THE YEAR
OF DEC

WE HAD A VISION
OF COMPUTING
WE KNEW THE
WORLD
NEEDED

— Ken Olsen
Digital
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it
now.
The best way
to bring all your
users together.
Today.

As computer systems multiply, so do the problems of sharing information among the people who use them. Each system has its own operating software, its own way of representing data. And its own way of communicating this data to the outside world. And as systems change to keep up with technological advances, the more users must struggle just to keep up.

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CONTENTS
THE YEAR OF DEC

DEPARTMENTS
COMMENT .................................................. 5
ASK DEC .................................................. 8
NEW PRODUCT REPORT .............................. 10
DEC EUROPE ............................................ 75

COVER STORY
A WHOLE NEW DEC ...................................... 14
How it came to be "the year of DEC"
By Glenn Rifkin
Ken Olsen: Life before DEC
"Ken Olsen on"

PRODUCTS & STRATEGIES
THE NETWORK AS COMPUTER ........................ 23
Decnet and VAX, the ties that bind
By Patricia Seybold and Michael Millikin
The DEC Family Tree
New slogan, new strategy
THIRD PARTIES DRAW LIFE FROM VAX ........... 33
Vendors ride DEC into commercial marketplace
By Clinton Wilder
Third parties thrive at DEXPO
COMPATIBILITY AT THE CORE ...................... 45
VAX VMS, the architecture of now and 1990
By Peter Cohen

INSIDE DEC
WHO'S ON DECK? ........................................ 47
They share power under Olsen now; one may succeed him
Executive interviews by Glenn Rifkin
Jack Smith .................................................. 48
Jack Shields ................................................ 51
Wm. Hindle .................................................. 55
R&D TARGETING ONE-FIFTH OF EVERYTHING ... 57
Research explores a fraction of everything
By Kevin Strethlo

USERS
MASTERING DEC ......................................... 61
Twenty-six full or partial DEC shops tell how they solve computing problems with DEC or third-party solutions
By Joanne Kelleher and Michael Sullivan-Trainor
Drawings by Mitchell Hayes
DECUS grows with DEC, attracts end users
Goal: 30-second service
DEC shifts marketing focus
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"Why do we own thousands of TeleVideo® terminals? Because we can't afford thousands of problems."
Susan Kennedy is a product analyst at Leasametric, a company that rents, sells, and services DP equipment all over the country, including thousands of terminals. And if reliability is important to the average user, it's critical to Leasametric. Because everything they offer not only has to stand up to the rigors of shipping, but the extra wear and tear that rental equipment always takes. And if a Leasametric machine breaks down, so does the cash flow it generates.

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"Too many terminals just don't measure up...I've seen machines with questionable ergonomics...keyboards that flex in the middle when you type...even cheap little diodes that could drop off...all these factors combine to make a product you either want or don't want in your product line...

But with TeleVideo, the whole product is well designed. They start with solid engineering, and follow through with every detail, down to the steel brace in the keyboard. Overall, they've built the same quality into the 9220 that's made all their other terminals last so long. Obviously, we want to make sure that, two years from now, our equipment will still be working for us. That's why we feel so good about TeleVideo."

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**WHY IS VERSION 5 OF ORACLE SO FAST ON MAINFRAMES, ON MINIS AND ON MICROS?**

**Reason #1: AI Optimizes Query Processing.**

V5 applies artificial intelligence to SQL query optimization. For example, few DBMSs can optimize the query "Select accounts 90-days overdue and accounts over $10,000." But only ORACLE can optimize "Select accounts 90-days overdue or accounts over $10,000."

**Reason #2: Array Processing Optimizes Access To Large Sets of Data.**

Relational DBMSs have always dealt with logical sets of data. But they manipulated only one physical record at a time. V5 eliminates overhead by physically delivering arrays of hundreds, even thousands, of records at a time.

**Reason #3: Parallel-Processing Optimizes Computer Resource Usage.**

V5 is 100% re-entrant shared code, and ORACLE's parallel-processing architecture fully exploits modern dyadic and quadratic processors from IBM, and other multi-processing computers such as those from DEC and Stratus. So ORACLE uses all the MIPS in parallel-processor configurations.

**Reason #4: Multi-Table Clustering Optimizes Joins.**

ORACLE stores data from different tables on the same physical disk page. This technique—called multi-table clustering—permits you to access data from multiple tables in one disk read operation. Clustering improves ORACLE performance on all multi-table operations, such as join queries, update transactions, etc.

**Reason #5: High-Speed Relational Sort Facility Optimizes Data Aggregation.**

Ad hoc relational query requests that data be grouped, ordered or otherwise sorted. V5's internal sort facility performs aggregation and elimination early, faster than previously thought possible.

**Reason #6: Efficient Row-Level Locking Optimizes Transaction Throughput.**

Row-level locking and a read-consistency model optimizes ORACLE V5 transaction concurrency. For the first time, high throughput is achieved by a fully relational DBMS.

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Oracle introduced the first relational DBMS and the first implementation of SQL back in 1979. Today ORACLE is installed on thousands of minis and mainframes, and over ten-thousand PCs. ORACLE is the only SQL-compatible relational DBMS that's portable across IBM mainframes, DEC, DG, HP and most other vendors' minis and micros, including the IBM PC. And ORACLE applications and databases are connectable across different hardware and operating system, providing you with a true distributed solution to your information needs.

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ORACLE stores data from different tables on the same physical disk page. This technique—called multi-table clustering—permits you to access data from multiple tables in one disk read operation. Clustering improves ORACLE performance on all multi-table operations, such as join queries, update transactions, etc.

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CIRCLE READER SERVICE NUMBER 71
Digital Equipment Corp. continues to expand its image from a scientific/engineering/manufacturing systems supplier — historically selling through indirect channels — to the broadest vendor with a much higher percentage of business from direct sales and large accounts.

Users who viewed DEC as a niche supplier are now considering it a contender for all departmental systems, transaction processing and even production data processing systems. With DEC basing itself on a very wide variety of systems, many users are asking if they should consider DEC for applications previously reserved for commercial mainframe vendors like IBM, the plug-compatible companies and the BNR group. DEC has done strong in non-DEC markets like Tandem Computers, Inc. The following questions and responses examine DEC’s credentials as a systems vendor serving large DP/MIS shops.

Can DEC deliver to traditional large MIS shops?

BY FRANCIS GENS

The Vaxcluster is an impressive attempt to approximate the performance of large-scale mainframe processors by loosely coupling multiple VAXs (and coordinating some of their activities) on a high-performance star local-area network.

With the exception of Tandem — which actually began implementing multicomputer complexes in the 1970s — DEC is the first supermini vendor to attempt to take this approach at the high end.

The Vaxcluster does a good job of providing additional incremental processing power for its current customers by supporting more users, processing power and data. So far, however, some limitations to the current capabilities...

New executives considering a clustered approach for large-scale computing needs should be aware of these limitations:

- The VMS operating system and other base system software (in which we include DBMS) has not yet been completely extended to support the Vaxcluster environment. DEC has already provided a distributed lock management, distributed file capability as well as the ability for multiple systems to access a single data base management system.

Still absent, however, are a full distributed DBMS and active distributed data dictionary, more sophisticated recovery (including distributed audit trails) and full parallel processing capability. The goal is to create an operating system view of the cluster as a single logical system.

One of the most important software areas in which DEC still needs to do work is in performance monitoring and management and performance tools that aid DP management in traffic analysis, distribution of records on different direct-access storage devices (DASD).

These issues can be grouped into two broad categories: speed and efficiency (in other words, performance) of communication across the cluster, particularly in applications with large numbers of users accessing large data sets; and system software that makes the Vaxcluster multicomp-uter architecture transparent to users, applications and cluster components (subsystems).

The first category — cluster performance for large data base applications — will undoubtedly be partially addressed sooner with higher performance DASDs. The more difficult part of the performance problem to solve involves modifying operating system algorithms to reflect a more transaction-oriented design point, in the on-line transaction processing environment in particular. Such a project will no doubt require some years to complete.

The second category — more software support for the Vaxcluster — will be addressed on a piece-by-piece basis during the next several years. One of the top items must be better Vaxcluster management tools. Products that go beyond the cluster version of the Monitor package will be introduced during the next one to two years.

Additionally, improvements to the distributed lock management and file systems (for improved concurrency) will continue to be rolled out in the same period. Providing a fully distributed DBMS (and active distributed dictionary) for the Vaxcluster is unquestionably one of the top priorities for DEC.

For the company to do it right will likely take two more years. Providing full parallel processing capability for the Vaxcluster, an enormously complex task requiring implementation of a full lock VMS, will probably not surface for three to five years.

The bottom line is that the Vaxcluster, while clearly pointed in the right technological direction, is still a somewhat embryonic solution for large-system computing needs. Some of the shortcomings are relatively easy to fix (high-performance DASD, for example) while others will take some years to fully address (full distributed data base, VMS accommodation of on-line transaction processing). MIS management considered the Vaxcluster as an alternative to a mainframe or more fully developed multicomputer systems should carefully consider the current limitations of DEC’s cluster would affect the target environment.

Does a strong base of third-party software for VAXs exist outside DEC’s traditional engineering and manufacturing markets?

The widespread impression is that within the past several years, DEC has established itself as one of the leaders in third-party applications in a broad range of industry and horizontal areas, but the supplies of replacement software for VAXs is still very much dominated by engineering and manufacturing applications.

As an indicator of the clustering of applications in the engineering and manufacturing arena, a "VAX Software Source Book," the 1986 DEC-published directory, lists almost 30% of all VAX packages in engineering and manufacturing. Altogether, engineering, manufacturing and accounting (like word processing, a basic utility for most systems) applications accounted for nearly 50% of the 1,500-odd packages listed, excluding system tools and utilities like DBMS and languages.

A second group of applications in the distribution, financial management, health care and earth resource areas make up about 25% of the third-party application portfolio.

About 18 industry areas and generic applications — roughly 25% — make up the remaining application packages. So, although this sparsely represented group are education, personnel, insurance, transportation, utilities, services, government, sales and marketing, law, agriculture and construction.

No third-party applications on installed VAXs is even more strongly tilted toward DEC's traditional markets than the portfolio of available third-party packages. International Data Corp. of Framingham, Mass., estimates that 35% to 40% of all installed VAXs are used for engineering or manufacturing applications, higher than the 30% representation of those applications in the software portfolio.

What do all these numbers mean? While there is undoubtedly a tremendous amount of momentum in the third-party software community to port a broader range of nonengineering and nonmanufacturing applications to the VAX today, the selection of such applications is fairly narrow in some industries.

Customers looking at DEC, particularly in areas such as insurance, transportation, utilities and service industries, must look closely at whether their application and industry are well supported on the VAX.

How tightly can DEC systems be integrated with existing IBM systems?

DEC has aggressively tried to keep

CONTINUED ON NEXT PAGE
up with new IBM communications standards. Through DEC's SNA/Gateway and associated software products, VAXs and Decnet networks can work with IBM Systems Network Architecture (SNA) networks and systems almost as intimately as IBM's non-370 processors like the System/36 or Series/1.

Like most vendors, DEC's first link to the IBM world was through cluster controller emulation (LU2). In the past several years, however, IBM has announced a large number of higher level communications links for its own systems, such as LU6.2, SNA Distribution Services, Document Interchange Architecture, Document Content Architecture and Distributed Office Support System (Disoss).

Ironically, many of these interchange tools and architectures, which have provided better hooks for DEC and others into the IBM environment, were developed by IBM to facilitate communications between its own incompatible systems. DEC has gone well beyond simple cluster controller emulation, consistently being one of the first vendors to announce and deliver support for new high-level IBM-announced links.

DEC's SNA/Gateway support and applications include VMS Advanced Program-to-Program Communications, VMS API, Disoss Document Exchange Facility (DDXF), Distributed Host Command Facility (DHCF) and VMS/SNA (for the Microvax). These products provide a variety of high-level interchange capabilities for VAX networks interfacing to IBM SNA networks.

Additional products that DEC will undoubtedly announce that will further integrate the IBM and DEC environments include an SQL query facility for DEC's VAX RDB/VMS, support for IBM's Distributed Data Management architecture and PUR (LU6) SNA support as a subarea SNA host.

Can IBM-oriented operations and development staff skills be leveraged in the DEC environment? For example, are there common application development tools for both IBM and DEC?

In terms of operations, there are few similarities between the VAX and 370 systems. The closest thing to a common operator facility for these two worlds is in the network management area, with DHCF. Installing a DEC system or VAX cluster in an IBM shop does mean establishing an entirely new core of expertise in VAX hardware and software.

In the application development area, IBM and DEC's third-generation languages (Cobol, Fortran and so on) are somewhat different. If CICS or TSO tools and facilities are used in the IBM environment, the conversion is going to be complicated. Needless to say, the control languages for each system are very different also. There is a limited number of conversion tools that help port such programs back and forth.

An approach that provides greater leverage of the application development staff is to select a fourth-generation language (and companion DBMS) that both families support. Since fourth-generation languages have remained for the most part in the control of independent software developers, vendors such as Cincom Systems, Inc., Relational Technology, Inc. and Oracle Corp. (and soon, Cullinet Software, Inc.) have attempted to keep their development tools as consistent as possible in a variety of hardware environments.

This means that, with minor exceptions, one can look forward to source-code compatibility for DEC and IBM applications developed with such tools.

Is DEC going to be a survivor in the information systems business during the next 10 to 20 years?

During the past couple of years, DEC has emerged as a clear long-term force in the information systems business. While this conclusion seems trivially simple, it is not; consider that there are several vendors with revenue of more than $1 billion for which the long-term future — 10 years or more — is not certain.

DEC features a very strong hardware line and a very strong software offering in Decnet. One of its biggest current weaknesses is that third-party software support is weak in some key markets, limiting the DEC appeal there.

There is very strong momentum in the software community for porting many packages in a wide variety of industry sectors to DEC systems; however, DEC will need to accelerate the modification of its systems (including the VAX cluster) to accommodate transaction processing environments. There is an excellent opportunity for DEC to challenge IBM and Tandem in this $20 billion to $30 billion market. Again, however, this task is not trivial.

Finally, the magnitude of DEC's future success depends heavily on how well the company can overcome its matrix management heritage. Direct sales and support of integrated systems will require a coordinated, account-oriented approach — one that is difficult to superimpose on a product-oriented organization that is used to selling through OEMs.

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DEC has undergone two major reorganizations in the past three years in an attempt to address that issue. Old habits die hard, however, and turning DEC into an effective, well-coordinated marketing organization will surely be a multiyear project.
What we learned about networking from Houdini, Einstein and the Blatta germanis.

These aren’t your average, everyday R&D resources we agree. But as history tells us, the answers to some of the most complex problems can be found in some surprisingly unusual places.

Jack Of All Trades vs. Master Of One:

Harry Houdini was well known for his overall expertise as a magician, but in escape artistry, he was the specialist.

At Codex, we can’t help you out of submerged trunks wrapped in chains, but we can help you out of some difficult networking problems like no other data communications company can.

Because in networking, we are the specialists.

With Codex networking solutions, you can create a high performance network without compromising anything.

Without tying completely into a single vendor. Or tying into a vendor that may be better at computing than communications.

Networking and innovation. It's all relative.

We all know what Albert Einstein was famous for, and it wasn’t his many rides around Princeton looking for his house.

It was the theory of relativity. An example of innovation which not only earned him a Nobel Prize, but also changed the whole way we look at the world around us.

At Codex, our forte is networking, with emphasis on technological innovation. We, too, have awards to show for it. It’s the kind of pioneering that has changed the way the whole world looks at networking.

Only the strong survive.

Last but not least, we’ve learned a big lesson from a small creature. The Blatta germanis, or common cockroach.

And what have we learned from the Blatta?

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In short, we’ve done it by being the company with the answers.

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If you’re building a private network, we’ve got a book that you or your staff might find useful. It’s called The Basics Book of Data Communications, and it’s free if you ask for it before December 31, 1986.

You can get one by calling 1-800-426-1212, Ext 207. Or you can write to us at: Codex, 20 Cabot Boulevard, Department 707-07, Mansfield, MA 02048.

Ask for your copy today. After all, you never know where you might learn something.

Visit the Codex booth at TCA (September 23-25); CMA (October 8-10); and Info (October 6-9).
The following questions were solicited from users by Computerworld Extra and conveyed to DEC for responses.

How is DEC planning to handle the problem of connecting multiple-area Decnets together directly, where there are conflicting area and node assignments that cannot be changed? Will the solution be sooner than two years?

Selden Ball
Technical Advisor
Wilson Synchrotron Laboratory
Cornell University
Ithaca, N.Y.

As part of Phase IV Digital Network Architecture (DNA), each Decnet node requires a unique area assignment and unique node assignment within areas. To merge two Decnet networks into a single network, it is necessary to identify new area assignments so that each area in the combined network has a unique address.

Today, area assignments can be changed one at a time. In a later phase of Decnet that will conform to the International Standards Organization's (ISO) network layer addressing standards, this limitation will be removed.

With the ISO standard, addresses are up to 20 octets (160 bits) long. The high-order bits designate the domain and can consist of an ISO organization code, a CCITT telephone number and so on. Thus, there is no question of conflict between different networks when merging has to be done.

This question identifies a situation that rarely poses a major obstacle in establishing a large network. Internally, for example, DEC has implemented a worldwide system that spans 29 countries and provides some 60,000 users at more than 250 separate locations with access to an integrated Decnet network.

Externally, there are more than 55,000 licensed Decnet nodes and 50,000 licensed Ethernet nodes at 5,500 customer locations that serve 750,000 users. William R. Johnson, Jr.
Vice-President, Distributed Systems

What is DEC's preferred data base solution? Will DEC develop a data base machine? Might one VAX in a cluster become a data base machine?

Herman Gold
Manager of Technical Services
A. B. Dick Co.
Chicago, III.

Digital offers two data base products for the VAX family. The first, VAX DBMS, is a full-function, Codasyl-compliant data base management system that includes an embedded query language.

The second, VAX RDB/VMS, is a full-function, relational data base system. Both products are supported in Vaxclusters and in wide-area networks applications. They are also supported by the VAX Common Data Dictionary and VAX Datafile for ease in query and report writing.

These products do work on a Vaxcluster in which you do not need to dedicate a particular VAX to data management.

It is distributed across all VAXs in combination with all the high-speed file access being provided by dedicated disk controllers. The HSC70.

You can have any combination of VAX processors and HSC70 controllers in a Vaxcluster up to a total of 16 devices. This data base management capability is available today.

In addition to the two Digital data base management products noted above, a number of other data base management software packages are offered by independent firms for VAX systems.

These allow the VAX user to pick the data management tool best suited to the application needs. William J. Heffner
Vice-President
Mid-Range Systems Business Group

What is DEC doing about managing its matrix organization, specifically in the maintenance area? Currently there is often a lot of delay in getting to the correct person. Also, what are you doing to improve your response to software problems? The formal route is often tedious, and it is frequently necessary to use informal routes to get questions answered.

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West Coast Defense Contractor

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In addition, our engineers receive continuous training — in both basic hardware and software service — so they can deliver up-to-date, total systems service. This systems approach to service helps ensure maximum uptime.

In most cases today, we begin providing service from a remote service center within 20 seconds of a customer’s call. On-site service is often delivered within 30 minutes, and we guarantee high-end VAX customers never to exceed two hours in responding to a service call.

We also recently opened a new Customer Support Center in Colorado Springs, which we believe to be the most advanced service facility in the world.

This new facility and similar sites worldwide provide Digital customers with the most complete and technologically sophisticated support services anywhere.

David W. Grainger
Vice-President, Field Service

When will DEC start to produce state-of-the-art disks that match the performance in terms of speed and reliability of the rest of the data processing industry?

Al Siegel
Battelle Memorial Institute

When will DEC start to produce state-of-the-art disks that match the performance in terms of speed and reliability of the rest of the data processing industry — specifically the performance of IBM disks? We do not perceive that size is a problem. We are much more interested in reliability and speed.

Al Siegel
Manager of Computing and Telecommunications Center
Battelle Memorial Institute
Columbus, Ohio

The performance of an I/O subsystem is affected by several elements in addition to the speed of the various components. Digital Storage Architecture subsystems typically attain throughput around or above 35% greater than you might expect by just examining component specifications.

Digital is dedicated to this flexible, sophisticated architecture and has a number of new products in development that will be comparable to the best component specifications available in the industry.

Digital is firmly committed to improving customer satisfaction by constantly improving the reliability of our products. In the RA81 and HSC50, for example, we strive for triple reliability in the last two years.

This is not to say that our products could not benefit from further improvement. Products currently under development consume less power, are faster and are more reliable. We are dedicated to providing the highest standards of I/O subsystems performance to our customers.

F. Grant Saviers
Vice-President, Storage Systems

Now that AT&T has dropped support for the VAX with System V, what does DEC plan to do to support System V? — incorporate it into Ultrix or use some kind of emulation package on top of V...

Digital will maintain compatibility with the System V Interface Document specification as well as with the University of California at Berkeley Unix releases.

Digital provides a computing environment in which VMS and Ultrix systems can be used together easily via a new Decnet. Furthermore, Transmission Control Protocol/Internet Protocol networking is provided. Digital has also ported its VAX systems.

For those users who make the transition from Unix systems, Digital offers the VAX DEC/Shell product, which contains the Bourne shell and many Unix utilities running on VMS.

William J. Heffner
Vice-President, Software Systems
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McCormack & Dodge
After Rainbow, Vaxmate: Not just another clone

NEW PRODUCT REPORT

BY GLENN RIFKIN

Within weeks of the fifth birthday of the IBM Personal Computer, DEC facetiously unveiled its answer to that now ubiquitous machine. The Vaxmate personal computer, announced earlier this month, is the overdue PC-compatible low-end solution for which DEC users have longed.

Make no mistake, this machine is by no means DEC's first foray into personal computers. The company lost hundreds of millions of dollars on its ill-fated Professional, Rainbow and Decmate II lines, which appeared nearly four years ago. But rather than mourn its losses or even exacerbate its misjudgment by building yet another PC clone, DEC spent the past month searching for and building what it considers a networking solution rather than just another PC.

"We believe," says Peter Smith, vice-president of product marketing at DEC, "that this solution gives MIS a way to deal with the hundreds of millions of dollars on its ill-conceived low-end solution for which DEC users have been begging for years."

A PC AT compatible based on Intel Corp.'s 80286 chip, the Vaxmate is bundled with most of the necessities a desktop user could want.

According to Henry Ancona, group manager of office and information systems, DEC struggled for a year and a half to figure out a strategy to meet what customers wanted from a DEC PC.

What DEC customers — and many others, DEC hopes — are asking for is the ability to integrate desktop PC applications into a seamless, top-to-bottom network.

The strategy is simple, Smith points out: Tie desktop users together using the strength of VMS and networking solutions that not only take advantage of the PC but also hook transparently to both departmental and corporate host systems.

To that end, DEC proposes what it calls "network group solutions," which currently take the form of two offerings built around the Vaxmate.

The first is a software solution called VAX/VMS Services for MS-DOS. This offering is a generic value-added package that allows a user to tap into the VMS computing for VAX users at the desktop level. For a DEC customer, nothing can touch it," Duray says.

Duray says he believes that the Vaxmate strategy opens a myriad of options for him that were previously unavailable. He can tie his numerous IBM PCs into the environment, and through Microsoft's Windows, he can run multiple sessions simultaneously on the Vaxmate.

Duray is anxious to see a more flexible configuration of the machine in which he could add a 19-in. monitor as well as a color monitor. "In doing electrical design, color is a must," Duray says.

At Summation, Inc., a DEC OEM in Kirkland, Wash., Dave Seres says he thinks that this link between the MS-DOS and VAX worlds can only bring customers look for. "We encountered a lot of people with DEC approaches on the factory floor, and we couldn't offer them this solution. Now we can," Seres says, adding, "It's very attractive to OEMs."

"DEC's emphasis on connectivity is smart and really plays to DEC's strengths," Gates says. But he says he believes the machine will not affect sales of IBM PCs because DEC has done with Ethernet built into it, so unless you are a company that believes in Ethernet, I don't think we'd be that excited about it. It's a fantastic machine for people who work closely with VAX, and that is a large community that we can target for customers." For DEC, the Vaxmate represents a bold and painful lesson about the changing nature of the computer business. It is never easy to admit to being wrong, but that is exactly what the company did when it ceased work on the Rainbow in January 1985 and reformed its attention on the Vaxmate strategy.

