods, system, and procedures	Knowles	TOPS Staff	9	Q3	High	Good progress here. Variances are low. There is better understanding of all financials. Need more work on work for hire reporting. Signature authorization/Loops significantly improved.

Technical Operations Group (TOPS) Charter

The Technical Operations Group is chartered to provide central focus and leadership in the development of products, tools, controls, services and records which cross all engineering operations. The group is responsible for the management of the engineering process and is the keeper of the engineering records. Additionally, the group is responsible for critical resource management, i.e. facilities planning, Maynard facilities and computer operations.

Technical Operations has a functional responsibility for operations in each engineering site and a direct responsibility for the subject operations in Maynard.

Common Products

- Power Supplies and Power Distribution development from advance development through product support for mature products.

- Packaging Engineering includes Central Mechanical Engineering, Corporate Enclosures, Industrial Design, Interconnect Hardware Engineering and Industrial Package engineering (shipping containers).

- Development of Diagnostic Operating Systems to be used by all engineering sites.

Engineering Tools

- Development and support of computer aided design tools (CAD) which include circuit design, mechanical design, simulation tools and analysis tools.

Controls

- Provide Engineering Design assurance through standards development, International regulations, consulting, records, product safety, auditing and testing.

- Develop and maintain a design review system through the office of the Chief Engineer.

- Develop and operate the Engineering Product Library System (EPLS).

- Development and operation of the Engineering release process through appropriate control documents and management review.

- Operate testing laboratories, i.e. Accoustics, EMI/RFI, Environmental, Materials Analysis, Thermal Analysis, Systems Evaluation.

Controls (cont'd)

- Maintain a product performance data base.

- Provide metrics development for all functional management described in this document.

  - Engineering Services
  - Diagnostic Engineering
  - Power Supply Engineering
  - Computer Operations
  - Reproduction Centers

- Provide Control and Operation of a Document Control File.

- Establish and maintain a system of Product Nomenclature which serves Digital's future needs.

Services

- Provide consulting engineering to all of Central Engineering in each of the specialties of the groups, i.e. Acoustics; Thermal; Power; RFI/EMI; Mechanical Design; Packaging; Analog bus integrity; Industrial Design; CAD; Mechanical Interconnect; Diagnostic Development; International Regulations; MTBF calculations; Human Factors Engineering.

- Provide Engineering Design Services to the greater Maynard (the Mill and Acton)engineering community.

- Maintain a current engineering records library which includes, but is not limited to, a Document Control File, Product Information, and product status. Develop appropriate systems and media to document design definitions.

- Provide CAD training to all sites.

- Provide CAD system libraries.

- Provide testing laboratories where economics dictate common laboratories for:

  Acoustics; EMI/RFI; Environmental; Materials Analysis; Thermal Analysis; Systems Evaluation.

- Provide an engineering Model shop for the construction of prototype model products.

- Establish plans for future engineering facilities and carry the plans to execution.

- Operate engineering facilities in Maynard.

Services (cont'd)

- Provide and operate computer facilities for central records keeping, CAD development and software operations in the Mill.

- Provide a central resource to manage our telecommunications projects and facilities related to teleconferencing, Timesharing computer service and computer networks.

Manufacturing Interface

- Identify and actively manage the interface process between Engineering and Manufacturing.

- Develop mechanisms to assure that information flows in a timely way without bottlenecks.

- Provide technology leadership in packaging which includes long range forecasting to Manufacturing regarding changes in packaging technology and new process requests.

- Provide leadership and focus to the Manufacturing/Engineering Committee.

Technical Operations Group (TOPS) GOALS

1. Achieve plans which are stated in each Beige Book.

2. Generate a Long Range Plan for the Technical Operations Group by Q4.

3. Drive decentralization process to completion by:

   A. Decentralize Power Supply Applications Engineering

   B. Develop Engineering Services Metrics which provide consistent measure of all E.S. at all sites.

4. Develop Functional Leadership for decentralized organizations through planning, coordination, metrics, training, consulting, strategy formulation.

5. Build a design assurance function which is clearly differentiated from design and design services. This implies that appropriate processes and standards will exist and be monitored to assure producible, maintainable products salable in our chosen markets, and limit Digital's exposure to product liability claims related to design flaws and external requirement oversights.

   A. Build a data base to track standards conformance

   B. Develop a coherent standards process between OOT and TOPS

6. Build an organization structure to implement agreed charter, goals and strategy by Q2.

7. Assure user involvement in tools development in order that the tools will have maximum utility.

Technical Operations Group (TOPS) GOALS

8. Develop Metrics for each function.

9. Work with Finance organization to simplify the accounting process which is very different within the TOPS organization for reasons of history.

10. Develop a coherent strategy for the management of printed circuit design which includes CAD, subcontracted CAD, Manufacturing interface, and design turn-around time.

11. Improve the organization climate through:

    A. A human resource planning and development system

    B. Team building between TOPS and sites

    C. Appropriate sponsorship

    D. Clarification of Goals and Strategies

    E. Management development and training

12. Develop a Mechanical Engineering focus

    A. Develop a focal point around mechanical CAD

    B. Develop a strategy

13. Develop a mechanical interconnect strategy and implementation to support DEC's interconnect strategy.

14. Develop facilities plans to support Engineering 5 year plan.

15. Improve the operation and maintenance of the Mill.

INTEROFF[illegible] MEMO

TO: Larry Portner/Gordon Bell

10 December 1979

FR: John Holman

SUBJECT: TOPS OBJECTIVES

Objectives	Responsible	Support Needed From	Goal Supported	Completion Date	Priority
Develop an Improved P.C. Design Operation					
A. Straighten out short term operational problems through audit, review and revision	Reilly/ Sartory	Design Eng. Mfg. Process Eng.	3	Q3/Q4	High
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F. Improve climate through mgt. training, OOD support, employee recognition, mgt. sponsorship	Sartory, Kelly,Reilly	Eng. Inf., Holman	11	Q4,FY80	Medium
G. More predictable CADNet operation	Reilly	Holman	12	Q2,FY80	High
Develop a Better Manufacturing Interface					
A. Review M & E Charter/Membership	Holman	Sam Fuller,Will Thompson O^2M, O^2D	16	Q3	High
B. Co-chair M & E Committee with Will T.	Holman		16	Q2	High
C. Fix operational problems with Eng. Serv. Mfg. soft tools and mfg. producibility group	Sartory		16,17	Q3/Q4 FY80	High
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4. Develop Functional Leadership for decentralized organizations through planning, coordination, metrics, training, consulting, strategy formulation.

5. Build a design assurance function which is clearly differentiated from design and design services. This implies that appropriate processes and standards will exist and be monitored to assure producible, maintainable products salable in our chosen markets, and limit Digital's exposure to product liability claims related to design flaws and external requirement oversights.

   A. Build a data base to track standards conformance

   B. Develop a coherent standards process between OOT and TOPS

6. Build an organization structure to implement agreed charter, goals and strategy.

7. Assure user involvement in tools development in order that the tools will have maximum utility.

8. Develop Metrics for each function.

12/10/79

9. Work with Finance organization to simplify the accounting process which is very different within the TOPS organization for reasons of history.

10. Develop a coherent plan for the management of printed circuit design which includes CAD, subcontracted CAD, Manufacturing interface, and design turn around time.

11. Improve the organization climate through:

    A. A human resource planning and development system

    B. Team building between TOPS and sites

    C. Appropriate sponsorship

    D. Clarification of Goals and Strategies

    E. Management development and training

12. Develop a Mechanical Engineering focus

    A. Develop a focal point around mechanical CAD

    B. Develop a strategy

13. Develop a mechanical interconnect strategy and implementation to support DEC's interconnect strategy.

14. Develop facilities plans to support Engineering 5 year plan.

15. Improve the operation and maintenance of the Mill.

16. Develop a better interface with Manufacturing.

17. Improve printed circuit design operational support.

Johnson

PERFORMANCE EVALUATION BY PERSON

ACROSS GOALS SUMMARY

BILL JOHNSON NAME

DATE

Q3 80 QUARTER

	GOAL IMPORTANCE a.	PRIORITY b.	RATING c.
ORGANIZATION GOALS			
1. CLEAR VIABLE CHARTER	major	M	B
2. STABLE, LOW HASSLE ENVIRONMENT	major	H	D(O^2D,F)
3. PRODUCT MANAGEMENT FOCUS	major & support	H	D
(OTHER)			
PROCESS GOALS			
4. INSTALL, ETC., AN ARCH. PROCESS	major/support	H	C[a]
5. INSTALL QUALITY EVAL. PROCESS	major/support	H	B
6. FOCUS ON BUS. PLANS/PROFITABILITY	——	——	→pending
7. SUPPORT SYSTEMS FOCUS	major →support	M	B
8. (OTHER) S/W SERVICES	support	H	F
PEOPLE GOALS			
9. HUDSON & SPIT BROOK WELL	major	H	A(S), F(H)
10. COLLEGE HIRE PROGRAM	major/support	M	pending
11. AFFIRMATIVE ACTION	major/support	M	A
12. FUN PLACE TO WORK	major	M	C
13. TENURE IN MANAGEMENT	support	H	pending
(OTHER)			
PRODUCT GOALS			
14. QUALITY, FUNC., SCHED. & BUD. PREDICTABILITY	major	M	C
15. FOCUS ON QUALITY	major	H/M	B
16. ZERO INSTALLATION COST	major/support	H	pending
17. ADVANCED DEVELOPMENT PROGRAM	major	H	A+
18. APPLICATION PRODUCT	——	——	→pending
(OTHER)			

a. major, support or, neither
b. high, medium or low

c. A, B, C, D, F, also Pending

a. A on trend

ORGANIZATION GOALS - COMMENTS

1. Clear Viable Charter

Status

Marlboro - Long term not clear
DPP - Dockser and Si getting agreement with Demmer and BJ
MK - Ok
Small Systems and Terminals - there but not solid
Tools and Architecture - Ok, change target
ESE - needs a major focus

End of Q1 for final long term space and charter definition.

2. Stable, Low Hassle Environment

Status

1) Troops feel lousy.
   *Hudson - disaster.
   *Merrimack - still feel like Commercial Group is out to stop rather than help. Roger's new role should help.
   *Marlboro - Cut in S/W will be severe.
   *Tewksbury - Spent Easter getting out VMS/to see no one wanted it.

Note on this category:

NEW METHOD

Software Engineering is going to push back on any new processes until it has been tested and I know why we're doing it.

NEW B.J. OBJECTIVE

1) Get to the point I know how to measure software planning, Product Management and simple, achievable measures for Mileski.

2) Solve the DECnet, Operating System, DPP charter hassle.

PROCESS GOALS - COMMENTS

4. Install, Etc., Arch. Process

Status

Charters

*moving in right direction

- Terminals definition started
- Languages in place
- Interconnect started
- VMS - Organizing to get it
- Information Management - slow.

Staffing

*offer out to Dr. Patel
*person coming on board

5. Install Quality Eval. Process

Status

This area is moving well with the exception of the statiscal analysis.

*RPG - done

Medical - ball is out of my court.

6. Focus on Bus. Plans/Profitability

On hold, pending system focus for product management.

7. Support Systems Focus

Status

1. done, out for approval
2. SPU slots filled
3. done
4. Kapadia process is working - Will work with Grant on Mass Storage coordination.

8. Software Services

Status

No progress, in fact, Bruno is attempting to get out of his commitment at Operations Review.

PEOPLE GOALS - COMMENTS

9. Hudson & Spit Brook Well

Status

Spit Brook - going well.
Hudson - OOD blew it badly. We've lost credibility. Still recovering organizationally.
Marlboro - no move planned.

10. College Hire Program

No comment.

11. Affirmative Action

Meeting our goals

12. Fun Place to Work

Status

*There are too many people saying "no you can't because it isn't the process" as opposed to "yes it makes sense to do it this way".

*Hydra may be a regular project if we let it alone.

13. Tenure in Management

No comment.

PRODUCT GOALS - COMMENTS

14. Quality, Func., Sched. & Bud. Predictability

    1. changed yellow book reporting structure
    2. Quality reports indicate trend is right
    3. DECUS (IAS) went well. VMS went well even with pulling slides.

15. Focus on Quality

    No comment.

16. Zero Installation Cost

    Product defined
    Not sure what it takes for SWS to accept such a product.

17. Advanced Development Program

    *funds allocation
    *proposals to RAD and s/w tools very good. This may help make it fun.

18. Application Product

    1. DECAID in approval stage.
    2. Ollie doing study for presentation in Q1.

L P.

THE GOALS AND OBJECTIVES PERFORMANCE EVALUATION SYSTEM

OVERVIEW

This simple system was invented to expedite the interaction between Software Engineering and Central Engineering with regard to Software Engineering's goals and objectives. It has some additional fall-out benefits to B.J. in his role as manager of Software Engineering. It provides one easily understood way in which the performance of the direct reports can be evaluated, as a part and parcel of the annual, personal performance reviews. By aggregating data on a fiscal year basis, a realistic notion can be pulled together to provide one arm of the Win Hindle Software Engineering Organization review. This should have the larger benefit of providing a "way" of talking about Software Engineering that stays straight forward on a year-by-year basis.

While all of the system is not operational for this quarter's review (due to its newness) the broad outlines of the system are there as well as the data flow. Please see Figure 1, immediately appended. Beginning with the next quarter's review of direct reports, the data will flow in and be aggregated on an organization wide level by goal. Please refer to the attached figure for details.

A NOTE OF CAUTION

The goodness of a system such as this as a management tool depends on the goodness of the measurement of the goal and the validity of this measurement in reflecting the spirit and true meaning of the goal. Ideally the measurement should also be: a) something directly under the manager's control and/or b) allow the manager in question to use these data/results to "explain" in a meaningful manner to the next level up in the management chain what is needed to improve the state of affairs. The point here is that very careful consideration should be given to the measurement of the goals.

ABOUT THE GOAL CATEGORIES

The broader goal categories (e.g. organization, process, people, product) will not change over time. These categories are not new ways of looking at an organization but are imbedded in years of experience of many people with organizations such as ours. What will change is the measurement or today's understanding of what that category means to us. Thus, the Hudson/Spit Brook move will be mentioned and presumably will not be seen two years from now.

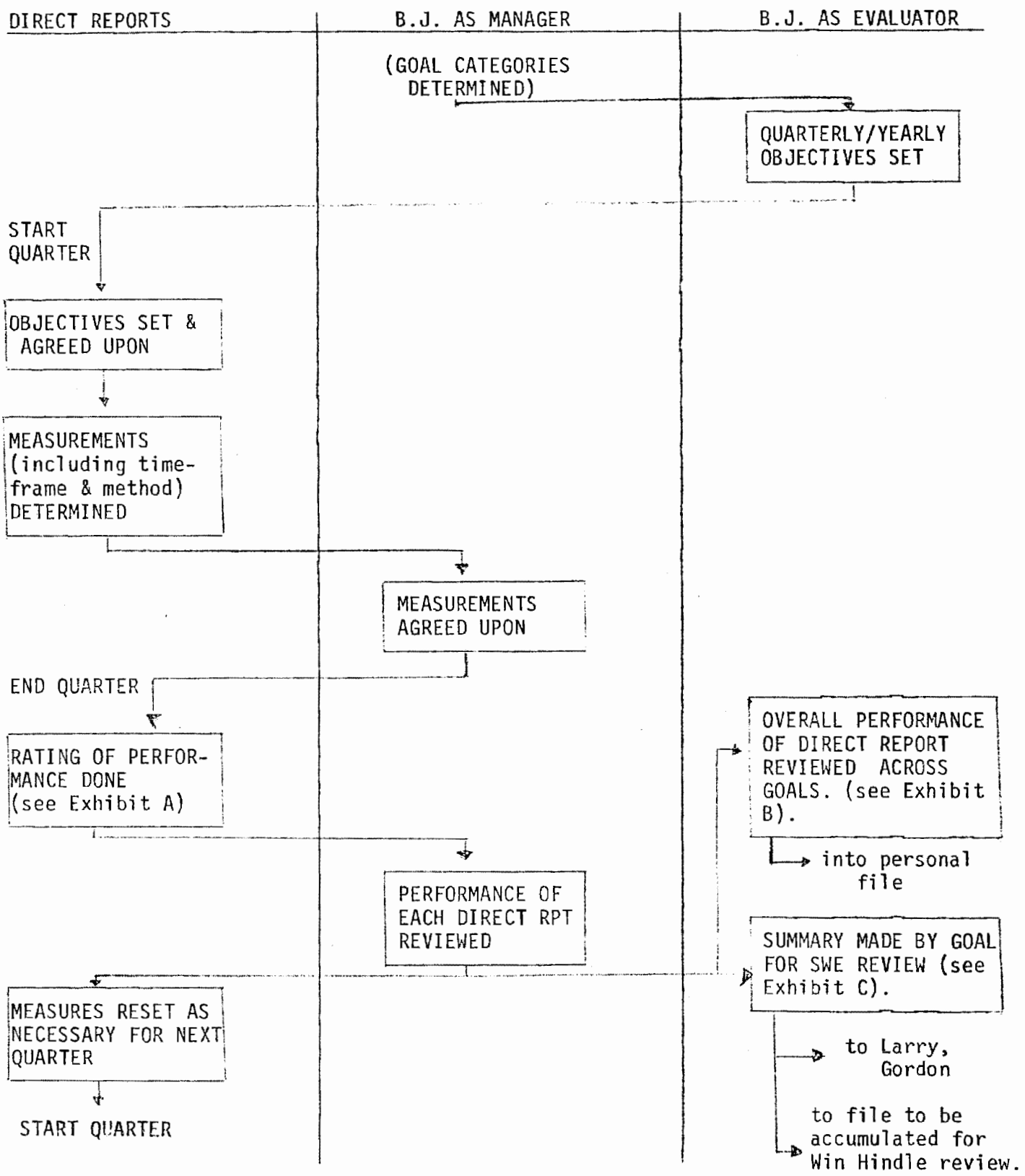


FIGURE 1. HOW THE GOALS & OBJECTIVES PERFORMANCE EVALUATION SYSTEM WORKS

EXHIBIT A

TYPICAL DATA SHEET BY GOAL

NAME_____

DATE_____

GOAL:

_____MAJOR GOAL _____PRIORITY (H/M/L)

_____SUPPORT GOAL

_____NEITHER

RATING_____

EXPLANATION (IF NEEDED)

EXHIBIT B

PERFORMANCE EVALUATION BY PERSON

ACROSS GOALS SUMMARY

_____ NAME

_____ DATE

_____ QUARTER

	GOAL IMPORTANCE	PRIORITY a.	RATING b.
ORGANIZATION GOALS			
CLEAR VIABLE CHARTER			
STABLE, LOW HASSLE ENVIRONMENT			
PRODUCT MANAGEMENT FOCUS			
(OTHER)			
PROCESS GOALS			
INSTALL, ETC., AN ARCH. PROCESS			
INSTALL QUALITY EVAL. PROCESS			
FOCUS ON BUS. PLANS/PROFITABILITY			
SUPPORT SYSTEMS FOCUS			
(OTHER)			
PEOPLE GOALS			
HUDSON & SPIT BROOK WELL			
COLLEGE HIRE PROGRAM			
AFFIRMATIVE ACTION			
FUN PLACE TO WORK			
TENURE IN MANAGEMENT			
(OTHER)			
PRODUCT GOALS			
QUALITY, FUNC., SCHED. & BUD. PREDICTABILITY			
FOCUS ON QUALITY			
ZERO INSTALLATION COST			
ADVANCED DEVELOPMENT PROGRAM			
APPLICATION PRODUCT			
(OTHER)			

a. major, support or, neither

b. high, medium or low

c. A, B, C, D, F, also Pending

EXHIBIT C

GOAL SUMMARY SHEET

DATE_____

PRIORITY_____

GOAL SUMMARY SHEET

GOAL:

	MAJOR GOAL	SUPPORT GOAL	NEITHER	RATING
BILL JOHNSON				
Bob Daley				
Bob Dockser				
Bob Freedman				
Bill Heffner				
Bill Keating				
Les Koch				
Dom LaCava				
Jack Mileski				
Dick Snyder				
Ollie Stone				

OVERALL RATING_____

EXPLANATION (IF NEEDED)

A QUICK WALK THROUGH THE SYSTEM

Herein is a very simple example to illustrate how the system works. We will take it by goal (using one goal) and then we will follow this piece of data through the three data sheets. Very few leaps of the imagination are needed to fill in the rest of the missing blanks.

Turn to the next page for the first data-step in the system: a typical data sheet by goal.

EXHIBIT A

TYPICAL DATA SHEET BY GOAL

NAME Heffner

DATE 4/30/80

GOAL: Organization

Develop clear, viable charter for each Group.

X MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING C

EXPLANATION (IF NEEDED)

Within Software Engineering we seem to do OK, but:

1. DECNET/VMS still unresolved.
2. Steil/Moffa (Micro products) still a mess.
3. Steil/Picott (Terminal Firmware) still needs work.

This, along with other similar data sheets, then gets put onto Exhibit B. Basically this is a data organization sheet by person and is entirely for B.J. in resolving issues that direct reports are having with the goals and objectives. It should also give B.J. some clues as to the strengths and weaknesses of a particular manager to see where special help is needed, etc.

So this piece of data on Exhibit A gets registered on Exhibit B. See next page.

EXHIBIT B

PERFORMANCE EVALUATION BY PERSON

ACROSS GOALS SUMMARY

Heffner NAME

4/30/80 DATE

Q3 80 QUARTER

	GOAL IMPORTANCE a.	PRIORITY b.	RATING c.
ORGANIZATION GOALS			
CLEAR VIABLE CHARTER	Major	H	C
STABLE, LOW HASSLE ENVIRONMENT			
PRODUCT MANAGEMENT FOCUS			
(OTHER)			
PROCESS GOALS			
INSTALL, ETC., AN ARCH. PROCESS			
INSTALL QUALITY EVAL. PROCESS			
FOCUS ON BUS. PLANS/PROFITABILITY			
SUPPORT SYSTEMS FOCUS			
(OTHER)			
PEOPLE GOALS			
HUDSON & SPIT BROOK WELL			
COLLEGE HIRE PROGRAM			
AFFIRMATIVE ACTION			
FUN PLACE TO WORK			
TENURE IN MANAGEMENT			
(OTHER)			
PRODUCT GOALS			
QUALITY, FUNC., SCHED. & BUD. PREDICTABILITY			
FOCUS ON QUALITY			
ZERO INSTALLATION COST			
ADVANCED DEVELOPMENT PROGRAM			
APPLICATION PRODUCT			
(OTHER)			

a. major, support or, neither

b. high, medium or low

c. A, B, C, D, F, also Pending

This also gets registered on the GOAL SUMMARY SHEET, Exhibit C. With regard to the relationship between Central Engineering and Software Engineering, this is the important sheet. When this has been done for all the direct reports, B.J. then puts a group rating at the bottom left, taking into consideration how important the goals are overall, at the Software Engineering level, (Priority: high, medium or low being entered by B.J. into the space in the upper right corner of this aggregation sheet). He then uses the space at the bottom to express both his opinion and some sense of the individual opinions which appeared on the data sheet, Exhibit A. These sheets, of which this is an example, are what should form the basis of the quarterly evaluation of progress.

If B.J. chooses, for himself, he can carry this one step further and go back to Exhibit B and use it as an organizational data sheet, to see where his organization is doing well and where it may need some assistance.

Please look at Appendix A which was given to B.J. as an exercise of the system by Bill Heffner.

EXHIBIT C

GOAL SUMMARY SHEET

DATE 4/30/80

PRIORITY To be filled out by B.J.

GOAL SUMMARY SHEET

GOAL: Organization

Develop clear viable charters for each Group.

	MAJOR GOAL	SUPPORT GOAL	NEITHER	RATING
BILL JOHNSON				
Bob Daley				
Bob Dockser				
Bob Freedman				
Bill Heffner	High			C
Bill Keating				
Les Koch				
Dom LaCava				
Jack Mileski				
Dick Snyder				
Ollie Stone				

OVERALL RATING_____ (To be filled in by B.J. after looking over the entire group's performance)

EXPLANATION (IF NEEDED)

APPENDIX A

EXAMPLE DATA SHEETS

NAME HEFFNER

DATE 4/30/80

GOAL: ORGANIZATION

DEVELOP CLEAR, VIABLE CHARTERS FOR EACH GROUP

✓ MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING C

EXPLANATION (IF NEEDED)

WITHIN SWE WE SEEM TO DO OK, BUT

① DECNET/VMS STILL UNRESOLVED

② STEIC/MSFFA (MICRO PRODUCTS) STILL A MESS

③ STEIC/PICHOT (TRAINING FINANCING) STILL NEEDS WORK

NAME H/EFFNER

DATE 4/30/80

GOAL: ORGANIZATION

DEVELOP A STABLE "LESS HASSLE" ENVIRONMENT

1 MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING C

EXPLANATION (IF NEEDED)

INTERFACE TO SWE WE SEEM TO DO OK, BUT

(1) SWS - MAINTENANCE ETC

(2) SDC - DELAYS.

(3) ANNOUNCEMENT DELAYS

(4) PROCESS CONSTRAINTS.

SEEM TO OFFSET ANYTHING POSITIVE THAT WE DO.

NAME HEFFNER

DATE 7/30/80

GOAL: ORGANIZATION

DEVELOP A CENTRAL S/W PRODUCT MANAGEMENT FOCUS

_____MAJOR GOAL H PRIORITY (H/M/L)

✓ SUPPORT GOAL

_____NEITHER

RATING B

EXPLANATION (IF NEEDED)

I BELIEVE JACK IS HAPPY WITH ME.

NAME Heffner

DATE 4/30/80

GOAL: PROCESS

INSTALL (ENHANCE, IMPLEMENT AND/OR STAFF) AN ARCHITECTURAL PROCESS

_____MAJOR GOAL __L__PRIORITY (H/M/L)

__✓__SUPPORT GOAL

_____NEITHER

RATING Incomplete (by Keating)

EXPLANATION (IF NEEDED)

NAME [illegible]

DATE [illegible]

GOAL: PROCESS

DEVELOP A METHOD FOR S/W SERVICES FEEDBACK ON INSTALLATION AND SUPPORT

__________ MAJOR GOAL   ________ PRIORITY (H/M/L)

__________ SUPPORT GOAL

__________ NEITHER

RATING ________________ Pending

EXPLANATION (IF NEEDED)

NAME Heffner

DATE 4/30/80

GOAL: PROCESS

INSTALL A PROCESS FOR MEASURING CHANGES IN THE CUSTOMERS PERCEPTION OF PRODUCT QUALITY

_____MAJOR GOAL _____PRIORITY (H/M/L)

_____SUPPORT GOAL

__✓__NEITHER

RATING_____

EXPLANATION (IF NEEDED)

The Process is Long Term

NAME HEFFNER

DATE 4/30/80

GOAL: PROCESS

FOCUS ON SOFTWARE PRODUCT PROFITABILITY IN BUSINESS PLANNING

✓ MAJOR GOAL M PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING INCOMPLETE

EXPLANATION (IF NEEDED)

I'm LATE

NAME HEFFNER

DATE 4/30/80

GOAL: PROCESS

AGGRESSIVELY SUPPORT BUSINESS PRODUCT MARKETING
AGGRESSIVELY SUPPORT SYSTEMS FOCUS

_____MAJOR GOAL _____PRIORITY (H/M/L)

_____SUPPORT GOAL

✓_____NEITHER

RATING_____

EXPLANATION (IF NEEDED)

NAME Heffner

DATE 4/30/80

GOAL: PEOPLE

DO HUDSON AND SPIT BROOK ROAD MOVES WELL

____✓____MAJOR GOAL ____H____PRIORITY (H/M/L)

_____SUPPORT GOAL

_____NEITHER

RATING F

EXPLANATION (IF NEEDED)

ANYTHING POSITIVE AT SPIT BROOK IS OFFSET BY THE HUDSON FIASCO.

