INTEROFFICE MEMORANDUM

DATE January 4, 1966

SUBJECT Laminate for PDP-8 Cabinets

TO Jim Hastings

FROM Ken Olsen

Two or three months ago we studied alternatives to the shiny redwood laminate we put on the wood panels for the PDP-8. We discovered a material which everyone seemed to think was an ideal replacement. This is mycarta, straight grained redwood, oil rubable. This material looks exactly like wood. Scratches come out if it is just rubbed with oil. The material costs less than 50¢ a square foot and should be cheaper to use because one doesn't have to be as fussy about handling it.

Everyone seemed to agree with this, but apparently we never pushed it through the red tape to make the change official and we're still buying the old shiny and quite unpleasant looking material. Will you somehow first find out if people are as enthusiastic about this material as I am and then find out how the change should be made.

I have also insisted that the tables on the new PDP-7X be made rectangular because of the very high cost of making the gull-wing tables. Will you see that the Small Computer Group considers the possibility of changing the PDP-7 to a rectangular table in order to save cost.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 4, 1956

SUBJECT "Practical Statistical Tools for Engineers" Seminar

TO See Distribution Below

FROM Ken Olsen

I have asked Mr. Leonard A. Sadar and Associates to conduct a series of seminars at DEC and I urge you all to attend. I have discussed these seminars with Mr. Sadar and feel that his ideas would be valuable in our engineering and design work.

There will be six Wednesday sessions, January 12, 19, 26 and February 2, 9, 16, from 4:00 p.m. to 6:00 p.m., and two Saturday sessions, January 15 and February 5, from 8:00 a.m. to 12:00 p.m., to be held in my office.

Attached is an outline of subjects to be discussed at these sessions.

If you would like to attend these seminars, please call Elsa and sign up with her by January 6. If you do sign up, you must attend every session.

Distributions

* ✓ Win Hindle
✓ Gordon Bell
✓ Bob Savell
✓ Harry White
Alan Kotok - no
Bob Clements - no
✓ Derrick Chin
Joe Sutton - no
Steve Mikulski - 1/06
✓ Arthur Hall
✓ Pat Greene
✓ Ulrick Skowronek
* Jack MacKnen
✓ Lee Butterworth
* Paul O'Malley
Don White - no
* * ✓ Dick Best
✓ Koren Prentice
✓ Phil Baekholm
Bob Brown
✓ Klaus Doering
✓ Jim Cudmore
Roland Boisvert - no
✓ Tom Hughes - no - school
* ✓ Stan Olsen
✓ Paul Dinman
✓ Russ Doane
✓ Ed de Castro X JAN. 15
✓ Harry Seligman
✓ Don Vonnda
✓ Stan Booth
✓ Ed Harwood
✓ Bill Long
✓ Steve Lambert
✓ Dan Wardlaw
✓ Dick Sogge
✓ Tom Stockebrand
✓ George Wood
✓ Jim Jordan
✓ Ken Fitzgerald
✓ Dave Nevala

FOR

DIGITAL EQUIPMENT CORP.

PREVENTING QUALITY LOSSES

The Costs of Quality Failures--Scrap, Rework, Repair, Tool Revision, Downtime, Design Changes, etc.--How to study your quality costs and identify areas for profitable improvement--How to get paybacks of 5/1 and 10/1--Role of Engineering in Quality Loss Reduction--Pareto's Principle.

ANALYZING ENGINEERING DATA

Simple statistical methods for discovering whether the data really prove what they seem to--The Meaning of "significant difference"--what to do when differences are not significant--interactions among variables.

ENGINEERING FOR MAXIMUM CUSTOMER SATISFACTION

How to determine what the customer really wants--New methods of analyzing field and complaint information to improve designs--Using customer's opinions to avoid costly overdesign--Determining the reliability of equipment in the field.

ENGINEERING FOR PRODUCTION

How to set tolerances that achieve the proper balance between functioning and manufacturing cost--The fallacy of "merry-go-round" tolerances--Can waivers be avoided?--Proper tolerancing for mating fits--Tolerance build-ups--Tolerances in the chemical industries--How to develop "feedback" to keep specifications up-to-date.

SPECIFICATIONS FOR THE "MASS"

Why the blueprint is not enough--The growing trend toward specifying what percentage must conform to the blueprint--How to set the Acceptable Quality Level--What is meant by "classification of defects?"--Other methods of specifying the "mass"--What is happening in the electronics industry.

PROCESS TROUBLE-SHOOTING

A new concept of variation--Systematic procedures for uncovering the trouble spot--Simple methods for dissecting variation to discover the main variable--Trouble-Shooting by remote control--Applying Pareto's rule--How to distinguish between tools, machines and operators as the cause of defects.

LAUNCHING OF NEW DESIGNS

Steps to take that can shorten the "debugging" period--Special considerations in prototype testing--Planning the pilot run to get maximum information--What data to take--Special problems of the vendor and sub-contractor.

RELIABILITY ENGINEERING

Probability concepts involved--the several types of life pattern--Relationship of reliability of parts to that of the assembly--Sources of unreliability--Specific techniques for improving reliability--how to handle environment that cannot be simulated--Evaluating reliability.

PLANNING OF EXPERIMENTS

New techniques for getting better answers from experiments--in research, development, manufacturing--The problem of establishing whether or not a real cause and effect relationship exists--Pre-planning the collection of data to avoid confounding of results--The fallacy of trying to hold "everything else constant"--How much data is needed--Simultaneously investigating the effects of several variables in an experiment--Optimizing the combination of important variables.

OUTLINE OF SUBJECTS

FOR

DIGITAL EQUIPMENT CORP.

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ABOUT THE INSTRUCTORS

Leonard Seder, Dave Harrigan and Warren Purcell are uniquely qualified to speak to engineers about engineering problems. Each has many years of industrial experience in both operating and consulting capacities in a variety of different industries. Among them they have held jobs in nearly every phase of engineering in industry including research, development, design, manufacturing, inspection and quality control. Each has contributed to the development of the "practical tools" they will describe and are widely known as authors, teachers and speakers in their fields and have frequently addressed engineering and other society groups throughout the country.

AMERICAN SOCIETY FOR QUALITY CONTROL
Boston Section
For Information: Mr. R. O. Surette
Eastern Tool & Stamping Co.
109 Ballard St., Saugus, Mass. 01906

Phone Evenings 884-2627

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PRACTICAL STATISTICAL TOOLS for ENGINEERS

TUESDAY EVENINGS

JANUARY 25 THROUGH MARCH 29

Leonard Seder

David J. Harrigan

Warren Purcell

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The current challenge to do more engineering in less time offers an unparalleled opportunity to every engineer in industry. To meet this challenge requires more than ever, an awareness of every new technical development in fields that become increasingly more specialized. But it also requires being up-to-date on methods of thinking that cut across all of these specialized fields.

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INTRODUCTION TO STATISTICAL THINKING

A review of "basic" concepts.

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Why the blueprint is not enough . . . The growing trend toward specifying what percentage must conform to the blueprint . . . How to set the Acceptable Quality Level . . . What is meant by "classification of defects?" . . . Other methods of specifying the "mass" . . . What is happening in the electronics industry.

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Relationship of reliability of parts to that of the assembly . . . Sources of unreliability . . . Evaluating reliability.

REGISTRATION APPLICATION
for
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Send to Mr. R. O. Surette, Eastern Tool & Stamping Co.
109 Ballard Street, Saugus, Mass. 01906
Make checks payable to Boston Section A. S. Q. C.

INTEROFFICE MEMORANDUM

DATE January 4, 1966

SUBJECT New Red Tape for Engineers

TO Engineering Newsletter

FROM Ken Olsen

As we change from being a company which does largely special engineering to one which manufactures a relatively large number of thoroughly engineered devices, we are going to have to continue to add a certain amount of red tape to engineering to make sure that we do our engineering completely and thoroughly. We are now going to institute a bit of red tape which is obvious and long overdue.

Before we order any component for production, or before we release a device for production, we will insist on an inspection specification from the engineer to be given to Purchasing for the use of the vendor or the Production Department, and, at the same time, for incoming inspection so that they can get ready for testing the item before it comes in.

It is obvious that Inspection should not both write the specifications and test to them but it is the responsibility of the specifying engineer to write down the specifications.

There will be times when we will want to purchase without specifications or a release to production before the specifications are completed. When this is the case, we will simply have a waiver signed by the appropriate product line manager.

The need for this red tape came about because of the very expensive terminal equipment we ordered and paid for long before we got to find out whether it was acceptable or not. However, in considering it, it became obvious that we have also run into trouble with small things, like transistors which we didn't get around to figuring out how to test until they were holding up production.

As we engineer more and more mechanical equipment, we're going to have to develop techniques for specifying tests of incoming parts, test during assembly, and final test. During the design, the engineer usually is quite conscious of critical tolerances and he can specify them. Some will have to be done in different steps during production and he had better specify them or they may never get done.

INTEROFFICE MEMORANDUM

DATE January 6, 1966

SUBJECT Plans for PDP-8/I

TO Ed de Castro
Dick Sogge

FROM Ken Olsen

cc: Nick Mazzarese
Mike Ford

Will you come to the Manufacturing Methods meeting next Thursday at 10:00 in Pete Kaufmann's office to let people know what your module plans are for the PDP-8/I. We will have to set up a system for automatically getting manufacturing involved early in the design of new equipment, but, before we do this, I would like to accomplish the same by informal discussion like this one next Thursday.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 10, 1966

SUBJECT Disc and Tape Meeting, Thursday, January 13

TO Roland Boisvert

Jim Hastings

FROM /Ken Olsen

For complex development programs like the tape transport, I would like to see a master chart, all on one sheet, which lists each of the components going into the transport and a status of each component. There should be a number of columns and the columns should tell when the work will start, when the work will be completed (leave room for the name of the vendor when it is done), when the drawings will be done, when the test specifications will be done, and what tests will be performed for engineering evaluation.

Will you make a first pass at this list for the disc meeting next Thursday. I know it will probably not be complete but it is better to get advice of others before a project like this has too much effort put into it.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 10, 1966

SUBJECT MIT Contract

TO Jim Hastings
cc: Harry Mann

FROM Ken Olsen

When we finally get to making a contract with MIT on the memory patent, will you make sure that this agreement includes all MIT magnetic core patents.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 10, 1966

SUBJECT Disc Meeting on Thursday, January 13th

TO Steve Lambert
cc: Ed de Castro
Jim Hastings

FROM Ken Olsen

For the disc meeting this coming Thursday, I would like to have you present a short, concise plan as to what program we should have to obtain the source of discs.

The second thing I would like to have you present is a testing program by which the Company should evaluate a disc. Assume that we're evaluating discs that we bought outside, and maybe several competitive discs inside. We will probably never have more than one disc to evaluate, but if you lay out the tests in this way it will probably make the most critical testing program.

Once we have a test, this will probably pretty much define a tester. Will you also propose the building of a tester, a schedule, and a cost estimate for it.

If I remember correctly, you were going to try and order an IBM head. It would be interesting to know at that time what your success has been.

