Large Computer Group

BUY-LINE

April 1983

Special In This Issue

New Pricing For DECSYSTEM-2040

Improving DECsystem-10 and DECSYSTEM-20 System Performance

LCG 1983 Advertising Campaign

For Internal Use Only

digital

TABLE OF CONTENTS

Special in this Issue

LCG ORGANIZATION

PRODUCT INFORMATION

GENERAL INTEREST

TABLE OF CONTENTS, Cont.

SALES and APPLICATION NOTES

COURSES, SYMPOSIA, SEMINARS

LCG LITERATURE and SALES AIDS

ANNOUNCING PRICE REDUCTIONS FOR THE DECSYSTEM-2040

Paul Feresten
LCG Marketing
MR02-2/8D2

I am pleased to announce that the DECSYSTEM-2040 has been repriced, resulting in significant price performance benefits.

This action has been taken as a response to the increasingly competitive nature of the Large Systems marketplace, and as an aggressive step in providing cost effective system building blocks for implementations of the recently announced DSIA (DIGITAL System Interconnect Architecture).

As a result of this repricing, customers will be able to lay the groundwork for full DSIA configurations with modest front end investment.

A summary of the new DECSYSTEM-2040 pricing is as follows:

Option	Description	Old Price	New Price	Savings
2040-SE/SF	512KW Basic System Package	$392,100	$250,000	36%
2040L-SE/SF	512KW License Only Package	$362,100	$220,000	39%
2040T-SE/SF	512KW ARPA	$427,100	$283,000	34%

As you can see, the above prices position the -2040 extremely favorably on the price/performance curve. Since the -2040 is fully upgradeable to DIGITAL's most powerful system, the DECSYSTEM-2060, this positioning will allow customers with limited budgets to invest today in a system that will provide significant growth potential tomorrow.

Upgrade Policy

In order to justify the significant reduction in the price of the -2040, it has been necessary to increase the price of the -2040 to -2060 Upgrade Option (2060-UA). The price of the 2060-UA will now be $225,000. This price will, in effect, represent a deferred payment for customers who either cannot afford a -2060 initially, or who do not need the extra performance for some time to come.

Since this upgrade results in a system with 300% the performance of the -2040 the -2060-UA upgrade still represents one of the best price/performance bargains in the industry.

Effective Date Of New Prices

The new DECSYSTEM-2040 prices were effective as of April 4, 1983.

GOOD SELLING!

IMPROVING DECsystem-10 AND -20 PERFORMANCE

Peter Wysocan
LCG Marketing
MR02-2/8D2

Customers often ask what they can do to improve performance on their current system. This article outlines the effects of adding additional memory, and of upgrading I/O devices for both DECsystem-10 and DECSYSTEM-20.

Performance is a complex subject. Figure 1 shows a simplified way to discuss the components that make up the performance envelope. By adjusting any of the three components, the performance envelope will change. For this study, we will assume that the CPU power remains essentially constant, and see what performance improvement we can expect when adding memory or increasing I/O throughput.

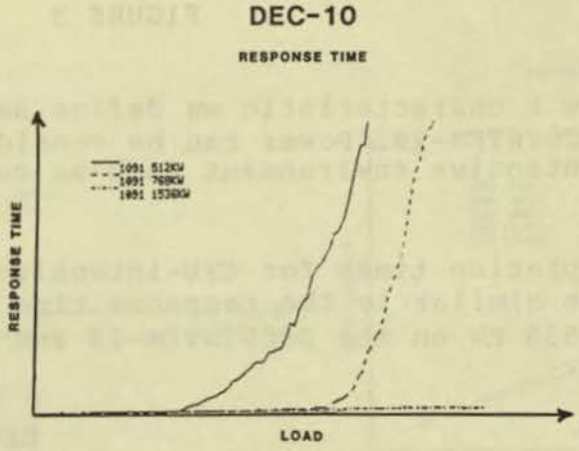


FIGURE 1

The Effects Of Memory

Both TOPS-10 and TOPS-20 are very "memory hungry" operating systems. This is the nature of virtual memory systems and well documented.

To illustrate what happens to system performance at different memory configurations, we use a timesharing simulation benchmark. This benchamark allows us to measure varying aspects of performance: response time, power, and throughput, as we increase the load on the test system by adding more users.

Response Times

Figures 2 and 3 show response time vs load for TOPS-10 and TOPS-20, respectively. By response time, we mean the amount of

time between entering a trivial interaction and a response from the system. This is meaningful in the typical, highly interactive timesharing environment.

For the DECSYSTEM-20, we see that systems configured with less than 1536 KW of memory will see a significant degradation of response times as system load increases. For the DECsystem-10, this degradation occurs with configurations of less than 1024 KW.

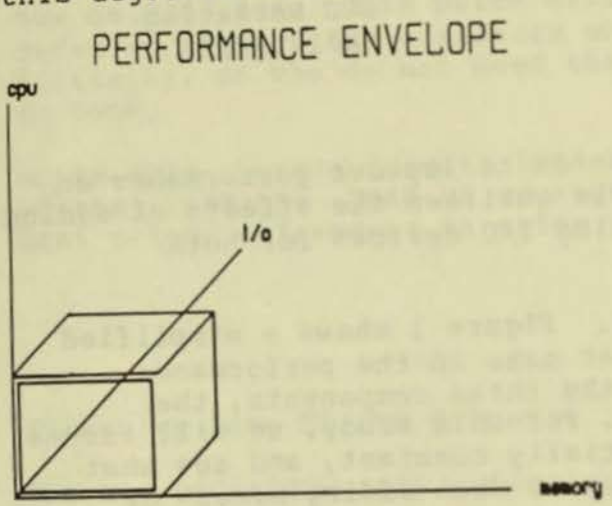


FIGURE 2

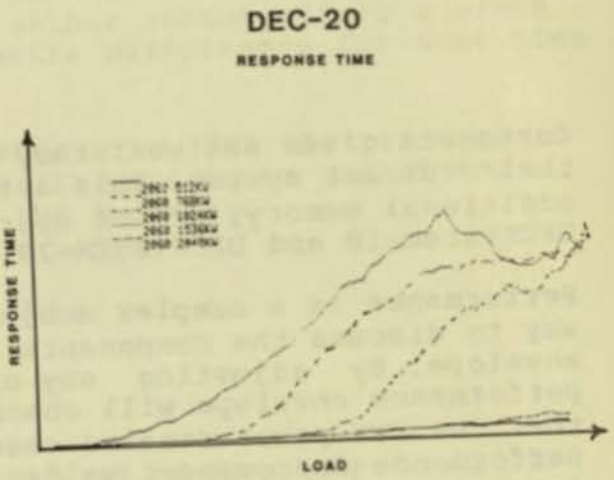


FIGURE 3

Power

Figures 4 and 5 show a characteristic we define as power, for the DECsystem-10 and DECSYSTEM-20. Power can be considered as the response in a CPU-intensive environment such as compiling programs.

The graph plots completion times for CPU-intensive tasks vs load. Again, we see curves similar to the response time case, with high degradation below 1536 KW on the DECSYSTEM-20 and below 1024 KW on the DECsystem-10.

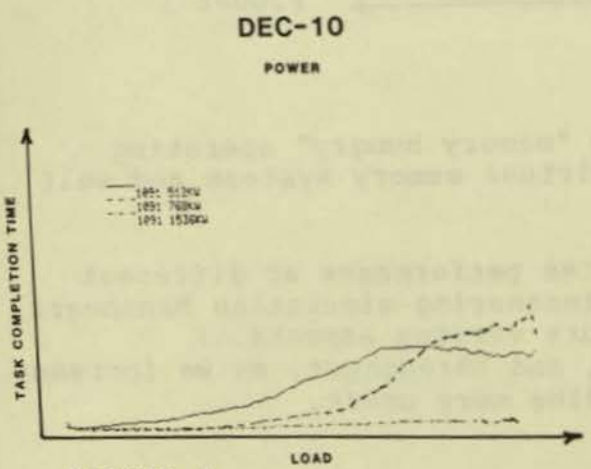


FIGURE 4

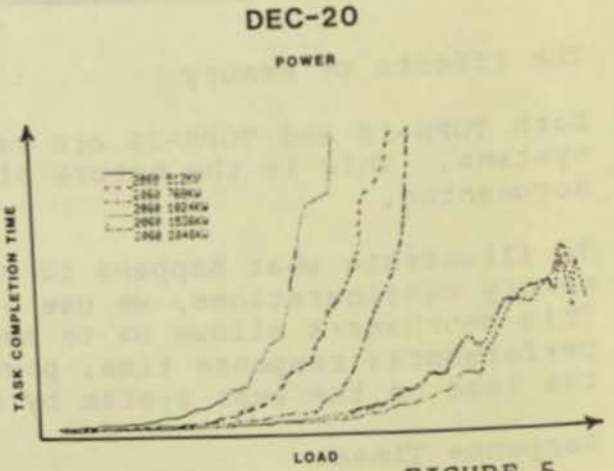


FIGURE 5

Throughput

Finally, we look at overall system throughput. Figures 6 and 7 show throughput vs load for the DECsystem-1Ø and DECSYSTEM-2Ø.

In an ideal system we would like to see a linear relationship between load and throughput. In other words, as we increase the load, we want a constant increment of throughput until we reach the point of using every CPU cycle. As the graphs illustrate, this can only be achieved if the system is configured with a sufficient amount of memory.

In the case of the DECSYSTEM-2Ø, a fairly linear relationship exists with a 1536 KW configuration, but additional throughput is possible with 2Ø48 KW. That throughput increment is the difference between the two topmost curves on the graph.

For the DECsystem-1Ø, 1536 KW show a good throughput/load relationship. In some cases additional throughput could be achieved with larger configurations.

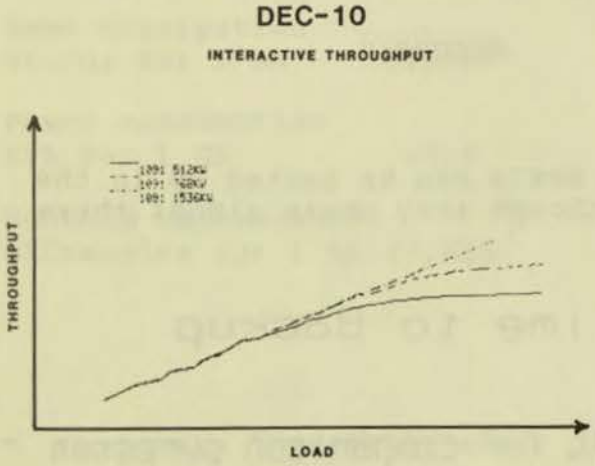


FIGURE 6

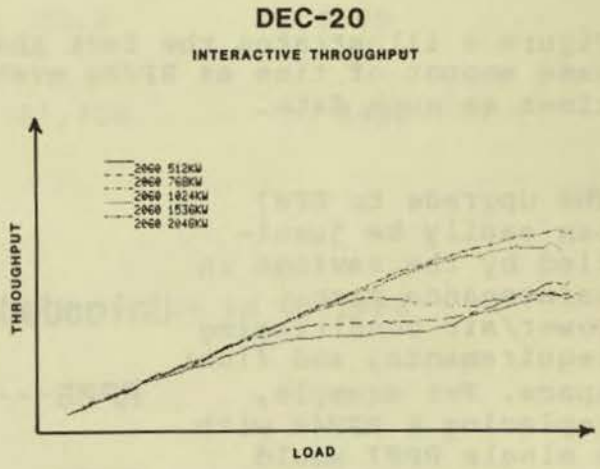


FIGURE 7

Memory Effects Summary

From the above data, it is evident that systems configured with less than 1Ø24 KW usually will benefit from increased memory.

In all cases, it is important to carefully analyze the system performance and determine where bottlenecks exist. It should also be noted that this data is for a well-defined and very controlled benchmark environment; the exact shape of the curves, as well as the point at which degradation occurs will vary from system to system. The basic relationships will hold, but will reflect the applications environment.

Improving I/O Performance

Some very significant performance improvements, space savings, and maintenance cost savings are possible by upgrading to newer disk technology. Replacing the RP06 and the RP04 disk drives with the current model RP07 will provide immediate benefits.

Figure 8 shows the difference in I/O performance between RP06 and RP07 disks. Especially when used in conjunction with TU78 tape drives, the RP07 can sustain much higher data rates. This effect is most noticeable when using DUMPER to save large files from disk to tape, with a threefold increase in data rates.

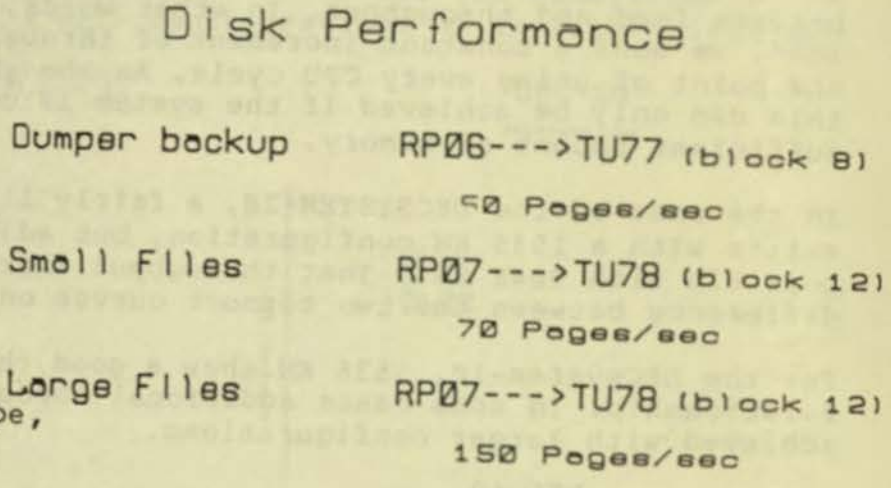


FIGURE 8

Figure 9 illustrates the fact that RP07s can be backed up in the same amount of time as RP06s even though they store almost three times as much data.

The upgrade to RP07 can easily be justified by the savings in maintenance cost, power/air conditioning requirements, and floor space. For example, replacing 5 RP04s with a single RP07 would pay for itself in 19 months based on the maintenace savings only.

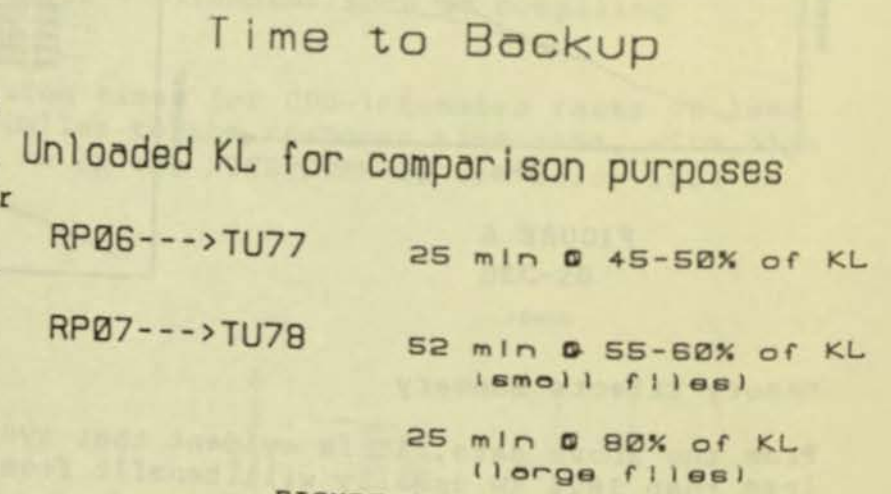


FIGURE 9

Dont forget: right now until the end of Q4, there is a corporate special price on the purchase of RPØ7s. A 30% discount applies if two RPØ7s or an RPØ7/TU78 package are purchased and installed before the end of Q4.

The following table summarizes performance, cost, space and maintenance for RPØ4, RPØ6 and RPØ7 disk drives:

	RPØ4	RPØ6	RPØ7
Capacity, MB	88	176	498
Xfer rate MB/sec	.8	.8	2.2
Price, $ MLP	----	34,ØØØ	26,6ØØ*
Footprint, SQ FT for 1 GIGA-byte	8Ø	4Ø	12
Heat dissipation Btu/hr for 1 GB	81,8ØØ	4Ø,9ØØ	14,ØØØ
Power consumption KVA for 1 GB	24.5	12.3	2.75
Monthly maintenance DECservice for 1 GB	$3,625	$1,42Ø	$43Ø

* Corporate "Special"; after Q4 FY83, price is $38,ØØØ

CUSTOMER SURVEY: DSS on DECsystems

Marilyn Davison
LCG Marketing
MRO2-2/8D2

A large number of LCG installations in the Fortune 500 accounts are providing professional Decision Support capabilities. Most of these accounts formerly used outside timesharing services for their financial modeling, marketing planning, forecasting, graphics, and ad hoc query functions.

To better understand how our most successful accounts plan, manage, and support their internal Decision Support Systems, we have conducted in-depth interviews with eight major reference accounts which have decision system installations with DECsystem -10s or -20s: Abbott Labs, Holiday Inns, Eli Lilley, R.J. Reynolds, Johnson & Johnson, Gillette, Morgan Guaranty Trust,and 3M.

We have researched the following issues: purchase decisions, when, by whom, how justified, what they were doing before, what were the original goals for the system, who were the original users, who are the current users, what tasks are running on the system, what software is running, what are the benefits of the system, and how the success of the system is measured.

Our knowledge about these accounts and others is giving us the information to prepare a Marketing Guide, promotional materials, and sales support information.

These materials will be in the field in the next couple of months. In the meantime, if you have a prospect, give me a call, and I will give you what information we have.

OPUS AVAILABLE FOR TOPS-20

Allan Titcomb
LCG Applica. Mktg.
MRØ2-2/8D2

On March 7, 1983, DIGITAL'S PPC (Pricing and Policies Committee) approved pricing and advertising of OPUS (Office Productivity User Software) for the DECSYSTEM-2Ø.

OPUS is a comprehensive, office automation environment for TOPS-2Ø.

DCS/EAS Library submission is currently underway. When this process is finished, OPUS will have SPS services, Telephone Support, and will be distributed through the SDC.

Until that time, OPUS will continue to be supported through the New York City Commercial Software Services Group. The OPUS base package price is $15,ØØØ. Options for OPUS will be submitted to PPC and EAS separately.

OPUS is currently installed at 12 sites in the US and Canada. Further information on OPUS can be obtained from our LCG Applications Marketing Group or from the New York office.

LCG BANKING INDUSTRY PRESENTATION FOLDER (IN VERY LIMITED SUPPLY...READ ON)

Marilyn Davison
LCG Marketing
MRO2-2/8D2

LCG has a good story to tell in the banking market. We have over 20 world wide installed accounts, all in large commercial banks. These include prestigious reference accounts, such as: Manufacturers Hanover Trust, Morgan Guaranty Trust, and Bankers Trust.

In practically all of these installed accounts, DECsystems handle internal timesharing, i.e. the decision support and other direct professional user functions. Financial modeling, graphics, and ad hoc query capabilities, as presented by system and third party application packages, make DECsystems winning solutions in this market.

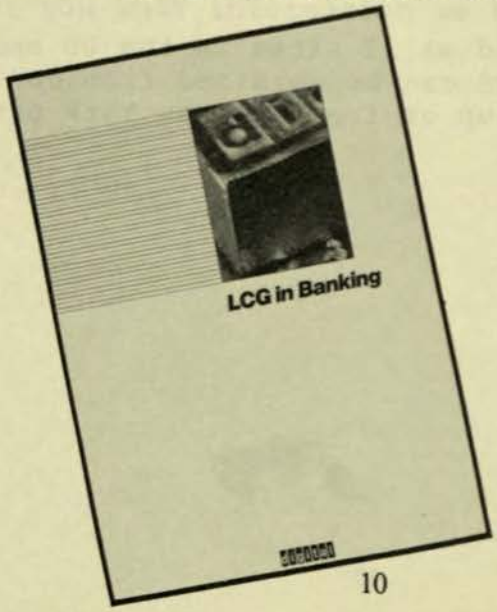
New Marketing Resource for Your Banking Prospects

We are in the process of designing a folder that will enable you to present LCG products, user success stories and application stories to your banking prospects in a professional, good looking package. This folder will be available in limited quantities!!!

The contents of this folder will vary, depending upon the prospects' current level of knowledge about DIGITAL, their technical interest, etc. We are currently ordering reprints of relevant feature stories about DIGITAL's LCG installations in financial institutions. These might be included in the folder along with the recently published Bankers Trust brochure.

If you have a banking prospect, call your LCG marketing contact, and we will send a folder with the pertinent reprints. You can then add literature which is relevant for your prospect.

Good selling!



LCG GRAPHICS DEMO CENTER OPENS FOR BUSINESS

Richard G. Smith
Princ. Mktg. Spec.
MRØ2-2/C2

With the purchase of the first piece of third party graphic hardware, a Houston Instrument color plotter, the LCG Graphics Demo Center has officially opened its doors. The Graphics Demonstration Center in Marlboro is intended for demos at customer visits as well as for LCG's own use -- we really do use what we recommend that cusomers buy.

The Center will include graphics terminals, plotters, and a selection of DIGITAL and widely recognized third party graphics software for both business and technical use.

The Demo Center will improve the image of LCG products as vehicles for the highest quality, state-of-the art human interface to:

- Leverage hardware sales
- Serve as a drawing card to generate interest in LCG products

The declining price for quality, color graphic terminals and plotters has fueled a rapidly growing demand for graphic capabilities on all sizes of computers. The most visible growth is in the use of graphics on personal computers and such new applications as Videotex.

Far higher quality and more sophisticated graphics -- for business presentation, scientific data plotting, and Computer Aided Design -- have long been available on LCG equipment. Now that quality and sophistication can be made more generally available using new, lower priced terminals like the VT125.

Since customers evaluating a computer system often judge the performance of the system by the capabilities of the highest quality user interface, LCG will aggressively promote and demonstrate the impressive graphic based applications already available on LCG products.

What's Available Now In The Graphics Demo Center

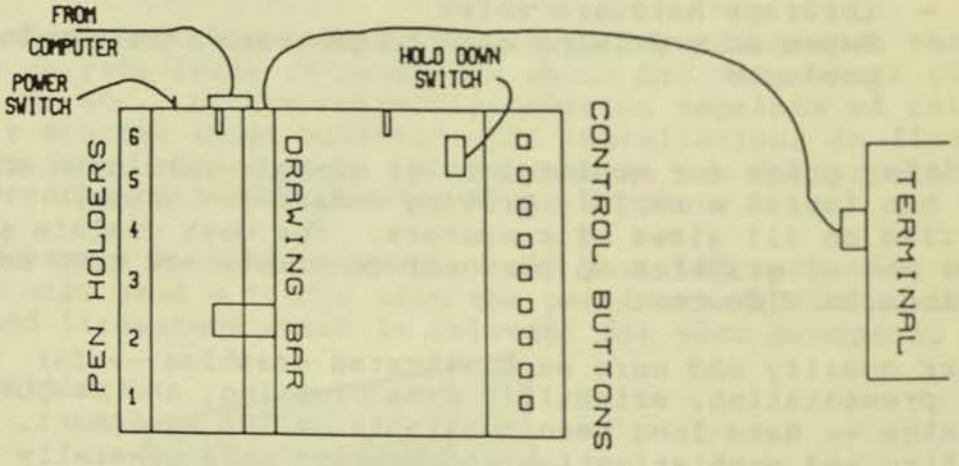
Equipment available now in the Graphics Demo Center includes:

Houston Instrument 6 pen Plotter
VT125 Terminals
GIGI Terminals
BARCO Color Monitors
Aquastar Color Video Projector
LA34 Terminal with Graphics Option
Professional 350s with Graphic Option

All these devices are linked to LCG's DECSYSTEM-2060 to provide a complete facility for creating, projecting, and plotting color pictures and graphs.

The recently acquired Houston Instrument DMP-4R offers six color, pen plotted hard copy of graphic images. The plotter is driven by the ReGis character codes as used by DIGITAL's VT125 and GIGI graphic terminals plus the Rainbow and Professional in VT125 emulation mode.

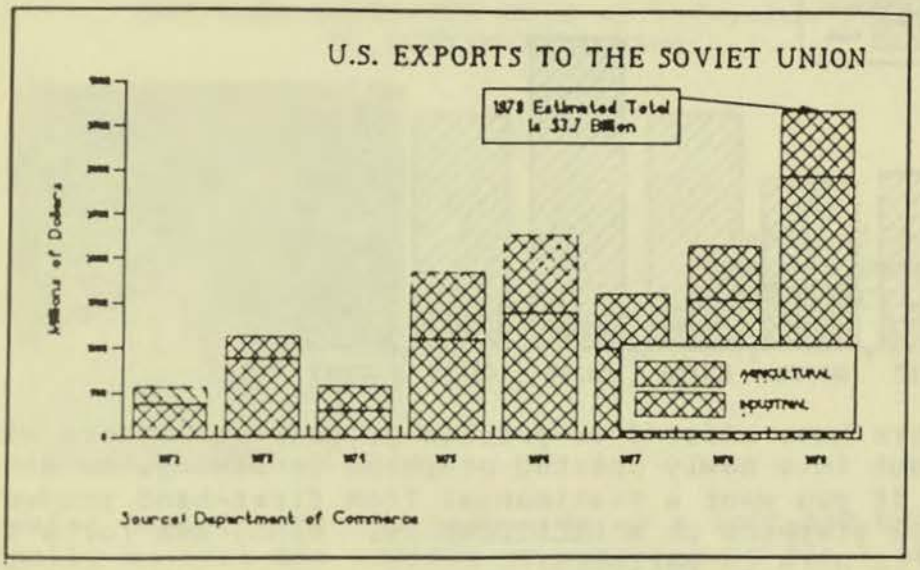
The plotter is a desktop unit that is an excellent companion to a graphics display terminal. It accepts 81/2" by 11" sheets of paper or mylar (for overhead transparencies). The low price (under $2500) makes this plotter an attractive hardcopy device for the bulk of business and scientific applications requiring good, mid-range resolution graphics.



HOUSTON INSTRUMENT PLOTTER

Several software packages for drawing pictures and plotting graphics are available on the DECSYSTEM-2060 MARKET. All can be used with either the VT125 or GIGI terminals and the new Houston Instrument pen plotter. Brief descriptions of two representative examples are provided here.

GRAPHICS from Rapidata - A very versatile package for plotting data on charts. The command driven software allows a user, with some practice, to produce attractive bar, curve, pie, bubble, step, and histogram charts. An example appears below:



GRAPHICS EDITOR - This is the drawing package originally developed for GIGI but that now can be used from a VT125 or a DIGITAL Personal Computer (Rainbow and Professional) in VT125 emulation mode. A very nice package for preparing overhead transparencies and illustrations combining both text and pictures (the Plotter Set-Up diagram above was created using the GRAPHIC EDITOR).

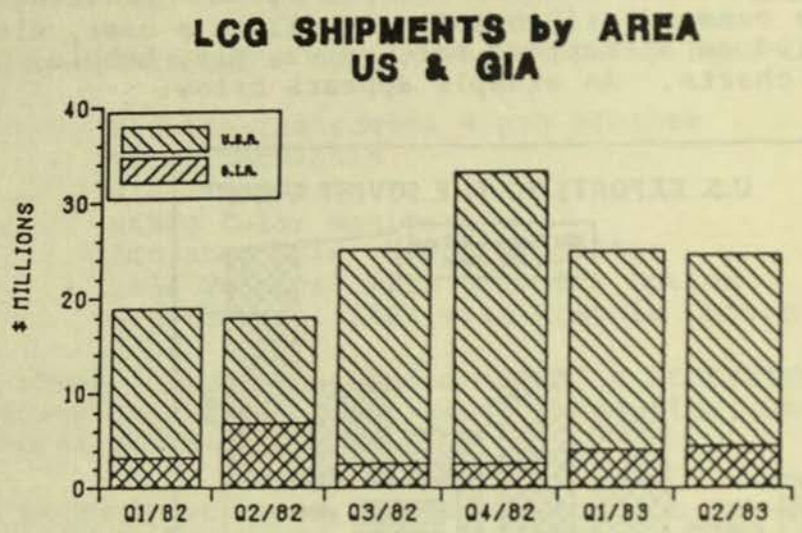
Each of the graphics packages allows the user to view their work as the image is created. When completed, a graph from Rapidata's GRAPHICS package or a picture from the GRAPHIC EDITOR may be stored as a file of ReGis code. ReGis is nothing more than a compact alphanumeric notation (C for circle, T for text, etc.) for giving drawing instructions to output devices such as the VT125, GIGI, Rainbow, Professional and the Houston Instrument plotter.

Putting the Demo Center to Work

Pioneer users have already taken advantage of the Graphic Demo Center facilities.

USER	APPLICATION
Tara Howard LCG Finance	All the charts in the LCG Q2 Financial Summary
Sue Appel LCG Marketing	Viewgraph presentations
Judie Hunter LCG Finance	Graphs for financial analysis of a proposal to the Pricing Policy Committee

Some examples of these users' work appear below:



These pioneers have offered to provide guidance to others wishing to venture out into newly charted graphics territory, so give them a call if you want a testimonial from first-hand production of attractive graphics on a DECSYSTEM-20. Also, ask for a demo anytime you're here in Marlboro.

NCP Calc LEVERAGES SALE of DECsystem-1090 To CONTINENTAL BANK

Larry Vifquain
Market Devel. Mgr.
MR02-2/C2

Continental Bank in Chicago just ordered a $462,000 DECsystem-10 principally to meet the rapidly growing demand for a single application software package, NCP Calc. NCP Calc, which by the way costs only $9500, is a spreadsheet calculator for LCG products offered by DIGITAL as part of the External Application Software ("EAS") Library. Since it came on the market a year ago, NCP Calc has experienced tremendous demand from LCG customers. Now that demand for the software has begun to pay big dividends in hardware sales as more and more new users find they can't get along without access to spreadsheet calculating on DECsystem-10/20.

Just one year ago, according to Sales Rep Susie Rowe, Continental Bank had spare capacity in its installation of one DECsystem-10 SMP and one single CPU DECsystem-10. With the demand for personal computing growing rapidly at the bank, one of the options considered for the available capacity on the DECsystem-10s was a Personal Computing Service. The other option was to buy several thousand personal computers (at $3000 each that represented an eventual investment of three to six million dollars) and sell some of the KLs on the open market.

In the midst of their decision, DIGITAL suggested that the people at Continental Bank look at NCP Calc, developed by National Computer Performance Company in close cooperation with LCG. NCP Calc offered the Bank all the capabilities and more of the incredibly popular Visicalc for personal computers, but at a fraction of the cost of supplying all the potential users at the Bank with their own PC. The economics and NCP Calc's performance quickly convinced the bank to buy NCP Calc and to install it as the centerpiece of a Personal Computing Service on the DECsystem-10s.

Less than one year later, in January 1983, Continental Bank not only had used up all their spare capacity, but had bought another KL processor to meet the demand for personal computing services. The new KL will be linked in a SMP configuration to the single CPU the Bank already owns, and that system will be dedicated to personal computing.

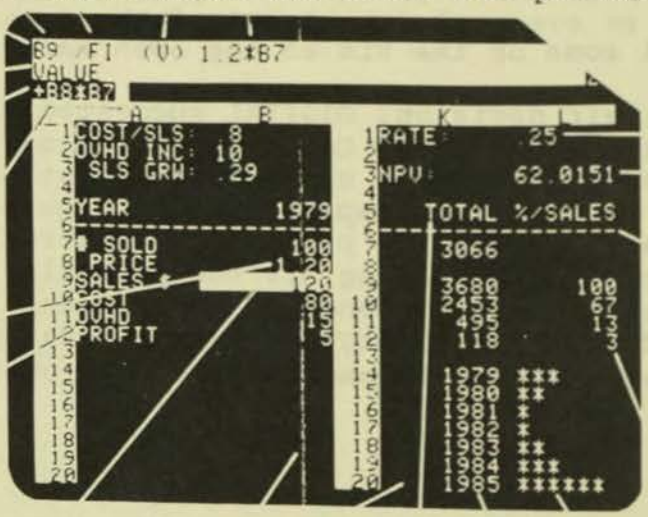
Over 350 people at Continental have Personal Computing Accounts on the DECsystem-10s at the Bank, up from none a year ago. NCP Calc is the most heavily used application by far, but the Bank also provides other applications, including:

STATPACK	- Statistical analysis package
FINAC	- A financial package
BASIC-20	- FOR USER DEVELOPED APPLICATIONS

Susie expects to sell more equipment to Continental as more and more people sign up for the service. The service clearly has the functionality personal computing users want, and the economics make the provision of the service on DECsystem-10 very attractive for the Bank.

Over 100 DECsystem-10/20s have NCP Calc installed. NCP Corporation estimates that over 4000 people now use NCP Calc regularly, and that 40% or 1600 of those are new users. All of those new users need terminals, disk space, and as the experience at Continental Bank shows, eventually new CPUs.

So, check with your customers to see if they have NCP Calc installed. If they do, help them promote the applications within their organization. As useage grows, add-on sales and new systems won't be far behind. If the customer doesn't have NCP Calc, tell them about the attractive economics of Personal Mainframe personal computing and sell them NCP Calc as the ideal low cost starter application for their own personal computing service.



ANNOUNCING FTS-20*

Paul Messier
TWO/B12

Product Overview

FTS-20 is a network File Transfer Spooler for DECSYSTEM-20s operating under the TOPS-20 operating system and the DECnet-20 network communication package. It provides spooled transfers of disk files between the host DECnet-20 node and any other supported node in a heterogeneous DECnet network.

Unlike on-line utilities, FTS-20 operates in a spooled environment for better resource control and utilization. It complements utilties such as NFT by offering features which are only practical in a spooled environment.

Features

- File transfers of any file type between DECSYSTEM-20 nodes
- File transfers of sequential access ASCII files between a DECSYSTEM-20 and VAX and PDP-11 nodes
- Queued processing of requests
- Specification of a request's priority
- Queue manipulation functions that allow for queue inspection, modificaton and queue element deletion
- System and user level logging of all transactions
- Automatic requeuing of a request if the transaction is aborted due to hardware, network or resource problems
- Intelligent scheduling of requests
- A mechanism to allow the user to control the sequencing of file transfer requests
- The ability for a user to pre-specify defaults in an initialization file.
- A MACRO-20 and BLISS-36 program interface library which provides the programmer with access to most FTS-20 functions available through the user interface.

Target Markets and Benefits

FTS-20 is targeted at several different markets. The primary market consists of commercial production applications running in a batch environment which have a need to transfer files across a DECnet network. These applications will experience the following benefits from FTS-20:

- Simplified Batch Streams
- Reduced Operator Intervention
- File Access Accountability

A second market for FTS-20 is in timesharing applications where users frequently need to transfer medium to large files across the network. These users will experience the following benefits from FTS-20:

- File Transfers run in "background"
- Independence from remote system scheduling
- Queued Operation
- File Access Accountability

Another important market for FTS-20 will be application programmers who are looking for building blocks with which to construct distributed applications. These users will experience the following benefits from FTS-20:

- Increased Programmer Productivity
- Transaction Logging

Ordering Information

FTS-20 is available only on 9-track 1600 bpi (PE) magnetic tape distribution media. For further information, refer to the Feb. 14 "Sales Update."

Prerequisite Software

FTS-20 requires that RMS be installed.

On KL Processors, FTS-20 is supported on Version 5.1 of TOPS-20 and Version 3.0 of DECnet-20.

On KS Processors, FTS-20 is supported on Version 4.1 of TOPS-20 and Version 2.1 of DECnet-20.

Prerequisite Hardware

FTS-20 imposes no specific requirements on the hardware. It will be supported on any valid DECSYSTEM-20 configuration which is supported by the Prerequisite Software.

Support Services

FTS-20 is provided as a layered, customer installable, network application program. It places no special dependencies on TOPS-20, DECnet-20, or any other DECSYSTEM-20 software.

A full range of support services from DIGITAL's Software Services organization will be available for FTS-20.

For more information please refer to the article in the Feb. 14 "Sales Update".

* Excerpted from Feb. 14, 1983 .. "Sales Update", p. 8ff.

LCG's AD CAMPAIGN
WHAT'S ORANGE WITH A PURPLE "NEW" TAG?

Don Mallinson
Mktg. Comm. Mgr.
MRØ2-2/8D2

It's also new. It's also exciting. It's also a grabber. It's LCG's new space advertising campaign that started last month. Capitalizing on a theme begun at the U.S. Fall DECUS meeting last December, we are promoting the "DIGITAL'S Mainframe Family Expands" message with domestic ads, featuring DSIA, DIGITAL System Interconnect Architecture.

headlines for each ad are:

> "Introducing DECSYSTEM-2Ø. The NETWORK." (first ad)
> "Unleash Your DECSYSTEM-2Øs by Tying Them Together."
> "TOPS-2Ø. Now There is No End of the Line."

The first ad (reprinted in BUY-LINE between pages 24 and 25) for you to "gently tear out" and hang up) introduces the DSIA concept. The second ad details the hardware aspects of DSIA, and the 3rd ad is about DSIA software (the second and third will appear consecutively, in the May and June BUY-LINEs).

Visually all ads are striking, similar to each other, and different from any other LCG campaign.

Our audience includes DP/MIS Managers, the organizational function you approach in your sales calls.

Our media schedule for all three of these ads targets the following publications: "Computerworld", "Infosystems", and "Information Systems News".

Our purpose in hyping DSIA is to maintain and to increase interest in our products. We also want to show that we are developing new products, to provide a growth path for TOPS-2Ø users, and to lay ground work for a KL follow-on system announcement.

A new aspect of this campaign is LCG's use of a toll-free 8ØØ phone number. Anyone calling the number that appears in the ad will be sent three pieces of sales literature within 24 hours. Why not test the system yourself?

LCG COMPETITIVE INFO: NEW HONEYWELL SYSTEMS AND PRICING

Peter Wysocan
LCG Marketing
MRØ2-2/8D2

In addition to Honeywell's recently announced DPS 88 family of mainframes (reference page 19, March BUY-LINE), Honeywell has made some other very agressive announcements:

* Nearly 5Ø% improved price/performance via two new entry level systems, the DPS 8/47 and DPS 8/49;

* 25-5Ø% price reduction on current CPUs, memory, and upgrades.

New Models:

The DPS 8/47 offers an 18 % performance improvement over the DPS 8/44. The DPS 8/49 is said to be 7Ø % more powerful than the DPS 8/44.

The performance level of these new systems are almost identical to the older DPS 8/5Ø and 8/52. This leads one to suspect that this is simply a case of repackaging and repricing.

Both models are offered in GCOS and CP-6 versions. The CP-6 packages have been upgraded to include more memory, and come with a Datanet 8C communications processor.

The 8/47 may be expanded to a dual processor version, and the 8/49 up to a four processor configuration.

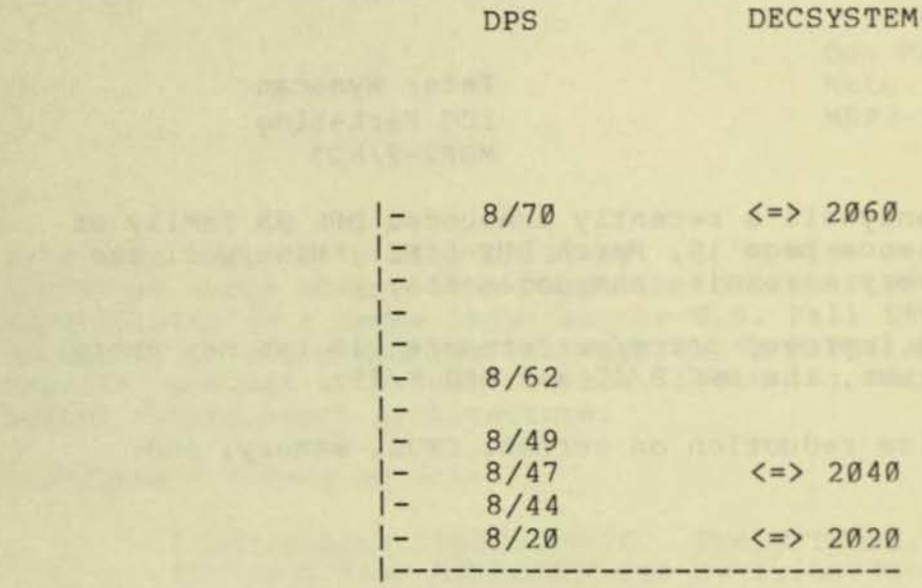
Pricing

DPS 8/47 2 MB GCOS Version	$ 153,ØØØ
DPS 8/47C 12MB CP-6 Version	$ 228,ØØØ
DPS 8/49 2 MB GCOS Version	$ 235,ØØØ
DPS 8/49C 16 MB CP-6 Version	$ 35Ø,ØØØ

These systems will be available at the end of this quarter.

For Internal Use Only

Relative Positioning:



Software:

I believe that these new systems and prices are an indication of Honeywell's committment to CP-6, an excellent operating system.

CP-6 offers integrated time-sharing, transaction processing, batch, and remote batch capabilities in a user oriented environment similar to tops-20. the system was developed by the same group as xerox cp-v, and is designed to offer a migration path for the xerox sigma installed base. there are approximately 400 xerox systems installed worldwide.

Other Pricing Actions:

Performance upgrade for DPS 8/44 to 8/49.... $70,000

Memory prices.... For DPS 8/20, 8/4X reduced to $ 10,000/MB
For DPS 8/5X, 8/60, 8/70 to $ 25,000/MB

DPS 8/70 Series... GCOS version reduced by 25 % to $ 900,000
CP-6 version reduced by 23 % to $ 1,000,000
Add on CPUs by 26 % to $ 655,000

DPS 8/62 Series... Add on CPUs by 14 % to $ 500,000

Upgrades.... DPS 8/52 to 8/62 by 33 % to $ 160,000
DPS 8/62 to 8/70 by 57 % to $ 220,000

LCG SALES PROGRESS in CANADA*

Bruce Weames, TBO
Joe Viula, MRO

Activity in Canada continues to be quite brisk, and on an upward trend as a result of two factors: the economic upturn, and the fact that we have a senior sales force in place selling LCG products throughout Canada.

Looking ahead to the coming year, we see great enthusiasm concerning the products which we have already announced as well as those which we plan to announce; this encourages us that our recent success will continue.

We find in Canada a very high percentage of machines to be sold in the commercial marketplace. As these companies' general business level increases, so demand for our products increases, compounded by new applications areas such as OPUS which we are now introducing.

In Canada, DIGITAL has achieved its highest market penetration of any company or subsidiary; more pertinent to our own Product Group, LCG continues to build from our established installed base. We are uniquely poised to better compete with IBM.

Several major contracts were completed across Canada during Q2-Q3, which accounted for LCG going significantly over budget.

In brief, credits to the following:

Peter Klassen in Winnipeg started the quarter with a major upgrade to AECL (Atomic Energy of Canada Ltd.), Pinawa, Manitoba. This will provide AECL with a DECsystem-1090 to enhance their research capabilities.

Dani Cotnoir in Montreal sold Multitek (a subsidiary of Quebec's largest actuarial firm) a very large upgrade consisting of the newly announced Common File System software and the Computer Interconnect Bus, to allow this customer to loosely couple three very large DECSYSTEM-2060s together.

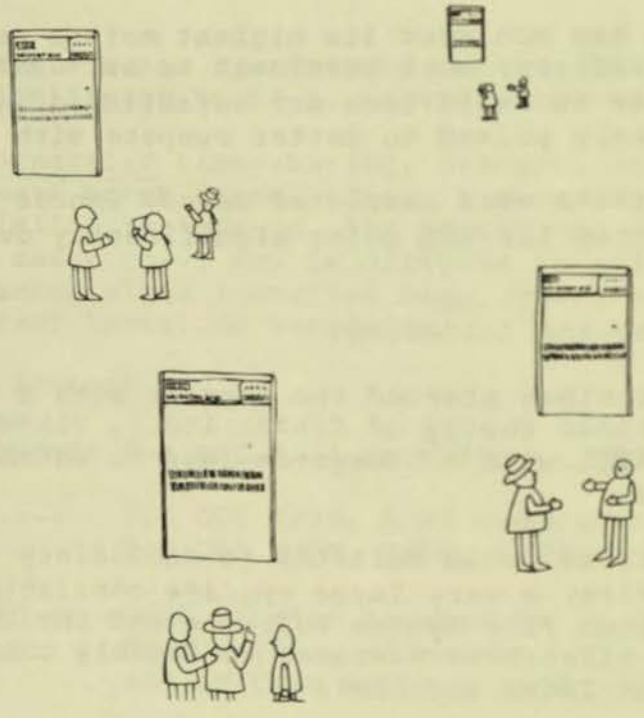
Jim Wolfe in Calgary sold a large DECSYSTEM-2040 to Mount Royal College, continuing the successful penetration of DIGITAL's mainframe products on this campus.

Mel Harding in Toronto sold a large DECSYSTEM-2060 to Kidd Creek Mines, which will be integrated into their Timmins, Ontario data center to assist in running DIGITAL's largest and most complex data base in Canada.

Ron Adams scored a major sale with a large DECSYSTEM-2060 order from McLeod Young Weir, stock brokers, in Toronto. Initially, the firm "trial tested" a DECSYSTEM-2020 as a means of bringing various financial services in-house. The assumption was proven, and now "the rest is history."

McLeod Young Weir's technical research department will use the -2060 to enhance the services it can provide to its customer base in the very competitive financial community. One interesting application is the distribution and analysis of stock prices and trends out to the firm's more than 200 brokers' offices, using Telidon technology. This critical sale represents for LCG a major foothold in Toronto's extremely large, influential financial community.

* Portions reprinted (or inspired) from the DIGITAL Canada News Bulletin, "Printout" March 1983.



INTRODUCING DECSYSTEM-20, THE NETWORK.

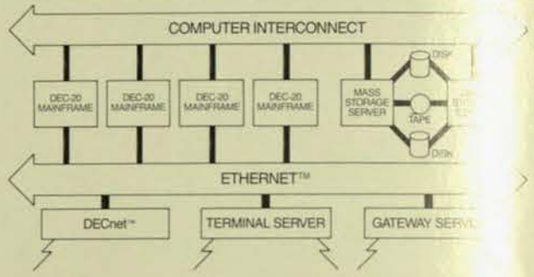
Until now you couldn't have it both ways.

No approach to system design could give you the performance of multiprocessing and the flexibility of networking.

Now there's Digital's System Interconnect Architecture. A unique way to link mainframes for power, free all peripherals from hosts, and share resources among all users.

With DSIA you can create a network comprised of dedicated computing, storage and communications modules. The first network that performs like a single multiprocessing system.

Here's how it looks:



Here's how it works:

Now you can loosely couple up to four DECSYSTEM-20s™ through a high-speed hardware bus (CI). Our new intelligent mass storage server (HSC50) is also on the bus. An extension to the TOPS-20™ operating system, called the Common File System, manages all files. It lets you create one large virtual file system and gives every user transparent access to the information on up to hundreds of disk and tape subsystems.

Soon you will be able to extend TOPS-20 further. To intelligent communications servers that will allow your DECSYSTEM-20s to be independently linked to local area networks, remote DECnet™ networks, and foreign networks beyond. The combinations are almost endless.

Digital's System Interconnect Architecture. There used to be two ways to put more computer into the hands of more people. Now there's a better one.

Find out more. **Digital Equipment Corporation,** Large Computer Group, MR2-2/8D2, One Iron Way, Marlboro, MA 01752. Tel. 1-800-DIGITAL. European Headquarters: 12 Av. des Morgines, CH-1213 Petit-Lancy/Geneva. International Headquarters: 100 Nagog Park, Acton, MA 01720 U.S.A.

digital

TRANSACTION PROCESSING-20

Dick Kessler
Rocky Mountain Dist. SWS
Large Systems Commercial
Applications Software
DVO (Denver)

Rocky Mountain District Large Systems Commercial Application Software Group is pleased to announce the availability of Transaction Processing-20 (TP-20). TP-20 is the first of many products and services from our organization.

Description

TP-20 is a collection of software tools which

(1) Provide a transaction-oriented application environment with high thru-put characteristics; and

(2) Provide a structured, transaction-oriented application development methodology which allows effective use of the TOPS-20 hardware/software features (such as IPCF, page mapping, enq-deq) for shops using COBOL-74.

Benefits

The following benefits can be realized by an organization undertaking transaction oriented application development:

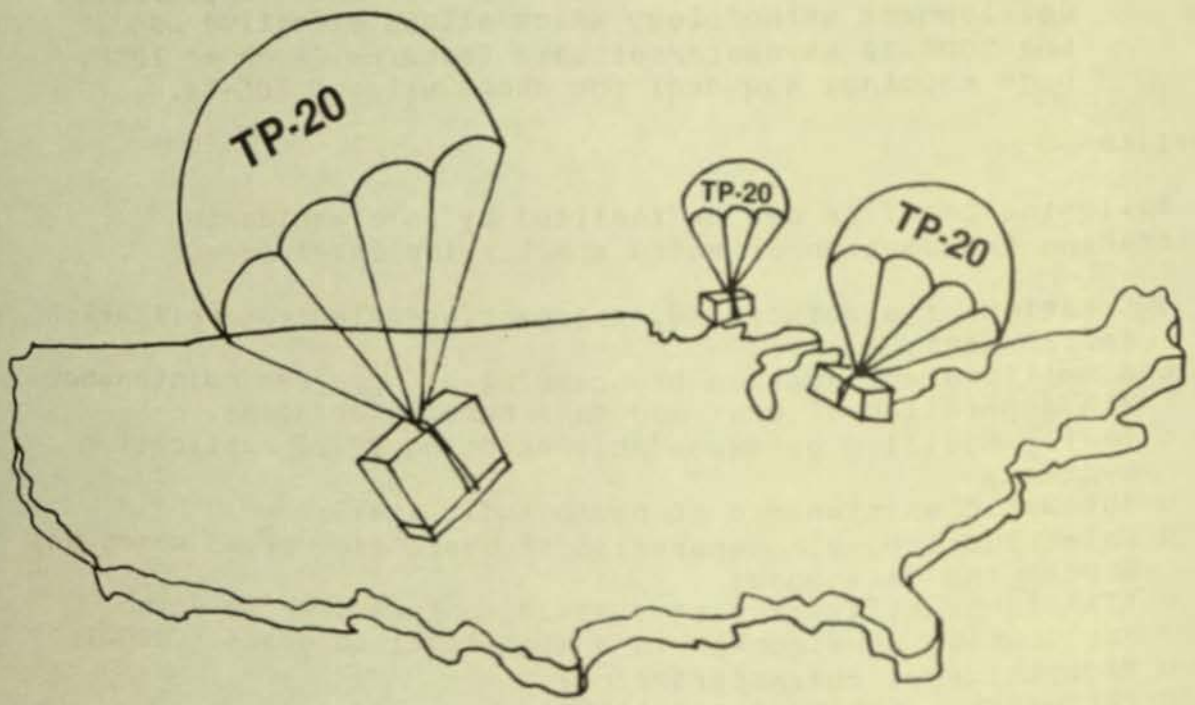
- o Creation of a structured, transaction-oriented application environment;
- o Simplified application programming and program maintenance via separation of user and data base interfaces;
- o Easily modified or expandable existing TP-20 application systems;
- o Automatic maintenance of basic audit trail;
- o Data security, via separation of users from areas which may access the data base;
- o Efficient utilization of TOPS-20 features, while doing application development in a high-level language (COBOL);
- o High thru-put characteristics;
- o Performance tuning capabilities.

