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* d i g i t a l *
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TO: MIKE GUTMAN

cc: *GORDON BELL
LARRY PORTNER

DATE: MON 31 AUG 1981 12:37 EST
FROM: KEN OLSEN
DEPT: ADMINISTRATION
EXT: 223-2301
LOC/MAIL STOP: ML10-2/A50

SUBJECT: VT278 PACKAGING EXPERIENCE

I don't remember telling people that they had to make a pedestal for the VT278. Will you find out for me who I told this to? Surely there must be records of the schedule reviews, which happened at least once a month during the history of the 278. Stan Olsen must have had schedule reviews; Gordon Bell and Si Lyle must have had reviews. In the records of these schedule reviews, the change in schedule because of my order, must have come up, and surely one of these senior people must have questioned the change in schedule because of my orders.

Through the years, Dick Gonzales has made many models of many things for me. A few are great; many were poor, and practically none have been used. I didn't realize that some of this model work was being charged to the 278.

When you go back to look at the records, check for me when the cube was ready to ship. As I remember it, in order to make the cube pass FCC, they had to put a large metal table top on it which made it a very expensive unit and very expensive to ship, and not very competitive in looks or in price. When the 278 was stopped, I did explore many possible combinations with Dick Gonzales. I hardly talked to the 278 people at all, because I didn't think they understood FCC problems. They said they spent several hundred thousand dollars finding out they needed a metal table, and that any change would take sixteen weeks.

I have been consistently and regularly critical of the packaging, but I don't remember telling people what they should do, however, I was quite heavy handed in having them set up some quick FCC tests. I asked for some simple tests at the Nashoba facility the next free evening or Saturday. It happened to be on a Saturday and John Kirk, in just a few hours, fixed the problem and showed that the metal table top was not necessary, and that, any other packaged floppies would be practical.

I was probably the first one to ask to have a model made with a pedestal, but I don't think I ever saw the model, and the resulting pedestals are quite different than the one I suggested. They missed the key ideas. I feel very badly that they missed some of the ideas ; on the other hand, it is a good thing they didn't notice some of the other ideas, because they didn't turn out to be very good.

If I asked them to use the pedestal, I feel hurt that they never came back and showed it to me and asked if that is what I had in

mind.

KHO/er
KO1:S6.11

278

digital

GB2.S7.38

interoffice
memorandum

TO: ENGINEERING STAFF

CC: MFG. STAFF
BARRY FOLSOM
SI LYLE

Date: 8/11/81
From: GORDON BELL
Dept: OFFICE OF DEVELOPMENT
MS: ML12-1/A51 Ext: 2236
EMS: @CORE

SUBJ: JAPAN'S TEAC A SCENARIO OF THINGS TO COME

We'll see competition in the low end and hi end where Japan is strong. Note this interchange. This is the first of more to come. We have to change our ways! The up and coming one board, VT/Z is a chance to show we can compete. Can we ship it by January 1, given we have a breadboard?

Our project takes 14 months. We can make TEAC take 14 with lots of hassle, but they'll slip in 3 months.

ml

To: Eng. Staff; Mfg. Staff, Barry Folsom [?], Si.
Subject: Japan's TEAC a Scenario of things to Come

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TO: PAUL BAUER

cc: see "CC" DISTRIBUTION

DATE: WED 5 AUG 1981 11:42 EST
FROM: SI LYLE
DEPT: <CPG>
EXT: <264-5001>
LOC/MAIL STOP: <MK1-2>/<2C36>

SUBJECT: RE: RX02 REPLACEMENT FOR VT278

I do not believe any more money is required. TEAC have quoted $69,000 to design and put the board in production.

Let's say they are twice as good then we should be able to do a RX50 board for $138,000. Now does it take $&700 -138)K to test a board. The two in parallel is simple. We pay TEAC $25,000 as requested for 10 prototypes and we pay engineering (still assume TEAC twice as good) $50,000 for 10 prototypes for RX50 board. Then we spend $100,000 to evaluate and then we go into production - TEAC $25 + $100 + $46 = $169K, or DEC $50 + $100 + $88 = $238K. Either approach is way below $700K.

Our problem is we have a project to do. Quoting costs that nobody else in the industry would accept, and then spending months hassling budget is our usual approach. Meantime, the Japanese have the product on the market.

Let's show that we can do a simple job like a controller board for reasonable dollars in reasonable time.

Si

"CC" DISTRIBUTION:

BILL AVERY *GORDON BELL BUZZ BROOKS
MIKE GUTMAN

ATTACHED: MEMO;99

— We'll see competition in the low end and hi end when Japan is strong. Note this interchange. This is just the first of more to come. We have to change our ways! The upcoming [illegible] our board, VT/2 is a chance to show we can compete. Can we ship it by [illegible], Jan. 1, given we have a headboard? Our project takes 14 months. We can make TEAC take 14 with lots of hassle, but they'd ship in 3 months.

****
* digital *
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TO: SI LYLE

DATE: FRI 31 JUL 1981 17:31 EST
FROM: PAUL BAUER
DEPT: ENG OPERATIONS
EXT: 223-6581
LOC/MAIL STOP: ML3-3/B91

SUBJECT: RX02 REPLACEMENT FOR VT278

41

****
* DIGITAL *
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INTEROFFICE MEMORANDUM

TO: Si Lyle

DATE: 31 July 1981
FROM: Paul Bauer
DEPT: SMALL STORAGE SYSTEM
EXT: 3-6581
LOC: ML11-3/T62

SUBJ: RX02 REPLACEMENT FOR VT278

Fundins for this comes from your activites. We have identified the followins sinks and sources.

FY82 Budset Estimates

Project	Need	Available	Source	Notes
RX02 replace-ment, in house	$900K	$750K	Gary Cole/ Paul Gardner	1
RX02 replace-ment, TEAC	$600K	?	?	2
RX Pks.	to be defined	to be defined	Barry Folson	3
Maximum exposure	$1800K			

Notes:

1. $900K was orisinally available. I understand that it has been cut back to $750K.

2. We are aware of no additional money available at this time to fund a full dual approach, or even the complete in house approach. Mike Gutman has alerted Gordon to the need for additional money if we have a full scale bake off.

The estimated required budget assumes we do the product qualification of the TEAC design. We will ask them to quote on doing the qualification themselves; this may save some time and money.

3. Barry has asked for a 2 drive package with power (no controller) shippable in Q4 FY82. I have committed to support him and we will meet next week and start nailing down the details. I am concerned that such a package can be easily "plugged" by any minifloppy vendor, and we won't be able to guarantee interchange.

/mpc

file / cutler or DECwest

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* D I G I T A L *
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INTEROFFICE MEMORANDUM

TO: Gordon Bell

DATE: 28 May 1981
FROM: Bill Johnson
DEPT: Software Engineering
EXT: 223-3982
LOC/MAIL STOP: ML12-3/A62

SUBJ: COMPENSATION FOR DAVE

Here's what we agreed to as approaches for a compensation approach for Dave:

A. Dave would be viewed as equivalent in level (status) to Eng. Staff members. His compensation would be based on performance in comparison to the group. His stock allocation would be handled similarly. Clearly, the projects Dave will be doing are of significantly more risk (technical breakthrough) than others. (2-3 year window)

B. In addition to the above we might set a contract for product delivery and for a level of stock grant given successful completion (3-7 year window).

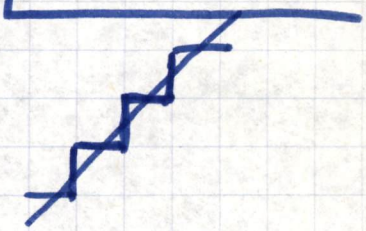
C. In addition getting Dave into a DEC paid financial advisory status is a distinct possibility and very critical.

/fs

1. Product (mktng.) — (cont + nt. mkt.)

Sell by Digital Sales.

Andy & BJ



2. DEC puts up $, stockholder.. →

Both sells

→ 3. Co. wholly owned! Autonomous!

4. Eng. Arm!!

(5) Prime contractor 4/30

"I'm interested in exploring ALL paths"

Goal

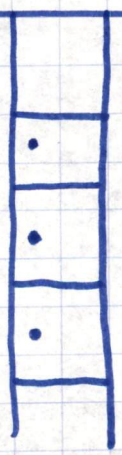
- Autonomy
- Can be creative; in way 10 years ago.
- Share in proportion to contribution

BJ willing to be innovative in approaches.

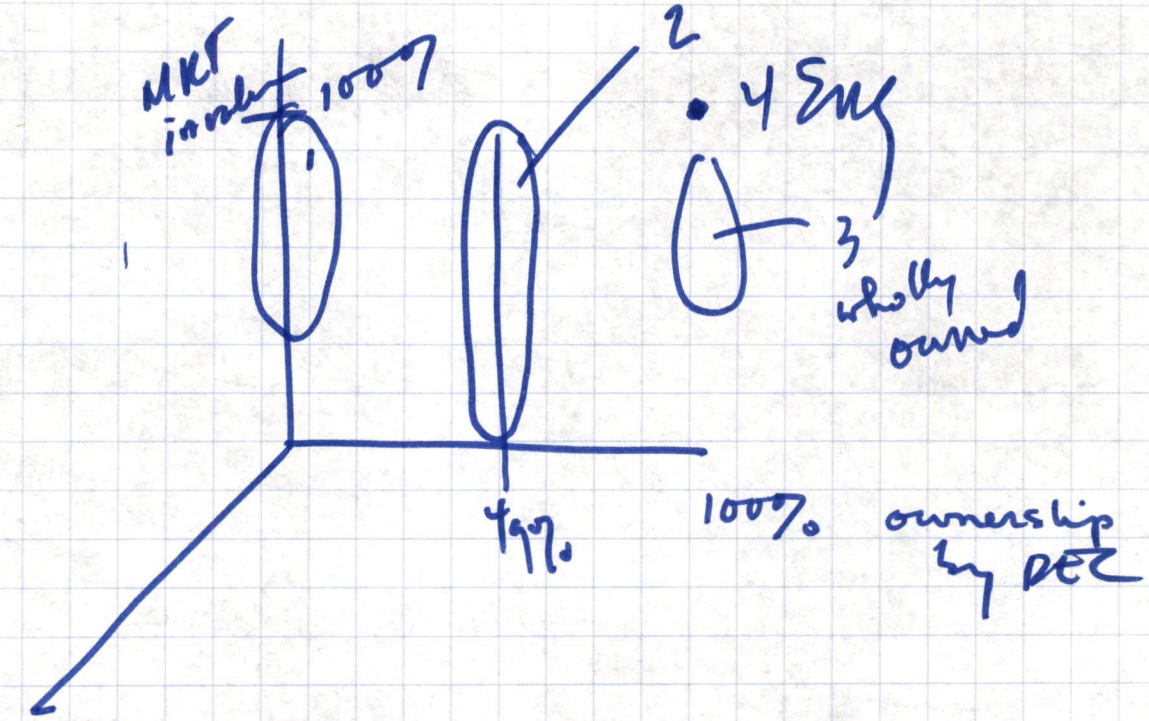
Key Mkt.

L. Wade

Andy



GB, BJ, Win, Andy



control of products

(DEC only system)

WHAT DO I WANT OUT OF THIS MEETING?

1. YOUR FULL COMMITMENT TO KEEP DAVE.

2. AGREEMENT ON NUMBER OF POSITIONS DAVE/HEFF/BJ APPROVED.

   - WANT DAVE TO OFFER TO PEOPLE TOMORROW.

BJ
6/3/81

3. AGREEMENT ON CHARTER.

4. AGREEMENT ON FUNDING RESPONSIBILITIES.

   - PROJECT - BJ
   - ONGOING-SITE COSTS - BJ
   - RELOCATION/START-UP - ROSE

5. DISCUSSION OF A RELOCATION PACKAGE

BJ
6/3/81

WHAT I AGREE TO DO

* KEEP YOU INFORMED.

* GENERATE A HERE-TO-THERE PLAN.

BJ
6/3/81

HERE'S WHAT'S HAPPENING!

- LOOKING FOR SITE THIS WEEK (FREEDMAN, RECO)

- GET COMMITMENT FROM PEOPLE BY JULY 1 (DAVE)

- AGREE ON RELOCATION PACKAGE (JUNE 13)
  GORDON, LARRY, THEN SHEL

BJ
6/3/81

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* d i g i t a l *
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278

TO: see "TO" DISTRIBUTION

cc: DON DEROME

DATE: MON 3 AUG 1981 13:48 EDT
FROM: DON DEROME
DEPT: CPU/MFG ENG
EXT: 232-2320
LOC/MAIL STOP: AC/B38

SUBJECT: WEEKLY RX PEDESTAL UPDATE

Key Event	Target Date	Expected Date	Completed Date	Responsible Person
3 Proto Fab Units	2 July 81	2 July 81	2 July 81	D. Albano
Build/Evaluate	8 July 81	8 July 81	8 July 81	Albano/Meacham
User Doc. Plan	8 July 81	7 August 81	(Note 1)	G. Cole
PCA Control Prints	9 July 81	9 July 81	9 July 81	D. Albano
Mfg. Print Release	9 July 81	9 July 81	9 July 81	Albano/Meacham
User Proto's Avail.	9 July 81	9 July 81	9 July 81	Albano/Meacham
Field Test Plan	10 July 81	15 July 81	15 July 81	G. Cole
DMT Complete	30 July 81	10 August 81	(Note 2)	B. Meacham
Document. Complete	7 August 81	7 August 81	on schedule	Albano/Meacham
10 B.O.D. Units	3 August 81	3 August 81	on schedule	Lamothe
10 Field Test Units	7 August 81	14 August 81	on schedule	Lamothe
10 Field Test Units	14 August 81	14 August 81	on schedule	Lamothe
10 Installability Units	21 August 81	21 August 81	on schedule	Lamothe
First Volume Ship	1 Oct.81	1 Oct. 81	on schedule	Lamothe
First Reveune Ship	15 Oct. 81	15 Oct.81	on schedule	Cole

Transfer Cost

	Planned	Current
Dual(Committed)	$1291.00	Westfield Mfg. to generate Transfer cost projection the week of August 10 1981.
Quad(Estimated)	$2196.00	

VT278(Committed)$1000.00

Note 1 The slip incurred is not expected to cause a slip in the FRS date. User Documentation to be available by 15 October 81.

Note 2 The slip in DMT was operator errors. This slip will not effect the FCS date.

"TO" DISTRIBUTION:

*GORDON BELL	BUZZ BROOKS	PETER BROWN
RON CAJOLET	DAVE DORSCHEL @F111	DAVE LAMOTHE @F111
ED TOMPKINS @MLXX	DICK ESTEN	GARY COLE @MK12
JOHN CAMERON @MK12	DAVE KNOLL	SI LYLE
PAUL MCGAUNN	KEN OLSEN	HERB SHANZER

****
* digital *
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TO: DON METZGER
GRANT SAVIERS
cc: see "CC" DISTRIBUTION

DATE: TUE 4 AUG 1981 13:51 EST
FROM: PAUL BAUER
DEPT: ENG OPERATIONS
EXT: 223-6581
LOC/MAIL STOP: ML3-3/B91

SUBJECT:

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* DIGITAL *
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NTEROFFICE MEMORANDUM

TO: Grant Saviers

Date: 3 August 1981
From: Paul Bauer/Don Metzger
DEPT: Small Storage System
EXT: 3-6581
Loc: ML1-3/T62

cc: Gordon Bell, Gary Cole, Mike Gutman, Dick Leslie, Si Lyle, Ken Olsen, Ron Payne, Bob Puffer, Steve Radoff, Herb Shanzer, Carl Redfield, Phil Goldman

SUBJ: RX02 REPLACEMENT FOR VT278 - Progress Report #1

Progress to date on this program is as follows:

MILESTONES	Project	Initial Date	Present Date	Who
1. Final Specification Complete	both	7/31	8/15	Bauer
2. Project leader identified	in house	7/31	done	Bauer
3. Responsible Manufacturing group identified	TEAC	7/31	done	Metzger
4.Buy out team identified	TEAC	7/31	8/15	Bauer, Lowe
5. Final TEAC bid received	TEAC	8/28	9/15	Lowe
6. Prototype order placed	TEAC	9/1	9/20	Lowe
7. Start evaluation of TEAC drives	"	9/1	8/15	Bauer, Lowe
8. Product Certification plan complete	"	10/1		Lowe
9. Receive TEAC samples	"	12/1		Lowe
10. Power up in house samples	in house	12/1		Bauer

Notes: 1. We have decided to wait for John Kirk to return and include his inputs into the specification, thereby delaying spec completion to 8/15.

2. Duncan Power has been installed as in house project leader. As support engineering supervisor for RX02 for the past 18 months, he has unparalleled knowledge and understanding of the RX02.

3. Storage System will be the responsible manufacturing group.

4. Bill Lowe is on vacation. I will meet with him upon his return and appoint the buy out team.

5&6. Delayed by our delay in submitting the spec to TEAC.

7. I intend to start in house evaluation of TEAC drive as soon as possible.

* A draft product spec has been completed and is being circulated. Quality Assurance is creating the certification elements of the specification.

/mpc

"CC" DISTRIBUTION:

*GORDON BELL	CARL REDFIELD @S111	GARY COLE @MK12
MIKE GUTMAN	SI LYLE	KEN OLSEN
RON PAYNE	BOB PUFFER	HERB SHANZER

JUL 22 1981 278

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* digital *
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TO: TED WEBBER

cc: *GORDON BELL
BOB LANE @PKXX
KEN OLSEN

DATE: MON 20 JUL 1981 13:51 EST
FROM: DAVE KNOLL
DEPT: MFG ADMINISTRATION
EXT: 223-2900
LOC/MAIL STOP: ML1-4/P14

SUBJECT: 278 SYSTEM THOUGHTS

The attached memo...

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* D I G I T A L *
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INTEROFFICE MEMORANDUM

TO: Ted Webber

CC: Gordon Bell
Bob Lane
Ken Olsen

DATE: 20 JUL 1981
FROM: Dave Knoll
DEPT: Mfg. Admin.
EXT: 223-2900
LOC/MS: ML1-4/P14

SUBJ: 278 SYSTEM THOUGHTS

Briefly, my thoughts are below:

1. Packaging: See my memo of July 1 - We should manufacture one vanila 50 cycle and one vanila 60 cycle version of the pedestal. We should offer a myriad of options and configurations to go with the pedestal - all customer installable and all sold separately through A&SG and stores. These include things like filters, work holders, floppy storage, various furniture options, etc. If people want to buy the pieces, (terminal, RX02, etc.) we should sell these also but I don't believe that this version should be the "headliner." Bottom line, at least until we have smaller, cheaper mass storage, we should try to have an answer to all the packaging objections that customers may raise.

2. Mass Storage: Obviously storage is the single key to both packaging and cost reduction. We should get minifloppies ASAP. Some thought on controller packaging should allow use of either TEAC or RX50, which ever comes first. We should go down both paths until it is clear that RX50 will be available less than 6 months after TEAC.

3. Printers: I don't see a need for other lower cost LQP's. I think the LA24 is going to be a winner.

4. Software: Yes graphics integrated with WPS. Yes get V2 out on time, if not sooner. Make sure the 278 is compatible with existing software - I understand it needs a VT52 mode before it can operate with EMS - a must.

5. Training/Software/Documentation: We need much more than I've seen in the way of simple training and operating documentation. We must come across as simple and approachable so people will and can use all our 278 WP features.

/do
7/20/81 5.52

20-JUL-81 13:53:25 S 12580 EM01

21-JUL-81 06:39:41 S 16965 FLIN

AUG 6 1981

VT278

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* D I G I T A L *
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INTEROFFICE MEMORANDUM

Paul

TO: Gordon Bell Grant Saviers

DATE: 5 August 1981
FROM: Paul Bauer
DEPT: SMALL STORAGE SYSTEM
EXT: 3-6581
LOC: ML1-3/T62

cc: Vince Bastiani, Mike Gutman, Don Metzger, Ron Payne, Carl Redfield, Dick Leslie, Phil Goldman, Si Lyle, Ken Olsen, Herb Shanzer, Steve Radoff, Bob Puffer

SUBJ: TEAC - RX50 MINI FLOPPY VT278 SUBSYSTEM EVALUATION - Update 1

TEAC has responded with lower costs and better access times. The updated comparision is shown below. We are continuing on a dual program at significant additional effort and expense. We will continue with our programs and keep you informed of our results.

	TEAC	RX50	COMMENTS
Capacity (KB) Formatted/Diskette	400	400	
Formatted/Subsystem	800	800	
Track to Track Access time	10 msec	6 msec	
Average Access First Access	633 msec	524 msec	See Notes 1 & 2
Subsequent Accesses	373 msec	264 msec	See Notes 1 & 2
Power per subsystem	27 watts	22 watts	
Landed Cost per Drive	$173	$265	FY83 Dollars
MTBF/2 diskette subsystem, as used	<4000 hrs	<4400 hrs	See Note 2. Assumes 50% duty cycle.

	TEAC	RX50	COMMENTS
Landed Cost per Subsystem (20,000 units)	$642	$475	In FY83 dollars. TEAC cost does not include purchasing burden.
Availability			
Prototypes	12/81	12/81	
First Volume ship	?	Q1 FY83	

Notes: 1. Assumes drive is spundown when no accesses occur in a 3 second period, and assumes 260 ms spin up time.

2. Our previous understanding of TEAC MTBF assumed that the spin motor stayed on. Current understanding is that their MTBF assumes 50% spin motor duty cycle. RX50 MTBF is based on testing at 82% duty cyle, TEAC MTBF is based on their calculations.

We have discontinued consideration of the double sided TEAC drive since we won't have media to support it.

Brushless DC motors for the RX50

RFQS sent to 27 vendors.

To date 26 responses.

6 responses - tentative yes

We expect to have testable parts in house by the end of the month.

/mpc

TO: STEVE RADOFF, MLXX, ML1-3/T62
TO: PAUL BAUER, MLXX, ML1-3/T62
TO: VINCE BASTIANI, MLXX, ML3-6/E94
TO: DICK LESLIE, MLXX, ML3-6/E94
TO: DON METZGER, MLXX, ML1-5/B98

FM: JOHN KIRK,/TOM KOBAYASHI, TKYD, TK(JTC)

CC: DICK YEN, TAIW, TA
CC: GORDON BELL, MMC2, ML12-1/A51
CC: GRANT SAVIERS, MM17, ML3-6/E94
CC: T. NAGAMINE, TKYD, TK(JTC)

TOKYO 7/16/81 MSG NO. 47

SUBJ: TEAC-RX02

1. MET WITH TEAC AGAIN TODAY. THEY RECEIVED COPIES OF RX02 MANUALS AT OUR LAST MEETING AND NOW HAVE MUCH BETTER IDEA OF THE INTERFACE. BASED ON THIS THEY GAVE US A NEW QUOTATION AS FOLLOWS: (ALL FOB JAPAN, 220 YEN = US DOLLAR)

INITIAL DEVELOPMENT COST : 12,985K YEN (SAME AS BEFORE)

THIS IS IN TWO PARTS -

SAMPLE DEVELOPMENT (PCB ETC): 3,132K YEN (DLRS14,236)

PRODUCTION TOOLING, DOCUMENTATION: 9,853K YEN (DLRS44,786)

SAMPLE UNITS (UP TO TEN) : 263K YEN EACH(DLRS1,195)

VOLUME PRICING - BASED ON THREE YEAR PERIOD

TOTAL UNITS	UNIT COST
20,000	122,800 YEN (DLRS558)
50,000	117,100 YEN (DLRS532)
100,000 AND UP	114,300 YEN (DLRS519)

2. OUTSTANDING QUESTIONS.

FORMAT - THEY CONFIRMED THAT THEY CAN WRITE 10 SECTORS OF 512 BYTES PER TRACK.

SAMPLES - THEY CAN PRODUCE UP TO TEN UNITS, THESE WILL HAVE THE SAME PARTS AND PACKAGE AS THE PRODUCTION UNITS, THOUGH THE PACKAGE WILL BE HAND MADE. FOR BOTH SAMPLES AND PRODUCTION, PACKAGE WILL BE METAL.

3. CORRECTION TO TWX OF 10-JULY

ITEM 10 - INTERCHANGE: THE OFF TRACK TEST DISKETTE NUMBER SHOULD READ 15 MICRON (NOT MICRON-INCH).

4. WE HAVE TOLD TEAC THAT WE WILL GIVE THEM A FORMAL REQUEST FOR PROPOSAL AROUND 15-AUGST (THEY ARE CLOSED DOWN 1 AUG - 9 AUG) AND THEY WILL THEN PRODUCE A DETAILED PROPOSAL WITHIN FOUR WEEKS (IN ENGLISH).

5. JOHN KIRK WILL BE BACK IN MAYNARD ON 5-AUGUST AND WILL HELP IN ANY WAY, PARTICULARLY IN WRITING DOWN THE RX02-VT278 BUS INTERFACE SPECIFICATION-THERE DOESN'T SEEM TO BE TOO MUCH DOCUMENTATION ON THIS, TIMING DIAGRAMS ETC.

6. TOM KOBAYASHI WILL BE IN MAYNARD FROM 27 JULY THRU 31 JULY.

KK
=07160943

16-JUL-81 05:46:28 S 30325 FRIN

01 MMC2 DECGRAM DELIVERED S 30325 D 02
16-JUL-81 08:41:23

****
* digital *
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TO: GRANT SAVIERS

cc: see "CC" DISTRIBUTION

DATE: WED 15 JUL 1981 16:46 EST
FROM: PAUL BAUER
DEPT: ENG OPERATIONS
EXT: 223-6581
LOC/MAIL STOP: ML3-3/B91

SUBJECT:

SUBJ: RX02 REPLACEMENT FOR VT278

We have started down a dual path to purchase a unit from TEAC and design an in house unit based on the RX50. Initial milestones for both the TEAC and in house projects are as follows:

MILESTONES	Project	Date	Who
Final Specification Complete	both	7/31	Bauer
Project leader identified	in house	7/31	Bauer
Responsible Manufacturing group identified	TEAC	7/31	Metzger
Buy out team identified	TEAC	7/31	Bauer, X
Final TEAC bid received	TEAC	8/28	X
Prototype order placed	TEAC	9/1	X
Start evaluation of TEAC drives	"	9/1	X
Product Certification plan complete	"	10/1	X
Receive TEAC samples	"	12/1	X
Power up in house samples	in house	12/1	X

Notes: 1. under the "who" column X is the responsible purchasing manager for the appropriate manufacturing group. Don is working to identify that individual now. 2. Gary Cole's help is needed to create a product requirements document and in obtaining approval of the specification.

/mpc

"CC" DISTRIBUTION:

*GORDON BELL	GARY COLE @MK12	MIKE GUTMAN
DICK LESLIE	SI LYLE	KEN OLSEN
RON PAYNE	BOB PUFFER	STEVE RADOFF
HERB SHANZER		

JUL 15 1981

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* D I G I T A L *
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278

INTEROFFICE MEMORANDUM

TO: Gordon Bell
Grant Saviers
cc: Si Lyle
Ken Olsen
Don Metzger
Mike Gutman
Ron Payne
Herb Shanzer
Vince Bastiani

DATE: 13 July 1981
FROM: Paul Bauer
DEPT: STORAGE SYSTEM
EXT: 3-6581
LOC: ML1-3/T62

SUBJ: TEAC - RX50 MINI-FLOPPY VT278 SUBSYSTEM COMPARISON

As of 7/7 the TEAC and RX50 versions of this product compared as follows. On 7/10 Vince Bastiani advised us that TEAC was quoting lower prices and better access times. We will document these changes shortly.