Olsen, who has emerged as the champion of the new DEC machine, says, "It was the driving force behind the earlier personal computer effort. That effort was characterized by an understanding of the emerging PC market and to get a useful product to market within the proper time frame. "It's not very complex; we didn't know what to do," recalls Jack Smith, senior product manager at DEC.

The strategy is simple: Tie desktop users together using the strength of VMS and networking solutions that not only take advantage of the PC but also hook transparently to both departmental and corporate host systems.

The Vaxmate is ergonomically designed, in-compactly configured for the nontechnical office worker. Once plugged in, an already loaded software package provides uncomplicated English menus and allows novice users to be systems managers, according to Ancona.

According to Smith, the two systems are the first of a series of products to be announced next six to nine months that will tie desktop users in virtually every computer environment into the network. Future considerations will focus on Unix users and factory floor applications.

DEC users, while upset at the length of time it took the company to address the low end, nonetheless seem pleased with the results.

Peter Duray, project manager in the corporate MIS department at Polaroid Corp., became a beta-test site user of Vaxmates last December. Using Microvax III as servers, Duray tied eight Vaxmates into several Polaroid environments, including computer-aided design, office systems, program development and operations support.

"It was disappointing that the system wasn't as mature going into beta test," Duray says, "but now it opens up a whole new way of computing for VAX users. One of the biggest issues with PCs was that there was nothing to back them up in terms of data security and integrity. It's hard to quantify the value of being able to store data centrally at the desktop level. For a DEC customer, nothing can touch it."

According to Batry Folsom, erstwhile Rainbow product manager and now vice-president and general manager of the East Coast division of Sun Microsystems, Inc., DEC's original strategy in 1981 was to make the Professional its personal computer product. DEC started the Rainbow project as an insurance policy because the cost of doing it was relatively cheap compared with the massive effort behind the Professional. At the same time, the company initiated an upgraded version of the original Decmate word processor.

Folsom recalls the contrast between DEC's emphasis on connectivity is smart and really plays to DEC's strengths. Gates says. But he says he believes the machine will not affect sales of IBM PCs because DEC has done with Ethernet built into it, so unless you are a company that believes in Ethernet, I don't think we'd be that excited about it. It's a fantastic machine for people who work closely with VAX, and that is a large community that we can target for customers." For DEC, the Vaxmate represents a bold and painful lesson about the changing nature of the computer business. It is never easy to admit to being wrong, but that is exactly what DEC did when it ceased work on the Rainbow in January 1985 and reformed its attention on the Vaxmate strategy.

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DEC's and IBM's efforts. IBM let a small group design and build its personal computer without corporate interference. In nine months, farming out virtually the entire machine, IBM put its product out the door. DEC, meanwhile, insisted on building every inch of its PC, including the microprocessor itself. This commitment put DEC a full year behind IBM in the market.

"IBM had the market to themselves for a full year before anyone came out with anything comparable," Folsom says. "They captured the mind-share of the third-party software developers and then a key software application — Lotus Development Corp.'s 1-2-3 — pops out, and the rest is history."

Folsom says he feels that, in fact, DEC was ahead of its time. The Professional, he recounts, connected into DEC's PDP networks and incorporated multitasking and bit-mapped graphics. And engineers agreed that the Rainbow, with both CP/M and MS-DOS operating systems, was superior to the IBM PC.

The Professional, too expensive and necessitating too much memory, foun-dered from the beginning. The Rainbow, ironically, fared far better. More than 200,000 were sold, and the Rainbow will be supported in the new Vaxmate environment.

The Professional is a reported $500 million. "Ken wasn't easy to deal with at that point," recalls Gordon Bell, then vice-president of engineering. "He had failed in his engineering project. He was driving that project."

By November 1983, Folsom was pushing for an IBM PC-compatible version of the Rainbow. DEC approved the idea, and the FC25 and PC25 projects got under way. But that development was characterized by months of wres-tling with questions about add-on boards and packaging. Jeff Kalb, vice-president of low-end systems, along with Folsom and other DEC managers, began to realize the product "where things were headed."

"It was obvious that we didn't need another PC clone. We needed higher value added and functionality for approaching the marketplace," Kalb explains.

While some DEC customers clamored for a faster, fancier clone, the decision was made to listen to another set of customers.

This group of customers wanted to protect its investment in IBM PCs but also wanted to access DEC's VMS, Decnet and Ethernet environments from the desktop. The idea, while simply stated, was another matter to accomplish.

K. admits that the original time frame for Vaxmate's development was 16 months. It took 22. "That was a challenge from Ken Olsen, and we didn't meet the challenge schedule," he acknowledges. "But we don't feel we took too long to build a product this complex. To the user, we've made it look simple, but the very art of making it simple is hard."

One of the difficulties was getting the IBM PC integrated into the VAX environment. Another was convincing Olsen that the machine should include an AT bus and IBM expansion slots.

Olsen, apparently averse to anything that might lead to interest from retail channels, fought the idea of an AT bus integrated into the machine. Without a bus, the Vaxmate would be software compatible but not hardware compatible, which would shut out virtually any peripherals being hooked to the new environment that were not specifically from DEC.

The compromise solution: Put the AT bus and slots in an optional expansion box that sits directly under the Vaxmate on the desktop.

As the machine ships, customers and consultants will undoubtedly be seeking more capabilities. A color monitor is being engineered, but no target date has been announced. "We did a survey that showed 93% of users use monochrome screens," Kalb says.

DEC is also readying its Vaxstar, reportedly a portable Microvax engineering workstation with a built-in Ethernet connection, and the firm must take care not to confuse potential buyers about which machine to consider.

But as Folsom points out, the Vaxmate should do well because "networking is incestuous. Once you get a few people on it, everybody has to be connected. If you can get all the PC ATs attached to it, you'll sell more VAXes. You want the price and marketing to be such that a person considering a new purchase will buy a Vaxmate instead of an AT. But the whole intent is not to sell Vaxmates, it's to sell DEC systems."
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A WHOLE NEW DEC
machines continue to roll out, tied together by a golden thread of connectivity. Even the least important announcements become major media events. The watchers and critics, so recently scornful, are singing a new, respectful tune. It is, by any measure, the year of DEC.

In Maynard, Mass., DEC President Ken Olsen speaks with humility. Success, he says, scares him as much as failure. It is in the flush of victory that the greatest mistakes can be made. “We got into all the trouble we were in by having too many years of good times,” he insists.

The wounds of three years ago may be healed, but they ache ominously whenever the celebration gets too loud. Olsen knows too well how quickly adulation can turn to finger pointing in this computer business. The scientist and the Christian, he says, must believe in searching for the truth and being humble.

The corporate officers and the troops fall in line, echoing the caution. But there is clearly vindication on the faces of DEC. Nobody openly sneers in the direction of Armonk, where Big Blue shuffles uneasily. But there is a certain giddiness in knowing that a long...
arduous adherence to a single strategy is finally paying off and also in knowing that despite its size, strength and tenacity, IBM currently doesn’t have an answer to a seamless top-to-bottom computing environment.

"We had a vision of computing we knew the world needed," Olsen, DEC's guiding spirit, about his corporate dream. The company began to re-emerge in early 1985, climbing toward a height it had never reached before. Long-delayed VAX machines appeared, along with the first networking scheme that corporate users — tired of vendor promises — could actually implement. While some waited for IBM's Token-Ring solution, DEC solidified its strategy around Ethernet, and its status as a standard grew. The product plan was simple yet ingenious: one architecture tied together across all machines along with connections to IBM that others were merely intending to provide in some vague future.

DEC is hot. Analysts predict that for at least the next 24 months, DEC will be the industry trendsetter. It will take at least that long for any other vendor, including IBM, to stem the momentum DEC has established over the past two years. The MIS manager in the Fortune 500, not a traditional DEC advocate, is being urged to take a closer look — not only by a new and aggressive DEC marketing scheme but also by independent consulting firm.

"DEC has a hell of a story to tell MIS," says Marty Grunh, vice-president of the Sierra Group, a Tempe, Ariz., consulting firm. "DEC has products that will add value to the dollar, and the MIS guy wants that. MIS doesn't have IBM stamped on its forehead. DEC has products where IBM is weak, and customers are using DEC as leverage against IBM."

IBM, for its part, has reportedly decided that the competition has narrowed to just itself and the upstart from Maynard. According to consultant George Colony of Forrester Research, Inc., Stephen Schwartz, president of IBM's System Products Division, stated that DEC is the target. His weapons include the System/36 and 38 and the yet-to-be-announced low-end 4300. DEC, for its part, keeps peppering IBM with blows aimed at its lack of connectivity, compatibility and networking capabilities. "We hook into an IBM environment better than IBM hooks into an IBM environment," re-peats more than one DEC executive. But DEC is not stupid, says Bob Hughes, vice-president of services industry marketing. "The humbling fact is that IBM has 40% of the industry's sales but 70% of the industry's profit. We have yet to learn from them about profitability as we have learned from them in many other ways about how or how not to do certain things. We do not have any designs on overtaking or replacing them."

This self-effacing stance, of course, is both in keeping with management’s marketing. DEC did not land in its enviable position by being humble with potential customers. The company indeed has a story to tell and is aggressively telling it. There is a new-found religion at DEC, and it is called marketing. "DEC realized it couldn’t grow by being a provider of iron," Grunh points out. "So they accurately identified what the users wanted — networking and connectivity — and started to market that. Ken Olsen has found an approach to compete with IBM. He’s bet on the company, and he’s going to win."

What surprises an observer who delves deep into this whole new DEC is how much and yet how little the internal culture of the company has changed thus far. One would imagine that a $7 billion corporation with 95,000 employees worldwide would have evolved beyond recognition.

In many ways, that is true. The company has gone through four major eras since the doors opened in 1957, eras defined by technology and personality. But as long as Ken Olsen remains at the lead, there is an unbroken thread that ties the past with the present. "It’s always a limitation to be consistent with the past," he says. "But as long as Ken Olsen remains at the lead, there is an unbroken thread that ties the past with the present. "It’s always a limitation to be consistent with the past," he says. Though the company is often termed "dull, stodgy and technical" in the image of its founder, its story rivals any of those told by such media darlings as Apple Computer, Inc. or Lotus Development Corp. In fact, DEC blazed the very trail that the much more heralded microcomputer companies followed two decades later.

The DEC story is ostensibly Ken Olsen's story. He is the almost mythical father figure, the unchallenged leader who has reigned longer, in fact, than any original company president in industrial history. But Olsen himself constantly credits the people around him with the success of DEC. He is not a man without faults, and will disarmingly acknowledge those faults in public and private settings. Olsen has asked at a recent product announcement why DEC closed its new VAXIBI bus structure to third-party developers. Olsen replied that a better question would be, "Why did we open the old bus structures? The answer is, I don’t know," he stated. "It certainly was sloppy business, and we won’t do that again."

He is a leader who so ingrains his values in his company that employees, while unable to comprehend DEC without him, insist that the culture will not change when he is gone.

In the 1950s, with the transistor revolution hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on machines, input data, get results. Olsen and his colleagues introduced concepts computing the world wanted and needed. MIT could provide the brainpower, but a new business would be required to make it fly. A grandiose plan for a business was hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on machines, input data, get results. Olsen and his colleagues introduced concepts computing the world wanted and needed. MIT could provide the brainpower, but a new business would be required to make it fly. A grandiose plan for a business was hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on machines, input data, get results. Olsen and his colleagues introduced concepts computing the world wanted and needed. MIT could provide the brainpower, but a new business would be required to make it fly. A grandiose plan for a business was hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on machines, input data, get results. Olsen and his colleagues introduced concepts computing the world wanted and needed. MIT could provide the brainpower, but a new business would be required to make it fly. A grandiose plan for a business was hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on machines, input data, get results. Olsen and his colleagues introduced concepts computing the world wanted and needed. MIT could provide the brainpower, but a new business would be required to make it fly. A grandiose plan for a business was hatched by a group of engineers. Too many people, too little vision of how to make it fly grounded the effort. Olsen would have been of even less use. Anderson, Dick Best, Ben Gorley and Stan Olsen (Ken's brother), Olsen got a taste of interactive computing. The inquisitive engineering minds at MIT wanted to get their hands on
Ken Olsen: Life before DEC

The press and financial and industry analysts are no longer suggesting retirement. DEC's employees have stopped wondering if he has lost control of the company. Now he is compared with Henry Ford and called one of the greatest industrialists of the 20th century.

For Ken Olsen, praise is much the same as scorn. He listens, the side his public relations aides cringe to the religious atmosphere, while the family struggled through the Depression. Olsen was the second oldest of four sons, handled the finances and accounting, which later undergraduates, such as Ken was the lead engineer, helped design the Whirlwind II. When he left the Navy, where his three years.

At MIT, Olsen discovered a passion and ability for computers. He not only was accepted, but...
The history of DEC:
In the area we concentrate on, we have more expansion possibilities than we can exploit, and going into other things would neutralize or pollute it. So an important part of our strategy is to have simple goals and then put enormous resources into them.

With networking, which is all-embracing, it was very clear that we had to be one company. And with that, most of the entrepreneurs quit.

Good entrepreneurs can’t delegate anything, except maybe the budget, and they can’t hire anybody to do the thing. When I said, “We’re going to be one company and all work together,” that was the ultimate blow to their spirit. Entrepreneurs don’t work together. That’s their nature.

So there was the disappointment of losing all my friends, all of whom I asked not to leave — if I were smarter, I would have hanged anybody to do the thing. They left; they were sure I was a dictator, ruining all the good things. When I said, “It’s a minimal computer,” and that fortuitous sale, we’d have make more chips, because they understood that they needed more just than the knowledge of how to make a computer,” Olsen recalls. “You didn’t understand that you need more than just the knowledge of how to make a computer.”

And I could not explain to them that that’s not what you need to run a whole business. If I couldn’t explain it to them, I can’t really blame them for not grasping that. And then, when we lost all the vice-presidents and they said I was ruining the company because they didn’t want to work together, I could understand the press reaction. So I don’t need vindication.

Management philosophy:
One immoral thing to do is to overpay somebody. If you over-pay him, you ruin his life. He has to keep bugging, struggling to keep that pay or take a cut, which some people can never tolerate. It’s absolutely immoral to overpay somebody.

If you strive for honesty, it does make a major difference in how you operate. Obviously it’s not easy, because you can go too far one way or the other.

In the business we’re in, humility and searching for the truth are very important. If someone says, “I invented a new network, it’s the only one...” if exactly what you need, you can almost be assured he is wrong.

Enjoying success:
The final picture of success is how well the company does after you’re gone, then how long after that.

It’s so exciting now, so nice to see the products going out and being sold. It’s much more fun now. In that era, when product lines had reached past their useful time, we didn’t have the discipline in engineering; we were not cutting the products out when we should. Now we turn out products so fast, we’ve got to slow them down. I enjoy talking with people. But in theory, I’d like not to because I should push starting others ahead. But we have a message to get across.

We are asking people to commit their whole company to us. Little companies can go to Computerland and tie a network of small PCs together. We’re asking people to tie a whole company together.

Corporate strategy:
The VAX architecture is a growing, evolving thing, so the main constraint is that it plays VMS. It’s a disciplined architecture. There’s a certain amount of freedom without giving up the enormous assets of VMS. The architecture may not be exactly the same, but it will still be a VAX. Our plans are always to be VMS-based. It will always play VMS.

You always think you can make a more efficient machine by starting over. But you’ve always been people who can make specialized machines faster and cheaper, but we always had this big customer base that we have to continue to satisfy.

Token ring probably has a long way to go before it’s finally defined. They don’t build large ones, but they’re thinking about it. And so we have little interest in token ring until it’s a useful product.

We don’t have the equivalent bridge to some of the other manufacturers, which we’d like to have, because they’re so sloppy in their standards, and we just can’t make bridges.

We do well in most companies selling networking into pieces of the organization, but it takes a long time to convince people that they have to plan to do the same things for the whole organization.

MIS departments:
Most people are dependent on their MIS groups, and the MIS groups are dependent on IBM. We tell our friends that’s a mistake because MIS is not the group that knows most about how a company runs. There is a new generation of MIS coming along that has a broad view. The MIS director normally has only one high priority, that’s for payroll. The MIS director does not know anything about manufacturing, or laboratories or engineering or the office. The chief information officer high in the organization has to be responsible for setting policies for everyone so they communicate, so this modern world of communications, sharing information, will revolutionize business.

We’re not asking them to understand DEC. First we’re asking, “Do you understand the corporation and what the needs are?” And then you introduce standards for communications because they all have to speak together. So our pitch is not to sell DEC directly.

This is the message we have to American business. If you allow everyone in your organization to run off in a different direction, you are never going to communicate and never accomplish what you can with modern computing. But if you get in the same direction that allows creativity and productivity... We preface that message and say, “Sure did help us.”
Despite the growing multitudes in the business, DEC clearly emerged as the leader. And it became a takeover target. Olsen recalls being approached by companies such as Harris Corp., Singer Co., Xerox Corp. and Hewlett-Packard Co. during that period. "HP wanted to buy us and said, 'We'll compete with you if we don't,'" Olsen says. "So they competed with us."

Even with the PDP-8, new markets sometimes resisted penetration. Stan Olsen remembers a visit he and Ken made in 1965 to The Wall Street Journal. "Ken and I tried to lay out what the possibilities might be in the future in typesetting," Olsen says. "They told us, 'You will never get an editor to sit in front of a tube.'"

Undaunted, DEC pushed hard into markets it did understand. The scientific and technical community welcomed DEC's carefully engineered machines and the understanding its sales and service people showed for their needs. PDP-8s sold furiously through a combination of OEMs, a concept DEC is credited with originating, and direct sales.

Internally, the company was experiencing its first period of upheaval. Ken Olsen was forced to recognize that the loose start-up atmosphere was creating glitches and that a new, structured management style was needed. "We were busy building the organization and growing, so we had our heads down during that period of time," notes Jack Shields, senior vice-president of sales and service. "My job title didn't change even though my job responsibilities were doubling every year."

In what Bell terms "a brilliant piece of organizational restructuring," Olsen implemented the product line structure in 1966. The company was organized according to product lines, each group having responsibility for its own bottom line. Unlike other division-oriented companies, like HP, the product line groups shared major functions, such as sales, manufacturing and R&D, on a corporate level.

This matrix style of management served two purposes. It spearheaded tremendous growth for DEC over the next 15 years, and it established a corporate culture. That culture would be both praised and attacked as time went on.

Olsen's notion of management was simple: Hire talented and motivated people and then let them do their thing within a disciplined environment. All decisions would be made by committee; there would be no dictates handed down from on high.

The management formula, widely praised (in Thomas J. Peters and Robert H. Waterman Jr.'s In Search of Excellence, for example), served DEC well for the next decade before it began to show signs of wear.

In 1966, however, other troubles surfaced despite the euphoria of growth and profit. Harlan Anderson, one of the company's founders, decided to leave. Though neither he nor Olsen will comment on the reasons for the departure, it seems clear that Anderson was squeezed out because he could not negotiate a role with Olsen. DEC went public in 1966, and Anderson took his windfall and embarked on a career as a venture capitalist.

Gordon Bell, burned out at age 32 after engineering three machines in six years, left Maynard to teach at what was then Carnegie Tech in Pittsburgh. "At one level, I was tired of engineering," Bell recalls. "I also had a pretty good view of what was going to happen for the next few years. DEC was a $20 million company at that point, and there were too damn many products for a $20 million company. I built computers, and the last thing DEC needed then was more products."

Bell took a leave of absence as a consultant and remained remarkably active for someone supposedly off duty. He helped solve engineering problems on both the PDP-10 and PDP-11 while at Carnegie.

By 1968, a great dark cloud was building over DEC. A small group of engineers, lead by de Castro, the designer of the PDP-5 and PDP-8, left to form Data General Corp. in Westboro, Mass. The story has since been told and retold to no one's satisfaction; the truth is elusive.

After the PDP-8, de Castro went to work on a new 16-bit machine that some, such as Bell, believed would have been even better for DEC than the highly successful PDP-11. The PDP-X project was reportedly killed by DEC, and an angry de Castro left to start a new venture.
Those who were insiders at the time believe that Olsen and de Castro simply couldn't communicate with each other. Outsiders, such as noted DEC-watcher Sonny Monosson, editor of "Monosson On Dec," say it was the complexity and politics of the matrix management structure that exacerbated the problem.

"To get anything done in the company, you had to buy or confirm the loyalty of manufacturing, engineering, distribution and everything else," Monosson explains. "It was very difficult. There were times in those early days that Ken Olsen himself said he didn't think he could have had things done that he wanted unless he got the rest of this group to agree." With superior products, layers of qualified people in place throughout the company and Olsen's steady hand, DEC more than survived the crisis. The 1970s were characterized at DEC by high growth, increased competition from DG, HP, Wang Laboratories, Inc. and an apparent lack of interest from IBM, which had chosen to basically ignore DEC's notion of computing.

The PDP-11, the versatile 16-bit offering, carried DEC through a good portion of the decade in its booming OEM business, while the Decsys- tem-10, which gave birth to the time-sharing concept, produced significant revenue in the 32-bit market.

Bell returned to take on the role of vice-president of engineering in 1972. This sense of very large-scale integration technology excited him, and he set out to build what he terms "one of the best engineering groups in the world." John Sims, now vice-president of personnel, joined the company in 1974 as its equal employment opportunity administrator. "There was an air of anxiety to do what was right," Sims recalls. "It was clear to the operations committee. "As he got closer to the project, it was simply not big enough; it was run-ning out of address space."

Bell and his engineering colleagues realized that the company's computer architectures needed serious attention. The competition was reportedly ahead in 32-bit architectures and the minicomputer market had turned into a seesaw battle of MIPS and price/performance.

In 1974, DEC centralized its engineering group to tackle an obvious problem on the horizon: The PDP-11 was simply not big enough; it was running out of address space. Bell drew up plans to extend the address on the PDP-11 and dubbed it Virtual Address Extension, or Ox. DEC's operations committee, as it had done before, began three simultaneous attempts to solve the power problem. From these three factions, the winner would emerge.

Bell and Lacroute, now executive vice-president of Sun Microsystems, Inc., were group product manager of the VAX team. He and Bell championed VAX against the two other alternatives — to extend the PDP-11 and to extend the Decsystem-10. Olsen, who today garners credit for the company's VAX strategy, actually had little to do with its development.

In fact, Bell was relieved that Olsen kept his distance. As such a powerful figure in the company, his suggestions were occasionally mistaken for dictates, wreaking havoc in the development process. "As he got closer to the project, he scared the hell out of me," Bell recalls.

It was clear to the operations committee that the PDP-11's 16-bit architecture would not extend very far and that the 36-bit architecture was a 10-year-old technology and thus not appealing. "What is the lifetime of the scheme?" Lacroute says. "DEC has always been good at defining architectures that last more than a year or two."

DEC approved a move that may one day be viewed as the most crucial in company history: DEC went with the VAX architecture.

Lacroute's team was ecstatic. In The Soul of a New Machine fashion, they set out to create. Lacroute says that "the best damn computer architecture that ever had been put together." The challenge was laying in preserving compatibility for DEC customers and creating a simple, elegant design.

The group became DEC's elite corps of engineers during development. "The mission was clear, the target was clear, you didn't have to worry about any company politics," Lacroute says.

The VAX-11/780 was introduced in 1977 and became an immediate industry standard against which other mini-mak- ers rated their products. It reaffirmed DEC's position as king of the minicomputer industry.

Gordon Bell, meanwhile was putting together a whole new notion of computing that would form the foundation for DEC's current company strategy.

Before the commercial wave of personal computers struck, Bell conceived of a three-level model of computing, with the central or mainframe machine on top, mini as distributed machines and micros on the desktop. He also foresaw the need for a single architecture across those levels.

The VAX strategy was put on paper and approved by the operation commit- tee in December 1978. It positioned VAX at the heart of an integrated strategy and called for the curtailing of all other development.