Why Promote TP-20?

TP-20 has been installed and running in a customer's production environment for over two years. This customer has an order entry and inquiry environment not unlike an airline reservation system where few paper records are kept. There has not been a failure of TP-20 which corrupted the integrity of the customer's data base.

TP-20 opens new doors for the sale of DECSYSTEM-20 in the commercial market. TP-20 has had success in mixed mode (where customer is performing many different kinds of tasks on one DECSYSTEM-20) environments and in dedicated environments.

We are currently very cautious about how this product is distributed. We will evaluate each opportunity for TP-20 to determine expectations, necessary support, and training requirements. Our goal is the successful implementation of transaction processing at each customer site.



On-site Software Services

TP-20 is installed by Rocky Mountain District Large System Commercial Software. On-site installation services are provided for one month by one of our Software Specialists. These services include: installation of software; documentation; training of customer's personnel; conversion assistance; customization; modification and advisory consulting.

Post Installation Support

Support services are provided by the Rocky Mountain District Large Systems Commercial Software organization, and are defined in the Software Services Fixed Price Terms and Conditions. Full software support equivalent to DECsupport is available from the District's Large Systems Commercial Software organization. A DF03-AA modem is required equipment for remote dial-up support.

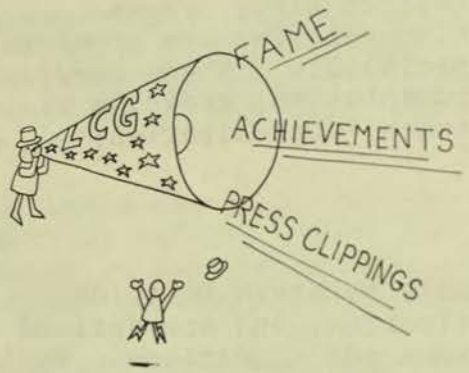
Additional implementation services are available separately; they may consist of additional general training and specific training in structured application development using the TP-20 design methodology, conversion assistance, customization, modification, project management, and advisory consulting on a contractual basis.

To back up the availability of this and other products, we have prepared a video tape explaining the program. This tape will be mailed to all LCG coordinators and to Software Services District Managers. A tape detailing the TP-20 package will also be mailed along with the TP-20 Information Sheet. The video tape and the Information Sheet are intended for customer distribution. We think that products like TP-20 are essential for success in this marketplace.

A Word About Our Dedicated Software Team

Software applications help sell hardware in the commercial arena. It is our charter to help leverage the sale of DECsystem hardware through the sale and support of Commercial Applications Software worldwide. This group comprises products, for example TP-20 (and there are others); a set of capabilities in our technical people: Manlio Marquez, Bill Hodgson, Sandy Neuman, Ted Weirich, Larry Moore; an emphasis on marketing and selling; a dedicated persons; and a firm committment to DIGITAL's Large Systems.

*LCG MEGAPHONE: LCG in the News



Don Mallinson
Mktg. Comm. Mgr.
MRØ2-2/8D2

The LCG Megaphone is being heard in the UK and Canada as well as in the U.S.

"Product Update", a DEC U.K. customer newsletter has eleven pages in its Feb. issue devoted to the DSIA (including HSC5Ø, TA78) announcement. The first page was a special Foreword by Bill Passmore concerning DSIA.

Bruce Weames, our Canadian coordinator sent along a clipping from the Jan/Feb issue of "Office Equipment and Methods". The article is an interview with key Monenco VIPs about the marvelous success they've had with electronic mail on their DECSYSTEM-2Ø6Ø based computer network.

And then there is the page one article in "Information Systems News", Feb 21, with the headline "DEC Users Say Top-of-Line CPU on Way" - and a sub-head: "DEC's New 'Jupiter' Said To Peak At 1Ø MIPS For $1M-$1.5M". Its about a half a page long and based on comments from "users of the largest DEC system."

"Electronic News", in a Feb 14 issue article about a couple of new VAX machines to be introduced this summer said the the VAX-11/81Ø is not the rumored "Jupiter" project that is to result in a 5-MIPS machine. That announcement is at least six months away.

"Real Times" published by Internal DECUS, mentions DECsystem-1Ø in an article about the VT18X personal computer option.

"DTW" ("Digital This Week") another internal employees' newsletter talks about LCG's own Phil Johnson's contribution to the development of an applicant tracking system developed in Marlboro that helps match job applicants and Job openings.

*See also the article on page 29, entitled "LCG News Clips"

LCG NEWS CLIPS

Barbara Holtz
Don Mallinson
MRO2-2/8D2

The following excerpts are only a small portion of LCG news from around the world. The article (on page 28) entitled "LCG Megaphone" provides additional mention of LCG, internally as well as externally.

Norio Murakami, SUM, and a very active LCG salesman in Tokyo Japan sends us translations of press releases which were reproduced in January and in March 1983 in :"The Daily Industry News", "The Japan Industry News", "The Electric Waves News", "The Japan Economy and Industry News", and "The Information Industry and Market News" (a collage of these article reprints in Japanese appears below).

* NIHON-DEC INSTALLS COMPUTER at ICOT (Jan. 19, 1983)
Nihon Digital Equipment Corporation announced a recent installation of the DECSYSTEM-2060, the high-end model of its DECSYSTEM-20 computer family at ICOT (the Institute for new generation COmputer Technology), the core organization of Japan's 5th Generation Computer Project....A huge amount of software runs on the -2060... It is said that if you have AI applications, you must buy a DECSYSTEM-2060, which has the well-known LISP and PROLOG languages, and other tools. In 1983, more than ten DECSYSTEM-20s will reportedly be installed for applications in the 5th Generation project, including robotics and knowledge engineering. Nihon-DEC expects to maintain this foothold to further penetrate Japan's mainframe market.

* INTRODUCING AN INNOVATIVE MULTIPROCESSOR SYSTEM CONCEPT (March 3, 1983) Nihon Digital Equipment Corporation has announced an innovative concept in multiprocessor systems with regard to the DECSYSTEM-20 family of interactive timesharing computers.

  This new system is based on DSIA, with high speed (70 mb/s) computer interconnect bus connecting several DECSYSTEM-20s (-2040s, -2060s) and mass-storage devices, allowing each CPU to share the resources. In the future, DIGITAL will implement the communication functions of this "Loosely Coupled Systems" concept in Local Area Networks with support for Ethernet based hosts and communication servers. .....Loosely coupled multiprocessing capabilities, provided by the CI and TOPS-20 Common File System, allow customers to meet growth needs in modular, incremental ways...additional CPUs can be added. Need more mass storage capacity or performance? Add more HSC50s.

Lynne Gillon, LCG's UK Marketing Manager, sends the following from the British trade press:

* "Electronics Weekly", London: DSIS IS POISED TO PUT DEC BACK IN THE LIMELIGHT: "1983 will see something of a technical coup - (DSIS), the Digital System Interconnect System ...from the CI can be hung up to four DECSYSTEM-20 CPUs, and up to 12 of a new product called the HSC50. These hierarchical storage controllers allow all the CPUs connected to the CI to access files on both disk and tape. ... The DSIS is a loosely coupled multiprocessing structure, which copes with both symmetrical and asymmetrical (master slave) configurations, as well as both batch and interactive processing.... DSIS' introduction means the re-establishment of DIGITAL's lead in low-cost (per user) distributed processing."

* "Computing, London", DEC CHANGES ITS DIRECTION:..."interesting moves afoot with the unveiling of the first stage of an advanced open network called DSIS, initially built around the DECSYSTEM-20 mainframe."

* "Computer Weekly": DEC OFFERS MAINFRAME USERS SHARED RESOURCES "DIGITAL has introduced an advanced system interconnect structure that offers users reduced hardware and software costs, more reliable databases and higher data integrity and system reliability....First implementation of the new interconnect structure is based on DECSYSTEM-20 mainframes with PDP-11, VAX, and personal computers to follow...."

Don't forget, we will gladly accept from our Field readers any news items concerning LCG products; these may later appear as news clips, or as "pieces" making up larger BUY-LINE articles.

1983 GERMANY DECUS AT UNIVERSITY OF KIEL

Reinhard Kronsteiner
LCG SW Services
Munich, Germany (RTO)

This year's Germany DECUS Symposium was held March 8-11, 1983 at the Univeristy of Kiel, some 60 miles north of Hamburg.

We were fortunate to have as guest speakers Nita Smith, European LCG Marketing Manager, from Geneva, and Guenter Fauser from Valbonne, France, who is heavily involved in the German implementation of X.25 under TOPS-20. Local Software Services provided Klaus Steiger for highly technical discussion support.

Nita presented to an audience of German and Swiss LCG customers a clear picture of DIGITAL's near and long term market strategy for the 80's. Using the Computer Interconnect and Ethernet as foundations, she explained DIGITAL'S Interconnect Strategy, ranging from PCs to mainframes, and "spiced" the marketing picture with technical flavors such as CFS-20.

Guenter Fauser's talk concerned X.25 and its implementation in Germany, which he presented in cooperation with Jerry Weisbach of Marlboro. Guenter gave a highly technical insight into this new means of electronic communication.

My task was to deliver the technical facts of all the new software announcements which we made during the last 12 months. One main portion dealt with Loosely Coupled Systems under TOPS-20 and all the benefits which are to come with TOPS-20 Release 6 (such as CFS-20, CI-20, HSC-50 and new disks and tapes). Another portion dealt with TOPS-20 Release 4.1 for the DECSYSTEM-2020.

DECsystem-10 customers got aspects of TOPS-10 Versions 7.01A and 7.02, as well as DECsystem-1091 SMP. Both the 'blue' and the 'orange' members of the LCG family received the message on DECnet Phase III. The major and long-awaited language was FORTRAN-10/20 Version 7 (FORTRAN Version 7)!

One afternoon was reserved for an open discussion between customers and the German Management Board, headed by Willi Kister. Participants included:

Frank Berger (Sales); Erich Knoller (SWS); Helmut Krings (Marketing); Joerg Rieder (Field Service); Nita Smith (LCG Europe); and Erwin Weiss (LCG Sales).

The user community stated that they were very impressed by DIGITAL's LCG announcements. Neverthless, their concerns focused on:

1. Announcement, delivery, and performance, concerning a high-end follow-on system;
2. Equal corporate commitment to TOPS-10 and -20; and
3. Commitment to provide a strong local LCG force in Software Services.

The following evening, the reception at the University was most pleasant. Tables were dedicated to SIGs, and I am glad to say that the LCG table was the most enthusiastic one, and the last to disperse.

DECsystem-10/DECSYSTEM-20 PRESENTATION KIT

Ken Bolick
U.S. SWS
PKO3-2/S41

THE DECsystem-10/DECSYSTEM-20 Presentation Kit, also called the "LCG Presentation Information Kit (PIK)", is now available. The kit is organized into sixteen modules, plus a Bibliography. Each module contains a Table of Contents, a Selection Matrix that categorizes the slides for specific types of presentations (management, technical, etc.),a script, and numbered slides contained in plastic sleeves. The kit is contained in a 4-inch binder. The modules and topics contained in the LCG PIK include:

FRONT MATTER	-	Describes the contents of the kit and provides recommendations for preparing/and giving presentations.
MODULE 1	-	DECsystem-10/DECSYSTEM-20 Introduction (Overview)
MODULE 2	-	DECsystem-10 Introduction
MODULE 3	-	DECSYSTEM-20 Introduction
MODULE 4	-	Processors (KL10 and KS10)
MODULE 5	-	Peripherals
MODULE 6	-	TOPS-10 Operating System
MODULE 7	-	TOPS-10-20 Operating System
MODULE 8	-	System Support Facilities
MODULE 9	-	Program Development Facilities
MODULE 10	-	Languages
MODULE 11	-	Data Management and Applications
MODULE 12	-	Data Communications
MODULE 13	-	Layered Products
MODULE 14	-	Conversion, Migration, Coexistence
MODULE 15	-	Services
MODULE 16	-	Markets
MODULE 17	-	Reference Documents

The Kit was designed as both a presentation resource for customer presentations, and as an education and orientation tool for new LCG personnel.

Kits will be distributed to each U.S. LCG unit during March and April at no charge; Kit funding was provided by U.S. Area Sales. Kits may also be ordered by DIGITAL LCG units outside of the U.S. for the price of $400.00 per kit. Requests from outside the U.S. can be forwarded in memor form, or via EMS. Information must include the requestor's name, badge number, cost center number, group name and location (mail stop), and DTN number. Requests should be forwarded to: Charlotte Parsons, Digital Equipment Corp., PK3-2/S41, 129 Parker Street, Maynard, Ma. 01754 (DTN: 223-5572).

CREDITS TO THE UNSEEN LCG SUPPORT CREW AT U.S. FALL DECUS

Nigel Webb
CSSE
MRØ1-1/S35

The impressive and successful U.S. Fall DECUS in Anaheim at the Disneyland Convention Center was due to a lot of hard work by many dedicated DIGITAL employees. The enthusiasm shown by everyone who played a part in putting together this showcase of DIGITAL's best must not go unmentioned.

Acknowledgements have been made to those of us who were fortunate to be there in Anaheim, to see the results of the hard work and to hear the positive comments and ardor with which our customers reacted to the booth and to the demos. I would like to acknowledge those who stayed behind (who weren't able to see the marquee blown down on Tuesday morning); they were "the unseen crew" who played an important role in our (DIGITAL's) success.

There were representatives on this unseen team from almost all of the LCG departments in Marlborough, i.e.: MFG, SW Eng., HW Eng., IHFS, CSSE, etc.

Some of the people by name are Doris Whitby, Dennis Hadmack, Arnie Miller, Dick Brown, Frank Patrone, Bernice Vautour, Clair Grant, T. Joe Marcoux, Jim Pettengill, Tim (Duncan) Hines, Pete Boubon, Rich Slocombe. It is almost impossible to list everyone who assisted with the preparation, but without these and other members of the "unseen crew" our success would never have been realized.

LCG NAVIGATION LIST

	DTN:	
Rose Ann Giordano	231-4049	LCG Product Group Mgr.
Per Hjerppe	231-7444	LCG Group Marketing Mgr.
Carl Cargill	231-6127	Strategic Planning Mgr.
Ray Ochester	231-4117	Product Marketing Mgr.
Paul Feresten	231-4371	Mktg. Mgr. DECsystem-10/20
Diana Miller	231-4537	Language/Layered Product Spec.
Ira Machefsky	231-6863	Future Systems Spec.
Peter Wysocan	231-7360	Competitive Analysis
Peter Gray	231-5829	European Support Mgr.
Larry Vifquain	231-4439	Market Development Mgr.
Rebecca Alexander	231-6469	Govt. & A.I. Mktg. Spec.
Marilyn Davison	231-5815	Commercial Mktg. Spec.
Richard Smith	231-7493	Eng./Office Automa. Mktg. Spec.
Ward Davidson	231-5657	LCG Product Line Mgr.
Connie Davis	231-4291	Installed Base Mktg. Spec.
Beryl Sachs	231-6691	LCG Projects Co-ordinator
George Harlow	231-4455	Technical Services Mgr.
Richard Colarusso	231-7424	Technical Supp. Spec. -H/W
Jack Lucier	231-4080	Technical Supp. Spec. -HW
Ammie Herring	231-5963	Shift Supervisor
Wayne Garber	231-6107	Computer Operator
Carol Orton	231-6107	Computer Operator
Jim Rehill	231-5562	Software Spec.
Doug Ruby	231-6884	Tech. Supp. Mgr.- S/W
Laura Gawronski	231-6480	Technical Supp. Spec. -SW
Celeste Moore	231-4510	Technical Supp. Spec. -SW
Reed Powell	231-4261	Technical Supp. Spec. -SW
Debra Rio	231-5612	Technical Supp. Spec. -SW
Rita Tillson	231-6615	Technical Supp. Spec. -SW
Jim Miller	231-4265	GIA Operations Mgr.
Joe Viula	231-4372	GIA Mktg. Mgr.
Sergio Kogan	231-7409	Latin America Prin.Mktg.Spec.
Allan Titcomb	231-4849	Applications Mktg. Mgr.
Bernie Eiben	231-4431	Applications Supp. Spec.
Mitch Perlitch	231-5975	Applications Supp. Spec.
Dee Ramee	231-6431	SOFTWARE REF. CATALOG Editor
Don Mallinson	231-4285	Mktg. Communications Mgr.
Barbara Holtz	231-4996	BUY-LINE Editor (Salesforce)
Don Waite	231-5256	LARGE SYSTEMS NEWS Editor (Customer)
Peggy Sullivan	231-6878	LCG Literature Co-ordinator

LCG Operations (cont'd)	DTN:	
Rich Whitman	231-7498	US Area Operations Mgr.
Beverly S.Mansfield	231-6584	Mktg.Supp.Spec. (Cust.Visits)
Michael Flitterman	231-6971	Govt.& Industry Rsch. Mktg. Mgr.
Tom Fleming	231-7115	Govt.& Industry Rsch. Mktg. Spec.
Kathleen Healy	231-6312	Govt.& Industry Rsch. Mktg. Spec.
Ralph Marriott	231-7638	Govt.& Industry Rsch. Mktg. Spec.
Ted Grenham	231-5893	Comm'l/Engin.Mktg. Mgr.
Susan Marie	231-7626	Comm'l/Eng. Mktg. Spec.
Dave Morosas	231-5036	Comm'l/Eng. Mktg. Spec.
Bob Todisco	231-4201	Educational Mktg. Mgr.
Jim George	231-6610	Educational Mktg. Spec.
Don Turner	231-7508	Data Services Mktg. Mgr.
John Montesion	231-4918	Data Services Mktg. Spec.
Art Zina	231-4700	Data Services Mktg. Spec.
Ed Govoni	231-6616	Office of Sales Programs Mgr.
John Loether	231-4961	LCG Sales Training Consultant
Howard Berloff	231-6456	Contracts (Law Dept)
Annette Albright	231-7455	LCG Personnel Mgr.
Bill Gervais	231-6866	LCG Finance & Administration Mgr.
Rich Andreoli	231-7495	MIS Mgr.
Phil Johnson	231-5098	Sr. Programmer/Analyst
Dave Slauenwhite	231-5571	Programmer/Analyst
Bob Hamelin	231-7680	Forecasting Mgr.
Earl Devanny	231-7625	Financial Consultant
Tara Howard	231-7342	Financial Analyst
Judie Hunter	231-6456	Financial Consultant
Joe Faro	231-4424	Credit Mgr.
Vicki Morrison	231-7678	Reg.Cr.Anal.Mid-Atl,So,NJ-NY,Reg.
Ann Ruth	231-5782	Reg. Cred. Anal. W & NE Reg.
Sibby St. Cyr	231-4420	Sales Service Mgr.
Barbara Belanger	231-5783	Sales Serv. Rep.
John Breen	231-4322	Sales Serv. Rep.
Brian Kane	231-5774	Sales Serv. Rep.
Ken Kilburn	231-6881	Manufacturing Finance Manager
Steve Woodhouse	288-6665	Customer Finance

EUROPEAN LCG ORGANIZATION:		
Bob Taylor	933311	LCG European Area Program Mgr.,Geneva
Nita Smith	933311	LCG Europ. Area Mktg. Mgr., Geneva
Ross Mullins	933311	LCG European Financial Analyst
INTERNATIONAL LCG CONTACTS:		
Jean Louis Delafraye	6872333	Sales Group Mgr.,Paris, France
Lynne Gillon	868711	LCG Mktg.Mgr., Reading, UK
Gerard Van Ruiten	631222	SUM, Utrecht, The Netherlands
Cyril Malm	7300200	SUM, Solna, Sweden
Jamie Muir	160290	Sales Mgr., Oslo, Norway
Roland Matthys	2427270	Brussels, Belgium
Norio Murakami	9897125	SUM,Tokyo, Japan
Bruce Weames	6752580	Toronto, Canada
Erwin Weiss	95910	Sales Exec., Munich, Germany

U.S. LCG COORDINATORS
(UPDATE 1/13/83)

DISTRICT	NAME	LOCATION	TELEPHONE NO.
NORTHEAST			
Metro Boston	Jim Roche	Boston (BXO)	224-2319
New England	Dave White	Bedford,NH (MHO)	263-2140
Conn.	Bob Nolin	Bridgeport (SCO)	254-5265
Upstate	Pete Lilley	Rochester (RCO)	252-2322
CENTRAL			
Chicago	Helen Godfrey	Rolling Meadows (RLO)	421-5660
Mid America	Nari Bawa	St. Louis (STO)	314-991-6400
Great Lakes	Scott Benson	Detroit (FHO)	313-348-8900
No. Central	Frank Delmont	Minneapolis (MPO)	612-853-9605
SOUTHERN			
Southeast	Ed Janusz	Orlando (ORO)	305-660-2100
Mid South	Bill Martin	Knoxville (KXO)	615-690-1521
Charlotte	Cliff Spatz	Chapel Hill (NCO)	919-493-2531
Houston	Lary Brown	Dallas (DLO)	214-620-2051
WESTERN			
Santa Clara	Toby Arnold	Santa Clara (WRO)	521-2484
San Francisco	Vatche Sogomonian	San Francisco (SZO)	415-397-8670
Rocky Mtn.	Bill Krause	Denver (DVO)	553-2214
Northwest	Ron Quarles	Seattle (SEO)	206-453-5500
NY/NJ			
NY Comm.	Alan Vitolo	One Penn Plaza (NYO)	333-3913
NY Tech.	Ned Barber	Westchester (WHO)	333-3940
New Jersey	Chet Sherer	Piscataway, NJ (KYO)	323-2383
NJ Comm.	Pete Buttacavoli	Piscataway, NJ (KYO)	323-2465
SOUTHWEST			
So. Cal.	Ivan Strashoon	Costa Mesa (CWO)	714-979-2460
Los Angeles	Frank Calderon	Culver City (LAO)	213-417-4351
Albuquerque	Bob Hughes	Albuquerque (AQO)	552-3021
MID ATLANTIC			
*Washington	Clyde Blassengale	Washington D.C. (DCO)	341-2248
*Maryland	CLYDE COVERS BOTH WASHINGTON & MARYLAND DISTRICTS.		
Philadelphia	Lou Goglia	Blue Bell, PA(PHO)	337-2520
Ohio Valley	Jim Fate	Columbus (CSO)	614-868-1900

*Washington & Maryland now have one coordinator for both areas.

NEW FROM DIGITAL PRESS!

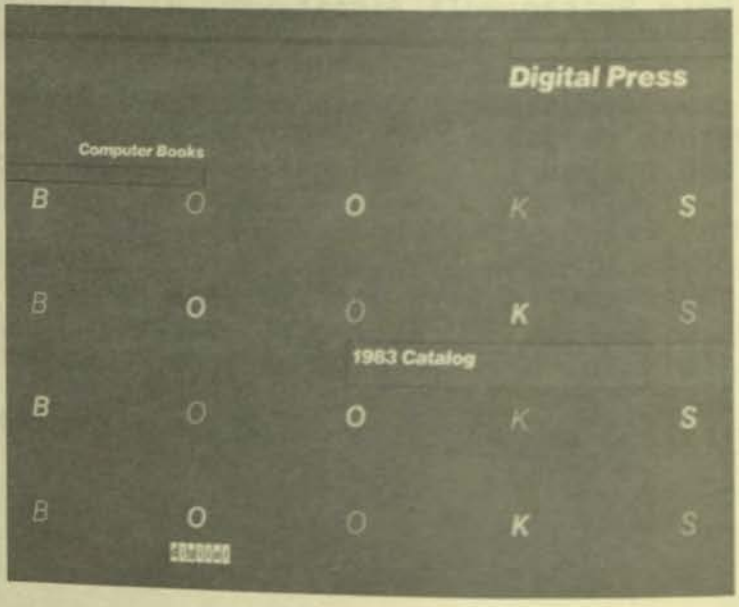
Peter Krauss
Digital Press
BUO/E44

The 1983 DIGITAL PRESS CATALOG is now available.

Titles included in the catalog cover: current issues in computer technology, computing for management and business, computer applications in education, and historic developments in computer science. Highlighted are such books as:

- YOUR FIRST BUSINESS COMPUTER;
- OFFICE AUTOMATION:
  A Survey Of Tools and Technology:
- TECHNICAL ASPECTS OF DATA COMMUNICATION, Second Edition;
- WORD PROCESSING PROCEDURES FOR TODAY'S OFFICE;
- NINE STEPS TO EFFECTIVE EDP LOSS CONTROL; And
- INTRODUCTION TO DECSYSTEM-20 ASSEMBLY LANGUAGE PROGRAMMING

For a free copy, contact me at 617-276-4444 (or DTN 249-4444). The address is Digital Press, BUO/E44, Digital Equipment Corporation, 12 Crosby Drive, Bedford, MA 01730.



NEW LCG PRODUCTS AVAILABLE FROM SDC

Diana Miller
Paul Feresten
Sharon Lipp
LCG Prod. Marketing
MRO2Ø2/8D2

Last month, the following products were signed into SDC (the Software Distribution Center):

FORTRAN-1Ø/2Ø V7

TOPS-2Ø V5.1

DECmail/MS V1Ø for TOPS-1Ø and -2Ø

These products were announced in prior issues of BUY-LINE, and we are pleased to inform you of their availability, by "Q numbers" they are the following:

FORTRAN-1Ø v7.Ø (QH5ØØ)
FORTRAN-2Ø v7.Ø (QTØØ1)

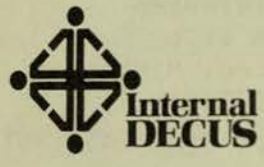
TOPS-2Ø v5.1 (QTØ25 and QTØ31)

DECmail/MS-1Ø v1Ø.Ø (QH215)
DECmail/MS-2Ø v1Ø.Ø (QT215) and
DECmail/MS Net-2Ø v1Ø.Ø (QT214).

The demand (from customers and salesforce) for FORTRAN-77 has been so great that we wanted to let you know that we met our commitments; the product is anticipated to ship on target.

Although DECmail was delayed in field test, we are pleased to say that the product began shipping last month. TOPS-2Ø V5.1 may be shipping as of this printing.

INTERNAL DECUS SPRING 1983 SYMPOSIUM ANNOUNCED



Joan Silverman
Internal DECUS
MRØ2-1/C11

Internal DECUS is pleased to announce its Spring 1983 Symposium to be presented June 15 and 16 at the Sheraton Conference Center in Boxborough, Massachusetts.

The two-day meeting will focus on DIGITAL's latest products and on other essential information for our internal users, engineering, marketing, and service organizations.

A large-scale exhibit and demonstration area will display some of the company's newest products, internally developed user projects and tools.

Registration and program information for attendees will be available in mid-May. For more information contact Internal DECUS at DTN 231-4418 or 231-4332.

OFFERINGS FROM ED SERVICES SEMINARS

Susan Scown
Ed Services Mktg.
BUO/E58

The following seminars may be of interest to you or to LCG customers. For more information or to register, call the Seminar Registrar at DTN 249-4949 or (617) 276-4949. Employees may also register by sending a memo with their name, badge number, cost center, and cost center manager's approval to: Seminar Registrar, BUO/E58.

Office Automation: Strategies

This two-day advanced course in Office Automation is presented by two internationally recognized authorities: Michael Hammer of M.I.T. and John Walsh of Avon Products, Inc. The seminar focuses on practical approaches and techniques which lead to successful implementation of office automation.

Attendees will learn how to increase managerial effectiveness and gain competitive advantages. They will examine cost justification and administrative analysis techniques from both corporate and departmental perspectives. Actual case studies are employed to analyze the components of successful office automation implementation.

May 9-10, Denver, Colorado
May 23-24, New York, New York
June 1-2, Oak Brook, Illinois
June 6-7, Boston, Massachusetts

Network Troubleshooting Seminar

This highly interactive seminar presents the latest techniques used for troubleshooting network problems in complex DECnet networks. The seminar introduces major hardware and software tools available for network troubleshooting, and demonstrates the use of these tools in several carefully selected case studies. The seminar leader guides the class through the complete troubleshooting cycle from problem identification to problem resolution.

It is expected that the attendees will participate in class discussions. Therefore, meeting the prerequisites prior to attending the seminar is essential in order to obtain the full benefits the seminar is designed to provide.

Prerequisites: Attendees should have technical training and/or experience in network software and/or hardware technical support, network management for DECnet networks, or programming for complex network applications.

May 9-11, Boston, Massachusetts
June 7-9, San Mateo, California

Networking: Design and Implementation of Computer Communications Networks

This three-day technical seminar for anyone involved in the design, use, or selling of networks is a state-of-the-art presentation of fundamental concepts, technology, and practical implementation of computer networks. It will include an in-depth discussion of network architectures, components, and structures with a focus on complete network design.

May 17-19, Orlando, Florida
June 6-8, Boston, Massachusetts

Office Automation: Implementation

This one-day course is for managers and supervisors who need to understand the scope of today's office automation "revolution" and evaluate its potential for improving business productivity.

May 23, Cleveland, Ohio

Data Base Technology: The Key to Software Productivity

This three-day seminar will provide a thorough overview of the basic concepts of data models and the physical organization of data bases. an important part of the seminar will be a comparison and contrast of the three significant data base models: relational, codasyl, and hierarchical. the participants will gain an in-depth understanding of distributed data base systems and application design. the seminar will also discuss evaluation and selection of DBMSs.

May 25-27, Boston, Massachusetts

Barbara Holtz
LCG Mktg. Comm.
MR02-2/8D2

LCG LITERATURE LIST

HARDWARE OPTION BULLETINS

CD20 Card Reader	ED 23999 61
DN20 Communications Front-End Subsystem	ED 20504 26
DN200 Remote Station	ED 22987 61
IDX-3000 Integegrated Digital Exchange (Linkabit Switch)	EC 24075 61
LP20-A/B Line Printer Systems	ED 19137 26
LP20-C/D Line Printer Systems	ED 19135 26
LP100-B Line Printer Systems	ED 19139 26
LP100-F/H Line Printer Systems	ED 19677 26
LP200-B Line Printer System	ED 24013 61
RP07 Disk Subsystem	ED 21997 61
RTP20 Disk System	ED 19725 26
TU72 Magnetic Tape Subsystem	ED 19763 26
TU77 Magnetic Tape Subsystem	ED 17400 26
TU78 Magnetic Tape Subsystem	ED 23003 82

EDITOR'S NOTE: You may order these publications by contacting Jane Fitzgerald at P&CS in Northboro. The DTN is 234-4325. Mail stop is: NR2-2/W3, RCS code is NR12 (for telexes).

If you find an item to be out of stock or incorrectly numbered, please phone me or Gail Breslin at DTN: 231-4996 or 231-4013, and we'll try to help you out.

ATTENTION ! ! ! This list (and order numbers) supersedes all prior lists.

SOFTWARE DATA SHEETS

ALGOL	ED 17156 18
APL/APL-SF	ED 21774 81
BASIC-PLUS-2	ED 18885 26
BLISS-36	ED 19208 26
COBOL	ED 22109 61
CFS-20	EC 23858 61
CPL	ED 15659 63
DECmail/MS	ED 24000 61
DECnet-10 Phase III	ED 24056 61
DECnet-20 Phase III	ED 22835 61
DBMS-10	ED 21782 81
DBMS-20	ED 21827 61
FORTRAN-10/20 V.7	ED 24054 61
IBM RJE E/T	EC 24057 61
IQL	ED 15660 63
TOPS-20 PSI Gateway	ED 24053 61
TOPS-20 Supported Utilities	ED 22933 61
TOPS-10 V7.02	EZ C5532 44
TOPS-20 V6.0	EZ C5532 45

TECHNICAL SUMMARIES

DECsystem-10 Technical Summary	EE 21041 26
DECSYSTEM-20 TECHNICAL SUMMARY	EA 20415 18
LCG Product Summary - April '83	*EJ 24660 61
LCG Price List - April '83	*EE 24661 61

PHOTO BULLETINS

DECsystem-10/20 Fact Sheet	EJ 19596 26
DECsystem-10 Family At A Glance	EJ 19595 26
Digital System Interconnect Architecture	ED 24668 61

* New order numbers for recently produced editions

LCG BROCHURES

TOPS-20 Multiprocessing	*EA 24237 61
Introducing TOPS-20 Multiprocessing	EC 24046 61
DECSYSTEMS: The Users Choice	EA 18366 26
DECsystem-10 Family	EA 20572 26
DECSYSTEM-20 Family	EA 18724 26
Develop Microprocessor Applications Faster	EA 22895 61
TOPS-10/20 Data Networking	EC 22813 61
LCG Software Referral Catalog (2nd Ed.)	EJ 22780 61
Symmetric Multi-Processing	ED 24089 61
The Personal Mainframe/Electronic Mail	EA 22872 61
The Personal Mainframe/Office Automation	EA 22076 61

CORPORATE BROCHURES

Digital's Ethernet	EA 22710 18
Digital Introduces DECnet/SNA Gateway	EA 22703 18
Digital Storage Architecture Product Summary	ED 23981 18

MARKET SPECIFIC BROCHURES

Education:

LCG Education Market Brochure ("Well-Schooled as Digital")	EC 22752 61
Wesleyan Univ.	EA 20271 87
Univ. of Vermont	EA 20270 87
Univ. of Pittsburgh	EA 19633 87
Columbia Univ. Teachers Coll.	EA 19630 87
Hamilton Cty. Office of Ed.	ED 19577 87
Carnegie-Mellon Univ.	ED 20467 87

Engineering:

Monenco: Engineering for Excellence	EA 23075 16

Banking:

Bankers Trust: Partners in Success	EA 23155 16

* New order numbers for recently produced editions

GENERAL MATERIALS

DECNET-10 Phase III Press Kit Folder	EJ 23998 61
BUY-LINE Compendium (Vol.2: 1981-82)	EZ 09016 82
Digital's Systems Interconnect Folder	EJ 24741 61

POSTERS

1983 Smooth Sailing Calendar	EJ 21823 61
Chart Your Course Sailing Poster	EJ 21623 61
LCG Personal Mainframe Poster	EJ 21652 61

SITE PREPARATION GUIDES

Corporate Field Service's Generic Site Planning Kit, available worldwide, enables site planners to do floor layouts and site planning for all DIGITAL products including the DECsystem-10 and-20 product set. This Kit is designed to be Field Service's standard Site Planning tool. The new Kit's order number is EK-SPKIT-SP, available from P&CS, Northboro.

SALES AIDS

* Sales Aids are ordered by sending a memo/TWX to Gail Breslin (MRO2-2/8D2) containing your name, badge number, cost center, shipping address, and the signature of your cost center manager. Minimum charge for an order is $100.00. The mugs cost $2 each and are packed in boxes of 12. Pens are $2 each.

MUGS: Large Computer Group Mugs - sand colored china with blue sail boat design.
PENS: White No-Nonsense Pens.

* New order numbers for recently produced editions

AUDIO VIDEO

LCG Users Tape (10 min.)	loan request
Benchmarking/CPU Analysis with Brochure	loan request
DEC-10/20 Overview Slide Show	K. Stanton
LCG DECSYSTEM-20 Timesharing Testimonial Slide Show Kathie Stanton, Bedford MA, DTN 249-4068	
Supplementary Slide Package	Memo Don Waite MR2-2/8D2
Large Systems Slide Presentation (Modules 1 thru 7)	K. Stanton

BUY-LINE is published monthly by the Large Computer Group, Marlboro.

EDITOR: Barbara Holtz, MRØ2-2/8D2, Ext. 4996
PUBLISHING COUNCIL: Don Mallinson, Jim Miller, Don Waite.

BUY-LINE IS COMPILED ON THE DIGITAL WT2ØØ WORD PROCESSING SYSTEM BY GAIL BRESLIN.

HAND-DRAWN ILLUSTRATIONS ARE DONE BY STANLEY ROBERTS OF MEDIA SERVICES, BEDFORD, MA. AND BY SUSAN BERUBE OF P&CS SERVICES, BEDFORD, NORTHBORO, MASS.

PRINTER IS COMMONWEALTH PUBLISHING CO. OF BOSTON, MASS.

LAYOUT and CIRCULATION SERVICES ARE PERFORMED IN NORTHBORO, COORDINATED BY JACK DECESARE.

Upon request (see mailer card in this issue), the following will be added to the BUY-LINE mailing list:

Field Service Managers
Sales Managers
Marketing Managers
Sales Representatives
Operations Committee Members
Service Group Managers
Software Support Managers
Product Managers
Software Specialists

BUY-LINE APPLICATION

NAME: MAIL STOP:

BADGE: COST CENTER:

DEPT: OFFICE LOC:

( ) Please add my name to the BUY-LINE mailing list.

( ) Please delete my name from the mailing list.

My responsibility is in:

( ) LCG Sales

( ) LCG Marketing

( ) LCG Service

( ) Another product line or corporate function

Please detach and mail to Barbara Holtz, MR02-2/8D2. Thank you.

CUT

BARBARA HOLTZ
MRØ2-2/8D2

CUT

digital

DIGITAL EQUIPMENT CORPORATION
MARLBOROUGH, MASSACHUSETTS 01752

Large Computer Group

BUY-LINE

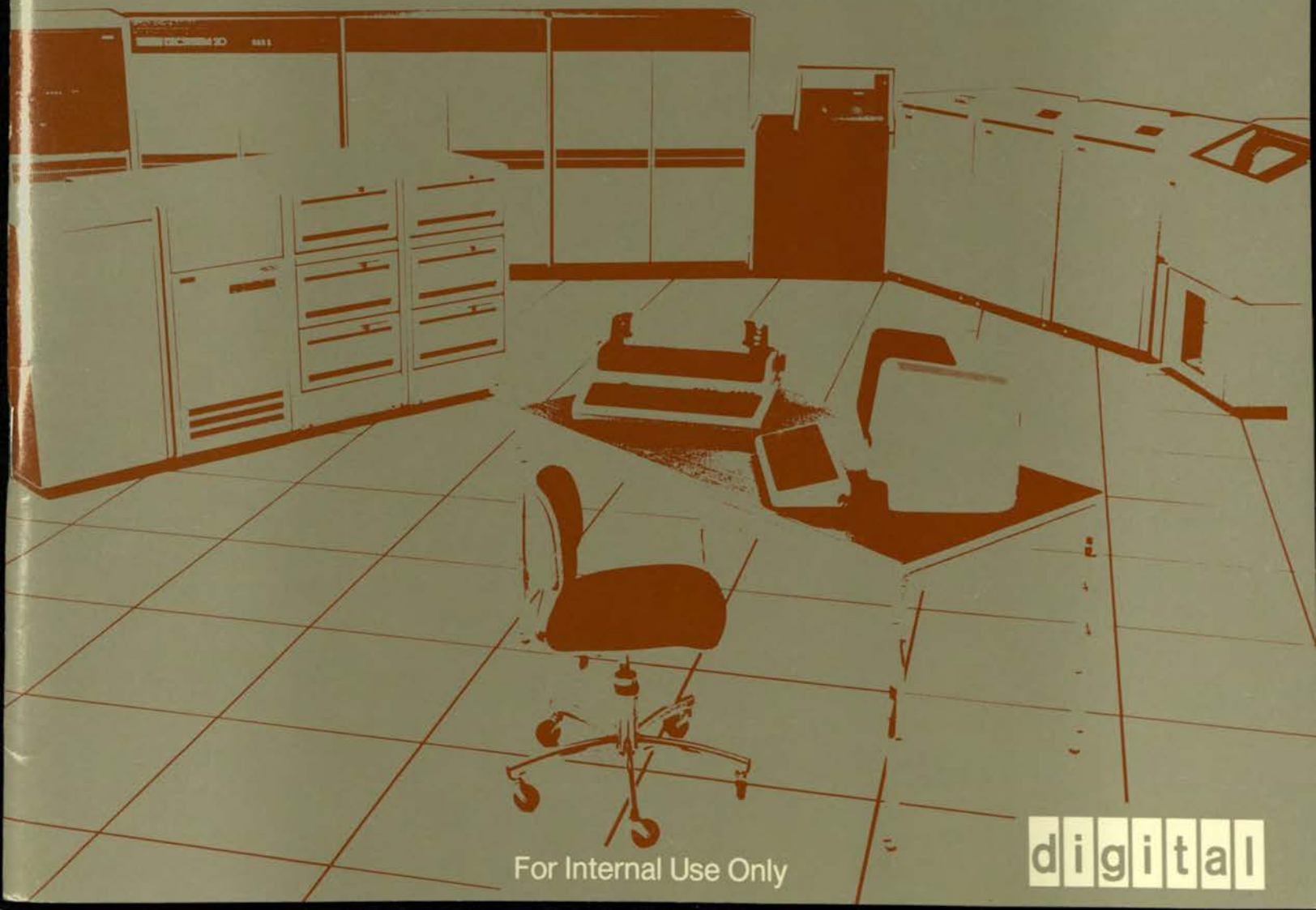
July 1983

Special In This Issue

LCG at U.S. Spring DECUS

Implementing the Integration Strategy

Cooperative Marketing Agreement
with Ampex to Improve Price/Performance



For Internal Use Only

digital

BUY-LINE JULY 1983
TABLE OF CONTENTS

LCG ORGANIZATION

LCG PRODUCT INFORMATION

SALES AND APPLICATION NOTES

GENERAL INTEREST

EMERGING MARKETS/TECHNOLOGIES

SYMPOSIA, COURSES, SEMINARS

LITERATURE AND SALES AIDS

ATTENTION!

Prices and availability quoted in BUY LINE - unless explicitly stated to the contrary - apply to Continental USA only; for other locations, please contact your local LCG Marketing Representative.

BUY-LINE is published monthly by the Large Computer Group, Marlboro.

EDITOR: Barbara Holtz, MR02-2/8D2, Ext. 4996
PUBLISHING COUNCIL: Don Mallinson, Jim Miller, Don Waite.

BUY-LINE IS COMPILED ON THE DIGITAL WS200 WORD PROCESSING SYSTEM BY GAIL BRESLIN.

LAYOUT AND ARTWORK ARE BY LORI FEAREBAY, BERLIN, MA.

PRINTER IS COMMONWEALTH PUBLISHING CO. OF BOSTON, MA.

CIRCULATION SERVICES ARE PERFORMED IN NORTHBORO, COORDINATED BY JACK DECESARE, OF P&CS.

Upon request (see mailer card in this issue), the following will be added to the **BUY-LINE** mailing list:

- Field Service Managers
- Marketing Managers
- Operations Committee Members
- Software Support Managers
- Software Specialists
- Sales Managers
- Sales Representatives
- Service Group Managers
- Product Managers

A MESSAGE FROM LCG

Rose Ann Giordano

As you are aware, DIGITAL has announced a change of focus in the DECsystem-10/20 development strategy. This decision provides for a further integration of DECsystem-10/20 computers into the DIGITAL information architecture and eliminates development of a follow-on 36-bit processor.

For many years, DIGITAL has been the leader in distributed data processing and interactive timesharing. As these concepts have matured, we have seen an evolutionary trend in our customers' computing needs. Our goal is to meet those changing needs with advances in technology.

One of the changes we see is a movement toward an Information Architecture; that is, the ability to easily use information at every level within an organization, from personal computers to mainframes. DIGITAL has provided early industry leadership to link together that diverse computing community through the Digital System Interconnect Architecture (Clusters) and our networking products (DECnet and Ethernet).

Integration and Support

The recent decision will focus our future high-end hardware development on our more broadly based VAX family of products and will concentrate DECsystem-10/20 resources on the integration of current KL-based systems into this DIGITAL Information Architecture.

Support of existing DECsystem-10/20 products will continue, including further development of communications capabilities, associated hardware and software support for the TOPS-20 and TOPS-10 operating systems, and our new mass storage offerings. In addition, we are committed to investing incremental software resources to allow DECsystem-10/20 users to be gracefully integrated into DIGITAL's integrated computing architecture.

Computer clusters and our integrated architecture allow customers to share their computing load among multiple processors and will permit easy addition of processors, file servers, and workstations when more computing power is required. This can be accomplished in a cost effective manner which preserves past investments and supports new applications.

We understand that any change in direction raises concerns. Our commitment to you is to provide the best set of products to meet your customers' needs in the years ahead and to protect their current investments. We believe this program will do both. As distributed processing moves forward to include high end systems, local area networks, shared file systems, and personal computers, we will make sure that DECsystem-10 and DECSYSTEM-20 users will be integrated into this new system environment.

To understand and prioritize our customer needs, we are working with the Large Systems SIG (Special Interest Group). The Large Systems SIG recently sent out a questionnaire to each installation to help us understand and prioritize our customers' needs.

LCG's NEAR-TERM STRATEGIC DIRECTION

Rich Whitman

May and June were busy months for LCG. The decision to discontinue the Jupiter project was made barely one week prior to U.S. Spring DECUS. Ken Olsen felt that once the decision had been reached, we had an obligation to inform our sales force and our customers immediately.

We worked closely with Engineering to begin accelerating our Integration Strategy, with the goal of meeting the growth needs of the LCG customer base. We have now distributed to the sales force worldwide a document which outlines this strategy.

It is important that the sales force carefully reads and understands the strategy, in order to present it to customers. LCG Integration Strategy is intended to be the first phase of a longer-range program, with specific financial, product, and integration tools to follow, as they are approved.

A questionnaire has been sent to members of DECUS asking for a prioritization of what DIGITAL should do to assist our customers to integrate. In early July, a meeting is being held in Boston for a select group, to further define this prioritization. We have committed to disseminating a statement, during the month of August, of our specific plans for the customer base.

The reaction of our customer base to our DECUS announcement has been mixed. Obviously, many customers are disappointed and upset. However, many others, including some very large customers, are now working closely with sales, to begin to implement the Integration Strategy. Customers such as Rutgers, Keplinger, F.B. Hall, and Michigan Bell Telephone have already decided to continue to order DECSYSTEM-2060s and DECsystem-1091s, giving them more time to plan their own Integration Strategy.

Even as we stress the integration message to our installed base, we do not preclude sales to new-name accounts. DECsystem-10s and DECSYSTEM-20s continue to offer viable solutions in the timesharing marketplace. We expect this market to exist for the foreseeable future.

The sales force has in fact closed several new new-name accounts - after the Jupiter decision was made public; they include: Intelligenetics, Contel, (Continental Telephone), Executive Resources Inc., and Marketing Associates Inc. - all needing timesharing systems. Evaluation revealed that the DECSYSTEM-2060 does indeed best serve these client's needs.

The LCG Marketing Group has met with many customers since our recent major announcement. We feel, now, that the best strategy to employ is to proceed slowly, and to stay in the planning cycle with our customers. Those customers who are trying to change their computing strategy quickly are the most difficult to help. We have experienced outstanding loyalty from many customers who want to continue to remain in the DIGITAL fold.

Finally, as we transition into the new DIGITAL and its Management Centers, it is important to understand structural roles. The Management Centers and Country Managers, along with the District Managers, have the tactical responsiblity for ensuring that LCG customers grow with DIGITAL. These resources have been very responsive and are eager to assist the field in this endeavor.

The LCG Marketing Group continues our availablility to assist Management Centers, Districts, and Regions in all strategy issues regarding the customer base. We will also provide more general consultative assistance to the Areas, Countries, and Sales Force in our new role as Strategic Marketing Group.

IMPLEMENTATION of LCG's INTEGRATION STRATEGY

Larry Vifquain

A statement outlining LCG's Integration Strategy was sent by EMS to geographic, regional, and district sales managers as well as to LCG Coordinators during the first week of June.

The purpose of this EMS was to restate LCG's product direction as announced at the US DECUS Symposium, May 23-27 in St. Louis. Additionally, the statement outlines potential effects on the DECsystem-10/-20 customer community, presents recommendations for working with this community, and outlines the plans which are being implemented to support the integration.

Action items planned at time of mailing included:

- Distribution of both the implementation strategy and DIGITAL's Product Plan and Systems Architecture to all sales persons;
- Identification of specific individuals within the various organizations to serve as contact points and coordinators;
- Distribution of more specific information on integration products and integration plans, for example, information on software tools, high-speed communication links, etc.;
- Distribution of pertinent results from the customer survey mailed shortly after the close of US Spring DECUS.

The following subheadings highlight the strategy statement's focal points:

- LCG's Product Direction
- Recommended Field Actions
- Potential Customer Reactions
- Support Strategies
- DIGITAL's Strategy (Distributed System Architecture)
- Recommended Strategy for LCG Accounts

Regarding the LCG Integration Strategy in Europe please, address any questions you might have to Nita Smith, EHQ, Geneva.

AMPEX MEMORY IMPROVES SMP PRICE/PERFORMANCE

Paul Feresten

LCG is pleased to announce that we have entered into a Cooperative Marketing and Service Agreement with Ampex Corporation's Memory Products Division. The Agreement will provide significant price/performance benefits to DECsystem-10 customers, particularly those with SMP systems.