NAME HEFFNER

DATE 4/21/82

GOAL: PEOPLE

INSTALL AN AGGRESSIVE COLLEGE HIRE PROGRAM

✓ MAJOR GOAL M PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING A

EXPLANATION (IF NEEDED)

NAME Heffner

DATE 4/3/80

GOAL: PEOPLE

INSTALL AN AGGRESSIVE AFFIRMATIVE ACTION PROGRAM

✓ MAJOR GOAL M PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING B

EXPLANATION (IF NEEDED)

ON TARGET

NAME Herrick

DATE 4/30/80

GOAL: PEOPLE

MAKE THIS A "FUN-IN PLACE" TO WORK

_____MAJOR GOAL _____PRIORITY (H/M/L)

_____SUPPORT GOAL

__✓__NEITHER

RATING_____

EXPLANATION (IF NEEDED)

NAME HEANER

DATE 4/30/80

GOAL: PEOPLE

DEVELOP A PROGRAM WHICH WILL RESULT IN LONGER TENURE OF PEOPLE IN MANAGEMENT POSITIONS

✓ MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING B

EXPLANATION (IF NEEDED)

NAME HEFFNER

DATE 4/30/80

GOAL: PRODUCT

IMPROVE FOCUS ON PRODUCT QUALITY

✓ MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING B

EXPLANATION (IF NEEDED)

I Feel Good About RT-11 V4, RSX 11M V3.2, RSX11M V1.

And VMS V2.0.

NAME HEFFNER

DATE 4/30/80

GOAL: PRODUCT

MEET PLANNED QUALITY, FUNCTIONALITY, SCHEDULES AND BUDGETS (NO SURPRISES)

✓ MAJOR GOAL H PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING B

EXPLANATION (IF NEEDED)

See Previous

NAME Heffner

DATE 4/30/80

GOAL: PRODUCT

DELIVER A ZERO INSTALLATION COST PRODUCT

_____✓_____ MAJOR GOAL ____M____ PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING ____F____

EXPLANATION (IF NEEDED)

I'm now convinced that the politics with SWS will prohibit this.

NAME Hoffner

DATE 4/30/80

GOAL: PRODUCT

DEFINE, INSTALL AND NURTURE AN ADVANCED DEVELOPMENT PROGRAM

✓ MAJOR GOAL ✓ PRIORITY (H/M/L)

_____ SUPPORT GOAL

_____ NEITHER

RATING B

EXPLANATION (IF NEEDED)

OCT 11 1978

SOFTWARE ENGINEERING CHARTER

Software Engineering is responsible for the software product content of the Central Product Strategy. This responsibility ranges from the concept phase for new products through the support, and phase out stages for existing products. Software Engineering proposes, develops and supports those products and the architecture which span many Product Lines. Purchase (or leveraging) of externally developed software for DEC's product set is also a responsibility. The evolution of S/W technology through tools, processes and the methodology to improve productivity of S/W engineers, product quality and performance is a corporate responsibility. The development and evolution of programs to provide consistency and to improve the overall S/W discipline, visibility and career opportunities for Software Engineers is a corporate responsibility.

Key Aspects of Charter:

- Develop an organization and environment which promotes individual initiative, responsibility, and autonomy

- Develop and implement the software portion of DEC's product strategy

- Develop an architecture plan and install process

- Develop and implement a software tools and software methodology program to aid productivity, quality and performance

- Provide leadership to leverage DEC sales through acquisition of externally developed software

- Develop and implement an Advanced Development plan and couple with Research

- Leverage hardware system sales via development of a family of products and through migration aides and tools

- Communicate the strategy and plans within OOD, PL Engineering and S/W Services

- Review and provide feedback to PL Engineering and their plans for S/W products

- Develop a strong customer services organizational interface to drive maintenance and installation costs down

- Work with Systems groups and Product Line groups to rationally understand migration, coexistence and compatibility goals

- Develop a career planning system

BJ
10/8/79 Rev. 4

digital

INTEROFFICE MEMORANDUM

TO: Larry Portner
Gordon Bell

cc: O^2D
S/W Staff

DATE: 12 November 1979
FROM: Bill Johnson
DEPT: Software Engineering
EXT: 3982
LOC/MAIL STOP: ML12-3/A62

SUBJ: GOALS & OBJECTIVES

These are the updates to goals and objectives for s/w engineering. These goals also represent the intergroup (O^2D) requests I made at Squam Lake in October 1979.

Keep the faith
BJ

/fs

digital

INTEROFFICE MEMORANDUM

TO: S/W STAFF

cc: Larry Portner
Gordon Bell

DATE: 9 November 1979
FROM: Bill Johnson
DEPT: Software Engineering
EXT: 3982
LOC/MAIL STOP: ML12-3/A62

SUBJ: GOALS AND OBJECTIVES

Attached are the goals and objectives for s/w staff members. Note that these are my goals with Larry and Gordon and match closely with yours.

In February Faith will set up a meeting with you and Jane to discuss performance against these goals. I would like you to put the goals/objectives in this format.

Goal .....
Objective 1 .....
Method .....
Measurement .....
Time .....
Objective 2 .....

Dick Snyder and Bob Freedman's goals are ok.

BJ

GOAL: ORGANIZATION

*Develop Clear, Viable Charters for each group.

OBJECTIVE:

Develop clear charters for each site, for each organization reporting to B.J.. Make sure charters are viable in the long term. Establish clear charters (responsibilities) for staff members.

METHOD:

Develop various long term market/technology scenarios for Software Engineering; work to a conclusion organization alternatives; publish final recommendation.

MEASUREMENT:

Market/technology scenarios published, Org. alternatives detailed, final recommendation and charters.

TIME:

Q4, FY80.

BJ
10/23/79

GOAL: ORGANIZATION

Develop a stable "Less Hassle" environment.

OBJECTIVE:

*Understand what causes "Hassle" at each level.

METHOD

*Via sensing interviews at each level, document what is causing hassle and then set in place a program to fix it. If this is caused by another organization, develop joint objectives to solve this.

MEASUREMENT

*Lower turnover, greater productivity, and subjectively people will feel better.

WHEN

*First results in Q3, continuing thereafter

Cross O^2D Goals

Grant, Bill, Dick, Ulf, Sam

Let's understand the boundaries, set clear expectation

John Meyer

Help me understand why people are leaving

Si

Drive for maturity in P.L. Eng. Interface - They own half that Interface

BJ
10/23/79

ORGANIZATION GOAL: Develop a Central S/W Product Management focus

OBJECTIVE & METHOD

1. Support the Corporate Product Marketing Manager (Si Lyle)
2. Utilize the Software Planning Team to develop a comprehensive Central S/W Strategy and Budget that supports the S, M, L systems strategies and is responsive to the functionality needs of the corporation.
3. Utilize the concept of the Software Product Management Committee (SPMC) to coordinate day-to-day PM activities for Software. (i.e. Promotion, Pricing, SPD's, DECUS, etc.).
4. Provide a 16 and 32-bit Central Planning Focus for Software.
5. Resolve how 36-bit will fold into the central plans.

MEASUREMENT

1. Ask Si Lyle if S/W Engineering is supporting his role.
2. Generate a strategy which holds together.
3. Hire a staff Product Manager to help focus these activities.
4. In place (Ham & Friedrich), keep it effective.
5. Resolution published via Per/Jack.

DATE

1. Immediate
2. Immediate
3. Immediate, hire person by Q3
4. Immediate
5. End of Q2

OBJECTIVE

Work on an on-going basis with Jack Mileski, et al, on assuring that whatever changes are made, the job description of Product Management in the new context remains viable.

MEANS

Reference the Phase Review Process: to be sure that there is minimal disruption on the on-going process during the evolutionary stages.

To work with Bruce Stewart, as the Hardware piece comes into focus.

MEASUREMENT

The amount of disruption felt, expressed, etc.

The number of hassles that cause management intervention because of disruption in the process.

BJ
10/23/79

Develop a Central S/W Product Management focus

CROSS O^2D GOALS

Si - Help make dual role for Jack Do-able

Si, Ulf, Dick, Bill - Don't establish, duplicate, competing s/w p.m. functions.

Ulf - Let's understand s/w org. role in 36-bit world (Q2)

Dick - Help us understand low-end comp./systems (Eng. & PL) Needs and strategy?

Ulf/LP/GB - Help solve the product support issue for 36-bit.

PROCESS GOAL: Install (Enhance, Implement and/or Staff) an Architectural Process.

OBJECTIVE:

*Clarify Architectural charters relative to Corporate, Central Engineering and Software Development responsibilities.

How: Set Process for Software Development first, then explicit recommendation relative to scope.

When: FY80 - Q4

*Architectural area, Get right mix of technical and management force in place. (Both staff & line).

How: Identify responsibilities, attract right people.

When: FY80 - Q3

Define the role of Language Architect and then put one in place.

MEASURE:

Have a written job description and have a person to fill the job.

COMPLETION:

There will be a written job description for such a person by mid Q3 FY80. The person will be hired no later than mid Q4 FY80.

BJ
10/23/79

PROCESS GOAL: Develop a method for S/W Services feedback on Installation and Support.

OBJECTIVE:

Understand for each new product what the goals are for installation and support;

Understand for each old product what actual installation and support hours are.

METHOD

Work through the Software Services/Software Engineering on-going interface committee to surface status information on the state of implementation of the CLAS system.

While SWS CLAS system is coming up world-wide, to define the frequency of reporting along with a commitment as to who receives why data.

Inform SWE of the same and what their data distribution responsibilities are.

MEASUREMENT

A smooth flow of data to responsible persons as the data becomes available.

DATE

Depends on when the SWS system is entirely up and running. The two should happen at approximately the same time or within the same quarter.

Will negotiate a date with S/W Services.

BJ
10/23/79

PROCESS GOAL: Install a process for measuring changes in the customers perception of product quality.

OBJECTIVE:

To have as much of the process of getting quality data into procedural form.

METHOD:

To continue to work with and train persons on all aspects of the Quality Questionnaire. This includes getting the coding procedure down par, getting the data into machine readable form, learning procedures for "scrubbing" the data base in preparation for preliminary analysis, doing the analysis, and finally developing a "how-to" set of instructions.

DATE:

Completed by Q4 80.

OBJECTIVE:

Development and publication of customer survey data.

METHOD:

Collect, analyze and distribute reports on customer perception of Quality with trend indicators.

DATE:

Q2 FY80 and on-going.

OBJECTIVE:

Improve focus on product quality

METHOD:

1. Insure Development intent
2. Strengthen Software Quality Management
3. Establish and use Quality Metrics
4. Install the right policies and make them work
5. Emphasize the System (as well as products)

MEASUREMENT:

Improved customer perception of Quality

BJ
10/23/79

PROCESS GOAL: Focus on Software Product Profitability in Business Planning.

OBJECTIVES:

Continue to maintain and expand the quantitative data base tools and reports on key S/W products. Enhance the present Business Plan to reflect SWS costs and revenue.

METHOD:

Work with SWS on, how their costs are captured.

Modify the business plan accordingly.

DATE:

Q2-Q3 time frame. (In time for planning crunch.)

Utilize reports and forecasting information to keep Software Business Plans current.

METHOD:

Work with Bob Freedman on procedures to assure that there is comparability in the assumptions used in making the estimates.

DATE:

To be determined...before Q3.

OPEN ASPECTS

*Establish a focus to stimulate a shift in revenue to s/w - LP & GB request.

SOFTWARE GOALS (B.J.): Focus on Software Product Profitability.

FINANCE GOAL:

Organize and Develop a Strong, Influential and Effective Product Management Financial Support Team.

RESULT:

Develop consistency within the Software Organization and provide a strong business focal point for the integration of cross-engineering development planning.

HOW:

Initiate, develop and implement a series of standards, policies and metrics for Software Business Plans.

WHEN:

Financial Section	Project Spec Completed	M03-Q2FY80
Implementation Plan	Completed	M01-Q3FY80
First Draft	Completed	M03-Q3FY80
Final Draft	Completed	M02-Q4FY80

RESULT:

Contribute to a long-range plan for the financial evaluation of Software products. Emphasize total committed investment and Software Product Revenue (both direct and indirect) establishing a comparable base across Software's offerings and one that ultimately produces an accurate measure of product profitability.

HOW:

Design, develop and implement a Product History Data Project. Automate Software spending data streams.

Fipromast - Design and develop a model of costs and effort required to report effectively the internal corporate investment on products.

WHEN:

Product History Data Project	Project Spec Completed	M03-Q1FY80
Implementation Plan	Completed	M01-Q2FY80
Project Completed (8 Major Products)		M01-Q4FY80
Automate Software Spending Reports	Project Completed	M03-Q2FY80
Fipromast Study	Project Completed	M03-Q2FY80
Collection/ Integration	Project Completed	M01-Q3FY80
Long Range	First Draft Completed	M03-Q3FY80
Combined Plan	Final Draft Completed	M03-Q4FY80

RESULT:

Assist in the development and implementation of an effective and successfully managed process to acquire externally developed Software products.

HOW:

Provide the business attitude, appropriate analysis and clear thinking to insure good business decisions. Insure that management develops a dependency and a high level of trust in their financial support. Maintain a high visability in this area by openly supporting its concept and by continually probing, questioning and providing ad hoc suggestions, recommendations and assistance. Push hard for a trial case - provide the manpower, flexibility and a high desire to prove that effective financial support facilitates the process while reducing the probability of incorrect decisions.

WHEN:

Trial Case	Start (PASCAL)	M02-FY80
	On-going	

BJ
10/23/79

PROCESS GOAL: Aggressively Support Business Product Marketing
Aggressively Support Systems Focus.

OBJECTIVES:

1. Have clear Software Strategy and Plans.
2. Participate on Systems SPU's.
3. Participate on PMC, OOD, and EBOD.
4. Joint H/W - S/W Planning. (where appropriate)

METHOD:

1. Develop clear s/w strategies which are responsive to S, M, L System Planning Units requirements.
2. Work with SPU chairpersons to get best s/w person on unit.
3. Jack will be s/w member on PMC and EBOD (Si's positions), BJ at O^2D;
4. Detail a process for H/W - S/W coordination.

MEASUREMENT:

1. Documents (Red and Beige Books) must be clear. Dick, Bill and Ulf will feel we are responsive and supportive.
2. Assign people from S/W Engineering agreed to by chairpersons.
3. How supportive and involved we are in the activities.
4. Less hassle between component builders/software, Need O^2D help.

WHEN:

1, 2, 3. Immediate
4. Q2 start.

CROSS O^2D GOAL

Ulf, Bill, Dick, Grant
Detail a process for joint h/w - s/w coordination to include planning, commitment and change.

BJ
10/23/79

FINANCE GOAL: Impact O^2D investment strategy by analyzing and emphasizing the shifts in investment between development, maintenance, quality and documentation. Research, evaluate and present historical and projected development investment strategies for FY76 through FY83 and the impact on our present and future business. Develop an encompassing competitive model, analyze implications and report on the level of synergism with industry standards.

RESULT:

Improve the timeliness and quality of strategic investment decisions. Insure management understands the broad implications of their decisions in an objective, quantitative manner, reducing the complexity of product to product interdependence. Develop the capacity to measure investment decisions and associated trade-off internally as well as to external competition.

HOW:

Effectively participate in the New Budgeting System Task Force - Emphasize system budgeting and multi-year investment commitments. Actively support the development of an in-house, software based competitor library. Push hard and support the expansion of Software's Product Management Team. More specialized talent with broader exposure to DEC's major competitors.

WHEN:

New Budgeting Task Force	Project Completed	M02-Q2FY80
Competitor Library		On-going
Product Management Team Expansion		On-going

BJ
10/23/79

PEOPLE GOAL: Do Hudson and Spit Brook Road moves well.

OBJECTIVE:

Have as many WC4 people move to Hudson and Spit Brook, if they are requested.

METHOD:

See attached

MEASUREMENT:

85% of people will move,

95% of people will stay with DEC.

WHEN:

At time of move.

BJ
10/23/79

SOFTWARE GOALS (B.J.): Do Hudson and Spit Brook well. Make this group a "Fun, In-Place" to work. Develop a Stable "Less Hassle" environment.

FINANCE GOAL:

Insure that the Spit Brook Road facility is designed, fit-up and operated consistent with Software's Productivity Philosophy.

RESULT:

Develop and implement an environment in which imagination, creativity and commitment to progressive thinking and decisive Facility Management creates and facilitates an atmosphere conducive to higher Quality Software productivity. Reduce bureaucracy and hassle in day-to-day operations. Provide an extremely high level of effective service. Make people want to go to Spit Brook.

HOW:

Assume the major role in interfacing with the Facility Planning and Engineering Organization, Engineering Planning, Building Architects, contractors and tenants - insure Software's objectives, needs and requirements are clearly articulated and successfully managed within the scope of practicality.

HOW:

Hire, train and develop a senior facility management team to insure a hassle-free environment in Spit Brook and one that meets our commitment to make Software a "fun, in-place" to work.

HOW:

Structure, organize and operate Spit Brook Computer Facilities to optimize our peoples' capabilities. Provide the right computer resources at the right time, right place and under the right conditions.

WHEN:

Build and Operate Spit Brook Successfully		On-going
Senior Facility Staffing	Completed	M02-Q3FY80
Design, Develop and Implement Spit Brook Computer Facility Plan	Completed	M03-Q3FY80

BJ
10/23/79

PEOPLE GOAL: Do Hudson and Spit Brook moves well

PERSONNEL OPERATING OBJECTIVES:

*Invite and encourage employee participation on issues relating to these moves.

*Formulate move policies consistent with employee needs and business requirements.

*Provide continuity of quality personnel services during transition of employees to Spit Brook road and Hudson.

*Administer policy consistent with goal.

*Work special need cases of employees affected by group moves. e.g. Help find jobs in Digital for employees who may not be able to move.

OBJECTIVE:

Move all Tewksbury Languages people and (if it is decided to do so) 75% of Marlboro Languages people to Spit Brook.

MEASURE:

No people from the Tewksbury languages organization are lost from the group to other DEC groups or to outside companies due to the move. Should it be decided to move the Marlboro languages people to Spit Brook, 75% of them move without being lost. The 25% that don't move should be placed in other jobs in Marlboro rather than being lost to DEC.

COMPLETION:

Q1 FY81.

BJ
10/23/79

PEOPLE GOAL: Install an Aggressive College Hire Program.

OBJECTIVE:

Develop a plan for number of hires, and for on-site interviews. (This is not a growth year for s/w personnel).

MEASUREMENT:

Complete by November

BSSG will hire 25 new hires.

OBJECTIVE:

Produce a college hire plan for Marlboro with specific goals for number of hires to come from college. Review the past year's performance in the Merrimack and Tewksbury Language groups and lay out a conscious plan to either continue at the existing rate or alter it.

Identify technical people to do college recruiting who will also interview the same people they saw at the colleges when those people come to interview at DEC.

MEASURE:

There will be specific hiring goals for all three engineering sites in my organization. The people to visit colleges will be identified by name.

COMPLETION:

End of Q2 FY80 for Marlboro and end of Q3 FY80 for the rest of my organization.

CROSS O^2D GOALS

John Meyer - Make it a long term program,
Be Innovative.

Reward - I'll hire and hire and hire --------.

BJ
10/23/79

PEOPLE GOAL: Install an Aggressive Affirmative Action Program

OBJECTIVE:

Meet the present goals.

METHOD:

Establish present level of people,
number likely to transfer
number likely to terminate
final goal.

MEASUREMENT:

We meet it.

DATE:

Q1 FY80.

CROSS O^2D GOALS

- Develop bottom - up plans as well as top down
- Set specific interview/recruitment goals

BJ
10/23/79

PEOPLE GOAL: Make this a "fun-in place" to work.

OBJECTIVE:

Produce an environment and organization which promotes individual initiative, responsibility and autonomy.

METHOD:

Reduce hassle, give people clear decision authority or process for elevation, and reward initiative for quality-leadership products or tools.

MEASUREMENT:

Our products, turnover of people.

BJ
10/23/79

PEOPLE GOAL: Develop a program which will result in longer tenure of people in management positions.

OBJECTIVE:

*Implement manpower planning program to help understand future staffing and employee development needs.

- Forecasts tied to Red and Beige Books
- Supervisory Development and Training plans

MEASUREMENT:

*Number of people who choose to go back to development because of management hassle will be reduced.

DATE:

Q1 FY81.

CROSS O^2D GOAL

John Meyer - Need support for management development
- Training

BJ
10/23/79

PRODUCT GOAL: Improve Focus on Product Quality

OBJECTIVE:

During Phase 0 and Phase 1 of each major product, use the data from the Quality Survey to develop plans to improve quality.

MEASUREMENT:

After each release compare levels of customer perception to indicate benefit versus dollars expended.

DATE:

Implement starting in Q2.

Actual data in 6 months to 18 months.

OBJECTIVE:

Fix the bugs.

MEASUREMENT/DATE:

Do it. Now.

OBJECTIVE:

Set quality goals of Retail Products Group Products and Medical, if proposal accepted.

DATE:

Q2

PRODUCT GOAL: Meet Planned Quality, Functionality, Schedules and Budgets (no Surprises) Each group manager will

OBJECTIVE:

Install an "inspection" process; at my level use Program Review process.

METHOD:

Already installed.

OBJECTIVE:

No product slips which exceed six months;

Each product release exceeds quality of last release.

DECUS groups will be happy.

MEASUREMENT:

1. Yellow book,
2. Customer perception of Quality reports,
3. No bloodbaths.

CROSS O^2D GOALS

Bill Demmer - DECNET and Interconnect requirements use S/W Phase Review Program - s/w and h/w plans tie together.

Bruce Stewart - Help!!

BJ
10/23/79

PRODUCT GOAL: Delivery a zero installation cost product.

OBJECTIVE:

SCS/RSTS, Retail Products Group products will be designed for customer installation.

METHOD/MEASUREMENT:

I can install them.

DATE:

Before Phase 2 meetings.

CROSS O^2D GOALS

Dick Clayton - Focus on SCS/RSTS or PDT.

BJ
10/23/79

PRODUCT GOAL: Define, Install and nurture an Advanced Development program.

OBJECTIVE:

*Install a process to foster Advanced Development in all line groups and make it work effectively. Advanced Development funding is prior to ship commitment.

METHOD & MEASUREMENT:

*Proposal in FY80-Q2 (Will include initiation/tracking/completion process for all projects.)

When: Effective operation FY80 - Q4.

*Establish advanced development funds within each group and centrally.

Method: Set a recommended percentage of budget to be used for advanced development.

Date: Q2 FY80 set 70, FY81 implement.

*Establish a "fund" to be administered centrally to be used to spawn advanced development in targeted areas.

Method: set targets, set up process

Measurement: Q4, 80, Q3, 81

Effectiveness of program should be visible in FY82.

PRODUCT GOAL: Start the development of an Application Product.

OBJECTIVE:

Develop a plan.

METHOD:

1. George Thissell will aggressively pursue the outside acquisition program.
2. George will work with Ollie Stone to explore Retail Store applications.

DATE:

Plan by Q3.

BJ
10/23/79

Kur

LP
GB
MK

NOTES/COMMENTS FOR OPERATING OBJECTIVES REVIEW W/ LP + GB 4/3/80

Mitch Kur

I. IMPROVE FINANCIAL PLANNING, ANAL, FCSTG, METRICS

1. NEW BUDGET PROCESS – EBS II has been designed and released; the task force was headed by Ken Nisbet. It significantly improves EBS I by providing for cost center budgeting (headcount and expenses by account), discrete project budgeting, four levels of budgeting (two of which are "off-line" simulation type budget programs), five year horizon, historic data, & line mgrs (not just finance people) can use it. Starting 4/8/80 for FY 81 – 85.

2. METRICS – Significant work has been done in gathering historic data, but lack of resources in the Central Fin group kept us from additl progress. Still need to meet with selected OOD members and implement — will prob slip from Q4 FY 80 to Q1 FY 81.

3. REPORTS – Controllers Report was designed and implemented as planned on schedule. Future effort needs to be directed at improving the report, making it more meaningful, and more timely.

4. PROD MGT SUPPORT
   a. Prod Fin Reporting – Started discussions with Prod Mgrs / Woodford to collect positions, ideas, needs. Expect a clearer goal set for this area by end of Q4 – early Q1.

b. BURP – Being used on all major hardware pgms. Presented to Product Pricing committee – they endorsed BURP analysis of all major products before pricing. Thompson expanded to Product Line Engrg products, too. Training plg. late – but in final completion process. Kur still needs to implement a simple central control/status system to know what's been BURPED.

c. more comprehensive anal model – Not ready to do – want to deal with making present tools/models/ effective first.

d. 3.5 Report – Initial work done – it's scant & there's a lot to do here to refine & get the right data reported. Will be an ongoing project for Woodford, working with Kyle, Prod Mgrs, Hjerpe, Kur, & Corp interfaces to improve & refine within reason.

5. ENG. BUS. SYST ARCH – Woodford/Baker conducted OOD discussions/interviews, dealing with basic conceptual model, which has good acceptance. Some alignment to model now – Expect a detailed syst. design (by major module or sub-groups) plan/schedule by end of Q4.

6. ENH COST CATH/MONITORING PROCEDURES – Part of arch. project above (#5). Part of the Labor reporting module.

II. Communicate/Educate Line Mgrs on Control + Fin. Role/Resp.

1. Basic Fin. Model – It's done, but in pieces, not really pulled together in one model. We've communicated via various invitations to staff mtgs + OOD --- the 3/16 OOD Direct Report Dinner mtg, Kerr to Fuller staff 4/1, Kerr to Haber's Woods mtg 3/28, etc.

   Kerr + staff will put together a comprehensive strategy statement for the current Beige Book process -- we'll use graphic models if they make sense.