When you are running tests on heads, I would suggest that you have a real or dummy head gold plated so that you can run tests on the fine characteristics by simply measuring the capacity between the gold plated surface and the disc.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 13, 1966

SUBJECT

TO Ed de Castro
Dick Best
Nick Mazzarese

FROM Ken Olsen

For $39.88, Allied Radio offers a transistorized automobile ignition system. When you want to work on a systematic approach to eliminating the susceptibility to sparking, this might be a simple way to synchronize the spark to the oscilloscope.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 13, 1966

SUBJECT Square D Company's NORpak

TO Stan Olsen

FROM Ken Olsen

Square D Company of Milwaukee very actively markets their NORpak which they claim is a simple, fast, static control. It would seem to me that if we looked into what they have to offer, we may have even better units for less money in our FLIP CHIP line.

I suggest that you get hold of their literature and study it to see how it compares with ours. Then look into the possibility of a taper pin socket for our FLIP CHIP units. Now that we have John Hitch working for us, and on the new socket, he could give us advice as to how we can obtain a taper pin socket. It would be nice if we could find a standard one because we won't ever use them in very large quantities.

We might then want to have a cast aluminum box to enclose a fixed number of these units to give the appearance of a package rugged enough for industrial control.

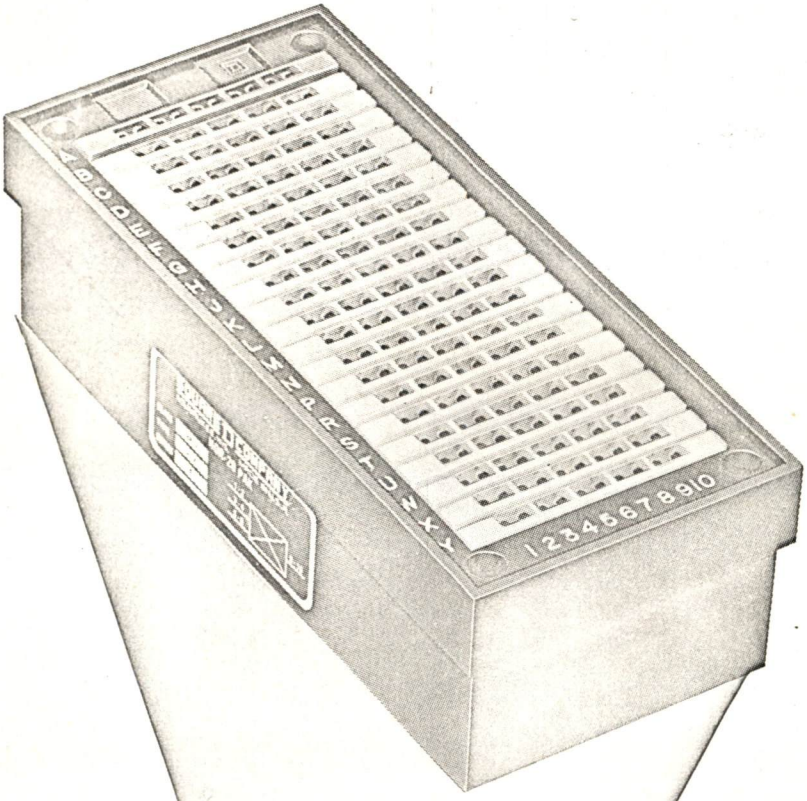
Ken

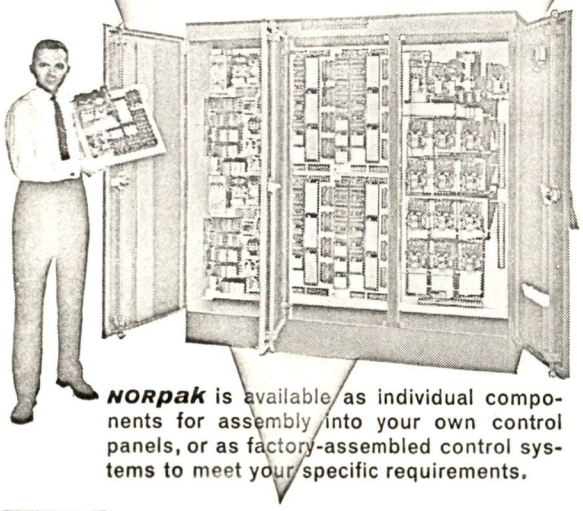
ecc

SQUARE D

NORpak

—a Simpler, Faster Static Control!





NORpak is available as individual components for assembly into your own control panels, or as factory-assembled control systems to meet your specific requirements.

NORpak is a significant advance in the field of static switching. It is the only performance-proven, industrial-type transistorized static control available as components or as factory-assembled systems. The complete selection of Norpak components includes:

LOGIC ELEMENTS • NOR units, OR units, timers, counters, transfer elements, memories

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NORpak is not complicated. It's easy to apply to conventional circuits. Units are color-coded for quick identification. There's no worry about phase relationships with Norpak's dc power.

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SQUARE D COMPANY

wherever electricity is distributed and controlled

Circle 103

dec INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Disc and Tape Meetings

TO Dick Best
Roland Boisvert
Phil Backholm

FROM Ken Olsen

I suggest that you get together before our Thursday Disc and Tape meetings and prepare your presentation so that it can be short, concise, and can take full advantage of the large group which is there on Thursdays.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Item for Works Committee Meeting, January 19

TO Harry Mann
Dave Packer

FROM Ken Olsen

Will you make a short report to the Works Committee this Wednesday on the status of the plans for the data processing system. I don't want to put pressure on forcing a decision, but I would like to have everybody up-to-date on the current thinking.

I would also like to hear the answer to the question which has been raised before as to whether we use the modern programming techniques. Is our equipment that much less reliable than others or do we, by our programming, demand on long periods of error-free operation because we have very few intermediate check points.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Disc and Tape Meeting Suggestions

TO Nick Mazzarese
Ed de Castro

FROM Ken Olsen

I don't remember what we decided to do as far as minutes for our Thursday afternoon Disc and Tape meetings, but I would suggest that you figure out a way in which we can have good permanent minutes. I can see that it is going to be important in the future to be able to look back and see what had been formerly decided.

I have encouraged Ed de Castro, Roland Boisvert and Dick Best to have meetings ahead of time so that they can present a concise, thought-out presentation on Thursdays to make the meetings shorter. If this works out, I suggest that we include the Microtape development in the same meeting. It might be good at this week's meeting to have all the problems of Microtape outlined and the plan for solving them presented.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Policy Regarding Vendors

TO Henry Crouse

FROM Ken Olsen

I think there should be a standard policy in regard to engineers talking to vendors and potential vendors. Will you think the situation over and propose a system for this.

I'm afraid that some of our engineers ask for samples and free help to an unreasonable degree and it might hurt our reputation. You might insist on being in on all conversations with vendors or at least have some way of controlling it.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Building 11's Junk Room

TO Nick Mazzarese

FROM Ken Olsen

In the junk room of Building 11, there is part of a tape unit, and there was almost a complete display that little by little has been hacked apart. I would like to see you claim those before they are completely destroyed.

Out in the hall there are three brand new complete 631A panels which should end up in your stockroom. If you look that over carefully, you might find even more things that are useful.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 17, 1966

SUBJECT Junk Rooms in Building 11

TO Loren Prentice

FROM Ken Olsen

In spite of all my efforts, I haven't been able to solve the problem with the junk rooms in Building 11. Here is a plan which I would like to have you think about and let me know what your thoughts are.

Suppose we divide up the maze acquired in this area of Building 11 and assign one block to your mechanical engineers, one block to the display people, one block to the PDP-7 and 8 group, one to the PDP-6 group, and one to the cabinet shop. Then we would have no room for a master junk room and people might be able to find parts that they can use. There are quite a few expensive special cabinet parts in the present junk room and it would be good if Dick Richardson had his own junk room or put them all in his main stock room so that he might use the junk parts over again. Or, if they were things he didn't want to use again, he should at least be forced to throw them away.

Right in the middle of the floor of the junk room there are remains of a conveyor section that was cut up and just dropped there. Someone should have been forced to think enough about what he wanted to do with that rather than leaving it in the junk room.

Other people cut parts out of the display that was there and just left it spread around.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 18, 1966

SUBJECT Advertising of your Modules

TO Stan Olsen

FROM Ken Olsen

I suggest that you consider having our Scandinavian reps have a small booth at the International Fair for Electronics Automation and Instruments in Copenhagen April 15 through 24 to push out as many of your module catalogs as possible. The booth could have nothing more than a few modules and thousands of catalogs. Then you should also try to get into the Hanover Fair (April 30 through May 8) if you can get in without committing for five years.

I think it might be a good idea to advertise your modules in MIT's alumni magazine. They have a limited number of subscribers but the price is cheap and they tend to be key people.

I would like to see you get a small ad which you can use periodically in magazines like "Product Design and Development." This ad would be the same all the time but would offer modules and our new catalog. This is the type of magazine which contains nothing but ads and new product releases. You might also standardize a one-column ad that you could put in the more traditional magazines like "Machine Design" and "Steel." This could be one ad that could last for a year and use it whenever you have a magazine in which you would like to advertise. The pitch might be, "If you get your kicks from making things work quickly, use DEC modules."

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 18, 1966

SUBJECT Presentation for the Works Committee

TO Ted Johnson FROM Ken Olsen

Will you make a presentation to the Works Committee on Wednesday, January 26, on your present plans for France. I would like you to do it at this time because our test period is about done and I would like to have your attitudes presented before you make your trip to Europe.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 18, 1966

SUBJECT Presentation for the Works Committee

TO Dick Best FROM Ken Olsen

cc: Roland Boisvert

Will you present a brief history of the 570 tape transport to the Works Committee on Wednesday, January 26. I would like to review the history at this time so that we can have a picture of this transport and help decide whether we want to throw away all of the units we have in inventory or try to sell them. I would also like to identify the techniques under which decisions were made so that we can make better decisions in the future.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 18, 1966

SUBJECT Presentation to the Board of Directors Meeting

TO Nick Mazzarese FROM /Ken Olsen

I would like to have you present your product plans at the Board of Directors meeting on January 25th. The pitch I would like to have you take is not what you are sure we will accomplish, but the goals toward which you are aiming.

One pitch would be to show our old price list with many, many options and the one which you would like to have us have, which would be two computers. This would include a simple in/out package, only one tape transport which we build here ourselves to solve everyone's problems, cost $9,000, one DECtape which we will build ourselves and solve all other problems, and one disc which we will build here and with this in/out equipment we will have a standard line to solve almost all problems.

A simple outline like this, of what programming will be available, without going into detail but would also give a short, snappy, concise picture of what we are aiming toward. You should then make hedges to say that we may sometime conclude that the tape transport is not practical to build ourselves and that we may have to offer, instead, two versions from Datamec. We may also not get a disc file of our own, although I think this should not be admitted because if we want it we should be able to get it.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE January 18, 1966

SUBJECT Rope Memory Design

TO Larry Seligman

FROM Ken Olsen

The president of one of our former neighbor companies is now a consultant and has offered to do the consulting for us on magnetic problems at $150 a day. You may want to use him for a day or two to help in the design of the rope memory. His son is a student at MIT and worked here last summer.