	TEAC	TEAC	RX50	COMMENTS
Product Description	FD-50 E 1-Sided	FD-50 F 2-Sided	1-Sided Double Density	
Diskettes	1	1	2	VT278 needs 2 diskettes for data and system info
Tracks per Inch	96	96	96	
Tracks per Side	80	80	80	
Capacity (KB) Formatted/Diskette	400	800	409	
Track to Track Access	25 msec	25 msec	6 msec	

Average Access First Access	783 msec	783 msec	524 msec	The RX50 based system will spin down if no accesses occur in 2 seconds.
Subsequent Access	783 msec	783 msec	264 msec	
Power per drive	11 watts	11 watts	20 watts	
Power per 2 diskette Subsystem	27 watts	27 watts	25 watts	
Cost per Drive	$250	$370	$250	
MTBF/drive, 100% duty cycle	8000 hrs	8000 hrs	2200 hrs	
MTBF/2 diskette subsystem, as used	<4000 hrs	<4000 hrs	<7000 hrs	See note above. Assumes 30% duty cycle.
Cost per Subsystem	$733 (2 drive)	$973 (2 drive)	$460 (1 drive)	
Availability	11 months	11 months	14 months	

Comment

The TEAC drives have significantly higher track to track access time, which results in lower power. 2 diskettes are required for an operable system; therefore RX50 based systems are cheaper.

Brushless DC motors for the RX50

RFQS sent to 27 vendors.

To date 19 responses.

1 response is a tentative yes.

18 responses no.

6 absolutely no.

12 no at this time, but come back later.

However, we have located one other potential vendor.

Bottom line - nothing to evaluate today, but within one month we expect to have testable parts in house.

/mpc

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* d i g i t a l *
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JUL 2 1981

TO: *GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: TUE 30 JUN 1981 9:48 EST
FROM: MIKE GUTMAN
DEPT: STORAGE SYSTEMS
EXT: 223-5285
LOC/MAIL STOP: ML3-5/E94

SUBJECT: VT278 MEETING OF LAST WEEK

#14

I had hoped you would help me bring stability into my new responsibility - but holding impromptu meetings with less than the right level of knowledge in attendance certainly isn't going to help.

I believe you were not dealing with complete data concerning the reasons for selecting the RX50 rather than TEAC for the VT278, and nobody from Storage was present to shed some light on the subject.

I understand your desire to do TEAC, but I also understand that most of that desire has little to do with the VT278. I strongly recommend we reconvene that meeting with all intelligence present and revisit the issue to see if our original decision was in fact the better one.

I would also appreciate being in attendance when you or Ken want to discuss making changes to programs I am responsible for. If stability and a healthy work environment are to be restored to the 16 bit space you've got to help.

"CC" DISTRIBUTION:

PAUL BAUER
KEN OLSEN
JIM WALLS
BOB LANE @PKXX
GRANT SAVIERS
SI LYLE
HERB SHANZER

****
* d i g i t a l *
****

TO: GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: TUE 30 JUN 1981 9:48 EST
FROM: MIKE GUTMAN
DEPT: STORAGE SYSTEMS
EXT: 223-5285
LOC/MAIL STOP: ML3-5/E94

SUBJECT: VT278 MEETING OF LAST WEEK

#14

I had hoped you would help me bring stability into my new responsibility - but holding impromptu meetings with less than the right level of knowledge in attendance certainly isn't going to help.

I believe you were not dealing with complete data concerning the reasons for selecting the RX50 rather than TEAC for the VT278, and nobody from Storage was present to shed some light on the subject.

I understand your desire to do TEAC, but I also understand that most of that desire has little to do with the VT278. I strongly recommend we reconvene that meeting with all intelligence present and revisit the issue to see if our original decision was in fact the better one.

I would also appreciate being in attendance when you or Ken want to discuss making changes to programs I am responsible for. If stability and a healthy work environment are to be restored to the 16 bit space you've got to help.

"CC" DISTRIBUTION:

PAUL BAUER
KEN OLSEN
JIM WALLS
BOB LANE @PKXX
GRANT SAVIERS
SI LYLE
HERB SHANZER

****
* d i s i t a l *
****

TO: see "TO" DISTRIBUTION

cc: see "CC" DISTRIBUTION

DATE: THU 2 JUL 1981 11:09 EST
FROM: GRANT SAVIERS
DEPT: STORAGE SYSTEMS
EXT: 223-9765
LOC/MAIL STOP: ML3-6/E94

SUBJECT: TEAC ALTERNATIVE

DIGITAL

INTEROFFICE MEMORANDUM

TO: Don Metzger
Paul Bauer
Vince Bastiani
cc: Distribution

DATE: 2 July 1981
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 223-9765
LOC: ML3-6/E94

SUBJ: TEAC ALTERNATIVE

I expect the TEAC plan to include the tools that we have found useful to get high volume, high quality products. This means an engineering evaluation of the product quality and margins, a full DMT, a full PMT and vendor qualification, complete development plans and engineering specifications, and assurance that TEAC understands the magnitude of their development task.

I expect maximum creativity in shortening the development cycle, a strong sense of urgency, and a willingness to take prudent risks.

We will be glad to initiate P.O.'s at any point in the program as long as there are clear accountabilities for the risks and contingency plans for the inventories and expenses.

I am particularly concerned that we may develop a bad reputation in Japan as a result of a confused program or sudden change in direction.

cc: Distribution

Mike Gutman
Si Lyle
Bob Puffer
Larry Portner
Gordon Bell
Ken Olsen

FGS:psh

"TO" DISTRIBUTION:

PAUL BAUER DON METZGER VINCE BASTIANI

"CC" DISTRIBUTION:

*GORDON BELL	MIKE GUTMAN	SI LYLE
KEN OLSEN	LARRY PORTNER	BOB PUFFER

****
* d i s i t a l *
****

TO: MIKE GUTMAN

cc: see "CC" DISTRIBUTION

DATE: THU 2 JUL 1981 13:33 EST
FROM: SI LYLE
DEPT: CSD
EXT: 223-7311
LOC/MAIL STOP: ML12-2/E71

SUBJECT: RE: VT278 MEETING OF LAST WEEK/M.GUTMAN 6-30

Mike, TEAC proposal sounds good to me: Prototype in 3 months, units available in 4 months, and transfer cost of $750. The approach has got to be how do we do it, not why we cannot do it. Remember your spending my money and I need results.

Si

"CC" DISTRIBUTION:

PAUL BAUER	*GORDON BELL	BOB LANE @PKXX
BUZZ BROOKS	DON METZGER	KEN OLSEN
GRANT SAVIERS	HERB SHANZER	JIM WALLS

ATTACHED: MEMO;40

****
* d i s i t a l *
****

278

TO: see "TO" DISTRIBUTION

cc: see "CC" DISTRIBUTION

DATE: MON 6 JUL 1981 10:47 EST
FROM: MIKE GUTMAN
DEPT: STORAGE SYSTEMS
EXT: 223-5285
LOC/MAIL STOP: ML3-5/E94

SUBJECT: TEAC VS RX50

At the Friday meeting with Gordon, it became evident that the best solution for all interests is to create a parallel development of TEAC with the current committed course of RX50 for the VT278.

This will be implemented by writing a black box system spec for the storage add-on, which will include all the system and environmental specs the black box must meet. This spec should be jointly developed between Storage and the VT278 program.

The Japan DEC Engineering Group (Kobiashi, Bastiani, CSS, et al) will work with TEAC to establish cost and schedules to meet the entire black box spec.

This seems the fairest way to treat all parties and to impartially test the Japanese alternative. This will create a more difficult business negotiation with the Japanese, but let's scope that problem when the time comes.

When we know how much this parallel effort will cost, we'll be back asking for incremental funding.

"TO" DISTRIBUTION:

PAUL BAUER
*GORDON BELL
SI LYLE
GRANT SAVIERS
HERB SHANZER

"CC" DISTRIBUTION:

BOB LANE @PKXX
BUZZ BROOKS
DON METGER @MLXX
PHIL GOLDMAN
JOHN KIRK
DICK LESLIE
KEN OLSEN
PAUL GARDNER @MLXX
RON PAYNE
LARRY PORTNER
BOB PUFFER
STEVE RADOFF
VINCE BASTIANI
JIM WALLS

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION

cc: *GORDON BELL
BUZZ BROOKS

DATE: MON 6 JUL 1981 10:44 EST
FROM: SI LYLE
DEPT: CSD
EXT: 223-7311
LOC/MAIL STOP: ML12-2/E71

SUBJECT: RX02 REPLACEMENT FOR 278

Good to see all the interest, but I would like to see it constructive and focused. Since Word Processing is funding all of the 278 projects, the following are the ground rules.

1. The 278 system integrator and only person authorized to spend any money is Herb Shanzer.

2. Herb owes Buzz a proposal on how and how much to replace the RX02's on the 278. Replacing the RX02's is top priority because of size and cost and we must do ASAP.

3. All investigations of TEAC or any other source must be co-ordinated through Herb. He in turn can then farm the project out to the appropriate people.

4. We need help and constructive criticism but no road blocks.

Si

"TO" DISTRIBUTION:

PAUL BAUER
DON METZGER
MIKE GUTMAN
GRANT SAVIERS
DAVE KNOLL
HERB SHANZER

****
* d i g i t a l *
****

278

TO: GRANT SAVIERS

cc: see "CC" DISTRIBUTION

DATE: MON 6 JUL 1981 8:25 EST
FROM: SI LYLE
DEPT: CSD
EXT: 223-7311
LOC/MAIL STOP: ML12-2/E71

SUBJECT: RE: TEACH VX. RX50/G.SAVIERS 7-2

The RX50 should proceed as is for the terminals programs such as CT100 and VT's, however, the 278 needs RX02 replacements before the availability of RX50's so TEAC should be looked at as the floppies for the 278.

Si

"CC" DISTRIBUTION:

*GORDON BELL	PHIL GOLDMAN	MIKE GUTMAN
DICK LESLIE	DON METZGER	AVRAM MILLER
KEN OLSEN	RON PAYNE	LARRY PORTNER
BOB PUFFER	STEVE RADOFF	HERB SHANZER

ATTACHED: MEMO;65

****
* d i s i t a l *
****

TO: see "TO" DISTRIBUTION

DATE: THU 2 JUL 1981 11:02 EST
FROM: GRANT SAVIERS
DEPT: STORAGE SYSTEMS
EXT: 223-9765
LOC/MAIL STOP: ML3-6/E94

SUBJECT: TEAC VS. RX50

DIGITAL

INTEROFFICE MEMORANDUM

TO: Distribution

DATE: 2 July 1981
FROM: Grant Saviers
DEPT: Storage Systems
EXT: 223-9765
LOC: ML3-6/E94

SUBJ: TEAC vs. RX50

Our approved plan is the RX50 and we will not change the plan without formal approval. All work on RX50 will continue at maximum effort. We will continue to examine QB and VT278 opportunities for expanding the market for the RX50. Any effort on the TEAC investigation should be incremental and should not detract from the RX50 commitments.

We hope to have some hard data from TEAC by mid July. Based on this data we will develop an alternative proposal.

FGS:psh

Distribution:

Gordon Bell
Ken Olsen
Larry Portner
Si Lyle
Mike Gutman
Herb Shanzer
Bob Puffer
Avrim Miller
Phil Goldman
Steve Radoff
Ron Payne
Don Metzger
Vince Bastiani
Larry Portner
Dick Leslie

"TO" DISTRIBUTION:

AVRIM MILLER	GORDON BELL	PHIL GOLDMAN
MIKE GUTMAN	DICK LESLIE	SI LYLE
DON METZGER	KEN OLSEN	RON PAYNE
LARRY PORTNER	BOB PUFFER	STEVE RADOFF
HERB SHANZER	VINCE BASTIANI	

****
* d i g i t a l *
****

TO: BUZZ BROOKS

cc: *GORDON BELL
DAVE KNOLL
KEN OLSEN

DATE: MON 6 JUL 1981 15:10 EST
FROM: SI LYLE
DEPT: CSD
EXT: 223-7311
LOC/MAIL STOP: ML12-2/E71

SUBJECT: 278 (MEMOS FROM D.KNOLL & G.BELL ATTACHED)

Buzz, there are lots of ideas floating around but it needs you to state exactly what is required and how you plan to sell it.

You should get Gordon's, Dave's, and Ken's ideas in one document, pick what you need to run the business, and get that committed to by engineering and manufacturing so that you can put the focus back on selling.

Si

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION
10:58 AM EDT

DATE: WED 1 JUL 1981

FROM: DAVE KNOLL
DEPT: MFG ADMINISTRATION
EXT: 223-2900
LOC/MAIL STOP: ML1-4/P14

SUBJ: MY VIEW - 278 WORK STATION PACKAGING

Many people have told me their views on what the 278 package should be. Most people have strong views and they are all different - often by 180 degrees.

Some feel that the 278 will primarily be sold as a pedestal work station with a keyboard holder. Others feel that virtually all units will be found next to desks with the terminal and keyboard on a secretary stand, a term stand, or a desk. Some feel people will want to hide it - others feel people will want to show it off.

I'm sure there isn't "one" right package. I believe that few will buy the 278 because of what it's packaging is, but at the same time I believe that people may decide not to buy the 278 because of what it isn't.

It seems to me that the right strategy is to build a vanilla version without any options in Manufacturing - cheap, stripped down, and all the same. We should then offer all sorts of accessories and options to allow customers to make the unit fit

with their particular environment. We should keep track of what is sold so that we learn for next time.

Options could be grouped as the car manufacturers do and they could have relatively high mark ups and they might range from different colored tops (oak, DEC grey or brown, walnut) to longer tops (30" long with a "bustle"), to a desk, to a keyboard shelf, to paper holders, tilt swivel stands, filters, modem holders, floppy disk holders, etc., etc. We should have a solution for whatever a customer needs for his environment/work situation.

Much of the effort has been on the basic package and getting it FCC'd, etc. I think now that the basic package is engineered and is being documented, the emphasis should shift to the options and accessories and these should be viewed as key and important parts of what we sell rather than an afterthought. In a packaging sense, I believe that the key advantage of the pedestal package is that it is flexible and can be adapted to fit many situations.

Distribution: Gordon Bell
Buzz Brooks
Tom Campbell
Gary Cole
Don Derome
Paul Gardner
Dick Gonzales
Ted Johnson
Bob Lane
Si Lyle
Ken Olsen

****
digital
****

TO: DAVE KNOLL
19:16 EST

cc: see "CC" DISTRIBUTION

DATE: WED 1 JUL 1981

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: DAVE (AND MY VIEW) ON HOW TO MAKE THE 278 PACKAGE GREAT, QUICK!

Just got back from the WPS show in Atlanta and the Digital booth.

The 278 was shown there and it's great... and I propose we take it as is, leave it alone and concentrate like mad on selling it, while concentrating like mad on getting a smaller set of floppies that can be shipped, carried and used more easily.

PROPOSAL FOR A MODULAR 278 WPS FAMILY THAT IS MINIMAL AND GREAT
What I saw at the show was the RX02 60# metal box we know, have and love (and must sell), plus the tube. There were AS&G options of: a caster to hold one or two pairs of RX02's, the DEC desk, the DEC music stand for documents that sit on a desk, the DEC file cab to hold floppies and documents, and the spider stand that
is used to hold a VT100. I'd propose we build a filing cabinet for floppies and document storage that is exactly the same size as an RX02 box that would be another option. We should also add a table top for the drawer as an option which would cap the pair and it would also be useful to hold the LQP. There might be some way to clean up cables and handle the phone and modem.
THIS WOULD BE THE ENTIRE SET OF HI-FI LIKE COMPONENTS THAT A CUSTOMER WOULD BUILD THEIR WPS SYSTEMS FROM. LET'S ALL TRY IT, I SUSPECT WE'LL LIKE IT!

This is in essence, what I read into what you were proposing. It offers the ultimate in flexibility by having small, neat components that can be combined together to form a system.

I think you'd all have been impressed with the DEC booth with the many 278's sitting on clean DEC desks, with 1 or 2 pairs beneath them. (I also saw the area between the top of the floppy and the bottom of the desk being used to store floppies and documentation.

This is why we need to offer a drawer too... and possibly someway to make a clean modem cable hookup.)

HOW THE COMPONENTS WOULD BE USED TO BUILD OFFICE SYSTEMS
Thus, if we offered this set today, I could guarantee uses of:
DEC desk WPS ensamble with floppies under it
Regular secretarial typing stand or typing wing with tube and floppies located either under the wing or beside it... maybe we'd offer a little table top that sit over the pair of floppies plus the drawer so that the new printer could sit on it
I'd put the floppies and printer and drawer together to form a

table as in 2 above and then put the 278 tube on a spider stand.

It might even be possible to stack the roller, drawer and floppies and table top to hold the 278 CRT!

(This is elegance through simplicity of component design.) Others would probably do as 2 and 3 but put the tube on their desk.

Please, please, please can we all stop this insidious repackaging effort and just go with what we've got. All we are doing is making the product more expensive and harder to carry and more inflexible to use. The pedestal continues to have problems and doesn't offer the flexibility, cost, weight, cleanliness, or lack of problems that the above proposal offers.

Worse yet, is the designated responsible individual going to get this all resolved... or are we going to continue to waste the corporation's resources?

Dick Gonzales and Dave Knoll could I please implore you to build the above components for me so that we could show them at the Operations Committee on Monday in their various system configurations?

What do you folks think?

"CC" DISTRIBUTION:

BUZZ BROOKS	TOM CAMPBELL	DON DEROME
GARY COLE @MK12	RICHARD GONZALES	TED JOHNSON
R.L. LANE	*SI LYLE	KEN OLSEN
PAUL GARDNER @MLXX	HERB SHANZER	

****
* d i g i t a l *
****

TO: *GORDON BELL

cc: PAUL GARDNER
LARRY PORTNER
DICK SCHNEIDER

DATE: WED 15 APR 1981 6:38 EST
FROM: JOHN HOLMAN
DEPT: TECHNICAL OPERATIONS
EXT: 223-5533
LOC/MAIL STOP: ML23-2/T36

SUBJECT: VT278

I met with Paul Gardner, Dick Schneider and Paul Benigni to review your memo regarding the unit you are testing in your home. Before I make specific comments, I would like to say that we are fortunate to have the type of dedication and drive that I have seen in these gentlemen. They have produced an enormous quantity of real work during the time that the packaging of this product has been an active project.

Paul feels that most of the comments you make regarding the glitches in performance are related to the early model of prototype that you have. He wanted to know where you obtained the prototype. The comments about the Polish Editor must be directed at all WPS systems. The comments about sticking keyboards was confirmed by Paul as a real problem that Manufacturing is trying to fix.

Gonzales feels the working hardware you have was input was going into production. Only package was changing; will check with Kirk when he returns from your house today. mj

The major problem that I see here is one of Goal Setting. We did not get to a quality set of goals that were agreeable to all as we see today. The cost goal was determined to be wrong in February which stimulated a redesign. The goals for which option designs are inviolate were much more constrained than they are today. The goal of storage and work space provision has been broken. The goal of using up inventory seems to be somewhat in tact. We're still going to use the old RX02 somewhat repackaged (more mgMFG inventory hassle). I would like to have seen the goal of incorporating new minifloppies or Winchesters as our competition will be doing. The goals for CT announcement have shifted putting more pressure on this product.

The major activity in packaging has been supervised by Dick Gonzalles with responsive help from the Industrial Design Group when they were asked.

I am concerned that the crash mode of the project will cause some oversights that will be very expensive to repair with ECO activity. I understand that Dave Knoll has volunteered to build 100 units of the new stripped down version before the design is qualified for thermal, vibration, acoustics (you have a substitute fan in your prototype - I guess they're using up inventory), RFI, and DMT.

I am very surprised at the spider approach which fortunately

was rejected. This was not ID's idea.

MAJOR PROBLEM -- Paul is concerned about getting the user documentation done. This is a key part of making this unit self installable and possibly self maintainable.

PACKAGING FOR THE OFFICE ENVIRONMENT:

It is very clear to me that the most popular version of the design can be the unit that becomes a wing of a secretary's desk. Secretary's do not like clutter and impingement on the small work spaces we give them. The only problem here is that a secretary will not initially give up the typewriter. Conversly, the simple free standing floppy unit can be the stand for a letter quality printer with the terminal on a secretary's desk.

COLOCATION:

There have been some developments that require more discussion with you and Ken which have very impact on what we do about the location of the I. D. group.

QUALITY:

I think that everyone involved wants to do a quality job and they need the goals stability that will yield high quality engineering. We are probably better off to push for design completion and to look for the possibility of making strong improvents in a new version if the market requires. Good design review and testing will help to insure high quality.

I am forwarding under seperate cover a chronology of the involvement of I.D. since the project began.

To: → Larry Portner
Dick Schnieder
Paul Gardner
FYI as promised
John

TO: JOHN HOLMAN (ML23-2/T36)

DATE: 14 APRIL 1981
FROM: PAUL BENIGNI
DEPT: INDUSTRIAL DESIGN
EXT: 223-6800
LOC: ML 11-4/E53

SUBJECT: VT278 PACKAGING DEVELOPMENT

MAR 80 — VT278 System pkg. to adress external cable management by; new wort box, new cables/connectors, add rear panel to existing H978 stand

APR 80 — Models fabricated

MAY 80 — Design review by Gordon Bell; H978 not sufficient, user needs a place to put task related items. Solutions should allow: remote RX pkg. w/ VT on desk or stand; optional workstation for worksurface and storage areas

JUN 80 — Decision by Gordon Bell to put "wings" on H978 stand. I.D. and Engineering ask to propose alternatives.

JUL 80 — Alternatives presented to Gordon. Decision- cube with optional workstation.

AUG 80 — Design development. Control drawings completed for proto by 22 SEPT

SEP 80 — Preliminary FCC testing indicates major shielding problems

OCT 80 — Cube proto completed, analyzed, redesign underway for second proto by 20 OCT.

NOV 80 — Proto delayed due to Mech. Eng. manpower shortage. Impact of slip, final design and customer documentation, conveyed to P.Gardner.

DEC 80 — Proto completed and presented to OPS Comm., positive feedback. FCC testing indicates need for groundplane. Decision, metal worksurface, workstation no longer can be optional.

JAN 81 — System package continues to be modified to provide for FCC class B requirements. Cost increases.

FEB 81 — FCC goal changed to class A. Proto presented to WPS sales meeting, Positive feedback. Project review by OPS Comm. results in decision to cost reduce all elements of the system. Ken Olsen proposes spider stand design. Minor cleanup of concept by design engineering. Product Lines pushback due to poor appearance. Terminal RFI problems solved by ferrite beads on CPU board which removes need for groundplane and allows user freedom of

placement.

MAR 81 PL decision to use revised H978 stand. Ken OLsen continues to design and reconfigures RX's creating pedestal concept. I.D. refines design to allow for various user configurations including an optional workstation.

Gordon Bell
ML 12-1/A51

****
* d i g i t a l *
****

TO: *MARY JANE FORBES

DATE: WED 22 APR 1981 7:21 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: GETTING TOGETHER WITH GORDON RE: 278 THINGS

Can we set up a time SOON so that Gordon can show me what he means by "crap on the screen" ?

ATTACHED: MEMO;23 MEMO;32

-Sr Louise-

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION

cc: BUZZ BROOKS

DATE: TUE 21 APR 1981 22:07 EST
FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: LET'S GET THE 278 OUT THE DOOR

We gotta get the product fixed by then. Are you folks talking? There are several things to get straighten out. Both Buzz and I are concerned about the crap on the screen (his does it too). Gary can you get the list of things to be fixed?

"TO" DISTRIBUTION:

JOHN KIRK BRUCE STEWART OLLIE STONE

ATTACHED: MEMO;32

****
* d i g i t a l *
****

TO: GORDON BELL

DATE: TUE 21 APR 1981 11:12 EST
FROM: OLLIE STONE
DEPT: APPLICATIONS
EXT: 264-7480
LOC/MAIL STOP: MK1-1C6/1C6

SUBJECT: 278

PLEASE NOTE THAT THIS MEMO IS BEING SENT TO YOU FROM GARY COLE MK1-1C6, 264-7478.

The 278 is going out the door on June 22nd with the new package. 400 system are being built for Q4 ship, 10,000 for FY82. The WPS software group (Owen Fisk) still has its head in the sand, but virtually everone else in the corporation is actively cooperating on our mutual objective. Perhaps you could explain the priorities to Owen? He doesn't listen to me or the product lines.

21-APR-81 11:11:01 S 21317 EMMK

Sue, call Carl & ask me to go out anytime Fri, 4/17, to upgrade firmware. Check Gwen first that someone is there all day

****
* d i g i t a l *
****

TO: GORDON BELL

cc: PAUL GARDNER @MM1A
HERB SHANZER

DATE: MON 13 APR 1981 16:43 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

+ att

SUBJECT: YOUR VT278

NOTE: This TWX is only sent through John Kirk via EMS - it is originated from:

Carl Gerstle
Small Systems Engineering
ML1-2/E60
223-2705

Paul Gardner and Herb Shanzer have asked me to determine the status of the VT278 system about which you wrote your memo of 12 April.

Please explain what is wrong with the cursor shape; isn't it the same as that of the VT100?

As to the EMS/Terminal Mode problem, it has been fixed in firmware; I will provide you/your machine with updated firmware; the EMS people have to invoke a fix at their end.

I need to understand more about the flaky screen patterns you described ... how did you produce them and what do they look like?

After speaking with John Kirk, we believe the problem with the auto-repeating keys to be a software only problem.

Please contact me with info on how I can schedule a visit to your house to update the firmware. Also - I need to talk to you about the cursor and screen problems.

****
* d i g i t a l *
****

TO: *MARY JANE FORBES

DATE: WED 15 APR 1981 19:57 EST
FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: CAN YOU HANDLE?

ATTACHED: MEMO;45

<date>4/15/81 Wed 15:03
<club>mJ
<message>PENNY SMITH RE:MEETING WITH CARL GERSTLE AND GORDON
RE:GORDON'S COMPLAINTS ON THE 278 (1 HR.) MAYBE SOME TIME NEXT FRIDAY
AFTERNOON (3-4)
<tel#>X3085
<taken by>SUE
<>

****
* d i g i t a l *
****

9-FYI

What's the bottom line?

TO: *MARY JANE FORBES

DATE: WED 1 APR 1981 16:46 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: RE: RE: RE: CAN WE FIX THE 278 HARDWARE, WSOFTWARE OR EMS? QUICK

EMS should be fixed by "next week" - the VT278 hardware/firmware changes will be fixed by that same time. When I hear from the EMS people, I or someone will install what Gordon needs to his machine

****
* d i s i t a l *
****

TO: KEN MAYERS

cc: see "CC" DISTRIBUTION

DATE: TUE 31 MAR 1981 7:56 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: 278 IDENTIFIER

The VT278 responds like the VT100 except that the identify number is an 8 rather than the VT100's 1. i.e. if you send ESC Z, the 278 will (and I emphasize WILL, as it doesn't do this at present but by the end of the week this should be changed) send back the following :

ESC [? 8 ; P cWhere P is configuration dependent and may have

the values 0, 1, 2 or 3, most usually 3

For Foreign Language versions of the VT278 this sequence is extended in just the same way that the VT100W series terminals extend it i.e.

ESC [? 8 ; P ; Q c Where Q now denotes the Foreign Language default settings of the machine.

Screen addressing is ANSI i.e. ESC [H etc.
How long will it take to put the VT278 into your startup code ?

"CC" DISTRIBUTION:

*GORDON BELL AL CRAWFORD MARY JANE FORBES
BRUCE STEWART

****
* d i g i t a l *
****

TO: JOHN KIRK

cc: see "CC" DISTRIBUTION

DATE: WED 1 APR 1981 7:13 AM EST
FROM: KEN MAYERS
DEPT: CORP MESSAGE SVCS
EXT: 223-6485
LOC/MAIL STOP: PK1/F60

SUBJECT: RE: 278 IDENTIFIER

Thanks for the info, John. I have forwarded it to our development team with a request that our terminal identification routines be patched to accomodate the 278 asap (and have also asked when that will be, given their present priorities). I presume that it can be done by next week, at which time I contact you about testing it.