2. Eng. Fin. Workshops – Two were held in Spring of 1979 -- with Signif. Personnel support. Wanted two more this year -- but pers. support + drive not there. Will partly offset with coffee sessions for small groups within Finance + continued presentations at other (OOD's / line mgrs) staff mtgs.

III IMPROVE PROFES. STRENGTH OF ORG.

1. HIRE COMPETENTS — DONE/DOING -- VERY LITTLE UNPLANNED TURNOVER IN ORG. LINE MGRS DON'T COMPLAIN -- ARE SUPPORTIVE -- RECOGN. FIN IN THEIR ORGS.

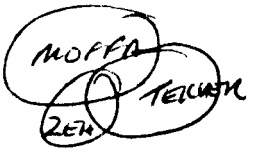
   [FUT -- NEXT 6 MOS -- POTENTIAL FOR T/O AT STAFF LEVEL IS HIGH]

2. PARTIC. IN C.E. HUM. RES. PGM — Both Chaffey + Kur have been on Guy Finke's Committees (different ones), + contributed.

PRESENT + FUT. ISSUES

① OOD ORG – ANTIC Δ'S COMPLEXITY [FIN. FOCUSES WANT TO RUN]

② VLSI ORG — POTENTIAL PROB



→ ? MANAGER
? OOD NEW MEMBER

[HOW TO SUPPORT FIN.]

③ TOPS (700 PEOPLE) / FACILITIES (280 PEOPLE) → LARGEST OOD ORG

- $20 M EXP.
- $30 M + CAPITAL
- SPACE PLNG

- OOD PROJ = FY80 7.3 M
- CC SPEND = 21 M

④ JUSTIF / STRAT. / APPROVAL SYSTEM FOR NON-DEVEL SPENDING EXPENSE + CAPITAL.

⑤ PROGRAM STATUS -- PIC. PGM REV
YELLOW BOOK
INTERNAL STATUS FOR {OOD / ENG / MGT}

⑥ FIN. "CENTRAL" ORG — MIS / CENT MGT SUPPORT / PLANNING-BUDGETING - CAP + EXP / SI'S SUPPORT
(UNIQUE CORP. FIN. ROLE)
– VS –
LINE ORG SUPPORT / PROD MGT SUPPORT

ORG STRUCTURE + FUNDING MODELS

COPIES TO KUR STAFF —
PLEASE REVIEW — THESE WERE DISCUSSED & AGREED UPON BY OOD; THEY ARE AN EXTRACT OF OUR COMPLETE LIST.
MITCH 11/20/79

INTERACTIVE OPERATING OBJECTIVES

CENTRAL ENGINEERING FINANCE

MITCH KUR
Rev. November 6, 1979

KEY: Fin. Role

P Primary
S Support/Secondary

Priority

VH Very High
H High
M Medium

1. IMPROVE FINANCIAL PLANNING, ANALYSIS, FORECASTING, AND MEASUREMENT CAPABILITIES

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
New Budget Process - Design and implement a revised discrete project budgeting system with a 2-3 year focus and a specific approval process. (A)	P	Ken Nisbet & Fin. Task Force	Bruce Stewart Si Lyle	Design cplt Q3,FY80 Impl.Q4,FY80 for FY81 & future budget	VH	More stable budget process, less hassle, far better financial planning.
Metrics - Determine metrics needs with OOD; plan to follow. (C-)	P	Jim Chiafery & FMs	OOD	Impl. by end of Q4,FY80 to use in FY81	VH	Ability to understand and measure accomplishment, progress, trends, and to identify and respond to adverse changes.
Reports - Develop package of meaningful monthly/quarterly fin. reports and graphs for Engineering VP's and OOD. (A-)	P	Joe Winn/ Jim Chiafery	M. Kur L. Portner G. Bell B. Stewart	Initial prelim. trial report at end of Q1FY80 Improve,refine, during Q2,FY80. Complete by end of Q2,FY80.	VH	Consistent control feedback on spending vs. budget for all Engrg.--Central Engrg. Project Rollup, Incurred Spending, G&A Spending, Manpower, & Capital--vs current emph. on Central Projects only.
Product Mgt. Support - a. Improve Product Fin. Reporting via a new or revised Prod. Fin. Statement System, with PM4. STARTED	P	Bob Woodford w/Emil Demikat	Si Lyle Sr. Prod. Mgrs. Curt Rawley Dick Becker PMS FA's John Fisher	To come - (Woodford started 10/22)	VH	Measurement (Corp.) of Product Contribution and/or profitability.

GOAL: I. IMPROVE FINANCIAL PLANNING, ANALYSIS, FORECASTING, AND MEASUREMENT CAPABILITIES cont.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
b. Implement BURP -- "ROI" Financial Tool for Product Investment analysis.	P	Curt Rawley, Dick Becker, PMS FA's	Sr. Prod. Mgrs. Si Lyle Larry Rasile	"Fixes" by end of Q2, FY80. Trn'g. pkg. by end of Q2,FY80	H	A technique forecasting returns on product investments; aids in deciding on which products to devel. and provides input to pricing decisions.
c. Evaluate and recommend a financial impact analysis model/ tool more comprehensive than BURP -- which evaluates induced spending on other projects/programs.	P	(New Objective - not evaluated yet)				
d. Define product measurement input to the corp. 3.5 measurement report. (Short range, until 4a above is done.)	P	M. Kur, Si Lyle Curt Rawley, Dick Becker, Bob Woodford	John Fisher Win Hindle Sr. Prod. Mgrs. Shel Aronoff(?)	Initial recom.11/79 Initial Imp. related to Corp. Fin. interface.	H	Initiate focus by top corp. mgt. on product cut-product impact on sales/contribution/ profitability, more learning than controlling at this stage due to less-than-desirable accuracy. Lyle,Kur, to initially review w/Fisher, Hindle.
Engrg. Business Systems Architecture - Design a system for Engrg. Business feedback, control, reports for the 1980's, with PM[4] and Opr. Mgr., after defining, w/OOD,mgt. requirements.	P	Bob Woodford	Si Lyle, Bruce Stewart, Mitch Kur, OOD Members	(To come - Woodford started 10/ 22)	H	Plan for instead of react to the growth anticipated in the 80's -- so that stable systems are in place for planning, measuring, and controlling.
Review the effectiveness of the cost gathering/monitoring procedures	P	Jim Chiafery	Bruce Stewart Int. Audit Corp. Acctg.(?)	By 6/30/80	M-H	Identification of procedures requiring correction -- to improve accuracy of project costs.

II. COMMUNICATE WITH AND EDUCATE LINE MANAGERS ON THEIR "CONTROL" RESPONSIBILITIES AND THE FINANCE ORGANIZATION'S ROLE/RESPONSIBILITIES.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. Set up a basic model and explain the overall Engrg. Finance Program -- overall structure, how coordinated, major thrusts, interrelationships of finance activities and projects.	P	M. Kur	OOD	Cplt by Mar., 1980.	H	Improved understanding of Finance role and contribution to Engineering function.
2. Continue (and improve) Engineering Finance Workshops for Engrg. Line Mgrs, Supv, and other key people.	P	M. Kur & Staff	J. Meyer (T. Buckley) (Ann Tomyl) Engrg. Mgt.	At least two more sessions in FY80 between Nov. 1979 and June, 1980.	M-H	Educate Line Managers re: cost center reports, discrete project budget system, capital budget system, current financial picture for Engrg., financial projects, etc. Emphasis on "how to".

AL: III. IMPROVE THE PROFESSIONAL STRENGTH OF THE ENGINEERING FINANCE ORGANIZATION (AND THE ENGINEERING LINE ORGANIZATION)

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
. Hire highly competent people. (A)	P	Kur Staff	Engrg. Line Mgt.	Ongoing	VH	Strong fin. org. capable of professional business partnership with Engrg. Line Managers in budgeting, controlling, analyzing investments, and financial counselling.
. Participate in Central Engrg. Human Resource Planning Program. (A-)	S	Guy Fincke	Jim Chiafery, Mitch Kur	See Guy Fincke/John Meyer Program	→	→

ENGINEERING FINANCE

July 1, 1979
M.C. KUR

GOALS/PLANS/PROJECTS FOR FY'80

Priorities:
(H) High

A. Content, Objectives, Responsibilities

1. Improve the professional strength of the Engineering Finance organization.

(A) a. Plan and provide for financial career growth and promotional opportunities for high performers. Kur & Staff (H)

(A) b. Hire highly competent people. Kur & Staff (H)

(A) c. Provide for and encourage participation in development programs, both inside and outside the company. Kur & Staff (H)

2. Improve financial planning, analysis, forecasting, and measurement capabilities.

⇨ * (A) a. New Budget Process - Design and implement a revised discrete project budgeting system which has at least a two-year focus and a specific approval process. (Started in FY'79). Resp.: Ken Nisbet, plus task force. (H)

⇨ * (C-) b. Metrics - Develop metrics (including cc, project, manpower, space, capital, etc.) for both development groups and key service groups. Resp.: Jim Chiafery (Central), all F/M's (own areas). (H)

(A) c. Control FY'80 - The prime objective for FY'80 will be to insure that Central Engineering stays in control -- first, that it does not exceed its expense and capital budget, but with the caveat that potential problems of budget vs. schedule vs. project content are identified and exposed in advance by financial personnel, so that the appropriate total business tradeoffs may be made by line management at the "right" level in the corporation. Implicit is timely and accurate forecasting. Resp.: all. (H)

⇨ * (A-) d. Product Management Support - A P/M support F/A is needed in Large Systems. This financial team will work with a Process/Systems Specialist to improve and/or redesign the Product Financial Statements, develop product investment metrics, along with an increasing role in investment analysis and development of corporate new product introduction financial evaluations. Resp.: Curt Rawley, F/M's, PMSF/A's. (H)

e. Engineering Business Systems Architecture - Replace Curt Rawley in order to continue this longer range business systems development activity; combine with Product Financial Statement Systems project. Resp.: M. Kur. (H)

f. Engineering Finance Metrics - Analyze collected data and organize into a cohesive formal package for ongoing measurement and review. Resp.: M. Kur, Jim Chiafery. (H)

g. Tool Development - Provide investment analysis for tool development in EIS and Technology group. Resp.: Alan Silver and Mike Jean/Bruce Green.

h. Improve Reporting Tools for F/A's - Engineering assume responsibility for labor processing and cost center reporting, improved budgeting and discrete project reporting. Resp.: Jim Chiafery.

i. Strategic Planning - Improve/Strengthen the coupling between strategic planning and finance. Resp.: M. Kur, F/M's.

3. Do the "basics" better.

a. "Simplification" - Design and implementation of changes in accounting within the Simplification philosophy will be accomplished in FY'80 and FY'81. Included will be an analysis of current accounting/financial practices in each OOD member's organization and recommendations for improvement. Included will be reporting by OOD member on both project spending and "incurred" spending. An initial time-phased plan has been proposed. Resp.: Jim Chiafery, plus task force. (H)

b. Large Systems Development - Fully integrate Large Systems (financially) into Central Engineering. Resp.: Dick Leslie. (H)

c. Engineering Accounting/Finance Procedures - Document these in a simple, easy-to-read, manual. Resp.: Jim Chiafery.

d. Audit of "Basics" - Provide for ongoing audit of travel expenses, employee receivables, overtime, first class air travel, and other "basic" financial areas requiring particular discipline within Central Engineering. Resp.: Jim Chiafery.

e. M098 System - Refine to minimize inter-plant reconciliations and provide accurate ECO history; resolve any loose audit issues. Resp.: Ken Misbet.

* f. Decentralized Engineering Accounting -- An analysis (and justification, if justified) of the benefits of decentralization (Engineering ledger) - and/or of other alternatives -- is required before any major decisions and resources expenditures (not budgeted in FY'80) are made toward an Engineering ledger. Continue implementing remote site accounting and reporting in Colorado, Phoenix, Marlboro, and Hudson. Resp.: Jim Chiafery.

g. Finance Budget - Accomplish FY'80 goals within a total cc322 budget increase of 15% over FY'79.

4. Educate line managers relative to their "control" responsibilities vs. the controller's role -- as described in the Corporate Controller's Staff Goals.

a. Directly participate on OOD. M. Kur (H)

b. Continue Engineering Finance workshops (started in FY'79) for Engineering Line Managers, Supervisors, and other key people. Kur & Staff.

c. Communicate to all levels of management and keep them informed about Engineering Finance Charter and Engineering Finance organization structure. Kur & Staff.

* Highest FY'80 priority goals, as established with Bill Thompson and Larry Portner.

M.C. Kur
2/16/79

CENTRAL ENGINEERING FINANCE CHARTER

BASIC CHARTER STATEMENT: The Central Engineering Finance function is the financial business partner of Engineering Operating Managers and Product Managers, and is responsible

- to provide financial planning, analysis, audit, and control for Engineering operating units, for Engineering programs/projects, and for the support of product business plans and new product justification;
- to assist engineering Management in the financial evaluation of alternatives;
- to provide tools and analysis for assessing tradeoffs between budget, schedule, and functionality of development projects;
- to develop, support, and/or manage related administrative and financial business sytems and functions;
- to insure integration and coupling between Central Engineering and corporate financial objectives and plans; and
- to develop the financial team to support Engineering operating units.

MAJOR RESPONSIBILITIES:

A. FINANCIAL SUPPORT, PLANNING, AND CONTROL - ENGINEERING OPERATING UNITS

1. Develop Central Engineering Operating budgets and capital budgets, including appropriate control reports.
2. Insure integration between corporate budgets and Central Engineering budgets.
3. Coordinate with Central Engineering's strategic planning group in the quantitative evaluation of alternative strategies and in the structured presentation of quantitative data as part of the strategic plan.
4. Install and maintain systems to control actual expenses to plan, at project level, at cost center level, and at higher roll-up levels for both.

5. Identify problems in advance, and force resolution wherever necessary (at OOD and within corporation).

6. Be a part of the management team at each level, and be judged on the execution of the team's plan.

7. Provide financial training for non-financial Engineering personnel.

8. Develop measurements and metrics for evaluating Engineering operations.

9. Develop an improved budget system, to cover a minimum of two full fiscal years.

B. FINANCIAL SUPPORT, PLANNING, AND CONTROL - PRODUCT MANAGEMENT

1. Document the financial section of business plans, in conjunction with and approval of product manager(s).

2. Develop tools and provide resources to financially evaluate product and business plan alternatives, and to justify specific proposed new products.

3. Assist Product Manager in providing new product introduction cost evaluations for the corporation.

4. Develop and provide meaningful reports for measuring financial performance by product.

C. ADMINISTRATIVE SYSTEMS

1. Assist, as required, in space planning activities.

2. Support Engineering operating management and Personnel Department in manpower planning and forecasting, and develop controls for assuring accomplishment of plan and its integration with budgets.

3. Obtain (from other corporate sources) or provide selective analysis of competition (as agreed upon with Engineering Operating Managers and/or product managers).

D. RESPONSIBILITIES RELATIVE TO TOTAL CORPORATION

1. Insure Central Engineering financial plans are integrated with corporate financial plans.

2. Provide a system for allocating Engineering expenses to the Product Lines.

3. Provide input, support, and active participation in the development of corporate planning and financial processes (e.g. Simplification, new financial Redbook, overall budget process, accounting change task force, financial training courses, etc.).

4. Develop and implement a decentralization program for Central Engineering, in conjunction with corporate decentralization activity.

5. Protect those corporate assets under the responsibility of Central Engineering.

E. DEVELOPMENT OF THE FINANCE TEAM

1. Provide for training and continued educational development of financial personnel.

2. Insure high financial and interpersonal competence of new personnel.

3. Provide for continuous feedback to personnel of performance and development needs.

4. Institute a career development program providing for growth both within Engineering Finance and with other finance organizations within DEC.

ENGINEERING FINANCE

July 1, 1979
M.C. KUR

GOALS/PLANS/PROJECTS FOR FY'80

Priorities:
(H) High

A. Content, Objectives, Responsibilities

1. Improve the professional strength of the Engineering Finance organization.

   a. Plan and provide for financial career growth and promotional opportunities for high performers. Kur & Staff (H)

   b. Hire highly competent people. Kur & Staff (H)

   c. Provide for and encourage participation in development programs, both inside and outside the company. Kur & Staff (H)

2. Improve financial planning, analysis, forecasting, and measurement capabilities.

* a. New Budget Process - Design and implement a revised discrete project budgeting system which has at least a two-year focus and a specific approval process. (Started in FY'79). Resp.: Ken Nisbet, plus task force. (H)

* b. Metrics - Develop metrics (including cc, project, manpower, space, capital, etc.) for both development groups and key service groups. Resp.: Jim Chiafery (Central), all F/M's (own areas). (H)

   c. Control FY'80 - The prime objective for FY'80 will be to insure that Central Engineering stays in control -- first, that it does not exceed its expense and capital budget, but with the caveat that potential problems of budget vs. schedule vs. project content are identified and exposed in advance by financial personnel, so that the appropriate total business tradeoffs may be made by line management at the "right" level in the corporation. Implicit is timely and accurate forecasting. Resp.: all. (H)

* d. Product Management Support - A P/M support F/A is needed in Large Systems. This financial team will work with a Process/Systems Specialist to improve and/or redesign the Product Financial Statements, develop product investment metrics, along with an increasing role in investment analysis and development of corporate new product introduction financial evaluations. Resp.: Curt Rawley, F/M's, PMSF/A's. (H)

CHANGE CONTROL
PLANNING
CFS.
SYSTEMS MANAGER
SYSTEMS MAN.
BUDGET BOOK —
CHARTS BY GROUP
MANPWR VS PLAN
SPENDING (ORGANIZATION)
BUS. PLANS F.A
DECISION MAKING

e. Engineering Business Systems Architecture - Replace Curt Rawley in order to continue this longer range business systems development activity; combine with Product Financial Statement Systems project. Resp.: M. Kur. (H)

WORK W. S.I.

f. Engineering Finance Metrics - Analyze collected data and organize into a cohesive formal package for ongoing measurement and review. Resp.: M. Kur, Jim Chiafery. (H)

g. Tool Development - Provide investment analysis for tool development in EIS and Technology group. Resp.: Alan Silver and Mike Jean/Bruce Green.

h. Improve Reporting Tools for F/A's - Engineering assume responsibility for labor processing and cost center reporting, improved budgeting and discrete project reporting. Resp.: Jim Chiafery.

i. Strategic Planning - Improve/Strengthen the coupling between strategic planning and finance. Resp.: M. Kur, F/M's.

3. Do the "basics" better.

a. "Simplification" - Design and implementation of changes in accounting within the Simplification philosophy will be accomplished in FY'80 and FY'81. Included will be an analysis of current accounting/ financial practices in each OOD member's organization and recommendations for improvement. Included will be reporting by OOD member on both project spending and "incurred" spending. An initial time-phased plan has been proposed. Resp.: Jim Chiafery, plus task force. (H)

b. Large Systems Development - Fully integrate Large Systems (financially) into Central Engineering. Resp.: Dick Leslie. (H)

c. Engineering Accounting/Finance Procedures - Document these in a simple, easy-to-read, manual. Resp.: Jim Chiafery.

d. Audit of "Basics" - Provide for ongoing audit of travel expenses, employee receivables, overtime, first class air travel, and other "basic" financial areas requiring particular discipline within Central Engineering. Resp.: Jim Chiafery.

e. M098 System - Refine to minimize inter-plant reconciliations and provide accurate ECO history; resolve any loose audit issues. Resp.: Ken Nisbet.

MIKE ? OHABIC -- Docum. the [illegible] PROCESS [illegible]

* f. Decentralized Engineering Accounting -- An analysis (and justification, if justified) of the benefits of decentralization (Engineering ledger) - and/or of other alternatives -- is required before any major decisions and resourceexpenditures (not budgeted in FY'80) are made toward an Engineering ledger. Continue implementing remote site accounting and reporting in Colorado, Phoenix, Marlboro, and Hudson. Resp.: Jim Chiafery.

g. Finance Budget - Accomplish FY'80 goals within a total cc322 budget increase of 15% over FY'79.

4. Educate line managers relative to their "control" responsibilities vs. the controller's role -- as described in the Corporate Controller's Staff Goals.

a. Directly participate on OOD. M. Kur (H)

b. Continue Engineering Finance workshops (started in FY'79) for Engineering Line Managers, Supervisors, and other key people. Kur & Staff.

c. Communicate to all levels of management and keep them informed about Engineering Finance Charter and Engineering Finance organization structure. Kur & Staff.

* Highest FY'80 priority goals, as established with Bill Thompson and Larry Portner.

INTERACTIVE OPERATING OBJECTIVES

CENTRAL ENGINEERING FINANCE

MITCH KUR
Rev. November 6, 1979

KEY: Fin. Role

P Primary
S Support/Secondary

Priority

VH Very High
H High
M Medium

GOAL: 1.. IMPR[illegible] FINANCIAL PLANNING, ANALYSIS, FORECAS[illegible]NG, AND MEASUREMENT CAPABILITIES

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. New Budget Process - Design and implement a revised discrete project budgeting system with a 2-3 year focus and a specific approval process.	P	Ken Nisbet & Fin. Task Force	Bruce Stewart Si Lyle	Design cplt Q3,FY80 Impl.Q4,FY80 for FY81 & future budget	VH	More stable budget process, less hassle, far better financial planning.
2. Metrics - Determine metrics needs with OOD; plan to follow.	P	Jim Chiafery & FMs	OOD	Impl. by end of Q4,FY80 to use in FY81	VH	Ability to understand and measure accomplishment, progress, trends, and to identify and respond to adverse changes.
3. Reports - Develop package of meaningful monthly/quarterly fin. reports and graphs for Engineering VP's and OOD.	P	Joe Winn/ Jim Chiafery	M. Kur L. Portner G. Bell B. Stewart	Initial prelim. trial report at end of Q1FY80 Improve,refine, during Q2,FY80. Complete by end of Q2,FY80.	VH	Consistent control feedback on spending vs. budget for all Engrg.--Central Engrg. Project Rollup, Incurred Spending, G&A Spending, Manpower, & Capital--vs current emph. on Central Projects only.
4. Product Mgt. Support - a. Improve Product Fin. Reporting via a new or revised Prod. Fin. Statement System, with PM^4.	P	Bob Woodford w/Emil Demikat	Si Lyle Sr. Prod. Mgrs. Curt Rawley Dick Becker PMS FA's John Fisher	To come - (Woodford started 10/22)	VH	Measurement (Corp.) of Product Contribution and/or profitability.

GOAL: I. ROVE FINANCIAL PLANNING, ANALYSIS, FORECASTING, AND MEASUREMENT CAPABILITIES con

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
b. Implement BURP -- "ROI" Financial Tool for Product Investment analysis.	P	Curt Rawley, Dick Becker, PMS FA's	Sr. Prod. Mgrs. Si Lyle Larry Rasile	"Fixes" by end of Q2, FY80. Trn'g. pkg. by end of Q2,FY80	H	A technique forecasting returns on product investments; aids in deciding on which products to devel. and provides input to pricing decisions.
c. Evaluate and recommend a financial impact analysis model tool more comprehensive than BURP -- which evaluates induced spending on other projects/programs.	P	(New Objective - not evaluated yet)				
d. Define product measurement input to the corp. 3.5 measurement report. (Short range, until 4a above is done.)	P	M. Kur, Si Lyle Curt Rawley, Dick Becker, Bob Woodford	John Fisher Win Hindle Sr. Prod. Mgrs. Shel Aronoff(?)	Initial recom.11/79 Initial Imp. related to Corp. Fin. interface.	H	Initiate focus by top corp. mgt. on product cut-product impact on sales/contribution profitability, more learning than controlling at this stage due to less-than-desirable accuracy. Lyle,Kur to initially review w/Fisher Hindle.
Engrg. Business Systems Architecture - Design a system for Engrg. Business feedback, control, reports for the 1980's, with PM[4] and Opr. Mgr., after defining, w/OOD,mgt. requirements.	P	Bob Woodford	Si Lyle, Bruce Stewart, Mitch Kur, OOD Members	(To come - Woodford started 10/22)	H	Plan for instead of react to the growth anticipated in the 80's -- so that stable systems are in place for planning, measuring, and controlling.
Review the effectiveness of the cost gathering/monitoring procedures	P	Jim Chiafery	Bruce Stewart Int. Audit Corp. Acctg.(?)	By 6/30/80	M-H	Identification of procedures requiring correction -- to improve accuracy of project costs.

GOAL: II. COMMUNICATE WITH AND EDUCATE LINE MANAGERS ON THEIR "CONTROL" RESPONSIBILITIES AND THE FINANCE ORGANIZATION'S ROLE/RESPONSIBILITIES.

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIOR-ITY	EXPECTED RESULT
1. Set up a basic model and explain the overall Engrg. Finance Program -- overall structure, how coordinated, major thrusts, interrelationships of finance activities and projects.	P	M. Kur	OOD	Cplt by Mar., 1980.	H	Improved understanding of Finance role and contribution to Engineering function.
2. Continue (and improve) Engineering Finance Workshops for Engrg. Line Mgrs, Supv, and other key people.	P	M. Kur & Staff	J. Meyer (T. Buckley) (Ann Tomyl) Engrg. Mgt.	At least two more sessions in FY80 between Nov. 1979 and June, 1980.	M-H	Educate Line Managers re: cost center reports, discrete project budget system, capital budget system, current financial picture for Engrg., financial projects, etc. Emphasis on "how to".

GOAL: III. IMPROVE THE PROFESSIONAL STRENGTH OF THE ENGINEERING FINANCE ORGANIZATION (AND THE ENGINEERING LINE ORGANIZATION)

OBJECTIVES	FIN. ROLE	PRIME RESP.	OTHERS INVOLVED	TARGET MILESTONE OR CPLTN DATE	PRIORITY	EXPECTED RESULT
1. Hire highly competent people.	P	Kur Staff	Engrg. Line Mgt.	Ongoing	VH	Strong fin. org. capable of professional business partnership with Engrg. Line Managers in budgeting, controlling, analyzing investments, and financial counselling.
2. Participate in Central Engrg. Human Resource Planning Program.	S	Guy Fincke	Jim Chiafery, Mitch Kur	See Guy Fincke/John Meyer Program	→	→

Lyle

****
* d i g i t a l *
****

TO: GORDON BELL*
LARRY PORTNER

DATE: FRI 11 APR 1980 9:31 AM EST
FROM: SI LYLE
DEPT: CORP PROD MKTG
EXT: 223-7311
LOC/MAIL STOP: ML12-1 T39

SUBJECT: OBJECTIVES & GOALS FOR 4/16 MEETING >3

SL1/S2/2

OBJECTIVES/STATUS FROM 10/25/79

OBJECTIVES

1. Define and implement EBOD process

   - Definition of the entire process is still not done.

   - Some time and thoughts were lost in Andy to Bill transition.