I suspect that you can make a very fast, inexpensive rope memory if you use small ring cores and string them on a loom type device. We proposed this a long time ago but it was impractical because we wanted to put the wires through the core one way for a zero and the other way for a one. Now that you are putting them through one direction only, the loom is relatively simple.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 25, 1966

SUBJECT FLIP CHIP Module Prices

TO Stan Olsen
Dick Best

FROM Ken Olsen

Please be sure to check the price of FLIP CHIP modules before the new catalog is printed.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE January 27, 1966

SUBJECT Books

TO Karen Kulik

FROM Elsa Carlson

Please order the following books for Ken Olsen:

"Development of the Scientific Method" by Fowler (Pargamon Press #104)

"Lectures on Theoretical Physics" edited by Arnold Somerfeld (Academic Press) Order one of each of the five volumes.

"Plasma Study" by Hullaund (Rheinhold)

"Fundamentals of Circuit Design" by Knoop (Rheinhold)

"Modern Digital Circuits" by Weber (McGraw Hill)

"Digital Storage Systems" by Renwick (Wiley)

These are all supposedly paper back editions and should be ordered from the Book Clearing House.

Another book he would like to receive is "Digital Tape Drives" by Taunt, published by the Business Press in New Jersey.

Elsa

INTEROFFICE MEMORANDUM

DATE January 31, 1966

SUBJECT Manufacturing Steps for the Production of DECtape

TO Dan Wardlmon

FROM Kenneth Olsen

cc: Ed de Castro
Nick Mazzarese
Dick Best
Loren Prentice

I would like to have you outline for next Thursday's Engineering Meeting the manufacturing steps for the production of DECtapes. I would like to use this for developing a standardized format for each mechanical device we build. It should include a description of each manufacturing step and each inspection step.

Ken

KHO:mca

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT Your Wish List

TO Nick Mazzarese
John Jones

FROM Ken Olsen

I would still like to see you and John Jones prepare a price list for me that you would like to have some time in the future. You might call this your wish list.

The advantage of this is that it would be a very simple to understand format to present the equipment you plan to have available, the equipment you would like to have available, and at approximately what prices you think would be reasonable. Putting your dreams down on paper is a good idea for your own sake, but it also lets the rest of us work toward the same dream. For example, if you put a line printer on your wish list at a certain price with a certain number of characters, we might just find one if we know you want it.

Stan is planning to spread his catalogs around every university and every laboratory in every country. At 12¢ a copy, he can readily afford to do this. You may want to do the same thing a few months from now on the PDP-8 manual. You might want to add a little more educational material to it but you might just overwhelm the competition with this little trick.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT Fire Protection

TO Bob Lassen
Bob Pate

FROM Ken Olsen

A few years ago there was a fire in the mill which, fortunately, turned out to be just smoke and no real fire. However, it was rather shocking to find out that they couldn't get water at the time because the fire hydrants were frozen stiff. Will you check into this and find out if we are completely helpless on very cold days and that the whole building would burn down without any fire protection at all.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT Industrial Research's Buyers' Guide

TO Joe Nangle FROM /Ken Olsen

Industrial Research is coming out with a Buyers' Guide and we should be included under all of our categories.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT Safety Features

TO Bob Lassen

FROM Ken Olsen

Minnesota Mining and Manufacturing Company has a new filter mask. They offered to send free samples of this mask, which they claim is very comfortable and the lightest weight one available. Maybe if we had a good one like this we would have less trouble keeping masks on our people.

Sometime ago we decided to buy flashlights to put around the plant for power failure emergencies. We might have done this without you, but will you find out the status of this.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT

TO Mike Ford

FROM Ken Olsen

How much of the speed of a PDP-8 is necessary for the typesetting problem? If we had a choice of speeds for PDP-8's that were cheaper as the speed went down, what would be the optimum speed for the machine?

Could you also tell me if you think it would be worthwhile to make a special purpose machine like Cognitronics makes for Harris-Intertype Corp.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT PDP-8 Costs

TO Nick Mazzarese

FROM /Ken Olsen

Will you prepare a breakdown of the cost of the PDP-8 for me. With the competition that is sure to come very soon, we should start working on those areas which are significant costs. With this we might also consider a cheaper version of the 8 if we knew where the costs were.

After you give me this breakdown, you might ask people to send to you (and I would like to have a copy sent to me also) a list of their suggestions as to what we could do to lower the price of the PDP-8.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT Photo Diode and Transistor for Reading Paper Tape

TO Ed de Castro
Ken Fitzgerald

FROM Ken Olsen

Fairchild Semiconductor is advertising a photo diode and transistor for reading paper tape. This sounds like it should have very high sensitivity and may solve our lamp problem.

They say the price is $550 to $850 but I'm not sure if that is for a single unit or for a bank of nine of them.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 1, 1966

SUBJECT "Industrial Research" Magazine

TO John Jones
Bob O'Hagan
Joe Nangle

FROM Ken Olsen

The March issue of "Industrial Research" magazine will be on oceanography. If we want to advertise in it, we probably should plan something right away.

Industrial Research is starting a new magazine called something like "Oceanography." If we're interested, we might be able to sew up a small, but key, spot for every issue in which we could push our computers.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 2, 1966

SUBJECT Suggestions for Module Catalog

TO Stan Olsen

FROM Ken Olsen

I visited our Cambridge office and came back with a few ideas on the module catalog.

We should work out a standard ad in maybe two or three shapes for use in different type periodicals and use them to push the new module catalog on campuses. At MIT we could afford to have an ad in "The Tech" (the weekly newspaper), "Tech Engineering News" (the student engineering magazine), "Voodoo," and "Technology Review" (the alumni magazine).

We should offer to send one of these catalogs to anyone who would visit our Cambridge office or send a letter to it. We, of course, should also include the home office address for those who are not near Cambridge. If we did this sort of thing at every college, you might get rid of a quarter of a million copies right here in the state colleges and universities.

The ad might include the table of contents of the book. The educational material would make the table of contents look very impressive. The catalog sections might be labeled "low speed circuits," "high speed circuits," "accessories," and it would look less like a catalog in this advertisement.

The name of the book is exceedingly critical. I would suggest that we no longer call it "FLIP CHIP" catalog, but simply call it "Digital" or "The Digital Module Book."

If these ads work well, we might put them in national publications and encourage people to write in to their local sales office. You have to have some check on our local sales offices to make sure that they don't keep the inquiries for more than a week before they send out the catalogs. You might find out what professors have suggestions on our lab workbook and then find one or two of them that might re-do it. After we have this much experience with it we probably can improve it significantly and then print it up in very large quantities.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 2, 1966

SUBJECT

TO Jack Shields

FROM Ken Olsen

We are thinking of using Lamb vacuum cleaner motors in the DECtape transports. This is the same motor used in the power tape transport and the Datamec units.

Would you please send me a note that I can past into a notebook outlining in a very general way what our experience has been with these units.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 2, 1966

SUBJECT Books to be Ordered

TO Karen Kulik

FROM Elsa Carlson

Please order the following books for Ken:

1. "Maintainability" by Goldman - (Wiley)
2. "Digital Computer Engineering" by Grey - (Prentice Hall)
3. "Differential Amplifiers" by Middlebrook - (Wiley)
4. "Modular Designing of Materials and Devices" by Von Hipple (MIT Press)
5. "Electromagnetic Clutches and Cupplings" by Vorob'yeva (Pergamon Press)
6. "Physical Ceramics for Engineering" by VanVlack (Edison Wesley)
7. "Plasma Physics and Magnetic Fluid Mechanics" (don't know the auther) (McGraw Hill)
8. "Package Design Engineering" by Brown (Wiley)
9. "The Mettallurgy of Welding, Blazing, and Soldering" by Lancaste - (American Elsevier)

INTEROFFICE MEMORANDUM

DATE February 3, 1966

SUBJECT Items for Evening Meeting, February 14

TO Members of the Works Committee FROM Ken Olsen

We will have our monthly evening Works Committee meeting on Monday, February 14th, at 7:30. The two items on the agenda will be:

1. Long-term Planning
2. Texas Instruments' Annual Salary Review

Attached is an outline for long-term planning. So that we can have a worthwhile discussion at that time, please make notes on what you think the answers to these items are for your own group and for the Company.

I would like to try out the Texas Instruments idea on the Works Committee to see how it works. Please prepare for me before the Monday evening meeting answers to the following questions:

1. Describe your job?
2. What did you accomplish last year?
3. What do you plan to accomplish this next year?
4. What job would you like to have if you had your choice?

When you do this, make believe that a new president has just taken over the Company and that his first step is to have the Works Committee answer these questions. If you answer them from this point of view, you can be much more objective than if you were writing it to someone you had worked with for many years.

ecc

Phase I—Corporate Profit Objectives.

A. Analysis of record of operations.
B. Establishment of standards for future profits.
C. Projection of present operations.
D. Measurement of extent of need for new products.
E. *Preparation of 5 and 10-year corporate objectives of sales, profits, capital requirements for present and new products.*

Phase II—Proprietary Directions for Corporate Growth

A. Audit of corporate skills, resources and limitations.
B. Position of company in its total industry structure.
C. Changing end-use markets, technologies and competitive integration, affecting industry structure and company position.
D. Alternative directions for company evolution and growth.
E. *Selection of most proprietary directions to maintain and optimize profits.*

Phase III—Planning New Products.

A. Selection of product fields to fulfill corporate objectives of Phase I within selected directions of Phase II.
B. Determination of approach to new fields—by acquisition, internal research, joint ventures, *etc.*
C. Programming of specific product lines.
D. *Scheduling of realization of new products in relation to financial and management feasibility.*

Phase IV—Programming Requirements of Business Functions.

A. *Marketing*—Focusing market development plans and programming (products, merchandising, pricing, field sales, *etc.*) on consumer requirements.
B. *Organization*—Scheduling, recruitment and development of manpower requirements (management, other personnel) to staff long-range program.
C. *R&D*—Relating research and development to divisional and corporate present product maintenance and new product realization.
D. *Manufacturing*—Scheduling further development of present and new plants and low-cost equipment programs.
E. *Financial*—Budgeting of capital requirements and development of financial resources.
F. *Planning of Other Requirements.*

INTEROFFICE MEMORANDUM

DATE February 4, 1966

SUBJECT Presentations for the Works Committee

TO Dick Best

FROM Ken Olsen

I would like to have you propose to the Works Committee on Wednesday, February 9, what central engineering tasks you would like to supervise in the long run, and also what organizational development tasks you would like to include under the responsibility, such as procedure for new product development and product process flow chart.