Under the terms of this agreement, Ampex and DIGITAL will jointly market the use of Ampex's multiported MOS memory subsystem, the ARM 10LS, for use on the DECsystem-10. Additionally, the DIGITAL Field Service organization will provide contract maintenance service for the ARM 10LS subsystem. Ampex has exclusive sales responsibility for the ARM 10LS.

Arm 10LS Features

The ARM 10LS is a multiported memory subsystem designed for use on DECsystem-10 systems. Because it is a shared memory system, it is ideally suited to the requirements of tightly coupled multiprocessing and therefore to the TOPS-10 SMP system.

The ARM 10LS provides a completely transparent alternative to the MH10 and to mature offerings including the MG10, MF10, ME10, etc.

The ARM 10LS is available in 256 KW increments; a single cabinet may be configured up to 1 MW. This represents a fourfold increase in the storage capacity per square foot vis-a-vis the MH10. The ARM 10LS's features are summarized:

- 256 KW, 512 KW, 768 KW, and 1024 KW capacity
- 4,6, or 8 ports
- 2- or 4-way internal interleaving
- Error checking and correction (ECC) circuitry
- 550 nanosecond maximum access time
- 670 nanosecond maximum read cycle time.

The ARM 10LS will offer DECsystem-10 customers sizable savings in terms of space and maintenance cost while increasing system performance and overall system availability. While it is particularly well suited to SMP environments, substantial benefits will also be realized by customers using CORE memory configurations in single CPU systems.

Marketing

Under the terms of our Marketing Agreement with Ampex, DIGITAL and Ampex will jointly promote the advantages of the ARM 10LS for use in DECsystem-10 configurations. DIGITAL will support Ampex sales efforts by helping to identify prospects for the ARM 10LS; Ampex will work closely with DIGITAL to ensure that important issues such as system and memory delivery times and minimum system configuration guidelines are adhered to.

Final sales responsibility for the ARM 10LS belongs to Ampex. In cases where a new system sale is involved, as in the case of an SMP upgrade, Ampex will work closely with us to ensure that system and memory arrive at the customer's site at the same time.

Service

DIGITAL Field Service will be providing contract service coverage for the ARM 10LS. This means that DIGITAL will service the unit in the same manner as if it were a DIGITAL product. In the very near future, final Field Service Pricing will be available. Field Service coverage of the ARM 10LS will be provided on a worldwide basis.

Contact and Support Information

Since the responsibility for the sale of the ARM 10LS belongs exclusively to Ampex, it is important that sales referrals be channelled to them in the most efficient way possible. For this reason, Ampex has established a central Marketing contact for this purpose.

Please direct your inquiries and inputs regarding the Marketing Agreement to:

Bob Nelson
Ampex Corporation
Memory Products Div.
200 North Nash Street
El Segundo, CA 90245
phone: 213-640-0150

In Europe, please contact:

Bob Trick
Ampex Corporation
Acre Road
Reading, England

All responsibility for pricing quotations, delivery commitments, and final conditions of sale are the responsibility of Ampex.

NOTE:*This Agreement pertains to the Ampex ARM 10LS and its use and service on the DECsystem-10 only. LCG and DIGITAL do not endorse the use of Ampex memories other than the ARM 10LS.*

Please let me know if I may answer any questions on this agreement.

AP-20 ARRAY PROCESSOR PACKAGE: BENEFITS PERFORMANCE OF DECSYSTEM-2060

Rita Tillson

In the June BUY-LINE, LCG announced that high performance array processing is available worldwide on TOPS-20, as the result of a cooperative marketing agreement between DIGITAL and Floating Point Systems Inc. (FPS) of Beaverton, Oregon. FPS array processors are an effective solution for high-speed iterative algorithmic execution.

For many years, DIGITAL and FPS have had a solid working relationship in establishing cooperative marketing agreements for a number of products. DIGITAL has previously integrated FPS array processor packages into several of its operating systems and processors. These include: VAX/VMS, PDP-11/RSX, and KL10/TOPS-10.

The AP-20 Array Processor Package is the newest cooperative offering, and supports FPS' AP-190L array processor; a hardware interface allowing connection of the AP-190L to the DECSYSTEM-2060; and a series of subroutines and a modified TOPS-20 monitor, available from DIGITAL's Northern California Software Services District.

The AP-20 package is an attached array processor option for DIGITAL's TOPS-20 Operating System. It integrates the high performance FPS AP-190L with TOPS-20's ease of use and sophisticated interactive time-sharing. This, combined with a low cost per calculation, provides a highly attractive and competitive option for the DECSYSTEM-20.

Applications and Benefits of the AP-20 Array Processor Package

The AP-20 Array Processor Package can be beneficial for many CPU intensive or compute-bound applications. These include simulation and modeling, scientific and research applications, and high volume data analysis.

The following represent specific business applications which can benefit from the AP-20 package:

- Graphics calculations
- Matrix manipulation
- Linear regression
- Operations research
- Forecasting (model calculations)
- Return on investment analysis
- Statistical packages
- Offloading of batch processes for better interactive response.

Similarly, the AP-20 can benefit the following scientific applications:

- Signal processing
- Image enhancement
- Stress analysis
- Fast Fourier Transforms (FFTs) and integrations
- Multivariable functions
- Eigenvalues and Eigenvectors
- Quadratic interpolation
- Recursive filter and rasterization
- Compute intensive scientific applications.

Performance

A set of preliminary performance tests have been run on the AP-20 Array Processor Package. These evaluations indicate that appropriate functions running in the array processor can increase their performance by a factor of 3 to 11 times.

These performance tests reflect only the usage of the array processor with Array Processor FORTRAN and the AP libraries. Further performance enhancements can be obtained with the use of optimized AP Assembly Language; performance data for optimized AP assembler code has not yet been obtained.

Tables 1 and 2 represent the results of the AP-20 Array Processor Package performance evaluation. All tests were measured by elapsed time on a standalone DECSYSTEM-2060 with 1.5 megawords of internal memory and a fully configured array processor system. The data reflects both the time that the routines ran in the array processor and the time spent for data transfer to the array processor.

Table 1 A double matrix inversion, 50 X 50 matrix

Mode of use	Time (seconds elapsed)
KL FORTRAN	4.25
ADC calls to math library	1.36
UDC calls to math library	0.93
AP FORTRAN	0.68

Table 2 Z(I) = ((X(I)*PI*2**1/2+Y(I))**2)/2
1000 element array, executed 1000 times

Mode of use	Time (seconds elapsed)
KL FORTRAN	38.00
AP FORTRAN	14.00
AP FORTRAN calling math library routines	3.43
ADC math library calls, inline	4.22
VFC subroutine	3.16

DECISION SYSTEMS IN A TIMESHARING ENVIRONMENT

DATA + DECision System = Information to Users Who Make Decisions.

Marilyn Davison

DECision Systems is the name we have chosen to describe that which we do best in an internal timesharing environment.

IBM has popularized this concept with the Information Center promotion. DIGITAL does this kind of end using computing better, and we have the reference accounts to prove it.

A DECision System:

- turns data into information
- maximizes professional productivity
- is product independent; can include DECsystem-10s, DECSYSTEM-20s, VAXs, PDP-11s, PCs.

Our current DECision System marketing program includes:

- the DECision System folder, mailed to BUY-LINE readers about two months ago;
- Sales Training for specialty purposes and for invidual districts;
- Customer Seminar Support (ongoing);
- A Modular Marketing Guide (to be available Q1); and
- A DECision System Brochure (to be available Q1).

The DECision System Folder was an attempt to deliver information on this subject to the Field immediately, so that we could utilize current information, and could update it when we have new information.

Contents include:

- a re-print from "Information Processing" Magazine, entitled "Will the Street Bypass Time Sharers?" (good in its discussion of Lehmann Brothers decision to bring their timesharing in-house with DECSYSTEM-20s);
- the Bankers Trust brochure, an excellent description of a successful internal timesharing account;
- the NCP Calc brochure, which describes the powerful spreadsheet calculation capabilities available on TOPS-10 and TOPS-20.

While we intend to continue supplying you with appropriate content for this folder, we encourage you to provide information or reprints which may be pertinent to your geographical area or to your own particular customer mix.

NOTE: For your reference, a brief article entitled: "Customer Survey: DSS on DECsystems" appears on page 8 of the April 1983 BUY-LINE.

FINANCIAL APPLICATIONS FOR THE INTEGRATED ENVIRONMENT

Larry Vifquain

Integration of the DECsystem-10s, DECSYSTEM-20s, and large VAX systems into a distributed architecture highlights the need for software applications which are supported on all systems.

Applications that can operate under TOPS-10/-20 and VMS and that can offer a common user interface allow customers to leverage their software investments and to gain maximum benefit from the distributed environment.

LCG is working to identify and qualify application software which supports this environment. There are a number of valuable tools and packages available that are used by many of our customers today. Additionally, others are being modified to work across the DIGITAL spectrum of products (PCs to mainframes). As we identify products of particular interest, we will feature them in BUY-LINE or in other internal publications and literature.

Financial application software is a key requirement. Interactive Systems Inc. (ISI) of Burlington, Mass. supports a number of financial software packages which are transportable among the DECsystem-10, the DECSYSTEM-20, and VAX computer systems.

Included are: General Ledger, Accounts Payable, Accounts Receivable, Purchasing, Inventory, Payroll/Personnel, Fixed Assets, and Order Entry. All programs are written in COBOL (COBOL-74 and VAX-11 Native Mode).

Designed to integrate with the on-line architecture of DIGITAL's timesharing systems, all packages are menu driven and feature formatted screens through use of ISI's screen processor, SCOPE. A layered architecture design has been used for greater efficiency, system integrity, and application to networking environments.

Available in both commercial and fund accounting versions, these packages are being used by a variety of manufacturing, distribution, publishing, and financial companies, as well as by educational, governmental, and non-profit organizations.

Interactive Systems Inc. began the migration of software from the DECSYSTEM-20 to the VAX in January 1979. During the past three years, ISI has developed a software implementation strategy together with numerous utility packages to facilitate support of software on both 32-bit and 36-bit machines.

Additional information on the ISI products can be obtained from Mr. Gary Kuba at ISI's Burlington office. The phone number is 617-273-4420.

FCC and LCG

Sharon M. Lipp

The following is one of two articles in this BUY-LINE issue regarding the FCC Program and LCG (the other is entitled 'New DECsystem-10/20 Options'). Both articles complement one another.

This article, "FCC UPDATE" which also appeared in the June 6 issue of "Sales Update", has been included in BUY-LINE because of the subject's overall importance to DIGITAL. It is important to understand that the DECsystem-1091, the DECSYSTEM-2040, and -2060 are classified as "mixed" systems, while the DECsystem-1090, and the DECSYSTEM-2020 are "grandfathered" products.

FCC UPDATE**

Dave Brown
Karen Kilday

As you know, the FCC has issued regulations that are designed to minimize radio and TV communication interference. All computer devices manufactured as October 1, 1983, must meet the Class A or Class B technical limit.

FCC Definitions

The FCC requires that computer devices first manufactured after October 1, 1981 be tested and labeled to meet one of two categories:

- Class A computer devices: products marketed for use in industrial, commercial, and business applications.
- Class B computer devices: products marketed for use in the home or in residential areas (such as personal computers).

Products that were first manufactured prior to October 1, 1981, are called "grandfathered" products.

- **Grandfathered products:** may continue to be built and labeled "untested" through September 30, 1983. These products may be sold and resold beyond October 1, 1983 (i.e. the grandfathered status of a particular unit does not expire - it is permanent). To continue the building of a grandfathered unit after October 1, 1983, the product must be ECO'd to bring it into Class A or Class B compliance.

The FCC has categorized the use of some computer devices as "temporarily" exempt from the Class A and Class B regulations. The following fall into this exempt category:

- A computing device utilized in any transportation vehicle, including motor vehicles and aircraft.
- A computer device used in an electronic control or power system by a public utility.
- A computer device used in an appliance (e.g. microwave oven, dishwasher, etc.).
- A specialized medical computer device used under the direction/supervision of a licensed health care practitioner.
- Also exempt are computer devices used by the U.S. Government or its agencies.

The FCC has provisions to allow "mixed systems" to be marketed and sold.

- **Mixed system:** a Class A or Class B product configured with a non-Class A or non-Class B product (e.g., a grandfathered product or an exempt product). In mixing these systems, the Class A or Class B product must maintain its FCC status.

DIGITAL's Position

*** Class A/Class B**

As of October 1, 1981, all new computer devices are tested and labeled Class A or Class B, appropriately. **All** computer devices manufactured as of October 1, 1983 will be tested and labeled Class A or Class B, appropriately. This includes those grandfathered products that will continue to be built after September 30, 1983. DIGITAL has chosen to label computer devices at the cabinet level.

*** Grandfathered Products**

Grandfathered products are currently labeled "untested". As of October 1, 1983, one of two activities must occur:

1) discontinue the manufacture of the grandfathered product, or
2) modify the grandfathered product to meet the Class A or Class B regulations in order to continue to manufacture.

Some grandfathered products, such as the PDP-11/70, will be discontinued. These products may continue to be marketed and sold until supply is depleted.

Most grandfathered products will be modified to meet the Class A or Class B regulations. DIGITAL has chosen a shielding technique that modifies the grandfathered products at the cabinet level. The cabinets are shielded at the side panels; there is a new shielded distribution panel technique; and shielded cables are used in most cases. For details on this shielding technique, a slide presentation entitled "EMC - The DIGITAL Approach" is available from the FCC/EMC Program Office.

In addition to meeting the FCC requirements, the product modifications will have very positive benefits for our customers:

- better cable management
- easier system assembly
- significantly easier system re-configuration.

As a result of the modifications required, most grandfathered products which will continue to be manufactured beyond October 1, 1983 will receive new model numbers. The Q1/FY84 Systems and Options Catalog and the July 1983 DEC Standard Price List will contain the new model numbers, configuration guidelines, etc.

*** Exemptions**

The FCC exempt categories refer to product end use in the U.S. The FCC has no jurisdiction outside the U.S. Customs area. A customer order for an **exempt** product must be accompanied by a letter from the customer stating the intended **exempt** use of the product.

It is strongly recommended that the sale of **exempt** products be avoided. The exemptions are temporary and could be removed by the FCC at any time. Also, although some customer applications may be exempt, they may in fact insist on Class A or Class B products.

In the July 1983 DEC Standard Price List, those products which are intended only for exempt use or for use as field add-ons to grandfathered systems will be clearly identified.

*** Mixed Systems**

Mixed systems can result from adding a Class A or Class B product to a grandfathered product, either as a system sale or a field add-on. The Fcc status of the Class A or Class B product must be maintained. Adding an option or subassembly which violates the FCC Class A or Class B status of a product DOES NOT constitute a mixed system, and is specifically not allowed by the FCC (unless it is for exempt use and is so stipulated in a letter from the customer).

DIGITAL will begin the phaseover from manufacturing grandfathered products to Class A and Class B products in Q1/FY84. Mixed systems comply with the FCC regulations and should be marketed and sold as such. During this transition stage, grandfathered products will continue to be available until supply is depleted; they can also be sold and re-sold by OEMs and end users in the future; the grandfathered status remains with each unit and is permanent for each unit.

As previously mentioned, the July 1983 DEC Standard Price List, and the Q1/FY84 Systems and Options Catalog are being revised to reflect the new product designations and configuration guidelines. Also, the FCC Regulations Q & A Brochure is available (Part # EA 23749 98) through your Literature Contact.

See future issues of "Sales Update" and BUY-LINE for more extensive FCC information.

** Except for the introductory paragraphs written by Sharon Lipp, this article was reprinted from the June 6 "Sales Update".

WHO ARE OUR LICENSED KL10 & KS10 DIAGNOSTIC USERS?

Sharon M. Lipp
Bob St. Cyr

In an effort to better serve our customers, LSE and A&SG are working to update and to provide better packaging and service for the KL10 and KS10 maintenance products. If any of your customers have ordered and/or have received the following self-maintenance products, please forward their name to Bob St. Cyr (MKO1-2/M38).

DECsystem-10/20 Maintenance Products:

ZH006
ZH007
ZH008
ZH009
ZH010

DECsystem-10/20 Diagnostic and Maintenance Product:

ZT001

Your cooperation in this matter will help DIGITAL to better serve these customers.

NEW DECsystem-10/20 OPTIONS

Sharon M. Lipp

The following is one of two articles in this BUY-LINE issue, regarding the FCC Program and LCG (the other is entitled "FCC UPDATE"). The two articles complement one another. This article provides a complete list of LCG products which can be sold after July 1, 1983.

It is important to understand that the DECsystem-1091, DECSYSTEM-2040, and DECSYSTEM-2060 are classified as "mixed" systems, while the DECsystem-1090 and DECSYSTEM-2020 are classified as "grandfathered" products (please reference the 'FCC UPDATE' article for clarification of these terms).

As you know, the FCC has issued regulations that are designed to minimize radio and TV communication interference. All LCG (in fact all DIGITAL) devices manufactured as of October 1, 1983 must meet the Class A or Class B technical limits. As a result, the following new FCC packages for the DECsystem-10/20 have been developed to replace the existing packages.

Customers will notice minor cabinet changes and a change in the way cables connect to the I/O connector panel. There are no changes to the software nor performance of the DECsystem-10/20.

Below is a table that defines the LCG specific product. Corporate products such as the VT100, TU78, etc. have not been included in this list. The MLP and BMC for the FCC version or replacement products are the same as the older options.

If an option is not listed, then the option has been placed in the maintenance only section of the DSPL. This does **not** imply that the option will no longer be supported by the TOPS-10/20 Operating Systems.

Note that the FCC version of the KL (KL10-R) is offered only in the 60 cycle variation and that the KL10-R is a "mixed" system. The KL10-E will continue to be offered in the 50 cycle variation. New designators have been assigned for consistency reasons. The 50 cycle variation have been placed in the FAO/E section of the DSPL.

The FAO/E (Field Add-On/Exemption) section includes those options which are non-FCC products. The Hardware section is for Class A, Class B, and Qualified Sub-assemblies.

FIELD ADD-ONS/EXEMPT

OPTION	DESCRIPTION
1077-UA	DUAL KI 1077 UPGRADE S/W KIT
1090-PE(PF)	256K SYS PKG T-10
1090-PH(PJ)	512K SYS PKG T-10
1090L-PE(PF)	256K L/O PKG T-10
1090L-PH(PJ)	512K L/O SYS PKG T-10
1090S-UG(UH)	1090B TO 1090 SMP U/G
1090S-UM(UN)	1090 SMP U/G W/MEM
1091-FJ	512K SYS PKG T-10, 50 CY
1091-FF	1M SYS PKG T-10, 50 CY
1091L-FJ	512K L/O SYS PKG T-10, 50 CY
1091L-FF	1M L/O SYS PKG T-10, 50 CY
1091S-FF	Mem.less KL10E, PV Kit, 50 CY
1091S-FJ	Mem.less KL10E, 50 CY
1091S-FL	Mem.less KL10E, DIB/DMA20, 50 CY
2020-ME(MF)	348K SYS PKG RP06 32TTY T-20
2020-MG(MH)	384K SYS PKG RP06 32TTY T-10
2020L-ME(MF)	384K L/O SYS PKG RPO6 32TTY T-20
2020L-MG(MH)	384K L/O SYS PKG RP06 32TTY T-10
2040-FJ	512K SYS PKG T-20, 50 CY
2040-FF	1M SYS PKG T-20, 50 CY
2040L-FJ	512K L/O SYS PKG T-20, 50 CY
2040L-FF	1M L/O SYS PKG T-20, 50 CY
2060-FJ	512 SYS PKG T-20, 50 CY
2060-FF	1M SYS PKG T-20, 50 CY
2060-UB	2040-2060 UG W/MC20 T20+MODEL A
2060-UC	2050-2060 UG W/T20+
2060-UD	2050-2060 UG W/T20+MODEL A
2060L-FJ	512K L/O SYS T-20, 50 CY
2060L-FF	1M L/O SYS PKG T-20, 50 CY
AN10-BA(BB)	APRA Interface for T-10
AN20-BA(BB)	ARPA Interface for T-20
CD20-AA DNCXX-AA	
CD20-AB DNCXX-AB	285 CPM CARD READER
CI20-AB	KL10 CI PORT ADAPTER
DC20-EA(EB)	COMM EXPANSION CAB
DC20-EC(ED)	COMM EXPANSION CAB
DN20-DB	EXPANSION DRAWER + DN20-BA, 50 CY
DN20-MA(MB)	DEC20 128KW FRTEND
DN20-MC(MD)	DEC10 128KW FRTEND
DN20-MU	DN20-C TO DN20-M UPG
DN21-JB	EXPANSION DRAWER, 50 CY
DN200-MA(MB)	REMOTE STATION T10
DN200-MC(MD)	REMOTE STATION T20
DN200-MU	UPGRADE CORE TO MOS MR
DN22-AA(AB)	TOPS-20 IBM FR END FOR 2020
DN25-AA	8 ASYNCH LINE MUX & CONTROL
DN25-AB	DIST PANEL + DN25BA
DN25-BA	8 ASYNC LINE INTERFACES
DN25-DA(DB)	EXPANSION DRAWER + DN25 AA
DN25-EC(ED)	EXPANSION CAB + DN25-DA
DN87-U	DC76 Upgrade to a DN87-A/D
DN87-UM	DN87-A/D to DN87-B/C
DN87S-U	DN87-B/C to DN87S
DZ11-AA	8 LINE ASYNCH MUX FOR 2020
DZ11-BA	8 LINE EXPANDER FOR 2020
KL10-FA(FB)	EXT ADDR CPU
KL10-FC(FD)	EXT ADD CPU WMEM

KL10-ER	KL10E W/O MEM, DIB/DMA20, 50 CY
KL10-PM(PG)	1080 TO 1090 UPGRADE
KL10-PV	KL10B TO KL10D UPGRADE MODEL A
LP07-YA	CHARABAND FOR LP07 64/64 EDP
LP07-YB	CHARABAND FOR LP07 96/96 EDP
LP07-YC	CHARABAND FOR LP07 64/96 EDP
LP07-YD	CHARABAND FOR LP07 KATA KANA
LP07-YF	CHARABAND FOR LP07 OCR-A 64/96
LP07-YH	SCI CHARABAND 96CH 2SETS FONTS
LP07-YJ	96CH SCI AND EDP CHARABAND
LP07-YK	CHARABAND FOR LP07 SWED/FINN
LP07-YL	BRITISH CHARABAND 64/6
LP07-YM	OPEN GOTHIC CHARABAND 64/64
MF20-LB	256K INTERNAL BASIC MEM, 50 CY
MF20-LD	256K INTERNAL SECOND ME, 50 CY
MF20-LJ	256K EXT BASIC MEM ORANGE, 50 CY
MF20-LK(LL)	256K EXT BASIC 2ND MEM, 50 CY
MF20-LN	256L EXT BASIC MEM, BLUE, 50 CY
MS10-BA	64K MOS MEMORY EXPANSION
M9301-WA	1090/91 SMP BOOT FOR DN87S
M9301-WB	1090/91 SMP BOOT FOR DN20
RP20-AD	ADD-ON DSK TOPS-10 FORMAT, 50 CY
RP20-AJ	ADD-ON DSK TOPS-20 FORMAT, 50 CY
RTP20-HA	MASTER SUBSYSTEM/1091
RTP20-HC	Dual Chnl Option 1091
RTP20-KA	MSTR SYS 2040-S/2060-P
RTP20-KC	Dual Chnl Option 2040/50/60
RTP20-KE	MSTR SYS 2040-P2050-P
RTP20-KH	MSTR SUBSYS/ARPA, BLUE DX
RTP20-KK	MSTR SUBSYS/ARPA, ORNG DX
RTP20-EB	MASTER SUBSYSTEM/1091, 50 cy
RTP20-ED	DUAL CHNL OPTION 1091, 50 cy
RTP20-EE(EF)	MASTER SUBSYSTEM/1090
RTP20-EH(EJ)	DUAL CHNL OPTION 1090, 50 CY
RTP20-FB	MSTR SYS 2040-S/2060-P, 50 cy
RTP20-FD	DUAL CHNL OPT 2040/50/60, 50 cy
RTP20-FF	MSTR SYS 2040-P/2050-P
RTP20-FJ	MSTR SUBSYS/ARPA, BLUE DX
RTP20-FL	MSTR SUBSYS/ARPA, ORNG DX
TAU77-EC(ED)	2020 TAPE SYS 800/1600
TU72-ED	TAPE DR 9TR 125IPS NL,50 CY
TX02-EC(ED)	MAG TAPE SUBSYS TU70 HI-B
TX02-EF	TAPE CONTROL W/C HNL-DEC2060, 50 cy
TX02-EJ	MAG TAPE SUBSYS TU70 CC-B60, 50 cy
TX03-FB	TWO CHNL SWITCH OPTION
TX03-EC(ED)	TWO CHNL SWITCH OPTION
TX03-EE(EF)	TWO CHNL SWITCH OPTION
TX03-EH(EJ)	TWO CHNL SWITCH OPTION
TX05-FB	TWO CONTROLLER SWITCH OPTION
TX05-EC(ED)	TWO CNTL SW OPTION + 2ND CNTL
70-11426-A0	OPT 100FT LPT CABLE FOR 2020
BC10R-20	20'XY CABLE
BC10R-30	30'XY CABLE
BC10R-40	40'XY CABLE
BC10S-20	20'CNTL CABLE
BC10S-50	50' CNTL CABLE
BC10S-70	70'CNTL CABLE
BC10S-A0	100'CNTL CABLE
BC10W-25	COMMUNICATOR CABLE 25'
BC10W-50	COMMINICATOR CABLE 50'
BC10W-75	COMMUNICATOR CABLE 75'
BC10W-AO	COMMUNICATOR CABLE 100'
BC10X-25	EMERGENCY POWER CABLE 25'
BC10X-50	EMERGENCY POWER CABLE 50'
BC10X-75	EMERGENCY POWER CABLE 75'
BC10X-A0	EMERGENCY POWER CABLE 100'
BC10Y-25	BUS OR TAG CABLE 25'
BC10Y-50	BUS OR TAG CABLE 50'
BC10Y-75	BUS OR TAG CABLEL 75'
BC10Y-A0	BUS OR TAG CABLE 100'
BC10Z-25	CHANNEL BUS CABLE 25'
BC10Z-50	CHANNEL BUS CABLE 50'
BC10Z-75	CHANNEL BUS CABLE 75'
BC10Z-A0	CHANNEL BUS CABLE 100'
BS10B-25	DRIVE BUS PWR+SIG CBLS 25'
BS10B-35	DRIVE BUS PWR+SIG CBLS 35'
BS10B-50	DRIVE BUS PWR+SIG CBLS 50'

HARDWARE
CLASS A, B, QSA

OPTIONS	DESCRIPTION
1091-FH	512K SYS PKG T-10
1091-FE	1M SYS PKG T-10
1091L-FH	512K L/O SYS PKG T-10
1091L-FE	1M SYS PKG T-10
1091S-FE	Mem.less KL10E, PV Kit
1091S-FH	Mem.less KL10E
1091S-FK	Mem.less KL10E, DIB/DMA20
2040-FH	512K SYS PKG T-20
2040-FE	1M SYS PKG T-20
2040L-FH	512K L/O SYS PKG T-20
2040L-FE	1M SYS PKG T-20
2060-FH	512 SYS PKG T-20
2060-FE	1M SYS PKG T-20
2060-UA	2040-2060 UG W/MC20 T20+
2060L-FH	512K L/O SYS T-20
2060L-FE	1M SYS PKG T-20
CI20-AA	KL10 CI PORT ADAPTER
DC20-AA	8-LINE BASIC ASYNCH GROUP
DC20-CC	CABLES + DIST CAB FOR DC20-AA
DC20-CD	CABLES + DIST CAB FOR DC20
DC20-DA	8-LINE ASYNCH EXPANSION GP
DIB20	I/O BUS INTERFACE
DN20-BA	SYNC LINE CTRL PLUS DN20-BB
DN20-BB	SYNC LINES SPEEDS 2.4-19.2KB
DN20-DA	EXPANSION DRAWER + DN20-BA
DN21-JA	EXPANSION DRAWER
KL10-RE	KL10E w/o mem, DMA/DIB20
LP20-JA	600 LPM BAND PRINTER 64/96 CHAR
MF20-E	256K EXPANSION
MF20-LA	256K INTERNAL BASIC MEM
MF20-LC	256K INTERNAL SECOND MEM
MF20F-LH	512K EXT BASIC MEM ORANGE
MF20F-LM	512K EXT BASIC MEM, BLUE
RH20	INTERNAL CHANNEL
RP20-AC	ADD-ON DSK TOPS-10 FORMAT
RP20-AH	ADD-ON DSK TOPS-20 FORMAT
RP20-CA	MASTER DUAL PORT UPGRADE
RP20-CB	ADD-ON DUAL PORT UPGRADE
TU72-EC	TAPE DR 9TR 125IPS NL
TX02-FE	TAPE CONTROL W/C HNL-DEC2060
TX02-FH	MAG TAPE SUBSYS TU70 CC-B

LCG PRODUCT PANEL AT US SPRING DECUS

Barbara Holtz

The LCG Product Panel at US DECUS is traditionally sponsored by the Large Systems SIG (Special Interest Group). At the recent US Spring DECUS Symposium in St. Louis, the Panel was chaired by Bill Miller of Texas State Purchasing, who welcomed the attendees and introduced the Panel members. They included: Rose Ann Giordano, manager of LCG; Win Hindle Jr., Vice President, Corporate Operations; Bill Johnson, Vice President of Systems and Communications Engineering; Sam Fuller, Senior Group Manager of Corporate Research and Architecture; Bernie Lacroute, Senior Group Manager, Distributed Systems; Rick Corben, Corporate Product Manager for Central Engineering; Per Hjerppe, Marketing Manager, LCG; and Ulf Fagerquist, vice president, LSG Engineering.

Addressing an audience of nearly 800, Rose Ann reiterated the announcement relayed days earlier to the sales force and customers: elimination of the high-end follow-on processor (more popularly referred to as the "Jupiter") project.

DECsystem-10 and -20 users expressed concern - during this Panel session and throughout the Symposium - that DIGITAL might neglect the development and maintenance of existing DECsystem-10s and -20s, and that the cost of integrating systems would be prohibitive.

While the initial message disappointed many users, Rose Ann stressed DIGITAL's commitment to LCG's installed base. "We intend to preserve your investments", she said; "our customers are better served by accelerating the integration of DECsystem-10s and -20s into our distributed computing environment and focusing future high-end hardware development on our more broadly based VAX family of products.

CAPTION: L to R: LCG Product Panel members Hjerppe, Corben, Fagerquist, Miller, speaker Giordano, Johnson, Hindle, Lacroute, and Fuller.

"As distributed processing moves forward to include high-end systems, local area networks, shared file systems, and personal computers, we will make sure that DECsystem-10 and -20 users will be among the leaders in incorporating this new systems environment."

Citing delays in the Jupiter project's development, Win told the audience that DIGITAL reached its decision after development of the high-end system became more complex than previously expected. The window of opportunity had passed; the delivery date would be far enough into the future so that the new system would lose viability as a product and would not be cost-effective to the users who were anticipating it. Bill Johnson added "we questioned whether the price/performance would be best for the time and market."

Hindle said that the decision to cancel the 36-bit follow-on processor was carefully studied, and involved the participation of senior staff and sales management. "DIGITAL will continue to develop new software and hardware for existing DECsystem-10s and -20s," he reassured the listeners; "we are determined to remain a leader in the industry."

"We are going through a difficult period," Hindle said, "but we are entering a new era, and I'm optimistic concerning our current 36-bit products."

Following this series of announcements, Sam Fuller, group manager for Research and Development, detailed DIGITAL's long and short range plans for the proposed integration and development of existing DECsystem-10/20 systems and new 32-bit machines scheduled for introduction in the early 1990s. Fuller also went into technical discussions on the potential of the Ethernet, CI, LNI, and Cluster options which will be available to integrate current systems and make them more powerful.

Rick Corben discussed more specifically Engineering's plans for achieving the integration into distributed architecture. He outlined several specific development plans for protecting customer investment in DECsystem-10/-20 software and hardware and for providing growth (increased capacity, as well as integration). Corben also spoke of the product capabilities available within DIGITAL's distributed environment, including personal computers, network servers and services, and powerful new 32-bit systems. He concluded by urging customers to "ensure more graceful integration of your systems into the distributed environment, by providing us *now* with your inputs concerning your needs."

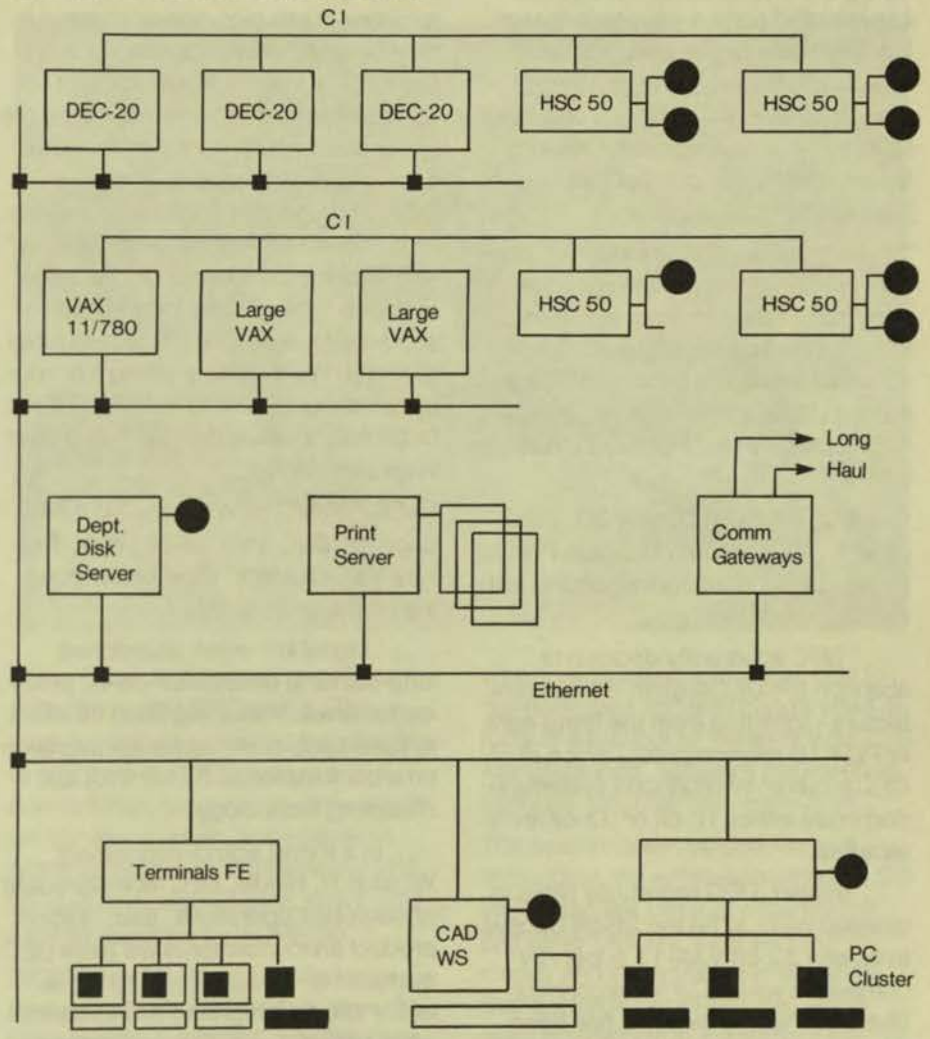
Rose Ann invited customers to use the LCG Booth at DECUS as the focal point for scheduling one-on-one sessions with LCG and Corporate managers and to participate in an extensive questionnaire which LCG would be mailing to customers for their response prior to a meeting to be held in Marlboro in July. Rose Ann expressed the hope that a formal Corporate commitment would be made toward DECsystem-10 and -20 users and their system needs, in August.

The three Management Center executives, Dave Grainger, WACS Manager, Chick Shue, NAS Manager, and Harvey Weiss, MASS Manager, along with Ward Davidson, Area Operations Manager for the WACS Center, were available after the Panel, for one-on-one discussions with LCG customers. Many customers took advantage of this opportunity to speak on behalf of their management as well as their own specific departments in expressing their needs concerning the integration of LCG products into the Corporate distributed architecture.

Both Rose Ann and Win said that LCG would be listening carefully to the concerns of users during and after DECUS week, and would consider customer suggestions as to their immediate and long range needs. "DIGITAL management will be listening to your ideas in order to make future development as smooth as possible," Win said.

In closing this session of the Large Systems SIG group, panel members once again emphasized DIGITAL's commitment to further development of software and hardware for existing DECsystem-10s and -20s, and promised to meet throughout the week with users in order to answer questions concerning possible future changes in their systems.

DECSYSTEM-20* INTEGRATED into DIGITAL DISTRIBUTED ARCHITECTURE



*DECsystem-10s ALSO INTEGRATED into ARCHITECTURE via ETHERNET

NEWSBEAT: LCG IN THE NEWS

Barbara Holtz

LCG was not only a "hot topic" at US Spring DECUS in St. Louis, but also commanded page 1 coverage in four industry trade publications the week after DECUS ended. The following press clippings are excerpts only, and reflect the various computer industry trade publications' point of view – not necessarily LCG's opinion.

We encourage you to read these articles in their entirety in the publications, rather than to make inferences based upon headlines alone. Please note that these are direct quotations; as such, they do not always correctly reference DIGITAL's product trademarks.

COMPUTERWORLD, May 30, 1983, page 1: "DEC scraps Upgrade Plan for Decsystems" (see corresponding article on page 10)

... "DEC apparently decided to abandon the DECsystem 36-bit architecture - inherited from the firm's earlier PDP-10 minicomputer - since all of DEC's currently produced systems incorporate either 16-bit or 32-bit architectures.

... Instead, DEC reportedly plans to develop ways to tie the 36-bit Decsystems into 32-bit VAX-11 superminicomputers via DEC's "interconnect cluster concept," which it has been espousing for more than a year...

... The company will continue development of hardware, software, and communications enhancements for their products, most notably enhancements for the processors' TOPS-10 and TOPS-20 operating systems and a series of mass storage devices.

... According to Rose Ann Giordano, the company will put its "Computer Interconnect and high-speed channel interface and Ethernet connections on both TOPS-10 and TOPS-20."..Giordano stressed that these packages are integration and not conversion packages. "Our strategy is to integrate TOPS-10 and TOPS-20 into our overall corporate information architecture," she explained. She said DEC is committed to "doing some incremental software to make that integration more graceful. We want everything from our personal computers to our mainframes to be able to move data back and forth in an easy fashion."

ELECTRONIC NEWS, May 30 1983, page 1: "DEC axes 36-bit Work; To Key Vax, Clusters" (See corresponding article on page 22)

... "Digital last week abandoned long-standing decsystem 36-bit processor development, signaling its intent to base large-scale computer migration on a combination of 32-bit VAX and clustering technology.

... In a formal acknowledgement, Winston R. Hindle, DEC vice-president of corporate operations, said, "recent product announcements will allow DECsystem-10/-20 customers to move easily into an integrated environment, while allowing us to forego continued development of a new 36-bit high-end processor."

... Rose Ann Giordano, manager of the Large Computer group, ...said software development on the DECsystem family would continue, and hardware attachments enabling communications among DECsystem-10s, -20s and VAX-11 clusters would be forthcoming this year. (she) said that the firm plans to develop Ethernet gateways between the tightly-coupled smp environment previously available for DECsystem-10s and the loosely-coupled cluster schemes developed for the DECsystem 20 and VAX-11 families.

... Ms. Giordano said the Large Computer group, whose charter once was restricted to the decsystem family, has been assigned responsibility for all large systems, including those of the VAX-11 family. She said support for the mainframes will continue indefinitely, and noted two additional releases of the TOPS-10 operating system, Monitors 7.2 and 7.3, would be forthcoming this year and next."

INFORMATION SYSTEMS NEWS, May 30, 1983; page 1: "Chronic Delays Kill Off DEC 36-Bit 'Jupiter' "

... "DEC disclosed last week that it has suspended work on its 36-bit, 4-mips 'Jupiter' mainframe because of chronic development delays... all."

... most DECsystem customers have configurations of about four processors operating standalone and need the power of a Jupiter-class machine. DEC has announced that those customers now will be able to integrate their processors through its Computer Interconnect products and its Distributed Computing Architecture."

MIS WEEK, June 1 1983, page 1: "DEC Axes Its Jupiter; Miffs Users"

... "Digital has killed its unannounced 'Jupiter' project ...

... The project, under development for 'several years' according to Per Hjerppe, marketing manager of DEC's large computer group, was to be a high-end member in the DEC system-20 36-bit family of mainframe computers.

... the integration of the DEC system-20, and later the DEC System-10 into a distributed computing architecture, along with the VAX, could minimize the adverse effect of having no add-on machine, a user said."

LCG'S BOOTH AT US SPRING DECUS
GREAT DESIGN, TERRIFIC TEAM WORK

Jim Rehill
Nigel Webb

LCG's booth at US Spring DECUS in St. Louis was our most esthetically pleasing booth to date. It was the same size as the booth at US Fall DECUS in Anaheim (i.e. 50 by 50 feet). However, we brought only half the amount of hardware that we had at Anaheim.

The booth consisted of two parallel semi-circles. At the center was our DECsystem-1091. The first circle consisted of the CI disk system and several short blue walls, representing the CI. The second circle, which represented the Ethernet, was about twice as large as the CI circle. It was made up of taller orange walls and cable troughs on the floor. Lodged in the walls were enlarged color photos of the new DSIA poster.

Our system was a DECsystem-1091 - a KL10-E, painted blue; its configuration included 32 terminal lines, a DMA20 to allow the addition of external memory, and .5 MW of MOS memory. We added a DN20 for DECnet connections, another 1 MW of MOS memory, and .5 MW of AMPEX external memory. We had two RP06 disk drives, one RP07, and a TU78 tape drive. We also set up a CI disk system, which consisted of a Star Coupler, an HSC50, and an RA81 disk drive.

The -1091 ran TOPS-20 most of the time that the demo area was open. We ran TOPS-10 during specifically scheduled hours three mornings that week. We had a 9600 Bd DECnet link back to the Market timesharing machine in Marlboro.

We also had 22 VT100 terminals, two VK100 (or GIGI) terminals with Barco color monitors, two Rainbow-100s, and a DECmate II on the DECsystem-1091. Several dial-up terminals provided access to the systems back in Marlboro. Our "chat" area had VK100 keyboards and Barco monitors.

Missy Gardella demonstrated CX/DX software on the DECmate II. This allows a word processor to transfer files to and from the DECsystem-1091. Bernie Eiben demonstrated the Kermit file transfer system, and Finalword (WPS software) on the Rainbow 100. He also demonstrated MICRO-10/20, a CP/M emulator for TOPS-20.

DIGITAL and third party software were available on the TOPS-20 system. The latter included: SCOPE-10/-20, from ISI, and NCP Calc for TOPS-10 and -20. There were automatic demos of the Network File Transfer program (NFT), the Network Virtual Terminal program (SETHOST and HOST), the MS program (with both local mail and DECnet mail), the new PASCAL-36 compiler, the SED screen editor program, along with several games and other interactive demos. A remote demo of the FPS array processor for TOPS-20 and a Birds of a Feather Session for the AP-20 Array Processor Package were announced on the Booth's Menu Board.

Teamwork Pays Off

From the staging and design point of view, the LCG Demo Booth was a widely recognized succcess, due to the dedicated and well coordinated efforts of a number of persons from LSG Manufacturing, Software Engineering, in-house Field Service, and CSSE.

The system came up and ran well throughout the entire convention. LCG impressed the DECUS organization and other DIGITAL staff with our efficiency and organization in ensuring that our large booth and mainframe were operational in a minimum amount of time.

Special thanks go to John Rzucidlo, Madeline Chen, and Paul Tourigny. Madeline lent LCG a two-drive RA81 and Paul lent us the HSC50 and Star Coupler. Thank you again, John Rzucidlo, for spending several nights upgrading Madeline's other disks in return for the pair which she lent us.

My heartfelt thanks go, also to the hardware installation team consisted of Tim "Duncan" Hines, Darrell Poirier, Dino Genova, John Rzucidlo, and Rich Colarusso. Nigel Webb designed the booth layout, and installed the back drops and walls in the booth. Making his debut as assistant system manager was John Purretta; I, Jim Rehill, acted as system manager.

MANY THANKS TO THE LCG TEAM!

TOPS-20. NOW A NEW WAY TO EXTEND THE LINE.

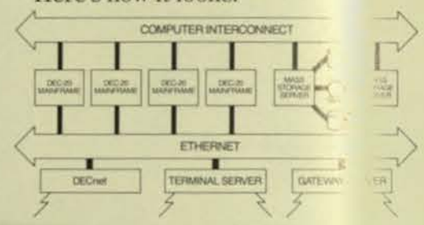
Introducing loosely-coupled multiprocessing with DECSYSTEM-20.™ A unique way to link mainframes for power, free all peripherals from hosts, and share resources among all users.

A compatible new version of TOPS-20™ operating system makes it possible.

Version 6 distributes operating system responsibilities among independent computing, mass storage and communications servers. These servers, processing work in parallel, allow system designers to build an open-ended multiprocessing network. The first network that performs like a single multiprocessing system.

Here's the inside story: Our new intelligent mass storage server is connected to as many as four DECSYSTEM-20's over a high-speed hardware bus. An extension to TOPS-20, the Common File System, gives each host equal access to all system files. The mass storage server off-loads the hosts of all physical I/O management tasks. This makes the server's disk and tape subsystem simultaneously and transparently available to all users regardless of which host executes the request.

Here's how it looks:



A future extension of TOPS-20 will off-load each host of communications tasks. These will be performed by outlying intelligent communications servers on Ethernet. This will allow terminal to foreign networks, remote DECnet™ networks and other local area networks transparent access to your system. Again, independent of hosts.

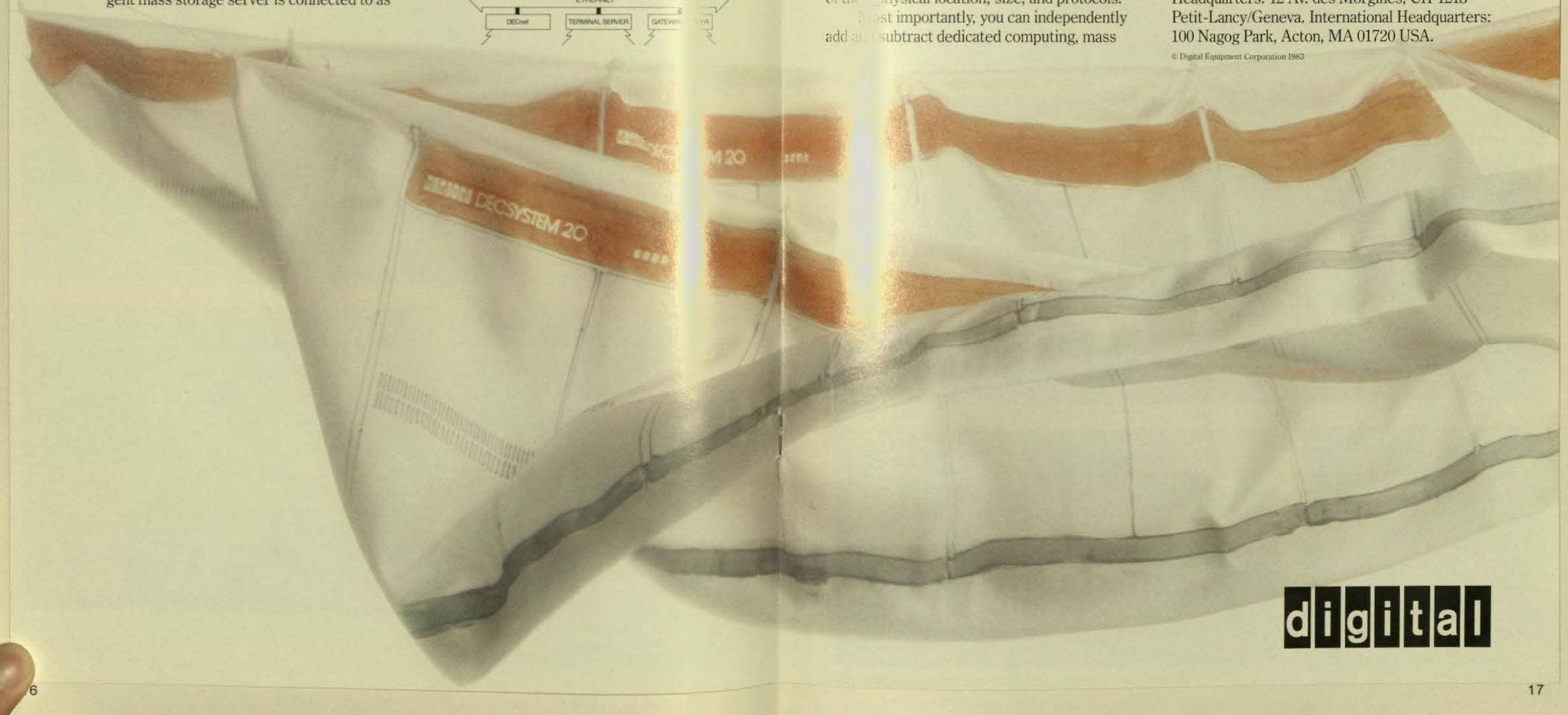
With the new TOPS-20, the possibilities for system design become almost endless. You get freedom of information. You can create a virtual common file system using any number of disks. You get freedom of communications. You can link up with other networks regardless of their physical location, size, and protocols.

Most importantly, you can independently add and subtract dedicated computing, mass storage and communications resources to meet your changing requirements.

TOPS-20 Version 6. It provides the most flexible form of distributed processing ever because it's got what distributed processing has always needed most.