The strategy was not welcomed by all. Bell recalls the initial reaction: "Are you crazy? You're killing all these ma-chines.” He countered with a proposal that would continue ship development on the PDP-11 and Decsystem-10, though the company's main focus would be on VAX.

Olsen was not enthusiastic in support of the strategy but took his cue from the operations committee. "I took no active part in forming the strategy, but once it got going, it was my job to say, ‘We’re one company, this is the strategy. If you don’t like it, get out.’" he says.

As DEC entered the 1980s, it had firmly established itself as the No. 2 computer maker behind IBM (though so far behind as to be in another league). In 1981, Stan Olsen departed to pursue real estate interests, leaving Ken as the sole original founder. Stan, as did others in the DEC community, thought that all was well and secure. Trouble, however, was heading toward Maynard from sev-
eral directions, and it all hit at about the same time.

The product line management style had run its course and for several years had outlived its usefulness. The result was a bloated, top-heavy mass of bu- neaucracies fighting among themselves for attention and funding. "The real indication of the problem was the customer frustration," says Pe- ter Smith, group vice-president. "Each of the groups was staying close to its customer, but customers who had to deal with several of these groups were being driven crazy.

It was no easier for the sales people who, Smith says, had to make 18 phone calls to the home office to find out the current strategy.

Meanwhile, the major product lines were nearing the end of their life cycles, and follow-on products for the VAX and Dectystem-10 hit major snags simultaneously. Bell remembers attend- ing a project review for the Vxen (VAX 8600) on a Friday the 13th in 1980. "I saw that the project was all screwed up, and I stopped it at that point," he de- clares. "I had to bring in a whole new management structure." Bell also discovered what he calls "a simple case of incompetence" in the group working on the Dectystem-10 follow- on. Olsen remembers the situation similarly.

"Logic says we should have stopped the Dectystem-10 earlier because we were making two investments in ma-

They were writing our obituary, and we thought, 'Has everyone
gone bonkers?'" — Jack Smith

The products fit together like some 

Building the VAX 8000 series, DEC's flagship computer for the 1980s.

SERIOUS
RDBMS!

The last major piece of that puzzle, the Vaxmate personal computer, was un- veiled on Sept. 4 and answered the nagging low-end question (see story p. 10).

As if they had just discovered DEC again, the media and consulting com- munity jumped on the bandwagon, and by the middle of 1986, the company was proclaimed not only fit but fabulous. In a slumping computer industry, DEC registered a 38% increase in earnings for the year.

The numbers are likely to remain high. Paine Webber, Inc.'s Stephen K. Smith recently raised his earnings per share estimate from $6.50 to $6.75 for fiscal year 1987 and added that "conside- rable upside remains, both in terms of further margin improvement and in terms of top-line growth."

Olsen, yesterday's villain, is the cur- rent industry's darling. But like a clever veteran ballplayer, he knows better than to get too high or too low. "The best things you learn are during tough times," he declares. "I'm asked if I'm vindicated. I'm not vindicated at all. The question is, Can I pull us through a few years of good times without running into the same old trouble? That's hum- bling."

DEC silenced the critics who said it lacking marketing savvy with a focused, aggressive campaign and the highly successful Decworld exhibition in Bos- ton earlier this year. The company is not letting up on product development and wants to embellish its already signifi-cant networking offerings.

CONTINUED ON NEXT PAGE
is as much a function of IBM’s inability to react as it is DEC’s own success,” cautions Sierra Group’s Gruhn. “Next year is going to get very nasty when IBM starts to try to close DEC out in small and mid-size accounts. It’s one thing to turbo past your competitors when no one is looking. It’s not so easy when everything you do is a major event. The challenge is to sustain that momentum.”

Even in a down year, IBM managed to walk away with a $400 million office automation contract from Ford Motor Corp. That DEC desperately wanted.

“We’re asking companies to change the way they operate,” Olsen admits. “That’s radical thinking and that’s hard. But we’ve got time. We’re patient.” He points out that that is exactly what DEC itself had to do just recently, so he knows how tough it is to recognize the need to change.

There is also the concern that the VAX strategy, while sound, is based on a 12-year-old technology. “They’re going to have to go further,” Monson states. “VAX is an old architecture now, and they have to keep moving. The nature of the computer business is change.”

DEC believes it is up to that challenge. It is spending nearly $1 billion on R&D, and Jack Smith insists that the company

has major research projects started in every possible facet of future technology (see story p. 37).

Finally, critics question the ability of the DEC sales force to take on the slick and aggressive group from IBM. Colony notes that DEC’s sales representatives tend to be engineering-minded and not polished enough to compete with IBM.

Gruhn adds that turning an iron-based sales force into a market-based one is a tough challenge. “Training salespeople and making them effective in front of customers are two different things,” she says.

Hughes, a former IBMer, is well aware of the magnitude of the task. DEC has been actively recruiting new salesmen and retraining its existing ones this year. “I’ve worked in a company that was regarded as a good marketing company, and I’ve worked in one regarded as an engineering company, and I’d much rather work here,” he says. “I’d much rather have good products than good promotion. It’s exciting as hell to go into banks and be known as a good engineering company.”

Colony points out that DEC now suffers the inherent problems of all big companies: People may feel they don’t matter, things move too slowly and there are far too many meetings. Some people, he says, are suffocated by the one-architecture strategy. Even Olsen acknowledges that the old entrepreneurial spirit among the engineering groups has changed significantly. “The Soul of a New Machine days are over,” he says. “But there is great freedom in a disciplined approach.”

Others both inside and outside of DEC believe that the company remains an excellent place to work. “I know a lot of DEC people, both high and low in the organization, and I’ve never met anybody who doesn’t have good things to say. They are loyal when they are there and loyal when they leave,” Gruhn says.

“Every one of DEC’s company,” says John Sims, “not because Ken and DEC demand my loyalty, but because I found a place where I can make a commitment and be valued for it.”

Such enthusiasm calls to mind another respected workplace — IBM. And like IBM, DEC faces a challenge that the sine waves of the computer industry throw down. In such a cyclical technological and business environment, the top can be an uncertain perch.

Like IBM, DEC carries the pleasure as well as the burden of a huge installed base. Gathering that base is a feat deserving praise; keeping it satisfied and loyal for the decade to come is the larger task at hand.

“DEC knows what it is facing,” says Gruhn. “They have to keep the organization tight and well focused. They know they could lose what they have gained very quickly.”

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CIRCLE READER SERVICE NUMBER 58
EC’s success and strategic direction are based on two critical factors: the strength of Decnet and the strength and depth of the VAX architecture. Together, these two components currently let DEC address the problem of transparent and compatible distributed computing better than any vendor in the industry.

With the number of devices that DEC can dangle off its network, the company is fulfilling its vision of the network as computer.

Furthermore, DEC is reaching a point at which, as some of its executives are fond of saying, “The MIPS are free” — not literally, of course, but almost. DEC can throw cost-effective VAX computational power at just about any problem it may encounter, from desktop engineering workstations to more demanding, glass-house-style applications.

DEC envisions a consistent architecture spanning corporate needs from desktops to large mainframe situations. In delivered and forthcoming products, this strategy translates into a Microvax-type device on every desk or at the head of every work group network up into larger VAXs.

In other words, DEC’s strategy is to offer a professionally managed, distributed, VAX-based end-user computing environment.

On the low end of the engineering side of the house, DEC will push the Vaxstation family and its newly announced Vaxmate personal computer strategy (see story p. 10). In the nontechnical office, DEC will offer PC All-In-1 and the Microvax and Decnet as a way to tie together all those pesky personal computers that drive systems managers crazy.

The possibilities here are enticing: Work groups of small multiuser VAXs or networked PCs with VAXs as servers tied into larger VAXs, with a powerful Vaxcluster humming away at the computational hubs within the organization. It is one architecture for all aspects

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of information processing needs. This is Ken Olsen’s revenge: To succeed against his nemesis, IBM, with a consistent, compatible networked architecture. After years of work, DEC has the broad architecture and the network to tie it together — now.

IBM, on the other hand, has many things now, not all of which tie together smoothly. Although IBM (a company that, ironically, made its mark by offering its own consistent architecture earlier on the 360 line) may seem in disarray, the giant is marshaling its forces.

Underlying hardware does not matter, Big Blue now claims. What does matter is a consistent user interface across all systems. IBM can put considerable resources behind its mouth, when it chooses to.

Big Blue this summer formed an umbrella division, IBM Information Services, charged with providing Cross-System Consistency (CSC, a phrase doomed to become a buzzword over the next few years). Stephen Schwartz, president of the Systems Products Division, estimates CSC will become a reality after a minimum of three years of development and one million lines of new code.

So competitive battle lines are drawn. DEC offers one architecture running the same software. IBM plans to offer layered software with a consistent user interface across its strategic architectures: the 370, the System/36 and 38 and the Personal Computer. Leaving small business and ancillary sales out of the picture, DEC’s primary task will be to convince the top 600 companies, which account for some 80% of DP expenditures, that DEC’s way is superior.

Combating Big Blue promises with deliverable products is not as easy as it might seem. Despite the fact that IBM is lagging behind, the giant will recover. DEC did.

Microvax II performance is an issue with the Microvax II. Strategically, DEC wanted to push the Microvax price-point down as far as possible. A lower price not only opens up opportunities for selling into smaller customer sites, but it also lets DEC broaden the VAX presence within its installed base.

Despite DEC’s efforts to keep the price down, the Microvax is still relatively expensive — an average of $40,000 per system shipped, according to DEC. To keep the price as competitive as possible, DEC used less-expensive devices, such as the Q-bus and relatively slow disks. Under certain conditions — heavy virtual memory paging requirements or heavy disk access — the Microvax II’s price can play, the greater the performance.

DEC will stretch the Microvax II family in two directions: equivalent (or slightly reduced) performance at a reduced cost and expanded performance at a constant cost. DEC has proven itself capable of both. The current Microvaxes are prime examples of DEC. Driving down both form factor and cost while maintaining performance.

Planned higher capacity, speedier disks will also help keep the Microvax from dragging. And it is perfectly feasible for DEC to squeeze an entire Microvax into a box small enough to sit atop a desk rather than squat beside it.

Does this mean DEC plans to plant a VAX processor on every desk? Not necessarily, although the performance issues vanish if each user has his own processor. Compare the difference in response time between a personal computer and a microcomputer system.

In the general office, however, many users do not need all that local power. Besides, there are PCs and existing dumb terminals to take into account. DEC will offer two optional uses of the Microvax in the general office: as a small multitasking system for a work group or as a server and VAX gateway for networked PCs, as DEC just announced with Vaxmate and PC All-In-1.

But in labs or technical offices, the situation is a bit different. Users need not only personal horsepower but access to general office applications. Pity the engineer; the majority of his time goes not to his specialties but to administrative work such as answering correspondence.

Vaxstations. Although the Microvax will eventually elbow its way into all of DEC’s application areas, the most exciting things right now is on the technical workstation side. In addition to this market being a rapidly developing and expanding segment of the industry, it is also fresh ground for DEC, ground into which the company has eagerly dug with its new product.

In commercial markets, the Microvax is basically a smaller VAX, with access to the existing base of VMS applications and future developments. But the Microvax II-based VaxStation IIIs are DEC’s first serious workstation offerings.

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NEW SLOGAN, NEW STRATEGY

During the past few years, DEC has based its marketing strategies on various themes: The all-out VAX promotion of “one company, one strategy, one message.” Then came the changes toward LAN-based networking, culminating in the “Digital has it now” slogan unfurled at Decworld ’95. With its product arsenal fully stocked, DEC moved on to conquer territories with “industry marketing” (see p. 73).

This is the same vertical marketing attack other vendors have chosen. On the office side, the clearest examples of this approach are the increasing number of specialized All-In-1 systems. DEC offers four such systems with perhaps another 10 or so in the works. Current versions include systems for sales and marketing, business operations, employment management and telecom management. DEC is providing the vertical market software as well as the horizontal All-In-1 foundation.

The All-In-1 systems also give the Microworks a little extra leverage. DEC has an image of distributed Microworks systems working away at their various vertical applications in discrete clusters yet networked up to a larger host processor, such as the 8550 running network management, software and user administration, financial consolidations and mail.

There is no real difference between the capabilities of the Microworks and the larger VAX boxes, with, of course, the obvious exceptions of size and performance. Although it is in the Microworks’ best feature, this compatibility makes the distinction of the product on the basis of VAX application offerings impossible.

The Microworks is simply a VAX, albeit a little one. But by using the size and accompanying price point of the Microworks II to break through the ice of previously frozen markets, the Office and Information Systems crew at DEC can expand the VAX base.

Now, especially given the price/performance and power of its newest mid-range processors, the 8550 and the 8700, DEC feels even better prepared to battle IBM for the middle tier in large corporations.

Given the price/performance and power of its newest mid-range processors, the 8550 and the 8700, DEC feels even better prepared to battle IBM for the middle tier in large corporations.

Most corporations, especially large ones, are trying to establish long-term computing environments. They are in search of breadth and achieving greater penetration there, rather than spreading their efforts over as many machines as possible. Without a small number of suppliers. Fortunately for DEC, many of these corporations also consider DEC one of the strategic vendors.

By focusing on those 600 top companies and the 150 largest in each industry, DEC is leaving itself some room for discounting.

Still, DEC seems intent on keeping the price/performance curves of the higher and the lower systems relatively parallel. The noticeable maverick in this scheme is the 8550, the price point of which moves upward on an otherwise consistent plot.

Of the entire family, the 8550 is the most costly in terms of performance. Perhaps DEC is leaving itself room for discounting.

Along with the 8800, DEC rolled out its high-performance VAXBI/O bus. According to DEC, the VAXBI is capable of supporting usable data rates up to six times that of the Unibus. By supporting uniprocessors such buses in the high-end VAXs (the 8700 and 8800), DEC can provide up to 30M bit/sec aggregate I/O.

All the members of the 8000 series introduced this year (8200, 8300, 8500, 8700 and 8800) use the VAXBI. The older 8600 and 8650 still use the SBI bus with its support for older peripherals.

DEC recently announced a VAXBI bridge for these older systems so that they can take advantage of peripherals designed for the newer bus structure. In its August product announcement, DEC unveiled its first VAXBI technology: an I/O subsystem, a Unibus adapter, a Vaxcluster port, a disk adapter, a high-speed tape adapter, an Ethernet port, a communications processor, and a 2M- and 4M-byte memory array and Ultrix over the VAXBI. Clearly, DEC can do it all.

DEC’s utilization of LAN technology is not altruistic. This move is not altruistic.

DEC was considered a distant second, if it was considered at all. But the company has been successfully carrying out a series of evolutionary improvements to its network, beginning most significantly with the early adoption of Ethernet in 1980 and culminating with Electronic Data Interchange (EDI) today. It is IBM that is struggling to keep pace, being forced to announce products far in advance of delivery dates, purportedly to give users time to plan. This turn of events has been brought on by two factors: the explosion of distributed processing and personal computing powered by local-area networks (LAN) integration to smooth communication among computers.

Many other factors have contributed as well. DEC’s processor line is unsurpassed in range, price/performance and capabilities. This compatibility includes the requisite IBM gateways, in which DEC took an early lead. Moreover, Ethernet has finally become fully accepted as a robust technology. No longer is “asynchronous” a dirty word. DEC’s utilization of LAN technology and the richness of Decnet’s Digital Network Architecture (DNA) protocols are a triumph of technology over marketing.

Open Systems Interconnect. DEC has also chosen to carry the Open Systems Interconnect (OSI) banner to the front lines. DEC now offers a full seven-layer Open Systems Interconnection (OSI) protocol suite as an alternate to DNA. Though the two protocol stacks are quite different, and the corresponding operating systems are a triumph of technology over marketing.

Despite holding a very strong position with its DNA protocols, DEC is aggressively pursuing a full migration to OSI. This move is not altruistic.

CONTINUED FROM PAGE 26

Theoretically, users could hook together a cluster of 8800s for a system that would provide 100 times the processing power of a VAX-11/780 and more than 100G bytes of storage.

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CONTINUED ON NEXT PAGE
As things stand now, all vendors seeking a common ground must genuflect to IBM's Systems Network Architecture (SNA) and Distributed Office Support Systems (Disoss). OSI is an alternate common ground not owned by IBM.

DEC's DNA protocols are already well matched with OSI, and its protocols are largely peer in nature. This process began in June 1985 and is to be complete in June 1988.

The stakes are different for IBM. The success of the IBM Personal Computer and the proliferation of small systems in general forced IBM to undertake a massive retrofit of SNA from its hierarchical (for example, terminal/slave to host/master) origins.

The major result of this effort to date is the LU6.2 Advanced Program-to-Program Communications (APPC) and PU2.1 protocols. The development and acceptance of these protocols is of fundamental importance to IBM.

In addition, IBM's SNA gives it the strategic high ground, and IBM is not about to come down off this mountain for more than an occasional day trip. No matter how good DNA is, DEC knows it cannot elevate its role to this status. Only ISO has a chance to play this role.

But the ISO needs a champion. Aside from having provided vaporware thus far, the ISO's major shortcoming has been its lack of a strong supporter. DEC has decided to play this role, being one of the few vendors with the resources to keep pace with both its proprietary and OSI protocols simultaneously.

Users will be able to look to OSI, and thus to DEC, for an alternative to SNA and Disoss. DEC is repeating the role it played in boosting Ethernet to its current status.

In the context of the current battle for supremacy at the departmental level, the implications of this movement are huge.

Large IBM users will have a fundamental strategic choice to make. Is SNA to be the dominant backbone network, providing a common gateway to which other networks can adhere or will departmental networks gravitate toward the ISO, creating a single, more efficient yet multivendor network that can operate independently of SNA or with it via a gateway?

In existing terminal-to-host SNA environments, the ISO will not be a factor. In host-to-host environments in the commercial market, IBM will have to provide much higher throughput solutions than those currently announced if it is not to lose some leverage.

The key will be IBM's ability to provide sufficient network management tools not resident in the 3725 front end similar to those already present for Series/1 servers or Token-Ring PC networks.

Already, there is a grass roots movement afoot building networks using IBM's own FC LAN-oriented Netchos applications interface. Though developed by IBM, FC-DOS and Netchos no longer give IBM strategic leverage.

A large percentage of IBM's customers will stay with SNA wherever possible, especially in centralized environments. Yet many users with distributed, multivendor environments will not be well served by passing traffic between sites through Disoss instead of directly from site to site.

Most gateways eat throughput for breakfast in accomplishing their translations. To date, this fact has enabled IBM to lock many of these distributed sites into the Big Blue fold. The ISO will give these users more freedom to choose.

Even without the strategic leverage SNA provides IBM, IBM will still win more battles than it loses. But the playing field will be leveled considerably.

It is very important not to get carried away with the ISO's prospects. It will be a few years at least before the ISO's standard can match SNA for network management and security, two issues of vital concern for users. The X.400 protocol needs distributed directory and mail management facilities as well.

In the meantime, ISO networks will have to rely on proprietary extensions to handle these needs. This is where DEC sees its leverage as an ISO provider. DEC plans to use its proprietary DNA protocols as an ISO superset. Even when these are in place, the user interface will continue to provide differentiation.

Decnet. Decnet has progressed through four phases,
Arguably, Decnet Phase IV is both physically and logically the most advanced network in the industry.

The current version being Decnet Phase IV. Arguably, Decnet Phase IV — using Ethernet as the transport — is both physically and logically the most advanced network in the industry.

One area that does need beefing up, however, is network security, according to some users. Decnet Phase V is scheduled to incorporate encryption and extended network management.

Each of the earlier phases, which were point to point instead of Ethernet-based, is still compatible with Phase IV. Phase IV first shipped in 1983.

By the end of 1985, DEC had installed 3,700 networks with 206,000 devices on them (not counting hard-wired terminals attached to CPUs or DEC’s internal installations).

DEC says that as of March, this number had risen to 5,900 customer locations with 73,000 Ethernet nodes (not including terminal server ports or hard-wired terminals). Of these nodes, 50,000 are CPUs; the rest are terminal servers, routers and gateways. Currently, DEC is shipping 4,000 terminal server ports and 600 CPU connections per week.

SNA gateways. Last but not least is DEC’s palette of SNA protocols. There are 10 of them, ranging from IBM 3270 Personal Computer terminal emulation to an LU6.2-based Disoss interface with a full SNA Distribution Services Store-and-forward participation.

The practical result of this limitation is that a Decnet user can only send messages to a single, specified Disoss node. For example, the SNA Gateway supports two 56K bit/sec. lines, but the user must choose one or the other.

Thus, instead of being able to send a message to the nearest Disoss node and have it forwarded to its final destination — which could be across the country — the message must go directly to its final destination.

There are two problems here. First, transmissions between a Decnet and an SNA network may be far more expensive because they cannot travel on lines already in use between Disoss nodes.

Second, if the recipient has moved to another node, there is no way to forward the message automatically. DEC is expected to overcome this limitation shortly.

In the meantime, there are few IBM users with multiple Disoss nodes in full production use. Furthermore, DEC appears to be picking up the pace.

DEC’s new line of Microvax processors and VAX processors comes with a built-in Ethernet link. On the downside, DEC’s capability to integrate LAN technology into its network architecture, DEC boasts the best overall network in this respect today.

Furthermore, DEC appears to be picking up the pace. DEC’s move to provide single-source maintenance service for multivendor networks and its aggressive championing of OSI speak well for the company’s strategic vision.

As satisfied as many buyers are with DEC’s products, many are also waiting to see what IBM does during the next few years. Distributed systems are the issue.

CONTINUED ON PAGE 31

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As satisfied as many buyers are with DEC's products, many are also waiting to see what IBM does during the next few years. Distributed systems are the issue.

DEC's vision encompasses professional systems managers, not hordes of PC-style hackers. Support by a central manager is one of the key differences between end-user computing-DEC-style and PC-style. Sophisticated, centralized tools for distributed systems management are a must.

DEC recently began addressing this need with the first release of its Remote Systems Manager (RSM). DEC has the products and the internal resources to conquer a sizable chunk of the middle tier of medium-scale computing. But although IBM might ship fewer mainframes than DEC ships minicomputers, IBM's margins are higher. DEC has to work harder to pull in equal amounts of profit on hardware sales. One of DEC's quirks as a systems vendor has been its obdurate refusal to bow to the inevitable as far as PCs are concerned. While DEC's Rainbow is a slick piece of hardware, it is not 100% IBM PC compatible. Given DEC's past attitude, the new 80286-based Vaxmate is a watershed of sorts. The Vaxmate sports a built-in Ethernet board. This move makes sense for DEC as the PC AT done, which also has a DEC superset keyboard, will only be sold to DEC accounts and not through the retail channel. Bundling the LAN board could enable DEC to offer its PC as a LAN node for less than an IBM PC and a 3Com Corp. board purchased separately.

But these options still stop short of a more complete integration of DEC's architecture. Despite its traditional loathing of the IBM PC, DEC probably will end up offering a service along those lines. If it does not, other vendors will.

IBM may be slow, but it certainly is not stupid. The company does respond to market pressure. As satisfied as many buyers are with DEC's products, many are also waiting to see what IBM does during the next few years. Distributed systems are the issue.

DEC has thrown down the gauntlet; IBM is busy formulating its response.

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CIRCLE READER SERVICE NUMBER 47
SUCCESS in the computer industry often creates a snowball effect. When a major CPU vendor sees its sales taking off, dozens of third-party companies offering software, peripherals and OEM turnkey systems jump into the hot market. Successful third-party products in turn generate more customers, which attract the attention of even more vendors.

In a nutshell, that is what has happened to the market for DEC products during the company's current renaissance as the industry's high flyer. While vendors ranging from AST Research, Inc. to Cullinet Software, Inc. are buying or developing their way into the DEC market for the first time, hundreds of traditional third-party DEC suppliers are expanding their offerings to become more competitive.

"It flows from what's going on in the VAX area," says Steven Barth, vice-president of marketing for Expoconsul International, Inc., sponsor of the DEXPO trade shows for third-party products. "DEC has made the final transition from the PDP-11 to the VAX line. That creates a large enough market for software, for example, that many companies are bringing their products over. They're looking at specific areas where DEC is making inroads and saying, 'We can add one to that.'"

