The VAX Family:
The Broadest Array of Compatible
Systems Available Today.

Compatibility. Why would you, as a buyer, be concerned about compatibility? Because the world of computers has changed – along with changes in the way organizations use computers. Processors are no longer restricted to the computer room. Applications are no longer restricted to one department. To work effectively, people in all parts of your organization need to access the same data and run the same software – without costly rewrites. The computers used in every part of an organization, though varying in size and function, must be compatible so that users can access information easily – with one set of rules for operation. Digital foresaw these changes while developing the vax family.

Other vendors claim to utilize the same operating system for several processors. The Digital difference is that with our standard operating system, vms, data can be exchanged among vax systems, and programs can be run on any vax with no modification. The similar implementation of central processing units assures you that all of your vax systems will work together. So, not only can your users go more easily from one vax to another, but your applications can be transported just as easily from one department to another or from one site to another without change. That's compatibility *plus*.

Today, twelve vax systems span the widest range of performance and price in the industry. From the smallest Microvax processors to the new vax 8600, and the vaxcluster System that combines several vax computers, Digital offers complete systems to meet your requirements.

vaxcluster Systems offer data integrity, data sharing, and incremental growth. And, with our advanced networking, you can share data and programs among all systems. Among all system users. The vax virtual memory computer family that revolutionized the industry has grown.

More than 35,000 of Digital's 32-bit virtual memory computers are working in diverse commercial and technical applications worldwide. They're providing the programming and performance advantages you'd expect of very large computers – without the associated overhead and expense. Every system is a solid investment that can expand or connect to other vax systems to meet future needs. That's why vax is the best-selling 32-bit computer family in the world.

- **Desk, Department, and Data Center – VAX Meets Your Computing Needs.**
  Your computer investment should be able to satisfy *all* of your information and computing needs. Not just bits and pieces of them. Today, vax offers completely compatible systems to handle the desk-level needs of each employee, the department-level data-manipulation needs of your office, and the data center needs of your entire organization. Place computing power right near the people who use it. Each system can be the size to meet the job at hand, while transparent networking lets local users share the resources in the next office or a continent away, keeping all data current.

We've developed all the pieces to put your computing environment to work for you. No matter what the skill level of the users, one easy-to-use operating system will make them more productive. From low-cost desk-level systems to large department and data center systems, all VAX systems share a common operating environment, VMS, the foundation for layers of cooperating software. Our industry-leading networking links the broadest range of systems in the business. VAX systems, VAX information management, and Digital storage systems organize, manage, display, and protect information.

With VAX, one completely compatible family handles a range of tasks from office automation to data processing, data exchange, and data storage. You can develop applications on your department-level VAX and send them over the network to run on a desk-level VAX. Or vice versa. With ALL-IN-1 office automation software you'll find it easy to use electronic mail and filing, online calculator and calendar functions, and text processing tools. You'll manage all tasks from your VT100- or VT200-series video terminal, from your VAXstation graphics workstation, or from one of Digital's personal computers. And, most importantly, all of these tasks can be run with VMS.

Think of the opportunities. If you are planning complex new applications, if your programs have outgrown your current system capacity, if a tight budget has convinced you to explore computing alternatives, or if you'll be distributing your computer operation – the engineering and software excellence that has made VAX systems number one makes them the best choice for you.

· What Makes VAX Number One?

The ultimate computer family architecture supports all of your needs – including office automation, scientific and engineering applications, and distributed processing – with compatible processors that make portable applications a standard. The unique design features of the VAX architecture form the base to plan and develop a growing VAX family.

VMS is the one operating environment that adapts VAX systems for realtime, timesharing, batch, and interactive data processing. You won't have to reprogram, recompile, relink, or relearn when you move to another VAX system. One standard Digital Command Language (DCL) makes users feel at home on any VAX system. Also featured on most of our PDP-11 systems, DCL has scores of commands that make using the system easy and natural. It's as simple as typing words like *edit* or *debug* to run system utilities – or *help* when you need it.

The 32-bit instruction set, common to all VAX systems and containing more than 300 powerful instructions, gives you programming performance and efficiency. Our 32-bit virtual memory addressing simplifies application design. The 32-bit word length and virtual memory management provide more than four billion bytes of address space. Half of this is for user programs. Half is used for the system. In effect, every VAX user has over two billion bytes of address space available for application design, development, and execution. You don't need to waste time trying to mold programs to available physical memory. The success of these unique design features has made VAX number one.

Employees at SMS, Shared Medical Systems Corporation, in Pennsylvania, are taking advantage of VAX compatibility. At the department level, application and development tasks can be completed on the VAX-11/730 or transferred to central-level VAX-11/780 systems that support many large applications.