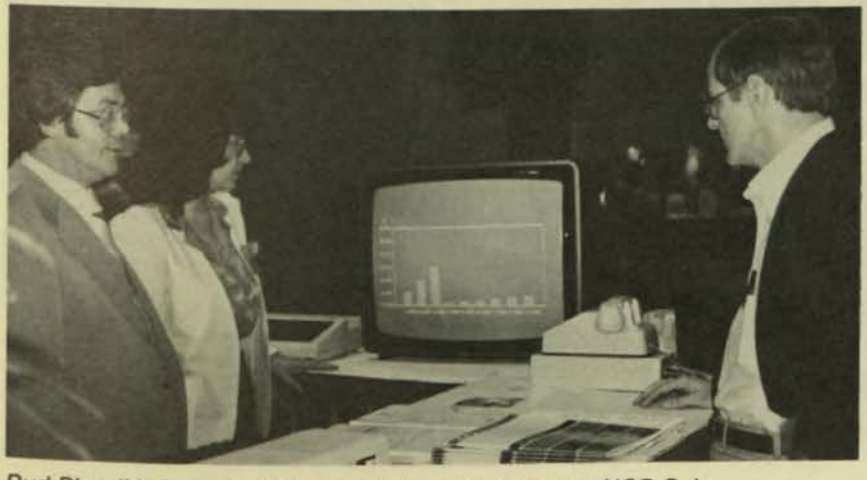
An operating system that makes it all hang together.

Find out more. **Digital Equipment Corporation,** Large Computer Group, MR2-2/8D2, One Iron Way, Marlboro, MA 01752. Tel. 1-800-DIGITAL. European Headquarters: 12 Av. des Morgines, CH-1213 Petit-Lancy/Geneva. International Headquarters: 100 Nagog Park, Acton, MA 01720 USA.



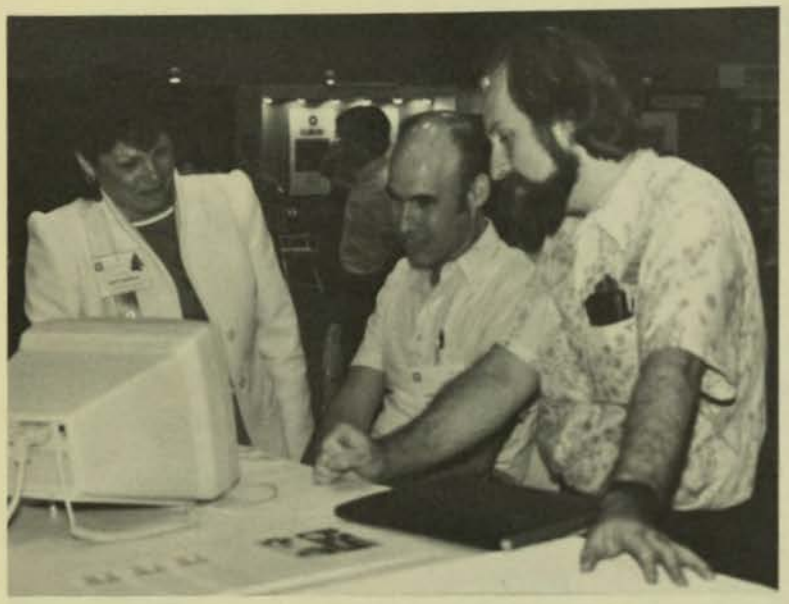
digital

LCG BOOTH



Bud Pine (L), President of NCP Corp., demonstrates NCP Calc.

LCG BOOTH and HOSPITALITY



TOPS-20 R6

Dave Braithwaite

This US Spring DECUS session covered the content, configuration requirements, and features of TOPS-20 Release 6. The highest priority features in R6 are:

- support for HSC50 disks,
- the basis for the Common File System, (CFS-20 V1.0), and
- CFS running on two systems.

Release 6 also contains other features, including:

- support for 3 MW of memory,
- password encryption,
- ARPA TCP/IP protocols,
- multi-forking in the EXEC, and
- enhancements to RSX-20F and to GALAXY.

As with R5 and 5.1, R6 requires a KL model B CPU, and in addition, at least 768 words of memory, and two RH20 slots for the CI20 port. CFS-20 customers are required to have a minimum of 1 MW of memory on each system.

HSC50 Intelligent Mass Storage Controller

Release 6 supports both the RA81 and RA60 disks, which can be grouped into multi-disk structures (four RA81s can be put into a structure). HSC50 disks will not be supported as a public structure, and thus customers should plan on using MASSBUS devices for booting and swapping.

At FRS, we will support up to three HSC50s on the CI with up to 60 disks. Further testing is expected to relax this constraint.

CFS Support

The discussion of CFS-20 was largely a repeat from the US Fall DECUS. Customers were informed that CFS would initially support two systems, and that further testing would be done before three and four system configurations were supported. Among the more popular features of CFS was the ability to access MASSBUS disks (RP04, RP06, and RP07) on other systems by using TOPS-20 as a disk server.

Customers were already aware that DBMS and applications coordinating their activities with ENQ/DEQ locking mechanisms or IPCF would require all users to be on one system. This seemed reasonable for the first release of CFS.

Customer Concerns

In discussions following the presentation, customers were supportive of our activities, and eager for the new features. Some of the specific points brought out during these discussions include the following:

- HSC50 disk performance should be roughly equivalent to an RP06, and customers should not expect a reduction in KL overhead due to using the HSC50.
- Customers who already encrypt passwords should find that our implementation will allow them to use their own algorithm in addition to ours.
- Whereas CFS will support RP06 and RP07 disks dual ported between two systems, TOPS-20 R6 may not support dual porting of RP20s, due to insufficient testing time.
- Customers have a lot of insight and interest in future enhancements of CFS which would enable them to more easily manage their multiple DECSYSTEM-20 sites. We are interested in pursuing this type of feedback.

TOPS-20 PSI GATEWAY

Son VoBa

My presentation at US Spring DECUS emphasized the functionality of the TOPS-20 PSI product (Release 1.0). We covered task-to-task communication and X.29 terminal access via the Public Network.

I discussed briefly what we in Marlboro have been doing concerning the Public Network, i.e.

- MR Library usage of the outgoing program X29PAD to access the Dialog information service,
- European engineers using the Public Network to keep us in touch with the field test sites in Germany and France, and
- using the Network to submit QARs to CSSE's Mother System.

Customers' questions included:

- the performance measurement of TOPS-20 PSI R1.0,
- the product's compatibility with the future corporate X.25 gateway,
- some technical details about how the X.29 server works,
- pricing and time frame of the product availability from SDC.

Concerns were voiced about TOPS-20 PSI restrictions, i.e. support of a single DECnet line, and the number of virtual circuits (there are 20 for this Release). One customer was concerned about what to do with the DN20, once DIGITAL releases the Ethernet X.25 gateway.

From the type of questions posed at the end of the talk, it appeared that the audience consisted of a good managerial and technical mix.

LCG LAYERED PRODUCTS PANEL AT US SPRING DECUS

Michael Brown
Peggy Doucet

The DECsystem-10 and DECSYSTEM-20 Layered Products Panel gave a brief overview of some of the available layered products. The products covered in this session included: APL, BASIC, BASIC-PLUS-2, BLISS-36, COBOL, DBMS, FTS-20, DIL, FORTRAN, LINK, MACRO, PASCAL-20, RMS, SITGO, and TRAFFIC-20.

Overall language and data management direction was given in the following goals:

- Less time between releases;
- Take advantage of extended addressing on DECSYSTEM-20;
- Make more use of RMS;
- Support more languages; and
- Develop more data management products.

The current autopatch products are:

TOPS-20	TOPS-10
ALGOL	ALGOL
APL	APL
BASIC-PLUS-2	BASIC-10
COBOL	COBOL
DBMS	FORTRAN
FORTRAN	LINK
LINK	RMS
RMS	SORT
SORT	

New products that will be autopatched after their release are: DIL, FTS-20, and PASCAL-20.

The PASCAL-20 product was announced and is currently in field test at a number of sites. At the end of the presentation, questions were asked and concerns raided about the integration strategy regarding TOPS-10, TOPS-20 and VMS.

Layered Products Panel; Michael Brown at podium

PASCAL-20

Michael F. Brown

This US Spring DECUS session, "Introduction to PASCAL-20", emphasized the following major features of the newly-announced PASCAL-20 V1.0:

- PASCAL-20 is an entry level product which runs on KL and KS TOPS-20 machines. The compiler is a one pass, non-optimizing compiler.
- PASCAL-20 conforms to Level One of the proposed ISO Standard. Level One includes conformant arrays.
- PASCAL-20 is a compatible subset of VAX PASCAL V2. Programs written in PASCAL-20 can be easily taken over to a VAX and compiled using VAX PASCAL V2.
- PASCAL-20 is an extended implementation of PASCAL. Many useful extensions have been made to the product, allowing more flexibility in programming.
- PASCAL-20 has a symbolic debugger, PASDDT, for faster and easier program development. PASDDT is a source level debugger that allows users to review the source code of their programs while still inside the debugger. PASDDT performs recognition on user identifiers, andenforces the scoping rules of the program being debugged.
- PASCAL-20 uses RMS, the TOPS-20 Record Management Services package, for all of its I/O. This is in line with LCG's goal of making more use of RMS in layered products. PASCAL-20 supports RMS sequential files only, although there is a provision for reading a record by simply specifying the record number relative to the start of the file.

At the session's end, the floor was opened to general questions concerning PASCAL-20. The input received from the question/answer period was quite favorable. Customers were pleased with the VAX compatibility, ISO Standard conformance, and use of RMS.

FORTRAN TECHNICAL SESSION

Jon Campbell

The FORTRAN Technical Session at US Spring DECUS was chiefly dedicated to a presentation of FORTRAN Version 7, which shipped to customers in March 1983 (for more complete details on this product, please refer to BUY-LINE November 1982).

FORTRAN V7 has been validated at the Subset Level, and has most full language features; the most notable exception is the INQUIRE statement. It supports the character data and block programming structures defined by the ANSI Standard, and a fair number of extensions to the Standard.

Customer response to both product and session was positive. Many customers at the Q & A period complimented DIGITAL for an "excellent product", and many reported that they had no problems upgrading programs which previously ran with FORTRAN V5.

Customer input varied concerning future releases of FORTRAN. They agreed that a strategy which emphasizes networking and data interchange is increasingly important. They also stated that extended addressing was quite important to the expansion of their current applications. Some customers wanted FORTRAN validated at Full (rather than Subset) Level as soon as possible.

Customers were very satisfied with our FORTRAN development effort, and the session was, in general, not affected by the announcement concerning the cancellation of the Jupiter project.

John Campbell speaking at session

Aerial view: a small part of LCG's booth and demos

JAPAN MEDICAL CONGRESS:
DECSYSTEM -20 RUNS AI-BASED DIAGNOSIS

Rebecca Alexander
Norio Murakami

The 21st General Assembly of the Japan Medical Congress, was held this year in in Osaka, April 3-11; in addition to lecture sessions, the Congress featured exhibits of state-of-the-art equipment in the medical field. DIGITAL participated as an exhibitor for the first time in this event, which is held every four years.

Thousands of physicians from around the world came to Osaka, to observe computerized and non-computerized techniques such as NMR (Nuclear Magnetic Resonance), scanning, imaging, and medical records processing; many of these techniques involved artificial intelligence (AI) software applied to medicine.

DIGITAL was represented by a booth shared by LCG and MSG (Medical Systems Group). MSG demonstrated Digital Standard MUMPS on the PDP-11/24 and the VAX-11/750.

LCG sponsored a medical diagnostic program, 'INTERNIST', which was developed at the University of Pittsburgh on a DECsystem-10. Dr. Randy Miller, one of INTERNIST's creators, was present at the Osaka conference to demonstrate to his fellow physicians the program's significant features as an experimental research system. Many sales inquiries were initiated as a result of this demo, performed on the DECSYSTEM-2060. The demo endorsed LCG's strength in AI medical applications.

After the Congress, Dr. Miller demonstrated INTERNIST on the DECSYSTEM-2060 at ICOT (the Institute for New Generation Computer Technology), the core organization behind Japan's Fifth Generation Computer Project, and at the Musashino Electrical Communication Lab of Nippon Telegraph and Telephone Corporation (the Lab is similar to Bell Labs of AT&T).

Not for commercial use yet, INTERNIST on the DECSYSTEM-2060, shows great promise of being a general purpose package which inputs symptoms and performs laboratory tests upon them, using AI techniques.

INTERNIST produces a reliable and complete diagnostic consultative program in the field of internal medicine. Artificial intelligence applied to internal medicine is a fairly recent and rapidly-growing field.

CAPTION: Dr. Miller (R) demonstrates "INTERNIST" program on DECSYSTEM-20 at Japan Medical Congress.

LCG PRESENCE AT TORONTO VIDEOTEX SEMINAR

Marilyn Davison

"What is Videotex, and how can I use it?" Customers from the Northeastern United States and Canada gathered in Toronto, Canada, June 13-14, to learn the answers to these questions.

Vigorous question and answer sessions followed presentations by current Videotex users: Michael Endicott, Philips Electronics, U.K.; Bruce Bolin, McLeod Young, Weir, Toronto, Canada; and Bill Carlisle, Digital Equipment Corporation, Northboro, Massachusetts, USA.

A full report on the seminar, accompanied by photgraphs, will appear in next month's BUY-LINE.

WHAT IS ARTIFICIAL INTELLIGENCE?

Mitchell D. Perlitch

Although artificial intelligence (AI) has only recently received general publicity, the field has a relatively long history. It is in the very beginnings of this history that we first observe the involvement of DECsystem-10s and -20s. Throughout this history until today, and for the foreseeable future, the DECsystem-10s and DECSYSTEM-20s continue to be extremely important to AI research.

Our department has prepared a 15-page overview of the AI field; a copy of it is enclosed along with this BUY-LINE mailing. This document surveys AI, its applications, various research centers, and the various marketing opportunities presented by this field of research.

Many of us in LCG feel the importance of having some understanding of what AI is all about.

A Research Area

AI is not a "market". It is a research area which involves many disciplines. "The central goals of Artificial Intelligence are to make computers more useful and to understand the principles which make intelligence possible" (Patrick Henry Winston, in his book "Artificial Intelligence").

There are many applications for intelligent machines, and it is these applications that can be viewed as marketing opportunities for the selling of computer systems.

In some sense, AI is the state-of-the-art of computer science research. AI research actually began in the 1960s with the advent of the LISP (List Processing) programming language. However, the bulk of computer science research was done in other areas. In the 1960s, computer science was generating programming languages. In the 1970s, it was creating simple data management tools (database and query systems). Currently, in the 80s, most of the real computer science research is AI or AI-related issues.

Understanding Intelligence

AI represents the first major scientific attempt to understand intelligence. Intelligence has been a subject for philosophers over the ages. Now, there is a scientific field dedicated to research in intelligence.

One science very closely tied to AI is psychology. To gain an appreciation of how AI applications differ qualitatively from traditional computing applications, one may consider an important question that is common to both AI and to psychological research. That is: "what is intelligence?"

Traditional computing applications order well-defined, "mechanical" operations into a logical sequence to manipulate real data, e.g. numbers and strings, to generate answers. Simply put, they perform the grunt work. They keep track of things, do arithmetic, etc. But they always operate on "real", concrete quantities.

AI applications manipulate symbols. Symbols are strings whose meaning/usage is "arbitrary", i.e. defined by the applications. They may refer to numbers, character strings, concepts, attributes, properties, etc. Symbols, like words in languages, are manipulated to describe, infer, etc.

AI Development Languages

Most AI computing has been done in the LISP language, originally developed by John McCarthy during the late 1950's (he's currently at Stanford University). Many dialects of this language are in use today.

Recently, another language, PROLOG (PROgramming in LOGic), has gained some support for use in AI applications. PROLOG was developed at the University of Marseille (by Rousel, in 1975). It is the language chosen for the Fifth Generation Computer Technology research, in Japan.

AI Leads the Way

Through the years, AI research has pushed computer science research. AI applications are, in general, much larger and resource intensive than traditional data processing applications. This has created a need for faster machines that are capable of running large programs.

For example, ARPA funded the development of a paging operating system, TENEX, from which TOPS-20 has descended. Paging systems take advantage of the fact that a program only executes some of its code at any given time. Therefore, it is not necessary for *all* of a large program to be in memory in order to run. At the time, this was a major advance in operating systems that was critical to the continuation of AI research.

Similarly, AI research has pushed the state of the art in computer hardware. This is illustrated by the development of the KL10 cache, LISP machines, etc.

Many sciences and disciplines contribute to and benefit from AI research, including: psychology and philosophy; physiology; biomedical and mechanical engineering; electronics; and computer science.

This article is excerpted from the introductory portion of the AI Overview, referenced above. Watch forthcoming BUY-LINEs for additional articles on this exciting new field in which DECSYSTEM-20s play a significant role.

DECSYSTEM-20s and VAX HELP MINING INSTITUTE RECOVER OIL*

Of the 450 billion barrels of oil discovered in the United States only about 115 billion have been recovered already. In New Mexico alone, about 11 billion barrels lie fallow beneath the earth's surface, and of those, only 500 million are recoverable by standard means.

How, then, can man extract the 10 billion barrels of oil that ordinary methods can't reach?

At the New Mexico Institute of Mining and Technology's (NMIMT) Petroleum Recovery Research Center in Socorro, researchers and students alike are investigating methods to unearth some of these riches. Techniques include flooding old oil reservoirs with water, gases, and chemicals to recover oil left behind by conventional recovery methods.

Research at the Center is organized into several different projects, such as mobilization of oil droplets tapped during water flooding, flow of gas in low permeability rocks, geology of reservoirs, and the physics and chemistry of carbon dioxide flooding.

At the heart of the laboratory data-handling and process-modeling for all of these projects is NMIMT's DECSYSTEM-2060, which is used by all four of the Institute's divisions: the College, State Bureau of Mines and Mineral Resources, the Research and Development Divison, and the Petroleum Recovery Research Center.

While oil recovery at the Petroleum Recovery Research Center may be among the DECSYSTEM's most impressive (and lucrative) applications, it's by no means the only one.

A Leader in Technological Education

The 100-year-old NMIMT, with about 1,200 students, is one of the nation's most prestigious institutes of technology. The small, publicly supported school offers technical education curricula ranging from undergraduate degrees to 14 different doctoral degrees.

"We cover more in our undergraduate courses than many other schools cover in their doctoral classes," boasts NMIMT computer center director Gary Smith. "For example, undergraduates in our computer center can take a course in compiler design, a topic that's typically not covered until post-graduate education."

Besides offering a sophisticated technical education to its students, NMIMT also conducts extensive research and development efforts in fields including earth and basic sciences, metallurgy, and mining engineering. While some of these projects are funded by private industry, others have contracts with the government.

The school is recognized not only for its technical excellence, but for its relatively low 15:1 teacher-student ratio as well. "We certainly don't limit education to the classroom here," says Gary. "Our students are employed in many areas; undergrads and graduate students alike are used extensively for research projects. Every student has the opportunity to be employed somewhere - and the great majority are."

Students Come From Far and Wide

The Institute's students come to study in Socorro (about 80 miles south of Albuquerque) from many different places, some as far away as Peking. "They're attracted by its fine reputation (many compare it favorably to Stanford), as well as its cost," Gary explains. "The tuition is relatively inexpensive, and the lifestyle here in Socorro is conducive to learning. It's a small, peaceful town, so there are few places that would tend to distract students from their studies."

With an annual budget of $20 million from a variety of sources, NMIMT spends about $500 to $1,000 per year per student on computers, considerably more than most schools of any size. "Even students who are not enrolled in the computer center are required to take a minimum of one computer-related course (Introduction to FORTRAN)," Gary points out. "And that requirement has been in effect for at least 10 years, long before many other schools realized the importance of 'computer literacy'".

NMIMT's reputation for Computer Sciences is so well-known that DIGITAL has hired a number of its graduates. And that's appropriate, given the extent and number of DIGITAL systems used by students, researchers, and faculty members throughout the school.

Designing an experimental piece of apparatus in the NMIT's mobility control lab, this technician, and many like him, rely on DIGITAL computer systems for data gathering and analysis.

When Gary became the computer center's director nearly three years ago, NMIMT had a DECSYSTEM-2040. He upgraded it to a DECSYSTEM-2060 about a year ago, and it now is the Institute's main timesharing system, with 96 terminals connected to it. The computer center also uses a VAX-11/750 with a UNIX operating system, for graduate-level courses.

"I've worked with DIGITAL systems for many years, and I've always been impressed with their products," says Gary, an avid member of the local DECUS organization. "Each time the company is about to come up with something bigger and better, I make sure that I know about it as quickly as possible."

DIGITAL's presence at NMIMT doesn't stop with the DECSYSTEM-2060 and VAX-11/750. The company donated five GIGI systems, 10 DECwriter IVs and five VT100s to the computer center. "Our terminals are used just about 24 hours a day," says Gary. "Some research projects go 'round the clock, and our DIGITAL systems inevitably play a major role in their success."

• Reprinted from "U.S. Area News," May 1983.

LCG's 1983 AD CAMPAIGN

Don Mallinson

As many of you read in the April BUY-LINE, LCG's 1983 Ad Campaign promotes the theme "DIGITAL's Mainframe Family Expands" with domestic ads featuring Digital System Interconnect Architecture.

Headlines for each ad are:

"Introducing DECSYSTEM-20. The Network" (first ad)

"Unleash Your DECSYSTEM-20s by Tying Them Together." (second)

"TOPS-20. Now a New Way to Extend the Line." (third ad)

The first ad was reprinted in the April BUY-LINE. The second ad (reprinted in the May issue) detailed the hardware aspects of DSIA; the third ad, reprinted in the centerfold of this issue, is about DSIA software. (The third ad was inadvertently omitted from the June BUY-LINE.)

Our audience includes DP/MIS managers, the organizational function which you approach in your sales calls. Our media schedule for all three of these ads targets the following publications:

"Computerworld"
"Infosystems" and
"Information Systems News".

Our purpose in hyping DSIA is to maintain and increase interest in our products. We also want to show that we are developing new products, and providing a growth path for TOPS-20 users.

A new aspect of this campaign is LCG's use of a toll-free 800 phone number. Anyone calling the number that appears in the ad will be sent three pieces of sales literature within 24 hours. Why not test the system yourself?

NEW APL VERSION OF VT102 VIDEO TERMINAL INTRODUCED

Jeanne Brattlof

A new video terminal with features needed to run APL (A Programming Language) on the DECsystem-10, DECSYSTEM-20, and VAX computers was announced early in June. The new terminal, based on DIGITAL's popular VT102 video terminal, is targeted for financial modeling, simulation, data analysis, design engineering, and data base management applications. Typical customers include universities, financial institutions, and financial and engineering consulting firms.

The APL Language

APL uses one of the most concise, consistent, and powerful set of functions ever devised. APL under the TOPS or VMS operating systems is especially suited for handling array-structured alphanumeric data. It is also used a a general data processing language and as a mathematical tool. APL allows programmer-defined functions and primitive language functions to be expressed with the same syntax. Thus programmers can expand the capabilities of the language to handle the requirements of any application.

The basic version of APL suits users who do not require the file I/O or the advanced APL functions. The extended version of APL, APL-SF, has all of the features of the basic version, plus advanced features that substantially increase its useful range of applications.

New Terminal and Upgradable Terminal

The new terminal is DIGITAL's first video terminal with APL functions; the other APL terminal is a hard-copy LA120 DECwriter III.

Concurrent with the announcement of the new terminal, DIGITAL announced availability of a field-installable kit to upgrade current VT102 terminals to APL capabilities. The new terminals and upgraded VT102 terminals retail all the features of standard VT102s.

New or upgraded terminals are supplied with a keyboard that incorporates APL characters on the front of the keycaps and standard ASCII characters on the top. A special setup function lets users switch back and forth between APL mode and standard ASCII operation either at the terminal of from the host.

THE LCG PRIMER

Cheryl Carey

The LCG Primer is an introduction to products and systems marketed by the Large Computer Group. The Primer describes concepts, practices, and terminology associated with LCG hardware and software, namely, the DECsystem-10 and DECSYSTEM-20 and related software products. The Primer is ordered from Billerica, Mass. (BK), with the document number EY-1073E-WB-001.

The primary audience for this information is field service engineers who have little or no LCG experience. For this audience, the Primer is a prerequisite to LCG system-specific training. For others, sales, software and network support, engineering and marketing) the Primer explains and defines much of the LCG terminology often found in product-specific documentation.

Each of the Primer's 16 chapters consists of goals, an introduction, text, a summary, references and additional resources, and questions/answers. Topics (as featured in chapter headlines) include: Software Tools; TOPS-10 and -20 Virtual Memory; TOPS-10 and -20 File System; Cache; PDP-10 Instruction Set; and TOPS-10 and -20 Monitor Overview; Maintenance Software; Buses; and Microcode.

U.S. LCG COORDINATORS

DISTRICT	NAME	LOCATION	TELEPHONE NO.
NORTHEAST			
Metro Boston	Jim Roche	Boston (BXO)	224-2319
New England	Dave White	Bedford,NH (MHO)	263-2140
Conn.	Bob Nolin	Bridgeport (SCO)	254-5265
Upstate NY	Pete Lilley	Rochester (RCO)	252-2322
CENTRAL			
Chicago	Helen Godfrey	Rolling Meadows (RLO)	421-5660
Mid America	Nari Bawa	St. Louis (STO)	314-991-6400
Great Lakes	Scott Benson	Detroit (FHO)	313-348-8900
No. Central	Frank Delmont	Minneapolis (MPO)	612-853-9605
SOUTHERN			
Southeast	Ed Janusz	Orlando (ORO)	305-660-2100
Mid South	Bill Martin	Knoxville (KXO)	615-690-1521
Charlotte	Cliff Spatz	Chapel Hill (NCO)	919-493-2531
Houston	Larry Brown	Dallas (DLO)	214-620-2051
WESTERN			
Santa Clara	Toby Arnold	Santa Clara (WRO)	521-2484
San Francisco	Vatche Sogomonian	San Francisco (SZO)	415-397-8670
Rocky Mtn.	Bill Krause	Denver (DVO)	553-2214
Northwest	Ron Quarles	Seattle (SEO)	206-453-5500
NY/NJ			
NY Comm.	Alan Vitolo	One Penn Plaza (NYO)	333-3913
NY Tech.	Ned Barber	Westchester (WHO)	333-3940
New Jersey	Chet Sherer	Piscataway, NJ (KYO)	323-2383
NJ Comm.	Pete Buttacavoli	Piscataway, NJ (KYO)	323-2465
SOUTHWEST			
So. Cal.	Ivan Strashoon	Costa Mesa (CWO)	714-979-2460
Los Angeles	Frank Calderon	Culver City (LAO)	213-417-4351
Albuquerque	Bob Hughes	Albuquerque (AQO)	552-3021
MID ATLANTIC			
*Washington	Clyde Blassengale	Washington D.C.	(DCO)341-2615
*Maryland	CLYDE COVERS BOTH WASHINGTON & MARYLAND DISTRICTS.		
Philadelphia	Lou Goglia	Blue Bell, PA(PHO)	337-2520
Ohio Valley	Jim Fate	Columbus (CSO)	614-868-1900

*Washington & Maryland now have one coordinator for both areas.

LCG LITERATURE LIST

HARDWARE OPTION BULLETINS

CD20 Card Reader	ED 23999 61
DN20 Communications Front-End Subsystem	ED 20504 26
DN200 Remote Station	ED 22987 61
IDX-3000 Integegrated Digital Exchange (Linkabit Switch)	EC 24075 61
LP20-A/B Line Printer Systems	ED 19I37 26
LP20-C/D Line Printer Systems	ED 19I35 26
LP100-B Line Printer Systems	ED 19I39 26
LP100-F/H Line Printer Systems	ED 19677 26
LP200-B Line Printer System	ED 24013 61
RP07 Disk Subsystem	ED 21997 61
RTP20 Disk System	ED 19725 26
TU72 Magnetic Tape Subsystem	ED 19763 26
TU77 Magnetic Tape Subsystem	ED 17400 26
TU78 Magnetic Tape Subsystem	ED 23003 82

EDITOR'S NOTE: Until July 1, 1983, you may order these publications by contacting Jane Fitzgerald at P&CS in Northboro. The DTN is 234-4325. Mail stop is: NR2-2/W3, RCS code is NR12 (for telexes). In Q1 FY84, your SCC (Sales Communications Center) Specialist will order your LCG Literature.

If you find an item to be out of stock or incorrectly numbered, please phone me or Gail Breslin at DTN: 231-4996 or 231-4013, and we'll try to help you out.

ATTENTION ! ! ! This list (and order numbers) supersedes all prior lists.

SOFTWARE DATA SHEETS

ALGOL	ED 17156 18
APL-SF-10	ED 24841 61
BASIC-PLUS-2	ED 18885 26
COBOL	ED 22109 61
CFS-20	EC 23858 61
CPL	ED 15659 63
DECmail/MS	ED 24000 61
DECnet-10 Phase III	ED 24056 61
DECnet-20 Phase III	ED 22835 61
DBMS-10	ED 21782 81
DBMS-20	ED 21827 61
FORTRAN-10/20 V.7	ED 24054 61
IBM RJE E/T	EC 24057 61
IQL	ED 15660 63
NCP Calc	EC 24656 61**
PASCAL-20	EJ 24759 61*
TOPS-20 PSI Gateway	ED 24053 61
TOPS-20 Supported Utilities	ED 22933 61
TOPS-10 V7.02	EZ C5532 44
TOPS-20 V6.0	EZ C5532 45

* New order numbers for recently produced editions

** Joint Marketed with NCP Corporation

TECHNICAL SUMMARIES

DECsystem-10 Technical Summary	EE 21041 26
LCG Product Summary - April '83	EJ 24660 61*
LCG Price List - April '83	EE 24661 61*

PHOTO BULLETINS

DECsystem-10/20 Fact Sheet	EJ 19596 26
DECsystem-10 Family At A Glance	EJ 19595 26

LCG BROCHURES

Don't Let the Software Blues Get You Down	EA 24773 61*
TOPS-20 Multiprocessing	EA 24237 61*
Introducing TOPS-20 Multiprocessing	EC 24046 61
DECSYSTEMS: The Users Choice	EA I8366 26
DECsystem-10 Family	EA 20572 26
Develop Microprocessor Applications Faster	EA 22895 61
TOPS-10/20 Data Networking	EC 22813 61
LCG Software Referral Catalog (2nd Ed.)	EJ 22780 61
Symmetric Multi-Processing	ED 24089 61
The Personal Mainframe/Electronic Mail	EA 22872 61
The Personal Mainframe	EA 24546 61*

CORPORATE BROCHURES

Digital's Ethernet	EA 22710 18
Digital Introduces DECnet/SNA Gateway	EA 22703 18
Digital Storage Architecture Product Summary	ED 23981 18

MARKET SPECIFIC BROCHURES

Education:

Wesleyan Univ.	EA 20271 87
Univ. of Vermont	EA 20270 87
Univ. of Pittsburgh	EA 19633 87
Columbia Univ. Teachers Coll.	EA 19630 87
Hamilton Cty. Office of Ed.	ED 19577 87
Carnegie-Mellon Univ.	ED 20467 87

Engineering:

Monenco: Engineering for Excellence	EA 23075 16

Banking:

Bankers Trust: Partners in Success	EA 23155 16
"Will the Street Bypass Time Sharers?" (reprint from "Institutional Investor")	EJ 24696 61*

* New order numbers for recently produced editions

GENERAL MATERIALS

DECNET-10 Phase III Press Kit Folder	EJ 23998 61
BUY-LINE Compendium (Vol.2: 1981-82)	EZ 09016 82
Digital's Systems Interconnect Folder	EJ 24741 61
DECision Systems Folder	EJ 24658 61 *

POSTERS

1983 Smooth Sailing Calendar	EJ 21823 61
Chart Your Course Sailing Poster	EJ 21623 61
LCG Personal Mainframe Poster	EJ 21652 61

SITE PREPARATION GUIDES

Corporate Field Service's Generic Site Planning Kit, available worldwide, enables site planners to do floor layouts and site planning for all DIGITAL products including the DECsystem-10 and-20 product set. This Kit is designed to be Field Service's standard Site Planning tool.

The new Kit's order number is EK-SPKIT-SP, available from P&CS, Northboro. **SALES AIDS**

* Sales Aids are ordered by sending a memo/TWX to Gail Breslin (MRO2-2/8D2) containing your name, badge number, cost center, shipping address, and the signature of your cost center manager. Minimum charge for an order is $100.00. The mugs cost $2 each and are packed in boxes of 12. Pens are $2 each.

MUGS: Large Computer Group Mugs - sand colored china with blue sail boat design.
PENS: White No-Nonsense Pens.

* New order numbers for recently produced editions

AUDIO VIDEO

LCG Users Tape (10 min.)	loan request
Benchmarking/CPU Analysis with Brochure	loan request
DEC-10/-20 Overview Slide Show	K. Stanton
LCG DECSYSTEM-20 Timesharing Testimonial Slide Show Kathie Stanton, Bedford MA, DTN 249-4068	
Supplementary Slide Package	Memo Don Waite MR2-2/8D2
Large Systems Slide Presentation (Modules 1 thru 7)	K. Stanton

Category/Title	Issue Date
-2060s at ICI (Informa. Consult. Inc.)	July 1982
INSEAD Uses DECSYSTEM-20s	"
DECSYSTEM-20 Aids Erasmus Univ., Holland	"
DECSYSTEM-20 at Liverpool Polytechnic	August 1982
DECsystem-10 Wins a Road Race	"
Kingston Polytechnic Picks -2060	"
DECSYSTEM-2060 Conquers Nigeria	September 1982
DECSYSTEM-2060s at Bankers Trust	October 1982
DECSYSTEM-2060s at Teknowledge	January 1983
The Entrepreneurial DEC-20 (Datability)	March 1983
DECSYSTEM-2060s at Case Western Reserve	May 1983

BUY-LINE APPLICATION

NAME: MAIL STOP:

BADGE: COST CENTER:

DEPT: OFFICE LOC:

( ) Please add my name to the BUY-LINE mailing list.

( ) Please delete my name from the mailing list.

My responsibility is in:

( ) LCG Sales

( ) LCG Marketing

( ) LCG Service

( ) Another product line or corporate function

Please detach and mail to Barbara Holtz, MR02-2/8D2. Thank you.

BARBARA HOLTZ

MR02-2/8D2

digital

DIGITAL EQUIPMENT CORPORATION
MARLBOROUGH, MASSACHUSETTS 01752

Large Computer Group

BUY-LINE

August 1983

Special In This Issue

Aggressive Repricing for
DECsystem-10s and DECSYSTEM-20s

Integration Support Activities

HYPERchannel® For DECSYSTEM-20

digital

BUY-LINE AUGUST 1983
TABLE OF CONTENTS

LARGE SYSTEMS ORGANIZATION

GENERAL INTEREST

LCG PRODUCT INFORMATION

EMERGING MARKETS/TECHNOLOGIES

SALES AND APPLICATION NOTES

SYMPOSIA, COURSES, SEMINARS

LITERATURE AND SALES AIDS

ATTENTION!

Prices and availability quoted in BUY-LINE - unless explicitly stated to the contrary - apply to Continental USA only; for other locations, please contact your local LCG Marketing Representative.

BUY-LINE is published monthly by the Large Computer Group, Marlboro.

EDITOR: Barbara Holtz, MR02-2/8D2, Ext. 4996
PUBLISHING COUNCIL: Don Mallinson, Jim Miller, Don Waite.

BUY-LINE IS COMPILED ON THE DIGITAL WS200 WORD PROCESSING SYSTEM BY GAIL BRESLIN.

LAYOUT AND ARTWORK ARE BY LORI FEAREBAY, BERLIN, MA.

PRINTER IS COMMONWEALTH PUBLISHING CO. OF BOSTON, MA.

CIRCULATION SERVICES ARE PERFORMED IN NORTHBORO, COORDINATED BY JACK DECESARE, OF P&CS.

Upon request (see mailer card in this issue), the following will be added to the **BUY-LINE** mailing list:

- Field Service Managers
- Marketing Managers
- Operations Committee Members
- Software Support Managers
- Software Specialists
- Sales Managers
- Sales Representatives
- Service Group Managers
- Product Managers

LARGE SYSTEMS MARKETING ORGANIZATION

Rose Ann Giordano

The goals of the Large Systems Marketing Group are to help the field meet the needs of the DECsystem-10/-20 customer base and to increase DIGITAL's presence and market share in the high end marketplace. In order to achieve these goals, the Large Systems Marketing Group will be organized as follows:

Product Marketing: Per Hjerppe. Per and his group will be responsible for product strategy for DIGITAL's high end systems, product marketing, support and promotion of customer developed technology, and the prioritization of product needs with engineering. He will continue to be responsible for the marketing communications function.

Strategic Marketing: Rich Whitman. Rich and his group will be responsible for setting the high end market strategy. This will include high end market analysis, application and industry strategy, third party applications/acquisitions, identification and segmentation of markets where DIGITAL can win in the high end. This group will be responsible for communicating with Large Systems Marketing strategy to the five geographic management areas and to interface with the Corporate sales organization.

Marketing Programs: Jim Miller. Jim Miller will be responsible for co-ordination of marketing programs for Large Systems Marketing. Currently, Jim co-ordinates the marketing group's involvement in DIGITAL's International Sales Symposium in Boston, in August.

Technical Services: Dave Backman. The responsibilities of this organization are to provide technical expertise to all segments of the Large Systems Marketing organizations, to assume project management support for third party arrangements, to work intimately with product marketing on product positioning, technical feasibility of internal and external endeavors. In addition, they will continue to manage the Marketing Data Center.

Finance & Administration: Gerry Coleman. The finance function wlll be responsible for financial planning and analysis, budgeting, investment analysis, business models, and the MIS function.

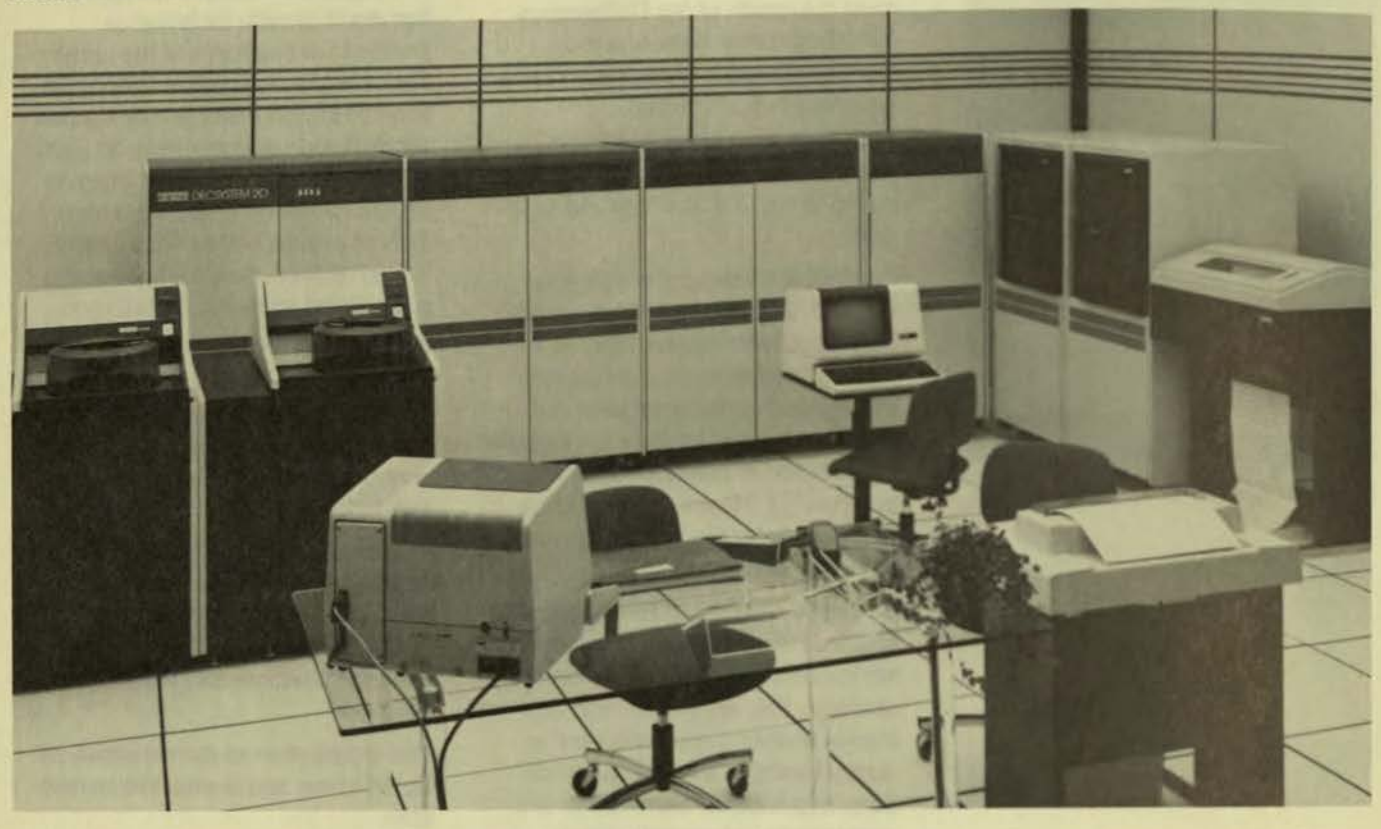
Personnel: Annette Albright. Annette will continue to serve as Personnel Manager for the Large Systems Marketing group, along with her duties as Marlboro Site Personnel Manager.

The organization as named above will report to me, and is effective immediately.

We look forward to working with the field, engineering, and other marketing entities to produce winning strategies for DIGITAL.

HYPERchannel® SOON to be AVAILABLE on DECSYSTEM-20s

Michael Flitterman



The HYPERchannel is an internationally known computer networking system that not only allows computers such as the DECSYSTEM-20 and the VAX to talk to each other at extremely high rates of speed (i.e. HYPERchannel bandwidth up to speed of 50 Megabits per second), but also allows similar communications to medium and large computers of other mixed vendors.

In addition, as a communications medium, HYPERchannel can be interfaced directly into satellite and similar transmission media.

The HYPERchannel and associated software, NETworks EXecutive (NETEX™), have been an acceptable standard method for high speed computer networking for a number of years. NETEX moves data over the HYPERchannel in a format compatible with other vendors and with other systems manufactured by DIGITAL.

Now, NSC is developing NETEX-20 software, to move data over the HYPERchannel between DECSYSTEM-20s and VAXs and "beyond".

DIGITAL's Large Systems Marketing is pleased to announce that NSC will now provide all of the software, hardware, and support necessary to interface the HYPERchannel and NETEX into the DECSYSTEM-20. An interface unit, the DTR01, is the only additional hardware which will be required from DIGITAL to physically interface with the HYPERchannel.

We are excited that DECSYSTEM-20s will now have this capability. The significance of this announcement is that the DECSYSTEM-20 connected via the HYPERchannel now has a very high-speed path to the outside world—a path which offers high speed multi-computer capabilities, very high data transmission speeds, standard protocols between multiple vendors, communications links via satellite, microwave, etc., and whatever other capabilities the HYPERchannel has planned for the future.

This joint development agreement has been the result of efforts on behalf of the Large Systems Marketing group to provide sales personnel with an extremely useful tool to aid in the sale of high end systems. Through its own general promotional activities, NSC will make known to prospective customers within the coming months the availability of NETEX-20 software for the DECSYSTEM-20.

* HYPERchannel® and NETEX™ are products of Network Systems Corp., Brooklyn Park, Minnesota.

NEW DECsystem-10 and DECSYSTEM-20 PRICES + PACKAGES = DIGITAL's COST-of-OWNERSHIP LEADERSHIP POSITION

Rose Ann Giordano

To retain cost-of-ownership leadership in our high-end systems, Large Systems Marketing announces aggressive price reductions for DECsystem-10 and DECSYSTEM-20 systems, upgrades, and options. The new pricing is effective August 29, 1983.

As in the case of the previously announced repricing (for the DECSYSTEM-2040 in Q3 FY83, and MF20 memory in Q1 FY84), this action is part of an overall cost of ownership reduction program, featuring:

- **20% MLP reductions for -1091 and -2060 system packages:** Cost-effective solutions for customers needing increased capacity; Implementation of TOPS-20 Loosely Coupled Systems is easier than ever, due to lower system price, lower software price, and the new CI20/CFS package.
- **50% reduction in the price of DN20 Front End:** Low cost entry to networking is achieved through price reduction on the DN20 Front End and on the new DN20/DECnet package.
- These significant new prices and packages bring DIGITAL into a cost-of-ownership leadership position vis-a-vis our competitors.

The following list details the repricing.

As you can see, the range of products, and the effect on pricing is significant.

We of LCG feel that this provides further impetus for our customers to pursue the integration of high-end products via DSIA with the rest of DIGITAL's product spectrum.

From PCs to Mainframes, the solution is DIGITAL.

Good Selling!

Option	Description	Old Price	New Price	Savings
Repriced System Packages				
1091-FE	1M Sys Pkg T-10, 120V/60HZ 3PH	532,000	425,000	21%
1091-FF	1M Sys Pkg T-10, 240V/50HZ 3PH	532,000	425,000	21%
1091-FH	512K Sys Pkg T-10, 120V/60HZ 3PH	496,000	396,000	21%
1091-FJ	512K Sys Pkg T-10, 240V/50HZ 3PH	496,000	396,000	21%
1091L-FE	1M L/O Sys Pkg T-10, 120V/60HZ	522,000	415,000	21%
1091L-FF	1M L/O Sys Pkg T-10, 240V/50HZ	522,000	415,000	21%
1091L-FH	512K L/O Sys Pkg T-10, 120V/60HZ	486,000	386,000	21%
1091L-FJ	512K L/O Sys Pkg T-10, 240V/50HZ	486,000	386,000	21%
1091S-FE	1090A to 1091 SMP U/G 120V/60HZ	340,000	275,000	19%
1091S-FF	1090A to 1091 SMP U/G 240V/50HZ	340,000	275,000	19%
1091S-FH	1090B/1091B to 1091 SMP U/G 120V/60HZ	340,000	275,000	19%
1091S-FJ	1090B/1091B to 1091 SMP U/G 120V/50HZ	340,000	275,000	19%
1091S-FK	1091B to 1091 SMP U/G 120V/60HZ	340,000	275,000	19%
1091S-FL	1091B to 1091 SMP U/G 240V/50HZ	340,000	275,000	19%
2060-FE	1M Sys Pkg T-20, 120V/60HZ 3PH	502,000	405,000	19%
2060-FF	1M Sys Pkg T-20, 240V/50HZ 3PH	502,000	405,000	19%
2060-FH	512 Sys Pkg T-20, 120V/60HZ 3PH	466,000	375,000	19%
2060-FJ	512K Sys Pkg T-20, 240V/50HZ 3PH	466,000	375,000	19%
2060L-FE	1M L/O Sys Pkg T-20, 120V/60HZ	472,000	375,000	20%
2060L-FF	1M L/O Sys Pkg T-20, 240V/50HZ	472,000	375,000	20%
2060L-FH	512K L/O Sys Pkg T-20, 120V/60HZ	436,000	345,000	21%
2060L-FJ	512K L/O Sys Pkg T-20, 240V/50HZ	436,000	345,000	21%
KL10-RE	Addon U/G 1091 CPU 120V/60HZ 3PH	326,070	260,850	20%
2060-UA	2040-2060 U/G W/MCA20, T-20 Ext Features	225,000	125,000	45%
Repriced DN20 Front End				
DN20-MA	DEC20 128KW Front End 60HZ	37,620	18,800	50%
DN20-MB	DEC20 128KW Front End 50HZ	37,620	18,800	50%
DN20-MC	DEC10 128KW Front End 60HZ	37,620	18,800	50%
DN20-MD	DEC10 128KW Front End 50HZ	37,620	18,800	50%
New DN20/DECnet Package				
DN20-ME	DN20-MA + DECnet-20 (QTD04-AM)	N/A	23,100	NA
DN20-MF	DN20-MB + DECnet-20 (QTD04-AM)	N/A	23,100	NA
DN20-MH	DN20-MC + DECnet-10 (QH683-AM)	N/A	23,100	NA
DN20-MJ	DN20-MD + DECnet-10 (QH683-AM)	N/A	23,100	NA
Repriced Common File System				
QT225-AM	Common File System 20	85,000	15,000	82%
QT225-DZ	Common File System 20 License Only	5,000	2,000	60%
New CFS-20/CI20 Package				
CI20-AC	2 CI20-AA + QT225-AM + QT225-DZ 60 HZ	N/A	45,000	NA
CI20-AD	2 CI20-AB + QT225-AM + QT225-DZ 50 HZ	N/A	45,000	NA

LCG TEAMS for INTEGRATION SUPPORT

Doug Ruby Reed Powell Gary Carpenter

The Integration Support Teams concept was established in June, after announcements made at U.S. Spring DECUS concerning the integration of 36-bit products into the Corporate mainstream.

The Teams' goal is to provide for the top hundred LCG customers technical growth alternatives with DIGITAL within a 6 to 9 month near-term time span.

Support Team Implementation
Support teams in the Field will provide technical direction and plans, using all DIGITAL products and services to meet targeted customer growth needs.

The Support Teams will perform tailored "Audits" of customers' current and future applications. These teams will be supported by "Home Office" Support Teams in Software Engineering, SWS/COG, Large Systems Marketing, and AMCs (Area Management Centers). This service is provided at no charge to customers.

Product
These Teams will provide for each customer a technically feasible plan, which addresses short-term growth recommendations as well as outlines longer term growth alternatives.

These plans will be the basis for the Account Management strategies at each of these accounts over the coming year or two. These plans will be presented to each customer in writing within two weeks of the close of the Audit.

Byproducts
Field Teams will have close access to both technical and marketing persons in the Home Office. These Support Teams will be one of the primary feedback mechanisms in the first six months of Large Systems' high end marketing in order to provide data on marketing programs and product directions.