The most notable arena where DEC has made inroads recently is the mainstream MIS world of data base management systems, office automation and transaction processing. The presence of traditional IBM mainframe players like Cullinet, Cincom Systems, Inc., Software AG and Information Builders, Inc. in the DEC marketplace testifies to DEC's increasing acceptance in the Big Blue world.

"The commercial marketplace is the fastest growing part of DEC's business," says Ron Nordin, president of Cognos, Inc., an Ottawa fourth-generation language vendor. Cognos ported its Powerhouse applications development system to DEC's VMS early in 1985 and now markets the package jointly through DEC's Cooperative Marketing Program (CMP) for third-party vendors.

Nordin cites DEC's full VAX product line compatibility as a major advantage for selling application development tools to DEC users. The DEC version of Powerhouse currently accounts for about 30% of Cognos's sales, but Nordin expects that percentage to increase greatly in the next two years.

"With VAX and Decnet, they are in a position to have applications running from the desktop to clusters up to 100 million instructions per second," he says. "It's a very powerful range in which to have virtually identical applications."

The highly successful Microvax II has also provided an entry for third-party players because of its market acceptance, relatively low price and physical size. It becomes easier to market a turnkey system on a CPU that, in the words of one OEM, "You can put in the back of
The growth in the third-party market is partially a result of DEC's inability to successfully enter the microcomputer arena, according to Ron Howard, president of Datability Software Systems, Inc., a New York-based vendor of micro-mainframe communications for the DEC market.

"DEC's inability to successfully enter the microcomputer arena has spurred third-party development for the Microvax II," says Eli Lipcon, DEC's Direct Channels Group manager. "You can have products that are technically hot, but if the market doesn't accept them, they won't be liked by third parties. Those vendors want to take the path of least resistance to their own goals," Lipcon adds.

The growth in the third-party market is partially a result of DEC's inability to successfully enter the microcomputer arena, according to Ron Howard, president of Datability Software Systems, Inc., a New York-based vendor of micro-mainframe communications for the DEC market.

"DEC has addressed the large systems problems effectively, but they have created many opportunities for software companies to create innovative new products for their line," Howard says. "Their computer architecture lends itself to linking multiple computers together for distributed processing, but it doesn't address integration of microcomputers into the computing environment."

By overlooking such areas, DEC has inadvertently created niches in which third-party vendors can thrive under the right conditions. But that market is becoming increasingly crowded, Howard says. "Because the low-end VAX machines are affordable and simple to use, more small start-up companies don't have to spend a million dollars just to develop products," Howard says. "As a result, a lot of small companies are coming out with products for DEC, and there will, of course, be a shakeout period."

Not all of these niches will continue to be overlooked by DEC, however. The company learned from previous micro failures such as the Rainbow and is becoming more aggressive in that area, according to Dan Azulay, managing director of Coefficient Systems Corp., which manufactures a DEC VT220 terminal emulation package for IBM Personal Computer series.

"DEC is becoming more successful in connecting microcomputers to mainframe computers, particularly as local-area networks become more integrated into communications," Azulay says. "They will be vying for IBM's microcomputer market share again and for the whole micro-mainframe communications area, with a DEC microcomputer at the middle. This means that whole market will be more competitive for everyone."

Although the VAX market is one of the most competitive in software sales, VAX customers are more decisive and less worried about spending money than mainframe customers, says Ione Cockrell, president of Marketing for the SAS Institute, Inc., a software vendor of products for the VAX and Microvax II.

"There's a lot of questioning and justification needed by customers in the mainframe market right now," Cockrell explains. "Because the VAX machine is less expensive and is used for specific departments or purposes, those looking at a VAX have money in hand and are ready to make decisions. There are fewer people involved in the decision process, so there's only a limited number of people you have to talk with.

Within this burgeoning marketplace, DEC itself is pursuing a mixed strategy. While it has expanded its CMP efforts to recruit third-party partners, particularly in vertical markets, it has aggressively fought third-party competitors.

On the technology front, DEC essentially closed the architecture on the VAX machines that it introduced since January with the synchronous VAXII bus. The previous Q-bus and Unibus are asynchronous, making it easier for third-party firms to develop DEC-compatible products for
"When trying to reach VAX users, Computerworld gets results."

Steve Lilly, Director of Marketing for Computer Information Systems (CIS), had set a clear goal: he wanted to introduce CIS' system management software, Quantum RS, to the marketplace and explain how it is used for VAX resource tracking, capacity planning and resource/cost allocation.

Steve delivered his message in Computerworld as well as in other trade publications. He quickly discovered that Computerworld does, indeed, get results. "Computerworld has helped CIS reach its target audience — the decision-making systems managers who are current and future users of VAX systems," he says. "Basically, Computerworld readers are serious buyers; if they inquire about a product, they're a viable lead — and often a sale."

Steve is sure about this because CIS tracks its leads with an in-house marketing system.

"We've found that Quantum RS generates a tremendous amount of interest, but CIS' sales department is dependent on the quality — not quantity — of responses. And we know Computerworld delivers quality — which added to Quantum RS' sales increase of 216 percent last year," Steve says.

One reason CIS has relied on Computerworld over the last two years is Computerworld's diverse coverage. "Computerworld covers the industry. Today's corporate DP shop is more of a mixed-vendor environment than it was in the past. In growing numbers, corporate users are utilizing IBM PCs and ATs for microcomputing and DEC VAX systems for departmental and mainframe computing," notes Steve. "Based on this, we've found Computerworld to be a very effective vehicle to reach VAX users, especially in large DP environments."

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Continued from page 34

the earlier VAX systems.

"Why give the technology away to someone who didn't make the investment?" DEC founder and President Ken Olsen said in response to a recent question about the closed VAXBI bus. "The better question would be, 'Why did we open it in the first place?' I don't re-

member. It was sloppy business." DEC also sent a message to third-party component vendors by aggressively pursuing legal efforts on alleged patent infringement. Emulex Corp., which has several ongoing legal battles with DEC over its DEC-compatible controllers and subsystems, believes DEC's efforts have increased in the past year.

"They have developed much more competitive products on the CPU side, but the peripherals divisions are relying on the court systems," says Emulex Chief Financial Officer Michael Lewis. "Other competitors have been reluctant to enter the DEC peripherals market because of what they see. In pursuing those markets, we feel that our legal position is strong, but clearly there is a price to pay."

Companies enjoying cooperative ar-

rangements with DEC sometimes have complaints stemming from DEC's often confusing organizational structure.

"There are a hundred companies called DEC, each with its own vision and priorities, and that makes dealing with them very difficult," Datability's Howard says. "You are dealing with one microscopic piece of the company which might be counter to what the other pieces want to do."

This situation creates problems for a third-party vendor attempting to obtain prerelease versions of new DEC operating systems. Howard observes. But most third-party vendors say such challenges are worth facing because of the poten-
tial profits in the expanding DEC mar-

ket. DEC may be taking steps that make things more difficult for some vendors, but that means it is going after a larger piece of an increasingly larger pie.

"DEC as a competitor has made it tougher to sell our products," says Jack Olsen, vice-president of sales and mar-
teting for Able Computer, a manufactur-
er of communications products for the VAX. "But as an innovator, DEC has expanded the market with its new series of computers. So even though the mar-

ket is tougher, it's going to be even better than it was in the past."

Wildor is Computerworld's senior edi-
tor, computer industry. Computerworld correspondent James A. Martin contribut-
ed to this report.

Third parties thrive at DEXPO

The following products will be intro-
duced at DEXPO West '86, Oct. 7-10 in San Francisco at the Civic Center. The show, which is expected to draw 300 vendors, is organized by Macmillan Inter-
national, Inc., 3 Independence Way, Princeton, N.J. 08540. DEXPO is being held simultaneously with the Digital Equipment Computer Users' Society (DE-

CUS) symposium at the Moscone Center. The two events are not affiliated, but as in the past, DECUS members will receive free admission to DEXPO and shuttle-bus ser-
vice between the Civic Center and the Moscone Center.

RS/Explore and RS/Discover, two multiuser software systems that offer engineers and scientists assistance with data analysis and experimental design, will be unveiled by BBN Software Products Corp. RS/Explore combines the full func-
tionality of RS/1 with a statistical advisory component. RS/Discover is an integrated soft-
ware system for the creation of analysis of designed experiments in industry. Both products from the company's RS series are based on the capabilities of RS/1. Booth 1311.

Equinox Systems, Inc. will show the MDX-1 Micro Data PBX, a local networking solution for small applica-
tions. The MDX-1 allows keyboard-con-
trolled switching and port sharing for up to 16 terminals, personal computers and computer ports operating simulta-
neously at 19.2K bit/sec. It can also be used to share terminals and PCs to share costly peripherals such as printers and modems.

The MDX-1 is a low-end addition to the Equinox range of data private branch exchanges and features the same attributes of simple installation and user-friendly, menu-driven configur-
ation as its larger brothers, the DS-5 and DS-15 PBXs. Booth 604.

P project Visibility System (PVS) Re-

lease 9.0, the project management sys-
tem for VAX users, will be unveiled by Xebek Corp.

PVS 9.0 produces presentation-quality network diagrams, bar charts and resource histograms—all of which can be viewed on DEC VT240-compatible terminals using the software's window-
ing technology. The plotted output from PVS is so-

phisticated as well as easily customized, and the system as a whole is user-

friendly, menu-driven configuration as its larger brothers, the DS-5 and DS-15 PBXs. Booth 604.

Tecex will introduce the TEC-OAS/1 Opti-
cal Archiving Subsystem for the VAX series of architectures, from the Q-
bus Microvax II on up to the Unibus 8650 series of processors.

Utilizing a standard Mass Storage Control Protocol/DU-Driven and Files-
11 QIO processor, the TEC-OAS/1 can be used as a standard VMS ODS-2 file structured device. No patches or changes to existing DEC software de-
vice driver or utility packages are re-
quired.

Integration to a host CPU environ-
ment is accomplished via a Q-bus or

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CIRCLE READER SERVICE NUMBER 84
Unibus host adapter, emulating a standard UDSO magnetic disk controller. This adapter makes optical drives daisy chained on a single host controller.

Booth 1411.

Softool Corp. will demonstrate the newest version of its Change and Configuration Control Environment (CCC). This version offers an additional interface to CCC that provides for a complete turnkey solution to the configuration management problem. The menu-driven approach allows CCC to furnish immediate results with minimal staff training.

CCC is the only complete automated configuration control tool available today. It automates the management of changes and versions, control over who makes what types of changes and where, tracking of trouble reports, reconstruction of previous versions, document control and more.

Softool will also demonstrate its Programming Environment and Fortran Automatic conversion tools. Booth 812.

Pennington Systems, Inc. will unveil an assembler-to-C program translation service, available on a contract basis.

Pennington will demonstrate its translation of a DEC PDP-11/70 assembly language program into a complete turnkey solution to the configuration management problem. The product is menu-driven and provides for a complete turnkey solution to the variation of target markets.

Booth 2113.

MCBA, Inc. will feature its newest VAX Cobol package, Fixed Assets and Depreciation (A/D), running on DEC computers.

Written in Cobol and running under VMS on VAXes, the A/D package handles asset accounting from acquisition, asset retirement and periodic calculation of depreciation.

A/D supports up to nine sets of independent books and all commonly used depreciation methods. The A/D package is the first in a series of new VAX Cobol products, which will be MCBA's most functional release yet. With complete, the VAX Cobol system will feature complete software for accounting, distribution and manufacturing applications. Booth 1704.

The Mobius Presto line of micro to host integration products will be introduced by FEL Computing Co. The latest version of the Mobius Micro and Host Integration System will allow users to operate with a variety of high-speed links and networking options.

Complex configurations involving networks, clusters and peripheral devices are facilitated by Mobius Presto. The product line provides users with the full power of Mobius with dramatically higher throughput.

Mobius users can now operate with high-performance terminal emulation, 25 definable drives, reciprocal personal computer/host transparency and full task-to-task communication from within the broadcast range of communication architecture. Booth 940.

Disc Instruments Co., the developer of the DBL programming language, will announce the release of DBL/RSS Version 4.

This upgrade to Disc's DBL/RSX product will include the following added features: software virtual memory, multisysem support, a fixed-point data type and terminal-independent screen functions.

As a superset of the Dibol programming language, DBL allows the universe of existing Dibol and DBL-based applications packages to be ported to any of the operating systems on which DBL runs, including Microsoft Corp.'s MS-DOS, Novell Inc.'s Netware and Unix. In addition, applications written in Dibol may be ported to the same environment with the only version of program sources. Booth 323.

Computer Intelligence will announce the availability of on-line access to its VAX Lead Qualification Program, a data base that contains information on computer equipment at DEC sites in the U.S. and Canada.

This product offers Computer Intelligence clients a flexible, effective way to perform a variety of target marketing functions. Booth 2149.

Christin Industries, Inc. will exhibit its recently introduced high-capacity memory for the Microvax II. The CI-M16V is 16M-byte parity memory all on one card.

The module uses 1M-byte dynamic random-access memory (RAM) chips with on-chip refresh, two on-chip refresh memories of modules with 256K-byte dynamic RAM chips.

All modules are one card slot relievers for slot for other needed modules. The board is 100% hardware and software compatible with the Microvax II and takes full advantage of the microcomputer's speed. Booth 1633.

American Photonics, Inc. announced an 802.3 Ethernet-compatible repeater series. The new repeaters are designated RL6000L (wire) and RL6000R (fiber).

The RL6000L allows DEC users to connect Ethernet segments over all the fiber sizes, a capability especially useful for wiring buildings in a campus environment. The RL6000L is an 80.3 local repeater used to connect many segments of Ethernet cable.

The RL6000R is a two-half repeaters that use all standard fiber-optic cable sizes. The product will function equally well with Ethernet Version 2 and 80.2.

Standard features include segmentation, thorough diagnostics and an easy-to-read LED display indicating collisions, heartbeat and fiber continuity. Booth 1705.

Syntax is set to introduce product configurations and pricing for its VAX Interface Manager (VIM) family. These products allow IBM Personal Computer users to work together in a high-performance Ethernet local-area network using any VAX system running VMS as a file, print, electronic mail and virtual terminal server.

New product configuration is now available for less than $500 per PC.

Syntax will demonstrate this configuration along with its recently acquired VIM Subroutine Library and its VT220 emulation system. Booth 240.

Systems, Inc. will unveil a controller design, the SMDC. The SMDC is a dual-width LSI-11/Microvax II compatible with data transfer rates up to 25M bit/sec. The SMDC provides the following: a 1MB-byte dual-ported data cache, microcode stored in electrically erasable, programmable read-only memory and intelligent port for tape, optical disk and user service port. Booth 1505.

Primavera Systems, Inc. is scheduled to demonstrate the Primavera Project Planner (P3), project management and control software using critical path scheduling.

P3 offers project managers extensive resource, costing, graphics and reporting capabilities for projects of 50 to 10,000 activities. P3 handles precedence and arrow networks and offers custom reporting with user-defined sort, selection lists and up to 4,000 reportable parts including those of Ampex Corp., Control Data Corp. and many others.

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All printer models are covered including the latest laser model. Also covered is the availability of printer supplies, model conversion and remanufacturing options. Booth 1540.

IMSL, Inc., maker of advanced numerical software, has released Edition 1.0 of PDE/Protran. This member of the Protran problem-solving environment solves systems of linear and nonlinear elliptic or parabolic partial differential equations.

As the successor to IMSL's Twodep, it has most of the capabilities of Twodep plus greater flexibility and product enhancements.

PDE/Protran handles a large class of time-dependent, steady-state and eigenvalue problems in general two-dimensional regions.

The versatility of this software product makes it ideal for problems in areas such as elasticity, diffusion, heat conduction, potential energy and fluid high-level language that uses logical, natural statements in problem definition.

Protran statements are simple and solution-oriented, allowing users to perform computations and analyses with ease. Help files provide quick on-line reference, and Protran systems feature automatic diagnostic error checking.

PDE/Protran is compatible with DEC System 10 and VAX computer systems. Booth 1004.

Talaris Systems, Inc., a vendor of laser-printer software and hardware, is

CONTINUED ON NEXT PAGE

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CIRCLE READER SERVICE NUMBER 90
CONTINUED FROM PAGE 37

scheduled to unveil a six page/min, 300 dot/in. laser printer.

Called the Talaris 610, the laser printer comes with 12 standard read-only memory fonts and offers emulation modes to provide compatibility with a wide range of software. The printer’s native controller language, ANSI 3.64, offers flexibility for printing typset-quality test and graphics.

Talaris also announced a chemical structures font that allows users to build chemical equations using standard word processing software packages, such as MASS-11 from Microsystems Engineering Corp. Talaris Systems combines advanced laser printers with a library of fonts, software, service and support to provide comprehensive test and graphics hardcopy output systems.

Talaris extends the functionality of its fully compatible family of full-page, bit-map printers by providing the software to easily manipulate fonts, text and graphics. Booth 1400.

Simpact Associates, Inc., the first licensed VAXB options vendor, will exhibit bundled hardware-software communications interface products for the VAXB machines. All of these products use Simpact’s multiprotocol TCP/IP632 programmable front-end communications processor. Each product includes host-resident user interface, interprocessor driver routines, the board-resident driver routine and applications protocol software.

The protocols include Switched Virtual Circuit X.25, High-Level Data Link Control (HDLC) Bit-Oriented Link Access Procedure, Advanced Data Communications Control Procedure (ADCCP) HDLC, and ADCCP Normal Response Mode. Synchronous or asynchronous operations are supported at data throughputs ranging from multiple low-speed ports to a single port at T1. Electrical protocol support includes V.35, Military Communication System Technical Standards-188-114 balanced and unbalanced, RS-232, RS-423 and RS-422. Booth 1121.

Kinetic Systems Corp. will exhibit the 8040 Concept, a powerful data acquisition and control system offering an economical alternative for applications requiring large system performance. Operating under MicroVMS, it interfaces DEC’s MicroVAX II computer — with 32-bit VAX performance — to a standard Computer Automated Measurement and Control (CAMAC), IEEE-583 system via a dedicated Q-bus adapter/controller.

The 8040 Concept is a complete process automation system. Users can choose from Kinetic Systems’ wide range of CAMAC process interface modules, which includes a line of modular transient recorders, as well as crates and accessories.

Direct Memory Access to process interface modules is optional. This system handles processor-intensive, I/O intensive and real-time tasks and fully supports Kinetic Systems’ Process Control/Data Base System software.

Both pedestal and rack-mounted versions of the 8040 Concept are available. Booth 1504.

Prestige PC, from K&H Project Systems, Inc., is a management productivity tool with upload/download capability to the entire range of K&H products on VAX computers.

The system has a highly visual user interface incorporating colorful full screen operation with pop-up menus. It has been configured around a relational data base to facilitate integration with other software such as spreadsheet, accounting and other popular packages that accept Software Development Facility, IBM’s Data Interchange Format or free-formats data transfer.

Prestige PC is currently under beta test at several companies in the U.S. and the UK. It will be formally released in January. Booth 1037.

Illinois Computer Cable will introduce fiber-optic cable to its list of DEC-compatable cables. The assemblies are terminated with standard SMA-style 906 series connectors.

Two separate styles are available, the VS100-VAX workstation cable and the CPU-to-terminal cable.

Some of the advantages of fiber-optic cable are reduced line loss, immunity from electromagnetic interference and radio frequency interference, lightweight and low cost.

The cable is capable of running up to 1,000 meters. Fiber-optic cables are available immediately. Booth 1829.

GSI Transcomm, a Digital Cooperaive Marketing Partner, will unveil its telemarketing expert system, Telestream. Developed in conjunction with Carnegie Group, Inc., Telestream was designed to counsel telemarketing employees during sales encounters.

Telestream is composed of mini-expert-systems, representing managers from various company departments such as sales, inventory, purchasing and promotions, all interacting simultaneously via a special process known as "blackboarding.

Ultimately, Telestream can reportedly increase sales order profit margins and improve an organization’s overall sales effectiveness.

GSI Transcomm will be conducting demonstrations of Telestream, along with its other TOLAS distribution and financial management application products during the show. Booth 2143.

Cosmic announces the availability of the Plaid computer-aided design (CAD) program. Plaid is a three-dimensional CAD system for interactively constructing and displaying sets of highly complex geometric models.

Polygons are constructed explicitly by coordinates or graphically with terminal cross-hairs or a digitizer. Solid models are constructed by combining or rotating the polygons.
SIMPLY BETTER.

A DEC compatible should not just be "more of the same"; it should be better. Not only better than other compatibles, but better than the original.

Start with better display.
A larger, 14" flat-faced screen, larger characters, high resolution and 70 Hz refresh that eliminates screen flicker.

The 3220 keyboard provides full functional compatibility plus a number of user enhancements. You get keystroke compatible, multilingual setup modes, seven additional keys, 22 dynamically allocated function keys, 256 bytes of non-volatile memory, an escape key where it belongs, and local programmability.

The packaging for the ADDS 3220 is an improvement in form as well as function. But this package gives you more than good looks. A conveniently angled legend strip, a tilt and swivel screen and thoughtful placement of controls, let you be more comfortable with the 3220.

Talk about DEC compatibility. The 3220 is fully compatible with the DEC VT220*, VT100* and VT52*, as well as ANSI X3.64.

The ADDS 3220 — making compatibility more than just the same old thing.

Ask Us About ASCII
If you’re looking for ASCII display terminals, ask about the ADDS 2020. It will raise your expectations about all terminals.

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EMC just gave the most advanced superminis the most advanced supermemory.

EMC announces an extraordinary leap forward in memory board technology for the VAX™ 8650 and 8600 superminicomputers.

Supermemory: The first commercially available memory boards to utilize high-density Megabit chip technology.

No longer does your VAX system have to be limited by DEC's 68MB memory capacity.

Now you can give it as much memory as your current and future applications require—from 20MB all the way up to 128MB.

And do it with the most reliable memory ever manufactured.

For the first time, you can give your VAX system enough speed and performance to rival most mainframes.
Our 16MB supermemory design takes half the space of DEC™ add-in memory boards. One of the big differences between EMC's new 16MB supermemory and DEC's 16MB memory is obvious at a glance.

DEC's board is twice as fat as ours. That's because it's actually a cumbersome multiple board assembly.

What's more, DEC uses older 256K RAM technology and surface-mounted devices that require over

Each EMC 16MB supermemory board takes up only one slot. Maximum capacity 128MB.

Each DEC 16MB memory board takes up two slots. Maximum capacity 64MB.

11,000 solder points. That's nearly five times as many board connections as you'll find on our new supermemory.

As a result, DEC's multi-layered 16MB board takes up two full slots. While EMC's new 16MB supermemory board occupies just one.

By making full use of every available memory slot, our new supermemory virtually doubles your VAX system's main memory capacity.

And you'll protect your investment with EMC memory through generous trade-up credits. If you start with our 4MB cards and in the future want to upgrade to higher capacities, you never lose a cent of your initial investment.

You can configure our supermemory with any combination of EMC or DEC 4MB or 16MB memory boards into either an 8650 or 8600.

All, we might add, without affecting your DEC maintenance agreement in any way.

Super reliability plus the industry's only unconditional lifetime warranty.

Our new supermemory's greater density of RAM delivers the highest reliability per bit or byte ever offered by any manufacturer.

Every single EMC supermemory board undergoes a rigorous 100-hour test and burn-in procedure. Including 24 straight hours of CPU qualification under online conditions in our own VAX 8600 superminicomputer.

Because EMC memory boards are so reliable, there are no maintenance charges of any kind.

While with a DEC memory board, your maintenance charges over five years would amount to a stiff $24,000 per card.

Another super product from the world's largest independent supplier of add-in memory.

No other independent supplier offers you anywhere near the variety of different memory sizes for the VAX system family.

Not just for the 8650 and 8600, but for the 785, 780, 750, 730 and the MicroVAX™ II systems as well.

And every EMC add-in memory board comes with our unconditional lifetime warranty. The only one in the industry.

If you even suspect a problem, just call our special toll-free number and we'll rush you a new board within 24 hours—absolutely free.

And it's available now for immediate delivery.

We're already delivering our revolutionary new 16MB supermemory.

And we'll be happy to provide you with a free cost analysis based on your system's current and anticipated needs.

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VAX Model(s)

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Title

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CIRCLE READER SERVICE NUMBER 69
The Silent 700™ Data Terminal Series from Texas Instruments.