I would also like to have you make a proposal as to secretary organization for the engineering floor. I would like to know how secretarial work is done now and what you would like to do to improve it. Engineers, as well as the rest of the Company, are very unhappy about the uncooperative secretarial service on the engineering floor and I think it needs some thought from an organizational point of view.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 4, 1966

SUBJECT Company Insurance Presentation to the Works Committee

TO Harry Mann FROM Ken Olsen

I have confidence that you have the Company insurance coverage well under control but I think it would be a good idea if you present to the Works Committee just what is in this insurance package so that everyone realizes what we're paying and what coverage we have. If we have choices as to coverage, it might be a better idea to let us know what choices we do have.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 4, 1966

SUBJECT Presentation to the Works Committee

TO Dick Richardson
Rod Belden
Bob Maxcy

FROM Ken Olsen

I would like to have you come to the Works Committee on Wednesday, February 9, and make a five-minute presentation on your new production areas. I would like to give you the opportunity to brag about your successes, tell about your problems, and ask for the help you might need.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 4, 1966

SUBJECT Presentation to the Works Committee

TO Ken Gold
cc: Jack Atwood

FROM Ken Olsen

I would like to have you come to the Works Committee on Wednesday, February 9, to tell the Committee about ON-LINE. I would like to give you the opportunity to take bows for the good job you have done, to tell about your problems, and to ask for any cooperation which you may not have been receiving in optimum quantity.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE February 4, 1966

SUBJECT Traffic Management

TO Stan Olsen
Frank Kalwell

FROM Ken Olsen

If you think that traffic management should come under Frank Kalwell for the time being, will you make a presentation to the Works Committee as soon as you're ready.

Ken

ecc

is one thing, for example, to say a product maintains close tolerances "under severe heat conditions," but quite another to show a severe heat application in which claimed tolerances are effectively maintained.

(7) *Better Technical Literature.* The extent to which an exhibitor should distribute literature from his booth is often a difficult decision to make, since much wastage can be involved. However, with respect to industrial exhibits, engineers have definite opinions about what they want. They do not want to "show flyer" type of material which contains little technical information. They do want technically complete data, with cross-section illustrations and information which help them to understand when and how the products can best be applied. Industrial exhibitors are encouraged to distribute more engineering data such as dimensions, finishes, materials, and the like.

(8) *New Products, and R&D Activities.* While this point may be more directly related to design engineers, the idea involved has broad validity. Engineers have a basic eagerness to see as many new developments as possible, and are disappointed when exhibits seem largely "carbon copies" of exhibits in previous years. Management should give its exhibit as much of an atmosphere of progressiveness and newness as possible. When products are shown which have been part of a previous exhibit, concentration should be on showing them in fresh new ways—perhaps with applications not previously shown.

(9) *Exhibits that Are Convenient to Study and Understand.* Cluttered, disorganized exhibits are annoying and distracting. The exhibit should be planned so that it displays the products in an orderly way, preferably in logical sequence. Where possible, written descriptions should be alongside each product or demonstration. Enough room should be allowed for unobstructed exposure of products on display.

Trade-Show Publicity. In view of the expenditures involved, management should make every effort to get maximum results by getting the story about the show across to everyone who should be aware of it. Edward Greif, of Banner & Greif, a public relations firm handling publicity for large exhibitors, stresses a three-fold dividend obtainable from proper publicity about an exhibit: (1) it will bring prospects to the booth; (2) interest of those who come will be increased; and (3) the exhibitor's message can be got across to thousands who will not be able to get to the show. Following are eight pointers on publicity prepared by Mr. Greif for the Exhibitors Advisory Council:

(1) *Talk the Show Up with Salesmen and Distributors.* Tell them about it in letters, literature, and company publications. Urge them to spread the news around. Put the show's symbols on posters in offices and show-rooms and wherever there is customer or prospect traffic.

(2) *Use Routine Correspondence as a Publicity Vehicle.* Put poster stickers on letters or reproduce them directly on letterheads, envelopes, folders, and other literature. Insert show stuffers in all mail. Use meter-mail slugs to publicize the show.

(3) *Ride Herd on Prime Prospects.* Keep reminding customers and prospects to get their hotel reservations early.

(4) *Stress "Unveilings."* In publicity releases, emphasize the fact that the new models being announced will be on demonstration for the first time at the show.

(5) *Send Out Invitations.* Invitations imprinted with the exhibitor's name are usually available from the show management on request.

(6) *Mention the Show in Trade Paper Advertising.* During the month of the show, use an advertisement keyed to the show's theme. If general media are used, such as magazines, radio, or television, call attention to the company's participation in the show.

(7) *Talk Up the Show in Speeches Before Industry Groups.* Include it in articles written for magazines and the daily press.

(8) *Help the Reporters.* Provide adequate publicity kits for the pressroom of the show, including photographs, company institutional information, and product "fact sheets."

Information References

Periodicals:

Industrial Marketing.
Sales Management.
Sales Meetings.

Cross-Reference: *Sales Promotion.*

TRAFFIC MANAGEMENT

The traditional concept of the **industrial traffic manager** as a specialist in rates and the complex administrative law surrounding transportation has given way in recent years to that

of a full-fledged operating executive, often at the vice-presidential level, responsible for major plans and decisions and the administration of budgets which run as high as $100 million annually.

Management Function. Sharp increases in freight transportation costs—and the realization that transportation is a major cost element in almost every industry—have had a great deal to do with the emergence of Traffic Management as an important management function. But even beyond this fact has been the recognition that the creative planning and implementation of transportation can be an effective competitive weapon and a practical tool of marketing, so much so that in many companies the top traffic executive sits in the councils of sales and marketing management and contributes the transportation, distribution and warehousing strategies that are critical to profitable marketing.

From a functional point of view, Traffic Management in most companies evolves as a combination of line and staff functions. These will vary markedly from industry to industry and even from company to company within an industry, but in general they break down as follows:

LINE FUNCTIONS

Formulate company transportation policy
Route shipments and select carriers
Operate private rail and truck fleets
Appear before regulatory bodies
Conduct rate research
Negotiate rates

STAFF FUNCTIONS

Conduct plant location studies
Show most advantageous purchasing and marketing areas from transportation standpoint
Determine most desirable units of purchase and sales on rate basis

In addition, there are several functions in which the Traffic Department is almost always involved, sometimes on a full line basis, sometimes on a staff basis and sometimes only on a consulting basis. These are (1):

Warehousing. In some companies, selection of warehouse locations, construction, and operation of the warehouses is an exclusive function of the Traffic Department; at the other extreme, the Traffic Department recommends warehouse locations, or public warehouses, that are advantageous from a transportation cost standpoint. In 72% of companies, selection of specific public warehouses is a Traffic Department responsibility.

Material Handling. Where it concerns methods of loading and unloading, bracing, unitizing, containerizing and similar procedures that are distinct from production-line material handling, the Traffic Department has complete authority in about 12% of companies, partial authority in 27%, serves in an advisory capacity in 49%, and in 12% of companies does not participate.

Protective Packaging. Participation of the Traffic Department in this function appears to be largely a question of the type of function. In the food industry, for example, with highly automated packaging lines which are in fact extensions of production lines, Traffic is involved only to the degree of insuring compliance with carrier regulations. Where the emphasis is more on the protective nature and transport capabilities of protective packaging, the Traffic Department may have full charge. One study shows that 20% of traffic departments have full authority, 39% have shared authority, 26% recommend and 15% (including bulk-only shippers) do not participate in protective packaging at all.

Household Goods and Passenger Transportation. These are service functions which are performed by most Traffic Departments in companies where there is any degree of personnel transfer and travel.

Company Transportation Policy. Because it is important for shipper companies to participate in the regulatory process to protect their own interests, almost every company of any size will have a basic transportation policy formulated by its Traffic Department. Besides setting forth the criteria which will determine the company's stand on proposals for changes in rates, routes and service, such a policy will also spell out what forms of transportation are to be used for company products, and what percentages of total tonnage will be allocated to each. The basic question of whether a company will use common carrier services or enter a private carriage operation will also be an integral part of such a policy.

Moreover, because development of a company transportation policy necessitates extensive knowledge of the regulatory process as well as the company's specific transport requirements and involves coordination of the transportation at any number of plants and warehouses, it is natural that the principal authority for buying transportation should be restricted to the rela-

tively few individuals who are in a position to implement that policy. As will be seen, this results in the preparation of company-wide routing guides and, as a further refinement, development of punch-card techniques for specifying routing and specific carrier to be used.

Centralized Planning. The highly specialized nature of transportation regulation, tariff interpretation, routing and service arrangements and the like, plus a body of complex and often anachronistic law, make centralized planning mandatory for the efficient management of transportation.

An important aspect of centralized transportation planning, often overlooked by outsiders, is that sound transportation policy dictates that a company control as much of its traffic as possible, even including that paid for by its customers or suppliers. Thus a "shipper" company is actually in most cases just as much a "receiver" company, controlling as it does the freight movements at both ends of its production lines. Obviously, it is almost always to the company's advantage to buy f.o.b. plant and utilize the skills of its Traffic Department to move the goods under its own control in the most suitable manner; similarly, it is to its advantage to use the same skills to move finished goods to customers at the proper time and at costs that are competitive. An example cited by the Aerospace Industries Association is an aerospace firm which in a single year purchased more than $92 million of goods and services from 4,855 small business firms. The same company placed 211,069 individual contracts—76.4% of its total sub-contracts—with small business firms employing fewer than 500 persons. In the majority of cases, the firms involved in such subcontracting are comparatively small, without traffic departments, and proper cost control requires the traffic to be managed by prime contractors.

On the "outbound" side, there is the example of a major chemical company which utilizes the skills of its Traffic Department as an important selling tool. In this case, the company sells to small, independent fertilizer manufacturers, and delivered cost of raw materials—plus means of transportation, handling unit, etc.—is an important factor in closing sales and keeping customers sold; as a matter of standard procedure, Traffic Department specialists go along with salesmen in calls on customers and prospects in order to plan the type of transportation (including vehicles, unloading and handling equipment and storage facilities) best suited to customers' operations.

Naturally, few companies can control 100% of their traffic, inbound and outbound—although there are important exceptions to this rule, like chain retail stores—but as a practical matter most large companies will anticipate controlling almost all of their inbound traffic and as much of their outbound traffic as is consigned to companies without formal traffic departments.

Method of Operation: the Traffic Manual. Because relatively few individuals in a company are equipped to implement transportation policy and to make transportation arrangements with common carriers, Headquarters Traffic Departments prepare so-called "traffic manuals" or "routing guides" which are issued to all plants and to personnel in other departments, such as Purchasing, who may have to specify routing on certain shipments or become otherwise involved in transportation.