SWS Session at Integration Support Seminar

Reporting Structure
The account strategies prepared by the Support Teams will be subject to formal review by the AMCs or the Europe and GIA Subsidiary management, for business decisions and approvals.

Support Team Definition
The Support Teams consist of:

- A VAX/VMS technical person;
- A Large Systems (LCG) technical person;
- The essential ingredient - a team leader, preferably already a Manager, who motivates the Team and leads their efforts in dealing with customer issues;
- At least one person competent in networking.

It is believed that a typical effort will require about 1 week off-site with the customer, followed by 2-3 weeks of off-site effort, to produce the customer strategy. It is critical that time at customer site be spent working upon technical issues including performance analysis, VAX product capabilities, and growth directions.

A Co-operative DIGITAL Effort
To gather the appropriate resources into Support Teams requires the cooperation of the entire DIGITAL organization (and clearly, all the resources do not exist in one organization alone). In our 'best case effort' to cite the most appropriate scenario, we propose the following break-out:

1. Field Sales and Software Services: the Field Component;
2. Software Services: COG, providing a "hotline" for handling technical problems, and providing 'flying squad' support, when necessary;
3. Large Systems Marketing Group: providing technical and marketing programs support; acting as a clearing house for tools; and managing the activities of the Integration Mail System (see related articles in this BUY-LINE issue).
4. Engineering from VAX/VMS and LCG groups: to provide the correct and timely information and feedback resources, and to arrange for "Alpha" testing of conversion products as they become available;
5. AMC/Subsidiary Management: their support mechanism is focused on review and approval of the customer plans produced by the Support Teams prior to their presentation to the customer.
6. Ed Services: provide new offerings tailored to the LCG customer base, and providing some level of technical VMS training rather quickly, while more in-depth 'Integration' training to be provided as more information is obtained.

LCG SPONSORS INTEGRATION SUPPORT SEMINAR

Reed Powell

LCG Technical Support sponsored a three day seminar in Marlboro in mid-July, in order to create technical information flow among Large Systems Marketing, Engineering, and the field (Sales, and SWS)—with particular regard to the integration of TOPS-10 and TOPS-20 products, along with VMS products, into DIGITAL's distributed products spectrum. About 250 attendees participated—some coming from Europe and GIA.

Underlying the seminar is the existence of a wealth of information of interest to both the technical (SWS) participants and the not-as technical (sales) participants. In addition, base level information exists, which all parties need in order to effectively communicate with each other, particularly as DIGITAL moves forward in its DSIA strategy. We found it useful and necessary for the two primary audiences—Sales and SWS—to receive detailed information related specifically to their near-term and longer-range tasks.

The seminar consisted of sessions running in parallel for the primary audiences—Sales and SWS. The initial session, attended by everyone, covered information and issues of interest without going into levels of detail. Groups then met for more in-depth coverage. During the initial session, persons more familiar with 36-bit products/systems were given base level information on the 32-bit products—and vice versa.

Scheduled presentors were available to attendees for general question and answer sessions; during "hospitality suites" held in the evenings, management representatives from organizations (such as the AMCs) and from engineering groups ((both 32-bit and 36-bit "land") were available for discussions on HW and SW topics.

Early feedback from attendees has been extremely positive; so let's keep the information flowing. See other articles in this BUY-LINE issue: "Integration Tools & Documentation", "The Integration Mail System", and "Integration Support Teams".

LCG USERS SPEAK UP: LARGE SYSTEMS SIG QUESTIONNAIRE/RESPONSE

Donald F. Mallinson

Ask a dumb question, you get a dumb answer. Ask a good question, in fact ask 55 good questions, and you get 55 good answers. That's what we did. Rather, that's what the DECUS Large Systems SIG (Special Interest Group) did in June. They created a 55 question survey designed to probe the user's reaction and plans resulting from DIGITAL's integration strategy.

LCG was asked to print and mail an extensive questionnaire to a list of names, provided by U.S. DECUS, which identified 1604 "LCG Systems Delegates".

Copies of the questionnaire were given to key LCG SIG persons in Europe and GIA with the understanding that they were going to do a similar user survey. The European Large Systems SIG identified 200 delegates.

LCG accepted responsibility for tabulating the results - a time-consuming task, as most of the questions were open-ended.

In mid-July, in Boston, a special two-day meeting occurred among 13 Large Systems SIG members from DECsystem-10 and -20 installations throughout the USA, and among key representatives from DIGITAL sales, engineering, and marketing.

User sites were categorized according to commercial, data services, research, government, and education markets. Their aim: to review and interpret the results of the survey, to clarify any outstanding questions, to establish priorities and action items concerning the plans for large systems (TOPS and VMS) integration.

After much discussion of software, hardware, networking, support, and business concerns, the delegates generated a comprehensive list of actions. This list is to be reviewed by appropriate DIGITAL personnel to determine which projects hold the most promise for our customers and for the company.

One of the delegates, Leslie Maltz, Director of the Computer Center at Stevens Institute of Technology, said that the meeting reflected an air of optimism in the participants' efforts to co-ordinate and execute goals of mutual benefit. "If we hadn't viewed this meeting to be significant and challenging, we wouldn't have agreed to come. In retrospect, we felt that the time spent trying to work out a mutually acceptable future for our integrated products was extremely productive." LCG European Marketing Manager, Nita Smith, added, "We experienced a real coordinated and constructive effort."

A Note to Our Sales Force Readers: Copies of the completed questionnaire coming in from some of your particular accounts were given to persons who attended the LCG Support Team Seminar July 12-14 in the Marlboro area. In Europe, they were given to the country LCG Coordinators.

If you have an LCG account and were unable to attend this seminar, contact the person from your area who did attend, and ask him/her for a copy of the questionnaire.

TOPS-20 "INTEGRATION MAIL SYSTEM"

Reed Powell

Of all the messages brought back from U.S. Spring DECUS in May, one of the more important was that DIGITAL and its customers ought not to wait until next Fall DECUS to talk more about the issues relating to the integration of TOPS-10 and TOPS-20 into DIGITAL's overall product spectrum.

To facilitate information access and interchange on Integration issues, Large Systems Marketing has installed a TOPS-20 system in Marlboro with a sole purpose to act as a mail system; this mail system will provide the mechanism for continued communication among and between the groups involved in the Integration effort.

Accounts will be generated on this system for:

1. Customers
2. US Area Software Services districts
3. All individual worldwide SWS who submit requests
4. All individuals on LCG Support Teams
5. Various individuals from Large Systems Marketing and Engineering.

No cost is involved in having an account; yet we urge users to keep in mind the system's purpose when individual SWS personnel request accounts. No software other than the mail system and editors will be kept on this system. User groups and mailing lists will be created to facilitate mail communications between the various groups on the system. For example:

1. All customers
2. All SWS
3. All support teams
4. Everyone (underprivileged system mail, for example)
5. Individual support teams
6. Anyone and Large Systems Marketing
7. Anyone and Engineering.

In addition, lists will be created for the system, as requested by any user (all customers interested in magtape compatibility, for instance).

The Mail System is also a key component in the Tools Clearinghouse Operation. Information on both -36 and -32 bit Integration tools and on TOPS-10 and TOPS-20 transition tools will be publicized via mail messages on this system.

This system is currently installed, and is expected to be up and running by early August.

Customers will be receiving information concerning the Integration Mail System in the very near future, along with information on accessing the system, account names, and passwords.

Due to security issues (because of the very public nature of its access), DECnet will not be available to the users of this system. It will be possible, however, for individuals to have mail sent to specific recipients in Large Systems Marketing or Engineering, using the distribution lists mentioned above.

Telephone numbers for access to this system are: 7020, 7021, 7024, 7025, 7046, 7047, 7048, 7049, 7051, 7054, 7062, and 7066. All are DTN (i.e. 231- prefix); from outside DIGITAL, the correct prefix is (617) 467-xxxx.

Let's co-operate, participate, and Integrate!

INTEGRATION TOOLS & DOCUMENTATION CLEARINGHOUSE

Large Systems Marketing's Technical Support group will be acting as a clearinghouse for any tools or documentation relating to the Integration effort (i.e. the integration of TOPS-10 and TOPS-20 into DIGITAL's overall product spectrum).

These tools might be items that already exist within DIGITAL or at customer sites, or they might be created in the future as both DIGITAL and customers gain more experience in this area.

The contact in the Technical Support group for submitting tools or for obtaining more information (as well as the tools themselves) is myself, Reed Powell, DTN 231-4261 (617-467-4261).

Related to the tools clearinghouse will be a list of requested tools - those which seem useful or necessary to a customer, but which do not seem to exist.

Another related area is that of information on tools-in-progress. By making information public concerning those tools which are currently being written (including documentation), duplication of effort should be reduced.

In order to encourage individuals to submit items to this list without feeling that they are totally committed to completing the effort, only the topics will be made public. All information on who/where the work is being done will be kept private, under the control only of the person/customer doing the actual work.

Customers will have the ability to inquire about the existence of tools, as well as to request copies of the tools themselves, via the Integration Mail System.

If you already know of existing Integration tools or documentation, please notify me (or send them to me), as soon as possible, so that we can get this crucially useful facility started with a bang!

SARGASSO C COMPILER

Dee Ramee

The Sargasso C Compiler is a full implementation of the C language developed at Tufts University specifically for the DECsystem-10 and DECSYSTEM-20 computers. The compiler conforms, in all but a few minor and well-documented ways, to the standards given in The C Programming Language (Kernighan and Ritchie, Prentice-Hall, 1978).

This compiler extends the language in a number of ways. Some users learn to use and profit from these extensions; others ignore them and stick to standard usage of the language. The extensions are implemented in ways that add no extra run-time cost to programs that don't use them. Associated with the compiler is a library of run-time support, input-output, and other routines available to user programs. User programs are also easily interfaced with assembly language subroutines. The compiler and library are documented in a 40-page reference manual.

The compiler runs in two passes, generating optimized MACRO code. The compiler can be invoked to run the C preprocessor only, to produce MACRO code, or to chain directly to the MACRO assembler, and can be invoked by the COMPIL program. C programs can easily be interfaced with MACRO subroutines. Included with the compiler is an efficiently coded library of run-time support, input/output, and other routines. Routines are provided for making monitor calls to TOPS-10 (UUO s and CALLI s) or TOPS-20 (JSYS s).

The compiler has an extensive and very successful history of use in developing new C programs that include an editor, a financial planning system, an interrupt-driven simulation of an operating system, a LISP interpreter, a communications network, and the compiler itself.

Experience with compiling preexisting C programs is limited, but there have been several successful cases. Portability problems are almost always due to machine- or operating system-dependencies built into the programs themselves.

The cost of the Sargasso C compiler is $6,000 for a perpetual license or 2,100 per year rental, and is available to educational institutions for a nominal fee. Contact

Sargasso Enterprise Associates
14 Wildwood Street
Winchester, MA 01890
(617) 729-9037

PSL: PORTABLE STANDARD LISP FOR TOPS-20

PSL is a new Portable Standard LISP interpreter, based upon Standard LISP (LISt Processing). PSL is written entirely in itself and is compiled with an efficient LISP compiler with machine-oriented optimizations.

Two versions of full PSL are currently running on the DECSYSTEM-20, one of which uses the DECSYSTEM-20's extended addressing capabilities.

Other versions are available for the VAX (under Berkeley 4.1 UNIX).

Transportation of software between the machines is completely transparent — one of PSL's strongest features. A number of significant LISP applications are being developed upon PSL, and utilize PSL's efficiency and portability.

The goals of the PSL system are to:

> Provide the same, uniform, modern LISP programming environment on a variety of machines;
>
> Effectively support large applications programs that desire portability in the LISP environment;
>
> Implement a library of LISP modules to provide a enhanced programming environment typical of LISP systems;
>
> Produce a portable system comparable in execution speed to existing non-portable LISP systems.

PSL includes a systems programming mode called SYSLISP, which allows machine-oriented data-types and operations. SYSLISP is efficient enough to attract users to PSL, who might otherwise choose PASCAL or C instead of LISP. The PSL system itself is a complete LISP, including a run-time LISP interpreter, compiler, and numerous library modules.

The extended addressing version of PSL for the DECSYSTEM-20 has just been completed. Basically it is exactly the same as the regular version, except the stack, heap and BPS (Binary Program Space for loading compiled modules) are bigger, providing about the same sizes as on the VAX.

Initial measurements have shown it to be only a little bit slower than the regular TOPS-20 version, and under some circumstances, faster.

The University of Utah distributes the PSL system on request for a fee of $200.00 to cover the costs of distribution. Distribution includes a complete running system, all of the sources and a PSL manual. For further information, please contact:

Utah Symbolic Computation
Group Secretary
University of Utah
Dept. of Computer Science
3160 Merrill Engineering Building
Salt Lake City, Utah 84112

ANNOUNCING TOPS-20 PSI GATEWAY*

Sharon Lipp/Diane Lorion

TOPS-20 PSI (Packetnet System Interface) Gateway is DIGITAL's public data network interface for TOPS-20 systems. With TOPS-20 PSI Gateway, application tasks running under the TOPS-20 operating system can connect to the Public Packet Switching Networks (PPSNs) currently supported by DIGITAL in the United States (Telenet) and France (Transpac).

As part of the DIGITAL Packetnet Program, the TOPS-20 PSI Gateway is one of the family of DIGITAL software products linking DIGITAL computer systems into public data networks. TOPS-20 PSI Gateway is based on the CCITT definition of X.25, an international protocol recommendation designed to provide users with communication services.

TOPS-20 PSI Gateway is layered on DECnet-20 V3.0. Other DECnet nodes connected to the Gateway node may use its services to gain access to a PPSN.

Highlights

- Completely compatible with Telenet (United States) and Transpac (France);
- Field-configurable for other networks;
- Allows connections between Digital Equipment computers as well as between Digital and non-Digital computers;
- Reduces line costs in many cases;
- Provides user interface for program-to-program communication;
- Supports (incoming-initiated) Interactive Terminal Interface (X.29);
- Unsupported local PAD (Packet Assembler/Disassembler) interface allows local terminals directly connected to the local system (PAD) to communicate with remote systems;
- Displays traffic and error statistics, counters, and other information.

Description

TOPS-20 PSI Gateway permits application programs running under the TOPS-20 operating system to transmit data and control information between computers across a Public Packet Switching Network. TOPS-20 PSI Gateway software is currently available for use with the Telenet (United States) and Transpac (France) networks.

The PSI products, including TOPS-20 PSI Gateway, expand the power of individual systems by allowing them to:

- share resources
- access other computers
  be accessed by terminals, and
- distribute data across
  a public data network.

Interfacing to a public data network yields two other benefits: configuration flexibility and vendor independence. Complex configurations are possible because the PPSNs assume responsibility for the network and for delivery of the data.

Vendor independence results from the use of an internationally accepted protocol such as X.25. This means that computers built by different manufacturers can work together through an X.25 interface.

In addition to allowing conversation between computers via the X.25 protocol, TOPS-20 PSI Gateway software also supports remote interactive terminal access. Terminals connected through a Packet Assembler/Disassembler (PAD) using the X.3 and X.29 protocols can gain access to the TOPS-20 system from anywhere in the public data network.

For task-to-task communication, application programs can use subroutine calls to:

- set up and break connections with the network
- send and receive data, and issue control and synchronization requests.

X.25 User Interface

TOPS-20 PSI Gateway includes the X.25 Access Routines, which allow user programs written in MACRO-20 or in FORTRAN-20 to exchange data with other programs. Connections can be made over permanent or switched virtual circuits (PVCs or SVCs). Any TOPS-20 DECnet node running the Access Routines and connected via DECnet to the Gateway system can use the TOPS-20 PSI Gateway.

The X.25 Access Routines support program access for all X.25 protocol functions, including:

- Setting up and breaking connections;
- Transmitting and receiving data;
- Sending and receiving interrupt messages;
- Controlling errors and reporting status.

The user is responsible for directing each packet to the appropriate program and making sure that each packet has been received.

Interactive Terminal Interface

TOPS-20 PSI Gateway software supports access from remote terminals complying with CCITT recommendations X.3 and X.29. Terminals are supported in "Network Terminal" mode.

Remote terminals have the same access privileges to TOPS-20 programs as they would have if they were local. Interactive application programs require no modification unless the network imposes restrictions which are beyond DIGITAL's control.

Addition of Other Networks

Corporate Software Engineering will assist qualified Digital Software Specialists in configuring this product for certification and connection to additional public data networks. If a network is not currently supported, the local office can apply to Software Engineering, who may decide to add that network to the list of supported networks.

Network Management
TOPS-20 PSI Gateway complies with the DNA (Digital Network Architecture) specifications for X.25 Gateway products. TOPS-20 PSI Gateway is fully integrated with DECnet-20 during execution the facilities of DECnet Network Management are available. In addition, specific network generation and special maintenance tools are provided with this product.

Operating Environment TOPS-20 PSI Gateway is supported on any DECSYSTEM-2040 or -2060 with a DECnet-20 DN20 front-end processor. Within the DN20, a maximum of one DECnet line and two X.25 lines (DN20-BA, -BB, and -DA) are supported.

DECnet-20 V3.0 running under TOPS-20 V5.1 is a prerequisite.

For additional hardware and software requirements, refer to the Software Product Description (SPD # 21.22.0).

* For further details, refer to "Sales Update" article, July 18.

COBOL-68 (TOPS-10/20) NOW IN MAINTENANCE MODE*

Hirak Sengupta

Large Systems Engineering announces the conclusion of development support for COBOL-68 10/20 Version 12B. As of August 1 1983, this product becomes classified worldwide as a Maintenance Only product. DIGITAL will continue to provide Software Product Services for this product though January 1985, when the product will be officially retired.

The marketing focus, emphasizing the state-of-the-art compiler, has shifted from COBOL-68 to the proposed ANSI 198X compatible compiler. Accordingly, the LSG Software Engineering Group has concentrated their development efforts to keep this product compatible with the latest developing ANSI standards.

Customers should base their development efforts on COBOL-74 to facilitate future transitions to new standards. In addition, customers are strongly advised to convert their current COBOL-68 application library to COBOL-74 with the help of the conversion tool (shipped with Version 12B) furnished for this purpose.

The revised SPD and the Q numbers will refer to COBOL-74 only. Pricing becomes effective with the Q1 DEC Standard Price List dated July 5, 1983.

To summarize, COBOL-68 10/20 will no longer be sold to new or existing customers as of August 1 1983; however, regular maintenance and SPR Service will continue through January 1985. Customers are strongly advised to use this time to convert their COBOL-68 applications to COBOL-74.

No change in price or Terms and Conditions are currently contemplated.

Reprinted from the "Sales Update" article of same title, June 20, 1983, p. 25.

NEW! NOW! LCG SOFTWARE REFERRAL CATALOG

Dee Ramee

The third edition of the LCG Software Referral Catalog is now available and everyone who receives the BUY-LINE will be sent a copy. Additional copies may be ordered through Northboro.

The new edition contains descriptions and contacts for 448 DECsystem-10 and DECSYSTEM-20 application software products, many of which also have versions running on the VAX, either under VMS or UNIX*.

A list of those software packages that run on VAX will also be sent with the catalogs; future issues of BUY-LINE will include articles on some of those packages.

Software packages listed in the LCG Software Referral Catalog cover the following major application areas:

ACCOUNTING
DATA BASE MANAGEMENT
EDUCATION
ENGINEERING
GRAPHICS & MAPPING
MANAGEMENT DECISION SUPPORT
MANUFACTURING, PRODUCTION & DISTRIBUTION
MATHEMATICS & STATISTICS
OFFICE AUTOMATION
SIMULATION & MODELING
SYSTEM UTILITIES

Customers may order copies of the LCG Software Referral Catalog by writing to:

LCG Software Referral Catalog
Large Computer Group Applications Mktg.
Digital Equipment Corporation
MRO2-2/8D2
1 Iron Way
Marlboro, MA 01752

Comments and suggestions for both the LCG Software Referral Catalog and the LCG Applications Update (which is published periodically between editions of the full SRC) are welcome. Please call me if you have any questions or require further information.

The Catalog's part number is EJ 25148 61; you can obtain it through your SCC (Sales Communication Center).

* UNIX is a registered trademark of Digital Research.

VIDEOTEX FOR EVERYONE*

Dr. Antone Alber

The high tech industries and society in general are on the threshold of a time when computers and databases will be available to virtually everyone within reach of a CRT and a telephone. The vehicle that will make this possible is called videotex.

Interactive Videotex Service

Interactive videotex is a two-way system allowing users to access a computer and database and display the information on a modified CRT or television (figure 1). Access to the information is gained using either a small handheld keypad similar in appearance to a TV channel selector or by a full alphanumeric keyboard.

The system end usually consists of either a mainframe or a minicomputer, equipment for preparing and editing information, and the software needed to operate and administer the system. On the user's side is a modified television, a keypad or keyboard for accessing the system, a videotex terminal, or — if the user will forego color and graphics — a VT100.

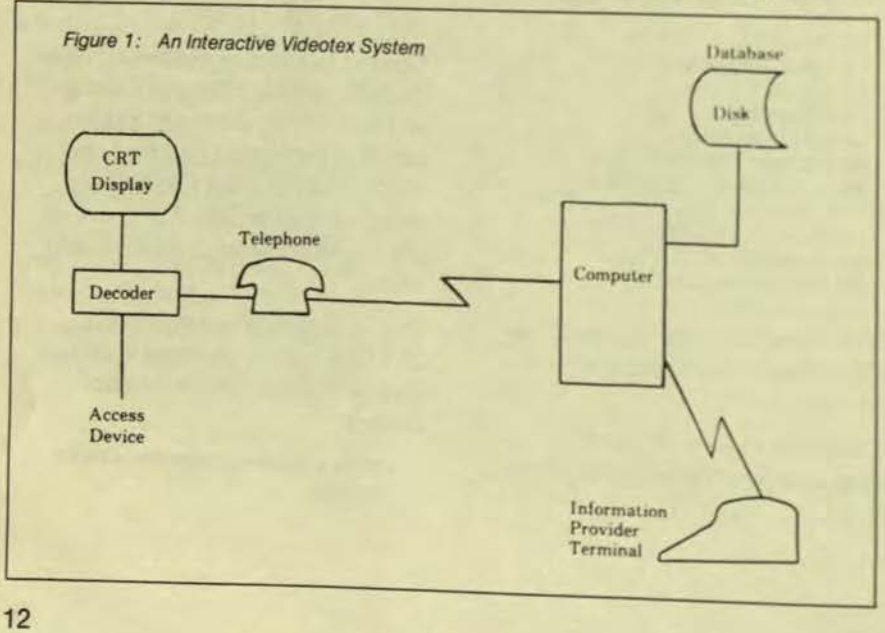
One of the few pieces of equipment not traditionally found in a DP environment is the information provider's terminal. The IP terminal is a specially-designed unit for the creation of pages. If used off-line, the terminal may consist of a color CRT with keyboard, a microcomputer and several RS232-C ports.

Interfacing with the terminal may be a variety of peripheral devices such as a graphics tablet,, videotex decoder, printer, video camera, and modem (see figure 2). The software accompanying the system usually includes graphic and text editors, database management routines, and a communications program. The cost of a fully-configured terminal ranges from $12,000 to $30,000, and requires an operator with non-technical graphics skills.

There are several commercial services in operation, and a number of major trials underway which are likely to result in public services within the near future. The most widely known is Prestel, run by the PTT (Postal Telegraph and Telephone) in Great Britain. Prestel is composed of a large network of GEC 4080 and 4082 computers. It has a database of 250,000 pages of information supported by 1,000 information providers.

There are presently 24,500 subscribers to Prestel; approximately 800 terminals are being added each month. Four out of five registrations are for a business rather than a residential user. The designers of Prestel had projected that such information services would be used most heavily by private individuals. Instead, businesses are finding it an efficient and economic medium for storing and retrieving data.

Figure 1: An Interactive Videotex System



Consequently, Prestel has been seeking to strengthen its appeal to the business community while retaining a foothold in the residential market.

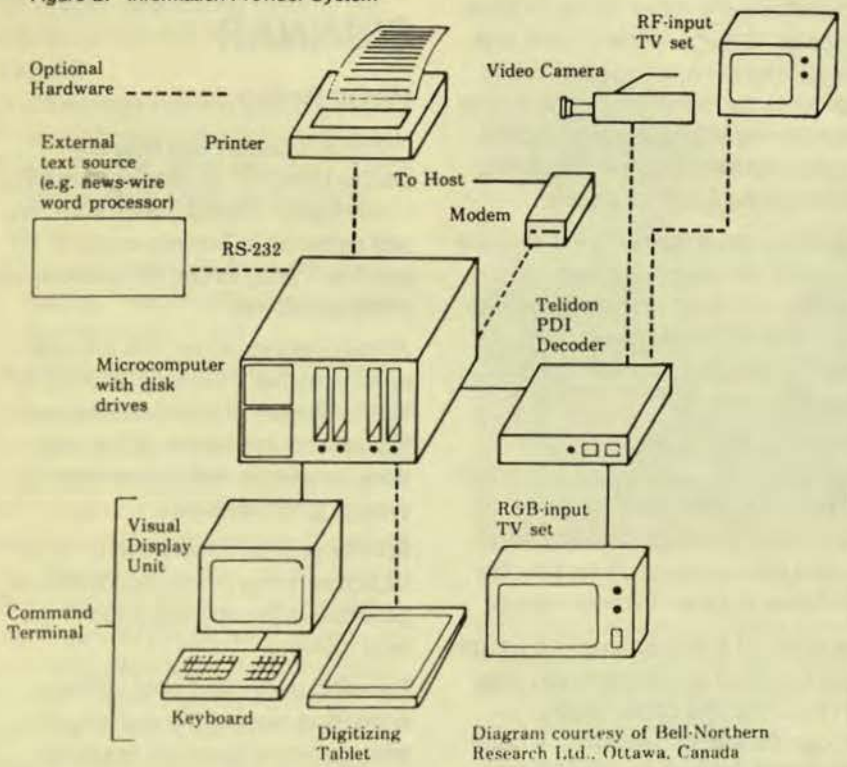
Prestel began as a trial program in 1976 with the expectation that it would lead to greater utilization of the telephone system during evenings and weekends. However, as it matures, additional benefits have become apparent. Prestel provides a service for business users such as the travel industry, which heretofore has not been available. It provides current and easily-accessible information to the public, and is a vehicle for exporting goods and services in a previously nonexistent area.

In the USA, CompuServe (Columbus, Ohio) with 60,000 subscribers, and the Source (McLean, Virginia) with 37,000 subscribers, each market a videotex service. Access to the extensive databases is possible by making a local phone call in over 480 cities to a nation-wide communications network. Although a significant percentage of the terminals in use are popular microprocessors, most standard data terminals and some communicating word processors may also be used.

In addition to these commercial services, a number of trials are also underway throughout the world. In most instances, these are being carried out under the sponsorwhip of the government and are the forerunner of a public service. The British, French, and Canadian governments are especially supportive — financially and vocally — of the videotex efforts underway within their own borders.

The French PTT began a videotex trial in May 1981 in Velizy, near Paris. Teletel will enable phone subscribers to obtain directory assistance from a computerized database, thus eliminating the need for printing and distributing phone directories. In addition to Electornic Directory Service, a full slate of applications will be incorporated within Teletel over time. PTT plans to ultimately give away 30 million information terminals to phone subscribers

Figure 2: Information Provider System



within ten years. If this goal is reached, the populace of France is likely to be the first in the world to have a computer terminal in every home.

The Canadian Department of Communications has developed a videotex service with an enhanced graphics capability, called Telidon. One such effort is the Grassroots project in rural Manitoba for providing farmers with the key information required to conduct their farming activities effectively and more cost-efficiently. The introductory phase completed in Spring, 1981, consisted of placing 25 Telidon TV terminals in local agricultural agents' offices, credit unions, and other public locations where farmers gather to do business.

Phase two of the project involves the leasing of terminals to individual farmers and expansion of the database to include a variety of subjects from pesticides to water resource management ...farm engineering to farm home economics....crop insurance data to economically-based feed mix combinations.

Broadcast Videotex

Another form of videotex that does not allow two-way interaction between the user and computer is called broadcast videotex, or teletext. In a teletext service, the information is continuously rebroadcast — either in conjunction with the regular television signal, or separately.

When the teletext signal is broadcast with the regular television signal, a portion of the vertical blanking interval (VBI) is used. In the USA, the TV signal is composed of 525 lines. Twenty-one of these lines, the VBI, are reserved for carrying reference and test signals; the VBI corresponds to the black band that rolls with the picture when the set needs to be adjusted. Two or more these lines can carry digitally-encoded textual and graphical information for display when the teletext option is selected.

Because of the one-way nature of Teletext, it is necessary to continually rebroadcast all of the database. Consequently, the size of the database is largely dependent on how many lines of the TV signal are used. If desired, all of the signals used could be dedicated to teletext transmission.

One or more of the pages being broadcast is an index containing page numbers for locating information in the database. A user identifies pages from the index and "grabs" them as they are recucled, by inputting the correct page number with a keypad. As each page is accessed, it is either displayed or stored temporarily — depending upon whether another page is being displayed.

The principal feature that differentiates the two forms of videotex is the method of data transmission. Interactive videotex allows the user to go to the database instead of bringing the database to the user. Because of this very fundamental difference in operation, each approach has several advantages unique to it.

Interactive videotex can provide an immediate response to requests for information. Furthermore, it can buttress what it provides with an in-depth treatment of a subject limited only by the volume of information stored in the database about the subject and time it takes to read it. The two-way capability of the system also makes applications available to the user, such as electronic mail and full-service teleshopping.

Goods and services may be ordered from merchandise catalogs or from advertisements contained in the database. A limited messaging capability exists in Prestel. Electronic mail is viewed as very important by system designers throughout the world and future generations of videotex will undoubtedly allow terminal-to-terminal capability.

A two-way capability makes it possible to use videotex as a device for polling subscribers regarding questions about the effectiveness of advertising campaigns, their reaction to political speeches, public response to major news stories, and so forth. In systems with storage available to subscribers either at the terminal or computer end of the network, personal data such as mailing lists, activity calendars, personal notes, and data may be stored.

As the preceding applications indicate, videotex is more than a system for simply displaying information. Some of

the most exciting areas under development are collectively referred to as teleservices. These are activities related to controlling, metering, and monitoring events at the subscriber's site.

Telecontrol enables a utility company to make adjustments to environmental controls for heating and cooling buildings. Another application called telemetering permits remote meter reading for billing purposes, and telemonitoring allows police and fire units to monitor for intrusion and fire. Teleservicing has the potential of eliminating some of the human effort needed to provide basic services, and will result in resource conservation, while at the same time improving the quality of life for subscribers.

The revolutionary feature of videotex is that it makes computer power and computerized databases available to the nontechnical person at home an ad work. It provides the infra-structure for the often discussed — but never before attainable — wired society in which transaction of many kinds can be handled electronically, regardless of whether they originate at home or at work. In so doing, it integrates the computer and all of its power into the basic fabric of society. There are three key characteristics that videotex possesses, making this possible:

- simplicity of use
- economic competitiveness, and
- the ability to share databases.

Videotex is user friendly. The most popular terminal is a modified TV set with a simple keypad containing twelve or more buttons. Gaining access to the computer is very simple, and involves turning the set on and pushing a button, to automatically dial the computer center in the case of interactive videotex. For broadcast videotex, the set is simply turned on.

If the number of a page being sought is known, it can be accessed directly by entering the correct number. Otherwise, information is presented in a tree format. A main index is displayed, which leads to additional index pages until the desired page is found. No previous computer experience or training is necessary.

The text is displayed in 40 character lines with usually either 20 or 24 lines to a page. Upper and lower case text, double height characters, and extra large fonts are standard. Graphics may be combined with text in eight colors on many systems along with flashing, to highlight parts of the display.

Prices are falling rapidly; estimates are that within the next few years, modified television sets will be available for $100 to $300 over the price of a standard television without videotex capability.

From the data processing department's point-of-view, interactive videotex can provide an expecially cost-effective way to collect data and to present information produced by the mainframe in a user-friendly manner.

The ability of a data processing department to collect and disseminate data can be expanded considerably through the use of gateways. A gateway permits access to outside databases. In addition to serving as a bridge to other databases, a gateway provides the mechanisms for interconnecting heterogeneous systems — a problem confronting many organizations today.

Videotex is a major new application of data processing technology. In both its broadcast and interactive forms, it will provide services that have been discussed for years — but never before have been available.

As in any new and rapidly evolving industry, the full implications are still unclear; but there is no doubt that videotex will complement the traditional services supplied by data processing departments, and will revolutionize the way information and services are provided within our society.

* Portions of this article are reprinted by permission of INTERFACE AGE Magazine; copyright ©1982; Vol.7 No.12; "Videotex: Data Transmission for the Masses" by Dr. Antone Alber, pp 112 ff. Certain numerical information within the first ten paragraphs has been updated, with author's permission, since date of original printing.

LCG Marketing Specialist Marilyn Davison provided edits making some portions of this article more relevant to LCG today. For information on reference accounts and on LCG's Videotex market focus, refer to Marilyn's article, entitled "LCG and Videotex", in the March 1983 BUY-LINE.

TORONTO VIDEOTEX SEMINAR

Marilyn Davison

"What is Videotex and how are people using it?" Customers from the Northeastern United States and Canada gathered in Toronto on June 13 and 14, 1983, to find the answers to these questions.

At the opening dinner, the keynote speech by Mike Hays of DIGITAL defined Videotex and its potential benefits, and outlined some of the cautions needed in dealing with this emerging technology.

Further general information on what Videotex is and its development was provided in my opening speech the next morning.

Benefits, costs, and cost justifications filled most of the morning session, as actual Videotex users described their personal experiences with Videotex for the private market.

Kavin Moody of Gillette poses question after one of the presentations.

Philips Electronics

From Michael Endicott of Philips Electronics, U.K., came an excellent description of Viewdata, the British Postal Telephone and Telegraph system, based on the Prestel standard, which is common in Europe.

A version of Viewdata, Philtel, runs on Philips' timesharing system, the DECSYSTEM-20. Philtel applications include:

- a message passing utility (basically an electronic notepad) which also ties into the MS program on TOPS-20 for more complete mail facilities;
- dissemination of information from central Personnel (generally, training information); and
- management summary information.

Management Summary Application
This last application is the one most commonly used. The ease of access of Videotex is very helpful, for this application is used primarily by senior management who are casual users of the computer system. The management summary application uses a program called MOP (Masking onto Philtel) to take a DECSYSTEM-20 file and map it onto a named frame. The facility substitutes actual data from the file into the frame. Thus, Videotex allows the casual user to create graphs and tables of current data on demand.

McLeod, Young, Weir
Why would a stock brokerage be interested in Videotex? With over 2000 stocks just in the Canadian market, no analyst has the time to prepare graphs to look at trends in many different variables over time and compare then with the price of a particular stock over that time period. If graphs are prepared, they are only done for a few selected stocks or the price of gold.

What if a client wants a "technichart" for another stock? Bruce Bolin, V.P., McLeod, Young, Weir, Toronto, described how Videotex solves this problem for them and why they feel that Videotex will be a useful tool in generating profits for the company.

Digital Equipment Corporation
Yes, Digital is itself a user of Videotex. Bill Carlisle, Manager of Printing and Circulation Services, Northboro, Massachusetts, described how DIGITAL plans to use Videotex in field communications.

L to R: Larry Vifquain, Marilyn Davison, and Michael Endicott from UK, Philips Electronics.

Bill's presentation included a cost justification of Videotex, primarily for literature order placement, that had 40% payback in 29 months.

Among other issues touched on by Bill, was the type of terminal used. DIGITAL will use ASCII files with little use of graphics. This decision was made because graphics are not necessary for this application and because we have about 40,000 VT100 terminals presently in use.

One of the advantages of Videotex is that it is device independent, therefore, your present equipment can be used for Videotex applications.

Videotex Software
If you know what Videotex is and how people are using it, the next logical questions may be:

- what software is available? and
- how are Videotex frames created?

Holding the seminar in Toronto not only provided all of the attendees a chance to experiment with public sector Videotex (tourist information, Teleguide, is provided on Videotex terminals scattered throughout the city), but also a chance to see how Videotex frames are created and to learn about one particular software package.

A chartered bus took the seminar attendees and presentors on a short ride to Infomart, an electronic publishing company — and the developers of the Teleguide tourist information system — for a demonstration of the software and to tour Infomart's frame creation department.

Alan Burke of Infomart described the Infomart/BASIS package which includes the BASIS data base management system with a Videotex shell. Key word search is among the excellent features of this package.

Following the presentation, small groups were conducted through the frame creation department. There, Tom Gilboe of Infomart demonstrated how frames are created, including subelement manipulation within the frame.

Overall Response
Overall response to the seminar was excellent. Vigorous question and answer periods after each presentation showed high levels of interest by the seminar attendees in all of the presentations.

If you or your customers are interested in more information about videotex in general or any of the Toronto presentations in particular, please let us know. We will be glad to provide additional information and support your activities in Videotex.

DISCIPLINES CONTRIBUTING TO ARTIFICIAL INTELLIGENCE

Mitchell D. Perlitch

The following article continues the series begun in the last BUY-LINE issue (refer to section "Emerging Markets/Technologies" and the title "What is Artificial Intelligence?", page 23).

Many sciences contribute to — and from — AI research. I have outlined some of them, below:

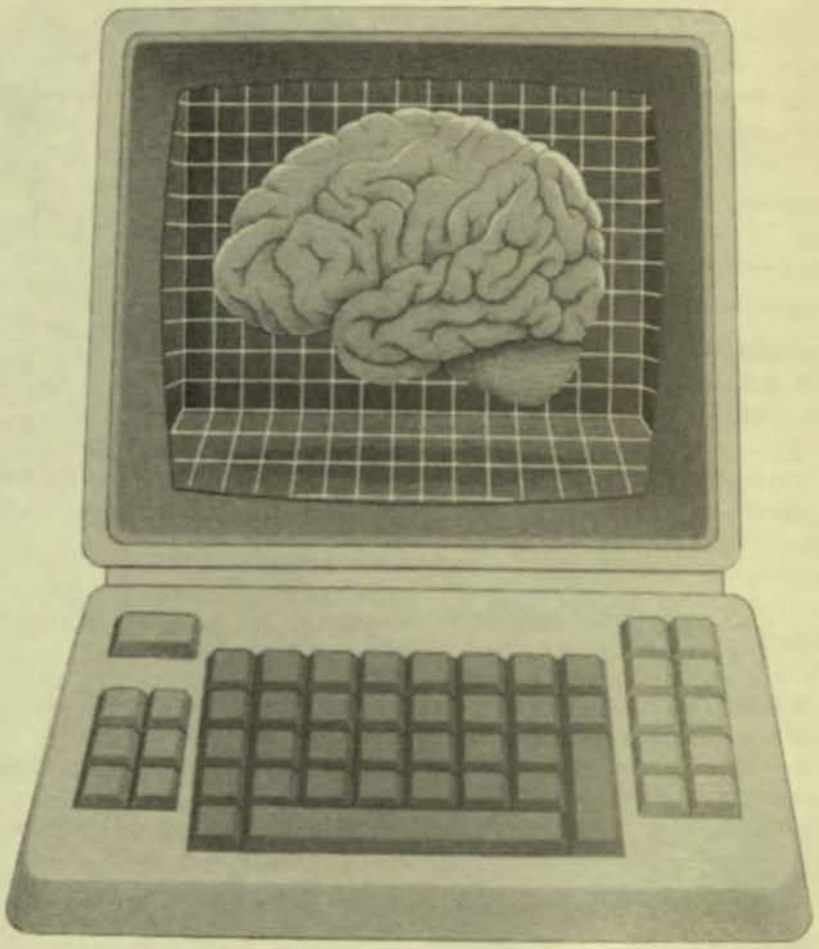
Psychology and Philosophy
In its attempt to understand the way the mind works, psychological research often uses computer models of cognitive processes. A goal of both AI research and psychology is the understanding of intelligence.

What processes are involved in human intelligence? What aspects of behavior are indicative of intelligence? ask psychologists and philosophers. The question "How can we make intelligent machines?" — posed by AI researchers — is intimately related to these questions regarding naturally occurring intelligence.

Computer models of intelligent processes are very useful for performing experiments in psychology. Similarly, psychological theories of intelligent processes often yield schemes for their artificial reproduction.

Physiology
Sometimes, understanding the physical structures that support intelligence yields viable strategies for creating man-made devides that can accomplish the same tasks. Work in vision has been supported by a good deal of research on the function of the retina (physiological psychology).

In David Marr's book, "Vision", a chip that mimics retinal functions is shown. Understanding the physiology of the brain, the relationships of neurons, etc., may provide greater insights into how computer architecture might be modified for more flexible parallel processing.



Biomedical and Mechanical Engineering
One of the major applications of AI research is robotics. Robots that can manipulate objects are becoming quite sophisticated. Recent work at MIT has created a hand that uses cables (similar to those used for bicycle brakes) as tendons to enable grasping.

Biomedical engineering advances at the University of Utal created a "tendon" made of a teflon material. This tendon essentially does not wear out (as does the bicycle cable implementation).

Electronics Engineering (EE)
Intelligence has proven to require far greater amounts of computing power than traditional data processing. Due to the physical limitation on circuit speeds — i.e. the speed of light — a single computer can theoretically run only about 1000 times as fast as today's systems.

Some intelligent systems will require systems that are more than 1 million times the speed of today's computers. The contributions that EE can give to AI research are many. Faster computers that are well suited to the programming languages used in AI are one of the obvious contributions.

The IBM 7094 was the first system for which a working version of LISP was implemented. This system was a 36-bit computer. When IBM began promoting its byte-oriented (32-bit) systems (360's), MIT's McCarthy collaborated with DIGITAL in the design of a new 36-bit system to continue his work in LISP on the PDP-6.

Since the PDP-6, DIGTAL's 36-bit computer family has incorporated other advances in computer architecture that have been motivated by the needs of AI applications, e.g., write-back cache memory (the Super Foonley research project).

More recently, work at both MIT and Xerox PARC has created personal LISP machines. These machines provide program development environments that are designed especially for LISP.

One way to increase the computing power available to an application is via parallel processing, i.e. multiple processors working on the same task. There have been many experiments in parallel processing over the years, most of which have involved multiple traditional computers, e.g., DECsystem-10s, and PDP-11s. These systems were efficient for certain types of computing problems, i.e. those that were easily decomposed into independent tasks, but not generally useful.

A significant problem in traditional multi-processing systems is that as the number of processors that are working together is increased, the communications between them takes even more time. This tends to negate the benefits of having multiple processors.

Several projects are underway (at MIT, Manchester University, University of Utah, ICOT in Japan), researching "data-flow" architectures.

A dataflow machine works slightly differently than traditional parallel processing systems. In traditional approaches, processors work on data in a pre-defined, scheduled fashion. Data-flow architecture is more analogous to the (apparent) structure of a brain. That is, data is operated upon whenever it is available.

Still experimental, one of the most recent developments is the "connection machine". Its design was motivated by the apparent parallel nature of processing in the human mind.

Basically, the connection machine is a network of processing cells implemented on a single LSI chip. Each cell can communicate with its immediate neighbors and contains some state information, several registers, and a "processor". The cells operate concurrently on a problem. It is hoped that this type of parallel processing will lend itself to a wider set of problems than traditional approaches.

Computer Science

Computer science research has provided the basic AI research tools. Essentially, all AI research has been done in a programming language called LISP (LISt Processing. Recently, another language, PROLOG (PROgramming LOGic), has been found to be useful in some AI applications.

Because AI applications are so large and therefore require much debugging and development, the quality of the software development environmentprovided to the AI researcher is very important.

Probably the most important reason for the acceptance of LISP machines is their excellent program development tools. Both the hardware (display, etc.) and debugging tools available on these machines are important to the LISP programmer. LISP is a highly interactive environment, and the human interface probided for LISP program development is a key concern of AI researchers today.

A windowing system (and high-resolution, bit-mapped display) allow the LISP programmer to perform several interactive processes concurrently. Debugging and editing (and communications with other programmers on a network) can be accomplished from the same workstation at the same time.

In parallel with the data-flow architecture research underway is some research going in applicative languages, e.g. function-based or data-flow languages. Japan is involved in the design of concurrent PROLOG. The University of Utah has a large research project in this area. Also, sites researching data-driven machine architectures (data-flow) are concerned with concurrent language systems.

This article is excerpted from the "AI Overview", recently mailed to BUY-LINE readers. Watch forthcoming issues for additional articles on this exciting new field in which DECSYSTEM-20s play a significant role.

EDGOMB STEEL

Don Waite

Edgcomb is one of the largest metal distributors in the U.S. Northeast, reporting $73 million in sales last year—during "a sluggish year," reports Randall Bennett, Director, Information Systems. " Digital's products and our own customized applications have helped us to successfully track and control inventory and expenses during this difficult period."

Edgcomb has a DECsystem-10 and a DECSYSTEM-2020 running TOPS-10 to serve its data processing needs. Neither system utilizes a card reader for data processing, which means that all the data is entered directly into the mainframe through video terminals. Designing data entry and inquiry applications has been made easier by using SCOPE, an interactive programming aid for creating screen formats.

SCOPE Aids Information Update

With SCOPE, users can specify screen formats that logically reflect the work task they have to do, without worrying if the programming staff can program it. This is because SCOPE also provides the programmer with a set of standard routines needed to read and write data from and to the screen.

"We now have more than 30 on-line applications using SCOPE, in which employees update information through terminals. For example, sales order processing, application of accounts receivable cash, as well as entering master file maintenance transactions are done with programs using screens developed and supported by SCOPE," states Doug Shafer, Manager, Systems and Programming. "The users are very happy with what they see, and the programmers are glad to provide a professional product with minimal difficulty."

Edgcomb Steel, Nashua, New Hampshire

Edgcomb originally bought a DECsystem-10 (KA processor), July 1975, which was upgraded to a dual KA processor, then to a KL processor in 1978.

The DECSYSTEM-2020 was purchased in 1982 and its installation immediately increased the performance of the DECsystem-10. The DECsystem-10 purchase in 1975 began the automation of the entire company, including payroll, general ledger, sales/billing, accounts payable, accounts receivable, purchasing, and inventory control—all made easier by SCOPE.

SCOPE has standardized the way a programmer at Edgcomb produces programs that require formatted video screens. "Scope reduces the drudgery while giving us more functionality and flexibility. It has allowed us to automate many facets of our work more quickly," added Bennett.

Telecommunications helped tie together the "many facets" of Edgcomb Steel. This is true not only in the many departments located in Nashua, but also in linking operations of the other seven locations to Nashua. The terminals at the seven locations are linked by leased lines with statistical multiplexers at both ends. The multiplexers allow several terminals to use the same phone line, thus reducing expense.

Many steps of Edgcomb Steel's order process are automated with a major portion of these programs designed and automated through SCOPE on the DECsystem-10.

Incorporated in 1952, Edgcomb Steel is a full service metal distributor with its home office in Nashua, New Hampshire. Edgcomb warehouses and distributes a full line of metals from seven locations in New England and surrounding areas. 420 people are employed in these locations which include Nashua, NH; Portland, ME; Slatersville, RI; Schenectady, NY; Wallingford, CT; Concord, NH; Baltimore, MD.

Computer room, housing DECsystem-10 and DECSYSTEM-20

-2060s at TILLINGHAST, NELSON & WARREN, INC.
Timesharing in Consulting Services

Don Waite

Tillinghast, Nelson & Warren, Inc., is the domestic arm and the parent corporation of the Tillinghast group of consultants, an international family of consulting/actuarial firms that serves clients in the United States, Canada, Europe, and the Caribbean.

In the USA, Tillinghast has offices in Atlanta, St. Louis, Hartford, Dallas, New York, Jacksonville, New Orleans, Denver, Los Angeles, Boston, Chicago, Kansas City, San Antonio, and Fort Worth. Foreign affiliates are situated in London, Toronto, and Hamilton, Bermuda.

Tillinghast offers a variety of consulting services, including: management consulting, employee-benefits consulting, insurance (life/health/casualty) consulting, and risk-management consulting. In addition, the firm provides actuarial services for insurance companies and similar organizations.

DECSYSTEM-2060s Chosen

These varied services create a need for a great deal of computing power and for storage — accessible from any of the firm's USA offices at a moment's notice and at any hour of the day or night.

To meet these needs, Tillinghast chose a pair of DECSYSTEM-2060 mainframes which allow timesharing from every one of the firm's offices.

"We bought a DECSYSTEM-2020 in 1977, upgraded it to a DECSYSTEM-2040, and then to a DECSYSTEM-2060 — because we felt it was the best timesharing machine for us", says Joyce Thackston, assistant vice president in the data processing unit of Tillinghast's flagship Atlanta office.

"We act as a service bureau which has its own timesharing system - and, in fact, we look on the DECSYSTEM-2060s as profit centers."

Tillinghast uses the DECSYSTEM-2060 mainframes for numerous kinds of work: actuarial calculations, profit studies, statistical analyses, product appraisal, analysis of risks, modeling, actuarial audits, and more — in addition to corporate accounting services and client billings.

"We have a library integration file of services which we have provided," Thackston says, "because many reports are auditable by the federal government for five years.

In addition, we have an extensive mailing list, broken down into numerous sub-categories, which we use for public relations and marketing purposes. As you may know, actuaries are banned by their own self-imposed code of ethics from self-laudatory advertising, which precludes most traditional forms of mass marketing; because of this, our mailing list is very valuable to us."

Operating 24 hours a day, seven days a week, and with an equal mix of users on each of the DECSYSTEM-2060 mainframes, Tillinghast utilizes for communication purposes both dedicated and leased lines with multiplexers and switching boxes.

SCOPE Interacts with -2060s

To aid in the development of major pieces of software (of which there are many), Tillinghast added SCOPE — an on-line screen formatter. Interacting with the DECSYSTEM-2060, a Tillinghast staffer can create a "program" on a video screen and convert it to a recallable program for future use.