   - Have tentative buy-in from Bill on SPU, strategy planning, EBOD calendar

   - SPU's up and running, but need calendar and more definitive statement of role from Bill, Larry and self

2. Establish appropriate Product Management job descriptions and levels.

   - Job descriptions and levels complete

   - Used in February/March salary planning

   - Awaiting Corporate approval

3. Establish working relationship with marketing and other functions.

   - Monthly systems meetings running since November 1

   - Product Management supporting PPC short term requests

   - Formal communication links need to be established

4. Establish an integrated long range planning cycle that couples systems/product markets and budget.

   - Starting point, integrated strategy and base plan content finished by April 10. Formatting, presentation and OOD review underway

   - Link between SPU's, EBOD, Product Line long range plans still has to be defined

- ECO process has yet to be established

5. Develop systems business plans

   - Starting point, experiment with linking product line demand forecasts with long range product plans - Orange book 3/80

   - Systems still needs OOD definition

6. Help specify MIS needs.

   - 2 field trips

   - Specifications need to be generated

   - Participated in design of color books and processes

In addition to working the issues associated with the above objectives, the following items have, or are being, completed.

1. Non disclosure package for systems and products for the Product Lines as requested by the Marketing Committee.

2. Start of Phase In/Phase Out Product Task Force as requested by Win.

3. Completion of Cost of Ownership Task Force as requested by Operations Committee.

4. Word Processing transition issues.

   - Preliminary work associated with budgeting products and staff with Stan

   - Jack Gilmore transition into Central Engineering

   - Start of OFIS product plan

   - Fire fight field issues

5. Provide moral support and direction through one on ones with Bob Dockser and Jim Barbour.

6. Involved with the sell of Systems Management within OOD including starting systems management task force.

7. Participate in sales situations with Raytheon, Boeing Aires Ltd. and MacDonald Douglas.

8. Participated in U.S. regional and district managers sales meetings.

9. Worked funding issues for a number of items including special issues of sales update, IAS, handbooks, DEC 10/20 promotion.

Current Objectives

Strategic Planning

- Get present document through product line and EBOD approval cycle - June 3, 1980

- Use present strategic plans document as base and define process using SPU's and product line long range plans to synchronize market and product strategic plans - June 3, 1980.

- Define content and format for Redbook - July

Product Planning

- Get present base plan through product line and EBCD approval cycle - June 3, 1980.

- Put control process in place to keep base plan up to date and trigger project/product/program reviews - June 3, 1980

- Define Phase 0 offical review process similar to FPC - July 1980

- Define business plan format associated with type of product and phase - July 1980

- Provide product planning guide to long range planning process - August 1980

- Review each major product/program at PMC on a 5 year basis for implementation of strategy, customer needs, and competitiveness

Marketing

- Improve engineering/product management/PPC interaction

- Define time-table and methods of implementing PPC announcement criteria - August 1980

- Participate in product group managers meeting on a regular basis

Systems Management

- Work definitive issues across OOD

- Run Systems Management Task Force

- Implement PPC systems pricing announcement criteria

- Continue Orange book

- Work Phase In/Phase Out product issues as chairman of

INTEROFFICE MEMORANDUM

TO: OOD

DATE: 3 October 1979
FROM: Si Lyle
DEPT: Corporate Product Marketing
EXT: 7311
LOC/MAIL STOP: ML12-1/T32

CC: Mike Gutman, Per Hjerppe, Bernie Lacroute, Jack Mileski, Stan Pearson, Bruce Stewart

SUBJECT:

OCT 2 1979

Attached is the package which includes some of the suggestions that came up during our meeting last week.

/mhm

Attachment

Distribution:

Gordon Bell	ML12-1/A51	Bill Johnson	ML12-3/A62
Dick Clayton	ML12-2/E71	Mitch Kur	ML12-2/A16
Jim Cudmore	ML1-5/E30	John Meyer	ML12-1/A11
Bill Demmer	TW-D19	Grant Saviers	ML3-6/E94
Ulf Fagerquist	MK1-2/E78	Larry Portner	ML12-1/T32
Sam Fuller	ML3-5/H33		
John Holman	ML12-2/T36		

ORGANIZATION - CORPORATE PRODUCT MARKETING

CHARTER

The role of the Systems Manager in the Product Marketing organization is to develop system plans and to see that they are implemented by all functional organizations. The planning shall include inputs from the marketing groups, corporate marketing, and engineering and will be focused on the saleability, cost of ownership, and gross profit of the system.

The role of the Product Manager in the Product Marketing organization is to develop product plans which meet the requirements of the system plans and market plans, if the product is to be sold as a stand-alone product. The product plans will meet the same criteria as the system plans.

The Systems and Product Managers will be part of a line product marketing organization and shall also report to the appropriate engineering manager to assure technology coupling and managing the engineering interface with the other functional departments.

THE JOB

The jobs within product management are undergoing a transition to become much more marketing oriented with an emphasis on external factors such as competition, market opportunities, and customer cost of ownership. The jobs will also take on an increased responsibility for measuring and taking steps for improving the profit of each product (system).

Jobs within product marketing will be developed to lead to promotion within product marketing as well as promotion to senior jobs in other functions, particularly marketing groups.

FUNCTIONS

Planning

Product marketing is responsible to maintain a formal four step planning process for all systems and products.

The four steps are:

a) Market opportunities reviewed by Product Marketing Committee (PMC) and the marketing groups (M/G).

b) Strategic market plan reviewed by PMC and the engineering board of directors (EBOD).

c) System/product business plan reviewed by PMC, Office of Development (OOD), M/G and EBOD.

d) Implementation plan reviewed by PMC and OOD.

Processes

Product marketing is responsible for the processes needed to handle a product (system) from the business planning stage through to announcement. This includes the interfacing between all functional groups.

The EBOD process is used to review strategic direction and set major budget goals.

The Program Review process is used to coordinate the business plans of the groups with the status of the program.

Marketing

Product marketing is responsible for the development of the following items to simplify the selling of all products.

a) Simplified data sheet and price lists

b) Product positioning statement

c) Market focus (by market and/or strategic market groups)

d) Competitive analysis

e) Pricing proposal

f) Announcement plan

Financial

Product marketing is responsible for the review of all systems and products to determine financial impact and cost of ownership with particular emphasis on gross margin, start-up expenses, profit and yields. Investment decisions are to be based on financial models which include profit and cash flow analysis.

GOALS

1. Develop a product/system marketing team that is focused on the specification of needs, and all facets that affect the profitability of the product/system during its total life.

2. Develop where necessary and continue to improve existing processes for

   a) "contracts" and forecasting with marketing groups,

   b) co-ordination of central engineering strategy, and

   c) management of engineering role in EBOD.

3. Develop where necessary and continue to improve existing process for system strategies and plans that

   a) account for the sales/marketing environment and expected changes within that space during the life of the system,

   b) position each system within DEC's total offering, and

   c) include field service and manufacturing input at the start of each project, within context of systems family.

4. Develop a set of product strategies

   a) products will be categorized an sold as stand-alone or sold as part of system and/or stand-alone,

   b) the product strategies for stand-alone products will be the same as 3a to 3c, and

   c) products sold as only part of system will be governed by system strategy.

5. Make systems and products easier to sell by developing

   a) easy to use systems price lists,

   b) Data Sheet Product Notebook, and

   c) a co-ordinated literature plan.

6. Reduce the cost of ownership by

   a) reducing the number of different components in products,

   b) designing field service and manufacturing needs into the product,

   c) developing a total plan for the entire life of a product/system and

   d) planning mid-life kickers at the outset of a project.

7. Increase gross margin by

   a) developing pricing plans for the life of product,

   b) reducing start-up and on-going support costs, and

   c) making necessary financial trade offs across all factors affecting the cost of goods sold.

8. Measure the P & L and cash flows of all systems and stand-alone products over th entire life of the product system.

SML-10/2/79
/mhm

SHORT TERM OBJECTIVES -

1. Define and implement EBOD process.

   a) Definition

      - conceptual scheme approval October 29
      - flow chart process November 8
      - review process OOD November 15

   b) Implementation

      - select procedure (Harvard 10 Step) November 16
      - start to establish SPU's PMC November 22

2. Establish appropriate Product Management Job Descriptions and levels.

   a) Determine number of levels October 11
   b) Prepare Job Descriptions October 31
   c) Personnel review (Don Ames) November 15
   d) Review at OOD (John Meyer) November 30
   e) Corporate approval December 30
   f) Adjust Managers classification January 15
   g) General Announcement January 30
   h) Define role of systems/product managers November 30
   i) Integrate systems/product managers role with systems/program managers December 31.

3. Establish working relationship with marketing and other functions.

   a) Define a working forum October 20
   b) Set-up and run monthly corporate meeting - first one November 1
   c) Deal with short term issues raised by PPC

      review process needs October 29

      design process

      implementation process December 31

SML:10/24-25/79

4. Establish an integrated long range planning cycle that couples systems/ product markets and budgets.

   a) Review present planning commitments October 18

   b) Review staffing impact October 25

   c) Establish SPU's - start November 22

   d) Determine 5 year revenues by

      - service/equipment
      - architecture 5 types
      - functionality - December 4

   e) Determine method of reviewing revenue impacts coupled to P/L forecasts. November 30.

5. Develop systems business plans.

   a) Select a product to be used to establish a complete system business plan November 30

   b) Develop cursory system plan December 30

   c) Test systems contract with P/L's January 30

   d) Develop full system plan. March 1

   e) Enter into contracts with all functions. May

   f) Expand to other systems.

   g) Select 1 product to test impact model. December 31

   h) Establish planning goals and staff. December 31

   i) Target total integrated plans. June 30

   J. Prepare redbook to present forecast. February 1.

6. Help specify MIS needs.

   a) Review external approaches. Bruce, Mitch November 30

   b) Produce statement of needs December 15

SML:10/24-25/79

CENTRAL ENGINEERING PERSONNEL CHARTER

MISSION STATEMENT - To participate with management and employees, both as a direct contributor and as a consulting resource, in creating an environment which promotes innovation, Affirmative Action and assures effective utilization of individual and organizational resources in conjunction with Corporate philosophy, goals, and objectives.

Personnel will provide capabilities which enable Central Engineering to:

- Provide strategies and plans for attracting, retaining and developing a competent workforce.
- Establish a linkage between organization requirements and individual needs.
- Monitor the impact of decisions and conditions on organizational effectiveness and employee morale.
- Develop programs and processes which provide for effective communication among employees.
- Treat employees fairly and in a manner consistent with Company policies.
- Conform with legal requirements.
- Develop, support and manage related administrative and personnel programs, systems and tools
- Influence, participate with, and insure integration of Central Engineering and Corporate Personnel objectives and plans.

J. Meyer
June/79
MS 22

J. Meyer
9/10/79

PERSONNEL GOALS

1. Provide day to day Personnel Services to employees.

   a Employee Relations/Communications

   b Salary/Benefits Administration

   c Training and Development Support

   d Administration/Monitoring of EEO/AAP

   e Employee Activities

   f Community Relations

   g Policy interpretation and administration

   h Health Services

   j Special projects needed by individual organizations

2. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

3. Provide organization development to line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

5. Create and maintain management awareness of Compensation/Benefits programs; how they are developed; how they are utilized within their respective organization; how effective they are and how to bring about program changes.

6. Develop and maintain an effective Employee Information System.

7. Collaborate with and support Corporate Personnel and other DEC Personnel Departments.

8. Provide a competent Personnel Department that is capable of supporting the Engineering group.

MS043

J. Meyer
9/19/79

PERSONNEL GOALS and FY'80 OPERATING OBJECTIVE SUMMARY

(Detail on individual department plans)

1. Provide day-to-day Personnel Services to employees.

A Employee Relations/Communications

Provide an environment whereby line managers and supervisors develop an increasing ownership for employee relations.

Insure that administrative systems and procedures are designed in such a way that local supervisory responsibility and control is fostered.

Begin to initiate a change in Personnel's role from problem solving to consulting: Analyze and review:

1) those functions which are performed by supervisors and managers

2) those functions performed by Reps which should be performed by supervisors and managers

3) those functions which should be performed by Reps.

Insure formal and informal sensing techniques are in place within the groups. Continue installation of group meetings where management and subordinates come together to talk.

Update the Tewksbury Employee Handbook. Modify and enhance orientation program.

Assist internal movement of employees within Central Engineering and DEC.

Consultant/Senior Consultant job descriptions, qualifications and Review Process.

Begin development of an assimilation program for new employees: Develop task force; Design Program; Implement Phase I and Evaluate.

Tewksbury Sensing Process: Design; Initial implementation; Modify design and Second implementation.

Continue meetings of new hires and group managers.

Invite and coordinate participation of employees on issues relating to SBR and Hudson moves.

B Salary/Benefits Administration

Conduct and/or have conducted at least one supervisory training session on Compensation at each Engineering location.

Revise current equal pay audit procedure; continue audits under revised procedure.

Design communications network among supervisors, employees and personnel group to aid in program development and implementation.

Continuation of Phase II of management job slotting project.

Review and/or write job descriptions within Engineering job families.

Special study of product/program management job family.

Exception spending, planning, implementation, program monitoring.

Exempt pay program administration: program monitoring, assessment of effectiveness, propose modification, implementation of next years program.

Non-exempt pay program analysis: Program monitoring, assessment of effectiveness, propose modifications, implementation of next years program.

Technician study: job descriptions/evaluation/structure analysis and revision as needed.

C Training and Development Support

Provide supervisory training modules on: Compensation, EEO/AA, Interviewing skills, Continue Discipline Documentation, and Finance Training programs. Evaluate M.T.O.

Communicate Technical courses/catalogs on-site.

Develop and implement programs to educate all users to their role in the S & P process which will gain more effectiveness and efficiency. Some examples of these programs are: Interviewing skills workshops; "State of the Marketplace" communications; and "How the administrative system works."

Definition of H.R.P. & D. Dept. training responsibilities.

D Administration/Monitoring of EEO/AAP

Review organization EEO/AA goals with OOD Staffs.

Develop and implement proactive Affirmative Action sourcing programs to help increase our representation of minorities and women in the C.E. organization.

Continue Male/Female Workshops where applicable.

E Employee Activities

Maintain present programs.

F Community Relations

Continue developing and understanding our responsibilities for this activity - primarily at Tewksbury and Spitbrook.

G Policy interpretation and administration

Participate in formulating policies across Engineering and DEC.

H Health Services

Investigate and propose an Employee Assistance program at Tewksbury. Monitor installation of Health Services Unit at Spitbrook Rd.; hire nurse to operate.

Continue involvement with Mill Health Services Unit.

J Special projects needed by individual organizations

Participate in Hudson and Spitbrook Road facility development and moves.

Participate in the redesign of the Engineering Review Board and ensure consistency across DEC and Engineering.

2. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

Define and begin installation of a Human Resource Planning and Development Program across Central Engineering.

Develop an HRP&D Program Plan (3-5 years)

Develop and initiate a process to understand and review C.E. technical and management needs 3-5 years out.

Propose an FY'01 plan and budget for H.R.P.

Develop and install a process for development planning and review for OOD members and their direct reports.

Continue the improvement of the Human Resource Process within CSD.

Improve content and purpose of the Human Resource Spring Woods

Improve quality content of salary reviews.

Begin Performance review program in SSD.

Establish quarterly review process for staff's direct reports and their direct reports.

Begin (1) level down development review for: Software, Tech. Director, Group level Software.

Definition of H.R.P.&D Dept. training responsibilities.

3. Provide organization development line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

Continue the integration of key groups into/with other organizations ie:

Formally identify Steils' and Glorioso's staff with respective Engineering Development groups.

Support project manpower flow between MSD groups (Adv. Dev., Prod. Dev., S.W. and Hydra)

Develop Terminals organization plan and communicate integration of Printer and Video.

Assist in defining charters and relationships between SSD and LSI group.

Establish an on-going sensing program to test the environment and to give data to management. Tewksbury is being used as test site.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

Establish an effective Internal Transfer process.

Develop, implement and monitor consistent administrative systems and metrics for the C.E. Staffing and Placement Organization.

Develop and administer the College Relations and College Recruiting Programs.

Develop and implement programs to educate all users to their role in the S&P process which will gain more effectiveness and efficiency. Some examples of these programs are: Interviewing skills workshops; "State of the Marketplace: communications; and "How the administrative system works."

Develop and implement proactive Affirmative Action sourcing programs to help increase our representation of minorities and women in C.E. organization.

H.R. planning process to understand C.E. technical and managerial needs 3-5 years out: Design, Implement, Review results.

5. Create and maintain management awareness of Compensation/Benefits programs:

How they are developed

How they are utilized within their respective organization

How effective they are

How to bring about program changes

Conduct and/or have conducted training in Comp/Ben at various locations.

Design communications network to aid in development and implementation of Comp/Ben programs.

Establish a company visit program with 12-14 companies to talk about engineering and engineering related jobs. Visit 2-3 companies per quarter.

6. Develop and maintain an effective Employee Information System.

Personnel Information System:

Conduct C.E. needs analysis
Scope out system specifications
Develop maximum utilization of System 1022
Augment Corporate programs with compatible Engineering programs.
Continue and expand use of Personnel Activity Reports.

7. Collaborate with and support Corporate Personnel and other DEC Personnel Departments.

Manage the Staffing and Placement Function across Central Engieering while integrating into Corporate Programs and Goals.

Scope managment positions: Continuation of managemenet slotting project.

Personnel Training program for DEC personnel department.

Individual development plans for OOD members.

Corporate O.D. Thrust: Consulting group; Functional O.D. Mgrs.; Al Fitz.

8. Provide a competent Personnel Department that is capable of supporting the Engineering group.

Be fully staffed.

Develop and review with management site department plans for Hudson and Spitbrook Rd.

Department management:

What are we going to do for ourselves?

How are we going to review goals and objectives?

What is our management process?

Consulting skills training to C.E. professional Personnel staff.

MS045

J. Meyer
11/29/79

CENTRAL ENGINEERING PERSONNEL DEPARTMENT
OPERATING OBJECTIVES - FY'80

1. Human Resource Planning

Objective	Completion Date
HRP&D Program Plan	
Model/philosophy statement	10/31/79
Overall goals (3-5 yrs. out)	10/31/79
Annual objectives for each year	10/31/79
Activities for each year	10/31/79
Staffing/organization plan for HRP&D function	1/31/80
Individual development plans for OOD members and their direct reports	6/30/80
HRP process to understand C.E. Technical and managerial needs 3-5 years out:	
Product strategy and supporting technology plans	1/31/80
FY81 planning/budgeting process	6/30/80

2. College Recruiting and Relations

Continue the development of the College Recruiting and College Relations Programs that support present and future staffing requirements.

Develop, implement and monitor systems and processees to provide C.E. the opportunity to hire 200 new grads in FY80	6/30/80
Develop plan focusing initially on 9 colleges	4/30/80
Implement plan	6/30/80

3. Spitbrook Road and Hudson facility plans and moves

Provide leadership and plans for the group moves that will minimize disruption to work and family life for affected employees resulting in a high degree of employee satisfaction and a termination rate not higher than organization average.

3. Spitbrook Road and Hudson facility plans and moves - continued

Objective	Completion date
Invite participation of employees on issues relating to SBR move	Q1 80
Formulate move policies consistent with employee needs and business objectives	Q1 80
Administer policy consistent with goal	On-going
Provide a continuity of quality personnel service during transition of employees to SBR	Q1,Q2 80

4. Assimilation Program for new Engineering employees

Assemble task group	12/31/79
Design initial program	3/1/80
Implement first part	4/30/80
Evaluate	6/30/80

5. Help managers understand and execute personnel responsibilities

Continue module on Discipline and Documentation	Q3 80
Provide modules on:	
Compensation	Q4 80
EEO/AA	Q4 80
Interviewing skills	Q4 80
Establish an on-going sensing program in Tewksbury to test the environment and to give data to management. Work with management to analyze and interpret data and action plans	Q3 80
Insure that administrative systems and procedures are designed in such a way that local supervisory control is fostered.	Q4 80

MS057
cs

Engineering
Personnel
Administration

J. Meyer
9/26/79

OPERATING OBJECTIVES WHICH ARE COMMON ACROSS THE CENTRAL ENGINEERING ORGANIZATION

1. Human Resource Planning

2. College Recruiting and Relations

3. Spitbrook Road and Hudson facility plans

4. Spitbrook Road and Hudson employee moves

5. Assimilation Program for new Engineering employees

6. Help managers understand and execute personnel responsiblities

mso47

J. Meyer
9/19/79

PERSONNEL GOALS and FY'80 OPERATING OBJECTIVE SUMMARY

(Detail on individual department plans)

1. Provide day-to-day Personnel Services to employees.

A. Employee Relations/Communications

Provide an environment whereby line managers and supervisors develop an increasing ownership for employee relations.

Insure that administrative systems and procedures are designed in such a way that local supervisory responsibility and control is fostered.

Begin to initiate a change in Personnel's role from problem solving to consulting: Analyze and review:

1) those functions which are performed by supervisors and managers

2) those functions performed by Reps which should be performed by supervisors and managers

3) those functions which should be performed by Reps.

Insure formal and informal sensing techniques are in place within the groups. Continue installation of group meetings where management and subordinates come together to talk.

Update the Tewksbury Employee Handbook. Modify and enhance orientation program.

Assist internal movement of employees within Central Engineering and DEC.

Consultant/Senior Consultant job descriptions, qualifications and Review Process.

Begin development of an assimilation program for new employees: Develop task force; Design Program; Implement Phase I and Evaluate.

Tewksbury Sensing Process: Design; Initial implementation; Modify design and Second implementation.

Continue meetings of new hires and group managers.

Invite and coordinate participation of employees on issues relating to SER and Hudson moves.

B Salary/Benefits Administration

Conduct and/or have conducted at least one supervisory training session on Compensation at each Engineering location.

Revise current equal pay audit procedure; continue audits under revised procedure.

Design communications network among supervisors, employees and personnel group to aid in program development and implementation.

Continuation of Phase II of management job slotting project.

Review and/or write job descriptions within Engineering job families.

Special study of product/program management job family.

Exception spending, planning, implementation, program monitoring.

Exempt pay program administration: program monitoring, assessment of effectiveness, propose modification, implementation of next years program.

Non-exempt pay program analysis: Program monitoring, assessment of effectiveness, propose modifications, implementation of next years program.

Technician study: job descriptions/evaluation/structure analysis and revision as needed.

C Training and Development Support

Provide supervisory training modules on: Compensation, EEO/AA, Interviewing skills, Continue Discipline Documentation, and Finance Training programs. Evaluate M.T.C.

Communicate Technical courses/catalogs on-site.

Develop and implement programs to educate all users to their role in the S & P process which will gain more effectiveness and efficiency. Some examples of these programs are: Interviewing skills workshops; "State of the Marketplace" communications; and "How the administrative system works."

Definition of H.R.P. & D. Dept. training responsibilities.

D Administration/Monitoring of EEO/AAP

Review organization EEO/AA goals with OOD Staffs.

Develop and implement proactive Affirmative Action sourcing programs to help increase our representation of minorities and women in the C.E. organization.

Continue Male/Female Workshops where applicable.

E Employee Activities

Maintain present programs.

F Community Relations

Continue developing and understanding our responsibilities for this activity - primarily at Tewksbury and Spitbrook.

G Policy interpretation and administration

Participate in formulating policies across Engineering and DEC.

H Health Services

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Improve content and purpose of the Human Resource Spring Woods

Improve quality content of salary reviews.

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Establish quarterly review process for staff's direct reports and their direct reports.

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Develop Terminals organization plan and communicate integration of Printer and Video.

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Establish an on-going sensing program to test the environment and to give data to management. Tewksbury is being used as test site.

4. Provide the proper supply of qualified candidates to meet the staffing requirements of Central Engineering.

Establish an effective Internal Transfer process. Means ?

Develop, implement and monitor consistent administrative systems and metrics for the C.E. Staffing and Placement Organization.

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6. Develop and maintain an effective Employee Information System.

Personnel Information System:

Too much

Conduct C.E. needs analysis
Scope out system specifications
Develop maximum utilization of System 1022
Augment Corporate programs with compatible Engineering programs.
Continue and expand use of Personnel Activity Reports.

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Personnel Training program for DEC personnel department.

Individual development plans for OOD members.

Corporate O.D. Thrust: Consulting group; Functional O.D. Mgrs.; AJ Fitz.

9. Provide a competent Personnel Department that is capable of supporting the Engineering group.

Be fully staffed.

Develop and review with management site department plans for Hudson and Spitbrook Rd.

Department management:

What are we going to do for ourselves?

How are we going to review goals and objectives?

What is our management process?

Consulting skills training to C.E. professional Personnel staff.