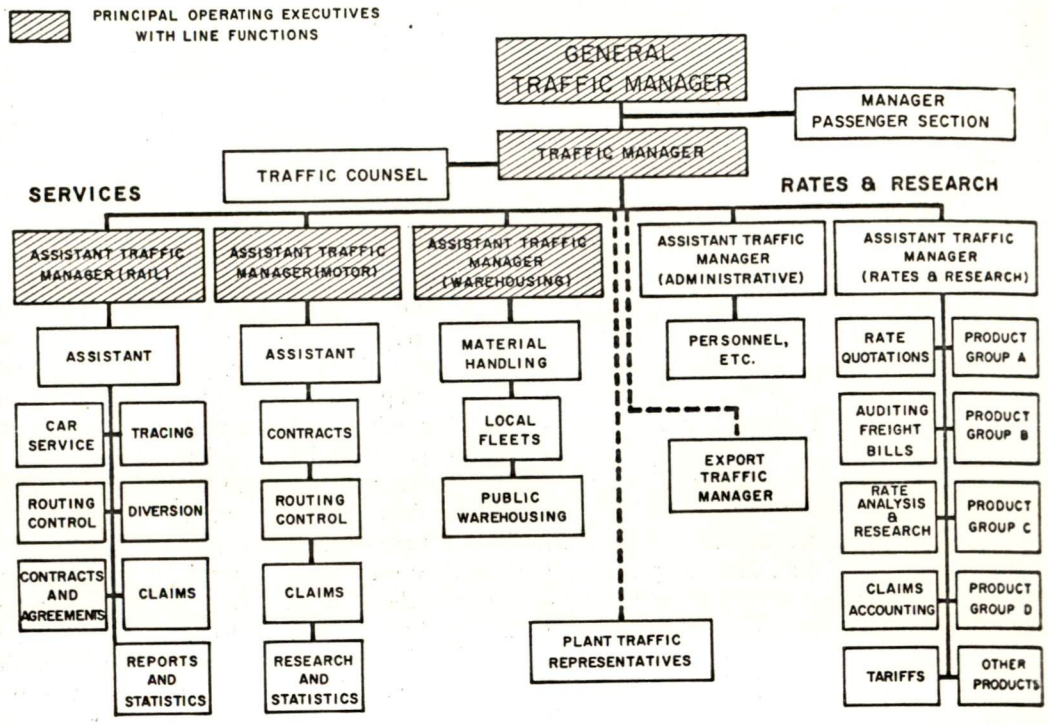
Besides establishing general policies and procedures, these manuals spell out in detail: the forms of transportation that are to be used for shipments of varying tonnages between certain points, the routings to be followed, and the specific carrier to be used. As new vendors or customers are added by Purchasing and Sales at points not listed in the manual, Traffic will work out the most economical routings and transport modes and issue supplementary instruction sheets. Any deviations from standard instructions—such as a switch from low-cost to premium transportation—must be justified before the Traffic Department will approve the freight bill for payment.

Automated Routing. A further refinement of transportation management procedures is to prepare the material contained in the traffic manual for a punch card system, so that routing instructions can be issued in conjunction with purchase order preparation or invoice writing. Also, in some extremely sophisticated order systems now in use, initial order-writing by the salesman is the only "input" required; shipping instructions, invoices—even addressed labels—are automatically produced via teletype at the shipping point nearest the customer, even though the central control office itself is several thousand miles away.

Organization of the Industrial Traffic Department. The Traffic Department of a major industrial firm may have as many as 60 to 75 employees, and may follow one of several

EXHIBIT I

TRAFFIC MANAGEMENT ORGANIZATION



organizational patterns. Generally, the Traffic Department will have two major divisions, one designated "Services," the other "Rates and Research." On occasion, there will be a third section for Warehousing and a fourth for Personnel Administration, and an Export Traffic Manager if circumstances warrant. Exhibit I depicts such a Traffic Department.

The General Traffic Manager (or Vice President—Traffic, as is often the case) is the operating head of the department, with principal operating authority delegated to the Traffic Manager and the various Assistant Traffic Managers in line functions.

There is little consistency among companies as to where the General Traffic Manager reports. If he is of the vice presidential rank, he usually reports to the president, although on occasion to a senior vice president. And in many cases where he is not a vice president he still reports directly to the president. In a good many companies he reports to the executive vice president, and in a relatively few he reports to vice presidents of Manufacturing, Purchasing, or Finance.

Although the background of industrial traffic executives varies, the largest proportion worked their way up from clerical positions as rate clerk or tariff clerk, receiving specialized training at one of the various traffic management colleges or academies in major metropolitan areas. In the larger companies, it is a general policy to send junior traffic employees to these schools at company expense; where there are executive development programs within traffic departments, the policy is to hire college graduates and then send them to the specialized traffic schools.

Other Departments. It has been noted that the management of transportation is almost exclusively in the province of the industrial traffic manager and his chief assistants, but there are a few exceptions. These are primarily cases where the nature of the product and its method of sale hingle closely on the type of transportation and the specific transport equipment used.

An example would be bulk chemicals, where very often the customer's receiving and production facilities will have a considerable bearing on how the product is shipped. Since the producer's own production, storage and handling facilities would also be involved, these per-

sonnel would become involved in transportation decisions: Traffic Manager; Sales Manager; Plant or Production Manager; Material Handling Engineer or Plant Engineer; Warehouse Manager; and Packaging Engineer.

On inbound shipments of raw materials, the alignment would be similar, with the Purchasing Agent replacing the Sales Manager. The Traffic Manager would still be the prime mover in this group, however, inasmuch as the actual transportation cost is usually 50% or more of the total costs in the procurement or distribution operation. Cases of this type will usually involve bulk commodities or large volume shipments of uniform goods.

How the Physical Distribution Concept Affects Traffic Management. Increased acceptance of the physical distribution management concept has not, to date, diluted the principal transportation management authority vested in the Traffic Department. In fact, where companies organize distinct physical distribution departments they very often do so by expanding the scope of Traffic to include production planning, inventory control, warehousing, material handling and protective packaging. And there are a few companies where one or more, and sometimes all, of these functions are already under Traffic.

The main impact of the physical distribution concept in this regard is to broaden the base of decision-making to permit proper evaluation of total cost and service. Thus, in a decision to switch from a low-cost form of transportation to a premium form, the decision might be based on considerations that the added expense would be offset by a decrease in warehousing charges, lowered packaging costs, improved cash flow, reduced capital investment costs of inventory, and better customer service. A switch from common carriage to a private fleet operation would involve similar considerations, and in both cases a number of other individuals besides the Traffic Manager would have a voice in the final decision.

Transportation Management in Smaller Companies. There is a marked difference between the larger companies and the smaller companies in transportation-buying practices. The larger companies—about 4,500 in number—have highly organized Traffic Departments and strict rules of procedure, and in this respect there is very little difference between one company and another. In smaller companies, however, the transportation management function is seldom formally organized, with the result that the "principal influence" (if there is one) may be anybody from the shipping clerk to the office manager or even the company president himself.

As an example, a 1961 study by the University of Minnesota (2) revealed that in only 26% of small companies (under $3 million) was somebody employed to whom all or most traffic/transportation matters were delegated—in the other 74% responsibility was divided among as many as 14 individuals in different departments.

The titles named in this study included: Accounting, Sales, Purchasing, Vice President, Shipping Clerk, Office Staff, Production, Plant Manager or Foreman, Chief Executive, Assistant to President, Company Secretary, Comptroller, Engineer.

It has already been noted that many of these smaller companies handle routing and carrier selection in accordance with specific instructions furnished them by traffic departments of larger companies to whom they sell. The use of automation for purchase order-writing by these larger companies almost always encompasses automatic print-out on the purchase order of pre-programmed shipping instructions to the supplier. In one case on record, the general traffic department of a major retail chain furnishes such shipping instructions to some 4,000 vendors and will not accept merchandise shipped otherwise.

Similarly, these smaller companies will usually have their inbound shipments routed by larger companies from whom they buy because the larger companies make every effort to give them the lowest delivered price, and employ special skills not available in the smaller companies.

The other principal method of Traffic Management employed by smaller companies is to delegate these functions to an outside agency: a shippers' association, a chamber of commerce, or an independent traffic consultant. These agencies maintain professional traffic staffs which perform almost all standard Traffic Management functions for their members or clients. There are between 250 and 300 such associations and consultant services in the U. S. The Traffic Manager of the association or consultant firm is in effect the Traffic Manager for each of the firms served, and in some cases actually carries a title identifying him as such; there are some Traffic Managers who represent the shipping interests of as many as 100 or more smaller firms, a situation

not unlike that of the corporate Traffic Manager who controls the transportation activities of as many as 300 or 400 company plants.

WARREN BLANDING, *for*
Transportation & Distribution Management

Information References

Associations

American Society of Traffic & Transportation (the professional certifying organization)
Transportation Association of America (a shipper-carrier-investor group interested primarily in legislation)
The National Industrial Traffic League (an all-shipper group with primary focus on legislative and regulatory matters)
Delta Nu Alpha Transportation Fraternity (a shipper-carrier group with primary focus on education)
The Associated Traffic Clubs of America, Inc. (the parent organization of the 200-plus traffic clubs located in all major U.S. cities, with a business and educational focus).
National Defense Transportation Association.

Periodicals:

Traffic World
Traffic Bulletin
Transportation & Distribution Management.
Daily Traffic World
Transportation Journal (published quarterly by American Soc. of Traffic & Transportation)
The Delta Nu Alphian (monthly except July and August, published by Delta Nu Alpha Transportation Fraternity)
National Defense Transportation Journal
Distribution Age.

Texts:

Colton, R. C., and Ward, E. S., "Practical Handbook of Industrial Traffic Management," 3rd rev. ed., Washington, D.C. Traffic Service Corporation.
Knorst, W. James., "Interstate Commerce Law and Practice," 3 vols., Chicago, College of Advanced Traffic, 1953–54.
Knorst, W. James, "Transportation and Traffic Management," 4 vols., Chicago, College of Advanced Traffic, 1955–57.

References Cited

(1) Survey results referred to are those of mail surveys periodically conducted by *Transportation & Distribution Management.*
(2) "The Transportation Function in Small Business," Minneapolis, Univ. of Minn., 1961.

Cross-References: *Materials Handling in Physical Distribution; Traffic and Transportation; Traffic and Transportation: Government's Role.*

TRAFFIC AND TRANSPORTATION: Structure of the Transportation Industry

The five basic **modes of transportation** are *rail, highway, water, pipeline,* and *air.* The structure of the transportation industry is based on these five modes plus a number of variations and sub-groups derived from (2) their several legal forms, (2) a number of auxiliary users of transportation, and (3) various modal combinations (coordinated systems).

Legal Forms. The basic legal forms of transportation carriers are: *common, contract, exempt,* and *private.* Common and contract carriers are subject to economic and safety regulation by national or State regulatory bodies. (State regulatory agencies ordinarily are concerned with operations solely within a given State.) Exempt and private carriers are subject only to the safety regulations of the States through which they operate and to the police powers of the cities which they serve. Common, contract, and exempt carriers are generally grouped into a category termed "for hire" carriage.

Common carriers form the backbone of the transportation industry. They accept responsibility for carrying goods (as specified in their operating authority) for any shipper. They are required to publish and make available to the public a schedule of rates charged for their services, and these rates must be the same for all shippers.

Contract carriers, on the other hand, make themselves available for business on a selective basis. They may charge different rates to different customers for the same service, although they are required to publish the actual rates which they charge shippers.

"Exempt carriers" is a classification which embraces a wide variety of transportation activities, such as carriage of "unprocessed" products of agriculture and fishing. These products are largely exempt from economic regulation. There are a number of other "exempt" examples, such as newspaper delivery trucks and hotel limousines, none of which have any significant effect on interstate or intrastate commercial transportation.

Private transportation refers to the common ownership of goods transported and the equipment in which they are moved. This not-for-hire category allows businesses to transport their

CONFIDENTIAL

INTEROFFICE MEMORANDUM

DATE February 7, 1966

SUBJECT Presentation for the Works Committee

TO Dick Best FROM Ken Olsen

Here are a few details on the two reports which I have asked you to make to the Works Committee on Wednesday.