Thackston explains how the coupling of SCOPE and the DECSYSTEM-2060 mainframes has aided the consulting firm in its development of software:

"Since we develop most of our own (software), we need a powerful, user-friendly set-up. SCOPE gives us that. SCOPE follows the DECSYSTEM-2060 lead through a menu-driven approach. The combination makes it easy for us to train our people, and this becomes part of the software development effort. Tillinghast chose SCOPE initially because we have so many different kinds of terminals, and SCOPE works on all of them."

SCOPE will also interact with either a DECsystem-10 mainframe or VAX processor via video terminal. For more about SCOPE, please refer to the May issue of BUY-LINE, page 5.

PARKER BROTHERS MAKING a MONOPOLY* of VCS GAMES

Don Waite

Parker Brothers (headquarters Beverly, Mass.) in August 1980 initiated a strategy to enter the VCS (Video Computer System) game market. By December, 1981, they finalized their efforts and prepared to enter this market through video controller chips.

Working on a PDP-11/44 minicomputer, schematics of these dissassembled chips were put in place and thus, Parker Brothers were able to develop a knowledge of designing a chip specifically for video games.

Parker Brothers utilizes emulators, which they custom designed for themselves. The emulator is a 8085 standard bus system and all editing is done on them, then down-line loaded to a CPU.

Don Moffitt, Director of Engineering Consumer Electronics at Parker Brothers, stated "the PDP-11/44 was very very good at allowing Parker Brothers to expand into the VCS market. It was very easy to encourage management to buy into the VCS market. Our leverage point was that if we had a coupling of good tools and good people, we could put out better VCS games, and faster!"

By August, 1982, Parker Brothers started programming their own VCS games. The first game, "The Empire Strikes Back", took eight months to take apart, map, and redesign; since that time, Parker Brothers has produced 18 different titles in the eight various Parker Brothers formats.

These formats include Atari-compatible software cartridges, as well as formats designed specifically for VCS game hardware on the market and for stand alone, hand held arcade games. Parker Brothers develops both the hardware and software for these arcade games.

Creating VCS Games at Parker Brothers

Parker Brothers presently procures games from three sources: licences of games on the market, or games developed independently by any programmer, which the firm purchases; its in-house Software Design Group, which, within the company, has the sole responsibility for creating VCS games; and finally, via brainstorming sessions between the company's marketing personnel and programmers in the software design group.

According to John Emerson of the software design group, whether the games come from outside inventors, purchased licences, or created at Parker Brothers, "they are all engineered to Parker Brothers' formats. Games are typically created according to our own specifications, resources and manpower are allocated, and then they are walked through tests for ALL Parker Brothers formats. From there we produce final code for our production facility."

All the Parker Brothers software is written in ASSEMBLY language; then the cross assembler takes the mnemonics and converts it into language for the machine to understand, 1's and 0's, which are then assembled onto the chip (ROM).

"Users Needed More CPU Space"

At about the same time Parker Brothers decided to get into the software development market, they also decided to purchase more computer power and to integrate the cross tools and editors on the same system. "We utilized the PDP-11 to the fullest extent, said Doug Detroy, Manager, SW Engineering. "We were compute bound and our programmers still needed more CPU space,...and needed it fast!"

Parker Brothers felt the need to get the optimum working environment for creating VCS games. "The best environment in which we could be working is one in which our cross tools (assemblers and linkers) were on the same system as our editors", explained Moffitt. "Cross assemblers are CPU intensive and use a great deal of CPU time. Any numerical analysis uses CPU time and is CPU intensive."

The projected life of the PDP-11/44 at Parker Brothers was 5 years. Although it is still being used today for various services, the user space was decreasing—within 6 months of its purchase—and the hardware was being utilized to the maximum. Emerson commented, "We realized that we might not be able to do software conversion on the -11, and that 8, 12, and 16K games were realities for the future."

The system manager polled the user base on various levels of requirements. Users were asked how they felt about upgrading the PDP-11/44; whether they wanted to take advantage of off-peak hours (night shift); if multiple PDP-11s or the purchase of a VAX might be an answer; or the purchase of another vendor's product would be an answer.

Parker Brothers looked long and hard at the responses. They compared them along with Parker Brothers' engineering matrix and came up with three very important criteria that had to be met. Performance, storage space, and network implementation. Performance naturally had to be high, as well as rapid system back ups and a feasible network implementation.

Parker Brothers gathered this user input along with DIGITAL's Field Service recommendations, then benchmarked their specifications for growth. The highest ranking specification was performance. Performance for response time, for friendliness, for maturity of software products, and for availability of third party software.

Considering the performance of the DECSYSTEM-2060 mainframe computer, the wealth of software available, and network implementation capabilities, Parker Brothers felt the obvious solution was either the DECSYSTEM-2060 or another vendor's mainframe product.

Parker Brothers Chose the DECSYSTEM-2060

Greg Baletsa, Manager, Electronic Product Development, said, "We could not provide a workspace as large as we do on anything but a mainframe. It would be difficult to provide maintenance to the group if it were not for the DECSYSTEM-20. The DECSYSTEM-20 brought a great deal of control to the group."

"Although the VAX is a very good machine and catching up fast, it does not have as much software available as the DECSYSTEM-20. There are specific areas that the VAX works well in. There are also specific areas where the DECSYSTEM-20 is the best choice. This is one of them!!" he continued.

Also, as Doug Detroy stated, "We were finally able to get our cross tools and editors on the same system, and the DECSYSTEM-2060 provides one of the best user-friendly environments offered."

The addition of the cross assemblers and conversion of the software from the PDP-11/44 to the DECSYSTEM-2060 went very smoothly. "To the two machines, the software looks the same, explained John Emerson. "The jump from one system to the other was very easy. The conversion of the software to the DECSYSTEM-2060 was virtually transparent."

"The DECSYSTEM-2060 gets things accomplished fast. Products are produced on time with plenty of power to spare, and as a result, we're able to offer some very talented people a very good job," added Don Moffitt.

Uses of the DECSYSTEM-2060 at Parker Brothers

The DECSYSTEM-2060 currently has three purposes at Parker Brothers. The first is as a central development system with the emulator fed into it, and with editing right off the DECSYSTEM-20. It is primarilly used as a large host machine with cross assemblers, cross compilers, and language decoders attached to it. Parker Brothers does software development on the DECSYSTEM-2060 as a host because of the enhanced speed and editing power.

The second major use of the DECSYSTEM-2060 is as a large on-line storage system (on a RP20 disk). This is a invaluable tool in Parker Brothers software factory. Games in the process of being created and even those already created can be stored and the RP20 allows vast amounts of user space. There is also a directory structure on the DECSYSTEM-20 with English-like names which allows control of VCS games with very good security.

The third major use of the DECSYSTEM-2060 is as a group communication machine. It's very important that each and every person on the VCS staff knows the status of projects being worked on. Using DECmail/MS, an electronic message software program, the system becomes an environment, encompassing all projects and an extremely dynamic environment.

"Every person in my group uses the DECSYSTEM-20 and PDP-11/44, said Doug Detroy. "Each person has at their hands the power and speed of the DEC-20 for creative purposes, then down-loads their programs to the PDP-11/44. Everyone communicates through the DECSYSTEM-20 on DECmail/MS and, therefore, we are able to check the status of any project - at any time. Sort of a management information system."

Greg Baletsa also praises the DECSYSTEM-2060 as a host management system for communications needs. "Electronic mail is great, and it has become a most useful item since the departments have grown," he said. "Because of DECmail/MS on the DEC-20, engineering functions can report fast, which enables us to keep on our most inportant schedules without failures."

"The DEC-20 has tremendous reliability and we're able to have a better quality control. We also have a better idea of how each game actually works with the hardware," explained Don Moffitt.

The software design staff of Parker Brothers at the start of software development was 10-15; now, with the DECSYSTEM-2060 in place, the group now has 50 people and it's still growing. Parker Brothers has 70 terminals in use at any one time and they try to leverage off of these tools whenever possible.

Moffitt explains, "We are looking to expand to our next CPU as our user requirements increase. Right now, everything works great! The load on the system is good and the DECSYSTEM-2060 continues to support all of engineering's efforts with even a little reserve. It's great! We feel there has to be a balance between the acceptable level of performance through these resources and the users, and even potential users on the system. People want to do more and they enjoy what they are doing. Productivity has actually increased," Don said.

John Emerson commented, "People still take six months to create the games, but we have an unequalled group motivation and the games seem to be getting better and better. If it were any other product and you are late, or you don't produce precisely when the product is supposed to be delivered, management feels the cost of any computer is extravagant. Our management doesn't feel this way about the DECSYSTEM-2060 - and we've never been late with a game!!!"

Don Moffitt put it succinctly. "We truly are in daily competition with other game vendors, but because of the DECSYSTEM-2060, our workforce is extremely motivated—and this places us at the forefront the VCS game competition."

- MONOPOLY™ is Parker Brother's most popular board game with approximately 85 million copies produced, in 19 languages, since its creation in 1933.

SPEAR SIMPLIFIES LARGE SYSTEM ANALYSIS And REPORTING

Joe Sullivan

Last August, DIGITAL introduced SPEAR (Standard Package for Error Analysis and Reporting), a sophisticated new software package that performs automated analysis of large-computer system failures.

The first release of SPEAR, field-installable on VMS, TOPS-10 and TOPS-20 operating systems, is available to customers with DECsystem-10s and -20s, and VAX-11/780s.

Run on a daily basis, the software is designed to assist field service engineers in diagnosing hardware failures.

This is a powerful new analytical tool which allows engineers to make the best possible use of their time. It's the first time that anyone, anywhere in the industry, has released a practical application of rule-based technology similar to that employed in artificial intelligence systems.

SPEAR is Symptom Directed (as Opposed to Test Directed)

SPEAR is based on the assumption that as hardware failures occur, they'll be accompanied by a corresponding set or series of physical events or "symptoms" that might indicate the source of the problem.

SPEAR's precursors produced a detailed report of the system "event file," a massive body of raw data on the system's day-to-day operations. When the computer failed, the field engineer would sometimes have to manually sift through bulky printouts looking for telltale symptoms that might indicate the source of the failure. Furthermore, the engineer's accuracy in identifying symptoms and then correlating them to the fault was limited by personal experience and human memory.

SPEAR automates a portion of the interpretive process. A body of human expertise has been designed into the software so that SPEAR can identify a wide range of "if-then" relationships between symptoms and causes. An engineer running the ANALYZE fault-isolation module will be presented not with a massive event file printout, but with a brief summary of symptoms and a suggestion as to the likely source of the failure.

SPEAR Approach Based Upon Field Service Experience

This takes a lot of the drudgery out of the engineer's job. Before SPEAR was developed, about 85 percent of the time spent on a typical service call was devoted to diagnosis. We expect this figure will be greatly reduced, with a corresponding decrease reflected in the mean time to repair.

Prior experience "repairing" software on KL-based systems all over the world confirmed for Jack Walden, Sr. Maintainability Engineering Manager, the wisdom of SPEAR's rule-based methodology. "Though I couldn't read schematics, some of my colleagues with hardware expertise taught me 15 or 20 simple rules to follow in tracking down systems failures: 'If you see this, check the following things.' It was a successful technique, and we wanted to incorporate that technique into our new error analysis product."

SPEAR is "Smart"

SPEAR is "smart" because a lot of thought went into the conception and design of the software package. "One of our first objectives was to provide a software product for the field that would resolve some of the problems associated with intermittent failures," says Nick Howgate, manager of the SPEAR Development Group, a part of Customer Services Maintainability Engineering.

"Intermittent failures are difficult to diagnose; they're time-consuming; they often require repeat visits; they cause a lot of customer dissatisfaction; and they're very frustrating for the engineer. Generally, we wanted to reduce repair time, by developing a process of symptom-directed diagnosis rather than the conventional test-directed approach.

"On an even wider scale, we wanted to capture a high level of expertise and make it available to the whole population of field service engineers."

The initial release of SPEAR supports MASSBUS disk and tape devices. In nine months of field testing, the TOPS-10 and -20 versions of the SPEAR package were greeted enthusiastically, says Nick.

He pointed out that both formal and informal polling showed engineers felt SPEAR gave them greater speed and accuracy in solving problems and in analyzing a system's overall performance. "They also seemed to appreciate INSTRUCT, the computer-aided instruction module which teaches them how to use SPEAR and then doubles as a reference manual/troubleshooting guide."

Customers, managers, and engineers will also come to appreciate another of SPEAR's functions, COMPUTE, which provides quantifiable data on the system's availability and effectiveness at any given moment or across time.

Initial release of SPEAR is just the beginning, the first generation of error analysis tools to embody the principles of artificial intelligence.

As the technology advances, and as we get feedback from the field, SPEAR-type systems are going to get smarter and smarter, representing more expertise, applicable to a wider array of hardware devices, and able to diagnose a greater variety of problems with increasing accuracy. And without a doubt, DIGITAL will continue to set the industry standard.

Availability of SPEAR differs according to geographic location. Please check with your local LCG sales person for more information.

EUROPEAN NOTES:

DECsystem-10/-20 USER GROUP MEETINGS

Nita Smith
LCG European Marketing & DECUS -10/20 SIG Rep

As a follow-up to the May LCG announcements, national DECUS User Group meetings were held in Europe between June 13 and June 24, 1983. Organized jointly by the local -10/-20 SIG chairmen and by the Country LCG coordinator, the meetings' objectives were to explain DIGITAL's recent decisions concerning 36-bit development and the new high-end strategy, to discuss with users the implications, and to gather feedback from them.

Meetings were held in Belgium, Sweden (for the Nordic countries), Germany (including Swiss users), the U.K., France, and Holland.

The sessions were supported by DIGITAL through the local sales and support organizations, as well as by Ernie Racine of LSG Engineering, myself, Nita Smith, and by representatives of the Valbonne LSG Technical Support Center.

In all, approximately 200 customers attended the meetings. Reports indicate that the meetings were very productive and discussion lively. The matter of greatest concern to the users was in the area of continued support and maintenance of DIGITAL's 36-bit products.

An important element was the opportunity for DIGITAL to obtain directly inputs on users reaction to the new integration strategy, their concerns about their growth needs over the coming 12-18 months, and their suggestions as to integration needs. The DECUS Large Systems SIG questionnaire and its role was also discussed.

These European meetings were the beginning of a continuing dialogue which we expect to have with the user base, both as a DECUS group and individually by account.

The annual DECUS Europe Symposium in Zurich later in August will be another important part of this process.

1983 DECUS EUROPE SYMPOSIUM: AUGUST, ZURICH

Nita Smith

The 1983 DECUS Europe Symposium will be held at the Eidgenossiche Technische Hochschule—or ETH, the Federal Institute of Technology—in Zurich, Switzerland, on August 30 through September 2, 1983.

DECsystem-10/-20 SIG has put together a very comprehensive program of sessions for the DECsystem-10/-20 users. The keynote will be the discussion of DIGITAL's Large Systems Marketing's new high end strategy, featuring speakers Win Hindle, Per Hjerppe, Walter Manter, and Peter Hurley. Any new information to be presented at Zurich will also be discussed during DIGITAL's International Sales Symposium in Boston, Mass., the previous week, to ensure that Sales is well-informed.

In addition, a number of technical sessions are planned with representatives of LSC Engineering, covering everything from Layered Software Updates to Communications and 10/-20 Clinics. Several user papers on applications will also be presented.

Specially added to the program in light of the new integration strategy are two sessions: a -10/-20/VMS Coexistence Workshop with both user and DIGITAL participation, and a VMS For TOPS Users session. The recently conducted DECUS Large Systems SIG survey sent to -10/-20 users will also be reviewed.

The exhibition area this year is in ETH's grand entrance foyer. Large Systems Marketing will have a DECSYSTEM-2020 in the exhibit, with a variety of demos, including a CP/M library. The -2020 will be connected via DECnet to the VAX-11/780 in the exhibit area, and to the DECSYSTEM-2060 in Valbonne, France. In addition, a terminal connection will be available to the ETH SMP system. All of us in Europe look forward to a highly interesting as well as a fun DECUS Symposium.

For details of the Zurich Symposium program, contact your Country DECUS Secretariat, or call me in Geneva.

DECSYSTEM-20 NETWORKS with VAX at CANADA DECUS

Jim Rehill

At the Canada DECUS Symposium, held in Ottawa, late in June, the LCG Booth contained a DECSYSTEM-2020 with 1 MW of MOS memory, 2 RM03 drives, and full DECnet capability. We networked our -2020 to a local VAX-11/750 (part of a Phase III network) via phone lines, to a VAX-11/780 and a PDP-11/44. The DECSYSTEM-2020 was running DECnet Phase II.

For terminals from our system, we had a DECmate II, a Rainbow 100, and 2 VT100s (the entire demo area contained a variety of terminals, including PC-350s in addition to those mentioned previously).

On the DECSYSTEM-2020 we demonstrated DECmail/MS, NFT (the Network File Transfer program), NCP Calc, and VT100 capabilities from our demo harness. Stand alone demos for the new PASCAL-30 compiler, and SED, a screen editor for TOPS-20, were also available. A demonstration of the CX/DX file transfer software with the DECmate II was given on demand, along with the KERMIT file transfer program for the Rainbow 100. John Kurzman of New York SWS demonstrated OPUS, the office automation software for TOPS-20

Shortly after the DECUS Symposium opened, a massive power failure hit the entire downtown Ottawa area, lasting for about 90 minutes. Sessions continued under emergency lighting, and upon power restoration, we found that the DECSYSTEM-20 had suffered no ill consequences.

Richard Harper from DIGITAL's local Field Service office was responsible for the DECSYSTEM-20 installation and for overseeing its general operation during the show. Richard did an excellent job! Special thanks to Linda

Bradley of DIGITAL's A&SG,Kanata, and to Mary Patruno of Hamilton HGL Data Systems, Ltd., for her assistance in formatting the Large Systems SIG questionnaire.

PHILIP MORRIS WINS A Rainbow™

Barbara Holtz

Many thanks to all of the DECsystem-10/-20 mainframe users who contributed to the "Integration of PCs to Mainframes" poll. The responses have shown that many users have already integrated personal computers with DECsystem-10/-20 mainframes — and in very ingenious and creative ways.

The winner of the Rainbow personal computer is Jon Tabb, research scientist at Philip Morris' Research Center, Richmond, Virginia. Installed at the Center are two DECSYSTEM-2060s and one DECSYSTEM-2020 for general timesharing in support of Philip Morris' research facility. The mainframes are used for data collection and analysis in chemical investigation — for example, analyzing chemical models of smoke compounds.

According to Tabb, the DECSYSTEM-20s are appreciated for their ease of use, software versatility, and "variety of the kinds of things you can do." The Research Center is looking at offloading specific functions (such as data reduction for laboratory instruments) from their mainframes and distributing them, in terms of load, to personal computers. Currently, scientists at the Center are investigating tools on the personal computers — such as Columbia University's KERMIT-80 program — for file transfer to the host, after data reduction is completed.

Responsibility for the Philip Morris account resides with Dick Groseclose of DIGITAL's Richmond Branch office. Congratulations to the winner!

(For further details, please refer to the May BUY-LINE, p.6, and to the latest two "Large Systems News" — that is, the April/May, and the June/July issues.)

NEW LCG LITERATURE: WE'LL MAKE IT EASY
(Bulk Literature Shipments from SCCs, not via BUY-LINE)

Peggy Sullivan

Need literature? You can't "reach" immediately for brochures that are sitting on a shelf in the Marketing Group or in Northboro. You need to know about new literature quickly and to be able to access it easily.

SCCs to Bulk Ship New Literature
Now, it will be easy for you. Your local Sales Communication Specialist will get advance information about new LCG literature and about bulk shipments of each piece. The copies you need will be in **your** local office in a timely fashion.

Your Sales Communication Specialist will be responsible for seeing that enough copies are available that you won't run out of stock and have to wait six weeks to send that technical summary, data sheet, or brochure to your customer.

LCG Literature List Still Useful
Because the bulk distribution will get material to the offices so quickly, we will no longer be doing distributions with BUY-LINE.

However, we will continue to indicate new literature offerings in case you should miss the notice from your Sales Communication Specialist.

For literature which already exists, please continue to place your orders through Northboro, as indicated on the first page of the Literature List which appears at the end of most BUY-LINE issues. As new editions and revisions of these pieces are prepared, they will be bulk distributed.

We will indicate in the LCG Literature List which literature must be ordered from Northboro and which has been distributed in bulk to your office.

We are trying to make it easier for you to obtain the literature you need to help you sell. We invite you to give us feedback on our literature pieces and how the new distribution system is working for you.

For more detailed information concerning the SCCs (Sales Communications Centers), please refer to the article of the same title, page 12, the June 1982 BUY-LINE.

LCG LITERATURE LIST

Barbara Holtz

HARDWARE OPTION BULLETINS

CD20 Card Reader	ED 23999 61
DN20 Communications Front-End Subsystem	ED 20504 26
DN200 Remote Station	ED 22987 61
IDX-3000 Integegrated Digital Exchange (Linkabit Switch)	EC 24075 61
LP20-A/B Line Printer Systems	ED 19I37 26
LP20-C/D Line Printer Systems	ED 19I35 26
LP100-B Line Printer Systems	ED 19I39 26
LP100-F/H Line Printer Systems	ED 19677 26
LP200-B Line Printer System	ED 24013 61
TU72 Magnetic Tape Subsystem	ED 19763 26
TU77 Magnetic Tape Subsystem	ED 17400 26
TU78 Magnetic Tape Subsystem	ED 23003 82

EDITOR'S NOTE: You may order these publications by contacting Jane Fitzgerald at P&CS in Northboro. The DTN is 234-4325. Mail stop is: NRO2-2/W3, RCS code is NR12 (for telexes).

You may order ***new LCG Literature*** via your SCC (Sales Communications Center) Specialist. The Literature List in BUY-LINE will asterisk the very latest items.

If you find an item to be out of stock or incorrectly numbered, please phone me or Gail Breslin at DTN: 231-4996 or 231-4013, and we'll try to help you out.

ATTENTION ! ! ! This list (and order numbers) supersedes all prior lists.

** Joint Marketed with NCP Corporation

SOFTWARE DATA SHEETS

BASIC-PLUS-2	ED 18885 26
BLISS-36	ED 19208 26
COBOL	ED 22109 61
CFS-20	EC 23858 61
CPL	ED 15659 63
DECmail/MS	ED 24000 61
DECnet-10 Phase III	ED 24056 61
DECnet-20 Phase III	ED 22835 61
DBMS-10	ED 21782 81
DBMS-20	ED 21827 61
FORTRAN-10/20 V.7	ED 24054 61
IBM RJE E/T	EC 24057 61
IQL	ED 15660 63
NCP Calc	EC 24656 61**
PASCAL-20	EJ 24759 61
TOPS-20 PSI Gateway	ED 24053 61
TOPS-20 Supported Utilities	ED 22933 61
TOPS-10 V7.02	EZ C5532 44
TOPS-20 V6.0	EZ C5532 45

TECHNICAL SUMMARIES

DECsystem-10 Technical Summary	EE 21041 26
DECSYSTEM-20 Technical Summary	EA 20415 18
LCG Product Summary - April '83	EJ 24660 61
LCG Price List - April '83	EE 24661 61

PHOTO BULLETINS

DECsystem-10/20 Fact Sheet	EJ 19596 26
DECsystem-10 Family At A Glance	EJ 19595 26

LCG BROCHURES

Don't Let the Software Blues Get You Down	EA 24773 61
TOPS-20 Multiprocessing	EA 24237 61
Introducing TOPS-20 Multiprocessing	EC 24046 61
DECSYSTEMS: The Users Choice	EA I8366 26
DECsystem-10 Family	EA 20572 26
Develop Microprocessor Applications Faster	EA 22895 61
TOPS-10/20 Data Networking	EC 22813 61
LCG Software Referral Catalog (2nd Ed.)	EJ 22780 61
Symmetric Multi-Processing	ED 24089 61
The Personal Mainframe/Electronic Mail	EA 22872 61
The Personal Mainframe	EA 24546 61

CORPORATE BROCHURES

Digital's Ethernet	EA 22710 18
Digital Introduces DECnet/SNA Gateway	EA 22703 18
Digital Storage Architecture Product Summary	ED 23981 18

MARKET SPECIFIC BROCHURES

Education:

Wesleyan Univ.	EA 20271 87
Univ. of Vermont	EA 20270 87
Univ. of Pittsburgh	EA 19633 87
Columbia Univ. Teachers Coll.	EA 19630 87

Engineering:

Monenco: Engineering for Excellence	EA 23075 16

Banking:

New York City Bankers Choose Timesharing	EJ 24794 61*
Bankers Trust: Partners in Success	EA 23155 16
"Will the Street Bypass Time Sharers?" (reprint from "Institutional Investor")	EJ 24696 61

GENERAL MATERIALS

DECNET-10 Phase III Press Kit Folder	EJ 23998 61
BUY-LINE Compendium (Vol.2: 1981-82)	EZ 09016 82
Digital's Systems Interconnect Folder	EJ 24741 61
DECision Systems Folder	EJ 24658 61

POSTERS

1983 Smooth Sailing Calendar	EJ 21823 61
Chart Your Course Sailing Poster	EJ 21623 61
LCG Personal Mainframe Poster	EJ 21652 61

SITE PREPARATION GUIDES

Corporate Field Service's Generic Site Planning Kit, available worldwide, enables site planners to do floor layouts and site planning for all DIGITAL products including the DECsystem-10 and-20 product set. This Kit is designed to be Field Service's standard Site Planning tool. The new Kit's order number is EK-SPKIT-SP, available from P&CS, Northboro.

AUDIO VIDEO

LCG Users Tape (10 min.): loan request
Benchmarking/CPU Analysis: loan request with Brochure
DEC-10/20 Overview Slide Show
K. Stanton, Bedford MA
LCG DECSYSTEM-20 Timesharing Testimonial Slide Show
Kathie Stanton, Bedford MA, DTN 249-4068
Supplementary Slide Package: Memo Don Waite MR2-2/8D2
Large Systems Slide Presentation: (Modules 1 thru 7)
K. Stanton

* New order numbers for recently produced editions

BUY-LINE APPLICATION

NAME:

BADGE:

DEPT:

MAIL STOP:

COST CENTER:

OFFICE LOC:

( ) Please add my name to the BUY-LINE mailing list.

( ) Please delete my name from the mailing list.

My responsibility is in:

( ) LCG Sales

( ) LCG Marketing

( ) LCG Service

( ) Another product line or corporate function

Please detach and mail to Barbara Holtz, MR02-2/8D2. Thank you.

BARBARA HOLTZ

MR02-2/8D2

digital

DIGITAL EQUIPMENT CORPORATION
MARLBOROUGH, MASSACHUSETTS 01752

Large Computer Group

BUY-LINE

July 1983

Special In This Issue

LCG at U.S. Spring DECUS

Implementing the Integration Strategy

Cooperative Marketing Agreement
with Ampex to Improve Price/Performance

For Internal Use Only

digital

BUY-LINE JULY 1983
TABLE OF CONTENTS

LCG ORGANIZATION

LCG PRODUCT INFORMATION

SALES AND APPLICATION NOTES

GENERAL INTEREST

EMERGING MARKETS/TECHNOLOGIES

SYMPOSIA, COURSES, SEMINARS

LITERATURE AND SALES AIDS

ATTENTION!

Prices and availability quoted in BUY LINE - unless explicitly stated to the contrary - apply to Continental USA only; for other locations, please contact your local LCG Marketing Representative.

BUY-LINE is published monthly by the Large Computer Group, Marlboro.

EDITOR: Barbara Holtz, MR02-2/8D2, Ext. 4996
PUBLISHING COUNCIL: Don Mallinson, Jim Miller, Don Waite.

BUY-LINE IS COMPILED ON THE DIGITAL WS200 WORD PROCESSING SYSTEM BY GAIL BRESLIN.

LAYOUT AND ARTWORK ARE BY LORI FEAREBAY, BERLIN, MA.

PRINTER IS COMMONWEALTH PUBLISHING CO. OF BOSTON, MA.

CIRCULATION SERVICES ARE PERFORMED IN NORTHBORO, COORDINATED BY JACK DECESARE, OF P&CS.

Upon request (see mailer card in this issue), the following will be added to the **BUY-LINE** mailing list:

- Field Service Managers
- Marketing Managers
- Operations Committee Members
- Software Support Managers
- Software Specialists
- Sales Managers
- Sales Representatives
- Service Group Managers
- Product Managers

A MESSAGE FROM LCG

Rose Ann Giordano

As you are aware, DIGITAL has announced a change of focus in the DECsystem-10/20 development strategy. This decision provides for a further integration of DECsystem-10/20 computers into the DIGITAL information architecture and eliminates development of a follow-on 36-bit processor.

For many years, DIGITAL has been the leader in distributed data processing and interactive timesharing. As these concepts have matured, we have seen an evolutionary trend in our customers' computing needs. Our goal is to meet those changing needs with advances in technology.

One of the changes we see is a movement toward an Information Architecture; that is, the ability to easily use information at every level within an organization, from personal computers to mainframes. DIGITAL has provided early industry leadership to link together that diverse computing community through the Digital System Interconnect Architecture (Clusters) and our networking products (DECnet and Ethernet).

Integration and Support

The recent decision will focus our future high-end hardware development on our more broadly based VAX family of products and will concentrate DECsystem-10/20 resources on the integration of current KL-based systems into this DIGITAL Information Architecture.

Support of existing DECsystem-10/20 products will continue, including further development of communications capabilities, associated hardware and software support for the TOPS-20 and TOPS-10 operating systems, and our new mass storage offerings. In addition, we are committed to investing incremental software resources to allow DECsystem-10/20 users to be gracefully integrated into DIGITAL's integrated computing architecture.

Computer clusters and our integrated architecture allow customers to share their computing load among multiple processors and will permit easy addition of processors, file servers, and workstations when more computing power is required. This can be accomplished in a cost effective manner which preserves past investments and supports new applications.

We understand that any change in direction raises concerns. Our commitment to you is to provide the best set of products to meet your customers' needs in the years ahead and to protect their current investments. We believe this program will do both. As distributed processing moves forward to include high end systems, local area networks, shared file systems, and personal computers, we will make sure that DECsystem-10 and DECSYSTEM-20 users will be integrated into this new system environment.

To understand and prioritize our customer needs, we are working with the Large Systems SIG (Special Interest Group). The Large Systems SIG recently sent out a questionnaire to each installation to help us understand and prioritize our customers' needs.

LCG's NEAR-TERM STRATEGIC DIRECTION

Rich Whitman

May and June were busy months for LCG. The decision to discontinue the Jupiter project was made barely one week prior to U.S. Spring DECUS. Ken Olsen felt that once the decision had been reached, we had an obligation to inform our sales force and our customers immediately.

We worked closely with Engineering to begin accelerating our Integration Strategy, with the goal of meeting the growth needs of the LCG customer base. We have now distributed to the sales force worldwide a document which outlines this strategy.

It is important that the sales force carefully reads and understands the strategy, in order to present it to customers. LCG Integration Strategy is intended to be the first phase of a longer-range program, with specific financial, product, and integration tools to follow, as they are approved.

A questionnaire has been sent to members of DECUS asking for a prioritization of what DIGITAL should do to assist our customers to integrate. In early July, a meeting is being held in Boston for a select group, to further define this prioritization. We have committed to disseminating a statement, during the month of August, of our specific plans for the customer base.

The reaction of our customer base to our DECUS announcement has been mixed. Obviously, many customers are disappointed and upset. However, many others, including some very large customers, are now working closely with sales, to begin to implement the Integration Strategy. Customers such as Rutgers, Keplinger, F.B. Hall, and Michigan Bell Telephone have already decided to continue to order DECSYSTEM-2060s and DECsystem-1091s, giving them more time to plan their own Integration Strategy.

Even as we stress the integration message to our installed base, we do not preclude sales to new-name accounts. DECsystem-10s and DECSYSTEM-20s continue to offer viable solutions in the timesharing marketplace. We expect this market to exist for the foreseeable future.

The sales force has in fact closed several new new-name accounts - after the Jupiter decision was made public; they include: Intelligenetics, Contel, (Continental Telephone), Executive Resources Inc., and Marketing Associates Inc. - all needing timesharing systems. Evaluation revealed that the DECSYSTEM-2060 does indeed best serve these client's needs.

The LCG Marketing Group has met with many customers since our recent major announcement. We feel, now, that the best strategy to employ is to proceed slowly, and to stay in the planning cycle with our customers. Those customers who are trying to change their computing strategy quickly are the most difficult to help. We have experienced outstanding loyalty from many customers who want to continue to remain in the DIGITAL fold.

Finally, as we transition into the new DIGITAL and its Management Centers, it is important to understand structural roles. The Management Centers and Country Managers, along with the District Managers, have the tactical responsiblity for ensuring that LCG customers grow with DIGITAL. These resources have been very responsive and are eager to assist the field in this endeavor.

The LCG Marketing Group continues our availablility to assist Management Centers, Districts, and Regions in all strategy issues regarding the customer base. We will also provide more general consultative assistance to the Areas, Countries, and Sales Force in our new role as Strategic Marketing Group.

IMPLEMENTATION of LCG's INTEGRATION STRATEGY

Larry Vifquain

A statement outlining LCG's Integration Strategy was sent by EMS to geographic, regional, and district sales managers as well as to LCG Coordinators during the first week of June.

The purpose of this EMS was to restate LCG's product direction as announced at the US DECUS Symposium, May 23-27 in St. Louis. Additionally, the statement outlines potential effects on the DECsystem-10/-20 customer community, presents recommendations for working with this community, and outlines the plans which are being implemented to support the integration.

Action items planned at time of mailing included:

- Distribution of both the implementation strategy and DIGITAL's Product Plan and Systems Architecture to all sales persons;
- Identification of specific individuals within the various organizations to serve as contact points and coordinators;
- Distribution of more specific information on integration products and integration plans, for example, information on software tools, high-speed communication links, etc.;
- Distribution of pertinent results from the customer survey mailed shortly after the close of US Spring DECUS.

The following subheadings highlight the strategy statement's focal points:

- LCG's Product Direction
- Recommended Field Actions
- Potential Customer Reactions
- Support Strategies
- DIGITAL's Strategy (Distributed System Architecture)
- Recommended Strategy for LCG Accounts

Regarding the LCG Integration Strategy in Europe please, address any questions you might have to Nita Smith, EHQ, Geneva.

AMPEX MEMORY IMPROVES SMP PRICE/PERFORMANCE

Paul Feresten

LCG is pleased to announce that we have entered into a Cooperative Marketing and Service Agreement with Ampex Corporation's Memory Products Division. The Agreement will provide significant price/performance benefits to DECsystem-10 customers, particularly those with SMP systems.

Under the terms of this agreement, Ampex and DIGITAL will jointly market the use of Ampex's multiported MOS memory subsystem, the ARM 10LS, for use on the DECsystem-10. Additionally, the DIGITAL Field Service organization will provide contract maintenance service for the ARM 10LS subsystem. Ampex has exclusive sales responsibility for the ARM 10LS.

Arm 10LS Features

The ARM 10LS is a multiported memory subsystem designed for use on DECsystem-10 systems. Because it is a shared memory system, it is ideally suited to the requirements of tightly coupled multiprocessing and therefore to the TOPS-10 SMP system.

The ARM 10LS provides a completely transparent alternative to the MH10 and to mature offerings including the MG10, MF10, ME10, etc.

The ARM 10LS is available in 256 KW increments; a single cabinet may be configured up to 1 MW. This represents a fourfold increase in the storage capacity per square foot vis-a-vis the MH10. The ARM 10LS's features are summarized:

- 256 KW, 512 KW, 768 KW, and 1024 KW capacity
- 4,6, or 8 ports
- 2- or 4-way internal interleaving
- Error checking and correction (ECC) circuitry
- 550 nanosecond maximum access time
- 670 nanosecond maximum read cycle time.

The ARM 10LS will offer DECsystem-10 customers sizable savings in terms of space and maintenance cost while increasing system performance and overall system availability. While it is particularly well suited to SMP environments, substantial benefits will also be realized by customers using CORE memory configurations in single CPU systems.

Marketing

Under the terms of our Marketing Agreement with Ampex, DIGITAL and Ampex will jointly promote the advantages of the ARM 10LS for use in DECsystem-10 configurations. DIGITAL will support Ampex sales efforts by helping to identify prospects for the ARM 10LS; Ampex will work closely with DIGITAL to ensure that important issues such as system and memory delivery times and minimum system configuration guidelines are adhered to.

Final sales responsibility for the ARM 10LS belongs to Ampex. In cases where a new system sale is involved, as in the case of an SMP upgrade, Ampex will work closely with us to ensure that system and memory arrive at the customer's site at the same time.

Service

DIGITAL Field Service will be providing contract service coverage for the ARM 10LS. This means that DIGITAL will service the unit in the same manner as if it were a DIGITAL product. In the very near future, final Field Service Pricing will be available. Field Service coverage of the ARM 10LS will be provided on a worldwide basis.

Contact and Support Information

Since the responsibility for the sale of the ARM 10LS belongs exclusively to Ampex, it is important that sales referrals be channelled to them in the most efficient way possible. For this reason, Ampex has established a central Marketing contact for this purpose.

Please direct your inquiries and inputs regarding the Marketing Agreement to:

Bob Nelson
Ampex Corporation
Memory Products Div.
200 North Nash Street
El Segundo, CA 90245
phone: 213-640-0150

In Europe, please contact:

Bob Trick
Ampex Corporation
Acre Road
Reading, England

All responsibility for pricing quotations, delivery commitments, and final conditions of sale are the responsibility of Ampex.

NOTE:*This Agreement pertains to the Ampex ARM 10LS and its use and service on the DECsystem-10 only. LCG and DIGITAL do not endorse the use of Ampex memories other than the ARM 10LS.*

Please let me know if I may answer any questions on this agreement.

AP-20 ARRAY PROCESSOR PACKAGE: BENEFITS PERFORMANCE OF DECSYSTEM-2060

Rita Tillson

In the June BUY-LINE, LCG announced that high performance array processing is available worldwide on TOPS-20, as the result of a cooperative marketing agreement between DIGITAL and Floating Point Systems Inc. (FPS) of Beaverton, Oregon. FPS array processors are an effective solution for high-speed iterative algorithmic execution.

For many years, DIGITAL and FPS have had a solid working relationship in establishing cooperative marketing agreements for a number of products. DIGITAL has previously integrated FPS array processor packages into several of its operating systems and processors. These include: VAX/VMS, PDP-11/RSX, and KL10/TOPS-10.

The AP-20 Array Processor Package is the newest cooperative offering, and supports FPS' AP-190L array processor; a hardware interface allowing connection of the AP-190L to the DECSYSTEM-2060; and a series of subroutines and a modified TOPS-20 monitor, available from DIGITAL's Northern California Software Services District.

The AP-20 package is an attached array processor option for DIGITAL's TOPS-20 Operating System. It integrates the high performance FPS AP-190L with TOPS-20's ease of use and sophisticated interactive time-sharing. This, combined with a low cost per calculation, provides a highly attractive and competitive option for the DECSYSTEM-20.

Applications and Benefits of the AP-20 Array Processor Package

The AP-20 Array Processor Package can be beneficial for many CPU intensive or compute-bound applications. These include simulation and modeling, scientific and research applications, and high volume data analysis.

The following represent specific business applications which can benefit from the AP-20 package:

- Graphics calculations
- Matrix manipulation
- Linear regression
- Operations research
- Forecasting (model calculations)
- Return on investment analysis
- Statistical packages
- Offloading of batch processes for better interactive response.

Similarly, the AP-20 can benefit the following scientific applications:

- Signal processing
- Image enhancement
- Stress analysis
- Fast Fourier Transforms (FFTs) and integrations
- Multivariable functions
- Eigenvalues and Eigenvectors
- Quadratic interpolation
- Recursive filter and rasterization
- Compute intensive scientific applications.

Performance

A set of preliminary performance tests have been run on the AP-20 Array Processor Package. These evaluations indicate that appropriate functions running in the array processor can increase their performance by a factor of 3 to 11 times.

These performance tests reflect only the usage of the array processor with Array Processor FORTRAN and the AP libraries. Further performance enhancements can be obtained with the use of optimized AP Assembly Language; performance data for optimized AP assembler code has not yet been obtained.

Tables 1 and 2 represent the results of the AP-20 Array Processor Package performance evaluation. All tests were measured by elapsed time on a standalone DECSYSTEM-2060 with 1.5 megawords of internal memory and a fully configured array processor system. The data reflects both the time that the routines ran in the array processor and the time spent for data transfer to the array processor.

Table 1 A double matrix inversion, 50 X 50 matrix

Mode of use	Time (seconds elapsed)
KL FORTRAN	4.25
ADC calls to math library	1.36
UDC calls to math library	0.93
AP FORTRAN	0.68

Table 2 Z(I) = ((X(I)*PI*2**1/2+Y(I))**2)/2
1000 element array, executed 1000 times

Mode of use	Time (seconds elapsed)
KL FORTRAN	38.00
AP FORTRAN	14.00
AP FORTRAN calling math library routines	3.43
ADC math library calls, inline	4.22
VFC subroutine	3.16

DECISION SYSTEMS IN A TIMESHARING ENVIRONMENT

DATA + DECision System = Information to Users Who Make Decisions.

Marilyn Davison

DECision Systems is the name we have chosen to describe that which we do best in an internal timesharing environment.

IBM has popularized this concept with the Information Center promotion. DIGITAL does this kind of end using computing better, and we have the reference accounts to prove it.

A DECision System:

- turns data into information
- maximizes professional productivity
- is product independent; can include DECsystem-10s, DECSYSTEM-20s, VAXs, PDP-11s, PCs.

Our current DECision System marketing program includes:

- the DECision System folder, mailed to BUY-LINE readers about two months ago;
- Sales Training for specialty purposes and for invidual districts;
- Customer Seminar Support (ongoing);
- A Modular Marketing Guide (to be available Q1); and
- A DECision System Brochure (to be available Q1).

The DECision System Folder was an attempt to deliver information on this subject to the Field immediately, so that we could utilize current information, and could update it when we have new information.

Contents include:

- a re-print from "Information Processing" Magazine, entitled "Will the Street Bypass Time Sharers?" (good in its discussion of Lehmann Brothers decision to bring their timesharing in-house with DECSYSTEM-20s);
- the Bankers Trust brochure, an excellent description of a successful internal timesharing account;
- the NCP Calc brochure, which describes the powerful spreadsheet calculation capabilities available on TOPS-10 and TOPS-20.

While we intend to continue supplying you with appropriate content for this folder, we encourage you to provide information or reprints which may be pertinent to your geographical area or to your own particular customer mix.

NOTE: For your reference, a brief article entitled: "Customer Survey: DSS on DECsystems" appears on page 8 of the April 1983 BUY-LINE.

FINANCIAL APPLICATIONS FOR THE INTEGRATED ENVIRONMENT

Larry Vifquain

Integration of the DECsystem-10s, DECSYSTEM-20s, and large VAX systems into a distributed architecture highlights the need for software applications which are supported on all systems.

Applications that can operate under TOPS-10/-20 and VMS and that can offer a common user interface allow customers to leverage their software investments and to gain maximum benefit from the distributed environment.

LCG is working to identify and qualify application software which supports this environment. There are a number of valuable tools and packages available that are used by many of our customers today. Additionally, others are being modified to work across the DIGITAL spectrum of products (PCs to mainframes). As we identify products of particular interest, we will feature them in BUY-LINE or in other internal publications and literature.

Financial application software is a key requirement. Interactive Systems Inc. (ISI) of Burlington, Mass. supports a number of financial software packages which are transportable among the DECsystem-10, the DECSYSTEM-20, and VAX computer systems.

Included are: General Ledger, Accounts Payable, Accounts Receivable, Purchasing, Inventory, Payroll/Personnel, Fixed Assets, and Order Entry. All programs are written in COBOL (COBOL-74 and VAX-11 Native Mode).

Designed to integrate with the on-line architecture of DIGITAL's timesharing systems, all packages are menu driven and feature formatted screens through use of ISI's screen processor, SCOPE. A layered architecture design has been used for greater efficiency, system integrity, and application to networking environments.

Available in both commercial and fund accounting versions, these packages are being used by a variety of manufacturing, distribution, publishing, and financial companies, as well as by educational, governmental, and non-profit organizations.

Interactive Systems Inc. began the migration of software from the DECSYSTEM-20 to the VAX in January 1979. During the past three years, ISI has developed a software implementation strategy together with numerous utility packages to facilitate support of software on both 32-bit and 36-bit machines.

Additional information on the ISI products can be obtained from Mr. Gary Kuba at ISI's Burlington office. The phone number is 617-273-4420.

FCC and LCG

Sharon M. Lipp

The following is one of two articles in this BUY-LINE issue regarding the FCC Program and LCG (the other is entitled 'New DECsystem-10/20 Options'). Both articles complement one another.

This article, "FCC UPDATE" which also appeared in the June 6 issue of "Sales Update", has been included in BUY-LINE because of the subject's overall importance to DIGITAL. It is important to understand that the DECsystem-1091, the DECSYSTEM-2040, and -2060 are classified as "mixed" systems, while the DECsystem-1090, and the DECSYSTEM-2020 are "grandfathered" products.

FCC UPDATE**

Dave Brown
Karen Kilday

As you know, the FCC has issued regulations that are designed to minimize radio and TV communication interference. All computer devices manufactured as October 1, 1983, must meet the Class A or Class B technical limit.

FCC Definitions

The FCC requires that computer devices first manufactured after October 1, 1981 be tested and labeled to meet one of two categories:

- Class A computer devices: products marketed for use in industrial, commercial, and business applications.
- Class B computer devices: products marketed for use in the home or in residential areas (such as personal computers).

Products that were first manufactured prior to October 1, 1981, are called "grandfathered" products.

- **Grandfathered products:** may continue to be built and labeled "untested" through September 30, 1983. These products may be sold and resold beyond October 1, 1983 (i.e. the grandfathered status of a particular unit does not expire - it is permanent). To continue the building of a grandfathered unit after October 1, 1983, the product must be ECO'd to bring it into Class A or Class B compliance.

The FCC has categorized the use of some computer devices as "temporarily" exempt from the Class A and Class B regulations. The following fall into this exempt category:

- A computing device utilized in any transportation vehicle, including motor vehicles and aircraft.
- A computer device used in an electronic control or power system by a public utility.
- A computer device used in an appliance (e.g. microwave oven, dishwasher, etc.).
- A specialized medical computer device used under the direction/supervision of a licensed health care practitioner.
- Also exempt are computer devices used by the U.S. Government or its agencies.

The FCC has provisions to allow "mixed systems" to be marketed and sold.

- **Mixed system:** a Class A or Class B product configured with a non-Class A or non-Class B product (e.g., a grandfathered product or an exempt product). In mixing these systems, the Class A or Class B product must maintain its FCC status.

DIGITAL's Position

*** Class A/Class B**

As of October 1, 1981, all new computer devices are tested and labeled Class A or Class B, appropriately. **All** computer devices manufactured as of October 1, 1983 will be tested and labeled Class A or Class B, appropriately. This includes those grandfathered products that will continue to be built after September 30, 1983. DIGITAL has chosen to label computer devices at the cabinet level.

*** Grandfathered Products**

Grandfathered products are currently labeled "untested". As of October 1, 1983, one of two activities must occur:

1) discontinue the manufacture of the grandfathered product, or
2) modify the grandfathered product to meet the Class A or Class B regulations in order to continue to manufacture.

Some grandfathered products, such as the PDP-11/70, will be discontinued. These products may continue to be marketed and sold until supply is depleted.

Most grandfathered products will be modified to meet the Class A or Class B regulations. DIGITAL has chosen a shielding technique that modifies the grandfathered products at the cabinet level. The cabinets are shielded at the side panels; there is a new shielded distribution panel technique; and shielded cables are used in most cases. For details on this shielding technique, a slide presentation entitled "EMC - The DIGITAL Approach" is available from the FCC/EMC Program Office.

In addition to meeting the FCC requirements, the product modifications will have very positive benefits for our customers:

- better cable management
- easier system assembly
- significantly easier system re-configuration.

As a result of the modifications required, most grandfathered products which will continue to be manufactured beyond October 1, 1983 will receive new model numbers. The Q1/FY84 Systems and Options Catalog and the July 1983 DEC Standard Price List will contain the new model numbers, configuration guidelines, etc.

*** Exemptions**

The FCC exempt categories refer to product end use in the U.S. The FCC has no jurisdiction outside the U.S. Customs area. A customer order for an **exempt** product must be accompanied by a letter from the customer stating the intended **exempt** use of the product.

It is strongly recommended that the sale of **exempt** products be avoided. The exemptions are temporary and could be removed by the FCC at any time. Also, although some customer applications may be exempt, they may in fact insist on Class A or Class B products.

In the July 1983 DEC Standard Price List, those products which are intended only for exempt use or for use as field add-ons to grandfathered systems will be clearly identified.

*** Mixed Systems**

Mixed systems can result from adding a Class A or Class B product to a grandfathered product, either as a system sale or a field add-on. The Fcc status of the Class A or Class B product must be maintained. Adding an option or subassembly which violates the FCC Class A or Class B status of a product DOES NOT constitute a mixed system, and is specifically not allowed by the FCC (unless it is for exempt use and is so stipulated in a letter from the customer).

DIGITAL will begin the phaseover from manufacturing grandfathered products to Class A and Class B products in Q1/FY84. Mixed systems comply with the FCC regulations and should be marketed and sold as such. During this transition stage, grandfathered products will continue to be available until supply is depleted; they can also be sold and re-sold by OEMs and end users in the future; the grandfathered status remains with each unit and is permanent for each unit.

As previously mentioned, the July 1983 DEC Standard Price List, and the Q1/FY84 Systems and Options Catalog are being revised to reflect the new product designations and configuration guidelines. Also, the FCC Regulations Q & A Brochure is available (Part # EA 23749 98) through your Literature Contact.

See future issues of "Sales Update" and BUY-LINE for more extensive FCC information.

** Except for the introductory paragraphs written by Sharon Lipp, this article was reprinted from the June 6 "Sales Update".

WHO ARE OUR LICENSED KL10 & KS10 DIAGNOSTIC USERS?