01-APR-81 07:14:36 S 11910 EM01

"CC" DISTRIBUTION:

*GORDON BELL AL CRAWFORD MARY JANE FORBES
BRUCE STEWART

****
* d i g i t a l *
****

TO: JOHN KIRK

cc: *GORDON BELL
MARY JANE FORBES
BRUCE STEWART

DATE: MON 30 MAR 1981 23:21 EST
FROM: AL CRAWFORD
DEPT: DIGITAL INFO SYSTEMS
EXT: 223-2305
LOC/MAIL STOP: PK3-2/F34

SUBJECT: EMS AND 278

see attached. r/s close the loop with ken mayers.

ATTACHED: MEMO;23

****
* d i g i t a l *
****

TO: AL CRAWFORD

cc: MURRAY COPP
BOB ERICKSON

DATE: MON 30 MAR 1981 9:05 PM EST
FROM: KEN MAYERS
DEPT: CORP MESSAGE SVCS
EXT: 223-6485
LOC/MAIL STOP: PK1/F60

SUBJECT: RE: KIRK'S INPUT ON 278

That is just how we handle it. That is, EMS sends esc-Z and waits for the terminal identifier. If it doesn't get a VT100 or VT52 identifier, it treats the terminal as a printing terminal If John will let us know what identifier he will be using, we can add it to the table of video terminals in EMS.

30-MAR-81 21:05:27 S 34676 EM01

****
* d i s i t a l *
****

TO: *GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: MON 30 MAR 1981 12:18 EST
FROM: JOHN KIRK
DEPT: CKG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: RE: CAN WE FIX THE 278 HARDWARE, WSOFTWARE OR EMS? QUICK

As we are in the process of changing the VT278 firmware for keyboard rollover problems we can at the same time add to the Escape sequence recognition the ESC Z, non-ANSI DEC Private identifier sequence. I don't know how EMS does its identify routine, but we will make ESC Z return the VT278 identifier (now it is ignored). It is not a good thing to make it return the VT100 identifier sequence as 278s don't support all the VT100 features, split screen, smooth scroll etc. and pretending to be a 100 would cause more problems than it solves. If the EMS identify routine can recognise the standard ANSI response from the VT100, then it should be able to treat the VT278 response in the same way. I would guess that we have the same problem with LA34 etc.....

'CC" DISTRIBUTION:

AL CRAWFORD MARY JANE FORBES STEWART AND OWEN FISKE
BRUCE STEWART

****
* d i g i t a l *
****

TO: JOHN KIRK

cc: see "CC" DISTRIBUTION

DATE: WED 1 APR 1981 12:29 EST
FROM: MARY JANE FORBES
DEPT: ENG STAFF
EXT: 223-2237
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: RE: CAN WE FIX THE 278 HARDWARE, WSOFTWARE OR EMS? QUICK

JOHN, DOES ALL THAT MEAN THAT GB WILL NOT GET BACKSLASHES
WHEN HE IS IN EMS?

WHEN WILL THAT BE READY? HOW, THE SOFTWARE VERSION?

"CC" DISTRIBUTION:

*GORDON BELL AL CRAWFORD STEWART AND OWEN FISKE
BRUCE STEWART

****
* d i s i t a l *
****

TO: *MARY JANE FORBES

DATE: WED 15 APR 1981 6:43 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: GETTING RID OF THE BACKSLASHES

Like I said I asked Ken Mayers for a status on getting ems to know about the VT278 - this is his answer.

ATTACHED: MEMO:19

****
* d i s i t a l *
****

TO: JOHN KIRK

DATE: TUE 14 APR 1981 11:01 PM EST
FROM: KEN MAYERS
DEPT: CORP MESSAGE SVCS
EXT: 223-6485
LOC/MAIL STOP: PK1/F60

SUBJECT: RE: VT278 ON EMS

Not yet. I'm forwarding your query to Paul Chuns as a tickler.

14-APR-81 23:01:07 S 26515 EM01

Something is wrong with the software/firmware:
.the auto-repeat when you hold down the keys is simply not acceptable and THE PRODUCT WILL NOT BE SHIPPED UNTIL THIS GETS FIXED! I'm tired of these kind of sloppy products, so get it fixed. The VT173 editor on VAX works right, ie. when you hold down the key, the cursor takes off and moves slowly at first, gets faster and in no case moves faster than it can execute. In the 278, holding down the key executes a bunch of commands and eventually they get executed, but it's too late. In the case of the editor, it would seem that you have to remove the function from the terminal macrocode, hand it to the editor to deal with. This auto-repeat can work very well, but it has to be designed, not a free for all between the hardware and software folks.

.The cursor seems to be the wrong shape, and I find it disruptive. This was mentioned before. We have some folks who can help immediately on this one, get help. ✓

.This particular keyboard sticks. I thought we got all these out of the system. If a customer gets one, he'll simply by Wang next time. I hate to think of all the customers who ended up with these keyboards on VT100's and LA's who thought they were buying quality products.

.When you come up in terminal mode, it could simply report that it's a vT100, assuming it is. This one drives me crazy cause EMS thinks it's a printer, and I get backslashes instead of backspaces.

.Our WPS Polish Editor. It is increasingly clear to me that this editor is sure costly in terms of the way one deals with the page and cursor. Recall that a Polish editor is one that instead of positioning the cursor to find something, positions the page. Several months ago I requested that we try an experiment and build the changes so that it works decently. We know how! EDT, the VT173, the VT134 editor, etc. all work fine. Let's have a trial change fix for this within two weeks. If you don't have the proposed change, then let me know.

.The machine I have occasionally produces flaky patterns on the screen. Under certain circumstances, there are random marks that go across the screen. This ain't quality. Is the machine electrically screwed up? Is it a timing bug where the machine can't keep up with the real time and hence paints garbage? (If there is a timing problem, then let's figure out how to put up something decent, or to blank the screen for a whole cycle. If the software knows when something is missed, then it would be best to simply turn off the display for the rest of the scan.) Again, do you know about this problem? ✓

.Glare. I trust Ken is solving this one. iIt has to be solved.

.I like the printer, though am anxiously awainting the LA24.

PACKAGING
.I hope Ken has a place for the modem, spare floppies, the

manuals (we haven't given him this requirement), a place for often used information (phone numbers, instructions) and paper. It would seem that if we have the two floppy case, the extra two floppies could be dummies and be replaced by drawers. Is there enough room to store papers, floppies?

Frankly, I am extremely disappointed in the 278 I have, cause we spent an incredibly long timCe last summer in trying to work on all these details with the Industrial Design group. The 278 is only attended to superficially. MORE THAN EVER, I WANT THE INDUSTRIAL DESIGNERS OF THE PRODUCT TO CO-LOCATE WITH THE PRODUCT DESIGNERS, NOT WITH THEMSELVES. DICK SCHNEIDER AND JOHN HOLMAN, IS THIS CLEAR?

We can take several attitudes about the system (a rehash of what we discussed last summer when we swore we would stop designing crappy products:

1. build components, they are small, unobtrusive and it's up to the user to make it into a clean system and be something useful

2. build it as a system as good as we know how. Unfortunately, like the 278, this may take up a lot of space, solve many problems but doesn't go all the way. The user has to deal with the manuals, floppy storage, paper holder. If I use the 278 I have for very long, then'll try to get sound deadener (auto parts store), a good paper holder somehow, put a drawer in it for floppies, and put a book shelf under it where my legs go. The modem and telephone on top of the crt though kludgy looking is functional as hell. (Note, I have to solve Ma Bell's problem cause the modem carrier rings in my ear... I simply can't believe that Ma Bell has any notion of quality! We should all laugh when we hear that Ma Bell thinks it is going to, should or can compete with IBM.)

3. build a set of modules so that the user can build a good system without having to be a total designer (like case 1), nor a redesigner. Frankly, I would hope we could take approach 3 with the NEW 278. Ken believes this is what we have in the new 278.

I hope we are designing for the Dreyfus average man. As one who is only about 4# heavy in regard to the average, I hope we get these problems solved before we deliver the product.

Am anxiously awaiting the next version.

It's clear we have the knowledge to build a great product, now let's get the details completed so we really have one.

FROM: GORDON BELL DATE: SUN 12 APR 1981 13:42 EST
DEPT: ENG STAFF
EXT: 223-2236
TO: GARY COLE AND STEWART
RICHARD GONZALES
JOHN HOLMAN
JOHN KIRK
KEN OLSEN
OWEN FISKE AND STEWART
DICK SCHNEIDER
HERB SHANZER
BRUCE STEWART

SUBJECT: WE HAVE TO HAVE A WORKING 278 BEFORE WE CAN SHIP IT!

I don't believe the 278 is anywhere near being ready to produce. It doesn't nave the quality, nor does it appear to have been adequately tested prior to it being available to me as a test site. It seems to have all the old problems. The package is disappointing too. I trust these will be solved by the new Gonzales/Olsen package.

OCT 6 1981

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: SEE DISTRIBUTION

CC: SEE DISTRIBUTION

DATE: 6 OCT 81
FROM: Dick Loveland
DEPT: Term. & Workstations
EXT: 223-3674
LOC/MAIL STOP: ML1-2/T29

SUBJECT: VT278 Minifloppy Decision

A meeting was held in Merrimack on Wednesday, September 30, 1981 to make a decision on which minifloppy to use with the VT278. Representation at the meeting included: Storage Engineering, Buzz Brooks' Product Line, Terminals & Work Stations, Office Systems Program and PSD.

The decision made was to proceed with the devlopment of an RX50 box for use with the VT278. This results in a better product, providing us competitive advantages. Also, we could not realize a time to market advantage that was perceived with TEAC. We believe that as a result of this decision, we will have reduced the number of floppy drives offered by DEC and will be able to optimally utilize DEC assets both in manufacturing and field service.

Following is a summarization of some of the key elements around the decision:

Eng. HW Cost	$475K	$900K	$425K more to do RX50B
Transfer Cost	$610	$525	RX50B $85/unit less
Size	1000 cu in.	675 cu in.	RX50B 30% smaller
Weight	25 lbs.	11 lbs.	RX50B 1/2 of TEAC
Track to Track Access	10 ms	6 ms	RX50B = RX02 performance, with TEAC about 5% less system performance
Average Access	366 ms	264 ms	
MTBF	Over 3000 hrs.	Over 3000 hrs.	Wash
BMC	$24	$24	Wash
Schedule	June 1982	June 1982	Wash
Cumulative PBT	$3626	$3689	Wash
Mfg. Intro.	From Japan	All in Westfield	Plus for RX50B
CT Media Compatability	TBD	Assured	Plus for RX50B

As a result of making this decision, every effort will be made to minimize development costs by working with other programs (e.g. ROBIN) that have similar needs.

I would like to thank everyone who contributed in providing the inputs and analyses to arrive at this decision. If there are any questions, please feel free to call me.

Distribution

TO: Bill Avery
Gordon Bell
Buzz Brooks
Tom Campbell
Si Lyle
Larry Portner
Grant Saviers
Ted Webber

CC: Paul Bauer
Al Davis
Owen Fisk
Mike Gutman
John Kirk
Larry Nahri
Herb Shanzer
Bruce Stewart

Enclosure
5.52/mn

VT278 NEEDS

1. LARGE MINI FLOPPY

2. AS "RX02" AS POSSIBLE

3. CUSTOMER INSTALLABLE

4. DOCK MERGEABLE

5. EARLY IN LIFE OF VT278:

FY	82	83	84
UNITS	9K	14K	5K

6. RAMP RATE: 2 QTRS UNTIL CROSSOVER IS DOMINANT

7. DECREASE TRANSFER COST BY 500+

	TEAC	RX50B
TRANSFER COSTS		
FY83	$600	510-569 (539) @6K UNITS
FY84	$618	475-553 (511) @9K UNITS
DELIVERY (FCS)	JUNE (FY82)	JUNE (FY82)
PROJECT COST	475K	900K
ENGRG	.400K	.750K
NPSU	. 75K	.150K
BMC	≈ 24	≈ 24

NOTE: I/O CABLE, DOCUMENTATION AND MEDIA: EXTRA COST

CONFIGURATIONS

RX02	2-DRIVE	MINIFLOPPY
VT278-AC	1000	1000
RX02-PA	1291	539 - 600
	2291	1539 - 1600

	4-DRIVE	
VT278-AC	1000	1000
RX02-PE	2150	1078 - 1200
	3150	2078 - 2200

	TEAC	RX50B
SIZE	1008"3	674"3
POWER	42W	41W
WEIGHT	25LBS	11LBS
MTBF	>3000HRS	>3000HRS
PERFORMANCE		
ACCESS	10MS	6MS
AVERAGE ACCESS	366MS	264MS
MOTOR START		

	TEAC	RX50B
BENEFITS	DRIVE IS ALREADY IN VOLUME PRODUCTION	LOWER TRANSFER COST
	LOWER ENGINEERING COST IN FY82	INHOUSE DESIGN AND MANUFACTURE
		BETTER PERFORMANCE, ETC.
RISK	POTENTIAL INTERCHANGE PROBLEM	MODERATE RISK ON DELIVERY SCHEDULE
	NEW VENDOR TO DEC 10,000 MILES AWAY	

STORAGE SYSTEMS
ENGINEERING AND MANUFACTURING
RECOMMENDS THE RX50B FOR THE VT278

REASONS

1. CONFIDENCE IN RX50 AS LEADERSHIP PRODUCT

2. VOLUME CAPACITY

3. CO-LOCATION WITH VT278 PRODUCTION

4. LOWER PRODUCT COST TO PRODUCT LINE

5. OPTIMAL UTILIZATION OF DEC ASSETS

6. REDUCTION OF THE NUMBER OF FLOPPY DRIVES OFFERED BY DEC

	TEAC (JUNE)	RX50B (JUNE)	RX50B (OCT)
ENGINEERING			
HARDWARE	400K	750K	750K
SYSTEMS	258K	258K	258K
SOFTWARE			
WPS	150K	150K	---
RAINBOW	40K	40K	40K
OS/78	10K (EST)	10K (EST)	10K (EST)
COS/310	12K	12K	12K
OTHER	10K+	10K+	10K+
DOCUMENTATION	25K	25K	---
COURSE	17.25K	17.25K	---
PROTOTYPES	75K	75K	75K
	997.25	1347.25	1155.00
OTHER			
NPSU	75K	150K	150K
CUSTOMER SERVICE	TBD	TBD	TBD
SDC	100K (CAPITAL)		
FIELD TEST SUPPORT	25K	25K	25K
BROCHURES	20K	20K	20K

TRADEOFF WITH V3.0

	TEAC	RX50B
ENGINEERING		
HARDWARE/SYSTEMS	658K	1008K
ALLOCATED	750K	750K
	92K	(258K)
APPLICATIONS	107K	107K
WPS + COURSE	232.25K	232.25K
RX278 V3.0 ALLOCATED	636K	636K
RX278 V3.0 REMAINING	495.75K	145.75K

ASSUMPTIONS

1. SHIP SCHEDULE

		FY82	FY83	FY84
UNITS	ALT 1	0	8K	
	ALT 2	0	8K	

2. MLP'S, DISCOUNTS & TRANSFER COSTS

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
MLP	2,000	2,000	2,000
DISCOUNTS*	11%	11%	11%
TRANSFER COST	600	539	523

* SOURCE: VT278 FINANCIAL ANALYSIS - 8/27/80 JOE WINN

3. ENGINEERING EXPENSES

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
ENGINEERING	997.25K	1347.25	1155.00

NOTE: CAPITAL EXPENSES ARE ELIMINATED FROM THESE NUMBERS

4. WARRANTY EXPENSES

	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3	
	FY82	FY83	FY82	FY83	FY82	FY83
WARRANTY EXPENSE* (% OF NOR)	2.7%	1.9%	2.7%	1.9%	2.7%	1.9%

* SOURCE VT278 FINANCIAL ANALYSIS - JOE WINN 8/27/80

5. MARKETING, SELLING, G&A EXPENSES
(ALL % OF NOR)

	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3	
	FY82	FY83	FY82	FY83	FY82	FY83
MARKETING	4.9%	4.8	4.9	4.8	4.9	4.8
SELLING	19.0%	18.3	19.0	18.3	19.0	18.3
G&A	8.8%	8.3	8.8	8.3	8.8	8.3
TOTAL	32.7%	31.4%	32.7%	31.4%	32.7%	31.4%

SOURCE: VT278 FINANCIAL ANALYSIS - JOE WINN 8/27/80

FINANCIAL ANALYSIS

	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3	
	FY82	FY83	FY82	FY83	FY82	FY83
SALES AT MLP	0K	16,000K	0K	16,000K	0K	12,400K
DISCOUNTS	0	1,760	0	1,760	0	1,364
NOR	0	14,240	0	14,240	0	11,036
TRANSFER COST	0	4,800	0	4,312	0	3,243
WARRANTY EXPENSE	0	271	0	271	0	210
NEW PRODUCT STARTUP EXP.	75	0	150	0	150	0
GROSS MARGIN	(75)	9,169	(150)	9,657	(150)	7,583
MARKETING, SELLING, G&A	0	4,471	0	4,471	0	3,465
ENGINEERING	997	0	1,347	0	1,155	0
PBT	(1,072)	4,698	(1,497)	5,186	(1,305)	4,118
CUMULATIVE PBT	(1,072)	3,626	(1,497)	3,689	(1,305)	2,813
CUMULATIVE PBT DISCOUNTED @ 40%	(1,072)	2,284	(1,497)	2,207	(1,305)	1,636

ALTERNATIVES

TEAC INCREMENTAL TO CURRENT PLAN - (140.25)

RX50B INCREMENTAL TO CURRENT PLAN - (490.25)

TEAC TRADEOFF WITH V3.0 - 495.75K

RX50B TRADEOFF WITH V3.0 - 145.75K

NOTE: NPSU NOT INCLUDED

APPLICATIONS NOT INCLUDED

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* d i g i t a l *
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Hold

TO: *GORDON BELL

DATE: MON 5 OCT 1981 9:14 EST
FROM: JOHN KIRK
DEPT: CRG
EXT: 223-4690
LOC/MAIL STOP: <ML3-2>/<E41>

SUBJECT: RE: RE: MINI FLOPPIES FOR VT278

The stacking of data I refer to is the committment to ship RX50 IN VOLUME by June '82 when there are today about 12 drives only in existance and adding to the TEAC schedule a quite unreasonable amount of "DEC test/verify" that conveniently moves the TEAC ship date out to the same time as RX50.

IF we started with TEAC on 1st. October (already almost another week has gone by) AND did evaluation of their drive in parallel with their development of the RX controller, then by the time that they deliver ten prototypes to us (1st. January - 13 weeks), we could know what shape their drives were in and could concentrate on evaluation of the working units - hopefully we would know how good they were going to be from having stayed close to TEAC as they did the design. Assuming that we could complete the functional evaluation in 4 weeks, we could then give them the go-ahead and have volume units in another 13 weeks - 1st. May.

If I had to rate the probablility of :

1. RX50B available in June, in volume
2. TEAC RX?? available in May, in volume

option #1 would not even get considered.

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* d i s i t a l *
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TO: BILL AVERY

cc: see "CC" DISTRIBUTION

DATE: TUE 8 SEP 1981 10:39 EST
FROM: PAUL BAUER
DEPT: ENG OPERATIONS
EXT: 223-6581
LOC/MAIL STOP: ML3-3/B91

SUBJECT: VT278

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: Bill Avery

DATE: 8 September 1981
FROM: Paul Bauer
DEPT: STORAGE SYSTEM
EXT: 3-6581
LOC: ML1-3/T62

cc: Gordon Bell Dick Leslie
Si Lisle Don Metzser
Carl Redfield Grant Saviers

SUBJ: VT278

Bill, I will be out of town most of the next few weeks. We had scheduled to make a VT278 implementation decision during that time and I wanted to share my present thinking with you.

For the in house design the RX50 is coming along well and will be available for Q4 ships (see attached volume forecast). In fact it looks like we will have excess production capacity in Q1 + Q2 FY83. The VT278 controller (RX02 emulation) uses 50% - 60% of the existing CT controller firmware and hardware, and will be running in the lab in October with etch board prototypes available in December and production units in early Q4.

The TEAC quote will be in Maynard this week. The last we heard they would have prototypes here in December and production in Q3.

My bottom line here is still that the RX50 is in good shape, and will be available for Q4 ship. The in house controller project is fully staffed and has defined milestones, and will match the RX50. I want to concentrate our resources on the RX50 and make it happen; it is a smaller, cheaper product. A TEAC buyout will diffuse this effort and result in a larger, more expensive product.

I recommend we stay with the in house project and not buy from TEAC on this one.

/mpc

RX50 PRODUCTION SCHEDULE

Shipments

Month	To CT	Other	Total
Jan.			
Feb.	120	80	200
March			
April	100	100	200
May	150	150	300
June	300	300	600
			1300

The other units are currently not totally commmited to any specific program.

"CC" DISTRIBUTION:

*GORDON BELL
DON METZGER
DICK LESLIE
CARL REDFIELD
SI LYLE
GRANT SAVIERS

****
* digital *
****

TO: see "TO" DISTRIBUTION

cc: DON DEROME

DATE: WED 9 SEP 1981 13:44 EDT
FROM: DON DEROME
DEPT: CPU/MFG ENG
EXT: 232-2320
LOC/MAIL STOP: AC/B38

SUBJECT: WEEKLY RX PEDESTAL UPDATE

Key Event	Target Date	Expected Date	Completed Date	Responsible Person
3 Proto Fab Units	2 July 81	2 July 81	2 July 81	D. Albano
Build/Evaluate	8 July 81	8 July 81	8 July 81	Albano/Meacham
User Doc. Plan	8 July 81	7 August 81	(Note 1)	G. Cole
PCA Control Prints	9 July 81	9 July 81	9 July 81	D. Albano
Mfg. Print Release	9 July 81	9 July 81	9 July 81	Albano/Meacham
User Proto's Avail.	9 July 81	9 July 81	9 July 81	Albano/Meacham
Field Test Plan	10 July 81	15 July 81	15 July 81	G. Cole
DMT Complete	30 July 81	10 August 81	27 August 81	B. Meacham
Document. Complete	7 August 81	7 August 81	7 August 81	Albano/Meacham
10 B.O.D. Units	3 August 81	3 August 81	3 August 81	Lamothe
10 Field Test Units	7 August 81	21 August 81	4 Sept. 81	Lamothe
10 Field Test Units	14 August 81	21 August 81	4 Sept. 81	Lamothe
10 Installability Units	21 August 81	21 August 81	4 Sept. 81	Lamothe
First Volume Ship	1 Oct.81	--------	(Note 2)	Lamothe
First Reveune Ship	15 Oct. 81	--------	2 Wks After F.V.S.	Cole

Transfer Cost

	Planned	Current	
Dual(Committed)	$1291.00	$1476.00	+185
Quad(Estimated)	$2196.00	$2469.00	+273

VT278(Committed)$1000.00 $1261.00 +261

Note 1 The slip incurred is not expected to cause a slip in the FRS date. User Documentation to be available by 15 October 81.

Note 2 First Volume Ship date will slip out past 1 October 81. Dave Lamothe and Ron Cajolet will commit to a new F.V.S. date by 23 September 81.

09-SEP-81 13:52:16 S 5054 MLDP

"TO" DISTRIBUTION:

*GORDON BELL	BUZZ BROOKS	PETER BROWN
RON CAJOLET	JOHN D CAMERON	GARY COLE
DAVE LAMOTHE @F111	DAVEKNOLL @MLXX	DAVID DORSCHELL @F111
ED TOMPKINS @MLXX	DICK ESTEN	SI LYLE
PAUL MCGAUNN	KEN OLSEN	HERB SHANZER

AGENDA - ETHERNET PRESS SEMINAR PRESENTATION

10 SEPTEMBER 1981

1. CURRENT STATUS

2. PRESENTATION OUTLINE

   DISCUSS CONTENTS AND GRAPHICS

3. IEEE 802 VOTE IMPACT

4. DEC's POSITION ON 802

ATTENDEES

John Adams
Gordon Bell
Ed Canty
Terry Cullen
Ralph Dement
Pat Murphy

OUTLINE OF DIGITAL PRESENTATION

FOR JOINT ETHERNET PRESS SEMINAR

I. WHY ARE LOCAL NETWORKS IMPORTANT TO BUSINESS

- EVOLUTION OF TECHNOLOGY
- REVERSAL OF COMPUTING BUSINESS TRENDS
- ECONOMIES OF SCALE NO LONGER APPLY
- TREND FROM 60'S MAINFRAME TO 80'S WORKSTATION

  ie. DISTRIBUTED PROCESSING
- NEED IN NEW ENVIRONMENT FOR INCREASED COMMUNICATIONS

II. WHY STANDARDS ARE CRITICAL TO THE NEXT GENERATION OF COMPUTING

- SYSTEMS REQUIRE COMMON DATA PATHS TO ACHIEVE PRICE PERFORMANCE
- COMMUNICATION BETWEEN MULTIPLE VENDORS IS A GIVEN
- WITHOUT A STANDARD CONVERSIONS ARE REQUIRED ADDING COST AND INEFFIENCIES WHILE REDUCING RELIABILITY
- WITH A STANDARD MANUFACTURES, OEM'S AND END-USERS BENIFIT
- PROCESS BY WHICH WORLD STANDARDS ARE ACHIEVED - DEC'S INVOLVEMENT

OUTLINE OF DIGITAL PRESENTATION

FOR JOINT ETHERNET PRESS SEMINAR

III. SIGNIFICANCE OF THE NEXT GENERATION OF COMPUTING

- EMERGENCE OF WORKSTATIONS PROVIDING COMPUTING POWER AT ALL LEVELS
- NEW LEVELS OF PRICE PERFORMANCE DRIVING INDUSTRY
- MERGING OF DISTRIBUTED ACCESS AND DISTRIBUTED COMPUTING
- SHIFT IN EMPHASIS FROM TECHNICAL TO NON-TECHNICAL USERS

Ken apparently they don't make 'em like they used to.

AUG 26 1981

Do you want to discuss this with either Mike or I?

2.18

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: Larry Portner
Gordon Bell

DATE: 24 August 81
FROM: MIKE GUTMAN Mike
DEPT: PSD
EXT: 223-5285
LOC/MAIL STOP: ML12-2/E71

SUBJECT: THE VT278 PACKAGING EXPERIENCE - THE COST IN TIME, DOLLARS AND PEOPLE

(I wrote you a similar note.) Gord

I've had an opportunity to look at this issue from the three perspectives indicated in the title. I believe there are some tough conclusions to be drawn and solicit your help in changing the behavior we have to deal with and we ourselves exhibit.

1. Time Cost

The VT278 was first shipped from volume on 3/30/81, then put on hold for repackaging due to Ken's dissatisfaction with the "cube" package. The resultant pedestal package has just been shipped from volume, resulting in a 4 1/2 month program slip.

2. $ Cost ← to me

a) Protos, environmental testing, tooling, startup, scrap of "cube" design = $200+K.
b) Some exploration of alternatives (Spider stand, etc.) = $50K.
c) New design and costs to bring it to fruition = $400K.
d) Total = $650K.

3. People Cost

650,000 / 20,000 = $32 / unit

A. Process:

1. The original "cube" design was approved within engineering after much discussion and visibility.

2. Ken intervened late in the process and changed the ground rules, by permitting the RX02 to be repackaged - opening an option not permitted in the original package design.

B. Frustrations:

1. Ken never clearly articulated what problem he wanted solved. Therefore time and energy were wasted bringing forth a number of "cut and try" alternatives. When Ken was pressed to clarify the problem to be solved, he accused people of being "in love with their idea", when in fact they were articulating the constraints under which the original design was conceived.