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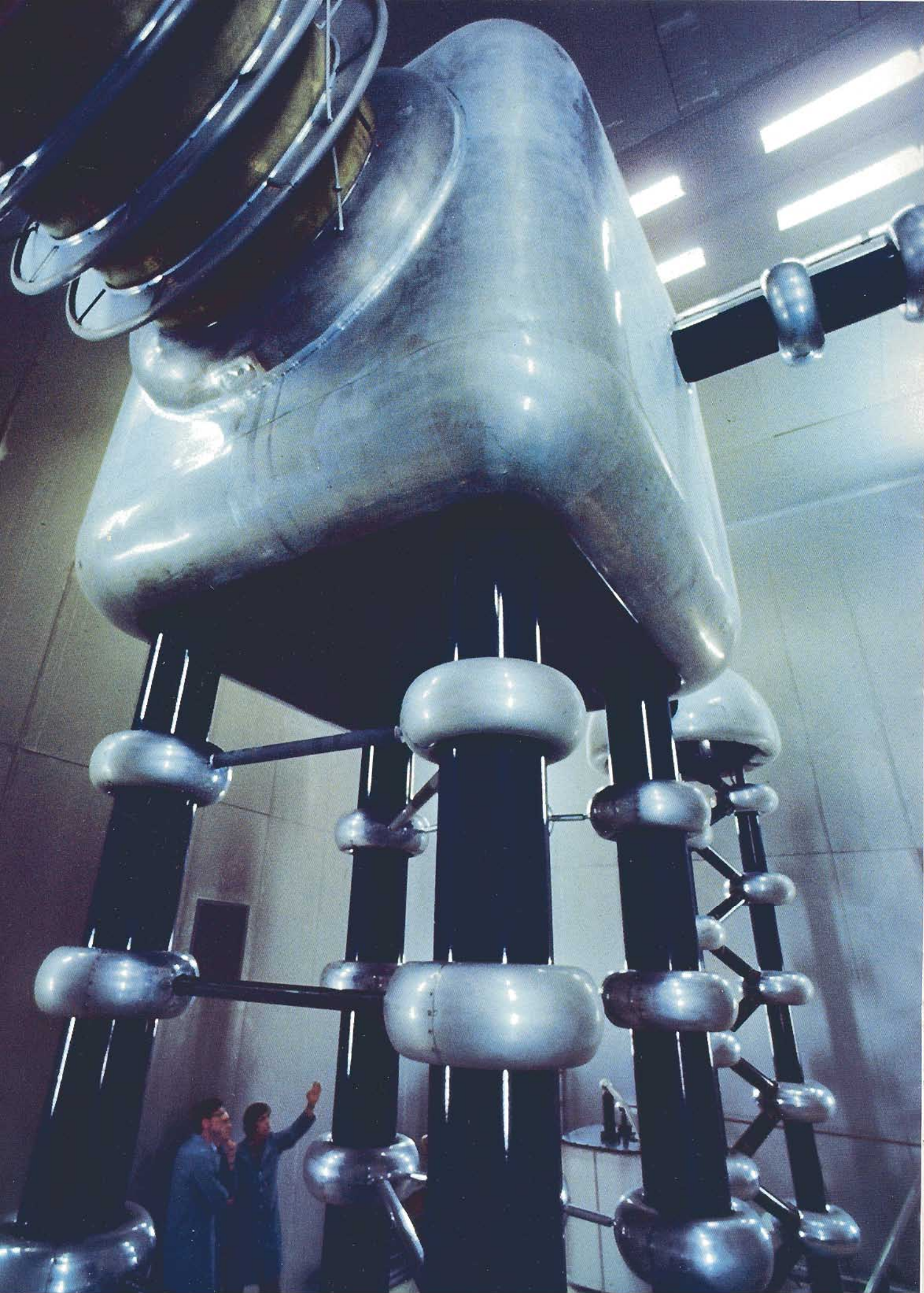
The Accelerator Ring at the Fermi National Accelerator Laboratory (Fermilab) in Illinois examines and records the characteristics of subatomic particles that live for only one ten-billionth of one trillionth of a second.

Our planning and development has resulted in the VAX Architecture – system compatibility unique in the industry. We define architecture as a collection of attributes common to all family members, attributes that guarantee that all software runs without change on every VAX. Each processor in the family uses slightly different implementations of the architecture, yet all function as VAX family members. This means that users can move their work from one VAX to any other, with ease.