Sharon M. Lipp
Bob St. Cyr

In an effort to better serve our customers, LSE and A&SG are working to update and to provide better packaging and service for the KL10 and KS10 maintenance products. If any of your customers have ordered and/or have received the following self-maintenance products, please forward their name to Bob St. Cyr (MKO1-2/M38).

DECsystem-10/20 Maintenance Products:

ZH006
ZH007
ZH008
ZH009
ZH010

DECsystem-10/20 Diagnostic and Maintenance Product:

ZT001

Your cooperation in this matter will help DIGITAL to better serve these customers.

NEW DECsystem-10/20 OPTIONS

Sharon M. Lipp

The following is one of two articles in this BUY-LINE issue, regarding the FCC Program and LCG (the other is entitled "FCC UPDATE"). The two articles complement one another. This article provides a complete list of LCG products which can be sold after July 1, 1983.

It is important to understand that the DECsystem-1091, DECSYSTEM-2040, and DECSYSTEM-2060 are classified as "mixed" systems, while the DECsystem-1090 and DECSYSTEM-2020 are classified as "grandfathered" products (please reference the 'FCC UPDATE' article for clarification of these terms).

As you know, the FCC has issued regulations that are designed to minimize radio and TV communication interference. All LCG (in fact all DIGITAL) devices manufactured as of October 1, 1983 must meet the Class A or Class B technical limits. As a result, the following new FCC packages for the DECsystem-10/20 have been developed to replace the existing packages.

Customers will notice minor cabinet changes and a change in the way cables connect to the I/O connector panel. There are no changes to the software nor performance of the DECsystem-10/20.

Below is a table that defines the LCG specific product. Corporate products such as the VT100, TU78, etc. have not been included in this list. The MLP and BMC for the FCC version or replacement products are the same as the older options.

If an option is not listed, then the option has been placed in the maintenance only section of the DSPL. This does **not** imply that the option will no longer be supported by the TOPS-10/20 Operating Systems.

Note that the FCC version of the KL (KL10-R) is offered only in the 60 cycle variation and that the KL10-R is a "mixed" system. The KL10-E will continue to be offered in the 50 cycle variation. New designators have been assigned for consistency reasons. The 50 cycle variation have been placed in the FAO/E section of the DSPL.

The FAO/E (Field Add-On/Exemption) section includes those options which are non-FCC products. The Hardware section is for Class A, Class B, and Qualified Sub-assemblies.

FIELD ADD-ONS/EXEMPT

OPTION	DESCRIPTION
1077-UA	DUAL KI 1077 UPGRADE S/W KIT
1090-PE(PF)	256K SYS PKG T-10
1090-PH(PJ)	512K SYS PKG T-10
1090L-PE(PF)	256K L/O PKG T-10
1090L-PH(PJ)	512K L/O SYS PKG T-10
1090S-UG(UH)	1090B TO 1090 SMP U/G
1090S-UM(UN)	1090 SMP U/G W/MEM
1091-FJ	512K SYS PKG T-10, 50 CY
1091-FF	1M SYS PKG T-10, 50 CY
1091L-FJ	512K L/O SYS PKG T-10, 50 CY
1091L-FF	1M L/O SYS PKG T-10, 50 CY
1091S-FF	Mem less KL10E, PV Kit, 50 CY
1091S-FJ	Mem less KL10E, 50 CY
1091S-FL	Mem less KL10E, DIB/DMA20, 50 CY
2020-ME(MF)	348K SYS PKG RP06 32TTY T-20
2020-MG(MH)	384K SYS PKG RP06 32TTY T-10
2020L-ME(MF)	384K L/O SYS PKG RPO6 32TTY T-20
2020L-MG(MH)	384K L/O SYS PKG RP06 32TTY T-10
2040-FJ	512K SYS PKG T-20, 50 CY
2040-FF	1M SYS PKG T-20, 50 CY
2040L-FJ	512K L/O SYS PKG T-20, 50 CY
2040L-FF	1M L/O SYS PKG T-20, 50 CY
2060-FJ	512 SYS PKG T-20, 50 CY
2060-FF	1M SYS PKG T-20, 50 CY
2060-UB	2040-2060 UG W/MC20 T20+MODEL A
2060-UC	2050-2060 UG W/T20+
2060-UD	2050-2060 UG W/T20+MODEL A
2060L-FJ	512K L/O SYS T-20, 50 CY
2060L-FF	1M L/O SYS PKG T-20, 50 CY
AN10-BA(BB)	APRA Interface for T-10
AN20-BA(BB)	ARPA Interface for T-20
CD20-AA DNCXX-AA	
CD20-AB DNCXX-AB	285 CPM CARD READER
CI20-AB	KL10 CI PORT ADAPTER
DC20-EA(EB)	COMM EXPANSION CAB
DC20-EC(ED)	COMM EXPANSION CAB
DN20-DB	EXPANSION DRAWER + DN20-BA, 50 CY
DN20-MA(MB)	DEC20 128KW FRTEND
DN20-MC(MD)	DEC10 128KW FRTEND
DN20-MU	DN20-C TO DN20-M UPG
DN21-JB	EXPANSION DRAWER, 50 CY
DN200-MA(MB)	REMOTE STATION T10
DN200-MC(MD)	REMOTE STATION T20
DN200-MU	UPGRADE CORE TO MOS MR
DN22-AA(AB)	TOPS-20 IBM FR END FOR 2020
DN25-AA	8 ASYNCH LINE MUX & CONTROL
DN25-AB	DIST PANEL + DN25BA
DN25-BA	8 ASYNC LINE INTERFACES
DN25-DA(DB)	EXPANSION DRAWER + DN25 AA
DN25-EC(ED)	EXPANSION CAB + DN25-DA
DN87-U	DC76 Upgrade to a DN87-A/D
DN87-UM	DN87-A/D to DN87-B/C
DN87S-U	DN87-B/C to DN87S
DZ11-AA	8 LINE ASYNCH MUX FOR 2020
DZ11-BA	8 LINE EXPANDER FOR 2020
KL10-FA(FB)	EXT ADDR CPU
KL10-FC(FD)	EXT ADD CPU WMEM

KL10-ER	KL10E W/O MEM, DIB/DMA20, 50 CY
KL10-PM(PG)	1080 TO 1090 UPGRADE
KL10-PV	KL10B TO KL10D UPGRADE MODEL A
LP07-YA	CHARABAND FOR LP07 64/64 EDP
LP07-YB	CHARABAND FOR LP07 96/96 EDP
LP07-YC	CHARABAND FOR LP07 64/96 EDP
LP07-YD	CHARABAND FOR LP07 KATA KANA
LP07-YF	CHARABAND FOR LP07 OCR-A 64/96
LP07-YH	SCI CHARABAND 96CH 2SETS FONTS
LP07-YJ	96CH SCI AND EDP CHARABAND
LP07-YK	CHARABAND FOR LP07 SWED/FINN
LP07-YL	BRITISH CHARABAND 64/6
LP07-YM	OPEN GOTHIC CHARABAND 64/64
MF20-LB	256K INTERNAL BASIC MEM, 50 CY
MF20-LD	256K INTERNAL SECOND ME, 50 CY
MF20-LJ	256K EXT BASIC MEM ORANGE, 50 CY
MF20-LK(LL)	256K EXT BASIC 2ND MEM, 50 CY
MF20-LN	256L EXT BASIC MEM, BLUE, 50 CY
MS10-BA	64K MOS MEMORY EXPANSION
M9301-WA	1090/91 SMP BOOT FOR DN87S
M9301-WB	1090/91 SMP BOOT FOR DN20
RP20-AD	ADD-ON DSK TOPS-10 FORMAT, 50 CY
RP20-AJ	ADD-ON DSK TOPS-20 FORMAT, 50 CY
RTP20-HA	MASTER SUBSYSTEM/1091
RTP20-HC	Dual Chnl Option 1091
RTP20-KA	MSTR SYS 2040-S/2060-P
RTP20-KC	Dual Chnl Option 2040/50/60
RTP20-KE	MSTR SYS 2040-P2050-P
RTP20-KH	MSTR SUBSYS/ARPA, BLUE DX
RTP20-KK	MSTR SUBSYS/ARPA, ORNG DX
RTP20-EB	MASTER SUBSYSTEM/1091, 50 cy
RTP20-ED	DUAL CHNL OPTION 1091, 50 cy
RTP20-EE(EF)	MASTER SUBSYSTEM/1090
RTP20-EH(EJ)	DUAL CHNL OPTION 1090, 50 CY
RTP20-FB	MSTR SYS 2040-S/2060-P, 50 cy
RTP20-FD	DUAL CHNL OPT 2040/50/60, 50 cy
RTP20-FF	MSTR SYS 2040-P/2050-P
RTP20-FJ	MSTR SUBSYS/ARPA, BLUE DX
RTP20-FL	MSTR SUBSYS/ARPA, ORNG DX
TAU77-EC(ED)	2020 TAPE SYS 800/1600
TU72-ED	TAPE DR 9TR 125IPS NL,50 CY
TX02-EC(ED)	MAG TAPE SUBSYS TU70 HI-B
TX02-EF	TAPE CONTROL W/C HNL-DEC2060, 50 cy
TX02-EJ	MAG TAPE SUBSYS TU70 CC-B60, 50 cy
TX03-FB	TWO CHNL SWITCH OPTION
TX03-EC(ED)	TWO CHNL SWITCH OPTION
TX03-EE(EF)	TWO CHNL SWITCH OPTION
TX03-EH(EJ)	TWO CHNL SWITCH OPTION
TX05-FB	TWO CONTROLLER SWITCH OPTION
TX05-EC(ED)	TWO CNTL SW OPTION + 2ND CNTL
70-11426-A0	OPT 100FT LPT CABLE FOR 2020
BC10R-20	20'XY CABLE
BC10R-30	30'XY CABLE
BC10R-40	40'XY CABLE
BC10S-20	20'CNTL CABLE
BC10S-50	50' CNTL CABLE
BC10S-70	70'CNTL CABLE
BC10S-A0	100'CNTL CABLE
BC10W-25	COMMUNICATOR CABLE 25'
BC10W-50	COMMINICATOR CABLE 50'
BC10W-75	COMMUNICATOR CABLE 75'
BC10W-AO	COMMUNICATOR CABLE 100'
BC10X-25	EMERGENCY POWER CABLE 25'
BC10X-50	EMERGENCY POWER CABLE 50'
BC10X-75	EMERGENCY POWER CABLE 75'
BC10X-A0	EMERGENCY POWER CABLE 100'
BC10Y-25	BUS OR TAG CABLE 25'
BC10Y-50	BUS OR TAG CABLE 50'
BC10Y-75	BUS OR TAG CABLEL 75'
BC10Y-A0	BUS OR TAG CABLE 100'
BC10Z-25	CHANNEL BUS CABLE 25'
BC10Z-50	CHANNEL BUS CABLE 50'
BC10Z-75	CHANNEL BUS CABLE 75'
BC10Z-A0	CHANNEL BUS CABLE 100'
BS10B-25	DRIVE BUS PWR+SIG CBLS 25'
BS10B-35	DRIVE BUS PWR+SIG CBLS 35'
BS10B-50	DRIVE BUS PWR+SIG CBLS 50'

HARDWARE
CLASS A, B, QSA

OPTIONS	DESCRIPTION
1091-FH	512K SYS PKG T-10
1091-FE	1M SYS PKG T-10
1091L-FH	512K L/O SYS PKG T-10
1091L-FE	1M SYS PKG T-10
1091S-FE	Mem.less KL10E, PV Kit
1091S-FH	Mem.less KL10E
1091S-FK	Mem.less KL10E, DIB/DMA20
2040-FH	512K SYS PKG T-20
2040-FE	1M SYS PKG T-20
2040L-FH	512K L/O SYS PKG T-20
2040L-FE	1M SYS PKG T-20
2060-FH	512 SYS PKG T-20
2060-FE	1M SYS PKG T-20
2060-UA	2040-2060 UG W/MC20 T20+
2060L-FH	512K L/O SYS T-20
2060L-FE	1M SYS PKG T-20
CI20-AA	KL10 CI PORT ADAPTER
DC20-AA	8-LINE BASIC ASYNCH GROUP
DC20-CC	CABLES + DIST CAB FOR DC20-AA
DC20-CD	CABLES + DIST CAB FOR DC20
DC20-DA	8-LINE ASYNCH EXPANSION GP
DIB20	I/O BUS INTERFACE
DN20-BA	SYNC LINE CTRL PLUS DN20-BB
DN20-BB	SYNC LINES SPEEDS 2.4-19.2KB
DN20-DA	EXPANSION DRAWER + DN20-BA
DN21-JA	EXPANSION DRAWER
KL10-RE	KL10E w/o mem, DMA/DIB20
LP20-JA	600 LPM BAND PRINTER 64/96 CHAR
MF20-E	256K EXPANSION
MF20-LA	256K INTERNAL BASIC MEM
MF20-LC	256K INTERNAL SECOND MEM
MF20F-LH	512K EXT BASIC MEM ORANGE
MF20F-LM	512K EXT BASIC MEM, BLUE
RH20	INTERNAL CHANNEL
RP20-AC	ADD-ON DSK TOPS-10 FORMAT
RP20-AH	ADD-ON DSK TOPS-20 FORMAT
RP20-CA	MASTER DUAL PORT UPGRADE
RP20-CB	ADD-ON DUAL PORT UPGRADE
TU72-EC	TAPE DR 9TR 125IPS NL
TX02-FE	TAPE CONTROL W/C HNL-DEC2060
TX02-FH	MAG TAPE SUBSYS TU70 CC-B

LCG PRODUCT PANEL AT US SPRING DECUS

Barbara Holtz

The LCG Product Panel at US DECUS is traditionally sponsored by the Large Systems SIG (Special Interest Group). At the recent US Spring DECUS Symposium in St. Louis, the Panel was chaired by Bill Miller of Texas State Purchasing, who welcomed the attendees and introduced the Panel members. They included: Rose Ann Giordano, manager of LCG; Win Hindle Jr., Vice President, Corporate Operations; Bill Johnson, Vice President of Systems and Communications Engineering; Sam Fuller, Senior Group Manager of Corporate Research and Architecture; Bernie Lacroute, Senior Group Manager, Distributed Systems; Rick Corben, Corporate Product Manager for Central Engineering; Per Hjerppe, Marketing Manager, LCG; and Ulf Fagerquist, vice president, LSG Engineering.

CAPTION: L to R: LCG Product Panel members Hjerppe, Corben, Fagerquist, Miller, speaker Giordano, Johnson, Hindle, Lacroute, and Fuller.

Addressing an audience of nearly 800, Rose Ann reiterated the announcement relayed days earlier to the sales force and customers: elimination of the high-end follow-on processor (more popularly referred to as the "Jupiter") project.

DECsystem-10 and -20 users expressed concern - during this Panel session and throughout the Symposium - that DIGITAL might neglect the development and maintenance of existing DECsystem-10s and -20s, and that the cost of integrating systems would be prohibitive.

While the initial message disappointed many users, Rose Ann stressed DIGITAL's commitment to LCG's installed base. "We intend to preserve your investments", she said; "our customers are better served by accelerating the integration of DECsystem-10s and -20s into our distributed computing environment and focusing future high-end hardware development on our more broadly based VAX family of products.

"As distributed processing moves forward to include high-end systems, local area networks, shared file systems, and personal computers, we will make sure that DECsystem-10 and -20 users will be among the leaders in incorporating this new systems environment."

Citing delays in the Jupiter project's development, Win told the audience that DIGITAL reached its decision after development of the high-end system became more complex than previously expected. The window of opportunity had passed; the delivery date would be far enough into the future so that the new system would lose viability as a product and would not be cost-effective to the users who were anticipating it. Bill Johnson added "we questioned whether the price/performance would be best for the time and market."

Hindle said that the decision to cancel the 36-bit follow-on processor was carefully studied, and involved the participation of senior staff and sales management. "DIGITAL will continue to develop new software and hardware for existing DECsystem-10s and -20s," he reassured the listeners; "we are determined to remain a leader in the industry."

"We are going through a difficult period," Hindle said, "but we are entering a new era, and I'm optimistic concerning our current 36-bit products."

Following this series of announcements, Sam Fuller, group manager for Research and Development, detailed DIGITAL's long and short range plans for the proposed integration and development of existing DECsystem-10/20 systems and new 32-bit machines scheduled for introduction in the early 1990s. Fuller also went into technical discussions on the potential of the Ethernet, CI, LNI, and Cluster options which will be available to integrate current systems and make them more powerful.

Rick Corben discussed more specifically Engineering's plans for achieving the integration into distributed architecture. He outlined several specific development plans for protecting customer investment in DECsystem-10/-20 software and hardware and for providing growth (increased capacity, as well as integration). Corben also spoke of the product capabilities available within DIGITAL's distributed environment, including personal computers, network servers and services, and powerful new 32-bit systems. He concluded by urging customers to "ensure more graceful integration of your systems into the distributed environment, by providing us *now* with your inputs concerning your needs."

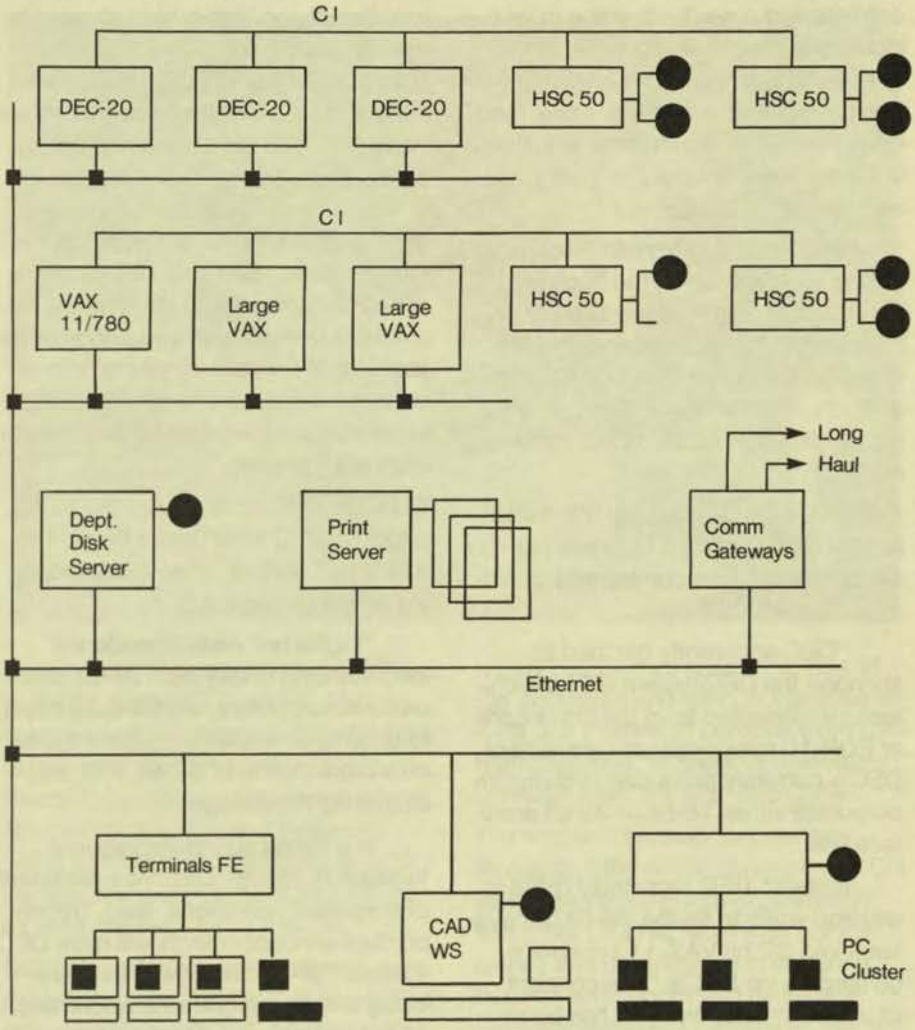
Rose Ann invited customers to use the LCG Booth at DECUS as the focal point for scheduling one-on-one sessions with LCG and Corporate managers and to participate in an extensive questionnaire which LCG would be mailing to customers for their response prior to a meeting to be held in Marlboro in July. Rose Ann expressed the hope that a formal Corporate commitment would be made toward DECsystem-10 and -20 users and their system needs, in August.

The three Management Center executives, Dave Grainger, WACS Manager, Chick Shue, NAS Manager, and Harvey Weiss, MASS Manager, along with Ward Davidson, Area Operations Manager for the WACS Center, were available after the Panel, for one-on-one discussions with LCG customers. Many customers took advantage of this opportunity to speak on behalf of their management as well as their own specific departments in expressing their needs concerning the integration of LCG products into the Corporate distributed architecture.

Both Rose Ann and Win said that LCG would be listening carefully to the concerns of users during and after DECUS week, and would consider customer suggestions as to their immediate and long range needs. "DIGITAL management will be listening to your ideas in order to make future development as smooth as possible," Win said.

In closing this session of the Large Systems SIG group, panel members once again emphasized DIGITAL's commitment to further development of software and hardware for existing DECsystem-10s and -20s, and promised to meet throughout the week with users in order to answer questions concerning possible future changes in their systems.

DECSYSTEM-20* INTEGRATED into DIGITAL DISTRIBUTED ARCHITECTURE



*DECsystem-10s ALSO INTEGRATED into ARCHITECTURE via ETHERNET

NEWSBEAT: LCG IN THE NEWS

Barbara Holtz

LCG was not only a "hot topic" at US Spring DECUS in St. Louis, but also commanded page 1 coverage in four industry trade publications the week after DECUS ended. The following press clippings are excerpts only, and reflect the various computer industry trade publications' point of view – not necessarily LCG's opinion.

We encourage you to read these articles in their entirety in the publications, rather than to make inferences based upon headlines alone. Please note that these are direct quotations; as such, they do not always correctly reference DIGITAL's product trademarks.

COMPUTERWORLD, May 30, 1983, page 1: "DEC scraps Upgrade Plan for Decsystems" (see corresponding article on page 10)

... "DEC apparently decided to abandon the DECsystem 36-bit architecture - inherited from the firm's earlier PDP-10 minicomputer - since all of DEC's currently produced systems incorporate either 16-bit or 32-bit architectures.

... Instead, DEC reportedly plans to develop ways to tie the 36-bit Decsystems into 32-bit VAX-11 superminicomputers via DEC's "interconnect cluster concept," which it has been espousing for more than a year...

... The company will continue development of hardware, software, and communications enhancements for their products, most notably enhancements for the processors' TOPS-10 and TOPS-20 operating systems and a series of mass storage devices.

... According to Rose Ann Giordano, the company will put its "Computer Interconnect and high-speed channel interface and Ethernet connections on both TOPS-10 and TOPS-20."..Giordano stressed that these packages are integration and not conversion packages. "Our strategy is to integrate TOPS-10 and TOPS-20 into our overall corporate information architecture," she explained. She said DEC is committed to "doing some incremental software to make that integration more graceful. We want everything from our personal computers to our mainframes to be able to move data back and forth in an easy fashion."

ELECTRONIC NEWS, May 30 1983, page 1: "DEC axes 36-bit Work; To Key Vax, Clusters" (See corresponding article on page 22)

... "Digital last week abandoned long-standing decsystem 36-bit processor development, signaling its intent to base large-scale computer migration on a combination of 32-bit VAX and clustering technology.

... In a formal acknowledgement, Winston R. Hindle, DEC vice-president of corporate operations, said, "recent product announcements will allow DECsystem-10/-20 customers to move easily into an integrated environment, while allowing us to forego continued development of a new 36-bit high-end processor."

... Rose Ann Giordano, manager of the Large Computer group, ...said software development on the DECsystem family would continue, and hardware attachments enabling communications among DECsystem-10s, -20s and VAX-11 clusters would be forthcoming this year. (she) said that the firm plans to develop Ethernet gateways between the tightly-coupled smp environment previously available for DECsystem-10s and the loosely-coupled cluster schemes developed for the DECsystem 20 and VAX-11 families.

... Ms. Giordano said the Large Computer group, whose charter once was restricted to the decsystem family, has been assigned responsibility for all large systems, including those of the VAX-11 family. She said support for the mainframes will continue indefinitely, and noted two additional releases of the TOPS-10 operating system, Monitors 7.2 and 7.3, would be forthcoming this year and next."

INFORMATION SYSTEMS NEWS, May 30, 1983; page 1: "Chronic Delays Kill Off DEC 36-Bit 'Jupiter' "

... "DEC disclosed last week that it has suspended work on its 36-bit, 4-mips 'Jupiter' mainframe because of chronic development delays... all."

... most DECsystem customers have configurations of about four processors operating standalone and need the power of a Jupiter-class machine. DEC has announced that those customers now will be able to integrate their processors through its Computer Interconnect products and its Distributed Computing Architecture."

MIS WEEK, June 1 1983, page 1: "DEC Axes Its Jupiter; Miffs Users"

... "Digital has killed its unannounced 'Jupiter' project ...

... The project, under development for 'several years' according to Per Hjerppe, marketing manager of DEC's large computer group, was to be a high-end member in the DEC system-20 36-bit family of mainframe computers.

... the integration of the DEC system-20, and later the DEC System-10 into a distributed computing architecture, along with the VAX, could minimize the adverse effect of having no add-on machine, a user said."

LCG'S BOOTH AT US SPRING DECUS
GREAT DESIGN, TERRIFIC TEAM WORK

Jim Rehill
Nigel Webb

LCG's booth at US Spring DECUS in St. Louis was our most esthetically pleasing booth to date. It was the same size as the booth at US Fall DECUS in Anaheim (i.e. 50 by 50 feet). However, we brought only half the amount of hardware that we had at Anaheim.

The booth consisted of two parallel semi-circles. At the center was our DECsystem-1091. The first circle consisted of the CI disk system and several short blue walls, representing the CI. The second circle, which represented the Ethernet, was about twice as large as the CI circle. It was made up of taller orange walls and cable troughs on the floor. Lodged in the walls were enlarged color photos of the new DSIA poster.

Our system was a DECsystem-1091 - a KL10-E, painted blue; its configuration included 32 terminal lines, a DMA20 to allow the addition of external memory, and .5 MW of MOS memory. We added a DN20 for DECnet connections, another 1 MW of MOS memory, and .5 MW of AMPEX external memory. We had two RP06 disk drives, one RP07, and a TU78 tape drive. We also set up a CI disk system, which consisted of a Star Coupler, an HSC50, and an RA81 disk drive.

The -1091 ran TOPS-20 most of the time that the demo area was open. We ran TOPS-10 during specifically scheduled hours three mornings that week. We had a 9600 Bd DECnet link back to the Market timesharing machine in Marlboro.

We also had 22 VT100 terminals, two VK100 (or GIGI) terminals with Barco color monitors, two Rainbow-100s, and a DECmate II on the DECsystem-1091. Several dial-up terminals provided access to the systems back in Marlboro. Our "chat" area had VK100 keyboards and Barco monitors.

Missy Gardella demonstrated CX/DX software on the DECmate II. This allows a word processor to transfer files to and from the DECsystem-1091. Bernie Eiben demonstrated the Kermit file transfer system, and Finalword (WPS software) on the Rainbow 100. He also demonstrated MICRO-10/20, a CP/M emulator for TOPS-20.

DIGITAL and third party software were available on the TOPS-20 system. The latter included: SCOPE-10/-20, from ISI, and NCP Calc for TOPS-10 and -20. There were automatic demos of the Network File Transfer program (NFT), the Network Virtual Terminal program (SETHOST and HOST), the MS program (with both local mail and DECnet mail), the new PASCAL-36 compiler, the SED screen editor program, along with several games and other interactive demos. A remote demo of the FPS array processor for TOPS-20 and a Birds of a Feather Session for the AP-20 Array Processor Package were announced on the Booth's Menu Board.

Teamwork Pays Off

From the staging and design point of view, the LCG Demo Booth was a widely recognized succcess, due to the dedicated and well coordinated efforts of a number of persons from LSG Manufacturing, Software Engineering, in-house Field Service, and CSSE.

The system came up and ran well throughout the entire convention. LCG impressed the DECUS organization and other DIGITAL staff with our efficiency and organization in ensuring that our large booth and mainframe were operational in a minimum amount of time.

Special thanks go to John Rzucidlo, Madeline Chen, and Paul Tourigny. Madeline lent LCG a two-drive RA81 and Paul lent us the HSC50 and Star Coupler. Thank you again, John Rzucidlo, for spending several nights upgrading Madeline's other disks in return for the pair which she lent us.

My heartfelt thanks go, also to the hardware installation team consisted of Tim "Duncan" Hines, Darrell Poirier, Dino Genova, John Rzucidlo, and Rich Colarusso. Nigel Webb designed the booth layout, and installed the back drops and walls in the booth. Making his debut as assistant system manager was John Purretta; I, Jim Rehill, acted as system manager.

MANY THANKS TO THE LCG TEAM!

TOPS-20. NOW A NEW W

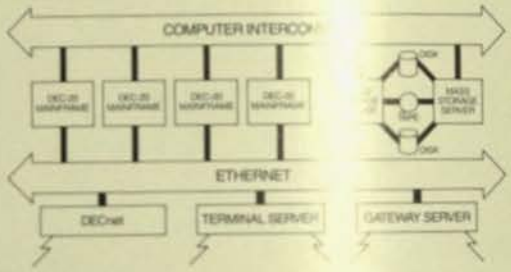
Introducing loosely-coupled multiprocessing with DECSYSTEM-20.™ A unique way to link mainframes for power, free all peripherals from hosts, and share resources among all users.

A compatible new version of TOPS-20™ operating system makes it possible.

Version 6 distributes operating system responsibilities among independent computing, mass storage and communications servers. These servers, processing work in parallel, allow system designers to build an open-ended multiprocessing network. The first network that performs like a single multiprocessing system.

Here's the inside story: Our new intelligent mass storage server is connected to as many as four DECSYSTEM-20's over a high-speed hardware bus. An extension to TOPS-20, the Common File System, gives each host equal access to all system files. The mass storage server off-loads the hosts of all physical I/O management tasks. This makes the server's disk and tape subsystem simultaneously and transparently available to all users regardless of which host executes the request.

Here's how it looks:



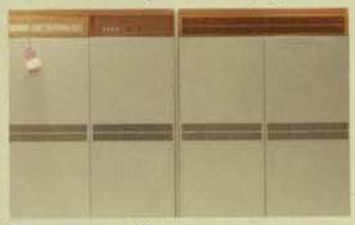
WAY TO EXTEND THE LINE.

A future extension of TOPS-20 will off-load each host of communications tasks. These will be performed by outlying intelligent communications servers on Ethernet. This will allow terminals on foreign networks, remote DECnet™ networks and other local area networks transparent access to your system. Again, independently of hosts.

With the new TOPS-20, the possibilities for system design become almost endless. You get freedom of information. You can create a virtual common file system using any number of disks. You get freedom of communications. You can link up with other networks regardless of their physical location, size, and protocols.

Most importantly, you can independently add and subtract dedicated computing, mass storage and communications resources to meet your changing requirements.

TOPS-20 Version 6. It provides the most flexible form of distributed processing ever because it's got what distributed processing has always needed most.

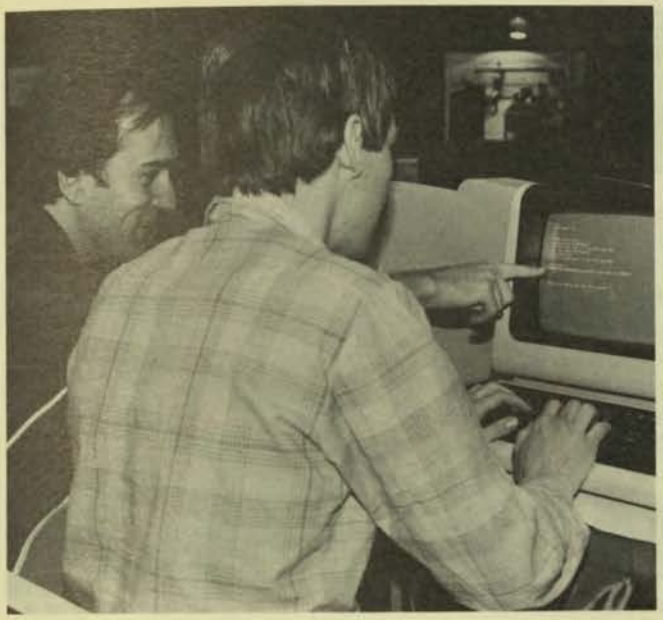


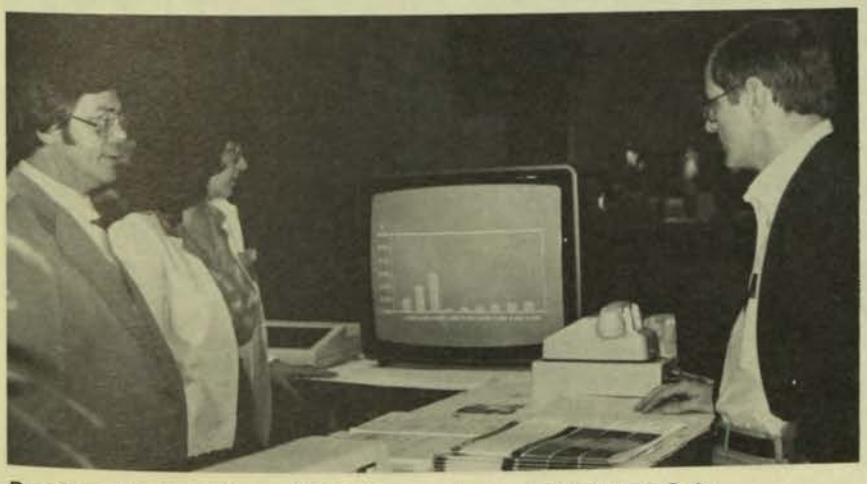
An operating system that makes it all hang together.

Find out more. **Digital Equipment Corporation,** Large Computer Group, MR2-2/8D2, One Iron Way, Marlboro, MA 01752. Tel. 1-800-DIGITAL. European Headquarters: 12 Av. des Morgines, CH-1213 Petit-Lancy/Geneva. International Headquarters: 100 Nagog Park, Acton, MA 01720 USA.

digital

LCG BOOTH





Bud Pine (L), President of NCP Corp., demonstrates NCP Calc.

LCG BOOTH and HOSPITALITY

TOPS-20 R6

Dave Braithwaite

This US Spring DECUS session covered the content, configuration requirements, and features of TOPS-20 Release 6. The highest priority features in R6 are:

- support for HSC50 disks,
- the basis for the Common File System, (CFS-20 V1.0), and
- CFS running on two systems.

Release 6 also contains other features, including:

- support for 3 MW of memory,
- password encryption,
- ARPA TCP/IP protocols,
- multi-forking in the EXEC, and
- enhancements to RSX-20F and to GALAXY.

As with R5 and 5.1, R6 requires a KL model B CPU, and in addition, at least 768 words of memory, and two RH20 slots for the CI20 port. CFS-20 customers are required to have a minimum of 1 MW of memory on each system.

HSC50 Intelligent Mass Storage Controller

Release 6 supports both the RA81 and RA60 disks, which can be grouped into multi-disk structures (four RA81s can be put into a structure). HSC50 disks will not be supported as a public structure, and thus customers should plan on using MASSBUS devices for booting and swapping.

At FRS, we will support up to three HSC50s on the CI with up to 60 disks. Further testing is expected to relax this constraint.

CFS Support

The discussion of CFS-20 was largely a repeat from the US Fall DECUS. Customers were informed that CFS would initially support two systems, and that further testing would be done before three and four system configurations were supported. Among the more popular features of CFS was the ability to access MASSBUS disks (RP04, RP06, and RP07) on other systems by using TOPS-20 as a disk server.

Customers were already aware that DBMS and applications coordinating their activities with ENQ/DEQ locking mechanisms or IPCF would require all users to be on one system. This seemed reasonable for the first release of CFS.

Customer Concerns

In discussions following the presentation, customers were supportive of our activities, and eager for the new features. Some of the specific points brought out during these discussions include the following:

- HSC50 disk performance should be roughly equivalent to an RP06, and customers should not expect a reduction in KL overhead due to using the HSC50.
- Customers who already encrypt passwords should find that our implementation will allow them to use their own algorithm in addition to ours.
- Whereas CFS will support RP06 and RP07 disks dual ported between two systems, TOPS-20 R6 may not support dual porting of RP20s, due to insufficient testing time.
- Customers have a lot of insight and interest in future enhancements of CFS which would enable them to more easily manage their multiple DECSYSTEM-20 sites. We are interested in pursuing this type of feedback.

TOPS-20 PSI GATEWAY

Son VoBa

My presentation at US Spring DECUS emphasized the functionality of the TOPS-20 PSI product (Release 1.0). We covered task-to-task communication and X.29 terminal access via the Public Network.

I discussed briefly what we in Marlboro have been doing concerning the Public Network, i.e.

- MR Library usage of the outgoing program X29PAD to access the Dialog information service,
- European engineers using the Public Network to keep us in touch with the field test sites in Germany and France, and
- using the Network to submit QARs to CSSE's Mother System.

Customers' questions included:

- the performance measurement of TOPS-20 PSI R1.0,
- the product's compatibility with the future corporate X.25 gateway,
- some technical details about how the X.29 server works,
- pricing and time frame of the product availability from SDC.

Concerns were voiced about TOPS-20 PSI restrictions, i.e. support of a single DECnet line, and the number of virtual circuits (there are 20 for this Release). One customer was concerned about what to do with the DN20, once DIGITAL releases the Ethernet X.25 gateway.

From the type of questions posed at the end of the talk, it appeared that the audience consisted of a good managerial and technical mix.

LCG LAYERED PRODUCTS PANEL AT US SPRING DECUS

Michael Brown
Peggy Doucet

The DECsystem-10 and DECSYSTEM-20 Layered Products Panel gave a brief overview of some of the available layered products. The products covered in this session included: APL, BASIC, BASIC-PLUS-2, BLISS-36, COBOL, DBMS, FTS-20, DIL, FORTRAN, LINK, MACRO, PASCAL-20, RMS, SITGO, and TRAFFIC-20.

Overall language and data management direction was given in the following goals:

- Less time between releases;
- Take advantage of extended addressing on DECSYSTEM-20;
- Make more use of RMS;
- Support more languages; and
- Develop more data management products.

The current autopatch products are:

TOPS-20	TOPS-10
ALGOL	ALGOL
APL	APL
BASIC-PLUS-2	BASIC-10
COBOL	COBOL
DBMS	FORTRAN
FORTRAN	LINK
LINK	RMS
RMS	SORT
SORT	

New products that will be autopatched after their release are: DIL, FTS-20, and PASCAL-20.

The PASCAL-20 product was announced and is currently in field test at a number of sites. At the end of the presentation, questions were asked and concerns raided about the integration strategy regarding TOPS-10, TOPS-20 and VMS.

Layered Products Panel; Michael Brown at podium

PASCAL-20

Michael F. Brown

This US Spring DECUS session, "Introduction to PASCAL-20", emphasized the following major features of the newly-announced PASCAL-20 V1.0:

- PASCAL-20 is an entry level product which runs on KL and KS TOPS-20 machines. The compiler is a one pass, non-optimizing compiler.
- PASCAL-20 conforms to Level One of the proposed ISO Standard. Level One includes conformant arrays.
- PASCAL-20 is a compatible subset of VAX PASCAL V2. Programs written in PASCAL-20 can be easily taken over to a VAX and compiled using VAX PASCAL V2.
- PASCAL-20 is an extended implementation of PASCAL. Many useful extensions have been made to the product, allowing more flexibility in programming.
- PASCAL-20 has a symbolic debugger, PASDDT, for faster and easier program development. PASDDT is a source level debugger that allows users to review the source code of their programs while still inside the debugger. PASDDT performs recognition on user identifiers, andenforces the scoping rules of the program being debugged.
- PASCAL-20 uses RMS, the TOPS-20 Record Management Services package, for all of its I/O. This is in line with LCG's goal of making more use of RMS in layered products. PASCAL-20 supports RMS sequential files only, although there is a provision for reading a record by simply specifying the record number relative to the start of the file.

At the session's end, the floor was opened to general questions concerning PASCAL-20. The input received from the question/answer period was quite favorable. Customers were pleased with the VAX compatibility, ISO Standard conformance, and use of RMS.

FORTRAN TECHNICAL SESSION

Jon Campbell

The FORTRAN Technical Session at US Spring DECUS was chiefly dedicated to a presentation of FORTRAN Version 7, which shipped to customers in March 1983 (for more complete details on this product, please refer to BUY-LINE November 1982).

FORTRAN V7 has been validated at the Subset Level, and has most full language features; the most notable exception is the INQUIRE statement. It supports the character data and block programming structures defined by the ANSI Standard, and a fair number of extensions to the Standard.

Customer response to both product and session was positive. Many customers at the Q & A period complimented DIGITAL for an "excellent product", and many reported that they had no problems upgrading programs which previously ran with FORTRAN V5.

Customer input varied concerning future releases of FORTRAN. They agreed that a strategy which emphasizes networking and data interchange is increasingly important. They also stated that extended addressing was quite important to the expansion of their current applications. Some customers wanted FORTRAN validated at Full (rather than Subset) Level as soon as possible.

Customers were very satisfied with our FORTRAN development effort, and the session was, in general, not affected by the announcement concerning the cancellation of the Jupiter project.

John Campbell speaking at session

Aerial view: a small part of LCG's booth and demos

JAPAN MEDICAL CONGRESS:
DECSYSTEM -20 RUNS AI-BASED DIAGNOSIS

Rebecca Alexander
Norio Murakami

The 21st General Assembly of the Japan Medical Congress, was held this year in in Osaka, April 3-11; in addition to lecture sessions, the Congress featured exhibits of state-of-the-art equipment in the medical field. DIGITAL participated as an exhibitor for the first time in this event, which is held every four years.

Thousands of physicians from around the world came to Osaka, to observe computerized and non-computerized techniques such as NMR (Nuclear Magnetic Resonance), scanning, imaging, and medical records processing; many of these techniques involved artificial intelligence (AI) software applied to medicine.

DIGITAL was represented by a booth shared by LCG and MSG (Medical Systems Group). MSG demonstrated Digital Standard MUMPS on the PDP-11/24 and the VAX-11/750.

LCG sponsored a medical diagnostic program, 'INTERNIST', which was developed at the University of Pittsburgh on a DECsystem-10. Dr. Randy Miller, one of INTERNIST's creators, was present at the Osaka conference to demonstrate to his fellow physicians the program's significant features as an experimental research system. Many sales inquiries were initiated as a result of this demo, performed on the DECSYSTEM-2060. The demo endorsed LCG's strength in AI medical applications.

After the Congress, Dr. Miller demonstrated INTERNIST on the DECSYSTEM-2060 at ICOT (the Institute for New Generation Computer Technology), the core organization behind Japan's Fifth Generation Computer Project, and at the Musashino Electrical Communication Lab of Nippon Telegraph and Telephone Corporation (the Lab is similar to Bell Labs of AT&T).

Not for commercial use yet, INTERNIST on the DECSYSTEM-2060, shows great promise of being a general purpose package which inputs symptoms and performs laboratory tests upon them, using AI techniques.

INTERNIST produces a reliable and complete diagnostic consultative program in the field of internal medicine. Artificial intelligence applied to internal medicine is a fairly recent and rapidly-growing field.

CAPTION: Dr. Miller (R) demonstrates "INTERNIST" program on DECSYSTEM-20 at Japan Medical Congress.

LCG PRESENCE AT TORONTO VIDEOTEX SEMINAR

Marilyn Davison

"What is Videotex, and how can I use it?" Customers from the Northeastern United States and Canada gathered in Toronto, Canada, June 13-14, to learn the answers to these questions.

Vigorous question and answer sessions followed presentations by current Videotex users: Michael Endicott, Philips Electronics, U.K.; Bruce Bolin, McLeod Young, Weir, Toronto, Canada; and Bill Carlisle, Digital Equipment Corporation, Northboro, Massachusetts, USA.

A full report on the seminar, accompanied by photgraphs, will appear in next month's BUY-LINE.

WHAT IS ARTIFICIAL INTELLIGENCE?

Mitchell D. Perlitch

Although artificial intelligence (AI) has only recently received general publicity, the field has a relatively long history. It is in the very beginnings of this history that we first observe the involvement of DECsystem-10s and -20s. Throughout this history until today, and for the foreseeable future, the DECsystem-10s and DECSYSTEM-20s continue to be extremely important to AI research.

Our department has prepared a 15-page overview of the AI field; a copy of it is enclosed along with this BUY-LINE mailing. This document surveys AI, its applications, various research centers, and the various marketing opportunities presented by this field of research.

Many of us in LCG feel the importance of having some understanding of what AI is all about.

A Research Area

AI is not a "market". It is a research area which involves many disciplines. "The central goals of Artificial Intelligence are to make computers more useful and to understand the principles which make intelligence possible" (Patrick Henry Winston, in his book "Artificial Intelligence").

There are many applications for intelligent machines, and it is these applications that can be viewed as marketing opportunities for the selling of computer systems.

In some sense, AI is the state-of-the-art of computer science research. AI research actually began in the 1960s with the advent of the LISP (List Processing) programming language. However, the bulk of computer science research was done in other areas. In the 1960s, computer science was generating programming languages. In the 1970s, it was creating simple data management tools (database and query systems). Currently, in the 80s, most of the real computer science research is AI or AI-related issues.

Understanding Intelligence

AI represents the first major scientific attempt to understand intelligence. Intelligence has been a subject for philosophers over the ages. Now, there is a scientific field dedicated to research in intelligence.

One science very closely tied to AI is psychology. To gain an appreciation of how AI applications differ qualitatively from traditional computing applications, one may consider an important question that is common to both AI and to psychological research. That is: "what is intelligence?"

Traditional computing applications order well-defined, "mechanical" operations into a logical sequence to manipulate real data, e.g. numbers and strings, to generate answers. Simply put, they perform the grunt work. They keep track of things, do arithmetic, etc. But they always operate on "real", concrete quantities.

AI applications manipulate symbols. Symbols are strings whose meaning/usage is "arbitrary", i.e. defined by the applications. They may refer to numbers, character strings, concepts, attributes, properties, etc. Symbols, like words in languages, are manipulated to describe, infer, etc.

AI Development Languages

Most AI computing has been done in the LISP language, originally developed by John McCarthy during the late 1950's (he's currently at Stanford University). Many dialects of this language are in use today.

Recently, another language, PROLOG (PROgramming in LOGic), has gained some support for use in AI applications. PROLOG was developed at the University of Marseille (by Rousel, in 1975). It is the language chosen for the Fifth Generation Computer Technology research, in Japan.

AI Leads the Way

Through the years, AI research has pushed computer science research. AI applications are, in general, much larger and resource intensive than traditional data processing applications. This has created a need for faster machines that are capable of running large programs.

For example, ARPA funded the development of a paging operating system, TENEX, from which TOPS-20 has descended. Paging systems take advantage of the fact that a program only executes some of its code at any given time. Therefore, it is not necessary for *all* of a large program to be in memory in order to run. At the time, this was a major advance in operating systems that was critical to the continuation of AI research.

Similarly, AI research has pushed the state of the art in computer hardware. This is illustrated by the development of the KL10 cache, LISP machines, etc.

Many sciences and disciplines contribute to and benefit from AI research, including: psychology and philosophy; physiology; biomedical and mechanical engineering; electronics; and computer science.

This article is excerpted from the introductory portion of the AI Overview, referenced above. Watch forthcoming BUY-LINEs for additional articles on this exciting new field in which DECSYSTEM-20s play a significant role.

DECSYSTEM-20s and VAX HELP MINING INSTITUTE RECOVER OIL*

Of the 450 billion barrels of oil discovered in the United States only about 115 billion have been recovered already. In New Mexico alone, about 11 billion barrels lie fallow beneath the earth's surface, and of those, only 500 million are recoverable by standard means.

How, then, can man extract the 10 billion barrels of oil that ordinary methods can't reach?

At the New Mexico Institute of Mining and Technology's (NMIMT) Petroleum Recovery Research Center in Socorro, researchers and students alike are investigating methods to unearth some of these riches. Techniques include flooding old oil reservoirs with water, gases, and chemicals to recover oil left behind by conventional recovery methods.

Research at the Center is organized into several different projects, such as mobilization of oil droplets tapped during water flooding, flow of gas in low permeability rocks, geology of reservoirs, and the physics and chemistry of carbon dioxide flooding.

At the heart of the laboratory data-handling and process-modeling for all of these projects is NMIMT's DECSYSTEM-2060, which is used by all four of the Institute's divisions: the College, State Bureau of Mines and Mineral Resources, the Research and Development Divison, and the Petroleum Recovery Research Center.

While oil recovery at the Petroleum Recovery Research Center may be among the DECSYSTEM's most impressive (and lucrative) applications, it's by no means the only one.

A Leader in Technological Education

The 100-year-old NMIMT, with about 1,200 students, is one of the nation's most prestigious institutes of technology. The small, publicly supported school offers technical education curricula ranging from undergraduate degrees to 14 different doctoral degrees.

"We cover more in our undergraduate courses than many other schools cover in their doctoral classes," boasts NMIMT computer center director Gary Smith. "For example, undergraduates in our computer center can take a course in compiler design, a topic that's typically not covered until postgraduate education."

Besides offering a sophisticated technical education to its students, NMIMT also conducts extensive research and development efforts in fields including earth and basic sciences, metallurgy, and mining engineering. While some of these projects are funded by private industry, others have contracts with the government.