MS045

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Department Goals/Objectives				
1. Complete FY'80 Objectives development	Personnel Managers Operating Managers	Q1	1	
2. Review Department/Personnel Objective with Portner, Bell and Davis.	Meyer, Davis, Bell, Portner	Q1	1	
3. Establish a Quarterly Review process for: 1. Individuals 2. Interdependent objectives	Meyer	Quarterly	2	
4. Participate in OOD and Corp. Personnel Program reviews	OOD: Meyer, Fincke, LaValle Pers: To be defined (?)	To be defined To be defined	3 3	
5. Develop FY '81 Objectives	Meyer and Direct Reports	Q4	1	
Department Management/Administration				
1. Direct Report interaction	Meyer	Monthly		
a. Bi-monthly staff meeting	Meyer/Staff		2	
b. Monthly Rap (catch-up/consult)	Meyer/Individual	Monthly	3	
c. Individual Planning - Present job - Future	Meyer/Individual	Semi-annually	1	
d. Quarterly WOODS	Staff	Quarterly		

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Department Mgmt./Admin. - continued				
2. Internal department communication and sensing	Meyer/All department employees			
a. Develop plan for FY'80	Meyer/Staff	Q2	2	
b. Implement	Meyer	Q2	2	
c. Evaluate	Meyer/Staff	Q3/4	2	
3. Budget Administration (goal±10%)				
a. Quarterly review of budget status	Meyer/Chiafrey	Quarterly	3	
b. Resolve FY'80 budget issues				
- Mass Storage	Meyer	Q1	3	
- Merrimack	Kelleher	Q1	2	
- Employment	LaValle	Q1	1	
c. Develop FY'81 budget	Meyer/Staff	Q4	3/2	
4. Longer Range Planning				
a. Participate in OOD and Corp. Personnel discussions which will help me develop some ideas	Meyer	on going	3	
b. Topic at future WOODS	Meyer/Staff	Q3(?)	3	
5. Insure there are individual development plans for all dept. employees	Meyer/Staff	Q3	1	

DEPARTMENT ENGINEERING PERSONNEL ADMINISTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Dept. Mgmt./Admin. continued				
6. Staff Personnel Manager openings in Storage Systems, Medium Syst. and Large Systems	Meyer, LaValle and responsible OOD member	Q2	1	
FY'80 Program Focus				
1. Support HRP program development and implementation	Meyer/Fincke/Bell/Portner	on going	1	
2. Support College Relations Recruiting program development and implementation	Meyer/LaValle/Goring	on going	1	
3. Work on the "1985" Personnel Plan	Shel Davis Staff	on going (?)	3	
4. EEO				
- Continued implementation of M/F workshops	Meyer	on going	3	
- Develop plan for greater focus in OOD on EEO issues	Meyer/Weathers	Q3	2	
5. Test the concept of Mini-Seminars	Meyer/Jenks/Hiss/OOD	Q3	2	
6. Support the development of a plan for an Employee Assimilation program	Meyer/Hiss	Q4	3/2	

DEPARTMENT ENGINEERING PERSONNEL ADMINSTRATION

John Meyer

Goals & Objectives	Who	Expected Completion Date	Priority	Results
Miscellaneous				
1. Work on Mfg/Eng. Committee with John Holman	Meyer/Holman	on going	3	
2. Participate on Personnel Policy Committee	Meyer	on going	3	
3. Get out to the various Engineering locations more	Meyer	on going	3	
Personal Objectives				
1. Figure out what I want to do in the next 2-3 year time frame	Meyer/Davis/Portner	Q2	2	
2. Get a broader view of DEC not just Engineering	?	Q4	3	
3. Get away from here for 2 whole weeks	Meyer	Q4	1	
4. I want to visit Europe				

To be developed

GOALS

SOFTWARE ENGINEERING AND

TECHNICAL DIRECTOR

PERSONNEL

JA SEPT. 1979
REVISED
9/25/79

GOAL: TO PROVIDE LEADERSHIP AND PLANS FOR THE GROUP MOVES TO SPIT BROOK ROAD THAT WILL MINIMIZE DISRUPTION TO WORK AND FAMILY LIFE FOR AFFECTED EMPLOYEES RESULTING IN A HIGH DEGREE OF EMPLOYEE SATISFACTION AND A TERMINATION RATE NOT HIGHER THAN ORGANIZATION AVERAGE.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. INVITE PARTICIPATION OF EMPLOYEES ON ISSUES RELATING TO SBR FACILITY MOVE.	VM	Q1(80)	NONE	
2. FORMULATE MOVE POLICIES CONSISTENT WITH EMPLOYEE NEEDS, BUSINESS OBJECTIVES.	VM	Q1(80)	DONNELLY MEYER F & A KURTZ ALBRIGHT	
3. ADMINISTER POLICY CONSISTENT WITH GOAL.	VM JK		MEYER	COMPLAINTS, TERMINATIONS, TRANSFERS OUT.
4. PROVIDE A CONTINUITY OF QUALITY PERSONNEL SERVICE DURING TRANSITION OF EMPLOYEES TO SBR.	VM	Q1 and Q2(81)	JK D. MACDONOUGH RANDI LOVE SOFTWARE MGMT. A. LAVALLE	

GOAL: TO IMPLEMENT PRIORITY MODULES OF HUMAN RESOURCE PLANNING PROGRAM; INCREASE MANAGEMENT FOCUS AND HELP UNDERSTAND FUTURE STAFFING AND EMPLOYEE DEVELOPMENT NEEDS.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. BEGIN (1) LEVEL DOWN DEVELOPMENT REVIEWS:				
FOR SOFTWARE	JK	Q2	GROUP (FINCKE) & CORP. (LEBLEU)	
FOR TECH. DIRECTOR	JK	Q3	HRP	
GROUP LEVEL SOFTWARE	ALL	Q3		
2. IMPLEMENT MANPOWER PLANNING PROGRAM.	JK	ONGOING	GROUP/OOD	

GOAL: TO WORK WITH CENTRAL ENGINEERING PERSONNEL GROUP IN THE DESIGN AND IMPLEMENTATION OF IMPROVED PROGRAMS FOR ORIENTATION AND ASSIMILATION OF NEW EMPLOYEES IN THE ORGANIZATION, REDUCE CULTURE SHOCK; INCREASE PRODUCTIVITY, AND UNDERSTANDING OF ROLE AND JOB FUNCTION.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. TO CONTINUE MEETING OF NEW HIRES AND GROUP MANAGERS.	DEPT. (ALL)	ONGOING	GROUP MANAGERS	
2. TO COLLABORATE AND CONTRIBUTE IN DESIGN OF INTEGRATED PROGRAMS FOR ORIENTATION AND ASSIMILATION OF EMPLOYEES.	DEPT. (ALL)	?	GROUP HRP	
3. TO PROVIDE CONSULTING SERVICES AS REQUIRED FOR SPECIAL PROGRAMS TO MEET ORGANIZATION NEEDS.	DEPT.	ONGOING	GROUP HRP (?)	REDUCED TURNOVE OF UNDER 2 YEAR

GOAL: TO CONTINUE AND EXPAND THE PERSONNEL TRAINING PROGRAM FOR SUPERVISORS; IMPROVE THE ABILITY OF THE SUPERVISOR TO MANAGE PEOPLE ISSUES.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. CONTINUE MODULE ON DISCIPLINE AND DOCUMENTATION.	VIV, MARY	Q3		
2. PROVIDE MODULE(S) ON: 1. COMPENSATION 2. EEO/AA 3. INTERVIEWING SKILLS	" "	Q4	GROUP/CORP. STAFF	

GOAL: TO CONTINUE TO BUILD A DEPARTMENT OF SKILLED PERSONNEL PROFESSIONALS WHICH IS CAPABLE OF TRANSFERRING THOSE SKILLS TO LINE MANAGEMENT; WHICH HELPS TO PRESERVE THOSE VALUES WE WANT TO PRESERVE AND WHICH SENSES THE NEED FOR AND IS A CONDUIT OF POSITIVE CHANGE IN INDIVIDUALS AND ORGANIZATIONS.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. TO HAVE MEANINGFUL TRAINING DEVELOPMENT PLANS FOR EACH EMPLOYEE.	JK	Q2		HIGHER MORALE
2. TO BE FULLY STAFFED 1. VM REPLACEMENT 2. TD 3. MK 4. PROVIDE STAFFING AND ORG. PLAN FOR SBR PERSONNEL	JK JK/VM	NOV. 79 DEC. 79		Y/N
3. TO EMPHASIZE SUPERVISORY TRAINING AS PRIORITY GOAL FOR GROUP.	ALL/DEPT.	ONGOING	MEYER BJ SF	
4. TO RECRUIT SKILLED PERSONNEL STAFF FOR SPITBROOK SITE.	VM JK	Q1(81)	BUDGET	Y/N
5. TO DEVELOP NETWORKS AND REPORTS WHICH HELP SENSE ORGANIZATION STATE.	ALL	Q4		

GOAL: TO ESTABLISH A LEADERSHIP ROLE IN THE ORGANIZATION(S) IN THE DOMAIN OF EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION RESULTING IN MINORITIES AND WOMEN IN MORE VISIBLE AND HIGH IMPACT ROLES.

OPERATING OBJECTIVE	PRIME RESPONSIBILITY	COMPLETION TARGET	INTERDEPENDENCIES	MEASUREMENT
1. REVIEW ORG. EEO/AA GOALS WITH BJ AND FULLER STAFFS.	JK	Q1	S & P	GOALS MET
2. FEMALE AWARENESS TRAINING FOR BJ AND FULLER STAFFS.	JK	Q2	BJ, SAM, MEYER	Y/N
3. ESTABLISH MANAGERIAL ACCOUNTABILITY FOR GOALS.	ALL	Q2	BJ, SAM	IMPROVED SALARY REVIEWS FOR SUPER., MGRS.
4. FILL NEXT OPENING ON BJ STAFF WITH FEMALE.	JK	?	BJ	Y/N
5. INCLUDE EEO/AA MODULE IN SUPERVISORY TRAINING.	ALL	Q4	MAYBE EEO DEPT.	Y/N

FY'80 GOALS

GOAL: I.

DIRECTLY CONTRIBUTE TO ORGANIZATIONAL DEVELOPMENT STRUCTURE AND ITS STRATEGY FOR THE FOLLOWING:

& OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. By continuing the integration of key groups into another's organization i.e., formally identify Steil's and Glorioso's staff into respective engineering development groups.	Mike Donnelly & Cathy Klinck	Line Mgmt.	On-going	High	
B. Terminals: Have organization plan development and communicate integration of Printer & Video.	Mike Donnelly	Clayton, Halio, Williams, Klinck	Q2	High	
C. Semi-Conductor Contributor to define the charters, relationships and interfaces and processes needed for future successes.	Mike Donnelly	Key Mgrs., Finn, Klinck	Q4	Medium	
1. Hold series of exploratory meetings using outside consultant incorporating LSI, Micro, & Microvax.	Mike Donnelly	Jenks	Q1 & Q2	High	

GOAL: I. (Continued)

ORGANIZATIONAL DEVELOPMENT STRUCTURE

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
D. R&D Group - Hold series of group meetings for the purpose of re-focusing, rechartering, and providing a more definite research oriented group.	Mike Donnelly	Ulf Fagerquist, Jim Bell & Group's Mgmt.	Q4	High	

GOAL: II.

THE HUDSON MOVE PROVIDES AN IDEAL OPPORTUNITY TO IMPLEMENT CORPORATE PERSONNEL AND EMPLOYEE RELATIONS GOALS.

& OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR ORGANIZATION	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Policy Development: 1. Consistency with other engineering moves. 2. Consistent administrative procedures. 3. Minimize the burdens on employees.	Mike Donnelly & Cathy Klinck	C.E. Personnel	On-going	High	
B. Communications: 1. Maximize employee participation in process through individual contributor committee, secretaries meeting.	Cathy Klinck	Line Mgmt. & Donnelly	Q1	High	
2. Ensure upward and downward communication within organizations that are moving.	Line Mgmt.	Mike Donnelly & Cathy Klinck	On-going	High	
3. Establish newsletter, bulletin boards, group meetings to communcate information about the move.	Cathy Klinck	Donnelly, Line Mgmt., Facility Planning	Q2	Medium	
C. Employee Relations: 1. Motivate managers to understand their importance and responsibility	Mike Donnelly & Cathy Klinck	Line Mgmt.	On-going	Medium	

FY'80 GOALS

GOAL:

HUDSON MOVE (Continued)

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
C. Employee Relations: (Continued)					
2. Move the maximum number of employees with the minimum amount of disruption.	Line Mgmt., Donnelly	All Line Mgmt.	On-going	Low	
3. Individuals who will not go.	Cathy Klinck	Line Mgmt.		Low	
a. Employment role is transfer process.	Cathy Klinck	John DiPietro	On-going	Low	

FY'80 GOALS

GOAL: III.

CONTINUE THE IMPROVEMENT OF THE HUMAN RESOURCE PROCESS WITH CSD

OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN THIS DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Improve content and purpose of the Human Resource Spring Woods.	Mike Donnelly	Klinck, Fincke, & Line Mgmt.	Q2 & Q3	High	
B. Improve quality content of salary reviews.	Mike Donnelly, Cathy Klinck	Line Mgmt.	Q1	Medium	
C. Reinforce performance review process in Low End.	Mike Donnelly & Cathy Klinck	Line Mgmt. and Joey Hiss	Q2	High	
D. Establish quarterly review process for staff's direct reports and their direct reports.	Mike Donnelly	Klinck, Fincke, Line Mgmt.	Q3	Medium	

FY'80 GOALS

GOAL: IV.

HELP MANAGERS UNDERSTAND AND EXECUTE THEIR RESPONSIBILITY AS MANAGERS, ESPECIALLY WITH RESPECT TO EMPLOYEE RELATIONS

5 OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Local control and responsibility.					
1. Salary administration.	Cathy Klinck	Donnelly, Line Mgmt.	Q1	Medium	
2. Requisition accountability.	Cathy Klinck	Donnelly, Line Mgmt.	Q1	Medium	
B. Provide forums and information workshops around:					
1. Policy & procedures revision as they come out.	Mike Donnelly & Cathy Klinck	-	On-going	Low	
2. Announcement and communication from Corporate Personnel. i.e., wage guidelines and their relationship to DEC.	Mike Donnelly & Cathy Klinck	Don Ames	Q2	Medium	
C. Do need assessment in CSD staff as to how you evaluate a manager, especially with respect to employee relations.	Mike Donnelly	Klinck, Fincke, & CSD Staff		Medium	
1. Present to staff and design workshop.	Mike Donnelly	Klinck, Fincke, Jenks	Q2	Medium	
2. Hold workshop and	Mike Donnelly	Jenks	Q3	Medium	

1. ESTABLISH A HUMAN RESOURCE PLANNING AND DEVELOPMENT PROGRAM WITHIN THE GROUPS.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
ESTABLISH A HUMAN RESOURCE PLANNING AND DEVELOPMENT PROGRAM WITHIN THE GROUPS.					
A. PARTICIPATE IN THE DESIGN OF A HUMAN RESOURCES PLANNING/ FORECASTING SYSTEM;	ALL	GUY FINCKE, PERSONNEL MGRS.	Q3, 1980	HIGH	PROGRAM TO BE IMPLEMENTED AT BUDGET PASS
B. PARTICIPATE IN THE DESIGN AND IMPLEMENTATION OF AN OOD HUMAN RESOURCE REVIEW/ DEVELOPMENT PLANNING PROGRAM.	ALL	"	Q4, 1980	HIGH	TO BEGIN A TOTA DEVELOPMENT PLANNING PROGRA WITHIN CENTRAL ENGINEERING

2. PROVIDE AN ENVIRONMENT WHEREBY LINE MANAGERS AND SUPERVISORS DEVELOP AN INCREASING OWNERSHIP FOR EMPLOYEE RELATIONS.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
PROVIDE AN ENVIRONMENT WHEREBY LINE MANAGERS AND SUPERVISORS DEVELOP AN INCREASING OWNERSHIP FOR EMPLOYEE RELATIONS.					
A. CONTINUE PARTICIPATION IN THE DEVELOPMENT OF A SUPERVISORS POLICIES AND PROCEDURES TRAINING PROGRAM.	CHRIS WINCHESTER, WALTER LEFLORE	MID-RANGE PERSONNEL AND SOFTWARE PERSONNEL	Q3, 1980	MEDIUM	CONTINUED DEVELOPMENT O SUPERVISORY TRAINING MODU
B. INSURE THAT ADMINISTRATIVE SYSTEMS AND PROCEDURES ARE DESIGNED IN SUCH A WAY THAT LOCAL SUPERVISORY CONTROL IS FOSTERED.	BILL KELLY	DON AMES AND PERSONNEL MANAGERS	Q4, 1980	MEDIUM	EFFECTIVE PERSONNEL SYS REPORTS

3. CONTINUE THE EXPANSION OF A MANAGEMENT/ EMPLOYEE COMMUNICATIONS PROGRAM.

GOALS AND OBJECTIVES

DEPARTMENT: TECHNICAL OPERATIONS/FINANCE PERSONNEL

GOALS AND OBJECTIVES: OPERATING	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
CONTINUE THE EXPANSION OF A MANAGEMENT/EMPLOYEE COMMUNICATIONS PROGRAM:					
A. INSURE FORMAL AND INFORMAL SENSING TECHNIQUES ARE IN PLACE WITHIN THE GROUPS (WORKING WITH TEWKSBURY IN DESIGNING A SELF-ADMINISTERED FORMAL SUPERVISORY SENSING SYSTEM);	WALTER LEFLORE	TEWKSBURY PERSONNEL	UNKNOWN	HIGH	THE ESTABLISHMENT OF AN EFFECTIVE VERTICAL SENSI SYSTEM WITHIN EACH ORGANIZATION.
B. IMPROVE INFORMATION FLOW WITHIN GROUPS. (JOHN HOLMAN ATTENDING STAFF MEETINGS WITHIN AND ACROSS THE ORGANIZATIONS. JOHN'S DIRECT REPORTS IMPROVING THE VISIBILITY DOWNWARD WITHIN THEIR OWN ORGANIZATIONS.	ALL	LINE MANAGEMENT	ON-GOING	MEDIUM	MORE EFFECTIVE COMMUNICATIONS UP AND DOWN WITH THE ORGANIZATION

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INTEROFFICE MEMORANDUM

TO: John Holman

DATE: September 17, 1979
FROM: Bill Kelly Bill
DEPT: Personnel
EXT: 223-3962
LOC/MAIL STOP: ML3-6/E95

cc: Paul Bennett, Walter LeFlore, John Meyer, Chris Winchester

SUBJECT: KEY PROJECT REPORT FOR FY '80

PROJECT NAME	RESPONSIBLE PERSON	START DATE	ESTIMATE TO COMPLETE	STATUS, ISSUES, ETC.
EEO Planning	All Personnel	Q4, '79	Q1, '80	Completed
EEO Quarterly Review	All Personnel	Q2, '80	on-going	Process to be defined
Monthly Salary Reviews	All Personnel	monthly	on-going	Revised tickler system to the line by April '80
Engineering Exception Planning	All Personnel	Sept. '79	Oct. '79	Major communications effort needed
WC 4 Salary Planning	All Personnel	Jan. '80	March '80	To be defined
WC 2 Salary Planning	All Personnel	April '80	June '80	To be defined (probable consolidation of WC 2/WC 4 sal. planning during FY '80
Personnel Support for Tech. Ops./ Finance	Bill Kelly	Sept. '79	Oct. '79	Reorganization of Personnel Support
Human Resource Planning & Development	Bill Kelly & individual Reps	Q1, '80 (for 2 programs)	Q3, '80 & the end of Q4,'80	Program is in the development cycle
Supervisory Training Program Development	Bill Kelly & individual Reps	FY '79	Q4, '80	Two additional training modules to be defined

GOALS AND OBJECTIVES

QUARTER

DEPARTMENT

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
INCREASED EMPHASIS ON A COMMUNICATION EFFORT					
O Employee Handbook	Dick/Cammy	Facility Staff	Q2	H	Provide new employees with a handbook containi information on this facility, its organization company history and avai able employee services.
O Modify and enhance Orientation program	Dick/Cammy	Joey Hiss	Q3 & Q4	M	Evaluation and analysis of current process and make recommendation.
O Sequential Training Modules, i.e. Interviewing Skills, EEO, Discipline	Joe	D&MS Staff plus all viable resources as needed	Q3	H	Implement Training programs to satisfy a need for new supervisors and managers.
O Employee Assistance Program - E.A.P.	A^2/Cammy	MK/NI/AC as needed	Q4	L	To provide Tewksbury em loyees with a referral service to enable them deal with problems inte fering with Job Perform.
O Group Meetings Vehicles: Tapes, Breakfast sessions, buffet lunch	Rodger/Dick	Bill Demmer	Q2	H	Increase employee aware ness of DEC Products an Strategies and ensure communication and intac groups or cost centers.
O Communicate Technical courses/catalogs on-site	Rodger	Judy Jurgens/ Bedford/library	Q2	M	Increase ease by which people can learn avail- ability of courses at

GOALS AND OBJECTIVES

DEPARTMENT

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
O Programs Medical - CPR, Breast checks Lunch at the Movies	Cammy/Rodger/Dick	Cross-facility community-local professionals everywhere	Q2	M	Outline of Medical, Educational and Entertain programs to be offered TW FY80. Provide entertainment during winter months, to educate employees about preventati medicine and to stimula thinking on appropriate topics.
2. SUPPORT THE EFFORT TO ESTABLISH A COLLABORATIVE AND SUPPORTIVE ENVIRONMENT ACROSS TEWKSBURY AND CENTRAL ENGINEERING					
O Establish an effective Internal Transfer process	Dick/Joe	Rep's forum and employment staff	Q3	M	Design a formal procedu for internal transfers facilitate process, les employee frustration an clarify Personnel's rol
O Support the project/ manpower flow between groups Adv. Dev. - Development Hydra - Software	A^2	D&MS Staff	Q4	H	Decrease turnover
O Participate in formulating policies across Engineering and support Spitbrook move	A^2	Meyer's Staff	Q2	H	To transfer move information and experiences to other Reps in order improve move process in Central Engineering.
O Participate in HRP TW	Rodger	Guy and D&MS Staff	FY 81	H	As defined

GOALS AND OBJECTIVES

GOA

DEPARTMENT

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
O Participate in the redesign of the Engineering Review Board and ensure consistency across DEC and Engineering	Rodger	Engineering Mgmt. and Personnel Reps	Q3	M	Upgrade process
3. ESTABLISH AN ON-GOING SENSING PROGRAM TO TEST THE ENVIRONMENT AND TO GIVE DATA TO MANAGEMENT a) Ongoing diagnosis b) Work with Mgmt. to analyze and interpret data and plan action items	A^2	Corporate Resources (Guy/Joey/Outside Consultant)	Q3	H	Develop an on-going sensing technique that is easily maintained and is of value to Mgrs. in analyzing morale and environment.
4. QUARTERLY D&MS PERSONNEL STAFF MEETINGS TO REVIEW GOAL STATUS, FACILITY METRICS, COMP. STATUS AND EEO STATUS	Joe	D&MS Personnel Staff	Q2	H	Keep on schedule
5. DEPARTMENT MANAGEMENT WHAT ARE WE GOING TO DO FOR OURSELVES DEVELOPMENT PLANS	All		Q2	H	Better Department Management

DEPARTMENT L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Manage the Staffing and Placement function across Central Engineering while integrating into Corporate Programs and Goals					
A. Develop closer ties within C.E. S & P by starting with a Team-Building Session	Armand	Jan Eddy Sr. C.E. S & P Staff Members	10/79	High	Better communication, coordination and collaboration
B. Define Accountabilities and Responsibilities of Site and Staff S & P Functions	Armand	Sr. C.E. S & P Staff Members Site S & P Mgrs. and/or Pers. Mgrs.	1/80	Medium	Clarify roles leading to more effective S & P effort.
C. Develop, implement and monitor consistent administrative systems and metrics for the C.E. S & P Function	Armand	S & P Staff Rossi & Staff	3/80	High	More efficiently run S & P function
D. Contribute to Corporate S & P Goals and Programs	Armand	John Meyer George Rossi Group S & P Mgrs.	Ongoing	High	A more effective, collaborative S & P function
E. Contribute to C.E. Personnel Goals and Programs	Armand	John Meyer & Staff C.E. S & P Staff	Ongoing	High	A more effective, collaborative C.E. Personnel function

DEPARTMENT CE — ENGINEERING STAFFING & PLACEMENT FY'80 — 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Continue the development of the College Recruiting and College Relations Programs that support present and future staffing requirements					
A. College Recruiting - Develop, implement and monitor systems and processes to provide C.E. the opportunity to hire 200 new grads in FY'80	Jane	Deanna S & P Reps Personnel Dept. Line Organization Corp. College Rels	6/80	High	Complete 85% or more of objective
B. College Relations					
- Develop plan focusing initially on 9 colleges	Jane	Deanna Armand	12/79	High	Approved by OOD
- Implement plan	Jane	Deanna Pers. Dept. Line Organization Corp. College Rels	3/80	High	Increased hires of top students

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
II. Develop and implement proactive Affirmative Action programs aimed at increasing our representation of minorities, women and handicapped at all levels in the C.E. organization					
A. Hire a person to focus on this area for C.E.	Armand	John Meyer Pers. Mgrs. AA Function	1/80	High	Person on board
B. Develop operating plan	New Person	Armand S & P Reps Personnel Dept. Line Management AA Function	4/80	High	Approval from Personnel, Line Management, AA Dept
C. Implement plan	New Person	Armand S & P Reps Personnel Dept. Line Management AA Function	6/80	High	Increased representation of minorities, women and handicapped at all level in C.E.

DEPARTMENT CE ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
V. Participate in Human Resource Plans and Programs as they develop					
A. Be a contributing member of at least one of the task forces	Armand	Guy Task Force	6/80	High	As stated in HRP & D Goals
B. Provide additional help as needed	Identified S & P Rep (s)	Armand Guy Task Force	?	?	As stated in HRP & D Goals

DEPARTMENT C L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
V. Develop and implement programs to educate all users to their role in the S & P process					
A. Run a minimum of 1 Interviewing Skills Workshop by Site (3 in the Mill)	S & P Reps	Armand C.E. Personnel Dept.	6/80	High	- Increased skills of interviewers - Better quality hires
B. See Internal transfer Goals and Objectives (VI)					

DEPARTMENT C... ENGINEERING STAFFING & PLACEMENT FY'80 9/26/7

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Improve internal transfer process for employees within C.E. and DEC					
A. Develop education module for hiring Mgrs/Supvs and employees as to the systems and processes	Joe Hart	C.E. S & P C.E. Personnel Phil Sardella		Medium	Approval of Meyer Staff and Group S & P Staff
B. Implement module separately or as part of other programs (i.e. Supv.Training, employee assimilation)	Joe Hart	C.E. S & P C.E. Personnel Phil Sardella		Medium	All employees (not just old timers) feel the same opportunity for growth in DEC

DEPARTMENT CE L ENGINEERING STAFFING & PLACEMENT FY'80 9/26/79

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
II. Participate, as part of a task force, in the development and implementation of an employee assimilation program					
A. Provide S & P Rep(s) as needed in the task force	Chris Larkin Jane Goring	Joey Hiss Armand	?	Medium	New employees make a smoother entry into DEC

9/24

COMPENSATION/BENEFITS/ADMINISTRATION GOALS

I. Create and maintain a management awareness of Compensation/Benefits programs:

- How they are developed.
- How they are utilized within their respective organization.
- How effective they are.
- How to bring about program changes.

II. Develop and maintain an effective management information system encompassing Compensation/Benefits and general Personnel information.

III. Create and maintain an effective benefit communication network designed to aid in program development and program implementation.

IV. Develop and maintain a system for bringing about the proper balance between external market salaries and internal job relationships.

V. Provide a smooth working administrative organization for carrying out various Compensation/Benefits programs and provide the technical and management direction to ensure programs are continuously updated.

EMPLOYEE/BENEFITS/ADMINISTRATION

Sept. 78

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
I. Compensation/Benefits Training					
A. Conduct and/or have conducted training at various levels.	Don	Algar and Personnel Mgrs.	On-going.	High	Better understandir on the part of Man-agement and Personn
B. Conduct equal pay audits.	Don/Lynne	Personnel	On-going.	Medium	Ensurance of equal pay treatment.
II. Personnel Information System					
A. Conduct Central Engineering needs analysis. Resources needed.	Don/Theresa	Management/ Personnel	End FY 80.	Medium	Identified needs.
B. Develop maximum utilization of System 1022.	Don/Lynne	Management/ Personnel	End Q3.	High	Regular use of 102
C. Scope out system specifications.	Don/Theresa	Management/ Personnel	------	Medium	------
D. Augment Corporate programs with compatible Engineering programs.	Don/Theresa	Management/ Personnel	------	Medium	------
E. Reports (Personnel Indexes).	Lynne	Management/ Personnel	On-going.	High	Regular meaningful reports.