It pays to get good connections.

TI's line of portable data terminals leads the market in keeping people connected to their operations no matter where they are, or where they're going.

For 15 years, whether you've needed to keep in touch with satellite offices, supply your field sales force with communications tools, access a remote data base or eliminate telephone tag, TI has always had the right data terminals for the job. They're easy to operate. Rugged. Self-contained. Lightweight. Affordable. And quiet. The TravelMate™ Portable Terminal.

The latest addition to the Silent 700 Series brings the convenience of both a desktop display and printer to a portable terminal. The TravelMate comes with built-in editing capability, and an easy-to-read, pop-up LCD display so you can see what's happening before you transmit, or as you receive. Its printer control key allows you to print selectively on its quiet printer. Of course, all the communications capabilities are built-in, and you can choose a 300 or 300/1200 baud internal modem. There's even a model designed for direct connection to your computer.

Programmed to do your business. Personalized Application Cartridges are what make TI terminals customizable. They can be programmed with features and functions that satisfy your specific communications, data entry and retrieval needs. Application-specific cartridges can be developed for remote sales automation, data base inquiry, or electronic mail, to name a few.

For more information on TI's family of Silent 700 Series Portable Data Terminals, call toll-free 1-800-527-3500.

Nemonix, Inc. will unveil a 16M-byte memory board designed for the VAX 8600 and VAX 8650. The Nemonix board is reported to be a technological breakthrough in price and performance. The Nemonix 16M-byte board is the first memory board to come with a standalone program for self-diagnosis and guaranteed life for the VAX 8600 and VAX 8650. Booth 612.

A 16M-byte — 1M-bit dynamic random-access memory (RAM) — memory card that is fully compatible with DEC's VAX 8600 and 8650 will be unveiled by National Semiconductor Corp. The NS965-16 occupies a single card slot, allowing the systems to be expanded up to 128M bytes. National Semiconductor is introducing on-board diagnostics, which allow service personnel to quickly verify the status of each memory board without loading system diagnostics. The on-board diagnostics will provide the location of any failing RAM via a LCD display. Spare RAM on the board can be used to immediately repair the memory board. Booth 118.

Habitat TM, ESCA Corp.'s real-time software environment, now is said to make the development of engineering applications even faster. Version 2.2 Habitat TM supports programming in Pascal in addition to Fortran and VAX-11 Macro.

Other enhancements reportedly improve console performance while giving application developers a more versatile user interface. Habitat TM now supports full-color displays on the IBM Personal Computer using ESCA's PC17 TM emulation software package. Booth 1746.

Digital Data Systems, Inc. will be showing its newly introduced 4M-byte and 16M-byte memory boards, which are fully compatible with the VAX 8600 and 8650. The 16M-byte board uses 1M-bit chips and occupies only one memory slot in the system. It allows for an increase in capacity up to 128M bytes in the VAX 8600 and 8650 computers. The 4M-byte board, which incorporates 256K-byte chips, can be used with any combination of 4M-byte or 16M-byte boards. Booth 1524.

Dataram Corp. will highlight its 20-yr. old DEC memory expertise by displaying a full spectrum of DEC memory technology. Dataram's fully compatible FDP-11/83 and 11/84 PMU bus memory will be introduced. The quad-size DR-283 memory board offers 1M byte or 2M bytes of data storage plus associated error control check information. Booth 1420.
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COMPATIBILITY FOR THE FUTURE

BY PETER COHEN

DEC is riding high on VAX VMS and will not dismount until well into the next decade. Expect a succession of new mid- and high-range VAXs, more capable and flexible network offerings, enhancements to the integrated office package and an assortment of terminals, printers and storage peripherals. During the next five years, not only will DEC move to bolster its advantage over its traditional minicomputer rivals, but DEC's sights are set squarely on IBM.

In the late 1970s and early 1980s, DEC was immersed in the development of the VAX VMS architecture while struggling with Ethernet networking. At the time, these were not the computer industry's most glamorous advances; in fact, a demand for the capabilities of a unified architecture was only barely evident. Today, users are vocally demanding compatibility, and DEC has a solid foundation in place. At least for the next five years, the VAX VMS architecture will serve as the central feature of the company's product strategy.

Compatibility is the strength of the VAX VMS architecture. Compatibility facilitates communication within the user's organization, and it protects the user's investment in software. Now that it can deliver this capability, DEC is spending money to get the message to the marketplace. Not known as a marketing company, DEC is instead relying on building a better mousetrap to attract users' attention. With the world beating a path to its door for VAX VMS capability, DEC has every intention of offering as much of that product as it reasonably can for as long as it reasonably can.

The VAX VMS development effort was difficult and costly. DEC now intends to reap the benefits of that effort. Margins and profitability have already improved, and more gains are expected during the next several years. During the fiscal year ending June 28, DEC's gross margin improved 43.6%, already a significant gain over 1985's 38.9%, and the net margin swelled to 8.1% in 1986 from 6.7% in 1985. In 1983 and 1984, the company's research and development spending ran more than 11% of total revenue. With the basic architecture now in place, the company can pull R&D expenses back into line with industry standards. The slew of products introduced over the last 18 months and those likely to be forthcoming over the next few years will capitalize on the R&D groundwork already laid. Changes will be incremental. Lower manufacturing costs will also bolster DEC's bottom line. The new processors are simpler and less expensive to manufacture.

No RISC. Do not expect DEC to adopt reduced instruction set computing (RISC) technology on a wide scale in the next few years. The company has experimented with RISC-based processors, but the performance relative to VAX has been unimpressive. In essence, any speed advantages offered by RISC do not outweigh the compatibility advantages offered by VAX VMS.

DEC may introduce a RISC-based processor if it is essential to meeting the requirements of a particular market. The company, for example, does offer a Unix operating system, along with VMS, to satisfy segments of the engineering and government markets. The RISC machine will, however, be an adjunct to the VAX VMS architecture. It is not likely to supplant it, a la the Spectrum series at Hewlett-Packard Co.

CONTINUED ON NEXT PAGE
The risk to DEC is that it will cling to VAX beyond its useful life that the architecture will not keep up with users' requirements or competitors' offerings.

Office automation. Look for DEC to enhance its All-In-1 product. In particular, expect more department-specific functions and a better human interface for the product.

DEC has built a strong presence in departmental computing based on the compatibility and networking strengths of the VAX. Leveraging this strength, it has pushed its All-In-1 integrated office system to a leading market position. At year-end 1985, 3,600 All-In-1 systems were installed, accounting for more than 20% of the market.

DEC is already shipping at least two department-specific models for All-In-1, which are sales and marketing applications. More of these are likely to appear as users look to push their office automation capability beyond word processing and electronic mail.

Holding action in printers. The objective of DEC's strategy in the printer market will be to hold onto its installed base. In line with its commitment to offer complete systems, the company will continue to roll out printers for systems from personal computers to the largest VAXes.

Specifically, look for a mid-range capacity (20 to 70 page/min) laser printer, which DEC may eventually package into a technical electronic publishing system. A low-end printer will also be offered with the forthcoming Vaxmate personal computer.

Bringing storage in-house. DEC will likely continue to reappropriate storage development and manufacturing to its own facilities, away from outside suppliers. The company's Colorado Springs operation is already shipping high-capacity drives (500M bytes or more) and more high-end, high-margin direct-access storage device products will be forthcoming. Also, expect in-house-manufactured follow-on to the HSC-50 and HSC-70 intelligent controllers.

Under this make-in-house strategy, DEC intends to maintain or increase its large piece of the market to more aggressive, margin commodity market; it could simply cede market share.

Wyse Technology, Inc., CIE Terminals, Inc. and others offering bigger screens, more features and prices well below DEC's $1,000 grabbed 30% of the VT200-compatible market in 1985.

DEC's response to this challenge is not yet clear. The company will always sell terminals, but it is not providing complete systems. It may not, however, choose to participate in a low- to medium-commodity market, it could simply cede market share.

Life after VAX. DEC will build on the VAX VMS foundation well into the 1990s, but then what? The risk to DEC is that it will cling to VAX beyond its useful life — that the architecture will not keep up with users' requirements or competitors' offerings.

The next-generation strategy will probably begin with a terminal easier to use, and maybe DEC will develop radically improved man-to-machine interfaces, such as natural language programming, graphics, voice recognition and synthesis.
When a company's founder is still president after 30 years, it throws the traditional ideas about succession into confusion. There is at DEC, for example, no precedence for turning over the reins of leadership. And further, Ken Olsen is a robust, energetic and undaunted 60-year-old with no apparent thoughts about retirement. These are not shoes waiting to be filled. Olsen appears ready for another decade in his beamed and brick office in the Mill.

Nonetheless, big companies cannot avoid the scrutiny of analysts, media and shareholders who wonder out loud where the mantle of leadership will fall when the top man steps down.

In many ways, DEC is Olsen and Olsen is DEC. The next president will step into an enormous void — not an altogether enviable position. It is heresy at DEC to suggest an outsider could be brought in to run the show.

Three men — Jack, Jack and Win — are strategically positioned to replace Olsen whenever the time comes. John Smith, John Shields and Winston Hindle Jr., all DEC career men in charge of key facets of the company, were named senior vice-presidents in June.

Olsen claims that the promotions to the newly created positions were simply a long overdue recognition of contributions to DEC. He refuses to participate in any "name the successor" competition. For their parts, Shields, 47, Smith, 51, and Hindle, 55, deny that succession is an active issue. They agree that naming a specific successor now would only put undue pressure on that person.

Hindle perhaps speaks for the entire company when he says, "I've never quite thought about it, because Ken has always seemed like he's going to be here forever."

The early speculation puts Shields in the lead. The youngest of the group, Shields has spent 25 years with DEC and is in charge of all its sales, service and international organization, a vast area that employs nearly half of DEC's population. Hindle is in charge of corporate operations while Smith handles all of engineering, manufacturing and product marketing. A possible dark horse: Bob Hughes, DEC's dynamic marketing vice-president.

In separate interviews, Senior Editor Glenn Rifkin spoke with Shields, Smith and Hindle about their roles at DEC, the direction of the company and their feelings about succeeding Ken Olsen.
JACK SMITH

The affable and candid Jack Smith had the unenviable task of replacing Gordon Bell as head of DEC's engineering group when the legendary Bell left in 1983. Smith points out, though, that it was a natural transition, since he and Bell had been working side by side coordinating engineering and manufacturing for several years. Smith, DEC's 12th employee, is now senior vice-president of manufacturing, engineering and marketing.

What is life after VAX?

Smith: VAX is pervasive. VAX is going to be around for an awful long time. When I say VAX, I'm also saying VMS. I'd just like to get that point across. It's the software that actually runs the system. And there is such an installed base out there, and VAX and VMS is so pervasive that VAX and VMS is going to go well into the 1990s.

Now there may be other market opportunities that will require a different approach to computing other than the VAX/VMS architecture, and we have proponents out there every single day, banging away at that. And indeed, we're constantly doing advanced development work in those areas.

What happens to the PDP line? Is that eventually going to disappear?

Smith: We're going to continue to support it. We're still selling that thing. Last year, we sold close to one billion dollars, believe it or not, in PDP-11s. We just recently introduced our newest model.

If you are still introducing models, you are doing more than supporting it. You are still developing it. Is that contrary to the slogan, "One company, one product, one strategy?"

Smith: Not really. Even today when we talk about new computing structures, such as reduced instruction set computing (RISC), of course we are doing heavy advanced development work in that area. No matter what we develop, be it a general-purpose computing architecture such as VAX and VMS, be it RISC, be it special computing machines based on parallel processing or whatever it is, it's going to play together. We're not going to change that.

So if you're a customer, and you've invested 15 years in VAX/VMS as your general computing environment, and, for some reason or other, you come up with an idea that gives a different architectural approach such as RISC or parallel processing, if we feel that's good for you, and you feel that's right for you to do your computing, we will provide that to you.

But you can rest assured when you plug it in to your current computing environment, it will play.

What about the sales force that is still trying to push PDP-11s that run into an opportunity where a VAX solution might be better. Do you tell them to push VAX?

Smith: We don't do that. That's the wrong approach. You have to sell to the customer what they really need, from their standpoint of running a business. If you don't do that, in the long term, you're going to screw yourself. There's just no doubt about it. The saddest thing, at least in our life, is to walk into a factory, walk into an office and see a piece of our equipment not playing. That to me is just devastating. It's devastating to us, and it's also devastating to people that we're trying to convince that our style of computing is better.

So what we try to do with the customer is work with the customer and really decide what is best for them. For some of our customers, PDP-11 is best, not VAX.

What would be an example of that?

Smith: Let's say you're running your business and have an installed base of PDP-11s worth $4, $5, $6 million. They're all sitting there pumping away getting the job done. Could VAX do it better? Maybe. But do you have to get it done better? Maybe you don't. When getting the work done. Do you have to get the work done three times as fast? Maybe not. You have people trained with a nice stock of spare parts, you know you can get your job done for the next 10 years with the same style of computing. Why do you need this new box?

There are other situations where you walk in and talk to a customer, and you say to yourself, "Boy, this guy's going to get blindsided. He's going to run out of capacity and is not going to be able to do the degree of computing that he's going to have to get done five years from now." That's when you have to start changing them over.

The classical situation is our 36-bit customers with a PDP-10. When we looked at that, we just said, "That whole area is just heading in the wrong direction. In five or six or seven years from now, those folks are going to be in trouble, and they're going to top out. We'd better bite the bullet, and we'd better start convincing them that that is the situation, and they should switch over to VAX."

Do you foresee that happening with VAX?

Smith: It has to happen to VAX some day, right? The question you ask is when, if ever, you think that's going to happen. And as far as we can see, we can't see that changing dramatically by any stretch of the imagination through the '90s.

Do you see breakthrough research coming through on parallel processing or some dynamic new chip that throws the industry completely into a shift and everything that you have done to this point just suddenly become obsolete?

Smith: We don't foresee that happening. There's all kinds of hot boxes being developed everywhere. We're in the business of selling hot boxes. We're in the business of selling the computing environment. And every week, somehow, someone's going to be coming out with a new concept of computers.

When we feel that that new concept of computing will do something better than our approach, we will go out and

we certainly will develop it. It can't see any area, at this point in time, of computing that we feel is going to be significant that we're not doing the biggest development in. We're just not going to get blindsided.

What about the issue of standards in manufacturing? Should a user such as General Motors Corp. be creating standards like Manufacturing Automation Protocol (MAP)?

Smith: General Motors is in the computer business, they understand it well. They should understand that that's what they understand. The [computer] industry itself will take care of developing the standards that it thinks are necessary in order to do what's right for the customer.

When a customer tries to develop standard bodies around areas that they do not quite understand as well as they should, they may be doing the industry and themselves a disservice, simply by stepping from the standpoint that it creates tremendous turmoil.

Whenever you start talking about potential standards, a lot of development comes to a screeching halt. Everybody takes a step back and says, "Wait a second. Let's find out what the standard's going to be." And development starts to slow down. That's what's happening to some degree in this particular situation. Development's not going as quickly as we might like to see it go, simply because there's turmoil relative to standards.

Are you actively working against MAP, therefore? Smith: No. Because there are too many customers who have begun embracing MAP.

So you are reluctantly going along? Smith: Of course. You must. The same thing happened with Unix. Unix is being embraced. We have to go along with it. You can't ignore a large following in our industry, just like you can't ignore a large following around MAP. Now do we think it's the best approach to the problem? Absolutely not.

Will you offer an alternative? Smith: We will continue to pursue our approach to what we think is best in the factory. Whatever we do is going to plug and play. If people want MAP, and that's what they think is best for them, then well, we'll give them MAP. If they grace our particular approach, then we'll offer that. We'll let the customer decide. But we'll also, as much as possible, be assured that if it's necessary for us to plug and play, which in some cases it may not be necessary, we'll do the best we can to make it plug and play.

So you are saying that you are developing your own version of factory automation that does not fly with MAP?
Smith: We have been for the last 10 years.

That works against the concept of a standard, does it not? Smith: Well, isn't it that CM has set the standard? The only standards — if you look at history — that have survived the ravages of time are those developed by the industry itself, not standards developed by large, significant companies.

For all the connectivity that DEC is being praised for now, the company had a thing or two that one has to think about as to come into line with what seem like clear industry standards, such as the IBM Personal Computer or Token-Ring for local-area networking.

Smith: There's always different approaches to how you want to supply computing to the customer. And the one you bring up is a good one, Token-Ring vs. Ethernet. We believe that in the long term you must do what's best for the customer, and if you don't do that, eventually you're going to get into trouble as we did with the DEC-10.

There are certain situations where we feel our approach is right from the standpoint of the customer, and we will not give that up. Now, the industry is still dominated to a large extent in size by IBM, but folks have to begin to realize that we're pretty significant in terms of what we do, and size isn't a total criterion. So we feel that we should be in a position now to influence the industry in some of these areas.

Will people be using Token-Ring? You bet your life. Why are they going to be using it? IBM. Will they be using Token-Ring because it gives them a better solution? My biased view is “no.” Does that mean that we should then shift over to Token-Ring? I don't think so. We'll stay with our convictions that our Ethernet is a better solution, and we'll let the marketplace decide.

But you will provide connections between them. Is that your philosophy? Smith: We do it now for all practical purposes. We connect better with IBM than IBM connects with IBM. IBM seems to be realizing its mistakes in the middle range and is setting about to correct them. Does it concern you that with its resources it will not just minor concern for a company like DEC whose very foundation is built on this market.

Smith: That's one thing one has to think about. I mean, money is important. The other thing is that one has to think about is how difficult is it to change a technical community? I would guess there are still proponents within IBM, within the technical community, walking around saying, “What's the problem? We've had the solution for 30 years, and we've got these little irritants called Digital down here, this little $7 billion company. What makes them so smart?”

And so it's not only having the monetary resources, per se, to pull this thing off; it's being able to convince a fairly large technical community that that's the right thing to do. And in my experience, that is not easy to do. I would not like to have that problem.

How do you feel about being considered a potential successor to Ken Olsen? Smith: This may be hard to believe, but it's true: We don't think much about that. The recent publicity we've been getting about that has gotten us to think more about it. But I haven't personally given it a lot of thought. Ken is 60 years old. He's going to be around for a while. We don't have any mandatory retirement age. I go to most board meetings, and it's never been discussed at the board meetings.

But now that you have given it thought, is it a position you aspire to? Smith: It's certainly something that anybody in this position would aspire to. I don't think is the next logical step? If not here then somewhere else. You push yourself as far as you think your abilities can carry you. I believe that my abilities will carry me farther in some role, maybe not necessarily in this industry. I've always aspired to be No. 1 in an operation. It doesn't necessarily have to be this industry or this size company.

If you were named the successor five years from now, would you do anything dramatically differently? Smith: It all depends on what you mean by different. The basic values of this company will never change. It's not only Ken Olsen; it's ingrained in the organization. Of course, Ken contributed significantly to it, but the organization contributed significantly to itself in building these values throughout the years. I think any change would be very difficult and certainly undesirable.

If you had to choose, would you pick yourself? Smith: That's a difficult question to answer. We're five or six years away, maybe ten years away. And a lot can happen in the course of five or six years. We continue to learn and to grow. I'm sure that when the time comes, it will be fairly obvious.
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"Computerworld has been our number one book since we first started advertising," notes Kathy. That was June of 1984, when Landmark had only three employees. Now, with a staff that numbers nearly 50, "Computerworld continues to play a key role with the company, and that will not change," she says. With a growing advertising budget, Landmark is looking forward to another successful year with Computerworld. Computerworld. We're helping more suppliers reach more buyers more often in the computer market. We cover the entire computer world. Every week. We're working for Landmark Systems Corporation, and we can work for you. Call your Computerworld representative for all the facts. Or call Ed Marecki, Vice President/Sales, at (617) 879-0700.
Jack Shields

Diminutive in stature but a powerful presence at DEC, Jack Shields holds responsibility for sales, services and international. He is also a member of DEC's executive committee and chairman of its marketing and sales strategy committee. A graduate of Harvard School's Program for Management Development, Shields has risen steadily through the ranks since he joined DEC at age 22.

You've been with DEC for 25 years. How did you reach your current level in the company? Shields: I started in the engineering area, and at that time, we had two computers installed. The third one went to MIT, and I installed that and began to have contact with customers. And we discovered we needed a service organization, so I started the service organization for Digital, and I managed it and built it. Of course, in those days, there really wasn't anything like software services — it was a hardware service.

In the early '70s, we had a training organization, which was basically there for both internal and external training for hardware and software, and I took responsibility for the training organization.

We had a software services organization building up, and I took responsibility for that in 1979 and put it under a title called "Customer Services." In 1981, I took responsibility for the sales and international organization, and I went to Europe and reorganized our European operation.

The structure seemed very loose early on. Was that a problem? Shields: Well, it was loose, but you didn't have any responsibility very long if you didn't do it. And some of the things we did in service are innovative and different and, in fact, are being recognized today as an appropriate way to run a service organization. For example, we decided to make a profit in service from the outset. That was absolutely heretical. IBM didn't do that; they didn't make a profit in service.

Why did you decide to make a profit from service? Shields: The customers we sold to were generally scientists or engineers who were self-sufficient; they didn't want to pay for something they didn't need. And so you couldn't charge a price that espically supported a service organization because your customers didn't want to pay the price for it. They were more interested in paying for what they needed.

How do you measure your success with service? Shields: We've been running opinion surveys for close to 15 years now. We got more than 200,000 returns last year. We measure our managers on it; we promote them based on it. We have service excellence awards.

Apparently, despite these boom times for DEC, there remains political infighting about the direction of sales and marketing.

Shields: This is a huge organization, so I'm sure that somewhere along the line there are people with opinions who think you could do things differently organizationally. And like all organizations, there tends to be benefits involved and risks around how you organize. We had a lot of argument over how to organize four or five years ago. We had a sales organization that was organized by market groups in the company, and we chose to change that. We've changed it in Europe.

So for people who argue philosophically that we should do something different, it may be nice, but academic, discussion. Our accomplishments are a matter of record.

It's great to discuss different organizational approaches, but we want to organize around our customers. Our customers want to see a Digital Equipment Corp. that can solve their problems in different applications and different departments, in fact, across multiple geographies. We've organized that way, they seem to like it and we're having success.

Again, how you mix and match skill sets and training is another question. We organized our company in a multidimensional approach. We have a dimension along applications, on industries, along geographies, around products and along channels.

At any moment, I could show you the company along any one of those dimensions. It's healthy, and we can tell you whether we do or we don't make money this way, or we are or we aren't successful that way. Whenever you have that sort of thing, there might be a person or a group that has a particular view that one dimension is better than another. That's normal. There's no big deal.

It's not causing delays in sales and marketing of any particular products? Shields: Oh, hell no. The problem with anything that's as complicated as this is that there are interdependencies, and one dimension is always dependent on

CONTINUED ON NEXT PAGE

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As you look at 1986 and beyond, what are the critical issues facing this company?

Shields: We've now got a direct selling effort. And my No. 1 goal is customer satisfaction. I believe that if we have a loyal, satisfied customer base and continue to make that our No. 1 priority, then it's going to be very, very difficult for anybody to take those accounts away from us. That's a strategy, a plan, a dedication, a fanatic commitment, if you will. We're zealots on that issue.

What kind of changes have you made in the past four or five years?

Shields: We've linked our manufacturing and our selling organization with tremendous results. Our inventories are lower than three years ago. We've introduced a whole new set of products over the last 14 months.

We're expanding our sales organization; we're delegating more responsibility to them.

We are learning how to sell better at higher levels in the company rather than at people who need a solution at a technical level.

A salaried sales force has gained a lot of attention. Are any of the concerns justified?

Shields: It's up to us to make sure that we don't have people who need a solution and the attitude about sales, and that's the criticism.

It isn't that we don't have products that we want to move, but we don't build inventory and then tell our salesmen to move it.

Are you seeing defections from IBM to your products, or are you getting mainly new accounts?

Shields: Clearly, there are defections from IBM. We're winning business against everyone, and the biggest potential for us to get market share is against IBM. I don't know what IBM's performance will be this year, but I can read the papers, and they have negative growth in the U.S. And the only growth they had last quarter was a result of currency. And we're growing.