2. Meetings/discussions were held and made without the responsible people in attendance.

3. The responsible people then inherited dictum's which included schedules, scrap costs, etc., etc.

4. The "cube" design was made visible during the original decision process, but no time was invested by Ken to understand it.

C. Other Issues Being Worked Simultaneously

1. Mfg. became very responsive because they didn't want to be viewed as a bottleneck.

2. Certain packaging people wanted to show that packaging could be done very quickly, but never took ownership of the complete job - only the idea and prototype generation.

3. The time to market issue was receiving a lot of heat.

D. Other Costs/Confusions

1. Demotivated the design team as many (overtime) hours were spent solving a problem they didn't understand.

2. User documentation came to a halt as product was changed.

3. Product Lines were confused about what they would sell and when.

4. Other developments slipped as resources were focused on the redesign.

4. Conclusions

A. What Was Good?

1. New design has smaller footprint.

2. Forced Mfg. to set a "not to exceed" cost which -

3. Created focus for them to really work transfer cost.

B. What Was Bad?

1. Problem never really articulated.

2. Ground rules changed when Ken intervened.

3. The lack of a clearly written down Engrg. process permits/invites people to disrupt the product flow whenever they see fit.

4. Other issues were being worked.

5. Time was not invested to understand the original approved design.

C. Attitudes

Several engineers involved are seeking a "change of venue" as a result of the above. They agree that wherever they go it should have one prime requisite: the probablity of Ken mucking in the space should be very low.

D. The Other Side

It would be interesting to hear Ken's summary of what transpired.

/df

MJ Please get my 278 file back from KO + Put this in it.

****
* DIGITAL *
****

INTEROFFICE MEMORANDUM

TO: Ken Olsen

DATE: 28 AUG 1981
FROM: Dave Knoll
DEPT: Mfg. Admin.
EXT: 223-2900
LOC/MS: ML1-4/P14

SUBJ: YOUR QUESTIONS - THE 278 AND IT'S PAST SCHEDULES

Bottom line - floppy packaging has never been the gating factor in getting the 278 to market. The plan has always been to ship with whatever was the best floppy package available at the time that the terminal and the software were ready.

The packaging history (in addition to the "pieces", RX78, VT278, etc) was that during last Q1 and Q2, the package was to be an H9780 - a desk-like package with a metal top. This died in February after 100 prototypes had been built, and was followed by a modified (cleaner cables) H978, then the "spider", and finally the pedestal concept in March.

The original 278 FCS schedule was July 1980 (from January '81 yellow book). The July to January time was spent with numerous 278 design changes - many driven by (the then new) FCC requirements.

Manufacturing schedules for the terminal back in December 1980/January 1981 called for building 100 in Q3 and 400 in Q4. This is what actually happened.

The first VT278's had a rollover problem which was found in field test. The attached 278 status report that was generated right after the rollover problem was found gives a clear picture of where the project was on April 29. At that point we had built 76 units (with the ROM problem) and were planning to build 400 more in Q4 with the ROM simulator fix which is what ultimately happened.

The product was announced in June, and the first terminals were sent to the stores. Production software was released to the stores at the end of July after completing a change to the owner's guide generated by the customer installability audit.

We probably could have done these documentation changes a couple of weeks sooner in June if packaging changes weren't also going on at the same time. To this extent, floppy packaging did impact initial 278 shipments.

Gary Cole would be a person with more details if you would like them. He has been with the program since the beginning.

/jb
Attachment
8/28/81 1.34

READY FOR INPUT
F113 ML12 ML30 ML?X ML1

TO; B. BROOKS ML1-1
I. CAMPBELL ML1-1
D. KNOLL ML1-4
S. OLSEN ML1-2

CC; R. CAJOLE WF
G. COLE MF
D. ESTEN ML
P. GARDNER ML
F. MCGAUNN WF

FROM: DAVE DORSCHEL WF COMPS WESTFIELD

SUBJ: 278 STATUS

DATE; 29 APRIL 1981

THE FOLLOWING IS THE LATEST VT278 STATUS;

. 69 UNITS WITH ROLLOVER PROBLEM SHIPPED TO HOLYOKE
. 7 UNTTS WITH ROLLOVER PROBLEM IN WIP UNTIL SHIPWEEK OF 4MAY.
. 50 UNITS IN WIP WITH ROM SIMULATOR MODULE
. WILL SHIP 175 UNITS TO HOLYOKE IN MAY; 325 IN JUNE

CURRENT TRANSFER COST FOR VT278 AC FOR FY81 IS$1197 (PLUS $56 FOR COST OF ROM SIMULATOR) FOR FY82, $1267 (PLUS ROM SIMULATOR) - MAXIMUM CAPACITY FOR FY82 IS 10K UNITS - TO DATE 8K UNITS HAVE BEEN REQUESTED AND COMMITIED.

THE FOLLOWING IS THE LATEST RL 278 STATUS;
. MODULE BUILD TO COMMENCE 5/4 - WAS DELAYED DUE TO ECO
. MODULE PMT TO COMMENCE 6/19
. UNIT ASSEMBLY TO COMMENCE 8/7
. FVS - 9/1

ESTIMATED TRANSFERCOST FOR FY82 IS$1700 (SINGLE DRIVE).

THE FOLLOWING IS THE LATEST DEC-MATESTATUS;

. MODEL RECEIVED IN WF ON5/28
. POWER SUPPLYBUILD COMPLETE FOR FIRST UNITS
. RX KITS BEING BUILT -DUE FROM WS ON 5/11
. SHEET METAL BEING FORMED -ASSEMBLED CABINETS DUE FROM WS ON 5/11
. SHEET METAL BEING FORMED - ASSEMBLED CABINETSDUE 5/11
. FA&T TO COMMENCE 5/11
. FVS 5/29
WILL SHIP 400 UNITS TO HOLYOKE IN FY81

MAJOR RISKS TO SUCCESSFUL COMPLETION OF THE DEC-MATE ARE;

. AC FILTER AVAILABILITY - CURRENTLY DUE 5/5
. SUCCESSFUL COMPLETION OF DEC 102 TESTING
. UL APPROVAL
. SYSTEMS MANUALS AVAILABLE TO MEETFVS

WFHAS MODIFIED THE CASTORS ON H978 CABINEST AND HAS THESE UNITS IN INVENTORY AND WILL SHIP INITIAL SYSTEMS(PER AUTHORIZATION, OF G. COLE) ON THE MODIFIED CABINED IS REQUIRED -MANUFACTURING'S GOAL IS TO HAVE DEC-MATESTANDS AVAILABLE.

ESTIMATED FY82 TRANSFER COST FORDEC-MATE IS$1250 WITHDUAL FLOPPIES. TOTAL VT278 SYSTEM COST WITH VT278 AC AND DEC-MATE DUAL RX'S IS ESTIMATE TO BE $2547. TOTAL SYSTEM COST WILL BE DEPENDENT ON PRINTER SPECIFIED. ESTIMATEDCOST FOR VT278 AHWITH RL 278 WILL BE$3115.

[illegible] DAVE

[illegible] MLXX ML12

[illegible] ACCEPTED [illegible] 0 02

+--------------+
: d i g i t a l :
+--------------+

INTEROFFICE MEMO

TO: Dave Knoll

Date: 31 August 1981
From: Ken Olsen
Dept: Administration
MS: ML10-2/A50 Ext: 2301

SUBJ: VT278 PACKAGING EXPERIENCE

I would like to hear your observations on this.

KHO/er
KO1:S6.8

Attachment

RECEIVED

AUG 2 7 1981

KENNETH H. OLSEN

2.18

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: Larry Portner
Gordon Bell

DATE: 24 August 81
FROM: MIKE GUTMAN Mike
DEPT: PSD
EXT: 223-5285
LOC/MAIL STOP: ML12-2/E71

SUBJECT: THE VT278 PACKAGING EXPERIENCE - THE COST IN TIME, DOLLARS AND PEOPLE

I've had an opportunity to look at this issue from the three perspectives indicated in the title. I believe there are some tough conclusions to be drawn and solicit your help in changing the behavior we have to deal with and we ourselves exhibit.

1. Time Cost

The VT278 was first shipped from volume on 3/30/81, then put on hold for repackaging due to Ken's dissatisfaction with the "cube" package. The resultant pedestal package has just been shipped from volume, resulting in a 4 1/2 month program slip.

2. $ Cost

a) Protos, environmental testing, tooling, startup, scrap of "cube" design = $200+K.
b) Some exploration of alternatives (Spider stand, etc.) = $50K.
c) New design and costs to bring it to fruition = $400K.
d) Total = $650K.

3. People Cost

A. Process:

1. The original "cube" design was approved within engineering after much discussion and visibility.

2. Ken intervened late in the process and changed the ground rules, by permitting the RX02 to be repackaged - opening an option not permitted in the original package design.

B. Frustrations:

1. Ken never clearly articulated what problem he wanted solved. Therefore time and energy were wasted bringing forth a number of "cut and try" alternatives. When Ken was pressed to clarify the problem to be solved, he accused people of being "in love with their idea", when in fact they were articulating the constraints under which the original design was conceived.

2. Meetings/discussions were held and made without the responsible people in attendance.

3. The responsible people then inherited dictum's which included schedules, scrap costs, etc., etc.

4. The "cube" design was made visible during the original decision process, but no time was invested by Ken to understand it.

C. Other Issues Being Worked Simultaneously

1. Mfg. became very responsive because they didn't want to be viewed as a bottleneck.

2. Certain packaging people wanted to show that packaging could be done very quickly, but never took ownership of the complete job - only the idea and prototype generation.

3. The time to market issue was receiving a lot of heat.

D. Other Costs/Confusions

1. Demotivated the design team as many (overtime) hours were spent solving a problem they didn't understand.

2. User documentation came to a halt as product was changed.

3. Product Lines were confused about what they would sell and when.

4. Other developments slipped as resources were focused on the redesign.

4. Conclusions

A. What Was Good?

1. New design has smaller footprint.

2. Forced Mfg. to set a "not to exceed" cost which -

3. Created focus for them to really work transfer cost.

B. What Was Bad?

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C. Attitudes

Several engineers involved are seeking a "change of venue" as a result of the above. They agree that wherever they go it should have one prime requisite: the probablity of Ken mucking in the space should be very low.

D. The Other Side

It would be interesting to hear Ken's summary of what transpired.

/df

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: Ken Olsen

DATE: 2 SEP 1981
FROM: Dave Knoll
DEPT: Mfg. Admin.
EXT: 223-2900
LOC/MS: ML1-4/P14

SUBJ: FURTHER 278 OBSERVATIONS -

Below are some additional observations that I would add to my 8/28 note after seeing Mike's memo and the things that concerned him.

Delays - As I said in my earlier note, PACKAGING WAS NEVER THE GATING ITEM FOR 278 SHIPMENTS.

Packaging was a disruption though and whenever a program gets thrown into change mode, there is bound to be an effect - people tend to take their eye off the ball. It's a little like when there's a disruption in the bleachers at a baseball game, it takes a lot of professionalism for the fielder to ignore it. I'm sure that software, documentation, user tests, etc. suffered somewhat due to the packaging commotion. I THINK FOCUSING ON THE PACKAGING EFFORT EVEN NOW IS LIKE TURNING TO WATCH THE DISRUPTION IN THE BLEACHERS - LET'S NOT MISS THE BALL!

Rules - In March when I got involved, I ran into comments such as, "The packaging rules had been changed" and "Obviously, if we can change the RX package, it's a whole new ball game". I believe people had felt for some time that the energy and effort required to change floppy packaging was so great (in hassle terms) that it couldn't be done. It did take intervention such as yours to "throw the rule out". Once the "rule" was out, packaging was a whole new ball game. THERE HAS TO BE A BETTER WAY TO THROW AWAY DUMB "RULES" OR EVEN TO DISCOVER WHAT THEY ARE.

Goals - I think people need to have goals and they need to buy into them and be able to put them in context. For the pedestal, people did understand the goals at one level. We were repackaging the floppies into a pedestal to get a better looking, more compact package - one that would be more exciting at no more cost than the H978 and we would do it in a big hurry. In this sense, people set out to meet the goals.

At another level though, the "why" for the goal wasn't clear - and I think this is what Mike encountered as he spoke to people. When they came up for air, I think people were thinking, "Will we sell more units with this effort?" and "Wouldn't the resources be better spent on other programs - mini floppies, options, etc?" WE CERTAINLY DID THE PEDESTAL FAST BUT THERE WASN'T UNIVERSAL BUY-IN THAT IT WAS THE BEST THING TO BE DOING. Everyone pitched in though, with an attitude of "let's get the job done fast and well".

People Benefits - I think there were some --- The packaging efforts took a lot of effort - by a lot of people. Maynard and Westfield manufacturing people, product and packaging engineering people, and many others did some things significantly

****
* digital *
****

fdl

TO: KEN OLSEN

cc: *GORDON BELL
LARRY PORTNER

DATE: THU 3 SEP 1981 10:05 EST
FROM: MIKE GUTMAN
DEPT: PSD
EXT: 223-5285
LOC/MAIL STOP: ML12-2/E71

SUBJECT: VT278 PACKAGING EXPERIENCE

61

Ken, I didn't mean to engage you in a debate when I wrote the original memo. My purpose was to indicate that whenever you enter a product area, even in the most casual manner, there are usually significant ripple effects which cause energies to be redirected. I have no desire to contain or stop your inquiries, merely to channel them so that the responsible individuals are aware of them, and are properly responsive given the available resources and commitments.

I will answer the questions you asked in your memo and then be still, as I've adequately covered the point I wanted to make.

1. You are correct when you say you never told anyone to make the pedestal for the VT278. However, I do believe you expressed your ideas to Gonzales who then set about putting your ideas into a prototype. I'm also told that you expressed your interest in the pedestal to Jack Smith. I suspect those casual expressions were enough to cause a decision to be made by the responsible parties (Stan, Si, Buzz, Gerry Moore, at OPS committee).

2. The cube would have been ready to ship on 3/30 as I stated, except for the hold put on for repackaging. You are correct about the metal table top being needed to pass FCC. Thanks for getting John Kirk into the act, for he did a fine job of cleaning up the FCC problem. The table top FCC fix was indicative of our rather poor knowledge of FCC emission problems and cures, but even so we were prepared to ship the product. In fact, 100 sets of hardware were prepared and then scrapped when the hold was put on. As an aside, while the VT278 folks had relatively little knowledge of how to fix the FCC problem, our mechanical folks who produced the package had even less. I suspect we would have eventually fixed the problem properly as our knowledge improved, but fortunately John Kirk was there to save the day.

As a final note, your recent memo about the VT200 and CT200, coupled with the VT278 response to me triggered a thought. Rather than John Kirk going to Japan, why not plug his expertise into the VT200/CT200 area? Area of interest (Small Systems) and capabilities seem a reasonable match.

digital

INTEROFFICE MEMORANDUM

TO: Bruce Ryan

cc: Gary Cole
Hezekiah Simmons

DATE: 2 February 1981
FROM: Joe Winn
DEPT: CPG/Finance
EXT: 264-7287
LOC/MAIL STOP: MK1/2C36

SUBJECT: VT278 FINANCIAL ANALYSIS

Per your request, I have completed a quick relook at the VT278 Financial Analysis based on a substantial reduction in the ship forecast and the latest changes to the Word Processing and Retail Stores financial model during F.Y. 1981-1984. Key factors which should be considered when reviewing this analysis are (1) Both RPG and WPG are loss or low profit businesses during this product's lifetime (2) There is no visible DEC product alternative to the VT278. The VT78 price has been slashed substantially and the CT100(KO) will not be available before F.Y. 1983 (3) the VT278 is an interim product that will keep both RPG and WPG active during F.Y. 1982 and F.Y. 1983.

My summary conclusions based on the below and attached analysis are as follows:

- Despite a substantial reduction in forecast volumes, this product continues to achieve a reasonable markup (2.7x) and an average lifetime Gross Margin at 49%.

- A full Internal Rate of Return and Operating Profit analysis are not necessarily meaningful in this case because this product would be burdened with Product Group allocations (Marketing, Administration, etc.) that are based on the Product Group Cost Models - and are thus, excessive. This product, in effect would be penalized for a lack of product in this space.

- With average Cost of Market and Sales Costs, this product achieves satisfactory Operating Profit and Return.

- A complete analysis of this product would require a full dissection of the WPG and RPG Cost Models to determine what portion of their direct costs are directly product related and what portion are based on inefficiency of being at a lower than anticipated volume level.

Summary Analysis is as follows:

The VT278 is a single user, small business system that runs Word/List Processing, Retail Stores (Dental, Property, etc.) and other application packages. The product was a planned replacement for the VT78 and was expected to have peak revenue producing years in the F.Y. 1983-84 timeframe.

Lifetime shipments were planned at ≈ 50K Units. Several issues have forced a substantial reduction in the unit forecasts.

(1) COEM has decided to transfer all 8-based business to TPL.

(2) Word Processing has developed a strategy around 11-based systems.

(3) Retail Stores growth plans have been reduced.

Total VT278 unit shipments are now ≈ 11K.

A comparison of the Current Analysis (Attachment B) and the August, 1980 BURP Analysis (higher volumes, better performance models in WPG, RPG) is shown below:

VT278	Jan., 1981	August 1980
Lifetime Units	11K	50K
Ave. MLP	$10.4K	$10.1K
Ave. Transfer Cost	$ 3.8K	$ 3.5K
NOR	$ 104K	$ 451M
Gross Margin %	49%	57%
Operating Profit %	-3%	25%
Internal Rate of Return%	0%	57%

As shown above, the most significant impact to Operating Profit % occurs below the Gross Margin level. This happens because the Direct product related categories - MLP, Transfer Cost and Warranty per unit do not change substantially at the lower volumes, however, product group expense allocations - Marketing, Administration, Sales have changed as discussed above.

An example of the impact to this analysis with a change in Product Group Allocations is displayed below. The Corporate average performance for all Product Group Direct Expense categories has been applied in the following (Attachment C).

VT278	Jan. 1981 (Corp. Ave.)	Jan. 1981 (Current Model)
Lifetime Units	11K	11K
Ave. MLP	$10.4K	$10.4K
Ave. Transfer Cost	$ 3.8K	$ 3.8K
NOR	$ 104M	$ 104M
Gross Margin %	49%	49%
Operating Profit %	22%	-3%
Internal Rate of Return %	87%	0%

As shown above, with no change in Gross Margin, average Corporate performance in Direct Expenses produces a favorable Operating Profit and an excellent IRR%.

I have attached BURP Summary Forms (B & C) Forecast Comparisons (A) and Assumptions (D). Let me know if you want me to pursue this further.

ATTACHMENT A

VT278
COMPARISON OF FORECASTS
UNITS

		AUGUST 1980 (Product Mgr.)	JANUARY 1981
WORD PROCESSING	81	700	113
	82	5,000	3,000
	83	6,500	1,000
	84	3,500	?
	TOTAL	15,700	4,113
RETAIL	81	500	100
	82	3,000	2,400
	83	6,000	3,000
	84	9,000	?
	TOTAL	18,500	5,500
OEM	81	500	20
	82	3,000	900
	83	3,500	500
	84	4,500	?
	TOTAL	11,500	1,420
TOTAL (External)	81	1,700	233
	82	11,000	6,300
	83	16,000	4,500
	84	17,000	?
	TOTAL	45,700	11,033

ATTACHMENT B
WPG, RPG Cost Model

PROFIT/LOSS SHEET FOR VT-278AA

BASE PLAN FILE #: A00358

CHANGED ON: 810127

PRODUCT:VT-278AA BEGINNING ON:_800701

[MONEY EXPRESSED IN 1000 DOLLAR UNITS]

... ERROR 63720 IRR NET ROW (NET.CASH.FLOW) SUMS TO ZERO OR LESS THAN ZERO!
... 18833 ...BAD CROSSOVER DATE CALCULATION...

******

... ERROR 63720 IRR NET ROW (NET.CASH.FLOW) SUMS TO ZERO OR LESS THAN ZERO!
... 18833 ...BAD CROSSOVER DATE CALCULATION...
:::AFTER TAX SUMMARY:::

SHIP DLY	SHIP MULT	COST MULT	PRICE MULT	A/R MULT	WIP MULT
0.00	1.00	1.00	1.00	1.00	1.00

******

$SALES	GROSS $MARGIN	GROSS MARGIN ÷ NOR	PROFIT BEF TAX	PROFIT BEF TAX ÷ NOR	$DEV	DEVEL. ÷ SALE	BRKEVN DATE	$NPV @ 40%	IRR
104000.2	51091.3	49.13%	-2934	-2.82%	1400	1.35%	0	-5592.3	-1%

******

TITLE	UNITS	80/07	81/07	82/07	83/07	TOTAL	SOURCE
		PERIOD BEGINNING					
SHIPMENTS		233	6300	4500	0	11033	(27)
MLP/UNIT	K	10.4	10.5	10.3	0		(81)
TRANSFER COST/UNIT		4419	4064	3579	0		(82)
DISCOUNT FACTOR		0.9	0.9	0.9	1		(AT)
EQUIPMENT NOR	M	2.19	59.9	41.8	0	104	(25)
FIELD SERVICE NOR							(AT)
SFTWARE SUPPORT NOR							(AT)
OTHER NOR							(AT)
TOTAL NOR	M	2.19	59.9	41.8	0	104	(13)
TRANSFER COST	M	1.02	25.6	16.1	0	42.7	(12)
F.S. CONTRACT COST							(AT)
SW SUPPORT COST							(AT)
FA&T COST	K	79	2159	1045	0	3283	(62)
F.S. WARRANTY COST	K	87.6	2394	1674	0	4165	(14)
SW WARRANTY COST							(78)
MFG. STARTUP COST							(AT)
OTHER COST	K	93	1599	1069	0	2721	(AT)
COST OF NOR	M	1.25	31.7	19.8	0	52.9	(18)
GROSS MARGIN	M	0.93	28.2	21.9	0	51	(37)
MARKETING EXP	M	0.53	10.5	7.4	0	18.4	(67)
SALES EXPENSE	M	0.79	17.5	10	0	28.3	(66)
G&A EXPENSE	K	175	3298	1300	0	5774	(63)
HARDWARE DEV EXP.	K	500	100	50	0	650	(AT)
SOFTWARE DEV EXP.	K	250	500	0	0	750	(AT)
DEV OTHER EXPENSE							(AT)
DEV MGT EXPENSE							(AT)
OTHER EXPENSE							(AT)
TOTAL EXPENSES	M	2.26	31.9	18.7	0	54	(26)
PROFIT BEFORE TAX	K	-1328	-3746	2141	0	-2934	(19)
PBT % TO TOTAL NOR		-60.5	-6.24	5.11	0	-2.82	(29)
LESS 46% TAX	K	-611	-1723	984	0	-1349	(71)
PROFIT AFTER TAX	K	-717	-2022	1156	0	-1584	(78)
LESS CAPITAL							(36)
PLUS DEPRECIATION							(77)
PLUS BUY BACK							(85)
A/R SHIFT	K	-274	-7222	4011	3465	0	(72)
WIP SHIFT	K	-2346	-3692	6039	0	0	(73)
ATNCF	M	-3.33	-12.9	11.2	3.48	-1.58	(68)
ATDCF @ 40%	K	-3338	-9241	5717	1270	-5592	(74)
WIP MONTHS		0	1.1	4.5	0		(84)
A/R MONTHS		1.5	1.5	1	0		(83)

ATTACHMENT C

Corp AVE

PROFIT/LOSS SHEET FOR VT-278AA

BASE PLAN FILE #: A00358

CHANGED ON: 810127

PRODUCT:VT-278AA BEGINNING ON:_800701

[MONEY EXPRESSED IN 1000 DOLLAR UNITS]

******

:::AFTER TAX SUMMARY:::

SHIP DLY	SHIP MULT	COST MULT	PRICE MULT	A/R MULT	WIP MULT
0.00	1.00	1.00	1.00	1.00	1.00

******

$SALES	GROSS $MARGIN	GROSS MARGIN ±_NOR_	PROFIT BEF TAX	PROFIT BEF TAX ±_NOR_	$DEV	DEVEL. ÷ SALE	BRKEVN DATE	$NPV @ 40%	IRR
104000.2	50215.2	48.28%	22815	21.94%	1400	1.35%	8212	3532.9	87%

******

TITLE	UNITS	PERIOD BEGINNING 80/07	81/07	82/07	83/07	TOTAL	SOURCE
SHIPMENTS		233	6300	4500	0	11033	(27)
MLP/UNIT	K	10.4	10.5	10.3	0		(81)
TRANSFER COST/UNIT		4419	4064	3579	0		(82)
DISCOUNT FACTOR		0.9	0.9	0.9	1		(AT)
EQUIPMENT NOR	M	2.19	59.9	41.8	0	104	(25)
FIELD SERVICE NOR							(AT)
SFTWARE SUPPORT NOR							(AT)
OTHER NOR							(AT)
TOTAL NOR	M	2.19	59.9	41.8	0	104	(13)
TRANSFER COST	M	1.02	25.6	16.1	0	42.7	(12)
F.S. CONTRACT COST							(AT)
SW SUPPORT COST							(AT)
FA&T COST	K	87.7	2399	1673	0	4160	(62)
F.S. WARRANTY COST	K	97.6	2394	1674	0	4165	(14)
SW WARRANTY COST							(76)
MFG. STARTUP COST							(AT)
OTHER COST	K	53	1589	1089	0	2721	(AT)
COST OF NOR	M	1.26	31.9	20.5	0	53.7	(18)
GROSS MARGIN	M	0.92	27.9	21.3	0	50.2	(37)
MARKETING EXP	K	153	4193	2927	0	7280	(67)
SALES EXPENSE	K	197	5397	3784	0	9360	(66)
G&A EXPENSE	K	197	5397	3784	0	9360	(63)
HARDWARE DEV EXP.	K	500	100	50	0	650	(AT)
SOFTWARE DEV EXP.	K	250	500	0	0	750	(AT)
DEV OTHER EXPENSE							(AT)
DEV MGT EXPENSE							(AT)
OTHER EXPENSE							(AT)
TOTAL EXPENSES	M	1.29	15.5	10.3	0	27.4	(26)
PROFIT BEFORE TAX	M	-0.37	12.3	10.7	0	22.8	(19)
PBT % TO TOTAL NOR		-16.9	20.6	25.6	0	21.9	(29)
LESS 46% TAX	K	-171	5698	4967	0	10494	(71)
PROFIT AFTER TAX	K	-200	6689	5831	0	12320	(78)
LESS CAPITAL							(36)
PLUS DEPRECIATION							(77)
PLUS BUY BACK							(85)
A/R SHIFT	K	-274	-7222	4011	3485	0	(72)
WIP SHIFT	K	-2346	-3602	6039	0	0	(73)
ATNCF	M	-2.82	-4.22	15.8	3.48	12.3	(68)
ATDCF @ 40%	K	-2822	-3018	8103	1270	3532	(74)
WIP MONTHS		0	1.1	4.5	0		(84)
A/R MONTHS		1.5	1.5	1	0		(83)

LEGEND:

ATTACHMENT D

ASSUMPTIONS

1. This analysis includes revenue and cost of a typical VT278 System configuration including a VT278 AA terminal, table, DP278 Comm Option, printer (LA34W, LA120, LQP-02, CQPSE, or LA24) and Software. Costs as of Q3, F.Y. 1981 are included.