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
II. Benefits Communications					
A. Design communications network to aid in program development and implementation.	Don/Theresa	Personnel	On-going.	Low/Medium	Well communicated and understood Benefits programs. A better understandi of how programs ar developed.
IV.					
A. Engineering job survey.	Don	Personnel	On-going.	3 visits per quarter	A clearer understa ing of survey data
1. Establish a company visit program with 12-14 companies to talk about engineering and engineering related jobs.					
B. Scope management postions.	Don	Personnel	~~September~~ October 79	High	Recommendations fo proper leveling.
1. Continuation of Phase II of slotting exercise.					
C. Job description review.	Algar	Personnel/ Management	On-going.	High	Issuance of useful descriptions.
1. Review and/or write job descriptions within Engineering job families.					

...LS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
. Consultant/Senior Consultant 1. Job descriptions. 2. "Review Board". 3. Qualifications.	Don	Personnel/ Management	October 79.	~~High~~ to/Medium	Better understandin of the jobs; the process for classification and the approval process.
. Special study of product/program management job family. 1. Develop descriptions. 2. Conduct survey. 3. Recommend leveling.	Don/Algar	Personnel/ Management	December 79.	Tied to how soon new manager gets organization squared away.	New job descriptio proper levels; reclassification of incumbents.
. Stock grant program. 1. Allocation.	Don/Lynne	Corporate Comp./ Personnel	03.	Medium	Smooth run and meaningful program.

COMPENSATION, BENEFITS ADMINISTRATION

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
A. Exception spending. 1. Planning. 2. Implementation. 3. Program monitoring	Don	Personnel	October 79.	High	Generally improved salary/market position of Engineering salaries.
B. Exempt pay program analysis 1. Program monitoring 2. Program effectiveness. 3. Program modifications. 4. Program implementation.	Don/Algar	Personnel/ Corporate Comp.	December 79 - March 80.	High	1980-81 pay program which satisfies Compensation needs of Engineering Management and employe
C. Non-Exempt pay program analysis 1. Program monitoring 2. Program effectiveness. 3. Program modifications. 4. Program implementation.	Don/Algar	Personnel/ Corporate Comp.	March 80 - June 80	High	1980-81 pay program which satisfies Compensation needs of Engineering Management and employe

COMPENSATION/BENEFITS/ADMINISTRATION

GOALS & OBJECTIVES	WHO HAS PRIME RESPONSIBILITY IN YOUR DEPARTMENT	WHO DO YOU NEED SUPPORT FROM:	EXPECTED COMPLETION DATE	PRIORITY	RESULTS
. Technician study. 1. Job descriptions/ evaluations/struc- ture.	Algar	Personnel	April 80.	High	Clear understanding of what needs to be done in the tech- cian area to ensure continued eompeti- tivesness and inter nal equity.

HUMAN RESOURCE PLANNING AND DEVELOPMENT DEPARTMENT LONG RANGE GOALS

1. Provide program management in Human Resource Planning and Development to enable Central Engineering to understand and meet its technical and managerial staffing needs 3-5 years out. In so doing, help the organization accomplish the Product Strategy and help individual employees satisfy their career needs.

2. Provide organization development to line managers, technical contributors, and personnel staff as they work to achieve business and "people" goals. Provide a strategic focus on key areas such as organization climate, group interfaces, management systems and engineering processes.

3. Coordinate our Department efforts with appropriate Corporate Personnel resources. In addition, collaborate with other DEC Personnel Departments.

GF:amt
9/25/79

HUMAN RESOURCES PLANNING AND DEVELOPMENT DEPARTMENT FY'80 OBJECTIVES

Objectives	Completion Date	P.R.	Support	Priority	Results
In support of Goal I (H.R.P. & D.)					
1. H.R.P. & D. Program Plan (3-5 yrs.):		Guy	John Meyer Joey Hiss Jim Walker Personnel Mgrs. Larry Portner	H	-Provide a context in which to understand why we are doing a certain activity when we do it. -Larry and O.O.D. are commited to the effort and understand their roles for FY'80. -Provide a means for assessing where we are at any given point in time.
a. Model/philosophy statement.	10/31/79				
b. Overall goals (3-5 yrs. out).	10/31/79				
c. Annual objectives for each year.	10/31/79				
d. Activities for each year.	10/31/79				
e. Staffing/organization plan for H.R.P. & D. function.	1/31/80				
2. Individual development plans for O.O.D. members and their direct reports.	6/30/80	Guy	Larry Portner John Meyer Ron LeBleu Task Group Personnel Mgrs. Gordon Bell Liz Aberdale	H	-A documented awareness of their current strengths/ development needs, aspirations and what is needed to get there. -A feeling that the Corp. is working to help them with their careers. -A heightened awareness of the complexity and value of career development planning. -An increased commitment to this area in FY'81 including a full-time perso in H.R.P.&D. Department. -Consistent processes being used by C .E. and at the Corporate level.

Objectives	Completion Date	P.R.	Support	Priority	Results
3. H.R.P. process to understand C.E. technical and managerial needs 3-5 yrs. out:		Guy	Larry Portner John Meyer Task group Jim Walker Personnel Mgrs. Project Mgrs. O.O.D.	H	-A better understanding of the H.R. needs/assumptions/ issues related to the Product Strategy and the major H.R. Programs that need to be started in FY'81. to support it. -A more accurate estimate of our H.R. needs in FY'81. -H.R.P. & D. budgeting for FY'81 by O.O.D. and by the H.R.P. & D. Department.
a. Product Strategy and supporting technology plans.	1/31/80				
b. FY'81 planning/budgeting process.	6/30/80				
4. Assimilation program for new employees:		Joey	Employment Dept. Personnel Mgrs/ Reps. Guy Fincke John Meyer External Consultant. Line Mgrs. Other DEC Resources.	M	-New employees make a smoother entry into DEC. -Personnel staff develop program skills.
a. Assemble task group.	12/31/79				
b. Design initial program.	3/1/80				
c. Implement first part.	4/30/80				
d. Evaluate	6/30/80				
In support of Goal II (O.D.)					
5. O.D. consulting to O.O.D.	6/30/80	Guy (support role)	John Meyer (P.M.) Steve Jenks Joey Hiss Personnel Mgrs.	M	-A functioning C.E. O.D. Strategy Group. -O.O.D. is helped in accomplishing some of their goals and/or resolving some key organizational issues. -John Meyer feels supported in his consulting role.

H.R.P. & D. DEPARTMENT FY'80 OBJECTIVES

Objectives	Completion Date	P.R.	Support	Priority	Results
6. Group-focused O.D. consulting (e.g. team-building, charter definition, conflict resolution):		Joey	Guy Fincke John Meyer Personnel Mgrs./ Reps. External Consultants Corporate resources	H	-Personnel Mgrs./Reps. develop their skills in this area. -H.R.P. & D. Department is viewed by personnel and line staff as an effective resource in this area (i.e. can provide direct support or can be a broker for outside resources).
a. Investigate potential projects and develop a plan for remainder of year.	1/1/80				
b. Provide consulting.	6/30/80				
7. Engineering seminars:		Joey (support role)	Steve Jenks (P.M.) John Meyer Guy Fincke Mike Donnelly	H	-Improves management systems/ processes for achieving the Product Strategy.
a. Decision-making.	3/31/80				
b. Interface management.	6/30/80				
8. Tewksbury sensing process.	6/30/80	Joey (support role)	Annette Albright (P.M.) Guy Fincke Wit Raymond	M	-Bill Demmer feels he has a better sense of employee attitudes at Tewksbury. -Sufficient actions are taken to justify the data collection efforts. -Tewksbury is self-sufficient in administering an ongoing sensing process. -This is a prototype process for the rest of C.E.
In support of Goal III (Corporate)					
9. Corporate Internal O.D. consulting Group.	6/30/80	Guy (member)	Al Fitz (P.M.) John Meyer Joey Hiss	M	-"Big ticket" items start to get worked across DEC. -Internal O.D. people help one another. -Al Fitz feels support.

SUPPLEMENTARY LISTS

I. Human Resource Planning and Development Department Objectives dropped since Squam Lake Meeting:

A. Competency profile for O.O.D. level jobs.

B. Consulting skill training for personnel generalists (i.e. no formal workshop training but hopefully informal training will occur via consulting projects).

C. Joey's participation in Corporate Personnel Training Task Group (i.e. need an alternate).

D. M.T.O. Evaluation (i.e. Guy is no longer project manager and plays a minimal support role).

E. Wilkof Study (i.e. Guy only plays a minimal support role).

II. Other potential Human Resource Planning and Development objectives not included in FY'80:

A. Human Resource Planning and Development:

1. Support local (e.g. Software) Human Resource Planning efforts.

2. Career planning/development process for Central Engineering Personnel staff.

3. Career planning help for line staff (e.g. for "displaced" employees).

4. Support supervisory policies/procedures training efforts.

B. O.D.:

1. Support general interface work with other functions (e.g. manufacturing, product lines, customer service).

2. Supporting O.O.D. on several of their goals (e.g. 3, 7, 8, 9, 10, 15, 20).

3. Developing a general sensing/communications strategy for Central Engineering.

4. Developing a strategy for Male/Female awareness training for Central Engineering.

III. Guy Fincke's management objectives for FY'80:

1. Assimilation program for Joey.

2. Annual objectives for Joey and Ann.

3. Quarterly review on objectives for Joey and Ann.

4. Quarterly report to John Meyer on key activities and accomplishments.

5. Individual development plans for Joey and Ann.

6. Annual performance reviews for Joey and Ann.

7. Annual salary reviews for Joey and Ann.

8. Recruit additional staff.

9. More visibility with Gordon, Larry and other O.O.D. members.

GF:amt
9/25/79

Saviers

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INTEROFFICE MEMORANDUM

TO: Larry Portner/Gordon Bell

DATE: 7 April 1980
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 9765
LOC/MAIL STOP: ML3-6/E94

SUBJ: FY'80 OBJECTIVES

Attached are my comments on my FY '80 Objectives. I understand that we will discuss these on April 16th.

ems
attachment

· move to CX.
~~· contingency against RP07~~
· Total bus. plan for Eng + Mfg.

FY80 OBJECTIVES - STORAGE SYSTEMS DEVELOPMENT

~~· Systems eng → (F+R) +~~
· Segmentation of resp. below Saviers-Gutman.

GOAL: leadership...competitive products

- implement Redbook
  - o strategy essentially unchanged
- major programs <=2 quarters late
  - o R80 against this stop. RP07 may overrun, ~~TU78~~ TU77 ~~ok~~ F+R
- 75% overall on schedule
  - o tough goal, longer planning focus is helping
  - o implementing phase review process to help
- removeable media tactics defined - five DECUS participants - ongoing
  - o on target, process was productive
  - o strong systems focus @ low end
  - o tactics have reasonable stability
- IR100 award ~~- apply in FY80~~ ✓
  - o done, RL02
- trade journal articles - 1 per quarter
  - o ok, but still lots of missed opportunity; need to stimulate R80 team, RX04, RP07, TU78
- competitive pricing on new products
  - o ongoing, RM05 looks very good

GOAL: management structure and process...commitments... expectations....results

- new FY80 Beige Book by Jan 1
  - o cancelled, except for revised FY '80 bugets
- better FY81 Redbook, start Q3
  - o underway, on schedule
- clear "functional requirements" - all new products
  - o done, good process, need to improve quality and consistency
- project reviews on six week cycle
  - o ongoing, implemented, quality dramatically improved, Mfg. starting to use effectively
- "programs" defined by end Q2
  - o only one for storage is new architecture, which continues to look good

GOAL: product line and systems groups support

- quarterly status to group VP's and/or staff
  - o not done, in process of getting scheduled now, Andy's 4/11/80
- systems participation in six week reviews by Q3 end
  - o need to have a better process, this one is wrong. software is participating in CX and communications are valuable
- clear systems interfaces by Q3 end
  - o thought that "systems focus" was ok. Now know expectations are divergent. Am writing our view. Our charter says what we mean.

GOAL: technology centers

- joint engineering/manufacturing plan by Q3 end
  - o good program, 1 qtr. slip with overal OOD plan, best process in OOD
- approval in Q4
  - o double, but dependent on OOD & Corporate strategies

GOAL: human resource development

- hire 40 college graduates in FY80
  - o on target, may overhire
- do functional college recruiting
  - o ok, ME hire going exceptionally well
- clear college level "joining up" process by Q4 end
  - o have outline and people thinking about it, but not implemented
- in - systems load test all new products by Q3 end
  - o moderate progress, software folks are helping (RM80). Still need more ownership by Storage Eng. managers. Have a TM78 plan.

GOAL: internal organization

- fill CX opening by Nov 15
  - o complete (Lignos)
- fill floppy/cartridge tape by 1 Jan
  - o complete (Bauer)
- quarterly woods meetings of Storage staff
  - o Q2, Q3 done. Q4 scheduled
- minimize conflict ML/CX,PD/AD,PD/PM
  - o significant progress, "team" is building, issues delegated to subcommittees, issues now legitimate, need closure

GOAL: stable....exciting....environment

- low end tactics by Q2 end
  - o done, ongoing process working with Shanzer, Webber
- >=3 technology dumps per year - ongoing
  - o done, next one May 12, 13
- get into semi mainstream - use gate arrays in a project
  - o CX committed to do one ASAP & follow up with CAD tools
- Adv. Development initiated in CX in Q2
  - o Jack Brown in place and hiring
- help with mechanical CAD
  - o contracted with other groups (terminals, sm. sys.) to provide support
- half of logic engineers learn logic CAD this year
  - o SUDS generally in use in CX, terminals ordered for ML

GOAL: track technologies

- implement planning function - done Q1 increased staff Q3
- build metrics/models - ongoing
- expand forecast model to memory - Q2
  - o complete
- high end model/options by end Q3
  - o complete, presenting to Ulf, Busiek, will schedule Gordon
- meet twice per year with major suppliers
  - o ongoing, meetings ok, need to develop a more formal process to survey non-suppliers, especially outside USA

GOAL: measure....as customers measure....and evolve

- do market research - plan by Q3
- DECUS surveys - ongoing, panel on storage at Chicago

GOAL: Increase market share...field merge

- all products dock merge certified at P.A.
  - o almost hopeless
- continue proposing to DCG - 1 "special" disk in FY80
  - o starting to push R80 looks like we have an excellent opportunity with CDS, also T & E floppy. Need to help them understand the market.

Grant Saviers
October 22, 1979

Updated Comments
April 4, 1980

CHARTER
STORAGE DEVELOPMENT

Storage Development is responsible for developing storage products that support the objectives of the corporation by meeting the needs of the Systems Groups and Product Line organizations.

1. Develop and manage the corporation's technology and product strategy for storage devices.

2. Insure jointly with the Systems Groups that the strategy is consistent with our systems goals and is as competitive as is feasible in the storage marketplace.

3. Implement the strategy by acquiring and/or developing technology, components, devices, drives, attachments, and subsystems. Develop quality products for the System Groups for systems integration and secondarily for Components Marketing if sold as a component.

4. Assist the Systems Groups and Components Marketing in their projects that tightly integrate standard high volume components, devices, or drives into systems or customer applications. Aggressively insure the use of standard products across the broadest range of applications.

5. Develop innovative products and subsystems to well-defined interfaces, interconnects, or software standards that are consistent with corporate architectural standards. The form, fit, and functional definition of subsystems are a joint responsibility with the Systems Groups.

6. Actively assist the corporate move to a Systems focus via joint efforts with the Systems Groups in planning, analysis, and definition of storage functions, technology, and products.

7. Be the primary focal point within the corporation for understanding the storage products, plans, technologies, and capabilities of storage suppliers and systems competitors.

8. Provide the product focussed business management of storage products for the corporation via Product Management.

9. Establish a partnership with Storage Manufacturing that is responsive to the strategy and flexible in meeting the needs of our customers.

10. Strategically manage the relationship with Storage suppliers and lead our efforts to establish licensing, technology, or product exchanges.

Grant Saviers
Sept. 1979

GOALS - STORAGE DEVELOPMENT

(approximate priority order)

1. Develop or acquire leadership or at least competitive storage components, devices, and attachments across the product spectrum as rapidly as possible; these products should primarily match the systems needs of the corporation and secondarily, should be saleable as components. Recognizing that generally IBM has a dominating lead, we should excel first at the low-end and quickly extend this competitive position upwards.

2. Be recognized as leaders by our customers relative to our systems, third party, and selected components competition.

3. Have management structure and process that makes good commitments, explicitly sets the expectations of those groups that are dependent upon us, and then insures that the commitments are met.

4. Establish Product Line and Systems Groups support, so that we are responsive and competitive in providing the products that are needed.

5. Continue to establish joint siting of engineering and manufacturing as technology centers, managing them for outstanding performance, for rapidly advancing process intensive technologies.

6. Have an aggressive human resource development program that focuses on minority and female development and implements the majority of our recruiting at the college graduate level.

7. Emphasize the quality, reliability, and ease of use in the implementation of our products.

8. Have a clear internal organization that is simple and effective at its interfaces.

9. Take prudent risks and create a stable, stimulating, and exciting environment that is fun for "winners" to work in.

10. Track storage technologies and select a hierarchy of winners for the systems that we sell.

11. Measure ourselves as our customers measure us and evolve our metrics as our markets evolve.

12. Increase our market share by encouraging the establishment of broader distribution channels and field merging of storage products at both the subsystems and component levels.

Grant Saviers
Sept. 1979

FY80 OBJECTIVES - STORAGE SYSTEMS DEVELOPMENT

GOAL: leadership...competitive products

- implement Redbook
- major programs <=2 quarters late
- 75% overall on schedule
- removeable media tactics defined by Q2 end

GOAL: recognized leaders by customers

- five DECUS participants - ongoing
- IR100 award - apply in FY80
- trade journal articles - 1 per quarter
- competitive pricing on new products - ongoing

GOAL: management structure and process...commitments... expectations....results

- new FY80 Beige Book by Jan 1
- better FY81 Redbook, start Q3
- clear "functional requirements" - all new products
- project reviews on six week cycle - ongoing
- "programs" defined by end Q2

GOAL: product line and systems groups support

- quarterly status to group VP's and/or staff
- systems participation in six week reviews by Q3 end
- clear systems interfaces by Q3 end

GOAL: technology centers

- joint engineering/manufacturing plan by Q3 end
- approval in Q4

GOAL: human resource development

- hire 40 college graduates in FY80
- do functional college recruiting
- clear college level "joining up" process by Q4 end
- inventory personnel for development programs by Q3 end
- development programs for all managers by Q4 end
- two performance appraisals/year for all exempt levels by end of Q3

GOAL: quality, reliability, ease of use....products

- push Field Service for written strategy by ???
- internal standards for physical customer interfaces - Q3
- systems load test all new products by Q3 end

GOAL: internal organization

- fill CX opening by Nov 15
- fill floppy/cartridge tape by 1 Jan
- quarterly woods meetings of Storage staff
- minimize conflict ML/CX,PD/AD,PD/PM

GOAL: stable....exciting....environment

- low end tactics by Q2 end
- >=3 technology dumps per year - ongoing
- get into semi mainstream - use gate arrays in a project
- Adv. Development initiated in CX in Q2
- help with mechanical CAD
- half of logic engineers learn logic CAD this year

GOAL: track technologies

- implement planning function - done Q1
- build metrics/models - ongoing
- expand forecast model to memory - Q2
- high end model/options by end Q3
- meet twice per year with major suppliers - ongoing

GOAL: measure....as customers measure....and evolve

- do market research - plan by Q3
- DECUS surveys - ongoing

GOAL: Increase market share...field merge

- all products dock merge certified at P.A.
- continue proposing to DCG - 1 "special" disk in FY80

Grant Saviers
October 22, 1979

Grant Saviers

F. INTERDEPENDENT OBJECTIVES - STORAGE X OOD

implement Redbook - Sam & Bill must get interconnects settled and hardware implemented.

removeable media tactics defined by Q2 end - Good progress to date, but will require existing resources through Q2 by Dick, Bill, and Ulf.

clear "functional requirements" - all new products - Dick, Bill, and Ulf should provide customer usage, functional requirements, and the hardware/software alternatives to meet the needs. We need clear models and metrics as targets for technology solutions.

systems participation in six week reviews by Q3 end
clear systems interfaces by Q3 end - We want dedicated, capable, visible, management level representation and interface to foster trust and communication with Dick, Bill, Ulf, and when appropriate BJ and Sam.

human resource development - John, I need a personnel manager! And staff!!!!

p. Field Service for a written strategy by ??? - Si should help.

systems load test all new products by Q3 end - A discipline that should be improved. John should make this process clear.

get into semiconductor mainstream - use gate arrays in a project Jim could do more internal selling. Bill & Ulf should be more missionary when it's time for others to jump in. Dick, our micro development tools should be as good as Intel's.

help with mechanical CAD - Work with John H. to develop an OOD philosophy and strategy.

half of logic engineers learn logic CAD this year - John should make this easier and insure that hardware/software works and can be installed at reasonable cost and effort.

expand forecast model to memory - Probably GIGO applies now. Si should generate a credible systems forecast process and close with Product Lines on the numbers.

Grant Saviers October 22, 1979

Stewart

BDS/7

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! d ! i ! g ! i ! t ! a ! l !
!   !   !   !   !   !   !   !   !
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i n t e r o f f i c e   m e m o r a n d u m

SUBJECT: LATEST ADDITION OF OPERATIONS CHARTER AND GOALS

OCT 2 1979

TO: OOD

DATE: October 2, 1979
FROM: Bruce Stewart
DEPT: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-5432

Attached is the latest edition of the Charter and Goals for Operations. I have included, to the best of my knowledge, all the comments and suggestions which were agreed to at the Jungle.

If you have any further comments or suggestions which you would like to be reviewed, please forward them to me by October 14 as I would like to cast this in concrete after that date.

Thanks.

/ma

OOD	
Larry Portner	ML12-1/T32
Gordon Bell	ML12-1/A51
Dick Clayton	ML12-2/E71
Jim Cudmore	ML1-5/E30
Bill Demmer	TW/D19
Ulf Fagerquist	MR1-2/E78
Sam Fuller	ML3-5/H33
John Holman	ML12-2/T36
Bill Johnson	ML12-3/A62
Mitch Kur	ML12-2/A16
John Meyer	ML12-1/A11
Grant Saviers	ML3-6/E94
Si Lyle	ML12-1/T32

O P E R A T I O N S C H A R T E R

Context:

It has become apparent to the Central Engineering organization that Digital has entered and is moving in a world computing scene characterized by compounding complexity. New technologies, corporate growth, expanding markets, expanding product sets and an increase in inter-group dependencies have all contributed to the complexity.

Central Engineering accepts that complexity in all of the above areas is on the increase, and management techniques and organization structures must evolve to handle this complexity.

The advent of the Central Operations activity as part of OOD along with the PM4 are the latest of the changes to help Central Engineering cope.

Scope:

The primary function of the Central Operations activity will be to define and implement the minimum, but sufficient, set of measurement and planning criteria to allow for the sensitive and sensible management of Central Engineering. The measurement and planning criteria will be arrived at by augmenting rather than replacing existing systems and techniques.

Among the items which Central Operations intends to influence are:

- Planning process and completeness
- Review methods for products, programs and options
- Change control for working documents
- Dependency management
- Budget to performance coordination

In all the above it is Operations role to develop and administer the process, not to do it. The doing is a line management responsibility. In all of Central Operations activities, we will endeavor to build on existing process and minimize bureaucratic overheads.

It is intended that the Operations' activity will bring about behavioral change which will allow each individual to do his or her job better. Success will allow the Corporation to better understand and deal with the development associated problems.

O P E R A T I O N S G O A L S

1. To evolve new systems or processes from existing systems or processes which will facilitate the achievement of the Central Engineering management strategy.

2. To educate managers as to the requirements for plans and planning.

3. To inspect plans for status and viability.

4. To coordinate inter-group activities in such a way as to cause reviews to be held in the event of significant mismatches.

5. To coordinate inter-group plans to ensure completeness and consistency.

6. To install review mechanisms that will allow for problem identification and resolution.

7. To install escalation procedures which will alert Central Engineering management to the need for review.

8. Via the PM4 ensure that dependent parts of the Company are aware of problems in Central Engineering which may impact their performance.

9. To coordinate Operations activities in each group with Central Operations.

10. To administer the management process (planning calendars, budget calendars, Red Book, Yellow Book, etc.

11. To help establish budget to achievement measurement techniques.

/ma

CENTRAL OPERATIONS OBJECTIVES FOR FY80

1. TO HIRE TWO STAFF CAPABLE OF ACTING AS MANAGEMENT SYSTEMS CONSULTANTS BY JANUARY 1980.

2. TO ESTABLISH THE ADMINISTRATIVE STRUCTURE TO HANDLE PLAN REPOSITORY, CHANGE CONTROL, AND REPORTING BACK BY JANUARY 1980. THIS STRUCTURE WILL ALSO PRODUCE A STATUS BOARD/REPORT WHICH WILL ALLOW FOR STATUS CHECKING AT ANY TIME BY MARCH 1980.

3. TO ADMINISTER THE RED BOOK, BEIGE BOOK, YELLOW BOOK, BUSINESS PLANS, AND PRODUCT PLAN SUMMARIES BY MARCH 1980. THIS WILL INCLUDE REGISTRATION, CHANGE CONTROL, AND THE NECESSARY CHECKS AND BALANCES TO ENSURE THE RELATIONSHIP BETWEEN THESE PROCESSES.

4. TO ACT AS AN AUDIT ACTIVITY ON MANAGEMENT PROCESS AND RECOMMEND CHANGE WHERE NECESSARY. ON GOING.

5. TO ENSURE THAT INTELLIGENCE EXISTS WHICH CAN LOOK AT DEPENDENCIES AND PLAN VIABILITY BY JANUARY 1980. IT IS INTENDED THAT THE PEOPLE FROM #1 ABOVE WILL BE CAPABLE OF PERFORMING THIS ACTIVITY. THIS OBJECTIVE WILL LOOK AT ALL PLANS WHICH WE HAVE FOR COMPLETENESS AND SANITY AS WELL AS ENSURING THAT DEPENDENCIES ARE CONTROLLED WHERE NO SYSTEM OR PROGRAM FOCUS EXISTS.

6. WORKING WITH LARRY PORTNER TO ESTABLISH AN ESCULATION MECHANISM BY FEBRUARY 1980.

7. TO TAKE THE AGREED REVIEW PROCEDURE FORWARD AND SET UP A LIST OF PROGRAMS AND FREQUENCIES BY JANUARY 1980.

8. WORKING WITH SI LYLE AND LARRY PORTNER, ESTABLISH A DOCUMENT SET AND APPROVAL PROCEDURE FOR CENTRAL ENGINEERING BY DECEMBER 1979.