Now, if we're growing and everyone else is flat to negative, it's clear we're winning market share; and if they are the large holder of the market, then it's pretty obvious that some of it must be coming at their expense.

And again, there's no lack of respect for IBM; it's just that their approach is different, and for them to adapt to or adopt our approach is not easy.

But when you look at a 10-year time frame, a company with IBM's resources ought to be able to correct its errors. Can you gain enough momentum to hold them off from then on?

Shields: Oh, no. It's not a question of catching up to them.

They'll still be No. 1 in 10 years. But what I'm trying to do is to point out that this company a few years ago was 50 times our size, and today is seven, and maybe next year would be less than that. And in 10 years, perhaps, we're talking factors of two or less, so that's a completely different situation of dominance than the levels that existed before.

Ken Olsen said that success, especially on this level, scares him a lot, probably more than anything else. What scares you the most about the good times that DEC is going through right now?

Shields: Complacency is of concern. And I doubt we will. It's not in our nature. That's the fear.

The other potential problem is the antitrust of humanity; it's called arrogance. Perhaps Ken would present it in a way differently than myself. He would say that you had to be humble,
and I would say we have to watch out that we don’t become arrogant. That has to do with my concern of how we deal with customers and customer satisfaction. You don’t refuse to do something for a customer. Figure out how to compete. If we can keep that attitude, we’ll be all right.

How do you avoid getting complacent if you approach IBM-like proportions over the next decade?

Shields: The fact that you’re aware and worried about it is a major step forward. The concern would be what happens when all of the people who have been through this for years are gone, and you get that second generation of managers. What happens when all of the people who were part of the whole building and fighting and growth of the company are all gone?

They don’t remember the lessons from the beginning.

Shields: No, because you have to experience those things; and unfortunately, as bright as people are, there’s nothing that substitutes for experience.

How do you feel about the thought of Ken Olsen retiring and you as a candidate to fill his spot?

Shields: Well, of course, Ken is Ken. I think when everything is over, there’s a good likelihood he’ll be called the industrialist of the century.

That’s high praise.

Shields: Look at the data. This company’s grown faster than any other company in history, with the exception of Honda Motor Co. Secondly, the only company that’s grown larger by the founder is Honda Motor Co., and Mr. Honda has retired, and the size of Honda Motor Co. on his retirement was somewhere between $9 million and $10 billion.

It’s not likely that Ken will retire before our company reaches that size if one just takes the normal growth. And so there’s a company that will have achieved its size in one of the most competitive areas in the world where competition is, in fact, on an extensive, multinational basis and is not in any way related to the discovery of major natural resources.

Now it is established in a moment when one could get empires together through things that happened with oil and banks. And it was done in an environment with a tremendous amount of legislation and other factors, which are basically there to restrict big business.

What impact would you or Win Hindle or Jack Smith make in light of that?

Shields: To say that a company won’t be different after somebody like that leaves doesn’t make much sense. Of course, things will be different. Will they be a lot different? I doubt it, because companies tend to take on a character, tend to take on an existence and a culture that is very much reflected by the leaders of that company.

So, in a sense, it will be different, but in a sense, it won’t be different. A lot of the fundamentals will be the same. I would suggest that of the three people that you mentioned, there wouldn’t be a heck of a lot different in terms of their philosophies and their views. Of course, there will be differences. There’s no doubt that different people bring different approaches, different style, a different slant.

As to who will be the successor, I don’t know. That’s a question that Ken does, and probably should, keep to himself. He certainly doesn’t talk with us about it, and I keep my options open as I’m sure he does. I’ve got plenty of time.

Are you the right man for the job?

Shields: Anybody who’s been here for 25 years and who has grown and built and is still here and working hard would have some motivation to perhaps have the responsibility for all of it. You get any executive who’s been out in the world working in a company for a number of years and he sees that as another step in his career.
That's what John Groppa — Vice President, MIS for the Stepan Company — told us when we asked him, "Why read Computerworld?" He's one of 127,000 paid subscribers who thinks that Computerworld is too important to his work to rely on someone else's copy.

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WIN HINDLE

Win Hindle, an MIT graduate, joined DEC in 1962 as assistant to Ken Olsen. Hindle has served extensive tenures in both administrative and product line positions, giving him a unique view of DEC. Unlike Jack Shields and Jack Smith, Hindle does not come from an engineering background. A member of the office of the president and chairman of the management committee, Hindle became vice-president of corporate operations in 1978.

How did your career develop at DEC? Hindle: In 1964, I was one of the people who helped Ken set up the product line structure of the company. I became one of the product line managers. I worked myself into the product line organization and out of a staff assistant's job.

You stepped out of an administrative role, and now you are back? Hindle: Yes, and I should describe corporate operations, since operations in many companies is considered to be manufacturing or day-to-day operations. That's not at all what I do.

I'm in charge of seven corporate functions including public relations, marketing communications, planning, staff, public relations and marketing communications.

You keep the ship on a straight course. Hindle: We try. And again, we are a distributed company. Each one of those functions has a corporate group. We also have resources such as information systems out in the organization. We probably have 300 people in corporate information systems, but there are 10 times that many out serving the sales function and the field service function.

Our job as a corporate office is to provide the standards, the quality control and the auditing function the rest of the company will use.

Often when a company gets to this size, there is some sense that in the old days it was fun, when there were only 400 people who knew each other by their first names. Is it still fun? Hindle: I can't remember a more exciting time at Digital than now. We went through a bit of a trough four years ago when we changed our organizational structure, and things didn't go well for us for a period of a couple of years. We got behind in our product development, and we didn't bring out enough new products. But that's all changed.

And over the last two years our products are coming out on time, I couldn't imagine being more excited about the company than I am today.

If I had asked you that four years ago, you probably would have answered differently? Hindle: It might have been a little tougher four years ago to have said that confidently. The world was beating on us, and we were having to read lots of articles in magazines and papers that Digital was falling apart, and Ken Olsen couldn't lead the company anymore.

You have been with the company 24 years. What has kept you with DEC all this time? Hindle: I guess I'm old-fashioned. I have a tremendous loyalty to the organizations that I decide I'm going to join. And so I've never been even slightly tempted to leave Digital. It was always so much more important to me to build the enterprise than it was to jump in and go to somebody else's enterprise and perhaps compete with Digital. I couldn't imagine competing with Digital. It would feel just terrible.

There is nothing that would tempt you? Hindle: No. I can't imagine what somebody could offer that would ever be appealing to me to leave here. Also I have an intense loyalty to Ken Olsen as a person because I feel as though I've learned so much from him over the years, and I continue to learn things from him. He is a truly remarkable man and for some reasons that very few people understand.

For example? Hindle: That he could run a company of $7 billion and also be the founder. I don't know if you could count on the fingers of one hand the people who founded a company and still were strong, vigorous presidents when they reached $7 billion and 90,000 employees.

You could count on the fingers of one hand the people who founded a company and still were strong, vigorous presidents when they reached $7 billion and 90,000 employees. He has made the changes that he's been able to make in his own management style because, obviously, running a 90,000-person company isn't the same as running a three-person company, which it was when he started, or 400 when I started.
What is his key to success? His ability to make decisions because you think you’re infallible. And we worry about that, and we’re going to worry about that period that you wish had not?

Ken told me he felt that one of the things that scares him more than anything is success; that too much success for any one person is probably bad. What is his idea of success? That too much success becomes even more efficient and effective in line with our goal of making customers satisfied with order transactions.

Are your customers complaining about poor billing procedures? We’re redesigning it so that it be-

Are your customers complaining about poor billing procedures? We’re redesigning it so that it becomes even more efficient and effective in line with our goal of making customer satisfaction our No. 1 criterion.

People have tried to tempt us into the system by which we interface to our customers on order transactions. But we’re redesigning it so that it becomes even more efficient and effective in line with our goal of making customers satisfied with order transactions.

More than 90,000 work for DEC. I know that Ken has always been cautious about rehiring people. We would be a void without Olsen. And I have never thought about it quite that way because Ken has always seemed like he’s going to be going on here forever. He’s going to be here forever.

Do you feel you could run it? His idea is right. If he were to discuss succession in specific terms of individual people. Ken doesn’t discuss it with us. He does, however, talk over with the board of directors from time to time; and he has not planned a specific successor. His idea is that if you build good managers in the next five years — a management challenge to be as good as six years from now, it will be a really superb sys-

How is your financial results continue to please your stockholders. That’s management.

The challenge for us is to allow our people to continue to grow, to handle a much bigger size gracefully.

Obviously, we’ve got to do the smart things. We’ve got to make sure that the product line stays competitive, as it is today. That we watch technology and use all the newest technology in designing and building; and I’m assuming we’re going to grow more internally as viewed by employees. That means an awful lot of management development, an awful lot of improved systems by which we get our work done. It’s a management challenge more than it is a technical challenge for us in the next five years — a manage-

DECEMBER 31, 1983

Hindle: You get overconfident; you think you know every-

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By Kevin Strehlo

By conventional reasoning, DEC should be too big to do truly innovative research and too small to profit from an IBM-like, brute-force approach to research and development.

DEC’s $717 million in R&D expenditures is, after all, second highest in the industry but only one-fifth that of IBM’s annual spending. Yet in the past year, DEC R&D challenged such young and innovative companies as Sun Microsystems, Inc. and Apollo Computer, Inc. with its new Vaxstation II/GPX workstation and IBM itself on the high end with the VAX 8800.

What’s DEC’s formula?

“While we’re much smaller, we try to be more focused,” says Sam Fuller, the vice-president of research and architecture who oversees university, joint-venture, internal and consortia projects. “We don’t have the luxury of bringing several projects all the way to fruition as some of our competition does.”

But still there’s the pressing question: If IBM’s R&D efforts really cover everything, as common wisdom has it, how does DEC go about targeting R&D at one-fifth of everything — which is all it seemingly could afford to pursue?

For one thing, concentrating on the VAX has cut the universe of possibilities that DEC needs to consider. “Having one common architecture is one of DEC’s important R&D advantages,” says Bob Djurdjevic, computer industry analyst and president of Annex Research in Phoenix. With IBM, he says, the requirement to support the different instruction sets encountered in the company’s product line means multiplying the R&D two or three times.

The strategic focus on the VAX instruction set provides a framework for understanding DEC’s research and development. It explains the efforts to stretch the VAX architecture and the preparations to replace it with as little customer disruption as possible when it finally runs out.

CONTINUED ON NEXT PAGE
Before a DEC product makes it to the marketplace, it must cross through a series of gates that lead out of DEC's growing corral of basic research interests. Gate 1 marks the line between basic research and actual product development: A prototype is operational and first engineering measurements have been made, but the total investment is only about 10% of the cost of bringing a product all the way to market.

DEC uses this gate to keep its research cost-effective — on the order of half of all projects fail to clear it. The rest move into the actual design phase but still have as much as two to four years to go before they might enter the marketplace.

Gate 2 comes a year or more before a product would enter the marketplace. At this point, with more than 50% of the development money needed to bring it all the way to market spent, another evaluation is done. If a product makes it past this second gate, an announcement target is set and revenue targets are developed. The intent is to bring it to market.

"We work pretty hard to get things through the first two gates," Fuller says, "and by the time they do, there is a low risk of technical failure. But there can still be some surprises." Although the computer press had long written about the Jupiter project and implied that the upgrade to the Decsystem-20 was on the verge of introduction when it was canceled, the Jupiter project was no third-gate surprise. "The Jupiter project never made it through the second gate," Fuller says.

Preliminary sales projections had indicated that the further investment in the family might not be paid back. "It was clear we needed to migrate people onto our 32-bit architecture. While it is clear that final decisions on the viability of an R&D project get made at the top, DEC's overall R&D mechanism is complex. Computer graphics industry analyst Stanley Klein is not alone in thinking DEC's R&D organization "chaotic" while expressing admiration for its success. "Ideas [at DEC] are subjected to a rigorous natural selection process including peer review," he writes, "that determines whether an individual's pet project flourishes, remains in limbo or perishes. Even DEC employees express amazement at times that such a corporate approach works."

One of the advantages of that structure, Fuller says, is that it is porous to ideas bubbling up to the top. Instead of starting out building a multi-chip MOS VAX processor," Fuller says, "but his engineers were too proud to settle for old technology. "They wanted to more effectively compete with the single-chip processors like Motorola, Inc.'s 68000 and the National Semiconductor Corp. 32020."

DEC's silicon designers in Hudson, Mass., scrubbed in the back room a bit and then insisted they could reduce a VAX to a single chip. "As soon as they could demonstrate the feasibility of it," Fuller says, "upper management grabbed the idea and instituted several projects to exploit it."

The Microvax II project, proved DEC was pretty fast on its feet for a company approaching $7 billion in revenue and not known for advanced in-house very large-scale integration capabilities. While outside semiconductor vendors projected a minimal developmental cycle of 36 months, DEC used 30 full-time designers and had working silicon within two years.

Despite the success of this ad hoc internal research, as well as more formal internal efforts, Fuller says, "in many cases DEC gets more value from the dollar invested in external research contracts done in the open than from proprietary research."

One of the most successful such investments dates back to early 1972. At the time, the batting average of the technical editors in charge of checking compatibility of system components before DEC shipped them had slipped to 0.700. While great for baseball, that percentage did not impress the 30% of customers who were having trouble getting their systems running, and DEC management was concerned.

DEC's head of manufacturing technology at the time, Dennis O'Connor, mentioned the problem to a Carnegie-Mellon University professor, John McDermott. McDermott astounded O'Connor by saying he thought he could not only capture the uncodified expertise of DEC's technical editors in a computer program but surpass it. DEC's funding of McDermott's research eventually led to Xcon, the expert system that DEC considers the VAX system orders 95% of the time.

Since brought in-house with McDermott as a consultant, the effort has grown to more than 200 individuals under Frank Lynch, head of engineering for DEC's intelligent systems technologies. Products from that effort include VAX LISP, ASP 5, the Vaxstation II artificial intelligence workstation and a VAX system that correctly configures VAX systems. Lynch says, "it has let DEC to pursue the concept of improving the efficiency of manufacturing businesses through an integrated network of expert systems focused respectively on design, manufacturing, distribution, sales, service and configuration."

In addition to maintaining its close, traditional ties to universities by investing millions of dollars in about 10 major joint efforts at a time, DEC participates in several industry consortia, including the Microelectronics and Computer Technology Corp. in Austin, Texas.

Typically, the advances made in external research projects are expected to be fundamental in nature and many years from implementation. Fuller says that ideas that creep into DEC this way "are passing through Gate 0."

_— continued from page 57_
But sometimes results are seen quite clearly in a specific product passing Gate 3 in no time flat. Indeed, although the main intent of DEC's investment in MIT's Project Athena was to investigate the behavior of a very large network of distributed workstations — "It makes a great test bed, and there's no harsher environment," says Jack McCredie, head of DEC's External Research Program — they've also gotten a product.

When marketing needed an impressive human interface with which to showcase the new Microvax II at a Decworld show in January 1985, Fuller says, the windowing system from Project Athena was pressed into service. When senior DEC management saw it at the show for the first time, they were smitten, especially when they found out it had been developed with DEC money. Only one year later, an enhanced version of the software was introduced as DEC's Xwindows package on the Vaxstation II/GPX.

Perhaps most important to DEC in the long run is the research proceeding apace on the West Coast, far from the company's Maynard, Mass., headquarters. DEC's System Research Center in Palo Alto, Calif., and the Western Research Laboratory up the street may be to 1990s computing what Xerox Corp.'s Palo Alto Research Center (PARC) has been to the 1980s.

Indeed, PARC's legacy is strong. Bob Taylor, who ran PARC for more than a dozen years, is head of the System Research Center, and among DEC's Palo Alto engineers are three of the four people named on the patent for PARC's networking project, Ethernet.

The Western Research Laboratory has spent the last four years looking into reduced instruction set computing (RISC) systems. And while DEC officials will not comment on unannounced products, sources say that basic research in RISC technology has already been transferred to an advanced product development center in Bellevue, Wash., where it is currently being guided toward Gate 2 by VAX 8800 architect David Cutler.

Fuller will say only that DEC will eventually have to move to new technology "if our customers are going to have cost-effective products available to them. If you use ideas like RISC, it will change the instruction set interface. We're saying this was a fine interface for the 1970s.

"For the late 1980s, we'll preserve the operating system interface and data-compatibility," Fuller adds. But he expects the customers will see no more level of change "than when they went from the VAX-11/780 to the 8600."

Meanwhile, at the System Research Center, Taylor and a crew now numbering more than 60 engineers have spent 2½ years looking at how to transparently utilize multiple processors in an extended networking environment. The resultant experimental Firefly workstation already taps the power of five Microvax II processors, Taylor says.

Although RISC research seems to get more attention, multiprocessor research may prove key to DEC's future. As DEC's former vice-president of engineering Gordon Bell wrote earlier this year: "The number of processors [in a system architecture] will have the greatest long-term effect, regardless of the number or type of instructions they execute."

More important even than multiple processors, however, may be the concept of universal and transparent access to the resources of a number of machines. The Systems Research Center is also heavily involved in that arena, which carries back to Bell's reign as vice-president of engineering from 1972 to 1983.

"When I was at DEC, we called it Gordon's vision," says Craig Synons, a Gartner Group, Inc. analyst. "The idea was to forget about single machines and create a network that provided universal access to resources."

Fuller says that DEC has some of the basic protocols and software in place to realize that vision, but he compares the current state of the art with the crude form of time sharing available back when the PDP-1 was introduced. Yet DEC's emphasis on connectivity in its R&D is already paying dividends. "People don't draw a VAX 8800 on the board if they want to buy the most effective quarter-million-dollar supermini," Fuller says. "They draw an Ethernet system with a dozen workstations and a VAX 8300 as file server."

FEW THINGS RUN BETTER THAN A VAX SET FREE
have to travel about 90% of the time when problems came up at plant locations," Burge says. "Now that average has dropped down to about 63%.”

Actually, Burge says, the concept of making multifunctional use of terminals has been carried one step further at the center, where some users are equipped not with VT100s but with Modgraph, Inc. computer-aided design terminals that are completely VT100 compatible. Using these terminals, design engineers can time-share three-dimensional CAD on the network.

Anvil 4000, a CAD software package produced by Manufacturing Consulting Services, runs on both the VAX-11/780s and the Microvax II. “As a rule,” Burge notes, “CAD is not thought of as a time-share application. But this serves us very well for the rough work and allows us to get multiple usage out of the same terminals, which will also function like VT100s or IBM Personal Computers. When we need to do finished work, we simply switch over to more expensive CAD workstations.”

USX

There’s no doubt in Sam Abston’s mind about the advantages of using DEC systems for order tracking and process control in a mill setting. “I think DEC equipment is great,” says Abston, manager of systems development at USX Corp.’s Fairfield Works in Fairfield, Ala. “In fact, if I ever went into business for myself and had to set up a tracking system for a small steel mill, I wouldn’t even consider any other equipment.”

There’s a qualification in Abston’s recommendation though, and it has to do with size or, to be more precise, independence. What works beautifully for a single, self-contained manufacturing operation may not be acceptable in a large, multisite corporation where consistency is important and the majority is going in a different direction.

That’s what is happening within USX, and it is the reason why Abston suspects that the collection of VAXs and PDP-11s in place at the Fairfield Works will eventually be replaced by IBM equipment. Most of the mills within USX’s extensive system already use either IBM or Burroughs Corp. equipment for order and production tracking. In the interest of consistency, the corporation may soon standardize on IBM, he expects.

Right now, the Fairfield site uses a Burroughs 5900 to handle front-end communications between the two VAX-11/780s handling order planning and tracking and the corporation’s central IBM billing computers in Pittsburgh. Communications between the VAXs and the Burroughs and IBM equipment is accomplished through the use of a 2780 protocol. The VAXs in the business office are linked to VAXs and PDP-11s handling process control throughout the site’s several mills — a primary mill, a seamless sheet mill and a tin mill — through a Decnet Ethernet network.

The conversion, when it comes, will not be easy. For one thing, the Fairfield Works has developed about 3,000 programs for its DEC systems, covering every phase of the operation from order entry and production scheduling to metallurgical testing and shipment. But beyond that, Abston says, it will be hard to match the ease of operation of the DEC systems. “The PDP-11s were easy to program on,” he says. “In fact, that’s why we chose them to begin with.”

Still, Abston notes that the voice of experience talking. To transfers from other mills, who gained their experience on other systems, trying to adjust to the DEC equipment can be difficult and time-consuming. In a company like USX, where relocations are frequent, that kind of learning curve can become a major obstacle to operational efficiency.

WOODS HOLE OCEANOGRAPHIC INSTITUTION

Distributed computing with broadscale network access is the key concern these days at the Woods Hole Oceanographic Institution in Woods Hole, Mass. And that means something quite different from a local Ethernet network running Decnet.

“What we are trying to deal with now is an increasingly decentralized computing environment and the need to provide network facilities that will allow our scientists to collaborate with their colleagues around the country … or even the world,” says Skip Little, manager of the information processing and communications laboratory. That means establishing connections with external networks like MIT’s Protecon, which serves as a gateway to a Cray Research Inc. research computer at the National Center for Atmospheric Research in...
In terms of its file-sharing facilities, the cluster is "just beginning to bear fruit," according to Bob Groman, research specialist and computer systems supervisor, since — until a recent upgrade in the operating system — "it wasn't really anything more than a fast Decnet channel." Still, the future demand for centralized computing appears cloudy to both Groman and Little.

"I think," Groman says, "that there will always be some need for centralized computing capability. But eventually, the central facility may be just a central computing engine — perhaps a VAX or perhaps something else — that acts as a disk server and supports magnetic tape and graphics devices."

What is different now, Groman explains, is simply that scientific workstations and networks have come of age. "You can get a workstation now that is the equivalent of a VAX-11/780 and hook it into a network that will give it access to the power of a Cray." As users migrate to smaller dedicated systems with linkages to outside networks and computer power, they may choose to move to Microvax IIs. There are already seven of these, plus two Microvax IIs, operating within project groups. However, opinions about the VAX line are much more divided at the work-group level than they were in the centralized systems area.

In 1977, Groman recalls, when the institute was searching for a 32-bit machine to give it more computing power, the VAX-11/780 simply overwhelmed the competition. At the workstation level, the Microvax does not have such a clear advantage. In fact, Groman notes, there are many ardent fans of Sun Microsystems, Inc. and Apollo Computer, Inc, workstations among the user population.

The scale may also be tipped by the necessity of adapting to the TCP/IP protocols necessary for connection through the outside networks. Right now, it is possible to adapt VAXs to those protocols. Groman says, but as far as he knows, there's only one way to do it and that is to buy a software package from Wollongong Group, Inc., which costs about $18,000 per CPU.

Networking is now the name of the game, Little observes. Networks are now more important than the equipment on them. "DEC may continue to play a strong role, but only if its products are good enough to win over users."

**ROCKWELL INTERNATIONAL**

Illustrating the importance of third-party software in the choice of a hardware vendor, engineers at Rockwell International, Inc.'s automotive division use DEC minicomputers because "it is the only way they can keep up with the latest versions of their software applications.

According to Bill Craig, engineering systems manager, "We've gone from a Data General Corp. Eclipse to a Hewlett-Packard Co. 3000, and now we're using a PDP and a VAX. The two previous machines were good machines, but in the scientific engineering area, there's not that much that runs on them."

Most of all the software companies in this market will find it difficult to develop their applications on a DEC and then port it to other machines. If you want to be up with the most current revision level, the machine you have should be a DEC, because that's going to be the first revision that's released."

Based in Troy, Mich., Craig's department provides computer support for engineers in the automotive division, which manufactures components like axles and brakes for 18-wheel trucks, as well as parts for passenger cars and light trucks, including plastics, sunroofs and door latches. A $2 billion part of Rockwell's $11 billion business, the division also runs computer-aided design (CAD) operations in six remote plants. While using the Data General and Hewlett-Packard equipment, Craig's staff developed the majority of their applications in-house. To save time and effort, the company shifted to using off-the-shelf packages, which in turn led to the equipment switch.

"We wanted to change our philosophy from an attitude of writing software internally to buying packages that could already solve our problems. Rather than spend 18 months developing a system for testing or for a data base, we started buying third-party packages," Craig says.