2. VT278 planned shipments and builds are as follows with first Customer Ship planned at Q4/F.Y. 1981.

SHIPMENTS	81	82	83
RPG	100	2,400	3,000
WPG	113	3,000	1,000
OEM & Other	20	900	500
	233	6,300	4,500
BUILD	600	8,000	2,433
INVENTORY MONTHS	1.1	4.5	

3. MLP/TRANSFER COST

	MLP	TRANSFER COST
VT278 AA - with 64KB and RX02	5,395	2,200
Table	500	150
DP278	1,000	240
SOFTWARE		
WP - with LP	900	50
COS 310/OS 78/WP	3,140	50
PRINTER		
LA34	900	560
LA120	2,100	829
LQP02	3,500	1,375
LQPSE	3,500	2,330

- All WP Sales with LQP (LQP-02, Q3 FY 1982)
- 50% RPG and OEM Sales with LQP
- 33% of Systems Include DP-278
- OEM Sales Include COS 310/OS 78/WP License

Weighted Ave. MLP Transfer Cost by Product Group:

		MLP	TRANSFER COST
WP/RPG/OEM	VT278-AA	$5,395	$ 2,200
	Table	500	150
	DP-278	333	80

		MLP	TRANSFER COST
WP/RPG	Software	$ 900	$ 50
OEM	Software	3,140	50
WP	Printer (thru Q2/82)	3,500	2,330
	Printer (after Q2/82)	3,500	1,375
OEM/RPG	Printer (thru Q2/82)	2,800	1,580
	Printer (after Q2/82)	2,800	1,100

		MLP	TRANSFER COST
TOTAL WPG	Thru Q2/82	$10,628	$ 4,810
	After Q2/82	10,628	3,855
RPG	Thru Q2/82	9,928	4,060
	After Q2/82	9,928	3,580
OEM	Thru Q2/82	12,168	4,060
	After Q2/82	12,168	3,580

4. DISCOUNTS - ALLOWANCES

OEM	23%
RPG	5%
WPG	15%

5. RECEIVABLES

RPG	0
WPG	60 days
OEM	60 days

6. WEIGHTED AVE. - COS

	81	82	83
Other COS	2.4%	2.4%	2.3%
FA&T	3.6%	3.6%	2.5%
HW Warr	8.7%	8.4%	6.0%
Mkt, Adm., etc.	24.6%	17.6%	17.7%
Selling	36.4%	29.2%	24.0%
Corp. Services	8.0%	5.5%	5.5%
(Eng.	$500K	$500K	$200K)
(Warranty Per Unit	$419	$380	$372)

faster than normal in response to a program that, I think, they all got excited about. I THINK THE RESPONSIVE EFFORTS OF WESTFIELD/MAYNARD COULD POSITIVELY BE VIEWED AS GETTING THINGS DONE IN A HURRY FOR A PROJECT THEY FELT WAS IMPORTANT. I was impressed by what happened. I don't think people's motivation was just to stay off the critical path.

I think a high energy program such as this also has some longer term benefits in that it tends to force people to work together and rely on each other more. I think there is some lasting good that comes from this. Occasional crash programs will increase the speed and cooperation with which other programs happen. BUT - A CRASH PROGRAM IS NOT THE WAY TO RUN THE RAILROAD EVERY DAY, ALTHOUGH I THINK IT'S GOOD THERAPY EVERY COUPLE OF YEARS.

Attitudes - I didn't run into the attitudes that Mike did. I didn't feel that the design team was demotivated - on the contrary, I felt that the excitement that comes with change and "doing the impossible" overshadowed a frustration with the goals. I also feel, though, that if I were at the bottom looking up, I might well say, "ISN'T THERE A BETTER WAY - COULDN'T ALL OF THIS HAVE BEEN AVOIDED BY GETTING AT THE ISSUES SOONER?"

Other Issues - One of my observations of the program was how segmented the efforts seemed to be. To have a clear bull's eye to shoot at, I think we need to view products in their entirety - terminal, packaging, options, storage, software, documentation, distribution, and promotion and all the pieces need to see the same bull's eye so trade offs can be made. Too much emphasis on any of these can take our eyes off the others. These product changes happened at a time when the marketing environment was quite unstable - everything was changing at once - and this didn't help. I feel that while there is clearer direction now, it is still too easy for too many people to focus on one part (like packaging if you are in mechanical design or software if you are in programming) and too hard to clearly see the same bull's eye as the customer sees. WHENEVER OUR COLLECTIVE VIEW OF THE BULL'S EYE IS BLURRED, WE'RE LESS LIKELY TO HIT THE TARGET.

Conclusions - We couldn't and shouldn't plan to introduce every product this way, but once every two years, it's good to shake the cobwebs. This is especially useful when the environment perceives that a super idea is being accelerated as opposed to a mistake being corrected.

Knowing the interest that you and Gordon and others far from the projects have (and should have) in packaging, it seems like it sure might make some sense for project architects and engineers to make it easier for communication to occur. The engineering process should provide for this.

I think there's an analogy that has worked well in the past in constructing buildings. The architectural review and "picking of the brick color" was a good vehicle that allowed you and others to be influential and comfortable with the "packaging" of our various operations. The various alternatives considered and their pros and cons were presented and understood.

There's no more reason to have to pick or change sizes, shapes, and colors of products at the last minute than there is to do the same for buildings. The process should be formal and should be set up by the people responsible for the project because this shows a desire for feedback. THESE THINGS HAVE TO BE CAUGHT EARLIER!

/jb
9/2/81 1.42

QQ BURT DECGRAM ACCEPTED S 21063 0 38 14-SEP-80 13:15:29

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* d i s i t a l *
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TO: see "TO" DISTRIBUTION

DATE: SUN 14 SEP 1980 1:03 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: WPS/EMS/KO DIRECTION AND STATUS

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
The attached is indicative of the high degree of confusion and unproductive hassle surrounding the WPS/OFIS/KO program across the Corporation. I believe we must do everything necessary to focus management attention on the critical issues and to limit the level of hassle wherever possible. The following is a brief statement of our current Engineering strategy which I propose we use to help clear the air and focus management attention across the Corporation.

1. Foundation Strategy

The KO project has become the top priority project toward the achievement of the Foundation Strategy approved by the Marketing Committee on 25 August 1980. The first version of OFIS on KO will be a single user, "minimum" implementation of Word Processing on a sound architectural base. Clean architecture and time to market are the critical success factors. The functionality of V1 will be defined by Engineering and reviewed with the Marketing Committee. We will follow KO V1 with greater functionality in V2. We will also be moving later versions to multi-user operating systems. At present, I believe we should do only this for VMS. At this time, I don't want Engineering to be quoting schedules or functionality on any activity beyond KO V1. I want to focus their attention exclusively on the V1 KO project. We will continue to accept product requirements for future versions through our Product Management organization (Si Lyle's group). I do not want Engineering responding to these requirements until the schedule, functionality, and architecture of KO V1 software is well established and deep into the implementation phase.

2. WORD-11

It was also agreed at the 25 August Marketing Committee meeting to begin immediately negotiating with DPD in an attempt to bring WORD-11 into DEC as a corporate product on RSTS. Buzz Brooks has the action item to report back to the Marketing Committee on how WORD-11 will be sold and supported by WPG and the end-user product groups. I am assuming that if we are successful in bringing WORD-11 in house, we will stop selling the WS200 multi-user PDP-8 system. In addition, I am hoping that the Electronic File Cabinet (EFC) will be unnecessary with the acquisition of WORD-11 as a corporate

product, in that a bounded version of WORD-11 will accomplish similiar functionality.

3. Electronic Mail

Engineering still has a commitment to produce an Electronic Mail capability (DECMAIL) on VMS and test market this product on VMS as soon as possible. I am giving the above two activities (KO and WORD-11) top priority within Engineering, and I want to defer (temporarily) planning activity on DECMAIL until the organizational and technical issues surrounding KO and WORD-11 are sorted out. Once this is accomplished, we will provide a firm schedule for the test marketing of DECMAIL under VMS.

I hope this clarifies the Engineering strategy for Word Processing and Electronic Mail as it has evolved rapidly over the past several weeks. I need your support to focus management attention and critical resources toward the successful completion of these critical projects. We need now to strengthen our resolve, focus our management attention, and curb our insatiable product/feature appetites until we establish a firm base upon which we can build. Unless we begin to get an underlying technical base, there will be no basis for building anything!

Meetings and memos do not produce products.

I would hope the people who are moved to continue meeting on product direction and requirements would temporarily suspend their meetings and consider how we might sell the products we have and are trying to buy. Please let me congratulate you on the admirable job you have done in stating the product requirements.

I am personally involved in the design of the base architecture and feel we are addressing the requirements.

We will not operate in a vacuum, but will have review in a well defined fashion. Furthermore, there will be progress reports as we proceed with the design. Bruce Stewart, Bob McKenzie and Bob Daley will outline the detailed process this next week.

"TO" DISTRIBUTION:

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ROSE ANN GIORDANO	OPERATIONS COMMITTEE:	LARRY PORTNER
GLENN REYER	BRUCE STEWART	TOM VLACH
TED WEBBER		

ATTACHED: MEMO;153

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* d i g i t a l *
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TO: see "TO" DISTRIBUTION

DATE: FRI 5 SEP 1980 2:19 PM EDT
FROM: JOAN ROSS
DEPT: TECHNICAL GROUP ADMIN
EXT: 231-5037
LOC/MAIL STOP: MR1-1/A65

SUBJECT: OFIS STRATEGY NOT MEETING MAJOR TG NEEDS

As I understand it the OFIS strategy has evolved into the followings series of products:

1. WORD-11 on RSTS Q1 FY82 or earlier

2. DECMAIL on VMS Q1 FY82 or earlier

3. OFIS FOUNDATION WP/EM on VMS, and then other OP sys Q1 FY83

In addition there is now a new systems level product, KNOCK OUT, which is in some way tied to OFIS strategy.

KNOCKOUT a small personal computer that can be:

Version 1 - 9 months limited WPS
Version 2 - 24 months with full WP

The Technical Group has concerns relating to the OFIS strategy and the new systems level product.

For 5 months TG has asked for the followings requirements to be included in the OFIS strategy. Our concern is that these requirements are not being met by Version 1 of OFIS Foundation nor Word-11.

TECHNICAL GROUP OFIS REQUIREMENTS

SHORT TERM (0 - 18 MONTHS)

- o Layered Word Processing on RSX by Q1 FY82

LONG TERMS (18 - 24 MONTHS)

- o Layered Word Processing on VMS by Q1 FY83.
  WP must include:
  - + Optional Character Set -- Scientific
  - + Math -- Including formula facilities
  - + Ability to embed Graphics in text -- WP hooks into GIGI and other graphic programs
  - + Editor for WP and DP must be the same
- o Layered Electronic Mail with the ability to

handle graphics, text and data.

- o Layered WP/EM/Adm Function Products which interface with the software bus of LDP's Total Lab Computer

- o Operating System Priorities

  1. VMS
  2. RSX
  3. RSTS
  4. RT (not for EM)
  5. TOPS 20/10

These needs are a must for TG because we have a large market demand to be met over the next three years. If we had the above products today we could sell the following number of packages.

TG LAYERED PRODUCTS MARKET POTENTIAL
(Number of Packages Sold)

	FY82	FY83	FY84
WORD PROCESSING			
VMS	970	1600	2400
RSX	450	700	700
RT	1000	1200	?
RSTS	150	300	150
TOPS 10/20	150	120	80
ELECTRONIC MAIL			
VMS	670	1350	1900
RSX	280	500	400
RSTS	50	100	40
TOPS 10/20	70	70	30
GRAPHICS TERMINALS to use graphics/text interface			
GIGI	14000	16000	20000
VT125	6000	10000	14000

- o This worldwide forecast assumes that we had the VMS, RSX, RSTS, and RT product available Q1 FY82. It also assumes that the RT system is a subset at $2K, versus $10K for the others.

There is a need for the following OFIS action items to occur.

1. Version 1 of OFIS Foundation must include SCIENTIFIC CHARACTER SET, FORMULA FACILITIES, ABILITY TO EMBED GRAPHICS IN TEXT.

2. I understand that Knock Out is likely to delay OFIS FOUNDATION delivery date of Q1 FY83. If

this is so, we need to explore with DPD setting WORD-11 on VMS and/or RSX as an actual product.

3. Also DEC needs to solve 1 year incongruity of WP on RSTS and EM on VMS.

TG needs to understand the KNOCK OUT product with the followins action items to occur.

1. KO need to formally clarify impact on OFIS FOUNDATION product.

2. TG should be thoroughly informed about the KO product strategy.

3. TG needs the opportunity to position KO product in terms of our own market strategies.

4. TG needs to meet with KO project team to discuss how it fits our market needs and raise issues of concern.

05-SEP-80 14:34:35 S 2365 MLDP

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GB1.S9.57

interoffice memorandum

SUBJ: OUR WPS248--1 YEAR LATER

TO: GORDON BELL

Date: 12/18/80 Thu 4:46
From: Mary Jane Forbes
Dept: OOD
MS: ML12-1/A51 Ext: 223-2237
EMS: @CORE

The shake-out period is over. In rereading my memo of June 16, 1980, I had trouble relating to the fervor I felt at the time with respect to multiple users. The latest software is great and solved almost all user hassles.

In 12 months of heavy usage:

- The keys, randomly, do not respond--Mill Field Service reports many complaints of this nature. They clean off the connection and the key works again--could be costly for us to run to customer sites for such a minor, but very annoying problem.
- Couldn't think of any major, extended downtime.
- Although we couldn't remember any major downtime, it was interesting/appalling to note that we did have 44 Field Service calls which would be terrible from a customer/DEC viewpoint. We found that it took 3 calls from Field Service before we realized it was a problem we could learn to fix--i.e. cables falling down and jamming the drive drawer (1st call--didn't know what it was, 2nd call--recognized problem but didn't think it would happen again, 3rd call--fix and show us).

Number of Field Service Calls - Jan thru Dec 1980

	TROUBLE					
Add/Delete Equipment	EM	Sys	VI	LQP	DP	Total
10	3	14	8	6	3	44

System Manager--the new software has almost eliminated this pain. However, this also depends on the number of users per system--with our 5 secretaries and 3 managers and good software the dependence/problems are down to one person backing up on a regular basis, and some hassle with release of hosts and printers from EMS. UDK access/exit from EMS just about solved release hassles. The one irritant remaining is turning on all 16 devices prior to morning boot. Still recommend a maximum of 3 to 4 secretaries (heavy users) per 248.

TO: GORDON BELL Date: 12/18/80 Thu 4:46
Base_2 From: Mary Jane Forbes

Any system with 2 or even 4 floppies will not be capable of OA. After one year on the 248 and the number of applications/tools we have introduced into this office, there is no way to introduce "office automation" without storage capacity equivalent to 2 RLs. MATH and SORT would add a big missing chunk to OA.

In short, I am now a proponent of the 248 as our initial entry into OA.

Looking Ahead
Just saw the WS278. As a replacement for the WS78, it looks terrific--solved cable problem, knee problem, a little better response time, bold/underline seen on screen and THE SORT. Did not try the SORT but you better believe we will. I understand the MATH capability will be added to the menu by fall. All of the above with the ability to add RLs should make it a hot seller.

While all of the added features on the 278 are great, the 248 needs them more. The 278 can automate the small office only so far then you run into the problem of single user access and limited storage (helped by the RL option). OA means a flow of information between users--boss and secretary--both must have access to selected tools.

Regarding a terminal with WPS software and up to 60 pages of storage all in the terminal, sounds fine for a professional but not for the secretary or an automated office environment where numerous files/tools must allow immediate accessibility; nor for the professional at home, given EMS with the WPS editor. It will be a boon to the professional, hard-wired to a host, working on one document at a time. A danger--once a user becomes familiar with WPS ease of use and editor, 60 pages could become a mummy suit.

Marketing--I see none! If we are going into the OFFICE, let's do it. The WPS278, WPS248, EMS with WPS editor is a dynamite package as is. Our training courses have also had their shake-out period; the documentation is there--what are we waiting for? We will always enhance our products--in talking with Gary Cole, we have answers why our equiment is better or as good as the competition from price through functionality, and this is just the beginning. Telling customers that the MATH and SORT routines will be available in 6 months can't really be dealing in futures, not when it is based on a SOLID "8" product.

The public is just learning about this marvelous OFFICE to come. Let's woo them on the upswing of this curve with our beautifully HUMAN ENGINEERED systems, and then keep giving them more and more. We have found that WPS are never really are out of date--as a user upgrades, the present one is passed on to another just starting. The potential is so great it will be many years before a WS78 isn't appreciated somewhere down the line from the initial buyer.

THE HOOK--DIGITAL'S OFFICE PRODUCTS--ease of use, quality, our enthusiasm and belief in our products, OUR NAME. From an enthusiastic user, I say let's keep those word processing trucks rolling and please give us a MARKETING CAMPAIGN worthy of our great office products--NOW!

OO BURT DECGRAM ACCEPTED S 24728 O 07 15-JUN-80 20:00:56

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* d i s i t a l *
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TO: OPERATIONS COMMITTEE:

cc: see "CC" DISTRIBUTION

DATE: SUN 15 JUN 1980 1:54 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: MARY JANE'S COMMENTS ON SINGLE VERSUS MULTIUSER SYSTEMS

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
This is a pretty eloquent plea as to what I also think our direction for office products ousth to be. In essence, it says set the price for stand alone down but have lots of communications capability. Minimize having interaction and having special departmental level operators.

As sellers we listen to our buyers, the DP and Office machines buyers. They want big, shared complex systems because it makes them important as experts who continue their control over Electronic computer magic. The office machines buyers don't give a damn about anything except cost per terminal.

The users (not buyers) don't want these systems... will the market have to deal with them or will it be strictly buyer controlled?

Does anyone else feel this way?

"CC" DISTRIBUTION:

BUZZ BROOKS
DICK CLAYTON
BOB DALEY
MARY JANE FORBES
TOM VLACH

ATTACHED: MEMO;135

****
* d i g i t a l *
****

TO: BUZZ BROOKS

cc: GORDON BELL

DATE: FRI 13 JUN 1980 4:44 PM EDT
FROM: MARY JANE FORBES
DEPT: OOD
EXT: 223-2237
LOC/MAIL STOP: ML12-1/A51

SUBJECT: WPS200--YOU ASKED FOR IT!

October 1976
We started using the WPS102 full time. We had been generating most memos and all long documents on the DEC-10. Needless to say, the WPS was a breath of fresh air, so easy to learn and operate. It took "drudgery" out of the job and replaced it with "fun".

1978
Became painfully floppy bound--categorized floppies, and were continually pulling out/putting in floppies. Automatic office procedures came to a standstill because the file you wanted access at the moment was not in the drive. WPS was used solely for document generation--no office function/communication applications.

Began looking into the WPS200.

March 1979
Ordered a WPS248 (8 VT100s, 2LQPs, 2DPs, 4RLs, Communications set up for 4 hosts) During a field trip to see how the speed was affected by n users, I found that adding the 5th user slowed the machine down measurably, and 6,7,8 made it worse than a WS78--which is impossible for an experienced user. Hence, we have 4 heavy users and 4 intermittent.

Our abundance of floppies had become a nightmare.

Nov. 1979
WPS248 was installed. The reliability of the software is well known--bad.

The very best, most marvelous feature, that made life infinitely easier, was the hard disk/greater storage capacity. The second marvelous feature was the speed of the system functions. The VT100 was terrific.

It ended there!

I was now a system manager at the mercy of 7 other users--a job I didn't need, a job that should truly be unnecessary at the office level.

All down-time is multiplied by 8.

Communication lines (EMS) were no longer at arms reach, but were 40 feet away. A constant irritant.

When necessary to use a floppy, the drive was no longer at arms reach, but 40 feet away. Again, an irritant.

The one piece of software I will mention, because I understand it is a particularly difficult hurdle, is the reserving and release of devices (printers/hosts). We are constantly asking, "who's on host 1, please release lpt1, I did, please check anyway, sorry you're right, etc. etc. etc."--TIMESHARING, UGH!

Quarterly preventive maintenance takes 3 1/2 hours. Our Field Service people do ours on Saturday--I doubt everyone gets such service. Do our customers? If not, 8 (a whole office) is down for 3 1/2 hours.

Disk backup--30 minutes minimum--can be an hour if there are interruptions. All our users know how to do this, some would rather not, all are down when any one user backs up, hence we do it for all every Friday. Of course, I don't trust anyone to back up OUR disks anyway.

Booting the system in the morning: I walk around to 8 terminals and 4 printers, covering the whole office, turning each on; then turn on the machine--an annoying trip.

New software comes, all users must be alerted, coordinated as to when, are they doing a critical job? Be sure to save all your system settings--i.e. rulers, standard printer settings, area set up X 8.

Some items on a multi-user system have to be coordinated for all: the System Option settings for communications, Section assign ments--adding/deleting.

1 terminal crashes--ALL 8 must stop work/file so the system can be booted--the cry goes out "everybody file, I have to boot". "OK, GRUMBLE GRUMBLE". I honestly don't know how users/customers cope if they aren't in eyesight/earshot of each other.

Case for RLs - needed for real office automation
Because of the increased capacity, Sue, Gordon and I can:

Keep conference room schedule on line	Eliminates a notebook, + walking to the other's desk to check availability.
Keep signature/mail log on line	Eliminates a notebook, + walking to other's desk to check status.
Keep messages on line	Complete list for future reference/ telephone numbers status, reply

"Please do" on line/more complete info	Eliminates chance of misunderstanding task. Eliminates numerous pieces of paper plus gives status of request.
In process of setting up GB's calendar	Hopefully will eliminate hard copy on desk.

All of the above took too much space to deal with effectively on floppies.

Summary

Please let us return to work at our own place. Give us the hard disks, automatic-dial communication line, and all other features available now, but don't make us have to worry about 5 or 6 other people and coordinate/wait/stop our work because we have this lump of hardware in common. Actually, our system would be fine for just our office--4 terminals (Gordon, myself, Sue, visitor).

GO BURT DECGRAM ACCEPTED S 5216 O 04 10-MAY-80 11:17:28

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* d i s i t a l *
****

TO: see "TO" DISTRIBUTION

cc: BUZZ BROOKS
GERALD T MOORE
STAN OLSEN

DATE: SAT 10 MAY 1980 11:11 AM EST
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: OUR MEETING ON THE OFFICE PACKAGING

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
We started out to discuss a tilt stand for the vt100. The outcome is to go ahead with it along the ideas we discussed.

On the vt278, I must reiterate the concern. The 78 was a Q&D (quick and dirty job) and we were going to do it right the next time. This time, it took longer it was more expensive due to volume and from an esthetics and user viewpoint it currently has no redeeming qualities except that it is a little faster and possibly a little easier to use cause it has a vt100 instead of a vt52.

Personally, I intend to try go get some alternative packages by other vendors (eg Wang) because I have suffered enough with our products. In the event this becomes too painful due to interfacing other DEC products, I will probably use something like a 222 which can be put in a closet.

In it's current state, I consider the 278 to be a poor product and barely marketable. The RL version is currently uncabablable and basically unconfigurable by our users. The massive cable bundle with a swivel stand is ridiculous because itwill cause massive cable breaks and attendant service calls and high service costs. Somehow all my pleas to have us use 4 wire, standard field (customer replaceable cables for all signalling have been ignored).

In order to survive the introduction which can best be described as a yawn, followed by deafening silenc we must start the vt278+ along the lines we described in the meeting where we build a product family that can be used in an office environment. Since there has been no user input to date, I hate to add any at this time, but let me list in order, what the base might look like: typist (typing pool, copyist), merger/editor (which does significant editing of relatively larger documents (may need 2-4 places to hold copy and reference work ... eg. chicago style guide or reference as to formats), author (Geral Davis claims that 7 are needed), secretary is probably at merger/editor, small business environments (try to get something here, but I doubt if we need to if we can characterize the other envionments). In order to go about the design, we then describe these model users, probably multiplying the list times 2 to take into account whether they are in an environment that has EMS or other computer systems that necessitates whether their system has to communicate with others. The space and document requirements are: (If we don't get the 7 things from Gerald, or if the base work is not done by the time we meet again, I will go make the requirements list with him... but in any event, the magic 7 for the

author), telephone and telephone book(s), system information that has to be readily remembered (ems protocolcs; files, ruler names, forms document names... that are always found on about a page worth of stuff on the front of terminals), the sytem reference manuals, floppies, paper file of all floppy files to find where the floppy stuff is, draft copy or input copy, dictionary,

The 278+ will be aimed at 2 uses: where we intrude into the enviroment as little as possible and provide a way of putting the monster floppy box in the corner somehow and the printers out of the way and only supplying a tube or a tube on a stand or a tube on a table (we have to see whether we can actually cable a mess like this when on a stand or on a tilt stand); and where we provdide the whole environment including the desk. In both cases, we provdide a complete solution including the procedures for how to file floppies and have hard copiy of the directory so it can be found, we show where some of the things like copy stands are placed and where other things are stored; and where the telepone and its stuff are located, and the thing should fit into a use where the lighting can be added on a task basis versus having to be lit up in the expensive way that DEC uses (not everyone has this kind of money or wants to waste energy the way we do). There also has to be a place to write in some of these environments.

At our next meeting, I expect to see the first pass at these requirements for the various uses, and some sketches (not beautiful renderings) of what our current system would look like in these environments. I also would like to see what the thing would look like using the packages that Brian Fitzgerald has done for both floppies and RL's that are modular. (By way of thought, I do not want us to preannounce the 278 with RL at the same time, because I regard the SE&D (slow, expensive and dirty) 278 as marginal, the 278+ as something that we could conceivably sell if we can do it rapidly enough and achieve something of value to a user, and am now totally turned around that we must go flat out to get an 11-based product in a single shell that does it right. Therefore, I see the 278, 278+ as a definite stop-gap and we have to get turned around quick to get the right product and hence must not spend all our resources on stop-gaps, particularly those that require a bigger software base.) This meeting should also provide the basis for seeing just how far we can go in getting a 278+ and seeing what some alternatives there are. (I still hold the constraints as not changing any electrical characteristics of what we are doing.)

Am anxious to see you soon.

"TO" DISTRIBUTION:

DICK CLAYTON	BRUCE DELAGI	MARY JANE FORBES
GARY COLE VIA FORBE	JOHN HOLMAN	BILL PICOTT
DICK SCHNEIDER	HERB SHANZER	PHIL TAYS

****
* d i g i t a l *
****

TO: BOB DALEY

cc: DICK CLAYTON

DATE: FRI 25 JUL 1980 2:41 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: MORE 278 SLIP AND A NUDGE/OPPORTUNITY TO MOVE MORE TO THE 11

We keep having chip slips. We have PDT's in inventory. We have ideas on how to even set the performance of the PDT 150 up and unbottlenecked. We are aggressively building a PDT 50. We have a WPS strategy that is 11 based. Given all this:

Can we move much more rapidly to get the 11 wps such that we do not need to market the 278 at all; given that it will be available at some future time? (We can really clean up in the market, I would hope with this approach).

Bob, can we discuss this on Monday? What a few of your troops say?

****
* d i g i t a l *
****

TO: BUZZ BROOKS
JACK GILMORE
cc: see "CC" DISTRIBUTION

DATE: SUN 29 JUN 1980 12:03 AM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: SLAVED TUBES ON WPS FOR FORGRD/BACKGROUND AND SECT./MGR USE

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
Your idea of slaving two scopes together for the manager can best be solved by taking two 100's and paralleling the inputs and outputs so that either scope can be used.

Stan and I were discussing a similar system where it would be great if his secretary had a two channel wps system, like a 2 push button phone. Either terminal could communicate with either channel. One wouldd be set up for viewing or mail for the manager (who is presumably less adept at doing these things) by the secretary and then control passed in the same way that a telephone call is passed. The manager would go through the mail or wps message log by hitting a few keys and there would be conventions.

MJ...let's get some switches for our terminals and try this, given that we have a wps200 and we can operate 2 channels in parallel or switch to one another.

Also, typed messages would be passed to the manager via the wps in this way. We would have to fisure out simple ways to pass message back, but in some respects, just having Stan or Julie do plain old wps editing by typing Y or N for most of the things would go a very long way to working.

Well folks, let's try it. It would be a big help to MJ and I and I suspect it would work well in both the single and dual channel systems.