9. COMMUNICATE #8 AND SEE IT WORKING IN CENTRAL ENGINEERING BY JUNE 1980.

10. TO ESTABLISH A FUNCTIONAL OPERATIONS ORGANIZATION ACROSS CENTRAL ENGINEERING BY DECEMBER 1979. THE INTENT HERE IS TO FOCUS ON THE MANGEMENT SYSTEMS/PROCESSES ACTIVITIES IN EACH ORGANIZATION AND PROVIDE A DISCUSSION/ACTION FORUM.

11. VIA 10 TO START ELIMINATION OF DUPLICATE ACTIVITIES BY MARCH 1980.

12. WITH MITCH KUR START AN ACTIVITY TO MEASURE PROJECT ACHIEVEMENT VERSUS PROJECT SPEND BY JANUARY 1980. THIS OBJECTIVE INCLUDES EVALUATION OF THE CURRENT FINANCIAL REPORTING MECHANISM WITH AN EYE TOWARD CHANGE WHERE NECESSARY. ACTUALLY REPORTING ON THIS BASIS WILL BE TARGETED FOR FY81.

DBS1/16
10/31/79

13. TO ASSESS THE RESULTS OF THE REVIEW PROCESS WITH GORDON BELL AND LARRY PORTNER AS TO COST VERSUS BENEFIT BY JUNE 1980.

14. TO CONTINUE TO WORK WITH THE LINE UNITS TOWARD COMPLETE MANAGEMENT SYSTEMS IN THEIR INDIVIDUAL AREAS. ONGOING.

Personal Goals

PERSONAL GOAL
CONTENTS

WS102/7 Updated: 7/13/79

OOD	SECRETARY	EXTENSION	MAILSTOP	
GORDON BELL	MJ	2236/2237	ML12-1/A51	2
DICK CLAYTON	MARYLYNN MORIN	3638/4352	ML12-2/E71	8
JIM CUDMORE	MARIE MANGAN	2393/5328	ML1-5/E30	1
BILL DEMMER	KATHY JOHNSON	247-2111/2112	TW/D19	3
ULF FAGERQUIST	ANN PESKIN	6408/5129	MR1-2/E78	1
SAM FULLER	DIANE SECATORE	247-2131/2129	TW/A08	7
JOHN HOLMAN	JUNE MCARTHUR	223-5533/5507	~~MR3-2/E84~~ ML12-2 T36	4
BILL JOHNSON	FAITH SCIRE	3982/7725	ML12-3/A62	8
MITCH KUR	VICKI TRAVIS	6883/3039	ML12-2/A16	2
JOHN MEYER	CAROLINE SPENCE	2633/2906	ML12-1/A11	8
LARRY PORTNER	MARILYN ARBUCKLE	2471/2217	ML12-1/T32	4
GRANT SAVIERS	BETTY SCANSAROLI	9765/4520	ML3-6/E94	

DC

digital

INTEROFFICE MEMORANDUM

TO: Larry Portner

DATE: 31 July 1979
FROM: John Holman
DEPT:
EXT: 3-5533
LOC/MAIL STOP: ML12-2/T36

SUBJECT: My personal agenda

Key items on my personal agenda are

1. Fill Financial, Personnel openings for managers.
2. Absorb Vonada, Verostic into organization.
3. Get cost center signature authorization straightened out. We could come to a grinding halt.
4. Get Paul Bauer to make up his mind.
5. Revitalize our RFI/EMI activity. Ken's suggestion of a consortium meeting is an excellent one. It could identify:
   A. Issues
   B. Talent
   C. Corporate Direction
6. Pick a name for our group. Any ideas?
7. Tewksbury Power & Packaging Leadership.
8. P.C. Technology owner should be identified soon. I feel that this problem belongs to me via Tays, Lawrence.
9. Carefully review the basis of each budget to establish my agreement. I feel uneasy allowing people to hire additions.
10. Get Jerry Butler up to speed in CSS as quickly as possible.

/jm

digital interoffice memorandum

AUG 6 1979

SUBJECT:

TO: O^2D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
~~DEPT~~: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

To

While we're busy focusing on getting our goals, charters, objectives and the like sorted out, I have this gnawing concern that we may let something important slip through the cracks in the short and intermediate term aspects of managing our business, particularly in areas that have new occupants in the key jobs. I believe that we need to reaffirm quickly what our major focus should be for the next six months. I'm sure there are issues in Sam Fuller's space that relate to technology and architecture; John Holman, I'm certain, has a set of issues that have the potential, unless understood, to squeeze us in a capacity bind for critical services. Major strategic issues lie within the domains of each of the line organizations and in particular I'd like to highlight those that are spread across several organizations - these are the ones that everyone assumes that someone else is going to take care of. Specific examples here may be Distributed Processing, the HYDRA program, and I'm sure there are others.

In this context, would each of you please just drop me an informal note giving me your current list of items that are on the top of your personal agenda or should be on the top of the O^2D agenda for us to keep our finger on while we move forward in longer term directions.

- Getting the adv. Dev activities in µproducts and semi Mfg restructured to insure we make key programs happen — VENUS (MCA), PUSART (HMOS)
- Process for better product / LSL planning linking

L.

(1)

| d | i | g | i | t | a | l |

interoffice memorandum

SUBJECT:

JUL 26 1979

TO: O^{2}D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
DEPT: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

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In this context, would each of you please just drop me an informal note giving me your current list of items that are on the top of your personal agenda or should be on the top of the O^{2}D agenda for us to keep our finger on while we move forward in longer term directions.

- S/W Architecture,
- Dist. Processing Program Office, (Venus/VAX/Comet/Nebula other compatability)
- TRAX
- Carreer Development
- RSTS/SCS
- Peripheral/SW interface
- S/W services/S/W interface

(1)

digital interoffice memorandum

AUG 6 1979

SUBJECT:

TO: O^2D MEMBERS

DATE: 7/23/79
FROM: Larry Portner
~~DEPT~~: Central Engineering
LOC.: ML12-1/T32 EXT.: 3-2471

To

While we're busy focusing on getting our goals, charters, objectives and the like sorted out, I have this gnawing concern that we may let something important slip through the cracks in the short and intermediate term aspects of managing our business, particularly in areas that have new occupants in the key jobs. I believe that we need to reaffirm quickly what our major focus should be for the next six months. I'm sure there are issues in Sam Fuller's space that relate to technology and architecture; John Holman, I'm certain, has a set of issues that have the potential, unless understood, to squeeze us in a capacity bind for critical services. Major strategic issues lie within the domains of each of the line organizations and in particular I'd like to highlight those that are spread across several organizations - these are the ones that everyone assumes that someone else is going to take care of. Specific examples here may be Distributed Processing, the HYDRA program, and I'm sure there are others.

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- Process for better product/LSL planning linking

L.

Digital

INTEROFFICE MEMORANDUM

AUG 16 '79

TO: Larry Portner

DATE: 13 August 1979
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 9765
LOC/MAIL STOP: ML3-6/E94

SUBJ: PERSONAL AGENDA ITEMS (Q1)

1. Develop an organization strategy jointly with Portner and Bell (underway).

2. Commence implementation of reorganization (Riggle and Gutman finding out about it).

3. Establish a periodic program review system (discussed with staff - no plan as yet).

4. Get TU/TM78 to critical Mass and meet commitments (offers out, have a plan).

5. Work with Removable Media Task Force to develop the strategy (underway).

6. Continue to observe, learn, listen, understand the OOD process. Work at developing the relationships.

7. Start working the Product Line interface (meet with Marcus' staff, 8/28/79.

8. Hire some top talent. (Hired Ed Burke - starts 8/20/79).

9. Follow up on CDC 7/25/79 meeting. Meet with STC, MRX, and ISS. (Legal doing non-disclosure.)

10. Solidify Gordon's position on HSC. (Fuller to publish note.)

11. Get LRP dialogue started with Puffer (meeting of our staff on 9/26/79).

Grant

NOV 22 1982

digital

Interoffice
Memorandum

TO: State of the Company
Meeting Attendees

DATE: Nov. 19, 1982
FROM: Anne H. Kreidler
DEPT: Employee Communication
EXT: 223-2603
LOC/MAILSTOP: PK03-1/K23

SUBJECT: ATTACHED AGENDA

We are glad you are able to attend the Dec. 1 State of the Company Meeting in Merrimack II. The attached agenda indicates the topics to be covered.

When you arrive at the Merrimack II facility, please park your car in one of the two parking lots closest to the building. They will be cordoned off specifically for meeting use. When you enter the building, there will be signs to guide you to the meeting room, which is on the first floor in an area very close to the reception desk.

If your office needs to reach you on Dec. 1, they can leave a message by calling 884-6732 or 884-3879 (the DTN is 264). Messages will be available at the registration table during the breaks. Telephones will be available for return calls. You can use them, at no cost, to make DTN calls, but must use your credit card to call outside the company.

State of the Company Meeting Agenda

December 1, 1982

7:45 - 8:30	Registration	

A CORPORATE OVERVIEW OF THE NEW DIGITAL AND ITS MARKETING CHALLENGES

8:30 - 9:00	Introduction	Ken Olsen
9:00 - 9:30	Trends in the Marketplace and Their Impact On Digital	Larry Portner
9:30 - 10:00	Digital's Communication Products and Network Strategies	Bernie LaCroute
10:00 - 10:30	Coffee Break	

DIGITAL'S VISION OF FUTURE MARKETING DIRECTIONS

10:30 - 11:30	Digital's Super Architecture and Base Product Marketing	
	VAX Products, Clusters and Network Capabilities	Bruce Ryan
	PDP-11 Products and Their Networks	Peter Conklin
	DECsystem-20, Clusters and Network Capabilities	Rose Ann Giordano
11:30 - 12:00	Channels Market Strategies With A Focus On OEMs	Ward MacKenzie
12:00 - 12:30	Business and Office Systems Marketing	Bob Hughes
	Small Business Systems	John O'Keefe
12:30 - 1:30	Lunch In The MK II Cafeteria (Service actually begins at 12:45)	
1:30 - 2:00	Business and Office Systems Marketing (continued)	
	Office Information Systems	Henry Ancona
2:00 - 2:30	Technical Applications Marketing Strategies With A Focus on Laboratory Data Products	Bill Long
2:30 - 3:00	Digital's Thrust In The Personal Computer Marketplace (Products, Customers and Channels)	Bill Avery
3:00 - 3:30	Coffee Break	

3:30 - 4:00	The New Corporate Advertising Focus	Dick Berube
4:00 - 4:30	How Digital's Marketing Is Changing To Meet The Changing Marketplace	Win Hindle
4:30 - 4:45	25th Anniversary Message: Managing Digital In the Next Quarter Century	Ken Olsen
4:45 - 5:15	Questions and Answers About the State of the Company	Ken Olsen

THE NEW DIGITAL (TND): ENGINEERING

THE EDGE IS THE ENGINEERING ENVIRONMENT

USING OUR FIFTH GENERATION PRODUCTS BASED ON A HOMOGENEOUS VAX ENVIRONMENT, TO LEARN, BOOTSTRAP AND BUILD THE SIXTH GENERATION

WHERE ENGINEERS, ENGINEER!

PRODUCTS, TOOLS AND PROCESSES TO BUILD PRODUCTS, AND COMPONENTS FOR BUILDING PRODUCTS IN ALL PARTS OF THE WORLD

Quality - absence of excess - especially errors

Do it right first time

AND USE THE QUALITY DESIGN METHODOLGY

TO DRIVE AND EXPLOIT ENGINEERING LEARNING CURVES SO THAT AS ENGINEERS, WE DO LOTS OF DESIGNS IN OUR LIFETIME!

Everytime you double the # of items produced, the cost/time/unit is reduced by some amt. (15 - 20%)

Happiness is bulky things

(THE ROI ON DESIGNS THAT HAVE A SHORTER GESTATION TIME WILL BE VERY HIGH BECAUSE THE DESIGNS WILL BE MUCH MORE COMPETITIVE...)

~~long times~~

- Want 1 machine/year

- Not Mille designs
- Simpler model, obsolete every 2 years (higher price, less $$$)

A PROJECT EXPERIENCE (IN THE OLD DIGITAL)

SPECIFY THE SCHEDULE: 9...27 MONTHS TO FCS

ESTABLISH A PROGRAM OFFICE TO CO-ORDINATE AND TRADE-OFF: SERVICE, MANUFACTURING, MARKETING, DESIGN PROCESSES, SCHEDULING, ETC.

ESTABLISH A DESIGN GROUP AND LEAVE THEM ALONE TO ORANIZE, ARGUE AND TRY TO WRITE SOME SKETCHY SPECIFICATIONS ABOUT THE PRODUCT

OCCASIONALLY REVIEW BUT CONCENTRATE ON THE PROCESS, NOT THE PRODUCT

PREDICATE DESIGN ON QUICK DESIGN, BUILD, SEE IF IT WORKS METHODOLOGY WHERE A POOR, HALF-DONE BREADBOARD IS SOMEHOW BUILT TO LEARN FROM, FOLLOWED BY A REDESIGN (OR TWO) THAT WILL BE MANUFACTURED,

AVOID: UNDERSTANDING, CONFLICT THAT COMES FROM DESIGN TRADE-OFFS, TIMING ANALYSIS, FORMAL (COMPUTER CHECKABLE) INTERFACES, VERIFICATION, DESIGN INSPECTIONS, SIMULATION, ETC.

MANUFACTURE AND WAIT FOR THE ECUS

VENUS EXPERIENCE

(AN EXAMPLE, OF THE QUALITY DESIGN METHODOLOGY)

• get the right people

COPY AND INSTALL THE IDEAS FROM COMPLEX VLSI DESIGN AND SOFTWARE:

ORGANIZE IN A HIERARCHY OF CHIEF DESIGNER, PROJECT LEADER AND BOX PROJECTS (EACH WITH CHIEF DESIGNER AND PROJECT LEADER)... IN A TEAM!

We had 0, 1, .., 4 Chief designers!

New people too . Alan Kotok

Personnel had a field day!

ESTABLISH CLEAR GOALS: EG. QUALITY, SHIPMENT, PERFORMANCE AND COST

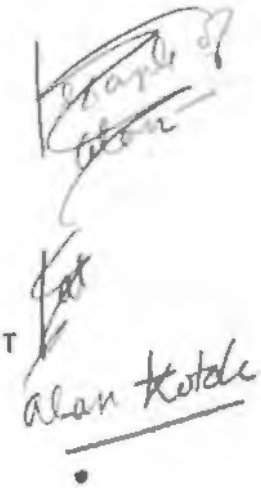
CHARACTERIZE THE PROCESSES AND COMPONENTS (EG. GATE ARRAYS, MODULES)

BE ABLE TO UNDERSTAND THE "STATE OF THE DESIGN" AUTOMATICALLY — that is the machine & people know — not the schedulers

VENUS EXPERIENCE CONTINUED

PREDICATE THE DESIGN BASED ON THE QUALITY DESIGN METHODOLOGY:

> WHERE AT EACH STEP, THERE ARE NO ERRORS...
>
> DESIGN IT CORRECTLY, VERIFY AND MODEL IT, INSPECT IT, TEST IT VIA SIMULATION, AND THEN BUILD IT (AND EXPECT IT TO OPERATE AT POWER ON)



USE THE PHYSICAL HIERARCHY TO SEGMENT THE DESIGN AND ESTABLISH FORMAL CONTRACTUAL BOUNDRIES AMONG THE TEAM

USE THE LOGICAL HIERARCHY TO SEGMENT THE DESIGN IN TIME AND MAKE SURE THAT THERE IS ALWAYS A "RUNNING" (SIMULATED) DESIGN!

REPEAT ON THE NEXT DESIGN!

Problem: what to do next

The reward is the next one

This is learning

Reward is a computer

TND: ENGINEERING FOR THE FIFTH AND SIXTH GENERATIONS

HIGHLY TRAINED, ENGINEERS AND MANAGERS WHO UNDERSTAND THE COMPETITION BY BEING WITH CUSTOMERS, AT SCHOOL AND TECHNICAL SEMINARS, COMPETING WITH THE JAPANESE, IBM, AT&T (ET AL), AND START-UPS

INSTALL AND USE MUCH IMPROVED DESIGN TOOLS BASED ON OUR OWN FIFTH GENERATION...THE VAX, HOMOGENEOUS COMPUTING ENVIRONMENT (WITH DIRECT LINKS TO ALL ENGINEERING AND MANUFACTURING SITES)

Tools for technology scaling to allow re-use of designs at least once, and learned from. Also, tools for automatic, low level design which will allow creative, higher performance and higher reliable designs

Underlying semiconductor and interconnect technology for designing (by compiling) all kinds of computers and computer based systems

The Sixth Generation, based on known and evolving ideas about better communication with humans, thereby creating more use

0028

+---------------+
! d i g i t a l ! i n t e r o f f i c e m e m o r a n d u m
+---------------+

Subject: Product Managers

To: Operations Committee

Date: 10 APRIL 78
From: Gordon Bell
Dept: OOD
Loc.: ML12-1 Ext.: 2236

What are they doing (see attached definitions)?

Integrating the product/business needs over the:

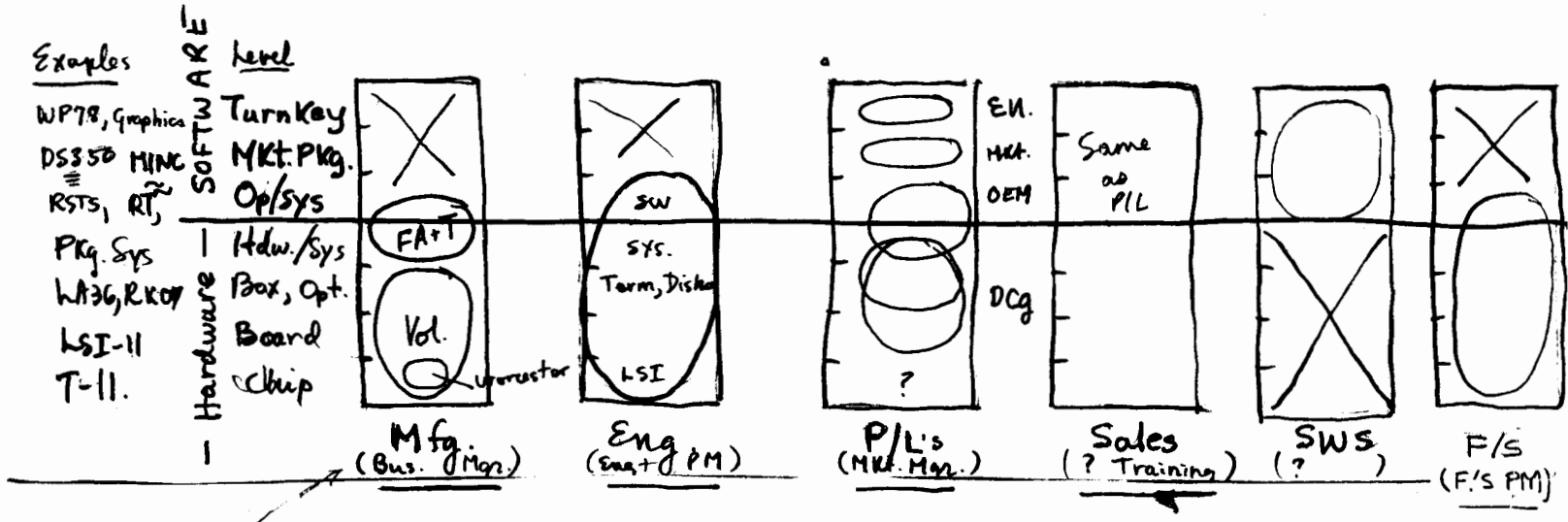
1. Levels of Integration

   (Usually 1 PM per 1 or more products at a level.)

2. Various Organizations: mainly outside of engineering

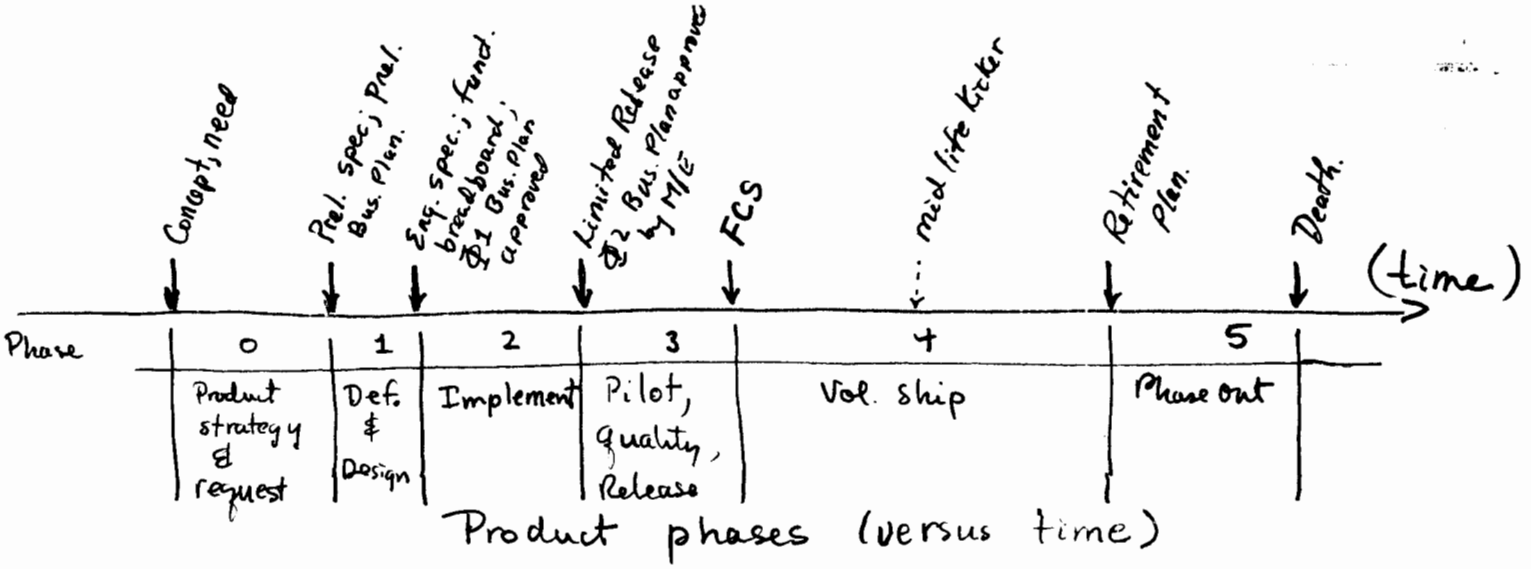
3. The Business Plan that evolves over the Product Phases (time).

The basic philosophy: Locate PM with Engineering Group that designs and (internally sells) the product. (Extensions of the "old time" project engineer who's "completely responsible" for the product.)

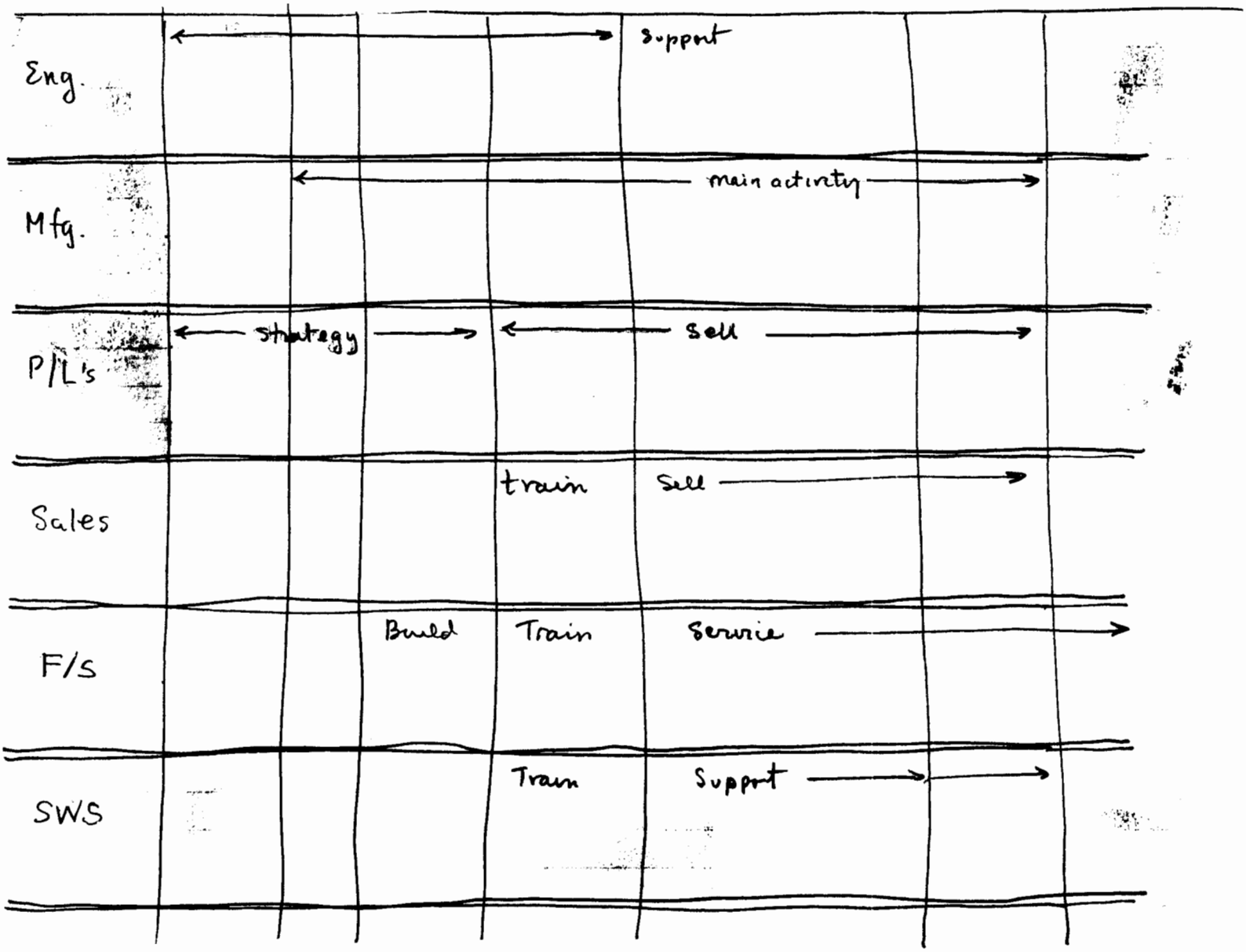


Person within org. responsible for product.

The Levels-of-integration and Organizations that are co-ordinated with.