This reasoning also applies to the kinds of DEC minicomputers used with-
in the department. For example, despite its dominance with DEC hardware, it is interesting that the VAX's software is not available for the VAX.

Acquired a year ago, the PDP runs a series of smaller clusters as well as for the VAX, and is used for a variety of different tasks. The PDP's software allows engineers to test various aspects of the hardware and to develop new designs. The PDP is also used for a variety of different tasks, including testing new designs and developing new products.

While the PDP is a powerful tool, it is important to note that it is not always the best choice for all tasks. For example, the PDP may not be the best choice for tasks that require a large amount of memory. In these cases, a different type of computer, such as a mainframe, may be a better choice.

Despite these limitations, the PDP remains an important tool for DEC and is likely to continue to be used in the future. As technology continues to evolve, it is likely that new types of computers will be developed that will be more suitable for different tasks.

**DECUS grows with DEC, attracts end users**

Clair Goldsmith is president of the DECUS and Visiting Computer Users Society's U.S. chapter. DECUS is an organization that promotes the use of DEC products.

The reason for DECUS's growth is that members have found it useful to share information and resources with other users. DECUS's goal is to promote the use of DEC products and to provide a forum for users to exchange ideas and experiences.

The organization is trying to attract more users by offering a variety of services, such as technical support, training, and a discussion forum. It is also looking for new members to help it grow.

**ATLASES STYLE RULE DIE**

The two-person data processing department at Atlantic Steel Rule Die, Inc. in Elkhart, Ind., is taking time out from a one- to three-year backlog of pending applications development work to rewrite existing applications.

“We have to do this to save memory,” says Deborah Scheneman, head of DP. With 46 users accessing the company’s VAX-11/780 for accounting, budgeting, order entry and order scheduling purposes, even the expanded memory (IBM by now) is no longer enough.

That is also the reason, Scheneman says, that the company is still making do with Version 3.7 of VMS. “We like to move to Version 4.0, but it takes about 20 more memory,” she says. “Right now, we just don’t have it.”

There is no obvious way to get extra memory capacity would be to trade up to a VAX-11/785, according to Scheneman, but Atlas does not want to implement what would be an interim solution at best — and an expensive one at that.

“We don’t want to invest in that all right now, but we want to work for the future.”

Is there still a weakness of DEC in users’ minds? Goldsmith: “The easiest weakness we determined is that they had a good product set but didn’t have — and may still not have — name recognition outside Digital. Consequently, you meet a lot of people in upper-middle and upper management who have never heard of Digital. To some extent, Digital is doing so well in the last 17 months that it has turned some of that around. But Digital has never made a real strong effort to be a nationally recognized company. It is not as visible as IBM, for instance.”

Would your job be easier if DEC advertised more, on TV, for instance? Goldsmith: “It would be to Digital’s advantage, but we think that is not the best name recognition strategy.”

What else does DEC need to improve — product planning, for instance? You bought three Decsystem-20s, why? Goldsmith: “That’s right. One is happy about that situation because you don’t have to go through a lot of new programming and building systems around that architecture. However, we are in the process of changing that. Things we’ve moved some jobs over, and of the networking capabilities, we can have a data base existing on the VAX which can be accessed off of the VAX.

Yes, it is an expense to go through that migration, but I think it has turned some of that around. But Digital has never made a real strong effort to be a nationally recognized company. It is not as visible as IBM, for instance.”

For how long do you expect to use the 20s? Goldsmith: “We would like to phase them out, but as the price of oil comes down, our ability to do some things gets curtailed.”
NIKE

Nike, Inc. of Beaverton, Ore., is divesting itself of its fifth Decsystem-2060s and switching to IBM. Dave Thomson, technical services manager at the athletic products company, will be sorry to see the last of the old machines go, even though their departure has been inevitable since before the last three were purchased.

"I'll always remember 2060s and 200s fondly," Thomson says. If for no other reason, he regrets their loss because they made some parts of his own job so much easier. IBM equipment, like the 3090 that Nike is moving to, requires more work. "It takes people who really know what they are doing just to install software on the IBM," he says. "From a technical services point of view, the volume of work involved is just much greater."

If there had been a follow-up system in the 36-bit line, one that would have allowed Nike to upgrade its operations, the company might have stayed with DEC, Thomson says. But after the manufacturer announced the discontinuation of that product line and switched its emphasis to the VAX, there just was not reason enough for making the extra effort it would have taken to stay with DEC.

Nike did purchase three Decsystem 2060s after the announcement of planned obsolescence, but only to provide necessary capacity while it considered its options. Obviously, that was only a stopgap measure. "It is very difficult to run a business on six separate machines," Thomson says.

The one thing that might have convinced the company to cast its lot with the VAX line, according to Thomson, would have been a ready-made software base that included both financial and warehouse management applications with which they were already familiar. In both the DEC and IBM worlds for an order processing and inventory system that could achieve the necessity of having to write its own programs.

IBM had something in the edge in the financial area, Thomson recalls. "DEC was definitely making some progress, but IBM already had quite a few packages available in that category." Even so, he says, order management was considered such a priority that a really good product of that type would have been more than enough to tip the balance.

As it turned out, the search narrowed to one package for each manufacturer's equipment, and both were discarded as inadequate. When Nike realized it would have to develop its software from scratch, the decision tilted toward IBM.

"If that package had been there, we would have stuck with DEC," Thomson says, "but when it came down to writing everything ourselves, it just seemed like it would be a lot faster on IBM."

Nike acquired IBM 4381 for the development work a year ago, and, at the rate it is progressing with applications being written using IBM's DB2 cross-system product, its X-generation language and various programming development tools, Thomson does not expect it will be long before the Decsystem-20s roll out the door.

"They're not going to see them go," he says, "but even more than that, I'm sorry to see the Decsystem-20s and -200s disappear from the market. The VAX is a very good hardware box, but those were greater user systems."

MA-COM

Plagued by repeated head failures on its DEC-based, MA-COM, a San Diego defense electronics company that produces modern and satellite communications equipment, recently replaced some of the RA-81 disk controllers on its DEC VAX systems with a product in the line selected by Systems Industries.

The move was not undertaken lightly, says Ceci Hawkins, manager of data base administration, who worked directly with Systems Industries. Hawkins explains, "It is very difficult to run machines," he says, "but even more so in the financial area, where we need the most sort of handling the data base."

"It is Hawkins' impression that the disk controller has now been re-engineered and stabilized, and is compatible with the alternative. In fact, he says, the System Industries disk controller is the same controller that DEC has a better concept of the problem in terms of replacing application, according to Hawkins. "Their own management of the operating system is really a package that takes care of everything. When a disk failure happens, it can easily take me all day to figure out what to do," Hawkins explains. "Just to recover the data base."

"The Disk controller is now, because he is facing the task of reorganizing and migrating a giant data base that is now running on the company's fifth Decsystem 2060s. Actually, this process will probably take two stages. First, the data base must be logically divided among the Decsystem-20s as the company effects a procedural separation among units handling government development, commercial production, and support functions. Later, as the Decsystem-20s are replaced by VAX 8600s, the data base will be logically divided again for the VAX environment.

In one sense, Hawkins welcomes the challenge of being over to the VAXs gives us a chance to start fresh," he says. "After five years of more or less haphazard growth, the systems here really need to be defined.

There is one aspect, however, in which the Decsystem-20s were found to be superior to VAXs. "VMS DBMS develop-

er, Hawkins says, "has a tendency to try to solve applications problems with systems solutions." In the interest of security, for example, IBM DBMS developers have disallowed direct key access for extraction of selected records across a number of files. "On the Decsys-

tem-20s, we could extract the particular records we wanted, sort them and replace them. On the VAXs, we can't just pull out the pieces we want — we have to extract the whole file."

UNIVERSITY OF TEXAS

There was a time when the Health Science Center at the University of Texas in San An-
tonio relied primarily on remote job entry terminal con-
nexions to a variety of IBM systems for administrative computing. When Rolumn Bux-
ton, manager of administrative systems, systems here really need to be defined.

Two factors are primarily re-
sponsible for the center's tilt toward DEC. For one thing, Buxton says, application development is easier on DEC equipment than on comparable sys-

From the technical services point of view, the volume of work involved is just much greater."
STANDARD OIL

A Vaxcluster can be a real performance booster, according to Dennis Tellerico, group manager for computer services at Standard Oil Co.'s research and development center in Warrensville, Ohio. But keeping one tuned to involve more than most purchasers bargain for.

"If you're going to get into the cluster business," Tellerico says, "you'd better make sure that you either have enough qualified staff to help you support it or are willing to spend some big bucks on DEC consulting services."

Tellerico's staff includes four systems programmers, two of whom have been spending substantial time on system tuning since the center activated its cluster last July, so he has resorted to calling in a DEC specialist only once. Unless you are dealing with a fairly fixed environment, he says, the adjustments required to maintain system performance when memory is upgraded or users are added call for either expert assistance or a high tolerance for trial and error.

The problem, Tellerico explains, is that cluster technology is so new that there hasn't been time to develop good documentation or maintenance utilities. "It would be nice to have some more sophisticated tools available," he says. "Unfortunately, there isn't really a manual you can turn to. DEC does have a tool called Autogen that is supposed to give you a good start on checking performance, but ... well, although it does give you a start, I'm not sure I'd say it's a good start."

In all fairness, Tellerico notes, it is not really possible, when you are writing a program like Autogen, to anticipate how people are going to be implementing the systems. VMS systems in general and clustered VMS systems in particular are known to take up a lot of memory, so upgrades are to be expected. But most cluster installations are probably not quite as demanding as the research and development center at Standard Oil.

The cluster there consists of one VAX-11/750, two VAX-11/785s, two VAX 8600s and one VAX 8800 with four HSC50 disk controllers and 20 RA81 disk drives with a capacity of 456M bytes apiece. The cluster is used for laboratories in providing technical support and DEC consulting services.

In implementing the cluster, Tellerico says, the center was able to merge four discrete VAX systems, eliminating the necessity of installing and maintaining multiple versions of every software product.

Equally important, he says, is that the Vaxcluster ensures a more consistent level of service. An interactive load-balancing facility directs traffic during surges in user demand so that there is no degradation in response time.

BRANDEIS

To meet the demands of a wide spectrum of academic research applications, as well as standard administrative functions, Brandeis University last year chose DEC's Vaxcluster over more traditional IBM and Control Data Corp. number crunchers.

Utilizing a VAX 8600, combined with two VAX-11/785s, the university's computer center provides the processing power necessary to meet the diverse applications in a single operating environment, says Ira Solomon, assistant vice-president for information services. "We looked at Control Data, IBM and DEC. Control Data did not have a satisfactory administrative package at that time, but the number crunching was there. So it became a choice between IBM and DEC," Solomon says.

IBM equipment would require IBM's VM operating system to handle the faculty's research demands, while the administrative applications were available only in IBM's MVS and CICS.

"I was faced with: Could I afford to support two operating systems?" Solomon says. "If I had given the academic community MVS, they would have turled and feathered me and righteously so. I knew CICS would eventually come to VM, but when?"

Rather than wait for IBM to combine VM and MVS, Solomon chose the Vaxcluster and its VMS operating system.

CONTINUED ON NEXT PAGE
"It wasn't a question of a bigger bang for the buck, because we were offered educational discounts from both vendors that a commercial buyer would never see. It came down to the cost of ownership," Solomon says. In addition, Solomon says he feels the Vaxcluster will be easier to upgrade than a comparable collection of IBM systems would be.

The university is also installing a new data network, which is based on Ethernet, and there was more support on the DEC side for such an installation than on the IBM side, Solomon adds.

DEC understands about networks. With IBM, I get the feeling that they do not have anything to offer once you get beyond 3270-type hardware," he says.

Other equipment at Brandeis includes a Decsystem-20 series computer, about 200 IBM Personal Computers — many used in terminal mode — a half dozen DEC Rainbow personal computers as well as approximately 110 DEC VT220 terminals.

The 8600 runs research applications ranging from radio astronomy to protein structure analysis.

One of the 11/785s handles administrative processing, such as financial aid records and accounting, while the other unit runs word processing applications.

Administrative software is supplied by Information Associates, Inc., a Rochester, N.Y.-based firm specializing in university administrative packages.

Academic applications are provided by statistical packages — such as SAS Institute, Inc.'s SAS — and by specialized radio astronomy or scientific programs.

A fourth-generation data base from Information Builders, Inc. called Focus, as well as various graphics applications, are also available on the DEC system.

Prior to acquiring the DEC equipment, Brandeis used a Data General Corp. MV/8000 for its administrative applications, but the university felt that the system did not meet its processing needs.

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BEECHAM PRODUCTS

Spurning the IBM environment prevalent at corporate headquarters, researchers at Beecham Products, Inc.'s laboratory selected a DEC Microvax II to be the hub of their computer configuration.

"Primarily, it was the ease of operation that caused us to go to a different vendor," says Tom McGrath, Beecham's computer scientist. "Our MIS department is very business-oriented. We are a scientific site, and there was a lack of understanding of what our needs were. It was also difficult to get the IBM mainframe to run our scientific software.

"In addition, the response time on the mainframe was just killing us. It was just terrible. We would have to wait for jobs to run, because we're a remote site."

Headquartered in Piscataway, N.J., Beecham Products manufactures household products and over-the-counter drugs. Primary data processing is provided by an IBM 3083, located at headquarters. The research laboratory, in Piscataway, N.J., runs the Microvax II as well as several DEC Professional 350 desktop computers.

The Professionals are centrally located on two floors of the research laboratory building. They are connected by Decnet to the Microvax II and are operated at staggered intervals by about 50 users.

Installed in April, the Microvax II runs the fourth-generation data base package from
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CONTINUED FROM PAGE 67
Not only does the Western Union connection solve the protocol problem between the Prime and DEC equip-
ment, Gatter says, it winds up being a very economical means for communi-
cating with remote locations.

"I figure that it saves us what would be about $30,000 a month in access
charges, if we had to be on-line all the
time," Gatter says. "This way, we are
only billed per minute of logged-on
time.

The central computer, which picks up
messages amounting to between 8,000
and 10,000 transactions a day, obviously accumulates substantial logon
time, according to Gatter, but usually
the process does not take longer than
five or 10 minutes from each of the
offices. There is only one problem on the
horizon for Public Finance Service, ac-
cording to Gatter, and that is that some
of the branches are beginning to out-
grow their Rainbows. "We really need
larger, multuser-type systems in four or
five of the offices," he says.

Gatter is seriously considering a mi-
gration to Microvax Ils for these offices,
since, he says, "It seems like a good
value in terms of price and perfor-
mance."

Still, it's not a move that he enjoys
contemplating because of the amount of
work that will be involved in adapting
the existing in-house software to both a
different operating system and a mul-
tuser environment.

"There's no getting around it," he
says, "it would be a major overhaul.
Once you get into the VAX line, I'm told
migration is fairly easy. But from where
we stand, it would be a very big job."
In addition, the observatory's equipment is connected to a Cryo Research, Inc. supercomputer at Digital Productions, Inc. in a project supported by the National Science Foundation. An experiment to see if AIPS can run on the Cryo, the connection may give the observatory more processing power to obtain better astronomical images.

ARKANSAS GAZETTE

The Arkansas Gazette Co. in Little Rock, Ark., publisher of "the oldest newspaper west of the Mississippi," has been a DEC shop from end to end since the fall of 1983, when it replaced the IBM 3400 and 3800 machines that had been running the business office with the first of two VAX-11/780s. The decision had little to do with brand loyalty, according to Riley Suit, manager of information systems. DEC moved in on the strength of its third-party software backing. "All of the software that was running on the IBM equipment was internally developed," Suit says, and "it was becoming more and more expensive to maintain as the applications continued to grow." With nine or 10 DP staff members already dedicated to program development and maintenance and with substantial expansions projected, the firm decided to look for packaged software.

Very little, if any, newspaper management software existed for IBM mainframes, Suit says. DEC, on the other hand, had gained an early lead in the publishing industry, and software providers had followed up with business packages. "There's probably more newspaper-specific software written for DEC equipment than for any other kind of system," Suit says.

The package that the company chose to handle front-office functions — including accounting, circulation, advertising layouts and personnel records — was produced by Collier-Jackson, Inc. in a project sponsored by the National Science Foundation. An executive specialist, according to the promoter, was dedicated to program development and maintenance.

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CIRCLE READER SERVICE NUMBER 40
ed to the business systems, now there is substantial improvement, according to Suit. Where once there were nine support people dedicated to the business systems, now there are three.

With the installation of a second VAX-11/780 a year and a half ago, linked to the first via DEC's Ethernet local-area network (LAN), a significant hardware benefit also emerged. "DEC's connectability has already given us an important measure of security," Suit says. "The way we have the equipment configured, we can, if necessary, switch all of the work over to one machine and get it out without interruption." Two linked VAXs cannot quite match the fault tolerance of a system like Tandem Computers, Inc.'s, he says, "but we are effectively using them that way."

To date, the Ethernet LAN has only been used to connect the two VAX-11/780s to each other and to two PDP-11/70s in the newsroom running DEC's Classified Management System software as well as its Test Management System package. The next step, Suit says, is to extend the link to the 50 or 60 VT100 and VT220 terminals that are currently tied into the VAXs with conventional cabling.

"We're moving slowly," he explains, "because we have to consider the availability of technical staff. Newspapers are somewhat unique in that they tend to do a lot of their own hardware maintenance, and we're no exception."

J. R. SIMPLOT

The J. R. Simplot Co., a privately held agribusiness in Boise, Idaho, has attempted some ambitious things with its 225 DEC Rainbows, using them for inventory control, for running soil tests in its retail fertilizer outlets and for front-end communications with Wang Laboratories, Inc. word processors and Compugraphic Corp. typesetting equipment.

But most likely, nothing Simplot has ever done with this equipment has been harder, says microcomputer specialist Brian Orr. Brian is on the ongoing task of trying to find software to run on it.

"The machine itself is very well designed, but gets next to no support from DEC," Orr says. He points to the difficulty of obtaining updates on popular commercial packages like Ashton-Tate's Dbase III and Lotus Development Corp.'s 1-2-3. "We're still working with Version 1.0 of Dbase III," he says, "and although Version 2.0 of Lotus has been available on the IBM Personal Computer for over a year now, we've only recently managed to get DEC to promise an upgrade for the Rainbow by sometime this fall."

What is even more frustrating than being kept waiting for — or even deprived altogether of — third-party software products developed for IBM-compatible personal computers, Orr says, is being snubbed by DEC on one of its own developments. "What really froze me," he explains, "was to have DEC come out with a version of Decnet for the IBM PC before it produced a version for the Rainbow."

F or a company with two Decsystem-20s, one VAX 6600, one VAX-11/780, two VAX-11/750s and more than 200 Rainbows to be placed in the position of having fewer micro-to-mainframe communications options than if it had IBM PCs was the final straw, Orr says. Simplot decided to pursue a gradual shift to the AT&T 6300 at the microcomputer level.

AT&T seemed to field a service organization capable of providing support equivalent to what the company had been getting from DEC, according to Orr. Even more important in light of past experience, he adds, "As far as we can tell, the 6300 is almost 100% IBM compatible, which means that we can run any programs for IBM and IBM-compatible machines straight from the box."

Orr, who is an active member of the PC special interest group of the Digital Equipment Computer Users Society, has listened with interest to preannouncements talk about DEC's Vaxmate PC product. However, nothing that either Orr or his boss, who attended a nondisclosure meeting held by DEC concerning the product, heard convinces them to change their minds about moving to the 6300. "[Vaxmate] is supposed to be very fast in communication with a VAX," Orr says, "but we still think that PCs with Ethernet boards look better."

S impplot is also concerned about expandability in its stand-alone machines. According to Orr, Vaxmate is intended to take computing in another direction. "There are only going to be two card slots in the new machine," he says, and "if you want to add a hard disk, you will have to buy a $2,500 expansion box. What I think DEC is trying to do is move away from the concept of stand-alone computing and push for the use of the mainframe as a memory device."

That is not only an expensive way to go, Orr says, it is also antithetical to the way Simplot wants to use PC-level equipment.
BANKERS TRUST

For Bankers Trust Co. in New York, one of the country's 10 largest financial institutions, there were two conditions of equipment that fit the bill for all data processing needs: IBM and DEC.

With IBM dominating the host environment, Bankers Trust chose DEC PDP-11/70s and a wide range of VAX products. This provided the processing requirements and provide a high degree of systems connectivity.

"VAX," says Stanley Rose, vice-president for distributed processing technical support. "We were looking for a vendor with a strong presence in those sites and one that had a track record. In 1976, when we chose the PDP-11/70 was almost the system we were looking for, it was a money saver.

Decisions were made for IBM and DEC equipment appears as a Decnet node to the IBM complex. DEC's customers. With complex networking systems and a spate of new machines invading customer sites, software people interact on the systems reads like a DEC software catalog. Rose says, "The bank's goal is to use DEC products where available. We feel that it's better in the long run to avoid niche products that may supply an expedient solution today but in the long run do not integrate well with the other products."

Bankers Trust runs its own communications backbone based on an X.25 network, and the company uses DEC's Packet Switch Interconnect software to interconnect the systems.

Money transfer is one of two major applications on the systems. This electronic funds transfer system forces Bankers Trust to the Federal Reserve Bank clearinghouse and several wire services. The system has handled on-line transfers in excess of $120 billion a day.

The front end to the money transfer system is a cash management system, called Cash Connector, which allows corporate financial officers to obtain on-line access to their accounts and to initiate activities on-line. For example, the officers can initiate a money transfer or move money from one account into another. The system enables them to check on their balances and determine whether funds have been transferred into or out of their accounts.

A second major application is used by 300 traders in the bank's Resources Management Department. This application allows on-line processing of security, bond and foreign exchange transactions.

Online servicing of the equipment is managed by DEC's 12 centers. A diagnostic data base automatically examines the problem and recommends a solution or dispatches a technician to the site.

The remote diagnostic centers allow DEC to concentrate resources in central locations rather than spread them worldwide. DEC service people also travel to customer sites, but the number of them will exceed for the first time the number solved on customer sites. DEC now employs several thousand service experts at its centers and plans to invest more than $1 billion in remote services over the next five years.

"We operate on an average speed per answer basis," Grainger explains. "The goal is get the customer a correct answer in less than 30 seconds. We've actually been coming in at 20 seconds."

For 15 years, according to Grainger, "We've been using an evaluation form sent to every DEC vendor. DEC has received the highest mark consistently, when, on a zero to 10 scale, the company consistently scored seven. To date, no other vendor has ever received an average mark of 8.8, rating 'supported by other independent data.'"

For Grainger, the challenge is to maintain or improve the high marks. "Satisfied customers come back again and again," he says.

— Glenn Rifkin

BECHTEL

At Bechtel Corp.'s Western Power Corp. division, which handles power plant construction projects in the West, a freshly acquired VAX is at the core of a computer-aided engineering environment. Testing when new product announcements from DEC took the shine off the purchase.

"We had only been using the cluster for three or four months when I saw a DEC ad for a new cluster controller, the HSC 70, that is supposed to be twice as fast as the HSC 56 we had just purchased," says Malcolm Chou, production services manager.

Recognizing that the new releases made the cluster purchased the previous summer if not exactly obsolete then certainly a distant second best, Chou went to DEC, advertisement in hand, and inquired about the possibility of a trade-in.

"They said, 'No,' they would continue to support the equipment that we had purchased, but they weren't offering any trades," Chou recalls. Then, he says, the vendor suggested that Western Power might want to consider upgrading to the new equipment. Chou understands that "business is business, but it is natural for a vendor to want to move existing stocks before starting to sell products that have not yet rolled out the door."

"There wasn't so much of a rush to implement a cluster that the company couldn't have waited until April to buy, Chou says. The only absolute need at that time was for a VAX-11/780 to be used in some of the burden of an existing VAX-11/780 that was beginning to experience serious performance degradation. "We could have ordered the 11/750 then," Chou says. "And waited on the cluster. If they had just told us, we would have listened."

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Bankers Trust Co.
INTERNATIONAL KINGS TABLE

International Kings Table, Inc., headquartered in Eugene, Wash., is trimming time and costs associated with cash management for its chain of 80 buffet restaurants. The tools it is using include an automated system consisting of the VTR 6050 terminals with telephone interface from Votan, Inc., and a PDP-11/780 as the main engine for medium-to-large organizations.