Any comments. (Jack will you set the hardware switches together for us to connect right into our terminals?)

As a seperate nifty device a user could use this switch so that they could do foreground and background processing. Often times I want to simply interrupt a wps or ems i/o and go to another channel to send off a wps or write down a letter or note without changing context. Also, this would let a person initiate a long list processing job and switch to another context.

The awful beauty of this is that it is a simple hardware mod and requires absolutely NO software... Yet it potentially gives us a really useful capability for either single or multi-user systems.

Another reason why a multichannel system can be made to be useful.

"CC" DISTRIBUTION:

BOB DALEY
STAN OLSEN

MARY JANE FORBES
BOB TRAVIS

JULIUS MARCUS
TOM VLACH

OO BURT DECGRAM ACCEPTED S 32482 O 66 17-JUN-80 09:45:41

****
* d i s i t a l *
****

TO: OPERATIONS COMMITTEE:

cc: OOD:

DATE: TUE 17 JUN 1980 9:43 AM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: PRODUCT STRATEGY VS BUSINESS AS USUAL

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
I certainly believe Bill has posed the right questions. We continue to have to make short term decisions, such as the WS200 based on the 8; that further erode our capacity our ability to provide good service and take customers down a path that we ultimately can't support or deliver according to their expectations.

Ultimately these users will probably want to switch.

When IBM made the 360 decision they didn't support all their past machines... as such there was a risk. Honeywell moved in to support the 1401 base and it kept them going for awhile. Univac and Burroughs have a hodgepodge of oldies, none of which are particularly effective, but could have been consolidated to give better overall support. Their customer, the government has been locked in to them with no alternative. Now, the government is saying we are going to only buy the 370's because it is available from many sources.
IBM has been doing their product introductions generally right in a business sense by knowing when to stop previous products. This is just another reason as why they are number 1. (As an aside, the government trend to 370 as their standard computer may have business implications mightn't it? Would others make the same decision, especially in light of an alternative source of supply from Japan?)

In our case, we lock people in. To the extent we lock them into something that is not in their long term best interest, they will have to change. When they do change it will be with a vengence to the best thing that is available then. Propogating all our oldies increases the likelihood of their eventual loss as a customer.

It is especially disheartening to see us lock in potential users to vax, to put out machines I can't really get enthusiastic about, and to not get the personal vax out. In this later one, there are emerging a several machines that users will flock to. The interest in the Perq is very high, with all the universities ordering them and the Navy attempting to outfit its newest nuclear carrier with it. Meanwhile, we can't get it out.

Somehow, it might be useful to frame this as a classic business strategic question of old versus new product line... but the answer is even more tricky because of the effect of lastingness

of software. (For example making only vax processors and letting the add-on market supply the rest might be the best way to go. In this way we can supply the whole market with everything; past and future.)

ATTACHED: MEMO;48

****
* d i g i t a l *
****

TO: GORDON BELL
ANDY KNOWLES
JULIUS MARCUS
JACK SMITH

DATE: MON 16 JUN 1980 5:23 PM EDT
FROM: BILL DEMMER
DEPT: DISTRIBUTED MID-SYS
EXT: 247-2112
LOC/MAIL STOP: TW/D19

SUBJECT: 32 BIT MARKETPLACE - SOME VACATION THOUGHTS

Ken has been admonishing us not to lose our lead in the 32 bit market. Have we an agressive enough marketing, engineering and manufacturing strategy with supporting implementation priorities to achieve this? Or, in our usual attempts to partially satisfy everyone are we risking high leverage future business with allocations being made on individual tactical needs not any strategic thrust?

An example or two of such things (primarily as "food for thought") might be:

a) Marketing-Manufacturing: Should we continue to open up a new plug compatible (VAX) memory and disk business as we are currently allowing or should we consider closing this off at the expense of permitting greater penetration on the 11/70 and DEC10/20 systems.

b) Marketing-Engineering: Is there a strong enough marketing swing to 32 bits such that we could re-evaluate the actual need for new high end PDP-11s and DEC10/20s? (eg, Right now our priorities are such that we are cutting back on the DECnet X25 type coexistence support and deferring VENUS options in order to maintain our plans for new DEC10/20 CPUs.)

c) Any other view across our marketing strategy that would shed more light on the strength of our current 32 bit strategy as we are implementing it versus what it might be if we wanted to set a clear goal of maintaining our leadership position.

OO BURT DECGRAM ACCEPTED S 30616 O 03 24-MAY-80 11:35:45

****
* d i g i t a l *
****

TO: BUZZ BROOKS

cc: see "CC" DISTRIBUTION

DATE: SAT 24 MAY 1980 11:34 AM EST
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: STATUS OF WS200 SYSTEM

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
Fixing and distributing this software is mandatory to our reputation.

Given the overall quality and lack of extendability of the product, I believe it should be a marketing committee decision as to whether or not we continue to sell it. From what I currently understand about our plans, its quality and this marketplace, my current, rather strong position is:

WE DO NOT CONTINUE TO MARKET THE MULTI-TERMINAL WS/WD!

"CC" DISTRIBUTION:

BRIAN FITZGERALD @MP3A	BOB DALEY	LES DOLE
WIN HINDLE	BILL JOHNSON	ANDY KNOWLES
ED KRAMER	SI LYLE	JULIUS MARCUS
STAN OLSEN	LARRY PORTNER	BRUCE STEWART
TOM VLACH		

****
* d i s i t a l *
****

TO: see "TO" DISTRIBUTION

cc: BRIAN FITZGERALD @MP3A
LES DOLE
BRUCE STEWART

DATE: FRI 23 MAY 1980 2:28 PM EST
FROM: BUZZ BROOKS
DEPT: COMMERCIAL OEM
EXT: 264-5500
LOC/MAIL STOP: MK1-2/H32

SUBJECT: STATUS OF WS200 SYSTEM

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981

The current inputs from software engineering on the status of the WS200 clean-up indicates significant progress is being made on correcting the bugs in the system.

- fixed over 50 bugs

- building base level this week incorporating latest fixes

- will test with internal quality assurance team for the next four weeks (one and one-half shifts per day) - completed June 12th

- product should be available for field test approx. June 16th

- field test should be finished August 1st (assuming no major bugs)

- submit to SDC mid-July, available out of SDC end of August.

If any major bugs are found in field test we will have to correct and retest the product which could add up to 10 weeks to cycle.

Based on this schedule, we have told the field that orders for the new version could be placed after June 1st quoting delivery in late NOVEMBER in order to give us a buffer for unexpected delays. If everything goes ahead on schedule we will attempt to improve the deliveries for critical customer situations. We will continue to follow the current procedures for shipment of the interim release software. This procedure requires the customer to acknowledge that they understand they are getting interim software (Y4.2A) and the district manager must approve the shipment of the system.

I will continue to keep you updated on the status of the testing at regular intervals until submission to SDC.

"TO" DISTRIBUTION:

*GORDON BELL WIN HINDLE ANDY KNOWLES

ED KRAMER
LARRY PORTNER

JULIUS MARCUS

STAN OLSEN

00 BURT DECGRAM ACCEPTED S 19437 O 03 22-MAY-80 01:55:50

****
* digital *
****

TO: see "TO" DISTRIBUTION

cc: see "CC" DISTRIBUTION

DATE: THU 22 MAY 1980 1:50 AM EST
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: PROPOSED WPS PRODUCT STRATEGY

RETRIEVED FROM ARCHIVAL ON FRI 26 JUN 1981
This reflects discussion with Fisk, Stewart and Travis, followed by a discussion with Stan.

My perception of the 200 series product is so poor that it looks like it can never be extended beyond where it is now. Furthermore the 200 (multiuser) and 78 (single user) versions are so diversent that there are really 2 seperate systems, and there is actually a third variant based on the 11M.

Based on the above, I would pick the best set of modules that run on the 8, segment them between operating system and editor parts so that they can be managed and evolve and put all the effort into evolving this single set of code for the single user 278. I would see what single user code exists for the Dibol run time system and if ok, then use it so as to keep consistency and to get the benefit of communications modules that will be required here. (Remember, we are being asked to extend the 8's to handle all sorts of terminal emulators and that will be exascerbated in the future... and we will have to interface with other WPS and DP systems).

I WOULD NOT MARKET THE MULTIUSER 200, GIVEN ITS LACK OF FUTURE, QUALTIY, EXTENDABILITY, AND ABILITY TO DEAL WITH FOREIGN CHARACTERS.

I WOULD NOT BRING IN, NOR TOUCH THE DPD PACKAGE BECAUSE IT WILL REQUIRE SIGNIFICANT EFFORT HERE AND ONLY DIVERT US FROM GOING TO THE ULTIMATE PACKAGE.

I would put the file handler (DX) on RSTS and VAX so that they can be used to hold the files for a multiterminal system of 278's! Also, this will have to be done anyway for the longer term.

I would so AFAP to get EDT to be WPS compatible and have it run first on RSTS and second on VMS. This provides both for multi-terminal support for the shared freaks on 11's, and allows documents done on 8's to be moved over and edited there and otherwise operate in the shared and stand-alone mode, according to user needs and desires. (Let's assume, worst case that the shared editor may take 18 months, even though we can test it now.)

This gets us from:
78, 2xx, WPS 11m

to:
278, Use of 11/M, RSTS, and VMX for central filing

followed by:
shared system using dumb terminals on RSTS and VMS;
PDT for single user version

NOTE:
Eliminates shared 200 we can't maintain or enhance.
Eliminates bringing in DPD code we have to fool with... and worse yet,
we will have to be compatible with it's file system that is WPS incompatible!
Gets focus on single user and shared user (RSTS).
Let's us align the work with the resources, and if we can build this, then
we can go further. Given what I see, this is about all I can honestly
recommend we do (it will still be tight to make the enhancements to the
8 to remain competitive and to get the foreign and communications option
in it).

Well folks, what do you think? Can we live with this or shall we
pick up some more weight with DPD and trying to screw around
with the 2xx multiuser until we go down in flames for the
second time?

(This is essentially what the strategy that has been proposed is
except that it removes DPD... I would still reference sell them
and I would even comit to our customers to be compatible with
their systems for the key featurs they have that we don't.)
Can I get a reaction?

"TO" DISTRIBUTION:

BUZZ BROOKS	JACK GILMORE	SI LYLE
STAN OLSEN	BRUCE STEWART	BOB TRAVIS
TOM VLACH		

"CC" DISTRIBUTION:

BOB DALEY	WIN HINDLE	BILL JOHNSON
ANDY KNOWLES	BILL LONG	JULIUS MARCUS
KEN OLSEN	LARRY PORTNER	JACK SHIELDS

Bruce, how are we ~~~?

****
* d i g i t a l *
****

TO: BRUCE STEWART

DATE: FRI 22 MAY 1981 15:18 EST
FROM: MARY JANE FORBES
DEPT: ENG STAFF
EXT: 223-2237
LOC/MAIL STOP: ML12-1/A51

SUBJECT: 200 AND 278 SOFTWARE F/U 5/29

GB says he knows it is a witch hunt, but would appreciate your pullins together information on the above--historical.

This would include date started, the content, commit date and actual date + a chrono history of and the specific problems associated with the above products.

Without your having to spend a lot of time at this point, I bet Sue could talk to Gary Cole and Bob Travis and put together a 1 or 2 page case history.

F/U + stash

TICKLER DATE: FRI 29 MAY 1981

SUBJECT: 200 AND 278 SOFTWARE HISTORY

ATTACHED: MEMO;24

Bruce are we doing?

****
* d i g i t a l *
****

TO: BRUCE STEWART
EST

cc: STAN OLSEN

DATE: THU 23 APR 1981 11:17

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: OUR PERFORMANCE IN MEETING 8-BASED WPS COMMITMENTS

I think it is necessary for us, Owen and Stan to meet and discuss history. Get a history of: date, content, commit date, and actual date and then we'll meet.

before next QIS

Stan is worried about our ability to meet dates and be competitive in the 8 area. Let's discuss this.

Also, we should discuss why this is not going to be the case in the 16-bit area. What's different? We want a very responsive development/introduction cycle that is much better than the 278 in order to be competitive. What's the best we can do here?

GB:swh
GB2.S5.39

Stan & B

****
* d i g i t a l *
****

TO: MIKE GUTMAN

cc: see "CC" DISTRIBUTION

DATE: TUE 9 JUN 1981 9:25 EST
FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: THE 278 ORG., THE LOW COST COMPUTING KEYBOARD AND JOHN KIRK

I think Ken and I unknowingly have been pulling at both ends of John. I've been working with him to go after the very low cost computing keyboard; and Ken, very concerned about the 278, has been pushing him back into the 278. This is what we'd use for building the portable and very low end wps.

Our first priority is clearly to get the 278 out, and to have it successful, including any enhancements involving John. For starters, Mike, could you get the 278 organization clearly spelled out so there are full-time persons on the 278 with a clear organization and clear decision making? I'd like Ken (and I) to feel comfortable with the organization. If John is essential, then let's try to get him back in full-time, otherwise, he could continue as it's primary designer and consultant as in the past.

GB2.S6.27

"CC" DISTRIBUTION:

DON GAUBATZ JOHN KIRK SI LYLE
KEN OLSEN

digital

INTEROFFICE MEMORANDUM

To: Gordon Bell
Owen Fisk

From: John Kirk
Dept: C.R.G.
Loc: ML 3-2/E41
Ext: 223-4690
Date: 14th. May 1981

Subject : VT278 Timings

In an attempt to put the question of machine performance in perspective, I made several measurements of raw compute performance of the 8E, 8A, VT78 and the VT278 running at both 5 MHz and 7.6 MHz. the results are shown on the attached graph. Taking each of the measured instructions as having equal weight, the numbers show that the VT278 running at its design speed of 7.6 MHz has 95% of the compute performance of a PDP 8/E and almost 4 times that of the VT78. At the 5 MHz clock rate (the speed of machines that most people have), the performance drops to 62% of an 8E, but still it is 2.6 times that of the VT78. If we exclude IOTs from the comparison, as compute bound tasks don't do any, then the figures change dramatically:

Comparison of Instruction Execution times

	Excluding I/O.		Including I/O	
PDP 8/E	50.27	100%	56.9	100%
PDP 8/A	41.65	83%	46.7	82%
VT78	14.93	30%	13.9	24%
VT278(S)	37.88	75%	35.2	62%
VT278	58.1	**116%**	54	95%

thus, the compute bound editing tasks of WPS should run faster on a real VT278 than on an 8E even.

When tasks involving screen I/O are considered, the comparison becomes a little more difficult - I only took two examples, the first creating a full page of text and then advancing through it with an ADVANCE PAGE command in the case of WPS 8 and executing an HT$$ command in TECO for OS78. (Starting with the cursor on the bottom line in both cases)

Display a page of text

	5 MHz	(Equiv.Baud Rate)	**7.6 MHz**	(Equiv.Baud Rate)
WPS 8 Ver. 1.U	3.8 sec.	5180	2.6 sec.	7570
OS78 Ver. 4	2.8 sec.	7030	1.6 sec.	12300

• Equivalent baud rate compares the VT278 terminal I/O to a conventional terminal connected over a serial line.

Performing this same test with a WS-200 system (PDP 8/A plus VT100 connected with a 9600 baud serial line) yields the following:

WS-200 Ver. 4.E	2.7 sec.	7300 Baud equiv.
OS78	2.3 sec.	8200 baud equiv.

The second was execution of a demonstration program I wrote for the 278 which calculates 1920 random numbers and puts a character at each of the corresponding 1920 screen locations i.e. builds up a complete screen of data in a random order, never repeating a point (this is written in PAL-8 with non-interrupt driven I/O

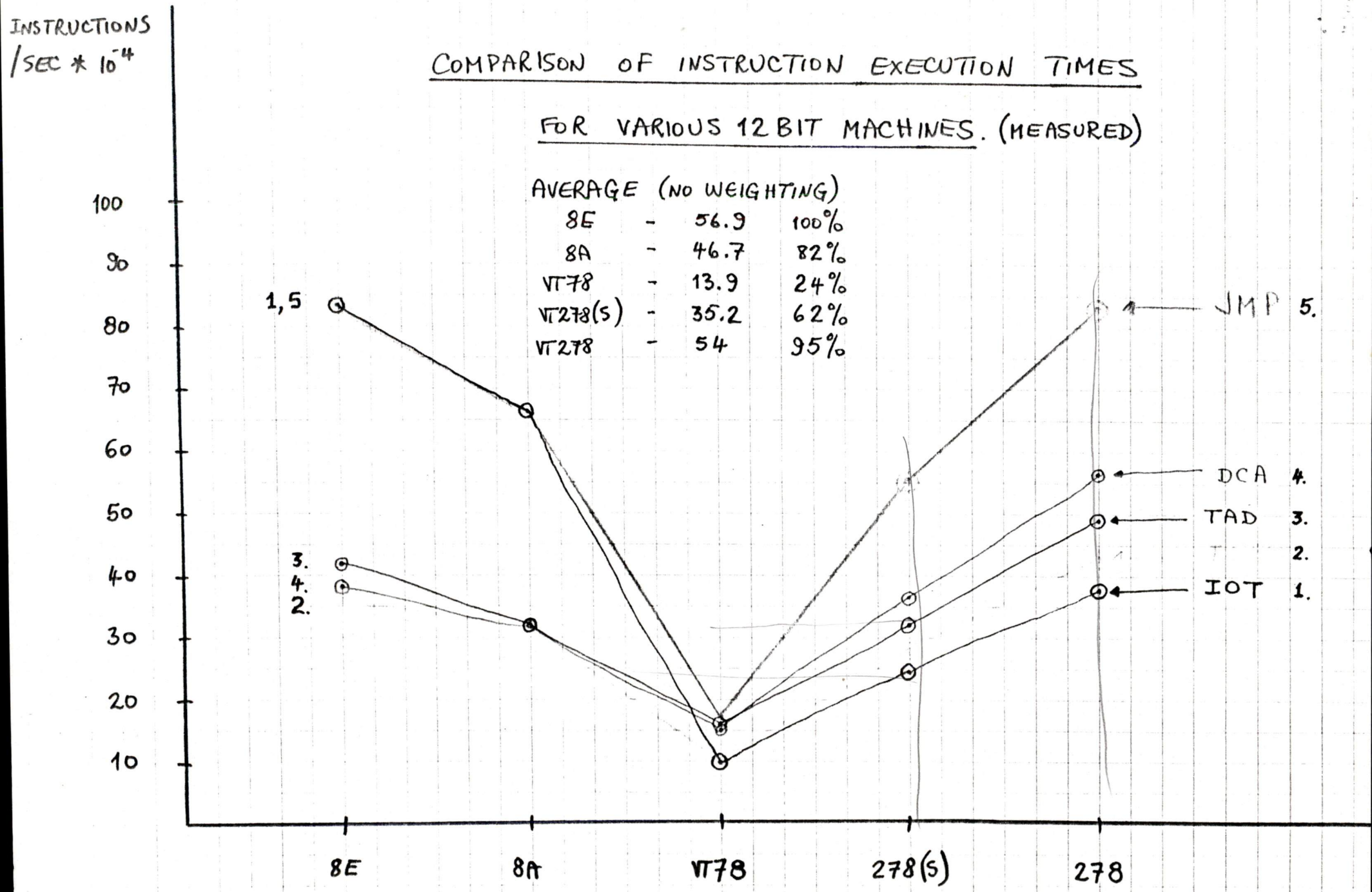
278 @ 5 MHz	40.2 sec.
278 @7.6 MHz	26.1 sec.
8A with VT100	48.5 sec.

Thsi shows the effect of doing a lot of direct cursor addressing commands that the 278 can handle much faster, as each escape sequence is treated as a single character, rather than as anything up to eight characters that must be passed over the serial link to the VT100 in the 8A case.

14 - MAY - 81. JK

COMPARISON OF INSTRUCTION EXECUTION TIMES

FOR VARIOUS 12 BIT MACHINES. (MEASURED)



****
* d i g i t a l *
****

TO: *GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: THU 14 MAY 1981 8:35 AM EDT
FROM: DAVE KNOLL
DEPT: MFG ADMINISTRATION
EXT: 223-2900
LOC/MAIL STOP: ML1-4/P14

SUBJECT: ATTACHED MEMO RE: 278 REVIEW

****
* D I G I T A L *
****

INTEROFFICE MEMORANDUM

TO: Gordon Bell

CC: Buzz Brooks
Gary Cole
Don Derome
Dick Esten
Paul Gardner
Dave Lamothe
Si Lyle
Paul McGaunn
Ken Olsen
Stan Olsen

DATE: 13 MAY 1981
FROM: Dave Knoll
DEPT: Mfg. Admin.
EXT: 223-2900
LOC/MS: ML1-4/P14

SUBJ: 278 REVIEW

Since I won't be in Maynard for the 278 Review on May 18th, I'm sending my input and a summary of Manufacturing status via this EMS. Paul McGaunn will be representing Manufacturing on the 18th. There will also be a pedestal unit with shipping container there - a unit is worth 2,000 words!

Status

VT278 Terminal

Manufacturing progressing on plan. All units after #75 will have the ROM simulator rollover fix installed. The 75 have been shipped. Production is 175 May, 225 June, 8-10,000 FY'82. FY'82 cost is $1,172 (plus the ROM simulator at $56 through Q1). MTBF 6K hours, FCC Class A compliant. Bottom line, the terminal is doing fine and commitments are being made.

RL278

Production starts in June, and PMT starts in July. First shipments in August. Estimated transfer cost for a single

drive (10MB) in a cabinet is $1,825 and for a dual drive (20MB) in a cabinet is $2,943.

Pedestal (production units)

Metal production has been on hold for the past two weeks and will resume as soon as the latest changes are made (expect this Monday 5/18).

The first 100 production unit shipments will happen in June (rather than late May).

Estimated cost - single $1,300 - dual $2,150. Add $50 for table and foot.

Pedestal Risk/Dependencies

Doing Manufacturing & Engineering in parallel yields many risks/dependencies. (It also results in a lot happening in a very short time - which has been the case).

Environmental tests - preliminary testing has happened in all areas. Testing of final design will occur in the next two weeks. I'm confident with my fingers crossed!

UL testing & paperwork cycle will require a waiver for customer shipments before August.

User documentation for any units shipped this fiscal year.

Completion of the reliability demonstration tests is planned for mid June.

Pedestal Options

Work table and foot - being designed - cost about $50.
L table - being designed - cost will be $50-$100.

H978 Status

Released
Cost $164
Have enough in stock, if needed, for initial shipments

Bottom line - while I am confident that the pedestal will come through it's final tests, including reliability demonstration, in good shape, these tests will not be completed until mid June. Until all tests are completed, there is certainly some risk that further changes will be needed.

I believe that the Manufacturing/Engineering program will support the planned announcement of the 278 in June and that this can include announcement of the pedestal with only a small degree of risk.

/Jb
5/13/81 2.67

14-MAY-81 08:41:44 S 9673 EM01

"CC" DISTRIBUTION:

BUZZ BROOKS	DAVE LAMOTHE @F111	DON DEROME
DICK ESTEN	GARY COLE @MK12	SI LYLE
PAUL MCGAUNN	KEN OLSEN	STAN OLSEN
PAUL GARDNER @MLXX		

****
* d i g i t a l *
****

TO: TED JOHNSON

cc: see "CC" DISTRIBUTION

DATE: THU 14 MAY 1981 9:11 EST
FROM: SI LYLE
DEPT: CSD
EXT: 223-7311
LOC/MAIL STOP: ML12-2/E71

SUBJECT: RE: 278 SALES AND WP PLAN/TJ 5-13-81

Buzz Brooks has to pull together the Word Processing plan. We have to give him time and help. The CT Business Plan process should help and having the one day Woods Meeting that you suggested should also help. We have to

1. determine which parts of the Word Processing ar
business we want to be in;

2. determine the products needed;

3. determine which distribution channels we should use and

4. set realistic goals.

Si

"CC" DISTRIBUTION:

*GORDON BELL BUZZ BROOKS STAN OLSEN
LARRY PORTNER

ATTACHED: MEMO;45

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION

cc: STEVE COLEMAN
R.L. LANE
LARRY PORTNER

DATE: WED 13 MAY 1981 10:27 AM EDT
FROM: TED JOHNSON
DEPT: CORPORATE MARKETING
EXT: 223-5942
LOC/MAIL STOP: ML10-2/A55

SUBJECT: 278 SALES AND WP PLAN

Rejection of the WP plan struck me as a rejection (or delay) of a plan to move 278's at loss, and of a plan to capture, learn about, and prepare channels for moving CT's into the office market.

The environment for setting a goal is very unstable. But I'd like us to have a chance for a realistic set of products and goals to suppot a marketing plan.

How can we all pull together? I am afraid we don't have the ability to beat Wang in this business (WP and OFIS). We have the base organization, the service, etc., but will we have the products and plans to exploit our relative strengths?

Ken wants to see us promote our strengths and sell our advantages effectively. Unless we can agree on what they are at each stage of the way, I am very uncomfortable about a promotional strategy that could position us as a strong contender in the office market. Where does this leave us?

ss
1:5.4

13-MAY-81 10:32:45 S 3278 EM01

"TO" DISTRIBUTION:

GORDON BELL SI LYLE STAN OLSEN

COMPANY CONFIDENTIAL

MAY 15 1981

digital

INTEROFFICE MEMORANDUM

To: Distribution List

From: Don DeRome
Dept: Small Systems Eng.
Loc: ML1-2/E60
Ext: 223-3765
Date: 13 May 1981

Subject RX78 Pedestal Development Minutes

ATTENDEES

Ed Tompkins, Paul Gardner, Bruce Meacham, Al DeLuca, Dave Knoll, Dave Lamothe, Shirley MacKenna, Dick Schuh, Mike Ford, Vic Bellemare, Jim Walls, Dan Albano.

OLD BUSINESS

. Product Safety - U.L. Listing/DEC 119
DEC 119 testing is being done on the unit by the Product Safety group. This test will be complete by the end of May. The UL engineer will come in, look at the data and run some more tests. A report will be written approximately 2 - 2 1/2 months later and the follow-up service group (UL Agency) will list the unit. The current estimate from when the UL engineer comes in until the unit is listed is 90 days or August 31 - September 1st. This is the critical path on the project.

* Paul Gardner will call Ron Minezzi to see if this time can be pulled in and how much.

* Need the Product Line's and Manufacturing's position on shipping with a waiver prior to being listed. Ed Tompkins on Manufacturing 15 May 81. Gary Cole for Product Line 15 May 81.

. Transfer cost - An apples to apples cost estimate was done on the Pedestal verses the H978. (See attachment.)

. New Product start-up budget - open.

STATUS - Engineerng - Bruce Meacham

25 prototypes will be started this week.
Have received the first five metal frames today and will expect five every other day from the Metal Shop.
Westfield resources are helping in the lab to build and comment on the design and manufacturability issues.
1 will go to Drop Test
1 to FCC Testing
1 to DEC 102
1 Engineering Evaluation
1 50 Hz operation.

The next 6-7 units will go to reliability testing.

- Engineering is looking at some new approaches with the wiring scheme. These changes will not be incorporated in the first couple months of production.
- DEC 119 testing is progressing. UL is scheduled to come in by the end of May.
- Bruce has generated the test criteria and status sheets. These sheets will track the progress of the unit through all the engineering evaluations and DEC testing (see attached).

NEW BUSINESS

* Don DeRome to call a meeting next week to address the entire documentation issues.

* Schedule issues were addressed and there will be a schedule slip from May to June. In order that we meet June ships, Engineering has to do FCC testing and Drop testing of the unit this week. The Mechanical hold will have to be taken off by 18 May 81 and metal upgraded to all the latest changes. Dave Lamothe and Dick Schuh will see how long the upgrade will take for production pieces, when Production (FA&T) will start, and when Westfield will ship based on the 18 May release data from Engineering.