Product phases (versus time)



Current groups and their relationship to Pots

	Level	Location	Pot
↑	· Turnkey:	PM's in P/Ls	-
SW	· Mkt. Packaged:	Specific market P/L	-
↓	· Operating System	RT/C; Comm'l; Comm./Nets	same as dev.
↑	· Hardware System	Comp. Sys. Development (eg.LSI-11,VAX,11,10)	Base; T/SS.
Hdw.	· Options	Disks/tapes; Memories; Terminals; Comm. Options	Storage; T/SS.
↓	· Chips	Microproducts; chip dev.	-

Product Managers are "managed" by the following groups in a single PM Manager:

· RT/C; Commercial; Communication/Nets	3
· Small Systems and Terminals	1
· VAX/11; PDP-11 Packaged Systems (all 11s)	2
· Storage Systems; Memories	3
total externally marketed products	9

What's wrong with Product Management? How can they be more effective?

1. There is not a plausible sales and support plan that goes across: P/L's, Sales, F/S, SWS. This would include PPG and literature during a product's life, not just at announcement.

2. We need and are instituting a strong phase review.

3. There should be more visibility of the product groups at the corporate level. Also, we focus too much on component level (e.g., RL01) at the exclusion of systems.

4. There should be a functional boss to be able to transfer activities and iron-out interfaces among the 9 groups. (This would also give them a stronger role, better direction, and show the growth/career path.)

   Note, there are separate two-level groups now!
   - this would tie them all together so that strategic issues like pricing could be worked in a more coherent way.

5. The results of products have to be reviewed in some way the Corporate Red Book is reviewed.

6. There must be a long term product strategy beyond the Red Book.

7. Coupling with sales to avoid multi P/L noise.

Attachments

R. Corp. MKting
F

PRODUCT MANAGEMENT RESPONSIBILITIES

NEW PRODUCT PROJECT MANAGEMENT (EXAMPLE RLOI)	PRODUCT SPACE STRATEGY MANAGEMENT (EXAMPLE: SMALL ROTATING MEMORY)	PRODUCT BUSINESS MANAGEMENT
- BUSINESS PLAN Development Cost Transfer Cost Field Service Cost Manufacturing Start-up Cost Software Cost - PHASE OVER - PRODUCT LITERATURE - SALES TRAINING	- UNDERSTAND MARKET FOR PRODUCT - UNDERSTAND COMPETITORS - PROPOSE PRICE STRATEGY - MAKE SURE WE REMAIN COMPETITIVE - MAKE GORDON (+ CORP) FEEL COMFORTABLE WE DEVELOP AND BUILD THE RIGHT PRODUCTS	- MAKE SURE WE BUILD THE RIGHT AMOUNT PER MONTH OF THAT PRODUCT (INVENTORY MANAGEMENT)
ENGINEERING RESPONSIBILITY	PRODUCT MARKETING RESPONSIBILITY	OPERATING RESPONSIBILITY

Helmuth Coqui
4 April, 1978

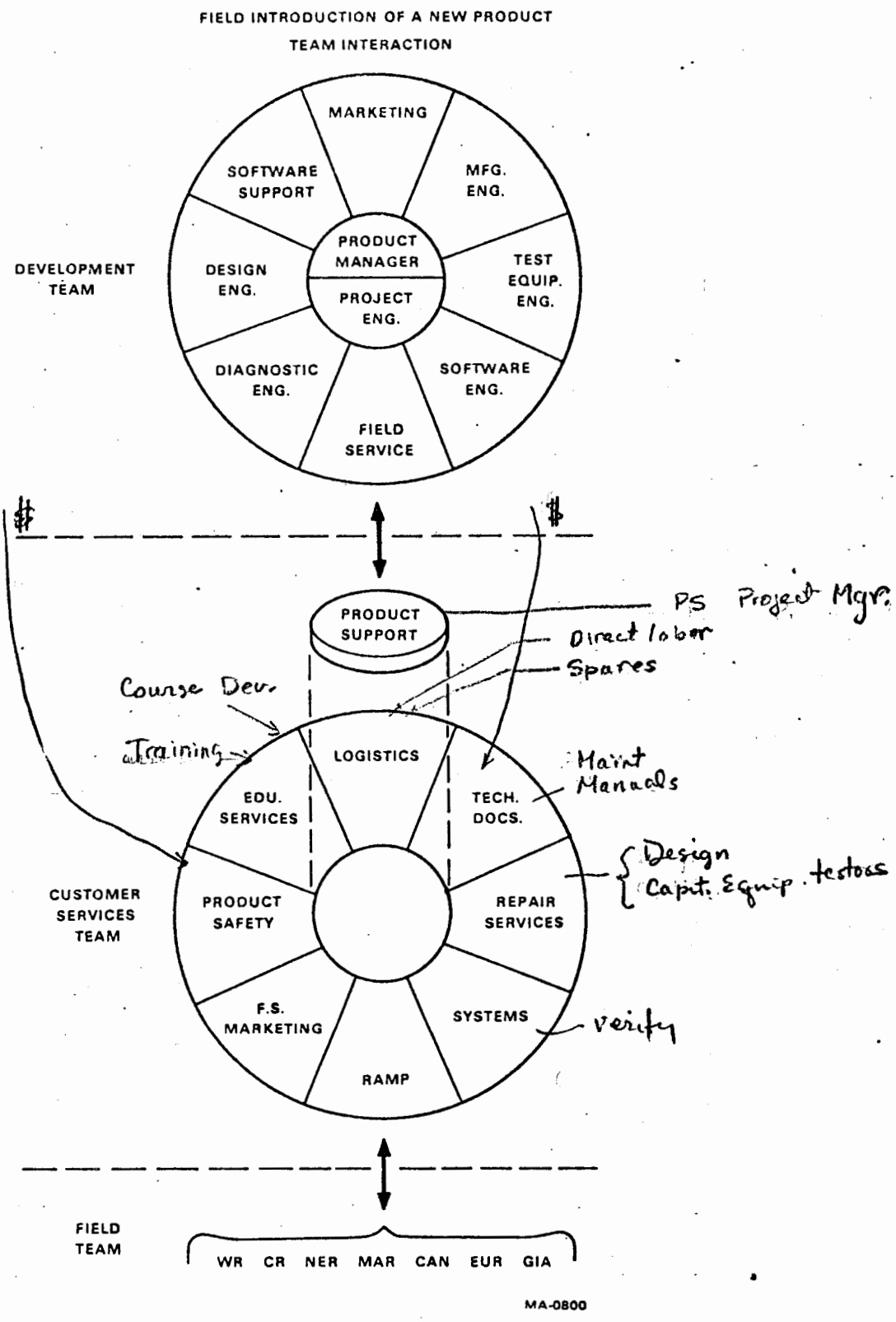


Figure 2-1 New Product Team Interaction

(Field Service)

April 78
SB

Component	P/L	Sales	SWS	F/S
Coordinator / responsible	Mkt. mgr.	?	Product Support Mgr.	Prod. Support Proj. Mgr.
Course Development		✓	✓	✓
Training		✓	✓	✓
Trainers			✓	✓
Product support			✓	✓
Mgmt	✓	✓	✓	✓
Field test			✓	
Pre-release test			✓	
Benchmark / Prod. test	✓	✓ (Field Offic)	✓	
Manuals Dev.		✓ (promo)	✓	✓
" Ongoing		✓	✓	✓
Advertising	✓	✓		
Spares Develop. + C.E. (testors)				✓
Spares				✓
Logistics				✓

Tomasic
Mar. 24, 78

II. Job Description

The following job description describes the product manager's functional responsibility, product life cycle responsibility, integration process responsibility and the line authority/power myth.

A. Functional Responsibility

From an overview sense, the product management role includes responsibility for all traditional functional business areas, including engineering, manufacturing, product line marketing, product promotion, sales, field support, and finance whenever appropriate and necessary from an integration of Digital's business from a product viewpoint. Some areas of appropriate product management responsibility should include:

BUSINESS FUNCTION	PRODUCT MANAGEMENT INTEGRATION RESPONSIBILITY
Engineering	• Development resource allocation • Detailed product definition • Phase review status • Testing and Verification • Performance Measurement • Business plan
Manufacturing	• Phase-in, phase-out volume plan • Manufacturing volume plan • FA&T inventory plan • System component mix plan
Product Line	• Market Analysis
Marketing	• Competitive analysis • Marketing strategy, including pricing and distribution channels • Analysis of shipment data • Shipment forecast
Product Promotion	• Promotion plan • Sales communication • Advertising and press releases • Brochures, handbooks & product configuration
Sales & Support	• Sales strategy, including hardware and software field support • Field service pricing and spares strategy • Key customer support • Analysis of bookings data • Bookings forecast
Finance	• Product gross profit margin • Return on assets, especially plant, equipment, and inventory • Actual vs budget variance analysis

B. Product Life Cycle Responsibility

The product manager's functional responsibility occurs throughout the entire product life cycle, from product conception through announcement to phase-out. The attached chart, from Bob Steingart, provides a more detailed understanding of hardware project phases and attributes. A similar software project phases and attributes understanding exists.

C. Integration Process Responsibility

I define product management as a process organization, with the role to achieve the integration of Digital from a product viewpoint whenever appropriate. This role is analogous to Bill Thompson's corporate planning function integration of the corporation to develop a corporate plan.

I define integration as the process of working with people with different functional and project operation goals and together developing common plans and solutions to problems at multiple organizational levels.

I measure my product managers on their ability to be a catalyst, not doing the task themselves in general, but helping the responsible individuals and organizations within Digital achieve results. This help should be in the form of truly understanding issues, and being able to present clear data substantiating that understanding.

Bob Steingart ML1-3/E38
DRAFT 7/14/77

PROJECT PHASES AND ATTRIBUTES- HARDWARE

PHASE NAME	STARTING EVENT	MAJOR ACTIVITIES	EVALUATE BEFORE PROCEEDING TO NEXT PHASE	TEST/REVIEW	ENDING EVENTS/ MILESTONES
Product Strategy & Requirements	New Product(s) Concepts & Needs	Match technological concepts & capabilities to product needs Feasibility study Market definition Define broad product requirements Identify potential sponsors	Why do it? For which markets? Does it fit DEC's long-range strategy? Cost/benefits Alternate solutions Risks of: -going ahead -not going ahead	Preliminary Concept & Specification Review Program Proposal Preliminary Business Plan	Preliminary Product Functional Specification Preliminary Business Plan Approved
Definition & Design	Preliminary Product Functional Specifications Preliminary Business Plan Approved	Assign a project number Generate detailed Eng. specs Make or buy? Start vendor selection for buyouts Build & test breadboard Develop Eng. & Mfg. PERT charts	Performance MTBF & PAM features Product Positioning Market advantages & limits Schedule slippage & cost overruns New competition/ technology	Design Review Functional Test Phase I Business Plan	Detailed Engineering Specifications (Functional Breadboard) Phase I Business Plan Approved by COD
Implementation	Detailed Engineering Specifications (Functional Breadboard) Phase I Business Plan Approved by COD	Build and debug prototype Design Mfg. process Specify initial tooling Selling configurations Documentation for mfg. Start Systems test with supporting hardware/software Start EMI & Environmental Test	Maintainability (MTTR) Transfer and service cost Sales forecasts Schedule slippage and cost overruns Changing markets New competition/ technology	Performance Tooling Accuracy Phase II Business Plan (with Mfg. Plan)	Operating Prototype (Limited Release- all Eng. drawings to Mfg.) Phase II Bus. Plan Approved by Mfg. Eng. Committee
Pilot Production, Qualification, & Release	Operating Prototype (Limited Release) Phase II Bus. Plan Approved by Mfg. Eng. Committee	Pilot assembly &test Buy final tooling Field service & sales training Public announcement Field sparing Pricing. Complete Systems test: -DEC internal -Customer field Service/User Manuals Start FMT	Consistent product quality & performance Mfg. yield/capacity Learning curve Sales forecast Mfg. transfer cost commitment Schedule slippage & cost overruns Changing markets New competition/ technology Are supporting products ready?	Complete EMI & Environmental Test Updated Business Plan Pricing Proposal (reviewed by Mktg. Committee)	Tested Production Unit Sold to Customer (FCS)
Volume Shipment/ Product Continuation	Tested Production Unit Sold to Customer (FCS)	Fully operational volume production FMT & Process control "Fine tune" mfg. process Customer support Product debug/ enhancement ECO's Meet changing markets by altering: -Mfg. capacity/facilities -Mktg. tactics	Sales volume/profitability New competition/ technology Replacement DEC product being developed?	Retirement Plan	Retirement Plan Accepted
Phase-out	Retirement Plan Accepted	Implement retirement plan (reduce support & facilities)		Product Life Cycle Review	Product Terminated

III. Levels of Product Integration

Some confusion exists between the similarities and differences of product management and system management, or product managers responsible for products at different levels of product integration. I believe the functional business responsibilities are analogous, although the specific developers of the product and specific customers of the products differ because of the product's particular location within the level of product integration.

The attached chart provides the general levels of product integration. Product managers in all positions are trying to fulfil the needs of their customers, both outside Digital as represented by the product lines selling the product to these customers, and inside Digital as represented by the engineering group responsible for developing the next higher level of product integration shown by the next column to the right in the chart. The product managers in all positions are also trying to influence their developers, both the lower level of product integration component development shown by the next column to the left in the chart, and the product development shown in the same column in the chart.

The product manager at all levels of product integration brings together the technology push from the development side with the market pull from the customer side to achieve a profitable business from a product viewpoint.

PRODUCT MANAGERS AT DIFFERENT LEVELS OF PRODUCT INTEGRATION

DIFFERENT DEVELOPERS AND CUSTOMERS

Job Title	Product Manager	Product Manager	Product Manager	Packaged System Manager (Small and Large)	Market System Manager (Commercial, Real Time and Computation)	Product Line System Manager
Level of Product Integration (Layer of the onion)	Chips	Module Product, Power Supply, Cabinet	Product	Packaged System (Excludes Software Language)	Market System (Includes Software Language)	Turn Key Product Line System
Product Example	Fonz-11 Chips	LSI-11 Modules	11/03, RK05, RSX	11T03	DS322	Word Processing
Developers of Components	None	Microproducts Development, Semi-conductor Industry	Module Development	Product Development	System Engineering	Market Syste Software Engineering
Products	Microproducts Development	Module Development	Product Development	System Engineering	Market System Software Engineering	Product Line Engineering
Customers of Components (Inside Digital)	Module Development	Small Systems & Terminal Devop-ment	Systems Engineering	Market System Software Engineering	Product Line Systems Engineering	None
Product (External to Digital)	Components	Components	OEM	OEM	End-user	End-user

IV. Line Authority/Power Myth

Many people continuously raise the issue that product managers should have line authority. This is often raised by product managers who are leaving the role. I believe that the staffing of product manager's roles with senior people able to fulfil the entire job description across all business functions including engineering, manufacturing, marketing, sales, and finance, equivalent with the senior people in these other functions at Digital today is essential. How can a junior individual, given a product management role, possibly influence a vice president of a Product Line who has been doing his functional job for five years?

After filling in the ranks with senior managers, then they must have the tools, such as financial product line brown book equivalents, business plan review boards, group product manager meetings, and other tools to give them the information flow and knowledge base to perform the product management function.

After staffing with strong managers and building up the tools to provide essential knowledge to product managers, I believe there will be no question about their real authority. Strong people with solid knowledge about a decision will have the implied authority to make decisions, whether the formal authority is given to them or not. In fact, people without knowledge should not have decision making authority, since it is unlikely this formal authority will result in the best decisions for Digital.

I personally feel I have one of the most powerful jobs within Digital today, and I do not feel the frustration of not having line authority. I believe most of the product managers working for me today also have the same feeling of power, without line authority. Although the product lines have formal profit/loss responsibility, in general they do not have line authority over many of the business functions they are measured on, which results in the same form and style of product line management by knowledge, not line authority.

V. Organizational Structure

If you believe in the importance of the product manager's contribution to Digital and the product manager's job description, then this organization's concept is suggested to improve the product manager's contribution.

The current organization has product managers, in general, reporting to engineering managers, sometimes product managers and engineering managers reporting to the same manager, and occasionally the engineering manager reporting to the product manager.

My goal for product management is that the focus should be much broader than engineering alone. I believe that although closely related to engineering, the product manager's integration role also provides significant product responsibility in other functions including manufacturing, product lines, product promotion, sales, field support, and finance.

To achieve this total job description, an additional functional product manager reporting structure could help in providing product managers with managers who fully understand the engineering, manufacturing, marketing, sales, field support, and finance job responsibilities. In addition, this would provide the career path growth ladder to attract and maintain strong individuals within the product management function.

For additional details on this functional organization proposal, please see the separate product management organization proposal.

PRIMARY ROLES OF PRODUCT MANAGERS AND DEVELOPMENT MANAGERS

Software Tools
4/17/75

	P. M. ROLE	D. M. ROLE
DEVELOP BUSINESS PLAN	X	
DEVELOP PROJECT PLAN		X
DEVELOP PRODUCT DEFINITION	X	
DEVELOP PRODUCT SPECIFICATION		X
DEVELOP FAMILY/PRODUCT STRATEGY	X	
MAKE SCHEDULE COMMITMENTS		X
COMMUNICATE COMMITMENTS	X	
DEVELOP PRODUCT BUDGET	X	
MANAGE PRODUCT BUDGET		X
ALLOCATION OF ENGINEERING RESOURCES		X
PRODUCT IMPLEMENTATION		X
PROVIDE TECHNOLOGICAL LEADERSHIP IN COST, RAS, QUALITY, AND PERFORMANCE		X
ENSURE TRAINED STAFF, TOOLS, ETC.		X
PRODUCT SUPPORT/MAINTENANCE		X
PROGRAM REVIEWS AND FOLLOW-UP	X	
DESIGN REVIEWS		X
INITIATION, INTEGRATION, AND PHASING OF PLANS	X	
REPORT MONTHLY ON TOTALITY OF THE PRODUCT	X	
INTERGROUP COMMUNICATIONS	X	
MAJOR MARKETING CONTACT	X	
PRODUCT POLICY DEVELOPMENT (T&C, SWS, DISTRIBUTION, ETC.)	X	
HARDWARE/SOFTWARE COORDINATION	X	X
PROVIDE PRODUCT IDEAS	X	X
UNDERSTAND USER'S NEEDS	X	X
ENSURE THAT PLANS ARE COHERENT	X	X
KEEP COUNTERPART MANAGER INFORMED AND SHARING MAJOR DECISIONS	X	X
MAKE/BUY DECISIONS	X	X

SOFTWARE SUPPORT/SOFTWARE ENGINEERING/SOFTWARE PRODUCT MANAGEMENT
RESPONSIBILITIES RELATIONSHIP

The following table indicates the relationship between the responsibilities of Software Support, Software Engineering, and Software Product Management. There may be some exceptions to this, however, the table is meant to define the general process.

	PSG	SWS	PM(2)	PLM	SEM
Release Product	R	-	A	-	C
Support Days	C	R	A	-	-
Support Category	C	R	A	-	-
SPD	R	-	C	A	R
Business Plan	R	-	C	A	R
Maintenance Service Price	C	R	R	A	-
Definition	C	R	A	-	R
Funding Plan	C	-	R	A(3)	R
Update(1) Content	A	-	A	-	C
Price	C	-	R	A	-
Frequency	C	-	A	-	A
Maintenance Service Management(1)	C	-	A	-	A
Documentation Quality	R	R	A	-	C
Kind	A	R	A	-	C
Product Policies	R	R	C	A	R
Product Announcement	R	R	C	A	R
Project Plan	R	-	A	-	C
Product Plan	A	-	C	A	A

KEY

PSG = Product Services Group
SWS = Field Software Support Management
PM = Product Manager
PLM = Product Line Manager
SEM = Software Engineering Manager
C = Create--Source of analysis and determination--Center of information, motivation and responsibility
R = Recommend and review
A = Approve

NOTES:

(1) Still unclear--Needs further definition.
(2) Centrally funded, cross market product managers.
(3) Approval is from funding source which in the case of PL20 is the appropriate product manager.

Futh 8/15/74

Responsibilities of a Product Manager

Overview

A Product Manager is responsible for the business success of his product.

Measurement

Product volume and contribution as proposed in attached memo from Curt Smith.
Smoothness of integration into on-going business of the company.
The degree to which a plan is met (either up or down).

Product Management Functions

(a) Marketing

- Product Plan/Strategy
- Business Plan/Forecast
- Competitive Analysis

(b) Sales

- Support Material
- Pricing
- Terms and Conditions
- Introduction and Training Plan

(c) Development

- Product Specification
- Development Schedule
- Intra-Development Coordination
- Diagnostic Programming
- Test Engineering

(d) Software Services Plan

- Training
- Support Policies

(e) Field Service Plan

- Training
- Spares
- Support Policies

(f) Manufacturing Plan

- Phase-In
- Training
- Quality Assurance and Testing

INTEROFFICE MEMORANDUM

SEP 14 1973

TO: John Fisher

DATE: September 7, 1973

FROM: Bob Puffer and David Stone

DEPT:

EXT :

SUBJ: Product Managers

On August 10, Dick Clayton, Win Hindle, Andy Knowles, Julius Marcus, Bob Puffer, and David Stone met to discuss the role of product managers at DEC as requested by the Operations Committee. The central controversy was whether product managers should reside in the central development areas (as originally suggested by Andy) or in the product lines (as suggested by Win). After some discussion we concluded:

1. Major products need product managers to prepare the business plan and carry out the tasks described in Attachment 1.

2. We defined "major" by listing a representative set of existing projects which need product managers (see Attachment 2).

3. It is the responsibility of the development manager to see that there is appointed a product manager wherever necessary, however, those product managers may reside in one of three places:

   a. In a product line; this is most appropriate when the product line is a major user of the product (e.g., RP04 product manager should be from the 11/45 or DECsystem-10 area).

   b. In the central development group; this is most appropriate for a widely shared cross-product line product. The person might be borrowed from a marketing area because most development groups have few marketing people (e.g., DOS-11 product manager should be in the Software Engineering group).

   c. The product manager may be the same person as the project engineer. This is most appropriate in the early stages of a high technology development effort (e.g., Steve Teicher's minimal-11).

We agreed that product management should not be a career but should rather be an assignment of limited duration.

BP:DS/jmab

Attachments

ATTACHMENT 1

Product Manager Responsibilities

- long range (3 years) product/ business plan
- annual marketing and sales forecast summary
- competitive analysis (performs and collects)
- initiate product improvements
- support literature definition
- option bulletin to marketing groups (in-house only)
- suggests pricing and announcements strategy
- field service, software support
- product definition
- distribution strategy
- overall commitment management

Product Line Market Responsibilities

- advertising ✓
- sales stimulation
- pricing
- announcing
- sales support
- customer support
- application support

: product dept

ATTACHMENT 2

Software Products	Product Managers	
RSX-11D	Mel Woolsey	- 11/45
RSX-11M	Bernard LaCroute	- IPG
BTS	Rod Belden	- 11/45
RSTS	Ken Klos	- 11/45
DOS/BATCH	Peter Jancourtz/Larry Wade	- LDP/SE
RT-11	George Thissell	- LDP
OS-8	George Thissell	- LDP
COBOL	Rod Belden	- 11/45
Networks	Dave Stackpole	- COMM
FORTRAN 45	Dave Fernald	- 10/45
VIROS (KL-10)	Howard Steadman	- 10

Hardware Products	Product Managers	
TU16	(To be assigned by Communications or IPG Product Line)	
RP04	(To be assigned by DECsystem-10 Product Line)	
RS04	Dan Riordan	- 11/45
TU60	Pete Jancourtz Ed Kramer (pro tem)	- PDP-11 - PDP-8
Floppy Disk	Mike Tomasic	- OEM
LA30L	John Wolaver	- Printers
Minimal 11	Steve Teicher	- 11 Engr.
16K Sense Memory & 10½" BOX	Rob Van Naarden	- OEM
11/XX	To be assigned	

JUL 25 1983

digital

INTEROFFICE MEMORANDUM

TO: SAC MANAGERS

DATE: 21 July 1983
FROM: Bill Johnson
DEPT: SAC
TEL: 223-3982
LOC/MAIL STOP: MLO12-1/U29

SUBJECT: A DEC MANAGER'S JOB

I recently gave a talk at Marlboro on "DEC Culture". During that talk, I discussed my expectations of all DEC employees; managers specifically. I have since thought that it would be a good idea if I wrote down my definition of a manager's job. This is also the definition of my job since I am a DEC manager.

A manager is first and foremost a leader and a doer. A manager should propose what should be done and then make sure it gets done. No one at DEC should do things only because "I was told to do it". This applies especially to managers. DEC managers should believe in the value of the work they are directing. A manager bears a special responsibility with respect to doing the right thing for DEC. He or she directs the efforts of many people. Wasting people's working lives is very destructive.

Leaders are certain types of individuals, not titles. The real leader of a project is not necessarily the person at the top of the organization chart. Good managers do not worry about their titles, they see things to be done and get them done. They provide support to people in leadership roles.

A manager must develop trust. DEC is not a very formal company. Much of the real nature of an employee's duties has been defined over time. A manager and an employee must have a trusting relationship if this kind of working relationship is to function. I believe a manager should be very candid with his or her employees on a continuing basis. There should never be any surprises at performance review time.

A good manager is an informed risk taker. I say "informed" because being bold is not enough. Risks should be taken when the manager feels that there is a good chance of producing a quality product. Frequently a good manager "buys in" to someone else's high risk project. This is good as long as he or she believes in the other person's vision of what should be done.

Managers must listen to people, especially the people working for them. The people who do the day-to-day work of an organization are usually in close touch with what is possible and what is not.

A good manager convinces his or her people that what they are doing is worthwhile. There are no second class citizens or organizations at DEC. If a group of people perceive themselves as being part of a second class organization, it is part of the manager's job to find out why they feel this way. If there is a real problem, the manager fixes it. If the problem is psychological, the manager changes the way the group thinks about itself. Similarly, managers should not permit other groups to be viewed as second class.

Managers are sensitive to the needs of their employees. Keeping people productive is a key management function, after all, they do the real work, not the management. A good manager always has time for his or her employees, especially those that truly need help. Since the people are the first priority of the manager, there is, by definition, always enough time to attend to their problems and listen to their suggestions. Special attention should be paid to those situations where people are being nonproductive although they are doing their best. If the problem is the system in which these people function, a good manager changes the system.

Managers must recognize that only they can remove many of the roadblocks that prevent high productivity. This is an ongoing job, new roadblocks appear each day. This productivity should be used to produce high quality products. I expect DEC to be an industry leader in the production of quality products. Managers must help build and support a working environment that produces quality products.

Finally, a manager should be an example for his or her employees. A manager who does the job, never passes the buck, and treats other people with respect will find those traits appearing among the employees. Every manager is a role model to some extent. A manager who is respected and who is a decent human being will experience problems sometimes, but will always be in a position to call on his or her employees for support when things become difficult.

P Productivity
R Requires
I Individuals
D Demanding
E Excellence