The primary reason we kept it," Whatley says, "is CW's newest publication could replace the voice transactions on our system that we had just spent part of 10 times better," according to Whatley, "that Dectalk didn't handle the decoding of the Touch-Tones, so we didn't think it would work very well for daily business. But then," he adds, "in the last catalog I saw, there was a caption indicating that it would be a place for Dectalk in the mix."

McKillan, who has been with the organization reaching the Australian market. This bi-monthly publication covers telecommunication, office communications and network management, and has a circulation of 10,000.

Australian PC World is Australia's only newspaper dedicated to IBM standard personal computing. 12,000 IBM PC owners and potential buyers read Australian PC World each month.

Australian Macworld is Australia's magazine for the Macintosh user community. It is published bi-monthly and has a circulation of 12,000.

Communications World is CW's newest publication.
DEC shifts marketing focus

Marketing has long been an enigma at DEC. Consultants and the media constantly bemoan the company's lack of marketing savvy. Engineers, they say, do not understand marketing, and selling outside of the scientific/engineering wellspring of DEC customers is a tough, even impossible, task for the company.

DEC officials, ever defensive about its label, counter that the company cannot not very well have reached its status as No. 2 in the industry without a solid marketing effort. Ken Olsen says that the discrepancy in viewpoint is a matter of perspective.

"The ultimate marketer, the great success in marketing in this world, is to sell a product the customer doesn't need or want and which is less than the best," Olsen says. "And when people say we're not marketing oriented, they really mean that. And we don't have that view at all. So in that area, I will always be naive in the eyes of the world."

In fact, insiders at DEC mirror the outside view. Those on the engineering side believe the company has done a fantastic marketing job, while the marketing and sales people feel that a change in focus was long overdue.

Robert Hughes, vice-president of industry services marketing, is currently overseeing that change. The company is refocusing its marketing and sales efforts toward specific vertical markets, a shift away from its product-oriented marketing of the past.

Hughes is quick to point out that the shift in focus is nothing more than a logical evolution of a company getting more and more customer oriented.

"I don't believe the company has done very selective about who it is hiring. It's not oversimplified; it is possible that political lobbying or outside pressure. Sources within the company observe that Hughes' view may be oversimplified, because many MIS executives hold the belief that DEC is simply a smaller version of Big Blue. "But you talk to an old-line MIS manager in a company that's hierarchically operated, and they don't understand. To them, the IBM approach is the only one you can understand. To them, the IBM approach is the only one you can understand."

Hughes says that the industry marketing approach will not only work but be transparent to the customer. He is personally frustrated that the installation of the philosophy has taken so long, but he is confident that its effect will be felt immediately. He is also convinced that in five years, the concept can be scrapped.

"By then, if it works, we can go back to the way we were organized, because people will understand customers better, and we will have such a philosophy of business that you won't need this focus," he insists.

— Glenn Rifkin

Robert Hughes
WALKER ASSOCIATES

In the last year, Walker Associates, Inc. of Los Angeles, an architecture and interior design firm, has spent a lot of time patching and shoring up an unsupported computer-aided drafting and design (CADD) system.

Three years ago, the firm invested about $250,000 in the system, which consists of a VAX-11/750, DEC VT100 alphanumeric terminals, Lexidata Corp. graphics terminals and a software package called Tri-CAD, produced by a vendor of the same name, Tri-CAD, Inc., in Milpitas, Calif. - a vendor that no longer exists.

Leckie, director of information systems. "Tri-CAD was acquired by another company called Technology Corp.," Leckie says, "and that company decided it would discontinue the DEC version and stop supporting it.

Walker has been reduced, therefore, to waiting and watching the market and "trying to use the current system, essentially, until it drops," according to Leckie.

As a conservation measure, against a day when "the software system might collapse in a smoking heap," Leckie has installed an IBM Personal Computer-based CADD system, Autocad, made by Autodesk, Inc., of Sausalito, Calif.

It took about three man-months of programming effort to produce software that would translate and transfer design data from the VAX-11/750 to the Autocad system, he says, and the result is a partial solution at best.

Still, any backup is welcome, since without source code Leckie cannot really patch up Tri-CAD in the traditional sense.

"I can't solve anything from a programming standpoint," he says. "I have to try to patch up jobs from the data side, figuring out alternative ways of recording information or information, without a bug develops in the middle of a session, deleting everything and rebooting.

WIENER ENTERPRISE

Wiener Enterprise, Inc., located in Harvard, La., a suburb of New Orleans, is holding firm with its Decsystem-20, despite high maintenance costs and a growing inventory of in-house programs that will eventually need to be converted.

"I know that in some ways we are digging ourselves a hole here," says Steve Attaya, director of information systems for the diversified retailer of menswear, footwear and popularly priced apparel.

According to Attaya, the more code we write on this system, the more we're going to have to convert, and we're already up to about 50 active programs.

But, Attaya explains, although the company considered replacing its 1977-vintage equipment in 1983, when the Decsystem-20 was announced it would be discontinuing the Decsystem-20, it was hard to justify such an investment at a time when business was suffering from an economic downturn.

"In 1982 and 1983, we lost money and went from 148 stores down to 81," he says.

Four states in which Wiener stores are located - Texas, Louisiana, Arkansas and Mississippi - are among the most severely affected by oil price drops.

Although business has improved, with the number of stores climbing back to 115 and net earnings reaching just under $2 million last year on sales of $58 million, Attaya still maintains a wait-and-see position. When the company began to run out of memory and experienced response-time erosion late last year, for example, it chose to upgrade rather than invest in new equipment.

At one time or another over the past couple of years, Attaya says, he has looked at equipment from Burroughs Corp., Xerox Corp. and Honeywell, Inc., as well as IBM's 370. Nothing, so far, has priced him to take the step.

"One of the things that would probably make us move," Attaya says, "would be if someone came out with a software package that fit this business.

There are packages for clothing manufacturers and packages for small retailers, but so far nothing - at least in an affordable price range - written for a retailer of Wiener's size.

If the truth be told, Attaya is not all that anxious to make a switch from the existing equipment, although he knows such an investment at a time when the business was suffering from an economic downturn.

"The Decsystem-20 has always been great for development," he says. "It has a wonderful operating system in terms of user friendliness, which has meant that we've been able to operate with a significantly reduced staff in terms of both quantity and quality.

"In fact, Attaya says, the only thing preventing him from simply hooking another Decsystem-20 to the original and staying put is the expectation of escalating maintenance costs.

"At the time of its announcement, DEC said it wouldn't change its maintenance prices for three years, and that's just about where we are now.

STANFORD

At Stanford University's Low Overhead Time-Sharing System (LOTS) Computer Facility in Stanford, Calif., the task of supporting the experimental computer-aiding includes providing users with continuing access to an operating system whose software is to be replaced.

This is why the facility chose not to migrate entirely from the 36-bit world of DEC's technology to the 32-bit environment, and instead to discontinue the Decsystem-20 line, according to the facility's director, Ralph Gorin.

"We find ourselves in a position that provides users with access to 36-bit machines for as long as they want it.

This demand is expected to outstrip even the most asocial social scientists seek out the larger capacity of the center's year-round systems for the diversified retailer of Wiener's size.

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T here is more going on at LOTS than this holding action, however. The facility is also creating a diverse networked environment. The various VAX systems running University of California at Berkeley Unix 4.2, the IBM 4381 running VM and a collection of a dozen or more types of workstations from IBM, Sun Microsystems Inc. and MicroAge all tie into each other and to remote networks via an Ethernet network supporting the Transmission Control Protocol/Internet Protocol (TCP/IP).

Although TCP/IP is a complex protocol, it, was Gorin, says, absolutely critical to achieving the kind of widespread connectivity essential for LOTS users. Beside the selection of protocol, the choice of network technology pales in insignificance, he says. "TCP/IP," he explains, "gives us access to the marvelously well-integrated World of Internet and TCP/IP," that disparity can be a bit of a problem, Gorin says, but Systems Concepts is working on the operating system to resolve the gap.
Europe pioneers reorganization

BY AMIEL KORNEL
European Bureau Chief

GENEVA — DEC's trans-Atlantic offensive, which started a century ago, has yielded much more than additional revenue for the firm. Its flourishing European operations are prompting DEC to refine its global corporate strategy and organizational policy.

Invigorated by a 1982 corporate restructuring and the development of products that are well-tuned to European needs, DEC International (Europe) is looking stronger than most U.S. companies overseas.

"All the factors seem to have gone right for the last three years," says Peter Tobias, high-tech specialist at BSI Management Consultants in London.

"As of Oct. 27, Big Bang is the name given to the official deregulation of London's stock market. The effect so far has been to encourage larger financial institutions, in particular the U.S. banks, to buy British stock brokers in the hopes of grabbing a slice of the new, enlarged market expected after October.

Estimates of the money spent over the past 18 months on acquiring new systems to help speed trading in what is known as the "post-big-bang environment" range from $1.5 billion to $15 billion.

At the epicenter of the Big Bang will be the London Stock Exchange; at the center of the exchange will be DEC computers.

The exchange is developing a major system to go on-line in October, which it calls Stock Exchange Automated Quotations (SEAQ). SEAQ is part of the exchange's thrust to become one of the major players in the current move toward global stock trading. It is spending approximately $120 million on getting up with a mixture of systems from vendors that include Modcomp Systems, Data General Corp. and IBM, as well as DEC.

Basically, SEAQ was designed to enable the 30 market makers that will be trading stocks after the Big Bang to report current prices for those stocks to the London Stock Exchange. The exchange will then be able to release that information to other market makers and information providers like Reuters, Quotron and Telerate. In the long run, it will be those firms that pay for the information in the form of tariffs for information received.

Nick Newman is in charge of SEAQ and the exchange's 100-confidence Information Services Division project team.

"The deal with the government was to stop minimum commission rates — what the say layman might call price fixing," Newman says. "But it has become a catalyst for total change. It has opened the whole market, and it's unthinkable for most of us if it doesn't work."

Newman's department is spending approximately $6 million on extra equipment, most of it from DEC, and an additional $11 million on people and software.

In addition to SEAQ, the money is also being spent on upgrading the exchange's other information services, Epic and Topic.

Epic's twin PFD-11/785s are being upgraded to VAX 8650. A further upgrade is being made to the buffer that links transmission vendors to Epic; that machine is moving up from an 11/750 to an 11/785.

Another problem Newman has had to face is keeping his staff, given the upward spiral of DP salaries in London's financial community. DEC experience is at a premium because many institutions are using DEC machines for their vital communications and transaction systems.

At the end of last year, the exchange took the drastic measure of circulating a hands-off-our-DP-staff memo among member firms and offering its staff financial incentives to stay.

As for service, Newman is fairly happy with DEC UK. "We're not absolutely satisfied, but it's much better for transaction processing." He rates DEC's support service as the yardstick by which he measures other manufacturers.

However, he is not slow to chastise the company on its sales and marketing efforts, particularly in the financial field. As he says, selling to cookie manufacturers involves a different style than selling to a bank.

DEC at center of Big Bang

BY STEPHEN ARKELL
Computer News

LONDON — DEC computers will be at the epicenter of the "Big Bang," expected to rock London's financial community on Oct. 27.

Big Bang is the name given to the official deregulation of London's stock market. The effect so far has been to encourage larger financial institutions, in particular the U.S. banks, to buy British stock brokers in the hopes of grabbing a slice of the new, enlarged market expected after October.

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Fast growth, slow profit

BY KNUT IVAR SKEID
Computerworld Norge

OSLO — DEC's subsidiary in Norway is the company's second fastest growing unit in Europe, behind the subsidiary in Spain. For the 1986 fiscal year, revenue grew by 43%, rising to $54.5 million.

Although this performance makes DEC the fastest growing minicomputer vendor in Norway, profits remain poor. For 1986, earnings were at only $306,000, a profit margin of less than 1% of sales. This figure was better than the previous year, when the company was $931,000 into the red.

As of the end of June, Digital Equipment Corp. A/S has 291 employees. It maintains no production or research facilities in the country. Traditionally, DEC in Norway has been synonymous with scientific and educational environments as well as with the Norwegian oil industry in the North Sea.

The latter might be one of the biggest threats to the firm's continued fast growth because the recent fall in oil prices has almost halted capital investments in that industry. Although DEC Norway sources say they have not yet been affected by the oil industry slowdown, others see a difficult road ahead.

Per Holte Rosenkilde, manager of market research firm International Data Corp. in Norway, says, "I think DEC is facing a hard time in the next months if the oil prices continue to be as low as today."

"The firm's technical image has made it difficult for DEC Norway to penetrate the office automation market, even though the firm has directed a great deal of resources into this area, including a Norwegian translation of All-In-1."

Another threat comes from Norsk Data A/S, Norway's leading computer vendor. Norsk Data has been very successful in northern Europe in recent years, placing second in the Norwegian market after IBM and posting about three times the revenue of DEC.

"Our strength, compared with DEC in Norway, comes from our office automation solutions," says Bjorn Boberg, marketing manager for Norsk Data.

"We rarely meet competition from DEC in this area, but we meet them more often in the technical market."

External R&D signs up scientists

BY PETER FAERBINGER
Computerwelt Oesterreich

VIENNA — The need to look toward the future and anticipate new developments in information technology is one of the most important responsibilities of every high-tech company.

DEC is aware of the need to respond to these demands. "We must have new technology at our fingertips in order to do so," says DEC management.

European research institutions and universities are a major source of knowledge and expertise. That is why DEC has contacted them for assistance in creating the European External Research Program (EERP).

EERP's purpose is to promote the exchange of technical expertise among DEC and European research organizations by identifying critical areas of potential interest to the company. Research projects will not be actively solicited without signs of prior interest from one of DEC's research and development groups.

The exchange of information broadens DEC's research focus and helps it gain additional knowledge, perspective and product-oriented results, a DEC official explains.

In return, the external research organization gets DEC support in the form of equipment allowances. The size of the overall grant is not fixed, and any research institution may participate in the program.

Since one of the objectives is to maintain established contacts, institutions that have used DEC equipment and developed a certain level of expertise in specific fields of interest will be at an advantage.

The research results can be used by DEC free of charge, but the copyright of the work remains in the hands of the author or institution.

DEC is not authorized to sell the product to customers, and the research organization may still market the product or give it away.

So the product itself is not the reason for EERP's existence. Very often, the value of research work will not be visible for many years, nor is return on investment immediately known.

The key element in the program is the proposal for research work on a specific topic. Upon receipt of a proposal from an institution, the next step is to find a DEC sponsor. The sponsor will directly benefit from the research results and must oversee the project's management.

In Austria, EERP is responsible for relationship with DEC — first with DEC U.S., which was building the Micro-Vax II chip, and now through the EERP and DEC Vienna.

Selberherr helped develop the Micro-Vax II chip through his simulation program dealing with semiconductor device modeling, process modeling for semiconductor device fabrication, circuit simulation, analysis of integrated circuit interconnect capacitances, computer-aided design (CAD) for integrated and hybrid circuits and CAD for surface acoustic wave devices.

DEC's subsidiary in Norway is the company's second fastest growing unit in Europe.
Success strains
Swiss operation

BY MARTIN MEIER
Computerworld Schweiz

ZURICH — The high quality of its
products has made DEC successful in
Switzerland, but the firm is having trou-
ble keeping up with its own rapid
growth. The relationship with OEMs
and value-added resellers (VAR) has
been strained at times, and finding suf-
ficient numbers of qualified personnel
is a continuing headache.

In fiscal 1986, which ended June 30,
DEC Switzerland posted revenue of
$188 million. Although its 1982-1986
annual growth rate of 23% is well above
the industry average, it represents a
deceleration in growth compared with
the boom years of 1984 and 1985.

DEC Switzerland's revenue in fiscal
1986 increased 31%, and in 1985, sales
grew 50%, placing DEC among Switzer-
land's 250 biggest firms in terms of
revenue.

Hans-Wolfgang Dirksmann, general
manager of DEC Switzerland, claims to
be satisfied with the pace of the firm's
growth. "Projections for 1986 are higher
still," he says. "We have no difficulties
in obtaining orders. We even allow our-
selves to turn down orders containing
too high a level of technical risk."

But success carries its own peril.
"Our main problem," Dirksmann says,
"is how to find new employees."

In the mid-1970s, fewer than a dozen
people were employed in the headquar-
ters near Zurich, selling and servicing
PDP-11 computers. Now there are more
than 800 employees, and the company
has sales and service offices in Zurich,
Basel, Bern, Geneva and Lausanne.

During the last fiscal year, more than
200 new people were hired, and the
company expects to take on another 200
in 1987.

DEC Switzerland recently bought
26,000 square meters of land in Duben-
dorf, near Zurich, for the construction of
a new headquarters with room for 800
employees.

In Switzerland, the company has
won a strong position in the market for
small and medium-size microcomputer sys-
tems. According to Framingham, Massa-
echusetts-based market research firm Interna-
tional Data Corp., DEC ranks second in
Switzerland during 1985 and had a
19% market share in terms of value.

But the firm's strained relationship
with its sales partners seems to have
improved. According to A. Zaengerle,
director of Zurich-based OPM Gemein-
schaft fur Organisation Planung Man-
gement AG, the competition from DEC
outweighs any negative aspects because
the market is stimulated. He says that
OEMs get more value compared to the
same Swiss VARs and OEMs who have
sentiment over DEC's forays into soft-
ware development. He states that DEC
does not support the market for its
software development. A cut in the firm's
discount rates also riled more than a few
OEMs and VARs.

"The times are gone when the OEM
companies used to make money with
DEC hardware without added value,"
Dirksmann says.

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the market is stimulated. He says that
OEMs end up benefiting from DEC's
increased publicity.

Hans Frick, director of EDP Support
AG in Schwerzenbach, Switzerland, ex-
presses doubt that DEC can further ex-
pand its software development activities
in this country for the simple reason
that there is not enough qualified per-
sontel to go around.

"In view of the situation on the job
market, this would not even be possi-
ble," he says.

In Switzerland, DEC sells much of its
equipment through OEM's and a grow-
ing number of software vendors and
claims a 75% share of the Swiss OEM
market.

Small number of vendors, howev-
er, obtain their DEC computers from the
American gray market — brokers who
provide faster delivery and lower prices
on DEC equipment without the support
offered by DEC — much to the annoy-
ance of DEC Switzerland.

Some software packages sold by
DEC in Switzerland are produced under
license from Swiss and West German
systems houses. Deconfianz, a financial
package, comes from software vendor
Systime AG (unrelated to the UK firm of
the same name). VAX-Profi, computer-

DEC ranks second in sales of computer
systems priced under $100,000 and designed
for up to 15 users.

DEC: SWITZERLAND

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CW International Marketing Services
This trend was broken in 1983 when the steady increase in revenue and profits became consistent and compatible now. The development on 32-bit machines also paved the way for a joint product development, something DEC had not done with any other company in the past. The development of the VAX processors and their VMS operating system was such a massive, complex job that Dimert is "convinced we lost money on every product during the first year, never mind the accountants' opinions."

"It seemed we were the last in the world to create a 32-bit processor, but we created for the future," he says. "We have both a lot to gain from such an agreement."

Ericsson will be responsible for delivery of terminals, printers and other office automation equipment. DEC will take care of the computing power.

"Our target is to strengthen our position as leading supplier of products, systems and services in the field of communications," says Stig Larsson, chief executive of Ericsson Information Systems AB. "A joint venture with DEC as a partner will give us the opportunity of developing banking systems on a larger geographical market. The cooperation with DEC does not imply any changes in product development. The two companies will continue to be developed." In the future, though, Lundin says, the 2500 system could be developed together with VAX machines.

We are very positive regarding a joint venture with Ericsson, and we hope this will facilitate a breakthrough on the Swedish market," says Bo Dimert, chief executive of Digital Equipment AB in Sweden. "Our hope is to reach an agreement which will help us to develop products that fit one another. In the future, this would perhaps lead to a joint product development."

In Sweden, DEC passed the one-billion line in Swedish krona (U.S. $130 million) on July 1, 1986. "The positive development of DEC's shares in the U.S. is a sign that things are going the right direction all over the world," Dimert says. The turnover (revenue) grew faster in Europe than in the U.S. In Sweden we have an increase of about 30%.

"The VAX line is expanding from small desk computers to big computers that can handle the biggest MIS systems."

During the 1970s, DEC enjoyed a steady increase in revenue and profits. This trend was broken in 1983 when the revenue fell about 32% and rumors spread that AT&T would take over DEC. But today DEC has replaced its VAX line with a second-generation family. The company is now fighting successfully with IBM on the commercial as well as technical and scientific markets.

"It's often easier to connect two IBM mainframes to one another via a VAX than directly," one user says. "The VAX line is expanding from small desk computers to big computers that can handle the biggest MIS systems."

Ericsson, DEC planning venture

STEFAN KARLEBO
Computer Sweden

STOCKHOLM — Ericsson Information Systems, Inc. and the Swedish DEC, Digital Equipment AB, are negotiating a possible joint venture in the banking systems market. Although an agreement was hoped for by this summer, negotiations are still under way.

"At this moment, nothing is obstructing any agreement between our company and DEC," says Niilo-Ingvar Lundin, Ericsson's vice-president of public relations. "We have both a lot to gain from such an agreement."

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"The VAX line is expanding from small desk computers to big computers that can handle the biggest MIS systems."

"We feel the demand is good," Dimert says. "The balance of costs and revenue is difficult to maintain in an expanding business, but now we control the situation." Last year revenue increased by 28%, and analysts expect the growth to continue.

"We are confident for the future," Dimert asserts. "Our installation at the Swedish parliament has been tremendously well received. This will probably have some multiplication effects."

The success DEC enjoys is a result of the decisions made by the management of the parent firm some years ago when it was decided to focus research and development on 32-bit machines. The decision to stop the future development of the Decsystem-20 was not well received among computer people within DEC. Many people were astonished, but their product line is more consistent and compatible now.

During the 1970s, DEC enjoyed a steady increase in revenue and profits. This trend was broken in 1983 when the
France seeks staffing answer

BY GERARD BIDAL
Le Monde Informatique

PARIS — Experiencing a 20% to 30% annual growth rate for the last three years, DEC France has begun to make significant qualitative and quantitative changes in its personnel hiring and development strategy.

DEC France has limited the hiring of young university graduates because it cannot mobilize the necessary training resources. DEC France devotes 9% of its payroll budget to internal training. Unlike other computer makers, such as IBM, that recruit mostly inexperienced applicants, DEC hires experienced engineers who can be operational immediately.

In 1985, only 20% of newly hired engineers were inexperienced. This figure applies on the average for other DEC affiliates worldwide.

But finding able managers has been difficult. The shortage of experienced managers has tended to favor decentralized management, leaving managers to a large extent on their own in making decisions. As a result, job candidates must prove that they are capable of taking risks and of handling responsibility. Such strict recruiting constraints limit the number of applicants in an already restricted market.

To solve this problem, the firm is using a novel in-house training program to rapidly bring inexperienced recruits up to par.

DEC France received more than 15,000 unsolicited applications in 1985. These serve as the main source for finding new employees.

A system of pinpointing dossiers by simple coding of the job profile and the resume helps to match candidates to job offers.

Special recruitment days are periodically organized for young graduates. In France, they are held in the spring or at the end of the year and are open to applicants who have had four or five years of post-secondary education, been to a grande école — a French equivalent to an Ivy League school — or a business school.

The candidates are interviewed initially by a psychologist and two executives — most often a training director and a software or sales manager.

The selected applicants will be enrolled in the firm’s in-house training program, known as DEC College. DEC College emphasizes theory as well as practice.

Generally, there are two classes of approximately 12 people each year who participate in a 10-month apprenticeship, which consists of four months of theory as well as on-the-job training. The final stage in the training program involves placement in one of the firm’s departments, with DEC College acting as an internal employment agency.

Training alone, however, cannot answer the firm’s personnel needs. Faced with the constant demand for managers and unable to increase the number of new employees in the company with qualified applicants, DEC has favored internal promotion.

But strong internal mobility can be disruptive in a company, and DEC hopes, with its training program, to progressively raise the number of young graduates it hires to the level that other manufacturers have achieved.

VAX/VMS

in St. Louis

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