* = Action Items

Item	Responsible Person	Due Date
Product Safety	DeLuca	Complete
Transfer Cost	Lamothe	Complete
N.P.S.U. Budget	Lamothe	11 May 81 (One week late)
UL Timeframe	Gardner	18 May 81
Mfg. UL Position	Tompkins	15 May 81
Product Line Position	Cole	15 May 81
Documentation Mtg.	DeRome	18 May 81
Production Dates	Lamothe/Schuh	15 May 81

PEDESTAL TRANSFER COST COMPARISONS

Assumption		Configuration	Problem/Solution
	VT278 Constant	RX78-RA & Cable $1068.53 + $25.00 = $1093.53	(No work service) Entry level Minimal configuration Basic - Dual
Keybd ext 25 Cable 25 Minifoot 25		RX02-PA + Cables $1276.00 + $25.00 = $1301.00 ▲ = $ 208.00	(No work service) Entry level (Has built in primary power Cable vs Keyboard ext. washout) Dual
		RX78-RA + Cables + H978 std. $1068.53 + $30.00 + $164.44 = $1262.97	Work service Dual
		RX02-PA + Keybd ext + Minifoot + Cable $1276 + $25 + $25 + $25 $1351.00 ▲ = $ 88.00	Work service Dual
		2-RX78-RA + Cables + H978 $1068.53 1068.53 $2137.06 + 34.00 + 164.44 Quad $2335.50	Quad - Work service
		RX02-PA+RX02-PK + Cable + Key Ext + Minifoot + Incremental Cabling + Brkt + FA&T $1276 + $811.01 + $25 + $25 + $25 + $3.00 + $4.50 + $27.17 $2196.68 ▲ = $138.82 Without keybd ext = $188.82 With work bench = ?	DeRome/Lamothe 13 May 81

(F)

RELIABILITY DEMONSTRATION(As of 5/11/81)

Completion Date Goal: 6/15/81

The RXØ2-P reliability qualification requirement will require three weeks of testing in the DMT Lab. The full MTBF demonstration is not required because the RXØ2-P is a newly packaged system comprised of reliability qualified subsystems.

The Test Plan has been written and circulated by Ron Dennis of the Central Reliability Engineering Group. It has already been signed off by the Review Action (RAT)Team Members.

The exercise will begin on 5/22/81 and will require 6 Pedestals, the configurations of which is as follows:

3 - Dual drive Pedestals(one 5Ø Hz)
3 - Quad drive Pedestals(one 5Ø Hz).

The RXØ2-P units will be run with VT278's in Class A environment for two weeks after one week's running at ambient with the 278's. This will allow debug of the RXØ2-P units(and 278's though unlikely), flag and correct any design problems, and removal of any infancy problems. In addition, there will be two days of AC margining during the Class A cycling in the chamber and at the same time temperature profiles will be recorded. Module swaps of the M8436 will occur through the 6 VT278's.

Diagnostics:
1. Loadable hardcore(ALVTAA) - 2Ø%
2. Memory/Processor Exercisor(AJE278) - 1Ø%
3. Functional Test(AIRXAG) - 35%
4. Performance Exercisor(if available) - 35% --otherwise AIRXAG will be run 7Ø%.

1/

(A) ENGINEERING EVALUTION(As of 5/11/81)

Completion Date Goal: 5/29/81

TEST NO.	DESCRIPTION	TEST DATE	STATUS	ACTION REQUIRED	ENGR/ TECH
1	Initial Verification	4/13/81	Passed	None	Meacham
2	AC Line Voltage Variation--90 VAC	3/24/81	Passed-8 Lab	Repeat @ DEC 102 @ 59 & 90 F	Meacham
3	AC Line Voltage Variation--128 VAC	3/24/81	Passed-8 Lab	Repeat @ DEC 102 @ 59 & 90 F	Meacham
4	AC Line Noise Measurement	5/18/81			Woomer Pratt
5	Mechanical Verification	3/24/81	Being Worked	Ongoing	Meacham Walls
6	Hipot Test	5/26/81			Salafia
7	Preliminary ESD Evaluation	4/30/81	Passed	Repeat @ DEC 102.7 on 5/6/81	Meacham
8	Preliminary Safety Evaluation	4/28/81	Being Investigated	Ongoing	Meacham DeLuca
9	Temperature Profiles	4/12/81	Passed	Repeat @ DEC102 & Rel. Study	Meacham Chung
10	Software Compatibility Evaluation	4/30/81	Passed	More applications run when avail.	Meacham
13	System hardware Compatibility Test	3/24/81 4/30/81	Passed	Repeat @ Rel. Study	Meacham
14	Astec P.S. Com-Compatibility Eval.	3/24/81 4/17/81	Passed	None	Meacham

(Engineering Evaluation Continued)

15	Physical Stability Test	4/28/81	Failed 2Ø Degree	Design Stabilizer Foot--Retest 5/13	Meacham Meuse
16	Acoustic Measurement	4/9/81	Passed	Repeat @ DEC 1Ø2 on 4/27/81	Ernest
17	Steady State Voltage	5/26/81			Salafia
18	Dynamic Voltage	5/26/81			Salafia
19	Inrush & Starting Currents	5/26/81			Salafia
2Ø	Line Voltage Disturbances	5/26/81			Salafia

(E)

DEC STD 119(As of 5/11/81)

Completion Date Goal: 5/22/81

TEST NO.	DESCRIPTION	TEST DATE	STATUS	ACTION REQUIRED	ENGR/ TECH
1.Ø	Temperature Rise	5/18/81			Dick B. Neuffer
2.Ø	Dielectric Withstand	5/18/81			Dick B. Neuffer
3.Ø	Leakage Current Test	5/18/81			Dick B. Neuffer
4.Ø	Mechanical Strength Test	5/18/81			Dick B. Neuffer
5.Ø	Physical Stability Test	5/18/81			Dick B. Neuffer
6.Ø	Abnormal Operation & Fault Tests	5/18/81			Dick B. Neuffer
7.Ø	Materials Flamability Test	5/18/81			Dick B. Neuffer
8.Ø	Hot Wire Ignition Tests	5/18/81			Dick B. Neuffer
9.Ø	High Current Arc Ignition	5/18/81			Dick B. Neuffer
1Ø.Ø	Hot Flaming Oil	5/18/81			Dick B. Neuffer
11.Ø	Locked Rotor Test	N/A			
12.Ø	Capacitor Discharge Test	5/18/81			Dick B. Nueffer
13.Ø	X-Radiation Test	5/18/81			Dick B. Neuffer

(DEC STD 119 Continued)

14.0	Overload Test For Switches	5/18/81			Dick B. Neuffer
15.0	Extreme Temperature Test	5/18/81			Dick B. Neuffer
16.0	Implosion Test	5/18/81			Dick B. Neuffer
17.0	Grounding Test	5/18/81			Dick B. Neuffer
18.0	Thermal Aging Test	5/18/81			Dick B. Neuffer
19.0	Transformer Overload Test	5/18/81			Dick B. Neuffer
20.0	Molten PVC & Copper Test	5/18/81			Dick B. Neuffer

(B)

DEC STANDARD 1Ø2(As of 5/11/81)

Completion Date Goal: 6/3/81

TEST NO.	DESCRIPTION	TEST DATE	STATUS	ACTION REQUIRED	ENGR/ TECH
3.1.1	Operating Temperature/Humidity	5/18/81			John G.
3.1.4	Line Voltage Variations	5/18/81			John G.
3.1.5	Overstress Temperature Test	5/18/81			John G.
3.2 +	Non Operating Temperature/Humidity	5/18/81			John G.
4.1 +	Operating Altitude	5/18/81			John G.
4.2 +	Non Operating Altitude	5/18/81			John G.
5.1.1	Operating Mechanical Shock	5/18/81			John G.
5.2.2 +	Non Operating Mechanical Shock	4/28/81	Failed	Stiffen Rails & Adj Package; Re.5/12/81	Muise Tewhey
MS81Ø P3.7	Bench Handling	N/A	---	---	---
6.1	Operating Vibration	5/18/81			John G.
6.2.2 +	Non Operating Vibration	5/18/81			John G.
9.Ø	Acoustic Measurement	4/27/81	Passed	None	Ernest
1Ø.Ø	Physical Stability	5/18/81			John G.

+: Shipping Carton Required.

(C)

DEC STANDARD 102.7(As of 5/11/81)

Completion Date Goal: 6/3/81

TEST NO.	DESCRIPTION	TEST DATE	STATUS	ACTION	ENGR/ TECH
7.6.1a	Conducted Susceptibility,CWRF	5/18/81			Pratt
7.6.1b	Conducted Susceptibility	5/18/81			Pratt
7.6.13	Radiated Susceptibility	6/1/81			Pratt
7.6.2	Radiated Emissions	4/16/81	Passed Class A FCC	Prelim--Repeat 5/6 other configuations	McBride Pratt
?	Conducted Emissions	4/22/81	Passed	None	Casey
7.6.12	Electrostatic Discharge	5/6/81	Passed	None	Woomer Pratt
5.2.9 *	Leakage Current	4/22/81	Passed	None	Casey Pope

* Refers to DEC Std 122.

LIST A - PROGRAM TEAM MEMBERS

Program Manager	Don DeRome	ML1-2/E60
Engineering Manager	Paul Gardner	ML1-2/E60
RX Project Engineer	Bruce Meacham	ML1-2/E60
VT278 Project Engineer	Al DeLuca	ML1-2/E60
Product Manager	Gary Cole	MK1-1/A06
Mechanical Engineer	Jim Walls	ML6-2/E66
New Products Manager	Ed Tompkins	ML1-5/B95
N.P. Project Manager	Dave Lamothe	WF
Customer Services	Carl Cline	MML5-2/T53

LIST B - NEED TO KNOW

Herb Shanzer	Tom Wright	Ron Cajolet
Si Lyle	Don Chace	Ken Olsen
Dave Knoll	Rigaud Lee	Stan Olsen
Joe Casey	Lou Poiries	Gordon Bell
Frank Grimaldi	Jim Ballance	Ron Cadieux
Roger Lawson	Lou Blount	Mike Ford
Gil White	Terry Colligan	Lino Mion
Harry Drab	Mike Neuffer	Roger Gogan
Paul Benigni	Steve Piligam	Larry Narhi
Larry Reboulet	Dave Zopf	Tom Belton
Roy Kizina	Art Baily	Dick Schuh
Carl Redfield	Fred Williams	John Cameron
Ron Gathro	Ollie Stone	Jim Demas
Dick Esten	Tom Aloise	Dick Gonzales
Barry Davilli	Ted Webber	Barbara Kelly
John Kirk	Peter Brown	Vic Bellemare
Ann Haase	Shirley MacKenna	

Gordon Bell

ML 12-1/A51

MAY 13 1981

d i g i t a l

INTEROFFICE MEMORANDUM

TO: Si Lyle
CC: Gordon Bell
Buzz Brooks
Steve Coleman
Stan Olsen
Mike Tomasic

DATE: May 12, 1981
FROM: Ted Johnson
DEPT: Corporate Marketing
EXT: 223-5942
LOC/MAIL STOP: ML 10-2/A55

SUBJ: 278 (WHERE DO WE GO FROM HERE?) History of 278

The attached memo and minutes on the 8 and 278 are quite clear.

Was there a specific cost goal for:

1. The lowest cost possible bounded 8 system?
2. 8-based low end word processor?

What would we have instead at this time!

I am not interested in history or promoting fungis.

But are we going to get these?

The pressure is on to have a "bounded WP" (see Ron Jansen's memo). Can we agree on our needs at the professional workstation level? Can we agree on a set of products?

If we are not going to compete with Lanier, IBM, and Wang at the S/A level, let's find a way to say so.

Incidentally, I am very concerned about full-page graphics. My gut tells me that this will be a very popular feature.

gg
1:5.13

F
OC RECORD

****
digital
****

INTEROFFICE MEMO

DRAFT

TO: John Clarke
Roy Moffa
cc: Stan Olsen
Bill Long ✓

DATE: 12/4/78 Mon 16:49:34
FROM: Dick Clayton
DEPT: Computer Systems Development
EXT: 3638
LOC/MAIL STOP: 12-2/E71

SUBJECT: PDP 8

At Operations Committee on December 4, 1978, the following actions were taken:

a) Stan (keyed off ~~WP and~~ Store needs) will drive White Tornado II as lowest cost (bounded) PDP-8 system possible, it is to run single user Dibbs ~~and~~ Word Processing. no cost goals?

b) Stan, and his designate, will manage the total PDP-8 business from the corporate perspective including the Tech OEM, Tech End User, Word Processing, Commercial End User and OEM, Typeset, Store, etc. The details of this will be worked out by Stan before the end of the month. At the moment, it feels like Stan will sponsor the PDP-8 Product Management process (presently executed by Jim Willis and Gary Cole) and insure it works effectively and in Digital's total interest. The business operational responsibility for the PDP-8 remains in its several product lines as presently constituted.

:mm

History of 278 Product Development

Jan '79 - Phase 0 proposal - goal was to ship Jan, 1979 (using Harris chip)

July '79 - Plan became to ship July 80, given the Harris chip delivery.

FCS ships

First possible ship → Nov '80 = chip available
Oct 80 = Mfg. availability
Jan 81 - to meet FCC requirements
Mar 81 - " " desk / FCC repackage
June 81 - pedestal redesign
? — Aug 81 - pedestal availability ?

C O M P A N Y C O N F I D E N T I A L

MINUTES OF THE OPERATIONS COMMITTEE
MEETING - DECEMBER 4, 1978

Attendees: Jack Smith, Win Hindle, John Leng, Al Bertocchi, Andy Knowles, Jack Shields, Julius Marcus, Stan Olsen, Ted Johnson, Gordon Bell, Shel Davis, Dick Clayton, Bill Thompson, Ken Olsen, Bill Long

1. OEM/END USER ORGANIZATION PHILOSOPHY - Win Hindle
Ken raised the question of whether we had done the right thing in moving Word Processing OEMs to the COEM group. We agreed that Ted should take another look at that decision from the field point of view. We endorsed the philosophy stated in Win's memo, with Stan the only dissenter. Ted will come back with an opinion on the best way to handle the Word Processing OEMs.

2. JAPANESE TECHNICAL BOOKS - Andy Knowles
Gordon wants to avoid aiding in the mass education of the Japanese in our business. The majority of the committee voted in favor of allowing the translation and publication of John McNamara's book "Technical Aspects of Data Communications". The fact that this question came up at all raises the more basic question: should we be treating our activity in Japan in a special way? We deferred this latter question, with the intention of having Carl Janzen explore this with us at another time.

3. PDP-8 NEW PROJECTS: THE WHITE TORNADO - Dick Clayton
It appears that the project for a Harris-chip version of the -8 has been cancelled. Ken feels that this question is of large magnitude, should not be decided in engineering but rather at Operations Committee, perhaps the BOD. Stan wants the project to continue for an entry-level STORE product, and intends to propose that. Evidence indicated that we can build an eight-based product at a significant cost advantage over an equivalent eleven-based product, for a low-end word processor. Ken insists that we also explain what happens to the existing $30M business before we get out of it. John Leng and Julius

agreed that Stan should drive this in the interest of the STORE principally but not losing sight of the interests of the existing OEMs. Stan provided a handout, "A Low Cost Single-User System" detailing his engineering project. Pending any decision to the contrary, we should consider that the project is on again; marketing and engineering details are to be provided by John and Stan.

****
* d i g i t a l *
****

TO: *GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: MON 11 MAY 1981 11:00 PM EDT
FROM: KEN MAYERS
DEPT: CORP MESSAGE SVCS
EXT: 223-6485
LOC/MAIL STOP: PK1/F60

SUBJECT: RE: RE: RE: 278 TERMINAL CHARACTERISTICS

I have requested that OIS Development give me an estimate of the time required to do the ANSI escape sequence work. I will then weigh that against our other outstanding tasks, assign it a priority, and work with OIS Dev on developing a realistic timetable for the work.

As you imply in your message, it is not a big deal -- taken by itself. But we've got an awful lot of "not big deals" to work on, all of which add up to a big deal for our limited resources.

I presume your product version has already dealt successfully with this problem. Is my presumption valid? If so, we may be able to use some of their work.

11-MAY-81 23:04:30 S 25544 EM01

"CC" DISTRIBUTION:

PAUL CHUNG
BILL PICOTT
SAM FULLER
HERB SHANZER
JOHN KIRK
OLLIE STONE

00 BURT DECGRAM ACCEPTED S 17002 0 13 09-MAY-81 12:33:23

****
* d i g i t a l *
****

TO: TED JOHNSON
EST
SI LYLE
cc: see "CC" DISTRIBUTION

DATE: SAT 9 MAY 1981 12:29

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: KHO'S MAY 4 MEMO RE APRIL 18 OC MTG - 278 PROPOSAL

I sent a note to Gary Cole to present this. Please contact him to get it on the meeting agenda. I also suggest that Gary have the whole team photographed and sent to OC. We also should put down an organization chart.

The big question: are we going to sell it in any interesting way, or are we limited, as we have been in the past by selling through the small, but high quality wps p/l?

Have just asked Bruce to look at things that make it better (faster). Despite Ken's enthusiasm and that of our secretaries, I don't see it beating anyone in terms of price and performance ... and competition is just going to get worse.

Therefore, given that we have only a so-so product, we are going to be totally dependent on our proven, superb marketing. At some point, there should be a business plan that says this is going to be done well in terms of units, profit, etc. There just has to be a way to get the product to our own customers, otherwise, we are doomed to the current abyss!

At least the 3 wps systems I typed on at NCC seem to be faster and cheaper to produce (Burroughs, IBM, and Wang). I suspect there were many more in the basement that the Japanese had. This, simply means the burden is on finding some way to market the 278, cause the product will not sell itself. If we can now, just be REALISTIC and CALM about the situation, we have a chance to do something, if we persist in pandamonium, we will continue to get creamed.

Please, please, let's start thinking and stop shouting. We have a real, important marketing opportunity.

"CC" DISTRIBUTION:

G COLE AND O STONE
BRUCE STEWART
STAN OLSEN
OLLIE STONE
HERB SHANZER

GB2.S6.37

MAY 13 1981

MAY 11 1981

****
* d i g i t a l *
****

TO: BUZZ BROOKS
    *SI LYLE
cc: MIKE TOMASIC

to →

DATE: FRI 8 MAY 1981 10:56 AM EDT
FROM: TED JOHNSON
DEPT: CORPORATE MARKETING
EXT: 223-5942
LOC/MAIL STOP: ML10-2/A55

SUBJECT: 278 ISSUE

Jake says the 278 has never been a processor issue. It's an RX02/storage issue.

Who should have done what to fix this liability?

Does anyone believe in trying any harder to make the 278 into a more competitive product.

ss
1:4.43

08-MAY-81 11:00:59 S 12099 EM01

It's too bad Jake doesn't understand computers & WPS user & buying factors.

We have to use the 278 since it is the only ~~[illegible]~~ future product we have, but the investment in the enhancements has to be balanced against the e1 program

Si
5-11-81

5/18 (urgent)

SI
THE ISSUE SEEMS TO BE WE ARE LOSING $ WITH EACH SALE. HOW DO WE JUSTIFY INCREASED VOLUME OF AN UNPROFITABLE PRODUCT. THIS IS A HAND SALE. PLS CALL ME

cc. G. Bell ✓
M. Tomasic
S. Coleman

78, 278, 11/23
Development Expense ($million)

FROM: Curt Rawley, Dick Clinton 5/6/81

	'78	'79	'80	'81	'82	'83
VT78 (P/L FUNDED)	$.6	$.2	$.1	$—	$—	$—
VT278 (P/L FUNDED)	—	1.4	2.0	2.2	1.1	1.0
11/23 - TOTAL PRODUCT	.6	1.6	2.2	2.2	1.1 - support	1.0 - support
	1.2	3.2	4.3	4.4	2.2	2.0
TOTAL HEADCOUNT for Small Systems Eng.:	45	55	65	75	85 people	
OF which ON VT278:	6	12	12	10		

WPS — 2+/year.

VT278
Financial Analyses (Coone Feb 81)

IF MARKETED USING Retail and W.P. Profit models
$million

	'81	'82	'83	'84
NOR	2	60	42	0
expense: MFG	1	29	18	-
WTY	-	2	2	-
MKTG/Sales/G&A	1	31	18	
ENG	2	1	1	
TAXES	—	(2) Favorable	1	
INVESTMENT IN: INVENT	2	4	(6) cash inflow	
ACCTS REC.	—	7	(4) cash inflow	(3)
TOTAL cash flow	(4)	(13)	11	3

— Never Breaks even
— IRR% is negative

IF MARKETED USING Corporate "AVE" P/L Profit model
$million

	'81	'82	'83	'84
NOR	2	60	42	0
expense: MFG	1	29	17	-
WTY	-	2	2	-
MKTG/selling	-	15	10	-
ENG	2	1	1	
TAXES		6	5	
INVESTMENT IN: INVENT	2	4	(6)	
ACCTS REC.	-	7	(4)	(3)
TOTAL cash flow	(3)	(4)	17	3

— Does break-even with lower MKTG/selling expense
— IRR = 57%
(ie: ITS OK.)

Gordon: Attached is a copy of our response to Ken's request this morning

KEN OLSEN IS LOOKING FOR THE HISTORY OF SPENDING ON THE 11/23, 78, AND THE 278 FOR THE LAST THREE YEARS AS WELL AS OUR PLANS FOR THE NEXT YEAR.

IN ADDITION, HOW MANY PEOPLE WE HAVE WORKING ON THESE PROJECTS.

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* d i g i t a l *
****

TO: OPERATIONS COMMITTEE:

cc: STEVE COLEMAN

DATE: MON 4 MAY 1981 11:30 EST
FROM: KEN OLSEN
DEPT: ADMINISTRATION
EXT: 223-2301
LOC/MAIL STOP: ML10-2/A50

SUBJECT: APRIL 18, OC MEETING - 278 PROPOSAL

At the next Operations Committee Meeting, I would like to have a proposal on our plans for the 278.

The 8 group was abolished a year or so ago, and I do not think we have a team that believes in the 278. It is hard to imagine it ever being a success without a team, and a project, and a crew committed to making it work.

The proposal ought to convince us to have this team, that there is a market, and that it will be a success.

KO1:S4.7

00 BURT DECGRAM ACCEPTED S 14901 O 25 02-MAY-81 16:12:21

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION
EST

DATE: SAT 2 MAY 1981 16:03

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

cc: STAN OLSEN
OPERATIONS COMMITTEE:
OLLIE STONE

SUBJECT: THE 278, WHAT COST, WHAT PAYOFF, WHAT RISK?

I think we had better start listening to our engineers. I'm ready to. Shall we get together this weekend, or how about early monday morning. This sounds like a potential disaster of even greater proportions.

If/when we get the new stand, it will be a megabuck project. Is this really going to get us any increase in sales? At an increased cost, I have real trouble in answering why we should do it.

"TO" DISTRIBUTION:

DAVE KNOLL SI LYLE KEN OLSEN

ATTACHED: MEMO;180

****
* d i g i t a l *
****

TO: STAN OLSEN

cc: see "CC" DISTRIBUTION

DATE: FRI 1 MAY 1981 14:16 EDT
FROM: OLLIE STONE
DEPT: APPLICATIONS
EXT: 264-7480
LOC/MAIL STOP: MK1-1C6/1C6

SUBJECT: THE DECMATE PEDESTAL DISK SYSTEM

d i g i t a l

INTEROFFICE MEMORANDUM

TO: Stan Olsen

DATE: 01 MAY 81
FROM: Gary Cole
DEPT: DECmate Product Mgr.
EXT: 264-7478

LOCATION: MK1/1C6

SUBJ: The DECmate Pedestal Disk System

Over the last two weeks I have become increasingly concerned about this product and whether it is a viable device for CPG to commit its 100m$ plan to for 1982.

First Issue: Product Readiness

The product is not going to be ready for ship by the end of May. UL/CSA certification will be delayed until mid-July (nothing ships without it.) DEC 102 testing is not completed and the unit fails drop test, FCC and static testing as of today.

Second Issue: Product Design

The product design is good in concept, but not so good as implemented. It is virtually unserviceable by the average terminals group field service technician. Over an hour is required to replace a drive, twice as long as servicing the RX78. The pedestal is mechanically unstable - top heavy, and requires an extendable front foot assembly to be used when the keyboard shelf is attached. 3) It is noisier than our existing RX78 4) Although it is not at all hard to "install", you must have an elevator and fork truck to move it (>150/LBS) which seems to be to be the wrong requirements for a customer installable product. It cannot be carried in a car without 2 or 3 people to lift it in or out.

Third Issue: Product Cost

The pedestal disk was intended to reduce our system cost by 180 dollars. Recently it has been determined that its 1982 manufacturing cost will be $435 more than a table top RX78 system and $271 more than a H978 mounted system. These figures are the most recent available from new products group in Westfield and are 40% above the engineering estimate of last month. This reduces our gross margin by 3-4 million dollars in CPG in FY '82. I consider this totally unacceptable.

Fourth Issue: Product Risk

We are putting the entire future of WPG and RPG on the line when we start delivery DECmates, I believe that we have a substantial risk of catastrophe by proceeding with the crash project production and ship of the

pedestal system. I have interviewed most of the members of the 278 project team and find that most of them share this view for various specific reasons.

Recommendations:

1. DO introduce the DECmate using the RX78 tabletop floppy and H978 optional desk, as scheduled at the end of June.

2. DO NOT introduc e or commit to delivery the RX02-P pedestal disk until

   a. DEC standards are met, UL/CSA & FCC compliance is achieved.

   b. Cost is, at the very least, made competitive with the RX78/H978 and consistant with our business plan.

   c. Serviceability and quality issues are brought up to reasonable issues.

3. If it does not appear that (2) can be achieved with 6 months, then let's abandon this effort and direct the funds toward the minifloppy, which is certain to reduce cost of our system by 500$ or more.

Other than the pedestal, the 278 if fully ready to be shipped in high volume as a highly reliable, customer installable product. I recommend that we do so.

I also recommended that we reconsider making the H9780 (Cube/Desk) assembly available as an extra cost option since it is very attractive and makes a very functional workstation. The design of that product is complete, and a hundred units are in stock.

DECmate Transfer Cost Summary

FY '82 Transfer Costs. (Actual or best estimates as of 4/30/81)

Components

RX78-RA	(existing tabletop RX02)	$1063	<committed>
RX02-PF	(new pedestal RX02)	$1498	<estimate>[$1073 planned]
H978-AA	(existing 78 stand)	$164	<committed>
VT278-AA	(@10K build rate)	$1172	<committed>

2-drive systems (95% of sales)

VT278 with RX78	$2235
VT278 with RX78 with H978	$2399
VT278 with RX02-PA	$2670

4-drive systems (5% of sales)

VT278 with 2-RX78 with H978	$3562
VT278 with RX02-PF	$3586

At a volume of 10,000 sales in FY '82 the use of the RX02-P will reduce gross margin by 4.3 million if H978 were to sold as an extra cost option on RX78 system or 2.7 million if the H978 was bundled into every system at constant price.

jp

Distribution:

Gordon Bell
Buzz Brooks
Tom Campbell
Don Derome
Dave Dorschel
Paul Gardner
Paul McGaunn
Dave Knoll
Si Lyle
Ken Olsen
Dick Price

01-MAY-81 14:22:22 S 11596 EMMK

"CC" DISTRIBUTION:

GORDON BELL	BUZZ BROOKS	TOM CAMPBELL
DON DEROME	DAVE KNOLL	SI LYLE
PAUL MCGAUNN	KEN OLSEN	DICK PRICE

GB2.S6.34

00 BURT DECGRAM ACCEPTED S 16041 O 34 20-APR-81 11:00:41

****
* d i g i t a l *
****

TO: OLLIE STONE
EST

DATE: MON 20 APR 1981 10:59

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

cc: see "CC" DISTRIBUTION

SUBJECT: RE: RE: NOTE ON CONTROL OF THE 278

I don't think the 278 is going to matter very much in the grand scheme of things. Let's start now to get it under control though. I believe, probably like Ken, that the main thing is to get the 278 out. All the folks working on it would have charged their time to something, but with the 278 as a cause they've probably worked much harder and with more focus. Thus, from a corporate viewpoint, we are probably ahead. Also, the decision to switch package types was made by Ken, I believe, and given this, it's up to you to get the best deal we can with it. Is there anyway we can salvage the parts and use them internally?