On the proposal for secretarial coverage for the Engineering floor, will you interview all of the engineers that you have under your supervision, and maybe some of those on the floor but not under your supervision, and find out what they feel they need for secretarial help and then make a plan. Also find out if they feel they get the cooperation from your own secretary. I would like to know if they feel that your secretary keeps them away from you on issues such as the things which are bothering them and hurting morale. I would also like to know if your secretary is part of the morale problem on the Engineering floor.

On the second part of the proposal, which is listing those things which you would like to supervise, I would like to have you make a list of all engineering activities which you now supervise. Then, to put them into prospective, will you also list all of the other engineering activities which are now under product line management. Also make a list of activities which should be covered in each engineering group, such as professional development, managerial training, setting up of standardized schedules, making up and organizing design review committees for each product, laying out manufacturing process flow charts, doing the industrial engineering for each product, regular personal counseling for personal weaknesses and problems, and all of the other things that have to be done. Talk to other people about this list so that they can be as complete as possible. Then as we discuss it at Works Committee we can make them more complete.

After you have these two lists, you can then claim those engineering activities which you would like to supervise and specify which of the necessary activities under each one for which you would like to be responsible. It will then be clear to define who will carry out the others.

If we have charts which are complete in both coordinates and then we fill in the blanks in each intersection for responsibility, we then should eliminate many of the misunderstandings which we now have. We have serious morale problems in various aspects of the Engineering Department but none of the supervisors seem to feel responsible for them. They think that "the Company" is responsible for whatever it is that's bothering the people.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE February 9, 1966

SUBJECT Manufacturing Operations

TO Sales Newsletter
and Engineering Newsletter

FROM Ken Olsen

As a further step to complete the product line organization of the Company, we have broken down the manufacturing operations into a number of pieces. I am already very happy with the results of these changes because responsibilities for each operation are rather clearly spelled out and production problems are now receiving the personal attention of senior people. It also makes it possible for us to assign responsibility for inventory planning in the detail necessary for control.

We will be making more changes, but in order to bring everyone up-to-date on things as they are today, we present this outline of responsibilities.

Jack Smith -
- Assembly of Systems - Ed Unis, Harold Godfrey
- Construction of Peripherals - Ed Unis, Harold Godfrey
- Checkout of PDP-7 - Dan Grill, Jack Williams
- Checkout of PDP-8 - Ed Havey, Bud Dill
- Checkout of Peripherals - Ron LaFosse, Jim Dimauro
- Construction of Special Power Supplies - Paul Green
- Production Control - Dave Kicilinski
- Strate Processing - John Viscogliosi

Maynard Sandler -
- Medium Production Modules (Line C) - Cy Kendrick
- Special Production Modules (Line A) - Cy Kendrick
- Mounting Panels - Cy Kendrick
- Subassemblies - Cy Kendrick
- Etched Boards - Cy Kendrick

Stan Olsen -
- High Production Modules (Line B) - Rod Belden
- Standard Power Supplies and Laboratory Logic Kits (Line D) - Bob Maxcy
- Module Test - Jim Cudmore

Loren Prentice -
- Machine Shop - Dick Richardson
- Sheet Metal Shop - Dick Richardson
- Cabinet Shop - Dick Richardson
- Carpenter Shop - Dick Richardson

Nick Mazzarese -
- Special Systems - Bill Long
- Special Module Checkout - Don White

Win Hindle -
- Final PDP-6 Assembly and Checkout - Bob Beckman
- Special PDP-6 Module Checkout - Bob Beckman, Jim Drew

Pat Greene -
- Production - Dick Flaherty
- Special Test Module Checkout - Ron Evans

Klaus Doering -
- Semiconductor Test - Anna D'Errico
- Mechanical Inspection - Don Bevins
- Test Equipment

KO - vevg - eng.

INTEROFFICE MEMORANDUM

DATE February 10, 1966

SUBJECT Engineering Questionnaire

TO All Engineers

FROM Ken Olsen

During the past year, we made some major changes in the organization of the Company in which we have assigned responsibilities for all activities. We now have good budgetary control and, in addition, our sales and production are running quite smoothly.

This year, the two major goals I want to have us accomplish are to develop complete systematic control of inventory and to develop our engineering methods and our engineering personnel. Because most of us have been engineers, and because we have been so dependent on engineering, we have gotten into the position where we have taken it somewhat for granted. We have not developed systematic ways of scheduling engineering or getting engineered projects into manufacturing. We have also allowed engineers to grow into engineering supervisors without any training or even spelling out to them the responsibilities of a supervisor. We probably got into this position because we have religiously tried to maintain the free, open atmosphere where people can propose ideas and projects. The time has come when we have to add a little formality so that we help people develop to their fullest capability. However, we still want to maintain the freedom which has allowed us to develop the products which are now so successful and for which we are so rightfully proud.

I am spending a good part of my time on this project now, and I would like inputs from all engineers. I would like to receive a note or call from you with your ideas, complaints and suggestions. As one help in this regard, I am attaching a questionnaire copied from the "Electronic Design" magazine which I would appreciate your filling out and mailing to me in the enclosed stamped envelope. If you feel you can be more free without putting your name on it, please make it anonymous. Otherwise, it would be more useful to me if your name was there.

Ken

ecc

By _____

Company rating sheet

Rate your company on each of the following factors. For each, select the condition that exists in your company and write the number associated with it (the figure in parentheses next to the condition) in the blank space at the right of the factor.

Management attitudes and policies

Competitive atmosphere . . . . . _____

(8) Cooperation natural; competition exists.
(4) Cooperation exists, but is forced.
(0) Competition is a way of life.

Communication upward . . . . . _____

(6) Management receptive to ideas.
(4) Some degree of filtering exists.
(0) Only noise gets through the filter.

Communication downward . . . . . _____

(4) Management keeps employees well informed.
(2) Management tells you only enough to direct you.
(0) The front office may exist, but you're not sure.

Responsiveness . . . . . _____

(6) General responsiveness at all levels.
(3) People are responsive when it suits them.
(0) People won't move without a fire started under them.

Opportunity for individual fulfillment

Technical development . . . . . _____

(8) Company urges participation and makes opportunities available.
(3) Company is passively for technical development.
(0) Forget about it! If we need a technique, we'll pirate an expert.

Are your talents used? . . . . . _____

(8) Company tries to provide a challenge when possible.
(4) Once in a while a good job comes in, but generally it's "dog work."
(0) It's all "dog work." (Maybe you're a dog?)

Opportunity for advancement . . . . . _____

(10) Promotion from within based upon performance when possible.
(6) Promotion from within when possible, but seniority plays a large part.
(3) New openings generally filled from outside.
(0) New openings always filled from outside.

Review policy . . . . . _____

(6) Periodic review with both your boss and personnel department.
(4) Periodic review with your boss.
(0) No review policy.

Are there stimulating people around? . . . . . _____

(6) Many, the atmosphere is stimulating.
(3) Some, there are few people to go to.
(0) It's an isolated, dreary life.

Company environment & remuneration

Salary policy . . . . . _____

(4) Company tries to rectify problem.
(0) Company ignores problem.

Salary level . . . . . _____

(4) Above average.
(2) Average.
(0) Below average.

Fringe benefits . . . . . _____

(4) Above average.
(2) Adequate.
(0) Lacking.

Professional turnover . . . . . _____

(4) Little, company dynamic.
(3) Moderate.
(1) Little, stagnation evident.
(0) High.

Do you punch a time clock? . . . . . _____

(4) No.
(1) We make time clocks, so everybody uses them.
(0) Professional personnel all use the time clock, or time-clock atmosphere exists.

Is there a professional union? . . . . . _____

(4) No professional union.
(2) Professional union exists.
(0) No union, but ripe for one.

Are there adequate facilities? . . . . . _____

(6) Adequate.
(4) Lack of facilities does not interfere with work.
(0) Poor.

Geographical location . . . . . _____

(8) Desirable.
(6) Adequate.
(0) Undesirable.

Total . . . . . _____

K9 - goals for
next year

DRAFT NOT SENT

dec INTEROFFICE MEMORANDUM

DATE 2/15/66

SUBJECT Goals for Next Year

TO Works Committee FROM Ken Olsen

During the last year, we accomplished two very significant things. By product line organization, we have defined responsibility for almost every activity within the Company. With our budgeting system, I think we have the operation under quite good budgetary control.

The things I would like to accomplish this next year are:

1. Get 80% of our inventory under personal competent responsible control of the appropriate individuals and to have the inventories budgeted for six months ahead.
2. Develop engineering methods and engineering personnel:
   a. standardize project management with design reviews, pert charts, etc.
   b. standardize a system for new product introduction.
   c. technical training of engineers.
   d. management training of engineers.
   e. develop standardized system of process flow charts
3. Develop a standardized method for making profitability projections.
4. Standardize price policy for the Company.
5. Regular reporting on a standardized basis of return on capital and return on sales.
6. Develop an executive development program.
7. Start zero defects program.
8. Simplify cost system so that people readily get cost information to help them in making decisions.

There are several positions within the Company which need filling, as well as a couple key positions. Here is a list of those positions which I would like to see filled.

1. Someone to supervise all of the different production lines.
2. Man to head industrial engineering group.
3. Man to head value engineering group.
4. Company auditing group.
5. Man to run zero defect program.
6. Traffic manager.
7. Office administrator.

CONFIDENTIAL

INTEROFFICE MEMORANDUM

DATE March 1, 1966

SUBJECT Possible Space Layout

TO Loren Prentice
Stan Olsen
Win Hindle
Nick Mazzarese
John Jones

FROM Ken Olsen

Here is a sequence of moves which I think will eventually get groups together. It seems like a rather roundabout way to get to the eventual end, but I think it makes some immediate gains which I consider important. The sequence is as follows:

1. Temporarily move Dick Best into the Conference Room on the first floor of Building 12.
2. The programmers would temporarily move to the PDP-6 marketing area.
3. Phil Backholm, Roland Boisvert, and their new tape transport development would move into the empty offices on the NE Sales floor.
4. The disc development with Ken Fitzgerald and Steve Lambert would move into Loren's area and would do the development in the area outside the module layout room.
5. Win, Gordon, and the PDP-6 engineers would move into a new row of offices along the wall of the PDP-6 checkout area.
6. Stan would move into Dick Best's offices and his sales and engineering staff would take over the offices between that and the test equipment checkout.
7. John Jones' PDP-9 crew would take the other end of the engineering checkout floor. We would knock down the petitions around the present peripheral area and John could take the space he needed. For awhile, Ed de Castro can probably use that space also.
8. Jack Shields and the New England Sales Office would take over the second floor of Building 12. I believe that if we insist we can get reserved parking immediately in front of Building 12 for the field service people.
9. I would then like to see the shops move to the basement.
10. PDP-6 could then take over the top floor of Building 4.
11. Nick would then have all of the PDP-6 area on the top floor of Building 5 to move up the PDP-9, the programmers, Ed de Castro, and maybe the program library.

12. Stan would then move down the finished goods stock room and module test. He would re-layout parts of the model shop so that we would have offices along those windows in the model shop for shipping and the traffic manager. The benches in the model shop probably could stay and the model shop would then just extend into the hall somewhat. The machine shop and part of the model shop would be moved, and that ~~whole~~ area would be used for shipping.