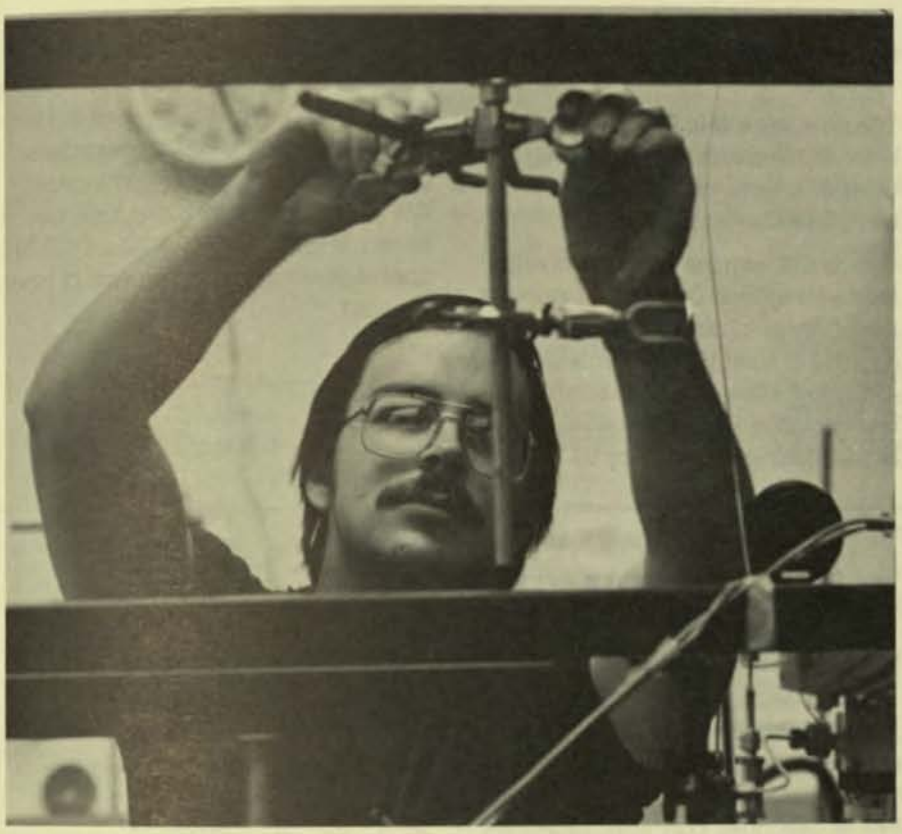
The school is recognized not only for its technical excellence, but for its relatively low 15:1 teacher-student ratio as well. "We certainly don't limit education to the classroom here," says Gary. "Our students are employed in many areas; undergrads and graduate students alike are used extensively for research projects. Every student has the opportunity to be employed somewhere - and the great majority are."

Students Come From Far and Wide

The Institute's students come to study in Socorro (about 80 miles south of Albuquerque) from many different places, some as far away as Peking. "They're attracted by its fine reputation (many compare it favorably to Stanford), as well as its cost," Gary explains. "The tuition is relatively inexpensive, and the lifestyle here in Socorro is conducive to learning. It's a small, peaceful town, so there are few places that would tend to distract students from their studies."

With an annual budget of $20 million from a variety of sources, NMIMT spends about $500 to $1,000 per year per student on computers, considerably more than most schools of any size. "Even students who are not enrolled in the computer center are required to take a minimum of one computer-related course (Introduction to FORTRAN)," Gary points out. "And that requirement has been in effect for at least 10 years, long before many other schools realized the importance of 'computer literacy' ".

NMIMT's reputation for Computer Sciences is so well-known that DIGITAL has hired a number of its graduates. And that's appropriate, given the extent and number of DIGITAL systems used by students, researchers, and faculty members throughout the school.



Designing an experimental piece of apparatus in the NMIT's mobility control lab, this technician, and many like him, rely on DIGITAL computer systems for data gathering and analysis.

When Gary became the computer center's director nearly three years ago, NMIMT had a DECSYSTEM-2040. He upgraded it to a DECSYSTEM-2060 about a year ago, and it now is the Institute's main timesharing system, with 96 terminals connected to it. The computer center also uses a VAX-11/750 with a UNIX operating system, for graduate-level courses.

"I've worked with DIGITAL systems for many years, and I've always been impressed with their products," says Gary, an avid member of the local DECUS organization. "Each time the company is about to come up with something bigger and better, I make sure that I know about it as quickly as possible."

DIGITAL's presence at NMIMT doesn't stop with the DECSYSTEM-2060 and VAX-11/750. The company donated five GIGI systems, 10 DECwriter IVs and five VT100s to the computer center. "Our terminals are used just about 24 hours a day," says Gary. "Some research projects go 'round the clock, and our DIGITAL systems inevitably play a major role in their success."

* Reprinted from "U.S. Area News," May 1983.

LCG's 1983 AD CAMPAIGN

Don Mallinson

As many of you read in the April BUY-LINE, LCG's 1983 Ad Campaign promotes the theme "DIGITAL's Mainframe Family Expands" with domestic ads featuring Digital System Interconnect Architecture.

Headlines for each ad are:

"Introducing DECSYSTEM-20. The Network" (first ad)

"Unleash Your DECSYSTEM-20s by Tying Them Together." (second)

"TOPS-20. Now a New Way to Extend the Line." (third ad)

The first ad was reprinted in the April BUY-LINE. The second ad (reprinted in the May issue) detailed the hardware aspects of DSIA; the third ad, reprinted in the centerfold of this issue, is about DSIA software. (The third ad was inadvertently omitted from the June BUY-LINE.)

Our audience includes DP/MIS managers, the organizational function which you approach in your sales calls. Our media schedule for all three of these ads targets the following publications:

"Computerworld"
"Infosystems" and
"Information Systems News".

Our purpose in hyping DSIA is to maintain and increase interest in our products. We also want to show that we are developing new products, and providing a growth path for TOPS-20 users.

A new aspect of this campaign is LCG's use of a toll-free 800 phone number. Anyone calling the number that appears in the ad will be sent three pieces of sales literature within 24 hours. Why not test the system yourself?

NEW APL VERSION OF VT102 VIDEO TERMINAL INTRODUCED

Jeanne Brattlof

A new video terminal with features needed to run APL (A Programming Language) on the DECsystem-10, DECSYSTEM-20, and VAX computers was announced early in June. The new terminal, based on DIGITAL's popular VT102 video terminal, is targeted for financial modeling, simulation, data analysis, design engineering, and data base management applications. Typical customers include universities, financial institutions, and financial and engineering consulting firms.

The APL Language

APL uses one of the most concise, consistent, and powerful set of functions ever devised. APL under the TOPS or VMS operating systems is especially suited for handling array-structured alphanumeric data. It is also used a a general data processing language and as a mathematical tool. APL allows programmer-defined functions and primitive language functions to be expressed with the same syntax. Thus programmers can expand the capabilities of the language to handle the requirements of any application.

The basic version of APL suits users who do not require the file I/O or the advanced APL functions. The extended version of APL, APL-SF, has all of the features of the basic version, plus advanced features that substantially increase its useful range of applications.

New Terminal and Upgradable Terminal

The new terminal is DIGITAL's first video terminal with APL functions; the other APL terminal is a hard-copy LA120 DECwriter III.

Concurrent with the announcement of the new terminal, DIGITAL announced availability of a field-installable kit to upgrade current VT102 terminals to APL capabilities. The new terminals and upgraded VT102 terminals retail all the features of standard VT102s.

New or upgraded terminals are supplied with a keyboard that incorporates APL characters on the front of the keycaps and standard ASCII characters on the top. A special setup function lets users switch back and forth between APL mode and standard ASCII operation either at the terminal of from the host.

THE LCG PRIMER

Cheryl Carey

The LCG Primer is an introduction to products and systems marketed by the Large Computer Group. The Primer describes concepts, practices, and terminology associated with LCG hardware and software, namely, the DECsystem-10 and DECSYSTEM-20 and related software products. The Primer is ordered from Billerica, Mass. (BK), with the document number EY-1073E-WB-001.

The primary audience for this information is field service engineers who have little or no LCG experience. For this audience, the Primer is a prerequisite to LCG system-specific training. For others, sales, software and network support, engineering and marketing) the Primer explains and defines much of the LCG terminology often found in product-specific documentation.

Each of the Primer's 16 chapters consists of goals, an introduction, text, a summary, references and additional resources, and questions/answers. Topics (as featured in chapter headlines) include: Software Tools; TOPS-10 and -20 Virtual Memory; TOPS-10 and -20 File System; Cache; PDP-10 Instruction Set; and TOPS-10 and -20 Monitor Overview; Maintenance Software; Buses; and Microcode.

U.S. LCG COORDINATORS

DISTRICT	NAME	LOCATION	TELEPHONE NO.
NORTHEAST			
Metro Boston	Jim Roche	Boston (BXO)	224-2319
New England	Dave White	Bedford,NH (MHO)	263-2140
Conn.	Bob Nolin	Bridgeport (SCO)	254-5265
Upstate NY	Pete Lilley	Rochester (RCO)	252-2322
CENTRAL			
Chicago	Helen Godfrey	Rolling Meadows (RLO)	421-5660
Mid America	Nari Bawa	St. Louis (STO)	314-991-6400
Great Lakes	Scott Benson	Detroit (FHO)	313-348-8900
No. Central	Frank Delmont	Minneapolis (MPO)	612-853-9605
SOUTHERN			
Southeast	Ed Janusz	Orlando (ORO)	305-660-2100
Mid South	Bill Martin	Knoxville (KXO)	615-690-1521
Charlotte	Cliff Spatz	Chapel Hill (NCO)	919-493-2531
Houston	Larry Brown	Dallas (DLO)	214-620-2051
WESTERN			
Santa Clara	Toby Arnold	Santa Clara (WRO)	521-2484
San Francisco	Vatche Sogomonian	San Francisco (SZO)	415-397-8670
Rocky Mtn.	Bill Krause	Denver (DVO)	553-2214
Northwest	Ron Quarles	Seattle (SEO)	206-453-5500
NY/NJ			
NY Comm.	Alan Vitolo	One Penn Plaza (NYO)	333-3913
NY Tech.	Ned Barber	Westchester (WHO)	333-3940
New Jersey	Chet Sherer	Piscataway, NJ (KYO)	323-2383
NJ Comm.	Pete Buttacavoli	Piscataway, NJ (KYO)	323-2465
SOUTHWEST			
So. Cal.	Ivan Strashoon	Costa Mesa (CWO)	714-979-2460
Los Angeles	Frank Calderon	Culver City (LAO)	213-417-4351
Albuquerque	Bob Hughes	Albuquerque (AQO)	552-3021
MID ATLANTIC			
*Washington	Clyde Blassengale	Washington D.C.	(DCO)341-2615
*Maryland	CLYDE COVERS BOTH WASHINGTON & MARYLAND DISTRICTS.		
Philadelphia	Lou Goglia	Blue Bell, PA(PHO)	337-2520
Ohio Valley	Jim Fate	Columbus (CSO)	614-868-1900

*Washington & Maryland now have one coordinator for both areas.

LCG LITERATURE LIST

HARDWARE OPTION BULLETINS

CD20 Card Reader	ED 23999 61
DN20 Communications Front-End Subsystem	ED 20504 26
DN200 Remote Station	ED 22987 61
IDX-3000 Integegrated Digital Exchange (Linkabit Switch)	EC 24075 61
LP20-A/B Line Printer Systems	ED 19I37 26
LP20-C/D Line Printer Systems	ED 19I35 26
LP100-B Line Printer Systems	ED 19I39 26
LP100-F/H Line Printer Systems	ED 19677 26
LP200-B Line Printer System	ED 24013 61
RP07 Disk Subsystem	ED 21997 61
RTP20 Disk System	ED 19725 26
TU72 Magnetic Tape Subsystem	ED 19763 26
TU77 Magnetic Tape Subsystem	ED 17400 26
TU78 Magnetic Tape Subsystem	ED 23003 82

EDITOR'S NOTE: Until July 1, 1983, you may order these publications by contacting Jane Fitzgerald at P&CS in Northboro. The DTN is 234-4325. Mail stop is: NR2-2/W3, RCS code is NR12 (for telexes). In Q1 FY84, your SCC (Sales Communications Center) Specialist will order your LCG Literature.

If you find an item to be out of stock or incorrectly numbered, please phone me or Gail Breslin at DTN: 231-4996 or 231-4013, and we'll try to help you out.

ATTENTION ! ! ! This list (and order numbers) supersedes all prior lists.

SOFTWARE DATA SHEETS

ALGOL	ED 17156 18
APL-SF-10	ED 24841 61
BASIC-PLUS-2	ED 18885 26
COBOL	ED 22109 61
CFS-20	EC 23858 61
CPL	ED 15659 63
DECmail/MS	ED 24000 61
DECnet-10 Phase III	ED 24056 61
DECnet-20 Phase III	ED 22835 61
DBMS-10	ED 21782 81
DBMS-20	ED 21827 61
FORTRAN-10/20 V.7	ED 24054 61
IBM RJE E/T	EC 24057 61
IQL	ED 15660 63
NCP Calc	EC 24656 61**
PASCAL-20	EJ 24759 61*
TOPS-20 PSI Gateway	ED 24053 61
TOPS-20 Supported Utilities	ED 22933 61
TOPS-10 V7.02	EZ C5532 44
TOPS-20 V6.0	EZ C5532 45

* New order numbers for recently produced editions

** Joint Marketed with NCP Corporation

TECHNICAL SUMMARIES

DECsystem-10 Technical Summary	EE 21041 26
LCG Product Summary - April '83	EJ 24660 61*
LCG Price List - April '83	EE 24661 61*

PHOTO BULLETINS

DECsystem-10/20 Fact Sheet	EJ 19596 26
DECsystem-10 Family At A Glance	EJ 19595 26

LCG BROCHURES

Don't Let the Software Blues Get You Down	EA 24773 61*
TOPS-20 Multiprocessing	EA 24237 61*
Introducing TOPS-20 Multiprocessing	EC 24046 61
DECSYSTEMS: The Users Choice	EA I8366 26
DECsystem-10 Family	EA 20572 26
Develop Microprocessor Applications Faster	EA 22895 61
TOPS-10/20 Data Networking	EC 22813 61
LCG Software Referral Catalog (2nd Ed.)	EJ 22780 61
Symmetric Multi-Processing	ED 24089 61
The Personal Mainframe/Electronic Mail	EA 22872 61
The Personal Mainframe	EA 24546 61*

CORPORATE BROCHURES

Digital's Ethernet	EA 22710 18
Digital Introduces DECnet/SNA Gateway	EA 22703 18
Digital Storage Architecture Product Summary	ED 23981 18

MARKET SPECIFIC BROCHURES

Education:

Wesleyan Univ.	EA 20271 87
Univ. of Vermont	EA 20270 87
Univ. of Pittsburgh	EA 19633 87
Columbia Univ. Teachers Coll.	EA 19630 87
Hamilton Cty. Office of Ed.	ED 19577 87
Carnegie-Mellon Univ.	ED 20467 87

Engineering:

Monenco: Engineering for Excellence	EA 23075 16

Banking:

Bankers Trust: Partners in Success	EA 23155 16
"Will the Street Bypass Time Sharers?" (reprint from "Institutional Investor")	EJ 24696 61*

* New order numbers for recently produced editions

GENERAL MATERIALS

DECNET-10 Phase III Press Kit Folder	EJ 23998 61
BUY-LINE Compendium (Vol.2: 1981-82)	EZ 09016 82
Digital's Systems Interconnect Folder	EJ 24741 61
DECision Systems Folder	EJ 24658 61*

POSTERS

1983 Smooth Sailing Calendar	EJ 21823 61
Chart Your Course Sailing Poster	EJ 21623 61
LCG Personal Mainframe Poster	EJ 21652 61

SITE PREPARATION GUIDES

Corporate Field Service's Generic Site Planning Kit, available worldwide, enables site planners to do floor layouts and site planning for all DIGITAL products including the DECsystem-10 and-20 product set. This Kit is designed to be Field Service's standard Site Planning tool.

The new Kit's order number is EK-SPKIT-SP, available from P&CS, Northboro. **SALES AIDS**

* Sales Aids are ordered by sending a memo/TWX to Gail Breslin (MRO2-2/8D2) containing your name, badge number, cost center, shipping address, and the signature of your cost center manager. Minimum charge for an order is $100.00. The mugs cost $2 each and are packed in boxes of 12. Pens are $2 each.

MUGS: Large Computer Group Mugs - sand colored china with blue sail boat design.
PENS: White No-Nonsense Pens.

* New order numbers for recently produced editions

AUDIO VIDEO

LCG Users Tape (10 min.)	loan request
Benchmarking/CPU Analysis with Brochure	loan request
DEC-10/-20 Overview Slide Show	K. Stanton
LCG DECSYSTEM-20 Timesharing Testimonial Slide Show Kathie Stanton, Bedford MA, DTN 249-4068	
Supplementary Slide Package	Memo Don Waite MR2-2/8D2
Large Systems Slide Presentation (Modules 1 thru 7)	K. Stanton

Category/Title	Issue Date
-2060s at ICI (Informa. Consult. Inc.)	July 1982
INSEAD Uses DECSYSTEM-20s	"
DECSYSTEM-20 Aids Erasmus Univ., Holland	"
DECSYSTEM-20 at Liverpool Polytechnic	August 1982
DECsystem-10 Wins a Road Race	"
Kingston Polytechnic Picks -2060	"
DECSYSTEM-2060 Conquers Nigeria	September 1982
DECSYSTEM-2060s at Bankers Trust	October 1982
DECSYSTEM-2060s at Teknowledge	January 1983
The Entrepreneurial DEC-20 (Datability)	March 1983
DECSYSTEM-2060s at Case Western Reserve	May 1983

BUY-LINE APPLICATION

NAME: MAIL STOP:

BADGE: COST CENTER:

DEPT: OFFICE LOC:

( ) Please add my name to the BUY-LINE mailing list.

( ) Please delete my name from the mailing list.

My responsibility is in:

( ) LCG Sales

( ) LCG Marketing

( ) LCG Service

( ) Another product line or corporate function

Please detach and mail to Barbara Holtz, MR02-2/8D2. Thank you.

BARBARA HOLTZ

MR02-2/8D2

Artificial Intelligence: An Overview

Table of Contents

Artificial Intelligence

The purpose of this document is to provide a brief overview of artificial intelligence, its applications and the various marketing opportunities presented by this field of research. It is not meant to be particularly technical or detailed. It is the author's feeling that due to the recent publicity that this field has received, it is important that we all have, at least, some understanding of what artificial intelligence is all about.

1.0 What is Artificial Intelligence?

Artificial intelligence is not a "market". It is a research area which involves many disciplines. "The central goals of Artificial Intelligence are to make computers more useful and to understand the principles which make intelligence possible" (Patrick Henry Winston, "Artificial Intelligence").

There are many applications for intelligent machines and it is these applications that one may view as marketing opportunities for selling computer systems.

In some sense, artificial intelligence is the state of the art of computer science research. Artificial intelligence research actually began in the 1960's with the advent of the LISP programming language. However, the bulk of computer science research was done in other areas. In the 1960's, computer science was generating programming languages. In the 1970's, it was creating simple data management tools (database and query systems). In the 80's, most of computer science research is concerned with artificial intelligence.

This is the first time that people are involved in a scientific attempt to understand intelligence. Intelligence has been a subject for philosophers over the ages. Now there is a scientific field dedicated to research in intelligence.

Traditional computing applications order well-defined, "mechanical" operations into a logical sequence to manipulate real data, e.g., numbers and strings, to generate answers. Simply put, they perform the grunt work. They keep track of things, do arithmetic, etc. But they always operate on "real", concrete quantities.

Artificial intelligence applications manipulate symbols. Symbols are strings whose meaning/usage is "arbitrary", i.e., defined by the application. They may refer to numbers, character strings, concepts, attributes, etc. They are manipulated, like words, to infer, describe, etc.

Through the years, artificial intelligence research has pushed computer science research. Artificial intelligence applications are, in general, much larger and resource intensive than traditional data processing applications. This has created a need for faster machines that are capable of running large programs.

For example, ARPA funded the development of a paging operating system, TENEX, from which TOPS-20 has descended. Paging systems take advantage of the fact that a program only executes some of its code at any given time. Therefore, it is not necessary for all of a large program to be in memory in order to run. At the time, this was a major advance in operating systems that was critical to the continuation of artificial intelligence research.

Similarly, artificial intelligence research has pushed the state of the art in computer hardware. This is illustrated by the development of the KL10 cache, LISP machines, etc.

2.0 Disciplines Contributing to Artificial Intelligence

As mentioned before, there are many sciences which contribute to artificial intelligence research. There are also many that benefit from artificial intelligence research.

2.1 Psychology and Philosophy

A question that is central to both artificial intelligence and psychology is: "What is intelligence?". In its attempt to understand the way the mind works, psychological research often uses computer models of cognitive processes.

What processes are involved in human intelligence? What aspects of behavior are indicative of intelligence? These are questions of psychologists and philosophers. Obviously, the question of artificial intelligence researchers: "How can we make intelligent machines?" is intimately tied to these questions regarding naturally occurring intelligence.

Computer models of intelligent processes are very useful for performing experiments in psychology. Similarly, psychological theories of intelligent processes often yield schemes for their artificial reproduction.

2.2 Physiology

Sometimes, understanding the physical structures that support intelligence yields viable strategies for creating man-made devices that can accomplish the same tasks. Work in vision has been supported by a good deal of research on how the retina functions (physiological psychology).

In David Marr's book, "Vision", a chip that mimics retinal functions is shown. Understanding the physiology of the brain, how neurons work together, etc., may provide greater insights into how computer architecture might be modified for more flexible parallel processing.

2.3 Biomedical and Mechanical Engineering

One of the major applications of artificial intelligence research is robotics. Robots that can manipulate objects are becoming quite sophisticated. Recent work at MIT has created a hand that uses cables (similar to those used for bicycle brakes) as tendons to enable grasping.

Biomedical engineering advances at the University of Utah created a "tendon" made of a teflon material. This tendon essentially does not wear out (as the bicycle cable implementation).

2.4 Electronics

Intelligence has proven to require much greater amounts of computing power than traditional data processing. Due to the physical limitation on circuit speeds, i.e., the speed of light, a single computer can theoretically only run about 1000 times as fast as today's systems. Some intelligent systems will require

systems that are more than 1 million times the speed of today's computers. The contributions that EE can give to artificial intelligence research are many. Faster computers that are well suited to the programming languages used in artificial intelligence is one obvious contribution.

The IBM 704 was the first system for which a working version of LISP was implemented. This system was a 36 bit computer and when IBM began promoting its byte oriented (32-bit) systems (360's), McCarthy (from MIT) collaborated with Digital in the design of a new, 36 bit system to continue his work in artificial intelligence, the PDP-6.

Since the PDP-6, Digital's 36-bit computer family has incorporated other advances in computer architecture that have been motivated by the needs of artificial intelligence applications, e.g., features of the KL-10 (Super Foonley research project).

More recently, work at both MIT and Xerox PARC has created personal LISP machines. These machines provide program development environments that are designed especially for LISP. (See the section on LISP machines.)

One way to increase the computing power available to an application is via parallel processing, i.e., multiple processors working on the same task. There have been many experiments in parallel processing over the years, most of which have involved multiple traditional computers, e.g., -10's and -11's. These systems were efficient for certain types of computing problems, i.e., those that were easily decomposed into independent tasks, but not generally useful.

A significant problem in traditional multi-processing systems is that as the number of processors that are working together is increased, the communications between them takes even more time. This tends to negate the benefits of having multiple processors.

There are several projects underway (two at MIT, one at Manchester U, one at U of Utah and one at ICOT) researching "data-flow" architectures. A dataflow machine works slightly differently than traditional parallel processing systems. In traditional approaches, processors work on data in a pre-defined, scheduled fashion. Data-flow architecture is more analogous to the (apparent) structure of a brain. That is, data is operated on whenever it is available.

One of the most recent developments is the (still experimental) "connection machine" (Daniel Hillis, MIT). Its design seems to be motivated by the apparent parallel nature of processing in the human mind. Basically, the connection machine is a network of processing cells implemented on a single LSI chip. Each cell can communicate with its immediate neighbors and contains some state information, several registers and a "processor". The cells operate concurrently on a problem. It is hoped that this type of parallel processing will lend itself to a wider set of problems than traditional approaches.

Applications of artificial intelligence are simplifying the design and debugging of electronic devices. There are many examples of artificial intelligence applications which configure systems, help design chips and diagnose hardware problems.

2.5 Computer Science

Computer science research has provided the basic artificial intelligence research tools. Essentially all artificial intelligence research has been done in a programming language called LISP (described later). Recently, another language, PROLOG has been of interest for some artificial intelligence applications.

Due to the complexity of artificial intelligence applications, the quality of the software development environment provided to the artificial intelligence researcher is very important.

Probably the most important reason for the acceptance of LISP Machines is their excellent program development tools. Both the hardware (display, etc.) and debugging tools available on these machines are important to the LISP programmer. LISP is a highly interactive environment and the human interface provided for LISP program development is a key concern of artificial intelligence researchers today.

A windowing system (and high resolution, bit-mapped display) allow the LISP programmer to perform several interactive processes concurrently. Debugging and editing (and communications with other programmers on a network) can be accomplished from the same workstation at the same time.

In parallel with the data-flow architecture research underway, there is some research going on in applicative languages, e.g., function-based or data-flow languages. For example, Japan is involved in the design of concurrent PROLOG, the University of Utah has a large research project in this area and sites researching data-driven machine architectures (data-flow) are concerned with concurrent language systems.

3.0 Networks

The importance of communications should be obvious from the number of fields contributing to artificial intelligence. Researchers in different fields need to communicate information quickly to each other. Experts in application areas must communicate with implementors of artificial intelligence systems. The magnitude of the problems being addressed by artificial intelligence researchers demands cooperation and, therefore, communications.

Since artificial intelligence applications are generally very large, there are typically several people working on a single project who all require instant communications. Furthermore, the vast resources required for running "complete" artificial intelligence applications necessitate networks of various types of machines.

In addition to the usual data processing communications, artificial intelligence applications often require real-time networks, e.g., for robot control, and the ability to access various resource servers, e.g., compute servers. It is interesting to note that the first LISP machines were all designed to operate in a network environment, specifically a local area network.

A local area network, e.g., Ethernet or Chaosnet, is the desired way of hooking machines together. This is due to several factors, not the least important being speed. Other issues include flexibility of the network topology and simplicity of communications protocols.

NOTE

> See the (mock) diagram of the network at the MIT AI lab. This gives a conceptual view of the local area network there. LISP Machines, DEC-20's and VAX's exist in a single network allowing each to be used where appropriate. It is (obviously) not a true picture of the network, but it gives a flavor of what is being done.

In addition to the communications requirements of a particular artificial intelligence research lab, there is a need for various labs to communicate. In the US, most of this inter-research facility communications transpires over the ARPANET. All of the major artificial intelligence research centers have access to the ARPANET. Researchers at CMU routinely use Stanford University's resources, Stanford accesses MIT, etc. Often, people working on the same project reside in different cities. For example, the principal researchers on the INTERNIST project are at the University of Pittsburgh, but use SUMEX-AIM routinely.

To quote Dr. Eric Ostrom (Directory of the AI lab at MIT), "Artificial intelligence cannot be viewed in isolation...". It is the combined efforts of many researchers, in many disciplines, at many sites throughout the US.

4.0 Applications of Artificial Intelligence Research

Artificial intelligence research is getting a lot of press these days. "Fortune" ran one of the first articles to show that some companies were already using artificial intelligence applications (Digital was one company mentioned). In fact, "Fortune" ran a series of three articles entitled "Thinking Machines" (May 17, May 31 and June 14 '82). Since then, articles have appeared in "Business Week","Scientific American", "National Geographic" and others. To date, most of the "commercial" artificial intelligence applications have been "Expert Systems" or "Natural Language Systems" (described later).

Just about anyone who reads has seen something about artificial intelligence in print. People's perceptions of what artificial intelligence is varies greatly. Most often, people think of robotics when artificial intelligence is mentioned. Robots are clearly the most tangible of artificial intelligence applications. However, other applications of artificial intelligence seem to have more importance in the short term.

4.1 Expert Systems

Popularly referred to as "Expert Systems", knowledge-based (also rule-based) systems are artificial intelligence applications that have implemented the expertise of some person(s) in a particular field on a machine. There are many examples of Expert Systems today.

Tools for knowledge engineering are presently limited. There are several areas involved in an Expert System.

1. Knowledge Acquisition - schemes for transferring knowledge from the expert to the application. Optimally, this would be a natural language interface (described later) that would allow the expert in the field to casually "discuss" his/her knowledge with the application.

2. Knowledge Representation - Systems for structuring a knowledge base in a usable fashion. Knowledge is dynamic. Existing information changes given new facts. Relationships between facts are continually modified. The representation scheme must be sufficiently flexible to allow for continual growth of the knowledge base.

3. Heuristics - The processes in an Expert System that allow it to learn from itself (experience) as well as from the human expert.

4. Problem Solving - procedures for the actual process of solving a problem in a particular knowledge domain. Which alternatives are the most likely to succeed must be considered here. Teaching the Expert System to make logical choices about probable solutions. This function of an Expert System is generally termed the "Inference Engine".

5. Result Explanation - often used to aid in "debugging" Expert Systems, it is the application tracing its steps in reaching an answer, i.e., explaining how it reached the conclusion that it did.

Expert Systems today do the best job when there is much information in their knowledge base and the domain of problems to be solved is small, i.e., the problems are well defined.

Companies, like Teknowledge, have been started which are applying the principles of knowledge engineering to the task of generating tools which will simplify the production of new Expert Systems. Due to the cost and paucity of "experts" in many technical fields, Expert Systems will, in all probability, be highly marketable products.

Historically, Expert Systems have been designed with two principal resources. One is an expert in the field and the second is a LISP programmer. In the future, the knowledge acquisition facilities of Expert Systems should be sufficiently easy to use so as to minimize the need for a "programmer" to transfer the knowledge from the expert to the system.

Following are some of the better known examples of Expert Systems, most of the descriptions come from the ARPANET Network Information Center (NIC):

4.1.1 PROSPECTOR

is an Expert System that was developed on a DECSYSTEM-20 at SRI. It analyzes geological data and determines the probabilities of finding various minerals. Probably the most interesting point regarding PROSPECTOR is that it was developed commercially. It is the proprietary property of SRI International.

4.1.2 MYCIN

is a consultation system designed to assist physicians with the selection of antimicrobial therapy for severe infections. It has achieved expert level performance in formal evaluations of its ability to select therapy for bacteremia and meningitis. MYCIN was developed at SUMEX (Stanford U) on a DEC-10 (TENEX). Principal investigators on the MYCIN project are Dr. Bruce Buchana and Dr. Edward Shortliffe.

4.1.3 INTERNIST

Attempts to produce a reliable and adequately complete diagnostic consultative program in the field of internal medicine. Although this program is intended primarily to aid skilled internists in complicated medical problems, the program may have spin-off as a diagnostic and triage aid to physicians' assistants, rural health clinics, military medicine and space travel. INTERNIST models the creative, problem-formulation aspect of the clinical reasoning process. The program employs a novel heuristic procedure that composes differential diagnoses, dynamically, on the basis of clinical evidence. During the course of an INTERNIST consultation, it is not uncommon for a number of such conjectured problem foci to be proposed and investigated, with occasional major shifts taking place in the program's conceptualization of the task at hand. INTERNIST was done at the University of Pittsburgh on a DECsystem-10. Work continues on the SUMEX computer system (DEC-10) by Dr. Jack Myers and Dr. Harry Pople (the originators of the system).

4.1.4 MACSYMA

Project MAC's SYmbolic MAnipulation System, a LISP-based program for manipulation of algebraic expressions involving constants, variables, and functions. The user can differentiate, integrate, take limits, solve equations, factor polynomials, expand functions in power series, or Poisson series, take LaPlace transforms or their inverse, plot curves, etc. Also, he can manipulate lists, subscripted variables, and matrices with many of the usual operators on them being available. Facilities exist which permit the user to extend MACSYMA by adding new functions and operations. It was developed at MIT on a DECsystem-10 running ITS. The design team leader of MACSYMA was Dr. Joel Moses.

4.2 Natural Language Systems

A "Natural Language System" is an artificial intelligence application that interacts with a person in his/her native language. Natural Language Systems have obvious importance in man-machine interactions. Current schemes for simplifying the use of computer systems take various forms from menus to transaction processing. These approaches are somewhat effective in making computers easier to use. However, people must still learn to use them and they are limited to dealing with certain subsets of computer applications.

A complete Natural Language System would recognize vague, common terminology and infer from the context of a "conversation" what questions actually mean. In order for a Natural Language System to converse as freely as a human being, it would need to understand the language. This is presently far beyond the horizon.

One thing that is possible today is a "Truncated Natural Language System". This is a system that can deal with a subset of a naturally occurring, human language in a particular context. For example, a Natural Language System could be made that understands the jargon of the financial community. This system could be used as the interface to a financial database. Accountants, etc., could converse "naturally" with this system to accomplish tasks which today require generating reports, writing models, etc.

A truncated Natural Language System could act as the interface for all sorts of traditional computing applications including database queries, transaction processing, etc. There are some companies now offering limited, truncated natural language systems on small computers. Artificial Intelligence Corporation sells a natural language system called "Intellect" for IBM systems.

One should consider a computer system to be a lever for the mind. The more force that can be applied, the greater (proportionally) the productivity gain. The way that one maximizes the force that can be exerted is to simplify the transfer of force (information) from source (mind) to tool (computer) by tailoring the computer to the mind not by making the mind understand the computer. Understanding this clarifies the potential usefulness of natural language interfaces to various computer applications.

4.3 Pattern Recognition

There are many uses for pattern recognition. Some of its major applications are described here.

It is important to note the difference between recognition and understanding here, as it is in natural language processing. Recognition comes first. Understanding requires a familiarity with the context (paradigm) of the information under consideration. "Human" understanding is far beyond the capabilities of today's systems.

One example of pattern recognition is routinely used in the intelligence community. NSA uses artificial intelligence applications to decode radio transmissions. Deducing the encryption scheme used on coded messages in order to decifer their contents is of obvious interest in the intelligence community. NSA uses a DECSYSTEM-20 to perform most of this work. Patterns within a message are analyzed by a system of programs.

Similarly, artificial intelligence applications can be used to "clean up" transmissions that have been disturbed by interference. A pattern may be discerned amongst the noise and the noise filtered out. In this way, garbled messages may be unscrambled.

From this example, two uses of pattern recognition are apparent, one in decoding or deducing (inferring) and one in enhancement.

4.3.1 Image Recognition

Image recognition is the ability of a machine to determine what an object is from the way it "looks" (to a video camera). Obviously useful in robotics, image processing also has other applications.

Image enhancement (related) is used to refine images transmitted by space exploration craft. It is also used in archeological work to reconstruct drawings and writings that have been worn in some parts by time.

4.3.2 Voice Recognition

The ability of a machine to recognize the human voice has been demonstrated in many cases. There are simple systems on the market today, e.g., VOTERM, which can be taught a few, simple words from a single person's voice that can be later recognized.

There are many difficulties involved with a generalized voice recognition system. Each person's voice generates slightly different waves for the same phonemes (basic units of sound). So a system would have trouble understanding more than one person. Furthermore, background noise further complicates/ distorts wave forms making recognition more difficult.

NOTE

> The synthesis of human speech is relatively simple. There are chips (Texas Instruments) that generate speech for children's toys today (Speak-and-Spell). More complex systems, like DECTALK, are being developed to "read aloud".

4.4 Robotics

Robotics is a multi-faceted application. It involves many of the previously mentioned areas of artificial intelligence research. Simple robots perform relatively basic, pre-programmed functions. They have simple "hands" that can hold an object. These hands are (generally) "two-fingered" devices. Most hands cannot grasp an object, nor are they pressure sensitive. For example, a hand programmed for holding metal objects cannot be used to hold a paper cup. The pressure that can be exerted on the cup (before crushing it) is less than that which can be applied to a metal object.

The degree of control over the motion of a robot arm is quite good today. Fujitsu has a control system that has demonstrated this by drawing Kanji characters on a grain of rice!

Robotics research today is considering the problems of grasping (as a human hand does) and touch sensitivity. These problems are only one part of robotics, i.e., manipulation. There are many other areas in which much research is being done.

Another area of robotics is image recognition (mentioned before). Robots should (at some point) be able to recognize one object from others so that they can do more generalized work. Also, a robot should be able to determine the spatial orientation of an object so that it can be manipulated into the proper position before a task is performed.

Robots have some obvious uses. In general, they should be used where the tasks are particularly tedious or dangerous for humans thereby improving the quality of jobs left for people.

Simple robots exist today for various manufacturing functions, e.g., welding and painting. Experiments are underway in which robots are used to aid the handicapped as well. Recently, on "60 Minutes" there was a section devoted to this research. In it, a quadraplegic used voice commands to a robot arm that was capable of performing tasks as complex as feeding the person.

Robots used for performing multiple or complex tasks need to be taught in a series of simple steps how a task is performed. The knowledge of how to perform a task must be represented in some (database) form and accessible on some type of command, e.g., voice.

5.0 Artificial Intelligence Centers (United States)

There are new artificial intelligence labs being started regularly. Here is a list of the better known sites and their interests/contributions to the field.

Massachusetts Institute of Technology

It is here that artificial intelligence was born. John McCarthy was at MIT when he first implemented LISP. There are many prominent artificial intelligence researchers at MIT. Marvin Minsky one of the fathers of artificial intelligence is there, Joel Moses who led the development of MACSYMA, Patrick Winston who has written many books on artificial intelligence and is well known for his "Blocks World". There are many, many more important artificial intelligence researchers at MIT.

MIT's AI lab is also an excellent source of information on what is happening in artificial intelligence research. "AI Memos" and "AI Notes" can be obtained from MIT.

Stanford University

There are two large artificial intelligence efforts at Stanford. One is the Heuristic Programming Project (under the direction of Dr. Edward Fiegenbaum) and the other is SUMEX-AIM (National Artificial Intelligence in Medicine). Dr. Fiegenbaum is well known for generating public interest in Expert Systems. Dr. John McCarthy (formerly of MIT), generally recognized as the father of LISP is at Stanford University.

Carnegie Mellon University

CMU has done quite a bit of artificial intelligence research. R1, a system for configuring VAX's was written there. Also, HEARSAY, a speech understanding system is also a CMU accomplishment. CMU has done several experiments in parallel processing, including CM-Star.

Recently, CMU opened a new Robotics Lab. Also, CMU has been funded by ARPA to create a Common LISP.

Xerox Palo Alto Research Center (PARC)

PARC is responsible for the development of INTERLISP. Furthermore, their work in local area networks (ETHERNET) is well known. PARC has also developed several LISP Machines including Dolphin and Dorado.

Other artificial intelligence research labs are at: Rutgers University, Rand Corporation, SRI, Teknowledge, Intelligenetics, Texas Instruments, University of Utah, Yale University, University of Southern California, University of California at Irvine.

6.0 Japan's Fifth Generation Computer Project

Japan's "Fifth Generation Computer Project" has gotten much publicity around the world. It is a very large artificial intelligence research project. Its goal is to leap-frog current computer system capabilities by providing an intelligent computer system.

The organization that was set up to perform this research is called the "Institute for New Generation Computer Technology" (ICOT). ICOT gets its personnel from MITI (Japan's Ministry for International Trade and Industry), NTT (Nippon Telephone and Telegraph), Fujitsu, Hitachi, Nippon Electric, Mitsubishi, Toshiba, Oki, Matsushita and Sharp.

Interestingly, the DECSYSTEM-20 was selected by MITI as the research machine for the Fifth Generation Project. This was due, in great part, to the omnipresence of the DECSYSTEM-20 in US artificial intelligence research centers and the availability of artificial intelligence tools and products for the machine.

The project involves several fields of artificial intelligence research. One is a Natural Language System for human interactions. This effort has clear origins in the language difficulties posed by Kanji, etc. The goal of this effort is obviously to simplify the man-machine interactions.

The two other areas that the Fifth Generation System will concentrate on are an inference system and a knowledge base. An inference system is an application that can infer solutions to problems given knowledge, i.e., problem solver. It is important to note that knowledge is not the same as data. Data is merely information. Knowledge implies an understanding of what the information means. Knowledge is a collection of facts about data, i.e., relationships, etc.

The language that is being used in the Fifth Generation Computer Research Project is PROLOG. One of the first steps in this project is to create a "Concurrent PROLOG", that is a PROLOG that is designed for a data-flow (like) architecture system. Also, since the Fifth Generation Computer will directly execute the language in which it is programmed, ICOT will develop PROLOG machines (ala the LISP machine).

7.0 LISP and PROLOG

Intelligent beings deal in concepts both real and abstract. These concepts are generally described in words. Words are simply symbols that represent these concepts. Programming languages like FORTRAN and COBOL perform real operations on (string and numeric) data. In order to make intelligent machines, the

machine must be able to manipulate symbols as humans do. To this end, many "symbolic manipulation" languages have appeared over the years.

LISP and PROLOG are examples of symbolic manipulation languages. LISP is by far the most widely used. It is simple and extensible. PROLOG is new and is of some interest to certain sectors of the artificial intelligence research community, most notably in Europe and Japan.

7.1 LISP

Essentially all artificial intelligence research programming has been done in a language called LISP (LISt Processing). LISP is a symbolic manipulation language. LISP has been referred to as the "assembly language" of artificial intelligence research.

The basic unit in LISP is the ATOM. An ATOM is analogous to a word. ATOM's can be linked together to form lists. An ATOM can represent anything. It can be a number, a real word, a quality or any concept.

If one knows nothing else about LISP, one should recognize the names of two basic LISP instructions: CDR (pronounced "cudder") and CAR. The names for these instructions have their roots as the names of registers on the IBM 704. This was a 36 bit computer and the CAR was the left 18 bit pointer and the CDR the right 18 bits. In LISP, the CAR instruction returns the first element of a list and the CDR returns the rest of the list:

```
(CAR '(Apples Oranges Plums)) => Apples

(CDR '(Apples Oranges Plums)) => (Oranges Plums)
```

Most LISP instructions manipulate lists (in some sense, all do). The various dialects of LISP offer various other functions, e.g., graphics and complete arithmetic operations.

There are many dialects and descendants of LISP. The two principle dialects are MACLISP (MIT) and INTERLISP (Xerox PARC). LISP users tend to be extremely loyal to the dialect that they are using. It is somewhat unrealistic to expect that an X-LISP user could be converted to Y-LISP. For this reason, it is important that as many dialects as possible are supported by a given system to insure a broad acceptance.

There is a good deal of work going into the development of LISP systems that are transportable between different computer systems. The standardization of a particular LISP would allow work to be shared more easily, etc. The two major efforts in this area are Common-LISP (CMU) and PSL (Portable Standard LISP, U. of Utah).

7.2 PROLOG

PROLOG is short for "PROgramming in LOGic". It is a nonprocedural language. Most traditional programming languages are "procedural". That is, programs are constructed by creating an ordered list of functions to be performed. The order is important. In PROLOG, each statement is a fact. Each statement can be evaluated without having to investigate the other statements in the program.

Facts in prolog are stated as relationships or clauses. To say that Bill is the father of John:

```
father(Bill,John)
```

Similarly,

```
father(John,Tom)
```

States that John is the father of Tom. To tell PROLOG that a grandfather is the father of a father:

```
grandfather(X,Y) <- father(X,Z),father(Z,Y)
```

If these were the only facts known to PROLOG, asking:

```
grandfather(X,Y)
```

would result in PROLOG responding that Bill and Tom were related in the fashion requested.

Clearly this is a simple way of creating a knowledge based system. Data and relationships are easily specified and inferred relationships between elements via established facts are easily obtained.

PROLOG was developed at the University of Marseille [Roussel 1975] as a practical tool for programming in logic.

PROLOG was written for the DECsystem-10 at Edinburgh by David H. Warren (1977). It has an interpreter and compiler both written (for the most part) in PROLOG. Since that time, it has been implemented on quite a few machines including several microcomputers. In Japan, ICOT (Institute for Computer Technology, i.e., Fifth Generation Computer) is designing a PROLOG machine ala the LISP Machine.

PROLOG is just beginning to gain some support here in the US. Warren is currently at SRI, due to their interest in this language.

NOTE

> Non-procedural languages like PROLOG are of interest to customers concerned with programmer productivity and/or the use of computers by non-technical personnel, not just artificial intelligence researchers. It is (in some cases) easier to write in a non-procedural language since debugging does not require the user to trace logic through large pieces of code.

8.0 LISP Machines

There are several LISP machines available commercially today. They come from three companies: Symbolics, LMI and Xerox. Both the Symbolics and LMI systems are derived from the original MIT LISP Machine called CADR.

The Symbolics and LMI machines run a version of LISP called LISP Machine LISP, also referred to as ZETALISP, which is a derivative of MACLISP. There are two major areas of difference between ZETALISP and MACLISP. These are in the display handler (window system for the high resolution bit mapped display) and a language extension known as "FLAVOR".

Xerox LISP Machines run INTERLISP-D. There are two machines currently available from Xerox. One is called the Dolphin. It was the first LISP Machine to be sold by Xerox. Recently, Xerox began selling a faster machine called the Dorado.

One common attribute of both styles of LISP Machines is the presence of a high speed, local area network. MIT style LISP Machines were designed to operate with DECSYSTEM-20's communicating via the Chaosnet protocol (on either Ethernet or Chaosnet hardware). The original MIT LISP Machine had a small disk for swapping, but most data I/O was performed using a file server.

Xerox LISP Machines support Ethernet communications. Discussions with various Dolphin owners, e.g., Rand, lead to the conclusion that the network is necessary for the reasonable operation of a special purpose system like a Dolphin.

The need for a general purpose system like a DECSYSTEM-20 is further illustrated by Xerox PARC's MAXC computer. MAXC at PARC interfaces to the ARPANET and acts as a server for files, printers and other resources. MAXC is a 36-bit computer that emulates the DEC-10 instruction set (it runs TENEX).

LISP Machines provide excellent program development environments. There still exists a need for a fast, production artificial intelligence computer system. Something that can run an artificial intelligence application at reasonable speed.

Many companies are currently developing LISP Machines. Fujitsu and Nippon Telephone and Telegraph are two Japanese efforts. There have been rumors that IBM is developing one.

9.0 Bibliography

Here are just a few good references for those who would like to get some more information on artificial intelligence:

Artificial Intelligence - Patrick Henry Winston, Addison-Wesley Publishing Company , 1977,1979

An excellent introduction to the field of artificial intelligence. It also gives and introduction to LISP.

Artificial Intelligence an MIT Perspective

Artificial Intelligence

A two-volume set outlining some of the work that has gone on at MIT. There is a good article on MIT's LISP Machine and an interesting piece by Minsky on the workings of the mind.

LISP - Patrick Henry Winston

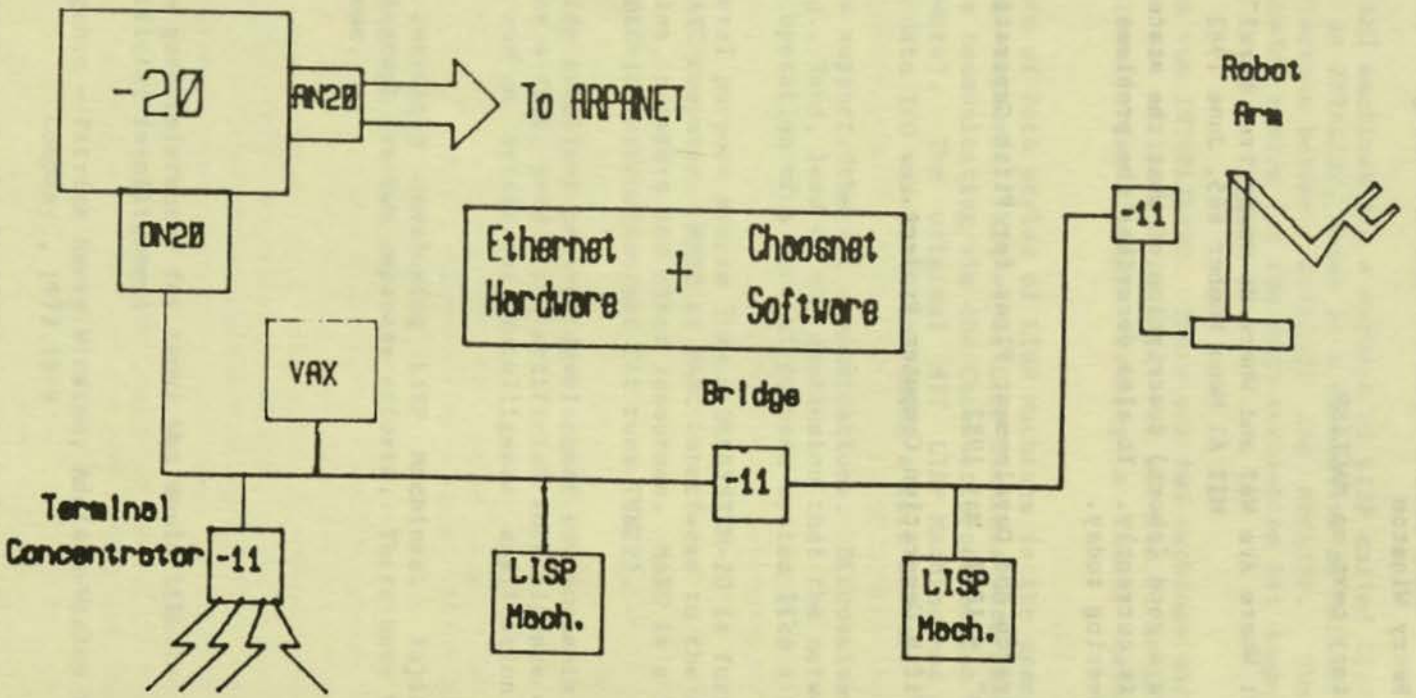
A good introductory text on MACLISP.

"Expert Systems: Where Are We? and Where do we go from here?" - Randall Davis
MIT AI Memo Number 665, June 1982

This paper gives a good (short) description of what the state-of-the-art in Expert Systems is currently. It also describes the problems confronting knowledge engineering today.

"Outline of Research and Development Plans for Fifth Generation Computer Systems" - ICOT, May 1982

Describes the Fifth Generation Computer Project.



Local Area Network

digital

DIGITAL EQUIPMENT CORPORATION
MARLBOROUGH, MASSACHUSETTS 01752