Just get us under control as best you can... but get the product out.

"CC" DISTRIBUTION:

TOM CAMPBELL BILL JOHNSON SI LYLE
STAN OLSEN

GB2.S6.5

****
* d i g i t a l *
****

TO: KEN OLSEN
EST

DATE: SAT 18 APR 1981 15:47

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: FUTURE PACKAGING OF 278 AND 11/23

It would seem the CT crt is most ideal. It does tilt, it only is the crt and can be positioned anywhere.

I think you have a runaway situation with the cabinet. It was the goal at one time to be able to ship it in a cardboard box through UPS and have the customer put it together like he does a hifi. Now, through a series of minor transformations you have incremented the thing to a stationwagon as being defined as what portability means. I don't have a stationwagon, nor do I intend to get one. I suuspect that there are other customers in the same boat (or without this sort of boat).

Apple is going to continue to cream us. The 278 will only help them by further draining our cash. I figure their ACE is the Apple III with lots of memory AND a Very Good WPS system which is finally possible because of the screen, the bigger memory and their expandability. Note the add in the May Scientific American.

The reason Apple will get more sales than us or Wang is the carriability (We need a word cause you have destroyed the meaning of portability) by having it associated with the 278. (As a by-product of stationwagon portability, you get a whole set of costs ... that we ignore in our costing and thinking. Since they are there, it either means continued negative profit on each one or continued ignoring us in the marketplace.

Damn it, We gotta have a computer that the user can use in many of the varied ways he will, it has to be carriable, assemblable and expandable. Also, it had better be big enough to get our software on (probably 128K ... not 64K as we dreamed last nite).

GB2.S6.3

****
* d i g i t a l *
****

TO: KEN OLSEN
EST

DATE: WED 15 APR 1981 19:40

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: RE: NOVEMBER 1981 FIVE YEAR PLAN MEETING

There are lots of folks involved with the 278.
This was a golden rule project. In retrospect, I goofed by agreeing to do it. It was a typical, kamakazee job like all the others in the low end, done with a small crew of hardware folks, for an inadequate amount. We spent millions in software though in a completely unbalanced way.

Remember the cast of thousands are the ones who are doing the engineering on the products so that we can have profit enough so that you can sponsor these idiotic projects with Stan. If Stan's P/L's didn't get the revenues from the other products, (like the 100, 120, etc.) sold as part of the large systems, there would be no money to build these marginal products in a half-baked fashion.

I do hope you understand this whole mechanism a bit... just which side our bread is buttered on and who is bringing home the bacon and who is spending the bread money on betting at the races and at the lottery. Sometimes I think you don't totally understand this. Tell me you do and that it's just an act.

Your drive for interim products at a time when we have an incredible array of mid-life kickers and interim products in order to live tomorrow really blows my mind. I don't believe you bought into Win's corporate Quality push. The crap you are advocating is all very marginal, in terms of cost-effectiveness. It is low in quality, and in no way can 3 half-baked products sell like one average one.

We really can only afford great products, and when we fail at these by making pretty good ones we may be able to skim by. But to start by building average ones is pre-ordained and continued failure. I want to stamp out average-ness... you get this for free when trying to be above average.

I came to DEC several thousand years ago because there was a notion that it was going to build very good products

and I can remember spending lots of time in the hiring process cause we only wanted to hire very good people.

I remember explaining this philosphy to others and they would always ask, where do you get the average people that the world needs to really make things go? At one point, someone told me or I figured it out that the average is something you get as a mistake when you don't make the best. So you really never should hire these folks, you get them for free as errors in hiring really good people.

Products are like this. I don't ever want to be involved in building an average product, and normally if I see one I avoid it too. I really can't stand to worry about them either cause there are so many of them around and I'd go crazy if I ever thought very long about them ... it's like trying to keep squirrels away from the bird food. I view you often are out giving pep pills to the squirrels... which is ok by me, cause I normally don't notice squirrels. What I don't want to happen is to demotivate the giants who gather our food at the same time we feed the squirrels who only seem to eat away at it.

GB2.S5.67

****
* d i g i t a l *
****

TO: see "TO" DISTRIBUTION
EST

DATE: SUN 12 APR 1981 13:42

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: WE HAVE TO HAVE A WORKING 278 BEFORE WE CAN SHIP IT!

I don't believe the 278 is anywhere near being ready to produce. It doesn't have the quality, nor does it appear to have been adequately tested prior to it being available to me as a test site. It seems to have all the old problems. The package is disappointing too. I trust these will be solved by the new Gonzales/Olsen package.

Something is wrong with the software/firmware:
.the auto-repeat when you hold down the keys is simply not acceptable and THE PRODUCT WILL NOT BE SHIPPED UNTIL THIS GETS FIXED! I'm tired of these kind of sloppy products, so get it fixed. The VT173 editor on VAX works right, ie. when you hold down the key, the cursor takes off and moves slowly at first, gets faster and in no case moves faster than it can execute. In the 278, holding down the key executes a bunch of commands and eventually they get executed, but it's too late. In the case of the editor, it would seem that you have to remove the function from the terminal macrocode, hand it to the editor to deal with. This auto-repeat can work very well, but it has to be designed, not a free for
a ll between the hardware and software folks.

.The cursor seems to be the wrong shape, and I find it disruptive. This was mentioned before. We have some folks who can help immediately on this one, get help.

.This particular keyboard sticks. I thought we got all these out of the system. If a customer gets one, he'll simply by Wang next time. I hate to think of all the customers who ended up with these keyboards on VT100's and LA's who thought they were buying quality products.

.When you come up in terminal mode, it could simply report that it's a vT100, assuming it is. This one drives me crazy cause EMS thinks it's a printer, and I get backslashes instead of backspaces.

.Our WPS Polish Editor. It is increasingly clear to me that this editor is sure costly in terms of the way one deals with the page and cursor. Recall that a Polish editor is one that instead of positioning the cursor to find something, positions

the page. Several months ago I requested that we try an experiment and build the changes so that it works decently. We know how! EDT, the VT173, the VT134 editor, etc. all work fine. Let's have a trial change fix for this within two weeks. If you don't have the proposed change, then let me know.

.The machine I have occasionally produces flaky patterns on the screen. Under certain circumstances, there are random marks that go across the screen. This ain't quality. Is the machine electrically screwed up? Is it a timing bug where the machine can't keep up with the real time and hence paints garbage? (If there is a timing problem, then let's figure out how to put up something decent, or to blank the screen for a whole cycle. If the software knows when something is missed, then it would be best to simply turn off the display for the rest of the scan.) Again, do you know about this problem?

.Glare. I trust Ken is solving this one. iIt has to be solved.

.I like the printer, though am anxiously awainting the LA24.

PACKAGING

.I hope Ken has a place for the modem, spare floppies, the manuals (we haven't given him this requirement), a place for often used information (phone numbers, instructions) and paper. It would seem that if we have the two floppy case, the extra two floppies could be dummies and be replaced by drawers. Is there enough room to store papers, floppies?

Frankly, I am extremely disappointed in the 278 I have, cause we spent an incredibly long time last summer in trying to work on all these details with the Industrial Design group. The 278 is only attended to superficially. MORE THAN EVER, I WANT THE INDUSTRIAL DESIGNERS OF THE PRODUCT TO CO-LOCATE WITH THE PRODUCT DESIGNERS, NOT WITH THEMSELVES. DICK SCHNEIDER AND JOHN HOLMAN, IS THIS CLEAR?

We can take several attitudes about the system (a rehash of what we discussed last summer when we swore we would stop designing crappy products:

1. build components, they are small, unobtrusive and it's up to the user to make it into a clean system and be something useful

2. build it as a system as good as we know how. Unfortunately, like the 278, this may take up a lot of space, solve many problems but doesn't go all the way. The user has to deal with the manuals, floppy storage, paper holder. If I use the 278 I have for very long, then'll try to get sound deadener (auto parts store), a good paper holder somehow, put a drawer in it for floppies, and put a book shelf under it where my legs go. The modem and telephone on top of the crt though kludgy looking is functional as hell. (Note,

I have to solve Ma Bell's problem cause the modem carrier rings in my ear... I simply can't believe that Ma Bell has any notion of quality! We should all laugh when we hear that Ma Bell thinks it is going to, should or can compete with IBM.)

3. build a set of modules so that the user can build a good system without having to be a total designer (like case 1), nor a redesigner. Frankly, I would hope we could take approach 3 with the NEW 278. Ken believes this is what we have in the new 278.

I hope we are designing for the Dreyfus average man. As one who is only about 4# heavy in regard to the average, I hope we get these problems solved before we deliver the product.

Am anxiously awaiting the next version.

It's clear we have the knowledge to build a great product, now let's get the details completed so we really have one.

"TO" DISTRIBUTION:

GARY COLE AND STEWART	RICHARD GONZALES	JOHN HOLMAN
JOHN KIRK	KEN OLSEN	OWEN FISKE AND STEWART
DICK SCHNEIDER	HERB SHANZER	BRUCE STEWART

GB2.S5.64

****
* d i g i t a l *
****

TO: MARY JANE FORBES
EST

cc: JOHN KIRK

DATE: THU 26 MAR 1981 21:11

FROM: GORDON BELL
DEPT: ENG STAFF
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: THE 278 I HAVE; I'LL BE HOME ALL WEEKEND AND I WANT IT UP

I have been delivered a piece of disfunctional crap!

Pleae call the necessary hardware and software engineers and
get the god damn thing fixed.

Paula left me a note indiceating a problem with it
in reaggard to whether it types correctly
when initiallized.

Also, it has the same bug it used to have when initialized
in terminal mode. namely, I think it thinks its a typewriter.

In this regard, typing rub out evokes a backslash, not a backspace
and a delete.

It sounds, I think, noisier than the 78.

I thought this had been checked before it was delivered.

I don't know whether it works as a wps cause there is no
floppy, therefore, bring a floppy.

I gotta have this system up, and I don't like being
left with no operational system.

Please get people moving as I have a heavy
weekend ahead and as of this instant, there is something'th
that is worse than a dumb terminal staring at me.

GB2.S5.26

MAR 3 1 1981

d i g i t a l

INTEROFFICE MEMORANDUM

TO: Gerry Moore
Stan Olsen

CC: RPG Staff
Gary Cole
Al Davis
Jack Lockhart
Si Lyle
Avram Miller
Bruce Stewart
Gordon.

DATE: 20-MAR-81
FROM: Ollie Stone
DEPT: Retail Products
EXT: 264-7480
LOCATION: MK1-1C6

SUBJ: HARDWARE PRODUCTS AND MIGRATION

The graph below shows our present and future small system products and my estimate of the product migration for each of these products. I believe this chart can realistically be used for long term planning of our future software products. Note that the four products that emerge from the chart in 1984-1986 are non-overlapping and cover the product spectrum quite adequately.

Some of the rationale for the chart follows (see the attached glossary for definitions of the systems):

- The 278 replaces the 78, although the 78 is sold until inventory is depleted.
- The SWP-8 is only sold until the OFIS software on the SWP-11 equals the functionality of WPS-8. (We must migrate the application software to SWP-11 by this time.) If all goes well, there may never be a SWP-8.
- The CT with mini floppy system will offer full functionality Word Processing. It will obsolete the RX-278 as soon as its data storage capacity equals that of the RX-278 and as soon as its word processing software matches that of the RX278.
- The RL-278 will be obsoleted by a RSTS based CT product. Rainbow will migrate to CT (MW). The Tailorable Application Package will run on the RSTS based CT product.

This product must not be done! If we need a low cost 11 then we should do it in CT not ollies proposal. see back page

CT has max 5Mb at FUS

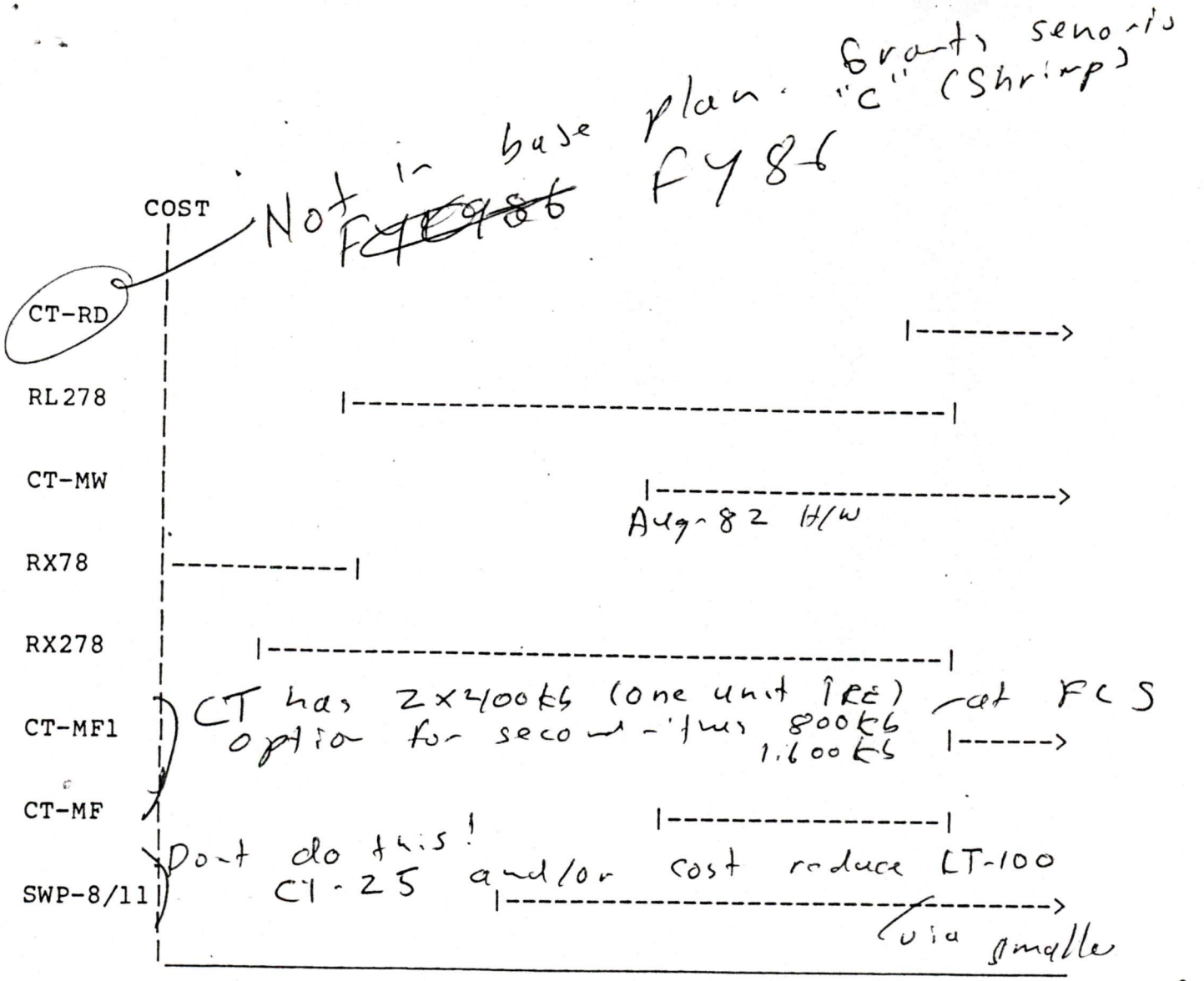
RL has 2 10 Mb RL + optional drives

what's that.

This is not a founder project. Isn't the problem to get Pibol on CT. or is this a multi user problem.

Could we work on the problem first an not on the solution (proposed)

Do we need CT-AZTEC to totally Obsolet?



No cost

Significant Migration Paths for Retail Products

100% of RX78s to RX278s

20% of RX278 to CT-MF

50% of RX278 to SWP 8/11

And eventually, 30% RX278 and CT-MF to CT-MF1 (CT-MF1 obsoletes the RX278)

100% of SWP8 to SWP11

40% of RL278 to CT-MW (a partial migration of DP users)

60% of RL278 to CT-RD (Obseleting the RL278) FY86?

this does not make sense!

Note no scale.

Not in base plan - earliest FY 86

GLOSSARY

CT-RD	A multi terminal CT with removable disk.
RL278	The VT-278 with RLØ2 disks.
CT-MW	The CT with mini winchester. CT-150 FVS 91 FY83
RX78	Our present VT78.
RX278	VT-278 with floppy drives.
CT-MF1	The CT with 800kb or greater mini floppy diskettes. (is this dual TEE)
CT-MF	The CT with mini floppies. TEE 91 FY83
SWP-8/11	The Small Word Processor with either a PDP-8 or PDP-22 CPU.

Do not due this. Bad ROI/ROA and worse!

ds

Do CT-25 (Gig. 1.5)
- Intelligent KS
- T-11 64 KS
- Floppy (TEE) added on
- CT monitor

xfer cost $1100 approx
FCS Q2/Q3 FY83
If we (central) start now, stay with CT family. Get focus.

DEC 4 1980

d i g i t a l

INTEROFFICE MEMORANDUM

TO: Bruce Stewart

DATE: Ø2 DEC 8Ø
FROM: Gary Cole
DEPT: 278 Product Mgr.
EXT: 264-7478
LOCATION: MK1/1A6

cc: Jim Beckwith
Gordon Bell
Buzz Brooks
Roger Cady
Art Campbell
Dave Dorschel
Owen Fisk
Paul Gardner
Jack Gilmore
John Kirk
Gerry Moore
Steve Morgan
Larry Narhi
Stan Olsen
Ollie Stone
Bob Travis
Ted Webber
Jim Willis

SUBJ: A Low Cost Word Processing Terminal Based on the 278 Office Computer

A meeting was held December 1, 198Ø with John Kirk, Larry Narhi, Jack Gilmore, Bob Travis, Paul Gardner and myself. The meeting focused on possible methods of producing a lower cost but highly marketable Word Processing Device quickly using the VT278 and WPS/8 as a base.

We started with 3 general concepts:

1. Minifloppy Storage for 278

2. TU58 Based VT278

3. Other Variation of VT278

The minifloppy approach was rejected because it would require 21-24 months to implement.

The tape based strategy was analyzed both as a "tape in the tube" and as an external option. In both cases we assumed the existing TU58 drives and electronics as used in the VT1Ø3 and PDT13Ø. In order to achieve acceptable word processing performance we concluded that a large solid state

working memory was needed. This device is buildable but has several problems: 1) very expensive media ($15 a tape); 2) relatively high cost ($1800 - $2100) which puts it within $100 of the base 278 floppy system but with less functionality; 3) slow performance in document retrival & filing all through editing speed is good (30 seconds - 2 minutes to get or file document); 4) only fair reliability.

The third discussion led to a more promising idea. This is to design a ROM based word processing terminal with WPS/8 software and 278 hardware. This "Video Typewriter" would function as a computer terminal as well as a word processor.

We believe that with a new $400 option module we could provide 64KW of WPS/8 software (most of the functionality), 20-30 pages of document storage and asynchronous communication channel within the terminal shell. This "Word Terminal" would be positioned as a high function member of our terminal family and as a entrypoint to our computer family. Since it would be a standard 278, it would be expandable to RX and RL storage and would use all serial printers. Since it would be based on WPS/8 software, it would have CX and DX communications as well as "DEC compatible" Word Processing and VT100 emulation. Using these communications facilities, it could store and retrieve documents on any DEC Host computer or another 278.

The final product would have a transfer cost of $1500, a BMC of $30 or less, and could have an FCS in Q3 82 if resources were assembled quickly.

The development consists of a module project and a software project. The module project is $300-$400K and about 13 months from start to ship with an aggressive effort. The Software project is more difficult to estimate but is likely to be in the $500K range if a reasonable set of objectives is established. (Bruce Stewart to evaluate.)

I find this idea appealing. It builds on our strengths in the terminal marketplace while establishing a compatible but new position in the word processing market. It works with every host computer. It is not only $1000 less expensive than a communicating 278 floppy system, but it also has 1/2 the BMC, so that very real progress is made on cost of ownership. None of the 278 functionality is excluded. It is fully tabletop, user installable, and reseller distributable. And it's available quickly, well before the CT series and coincident with full volume 278 production.

Please consider this idea carefully and communicate your comments to me. Meanwhile we will take a careful look at the hardware side of the project in order to validate the cost estimates.

WT278 VIDEO TYPEWRITER

$3500 and worth it!

- VT100 compatibility
- Word Processing Firmware

  with Document Creation

  with Editing with Rulers

  with User Defined Keys

  with Cut/Paste/Search

  with Simultaneous Printing

  with Character Level Communication to Time Shared System

  with Document Level Communication to DEC systems and other WT278's

  with 25 Page Document Storage
- Low Maintenance Cost
- Uses Any Serial Printer
- Direct Expansion to 42 Megabyte Office Computer
- International Character Set

jp

****
* d i s i t a l *
****

TO: *GORDON BELL

cc: see "CC" DISTRIBUTION

DATE: FRI 21 NOV 1980 3:39 PM EST
FROM: HERB SHANZER
DEPT: CSD
EXT: 223-5159
LOC/MAIL STOP: ML1-2/E60

SUBJECT: ATTACHED MEMO

digital

INTEROFFICE MEMORANDUM

TO: GORDON BELL

DATE: 11/21/80 Fri 13:03:32
FROM: Herb Shanzer
DEPT: Sm Sys Prod Dev
EXT: 223-5159
LOC: ML1-2/E60

CC: Dick Clayton
Gary Cole
Paul Gardner
John Kirk
Avram Miller
Larry Narhi
Ollie Stone

SUBJECT: ALTERNATES TO CURRENT VT278/RX78 PRODUCT

We are asked to evaluate the possibility of coming out with a smaller VT278 package in anticipation of the CT100. The priorities were physical size, time to market, cost in that order. We have investigated the alternatives assuming that if a mini-floppy solution is required another buy out would be needed to significantly beat the CT100 to market since the T&E is one of the key CT100 schedule issues.

RX78 ALTERNATIVES

Buy-Out 5 1/4" drive with R/W Electronics

- Capacity: 400 Kbytes to 1.6 Mbytes (2 diskettes)
- Package: Table Top, 6"H x 10"W x 12"D
- Cost: $600 to $800 Subsystem with FA&T
- Time to Market: 18 months best case

*Disadvantages

- Unfamiliar drive/spares to Field Service with Limited Life

- Another (distribution) media

- Must add switched AC receptacles for common system power switch

- New design required for control electronics

- FCC qualification

RX02 Drives, Electronics and Power Supply in PDT Footprint

- Capacity: 1 Mbyte (2 Diskettes)
- Package: Table Top, 14"H x 13"W x 19"D
- Cost: approximately same as RX78
- Time to Market: 12 months

*Advantages

- Familiar drive/spare for Field Service
- Existing electronics, no need for (Re)Design

*Disadvantages

- Must add switched receptacle
- Repackage H771 (Today's RX supply) or re-design PDT supply
- PDT package must be altered slightly to fit current RX modules
- Higher and slightly uglier

CONCLUSIONS

1. Within 2-3 weeks we can resurrect a running prototype of either approach.
2. Neither approach seems sufficiently attractive to pursue seriously.
   - Cost advantages are not great ($100-$300 depending on stand versus desk assumptions and which disc you buy out).
   - Table top package has unsightly cabling implications.
   - Maximum lead-time to market over KO is 12 months.
   - Opportunity costs of engineering resources, NPSU, market distribution and planning seem too high in relation to payback.

3. If we were to proceed based upon our prioritized requirements, the RX02 is my clear choice. The implications of finding, qualifying, and servicing another minifloppy seem excessive.

4. We will be happy to discuss this further with you. Contact Larry Narhi, Paul Gardner or myself unless we hear from you we will not proceed further.

5. Conversations with Ollie lead me to believe that a T&E version of the 278 may be sensible if we believe that 278/C1100 co-existence is desirable and/or inevitable for a significant time frame. I'd rather concentrate everyone on the C1, however, I believe we owe RPG a formal proposal on this to put the issue to bed one way or the other. We will be back with a proposal by December 15.

HS:so

"CC" DISTRIBUTION:

DICK CLAYTON
LARRY NARHI @MLXX
OLLIE STONE
GARY COLE @MK12
AVRAM MILLER
JOHN KIRK
PAUL GARDNER @MLXX

****
d i g i t a l
****

Print Q

TO: see "TO" DISTRIBUTION

cc: see "CC" DISTRIBUTION

DATE: MON 9 JUN 1980 9:10 PM EDT
FROM: GORDON BELL
DEPT: OOD
EXT: 223-2236
LOC/MAIL STOP: ML12-1/A51

SUBJECT: WPS STRATEGY, ESPECIALLY THE 200

Our meetins tonisht seemed to focus on the issues of whether to continue on with the 200. More than ever, it has to be a marketins commitee approval as to whether to continue to sell it.

My position on the 200 is still the same: Ensineerins- it will require more enhancements both for market viability (to comm. with other systems, and all the other thinss that sot us the lons list of enhancement needs), and for Europe. It has different code than the 78/278 hence it will take our resources. It is definitely interim and I can not see blowins any more resources on a direction that we don't want to so in.

Customer/sales perspective- siven the interim nature of the product and likelihood of needins communications or extra processins capability as my WPS people set more sophisticated, I can't see sellins it (buyins it if I think customer wise) when it has such a clear, limited life.

Field service perspective- 8's just don't have the spares, the trainins, the diasnostics and the overall learnins that is needed to make this a really solid product. Also, the power density of 3 RL's in a cabinet makes me wonder about it and certainly makes me make sure it sets the DMT it must have.

Overall, I don't believe it is in our best interest or our customer's to sell it.
It morsases our future, sives dreams that won't be fultfilled (I still believe customers are buyins futures as they know computers evolve and set more feature with time), and will not perform. Worst of all, it is interim and takes us in a direction we don't want to so.

I STILL CAN STILL UNDERSTAND THAT WE BELIEVE WE MIGHT HAVE TO SELL IT TO GET MORE PEOPLE ON TO OUR SYSTEM BASE ... but this has to be really quantified against the above risk.

We have to come forward with the alternative that is part of the lons ranse which puts the DX filins capability on RSTS and other systems to be the multi-terminal alternnative. This would sive us the capabilities includins the communications ones and have us use a base that can be built on. Furthermore, we can sell future because we are plannins to put a multi-dumb terminal version out. In this way, we could sell the 78 and 278 and then evolve nicely into the multi-dumb terminal version whether it be with DPD or our own. This is completely alisned

with our current direction and it doesn't represent an alternative interim product that we will have to back out of. Furthermore, we can sell any number of existing users of RSTS users on our current WPS stand alone systems with confidence. It will also let us reference sell the DPD system.

Tom and Bob,
We are asking for the status of the RSTS DX package that we have and when we could have this part of our product direction done. It would be mandatory to be able to demo this pretty quick and to have a clear direction that we could sell. The product is quite low risk, but we do need to be able to give a strong message and direction.

"TO" DISTRIBUTION:

BUZZ BROOKS	BOB DALEY	TOM VLACH

"CC" DISTRIBUTION:

DICK CLAYTON	JACK GILMORE	BILL JOHNSON
STAN OLSEN	LARRY PORTNER	

QQ RUBT DECGRAM ACCEPTED S 24728 0 07-15-JUN-80 20:00:54