After all this is done, we can see what space is left in the plant for the library. It might go in the present PDP-6 marketing room. This would leave a lot of room for Stan and Pat Greene. There might still be plenty of room for Bill Long to expand into.

Ken

ecc

- There will do not provide for more accounting and more Board Production + New Mod
- Production to Bld 11.
- unoccupied area
- is
- 9 Production across from Stock

CONFIDENTIAL

INTEROFFICE MEMORANDUM

DATE March 1, 1966

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TO Loren Prentice
Stan Olsen
Win Hindle
Nick Mazzarese
John Jones

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Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE March 1, 1966

SUBJECT Printing of the Sales Newsletter

TO Ted Johnson FROM /Ken Olsen

The Sales Newsletter was hardly readable. There must be a better way to print it than the way we did the last one. If offset printing is too expensive, we might try typing the ditto masters with the ribbon in neutral position.

Ken

ecc

Began offset printing 3/2/66

dec INTEROFFICE MEMORANDUM

DATE March 1, 1966

SUBJECT PDP-8 Costs

TO George Gerelds
cc: Ed de Castro

FROM Ken Olsen

The most expensive item in the PDP-8 is the memory stack. I'm told that about half the cost is in the wiring between the stack and the sockets. It might be a good idea if you looked into this to see if you can get better ideas on how to do it.

The next most expensive item is the power supply and almost half of the cost in that is assembly. I understand that you and Bob Maxcy are working on this, and I would like to hear your ideas sometime.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE March 7, 1966

SUBJECT Sales Tax

TO Harry Mann

FROM Ken Olsen

Just a reminder that we should consider buying taxable items before April 1st.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 9, 1966

SUBJECT Power Control Panels

TO Ed Harwood
cc: Mike Ford
John Jones
Nick Mazzarese

FROM Ken Olsen

Our power control panel has always been an orphan in the Company because no one has felt responsible for them. It is a dangerous thing to get involved in because if one sets about to simplify these, he is then open to criticism that he has forgotten some detail. However, with your new position, I think that it should come under your responsibility. I would like to see you write a memo explaining the power control system which you propose for the PDP-8 and PDP-9.

It might be that we can have enough timing controls built into the special power supplies in each one of these computers that we don't need any power control. We might ship a timed signal around to accomplish everything that we want to.

These items are expensive and we have so many different types that it would be very worthwhile to do what we can to simplify them.

Ken

eee

INTEROFFICE MEMORANDUM

DATE March 9, 1966

SUBJECT Wire Saw

TO Bob Brown
cc: Roger Williams

FROM Ken Olsen

If we make some gross simplifications in the wire saw, we can make one of them very quickly and then produce them in large numbers so that we can have any number we need. I would suggest that we build them on a simple vertical piece of jig plate. If we can drive both reels and the drums right on a motor shaft, we can avoid the problem of bearings, shafts, pulleys, and belts. If we time the run in one direction instead of using photo cells to sense the reels, we can save all the electronics and complexity of building the part of the equipment. It would also then fit in nicely with the rotary machine because the reels could be reversed after every rotation of the machine.

If we lifted the reels up high above the drums, we could put a guard and a wiping mechanism between them so that we could spray clean the drums and wafer without touching the reels. We should look about for a seal to protect the motors or bearings from the grit and spray.

We might be able to find a motor that goes at 400 rpm's, or we could use a 200 rpm Slo-Syn motor and double the diameter of the drums to get the same effective speed. The double diameter drum should last twice as long, which might make it worthwhile. If we had a motor on each drum, we could put a slow voltage on one to supply the desired tension.

Ken

ecc

Ko-PDP-8 whatnext?

INTEROFFICE MEMORANDUM

DATE March 10, 1966

SUBJECT PDP-8 Improvement Program

TO Mike Ford
cc: John Jones
Nick Mazzarese
Stan Olsen

FROM Ken Olsen

I have not yet heard of any dramatic idea for a new PDP-8, but many people have ideas for small improvements. I would like to suggest that you divide your program into two parts. The first would be to make a list of all the suggestions which people have as to how we can cut the price and improve the PDP-8. No one will be significant, but when you add them all together I think we might possibly cut the cost in half. The second part would be to lay out dramatic new ways of marketing the machine with the new peripheral equipment we have, and perhaps repackaging it.

The most significant improvement that will come about eventually for the 8 will be the all-ceramic module using our own semiconductors. Part of the cost of using this will be redesign of the 8 so that it uses the standard ceramic modules. They will be much more dense so the unit could be more compact.

The most significant cost item outside of modules is the memory. Pat Greene has some ideas of how we can dramatically cut the cost of that. The wiring is almost half the cost of the stack and Pat has some ideas on how to avoid all the wiring.

Many people have ideas that will help in small parts. John Trebendis in the stock room would like to see us buy a mold and have cable clamps molded instead of cut out by machine.

We have already made a significant cost lowering in the rosewood side panel and we might work on the trim for the panels and for the control panel.

The aluminum strips which hold the row of switches are probably rather expensive and so we might have these done by a short run stamping house that could give us threaded holes. This would make assembly much cheaper. These are made out of cadmium plated steel so they would probably be less expensive.

The jazzy table top model with the plastic sides is probably worthwhile during the initial introduction of the machine, but next go around we should have the simpler assembly and probably a floor mounted model. We would wire-wrap the whole machine at once rather than having two gates. The plastic sides are quite expensive, not only because of the initial cost but because of the high breakage.

If we could incorporate our high speed reader nicely into a PDP-8, it would be a tremendous selling feature, and if SDS is using the Teletype, they probably have a gimmick which we can use to overwhelm them.

If you collect all of the literature and print it up in a pocket book like Stan did, the investment would be very small. If a quarter of a million of them could be spread around the world, you would have the PDP-8 known by everyone. That would probably be the most dramatic marketing gimmick you could obtain. We have been working on a new high reliability socket using our consultant, John Hitch. He is interested in a machine which would have a 20-year life and after we get this socket we could make a tremendous sales pitch around it. We might even do a little negative advertising like saying that ordinary sockets are only designed for 5-year life and ours are designed for 20.

We still have the potential of making our own cores, which would cut the stack cost way down. We also have the potential of manufacturing PDP-8's in England which could be a significant marketing device for the European market.

We are now making this machine in large quantities and we could consider using printed wiring for the PDP-8. If we put two or three layers of printed wiring down, there would be very little wire-wrap left to do.

DEC's new line of peripherals will be a key part in future marketing and it will be particularly important when we market against SDS who has their own line of peripherals. The peripheral development has suffered from lack of interest in the Small Computer Group. I would, therefore, suggest that you and John Jones spend time making sure that the peripheral people are going in the direction which you want them to go and that they are working toward a schedule in which you agree. There is always the danger in engineering that they go off on different ideas when it might be in the best interest of the product lines to finish up on one idea even though the later ideas are improvement.

When we get our own disc, it may necessitate designing a new cabinet, and it would be good to think this out well in advance. You might even consider using the LINC-8 cabinet which may be somewhat wasteful for now but which would allow easy expansion of memory and probably have room for peripherals. The present PDP-8 upright rack is very wasteful in that you gain almost no space with the table top model. With a little thought, we could do a lot better.

As head of this business for the product line, I would like to have you go around and inspect the various pieces of PDP-8's that are laying hither and yon and fix up those that are still useful and you might save significant money. Those pieces which are no longer of any value should be sent to the dump to get them out of the way.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE March 10, 1966

SUBJECT Future Module Plans

TO Stan Olsen

FROM Ken Olsen

In laying out your pert diagram for the next several years, I think you ought to lay out plans for each of the different memory types which you would like to offer as modules.

You probably should have magnetostrictive memories, in addition to two types of discs, a low priced, low speed, and a fast core memory with bit lengths to correspond with those stacks which we keep in inventory.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE March 11, 1966

SUBJECT American Flag for Front Entrance

TO Henry Crouse

FROM Ken Olsen

John Culkins has requested that we have an American flag and holder that he can put outside the main entrance. Will you talk to him about this and look into what would be a good flag and holder that would be convenient for him to use.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 11, 1966

SUBJECT Plant layout

TO Loren Prentice

FROM Ken Olsen

cc: Bob Lassen

It has been requested that we have the plant laid out in coordinates so that we can identify each area. Will you propose a system if you think it is practical. In this way packages can be delivered, repairs assigned, and light things done by coordinates.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Presentation for Works Committee, March 16th

TO Dick Best
George Wood

FROM Ken Olsen

cc: Loren Prentice
Stan Olsen
Nick Mazzarese
Harry Mann
Win Hindle

Will you prepare for this Wednesday's Works Committee a proposal for the continuation of the ceramic module machine.

I think we now have enough information where we can schedule each part of the machine and fairly accurately estimate what engineering and drafting we need.

I would also like to see down on paper the suggested contract with John Hitch and why you propose to pay so much. If we are buying the results of someone else's developments with their blessing, I think that we have to see some pretty definite proof that John Hitch has these secrets, and proof that we are not buying secrets on an unethical basis.

I would also like to see in the proposal a definition of who is going to follow through on a technical point of view for the Company. I think we should already have had somebody on the project learning all there is to know on the technology, plus keeping up with the literature and reading all the books available on the subject. We have had very poor luck with consultants when we have not had someone assigned to follow up on the project, and we've had very good luck with consultants when they were hired to complement our own staff.

I expect the Works Committee to be quite critical before there will be approval to contract this much money under the conditions which this has been presented.

For your proposal, I would suggest that you have the socket design and most of the machine design contracted outside because John Hitch's rates are much too expensive for this type of consulting. You should also isolate in your proposal exactly what is worth so much money and make sure John Hitch concentrates his work on that.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Laboratory Modules

TO Stan Olsen

FROM Ken Olsen

Part of our laboratory module idea which we never completely worked out was to have one of the standard circuits, such as the diode input gate, spread out in a panel in component form so people could wire the circuit together. In this way they could find out how the circuit itself works. You might get two or three of these across a 5 1/4 inch panel and in that way people could make it a flip-flop with a read-in gate.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Inspiration for our Modules

TO Stan Olsen

FROM Ken Olsen

We have got to get some new inspiration in getting out a few new modules. Apparently, we badly need a prepackaged counter.

I think it is important that we convince our sales people that we are coming out with new modules, that we do have engineering, and that we do have thoughts that aren't going into just computers.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Integrated Circuit Carrier

TO Stan Olsen

FROM Ken Olsen

I think we should offer an integrated circuit carrier. I think people have standardized in the 14 contact integrated circuit and we could make a special board with a rectangular hole cut out and room for soldering in the circuit or room for a socket. We can then wire them up to those pins which don't normally take power. This will give people the freedom to use the circuits with our logic or to experimenting with them.

Ken

ecc

dec INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Spray Machine

TO George Wood

FROM Ken Olsen

When you make your trip to New Hampshire to look over the spray machine, it might be a good idea to take Bob Brown along. You might, ahead of time, let him know what you're going to do and let him know what you expect to accomplish with each of the different materials you're going to spray.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 14, 1966

SUBJECT Hybrid Circuits

TO Tom Stockebrand

FROM Ken Olsen

Please be sure to study the February 21 issue of ELECTRONICS magazine which discusses hybrid circuits in detail.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 15, 1966

SUBJECT IEEE Convention

TO Engineering Newsletter

FROM Ken Olsen

We encourage our engineers to visit the IEEE Show which this year is being held from March 21 - 24. Those who feel they would benefit from visiting the Show should plan to cover it in one day; leaving by shuttle in the morning and returning by shuttle that evening. The Show hours are from 11:30 a.m. - 9:30 p.m., and a convenient schedule should be worked out with your supervisor. We will have copies of the program available so that you can make sufficient use of your time.

INTEROFFICE MEMORANDUM

DATE March 15, 1966

SUBJECT Company Travel Arrangements

TO Ted Johnson

FROM Ken Olsen

It is not clear to me how we make travel arrangements or who supervises this function. I feel that it must come under Ted, Nick or Stan. Whoever has this responsibility under them should make a presentation to the Works Committee next week as to how it works, what services our inside office performs, and what services the travel agency gives us. Then, if the Works Committee doesn't suggest any changes in this, we will immediately put this, as presented, in the Sales Newsletter and Engineering Newsletter.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 15, 1966

SUBJECT PLANT ENGINEER

TO Ken Olsen
cc: Bob Lassen

FROM Loren Prentice

I propose that we hire a man to be called a plant engineer and his duties be as follows:

Responsibility for the physical plant. This may be detailed as follows:

1. Maintenance and repair of the buildings

2. Leasehold improvements

3. Layout plans, supervise the development on new areas and relocation of old areas.

4. Safety - This includes safety conditions, safety programs of the plant and the safety program for the enlightenment of the employees. This duty to be performed in conjunction with advice and help of the Personnel Department.

5. Security - This is plant security of the type now being exercised by myself.

6. Fire Protection - This includes plans of evacuation, emergency lighting, training of the fire brigade, maintenance of fire fighting equipment, etc.

7. Furnish engineering assistance and consultation in the writing of leases, together with our legal advisors.

8. Supervise communication system - Installation of the telephones, in-house paging, music installation, and the fire alarm systems.

9. Day-to-day liaison with Maynard Industries and all the problems with the abutting tenants.

10. To have made up and maintain a set of drawings of the area we occupy with plumbing drawings and electrical drawings of each individual system throughout the plant.

11. Conduct with insurance representatives of both casualty and employment compensation insurance inspections and see that their suggestions and demands are passed on to management and to implement the carrying out of these suggestions if the company so desires.

12. Have charge of the power and lighting and all motors, generators, compressors & vacuum pumps, etc., for which maintenance is not maintained by production.

13. Repairs and maintenance of all parking areas outside grounds, etc., including the lighting and drainage thereof.

Personnel which would report to him and who he would supervise:

1. The Pinkerton National Detective Agency Guards

2. John Culkins - maintenance crews, consisting mostly of janitor work and maintenance painting.

3. Our own in-house plumber, electrician and carpenters (probably 1 or 2 carpenters).

4. All outside contract help engaged in plumbing, electrical, carpentry and masonry, floor layers, etc.

5. Receptionists and telephone operators.

I propose that this man be hired with the idea that he would accept these types of duties and that he not be asked to take them all at once, but to gradually assume them over a three to six month period and during this familiarization period, that he report to me. As soon as this is over and these have been absorbed by him, he should report directly to some other officer in the company, preferably Harry Mann.

I realize that this seems like a long and rather detailed description of the duties of the plant engineer, but I believe with the proper assistance and initial help, he can assume all of these duties and relieve the several people that are now carrying them for more important duties and that these are necessarily centralized in one person for the proper function of our organization.

dec INTEROFFICE MEMORANDUM

DATE March 17, 1966

SUBJECT Technical Sessions of the IEEE Convention

TO Product Line Managers
John Jones
Mike Ford

FROM Ken Olsen

We, as a Company, have never taken advantage of the technical sessions at conventions. I think because the senior people of the Company have been so involved in selling, thus showing disrespect for these sessions, the technical people in the Company have done the same.

At one time we were doing all the inventing and the rest of the industry was following us. Now that many millions of dollars have been spent on research in the industry, it is important that we learn all that is possible about what is going on in the outside world.

I would suggest that all of you study the program for the IEEE, pick out those sessions which are important, and then draft your engineers to go to them. They should then make a report for the "Biweekly" on the sessions attended.

I think the Small Computer Group should have one or two people sit through session 1 on "Applications to Automation Processes."

It would be good for Dick Best, and maybe someone else, to attend session 10 on "Electrical Contracts."

Session 41 would be interesting for all computer groups. It is titled "New Techniques for Computers Input and Output"- an expository session.

Session 42, " Solid State Devices and Integrated Circuits," would be interesting for Tom Stockebrand, Dick Best, and maybe Russ Doane.

I have taken it for granted that you have the pamphlet outlining these sessions. If not, call Elsa for any information you might need.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 17, 1966

SUBJECT Idea for New Module Ad

TO Jonah Kalb
Stan Olsen
Jack Atwood

FROM Kenneth H. Olsen

Here is an idea for a module ad which I would like to have you consider: It is a large picture of a FLIP CHIP module with nothing but a single integrated circuit in the middle. I think we have modules like this in stock. The background might be either out of focus or distant regular modules.

The title is something like: "Digital Now Has Integrated Circuits."

The text is: "Three years ago our President ordered us to put an integrated circuit in one of our computers to show that we too are for progress and modern technology. We finally found the place where we are happy to put an integrated circuit. Every PDP-8 will now contain one modern, new integrated circuit."

"The integrated circuits will, of course, cost us somewhat more than discreet components or hybrid circuits, but we're happy to absorb this cost to demonstrate our interests in modern technology. The integrated circuit is smaller but so far we haven't figured out how to use the extra space. We have studied the reliability of these integrated circuits and have found no reason to believe that they will not live up to the reliability of the circuits we have been using before. They, of course, cannot be repaired but we feel it is very unlikely they will ever need repair."

"We want to assure our customers that our production will not be limited by the unreliability of integrated circuit supply because we will always maintain six months of discreet component circuits so that we can always maintain our production level."

If you can make anything out of this idea for an ad, we will figure out how to put an integrated circuit into the PDP-8.

Ken Olsen

ecc

ALSO

MSG 1091-10 3/21/66
TO JOHN LENG
FROM ELSA CARLSON

WE HAVE RECEIVED YOUR TLEX NO. 149. PLANS ARE NOW FOR KEN OLSEN TO VISIT EUROPE BEGINNING THE 14TH OR 15TH OF APRIL AND RETURNING HOME ON THE 24TH OR 25TH.

END OF MSG TO ENGLAND

RECEIVED
1966 MAR 21 PM 4:
DIGITAL EQUIPMENT CORP.
SALES DEPARTMENT

END OF MSG

RECEIVED
1966 MAR 21 PM 4:41
DIGITAL EQUIPMENT CORP.
SALES DEPARTMENT

MSG 1090 3/21/66
TO KLAUS KYRIS
FROM ELSA CARLSON SECRETARY TO KEN OLSEN

IN ANSWER TO YOUR TELEX NO 164 TO TIM MCINERNEY, KEN OLSEN DOES NOT PLAN TO ATTEND THE HANOVER FAIR THIS YEAR. HE PLANS TO VISIT EUROPE FROM APPROXIMATELY APRIL 15TH TO THE 25TH. THANK YOU SO MUCH FOR OFFERING TO MAKE HOTEL RESERVATIONS FOR HIM

END OF MSG TO MUNICH

dec INTEROFFICE MEMORANDUM

DATE March 22, 1966

SUBJECT Back Panel Wiring

TO Stan Olsen
Dick Best
Loren Prentice
Nick Mazzarese
Jack Smith

FROM Ken Olsen

Here is an idea for back panel wiring. Instead of using multi-layered printed wiring, let's print the wiring with a flame spray gun one layer at a time. First put down a board full of holes and spray one layer of conductors and then put down another board and spray another layer. We should be able to do this indefinitely.

Ken

ecc

INTEROFFICE MEMORANDUM

DATE March 28, 1966

SUBJECT Your Memo of March 7th

TO Jack MacKeen

FROM Ken Olsen

I was pleased to receive your memo making suggestions for Mechanical Engineering.

Mechanical Engineering is on the same basis as Technical Publications and the other service organizations, in that they have to sell their service. However, in Mechanical Engineering there is a seller's market and they can act independent because they have a much larger market than they can supply.

This is much different from a service organization which has ambitions several times what the product lines can use.

When you are buying from a seller's market, you have to convince them that it is worth expanding, develop the services within your own group, or encourage someone to set up a competitive group. This free enterprise approach to service organizations does limit the services whose ambitions are way beyond the needs of the company, but only in indirect ways does it force service groups to expand.

Ken

ecc

MSG 1358 4/7/66

TO JOHN LENG
FROM TED JOHNSON

KEN OLSEN WOULD LIKE TO LAY OUT HIS TRIP AS FOLLOWS:
PLEASE LET ME KNOW IF THIS IS REASONABLE.

1. HE WILL ARRANGE FLIGHTS TO ARRIVE IN LONDON AND VISIT READING FRIDAY OR SATURDAY. WOULD LIKE TO MEET WITH YOUR PEOPLE.

2. AT THIS POINT YOU ARE TO SET UP PLANE AND HOTEL RESERVATIONS FOR KEN AND HIS SON UNTIL HE ARRIVES PARIS FOLLOWING SATURDAY. KEN WANTS TO CHARGE THESE FLIGHTS TO HIS OWN CARD WHEN HE ARRIVES.

A. FLY TO GENEVA SUNDAY AFTERNOON- DINNER WITH TOR LINGJAERDE AND VISIT CERN MONDAY MORNING.

B. FLY TO ZURICH IF DESIRABLE MEET KLAUS KYRIS TO VISIT BROWN-BOVERI IF THIS IS CONVENIENT.

C. FLY TO MUNICH THAT EVENING OR TUESDAY MORNING SPEND UNTIL FRIDAY VISITING COLOGNE. STUTTGART LOOKS MARGINAL CAN VISIT DESY HAMBURG IF DESIRED ON WAY TO COPENHAGEN FROM COLOGNE.

D. SHOW IN COPENHAGEN ON FRIDAY-WILL AGA BE IN COPENHAGEN?
FLY TO PARIS, PROBABLY SATURDAY, MORNING, TO SPEND WEEKEND.
~~:-, 3:8546 .335 (3, 9, 233(3,?~~ CONTINUED ON NEXT LINE
CAN DEVITRY MEET KEN ON WEEKEND?

MAIN OBJECTIVE TO MEET WITH OUR PEOPLE - SON WILL ACCOMPANY HIM ON ENTIRE FLIGHT. ARRANGE TWIN BEDDED ROOM THROUGH OUT TRIP. CALL ME OR TELEX IF ANY PROBLEM.

END

RECEIVED
1966 APR -7 PM 4:31
DIGITAL EQUIPMENT CORP.
MAYNARD, MASS.

Opera
weekend?