Beyond looking at performance and price in choosing a processor, you have to know that what you buy today will still be useful to you in the future, that your investment in both hardware and software will be protected. The VAX Architecture uniquely integrates hardware and software disciplines. This ensures that VAX users won't have to change the way they work to keep up with the changes in their work.

• The VAX/VMS Architecture: A Unique Blend of Hardware and Software.

To develop a powerful operating system that would provide a common environment for each and every VAX, hardware and software engineers had to work together every step of the way. Because we've engineered the VAX family to a plan, we now have the most respected hardware/software architecture in the industry – VAX/VMS.

Every VAX system equips you with a standard software package consisting of the VMS operating system and a full set of application development tools. MicroVMS is a modular version of VMS for use on the MicroVAX. VMS provides file and record management, support for VAXclusters, asymmetrical multiprocessing, system and file security, and system services. Data security measures protect your confidential information. Every VAX system can support additional language processors, networking systems, communications packages, information management software, and the ever-expanding selection of application software. The software you develop today will always run on any VAX processor – so, your software base can grow right along with your processing needs.

If you want to purchase software instead of developing your own, you needn't worry. The repertoire of VAX software is continually growing. The *VAX Software Source Book* lists many of the thousands of applications developed and supported by Digital and independent vendors for use on VAX systems. Compatibility among all current and future VAX systems ensures that you'll never lose your investment in software costs.

VAX-11/725 users can access the data in other VAX systems using the smaller system interactively while time-consuming batch jobs are relinquished to larger VAX systems.

VMS operating system software is integral to the operation of a VAXcluster system, providing enhanced system availability and multisystem file and record sharing. In the VAXcluster environment, VMS includes support for the VAX-11/750, VAX-11/780, VAX-11/785, and the VAX 8600. Users can access data stored anywhere in the cluster. If you add duplicate processors, this hardware redundancy ensures the safety of important data should one processor or disk fail. When you need more power you can add processors and intelligent storage subsystems, preserving your investment.

Developing VAX applications is surprisingly simple. Chances are your programmers already know one or more VAX programming languages. To help create source code and documentation, the VAX system editor helps you work easily with video or hardcopy terminals. You can develop cooperating processes that execute on a single VAX system, then move one or more to other VAX systems in a growing network. Our network software will ensure that the programs still cooperate.

Development utilities, including a symbolic debugger, a linker, and a librarian, are part of every VMS software package. All VAX programs can use the single systemwide *call* procedure to call system routines and programs written in any other programming language that supports the VAX Calling Standard. Having all these tools at the start means fast, productive, and easy application development.

· VAX Information Architecture: Information Management Tools to Keep You Organized and Productive.

To help you keep on top of the vast amount of information that flows through your system daily, the VAX family equips you with an integrated system of information management capabilities that lets you do far more than merely organize your data. Organizing data is only the beginning. You then have to be able to make use of the data to write reports for sales strategies, to compile information for stockholders, or to check on the credit rating of a buyer.

Whether you need to manage simple files or sophisticated databases, the VAX Information Architecture provides the right combination of tools to do it. Use RMS, Record Management Services, a straightforward method for creating, updating, and modifying files that is built into the VMS operating system. Or, turn to Digital's database management system, DBMS, to accommodate more complex data relationships.

As more new users need access to information, they'll need easier and faster ways of working. Our relational database products, Rdb/VMS and Rdb/ELN, allow access to data that is arranged in easy-to-understand tables. With these products, less experienced users can access information in the database and build applications without the assistance of a database manager.

Sized to the needs of office environments, the VAX-11/730 is perfect for clerical, professional, and managerial tasks, and as a dedicated program development system. The versatile VAX-11/730 also manages engineering, scientific, and laboratory environments with ease.

The VAX Common Data Dictionary stores data about data – data used throughout the VAX Information Architecture. It eliminates the problems of having multiple copies of data and provides several levels of security. For data reporting or inquiry, use VAX DATATRIEVE interactively or have your programs call DATATRIEVE to access information. It doesn't matter if the data is stored in RMS, DBMS, Rdb/VMS, or Rdb/ELN files or even in another VAX system in your network.

Users can produce and display graphic representations of data by using DECgraph, which accepts input from the keyboard, from DATATRIEVE, or from ASCII files. DECslide, the other part of your presentation preparation package, generates text slides and diagrams with an easy-to-use menu system.

For more data formatting, forms management is supported by VAX FMS Forms Management System and VAX TDMS Terminal Data Management System. The ACMS Application Control and Management System Product Set reduces the cost of designing, developing, maintaining, and controlling transaction processing and other complex VMS applications.

VAX information management products help your desk-level users do more for themselves so programmers have more time to plan and develop new applications. Choose only the information management tools you need and add additional capabilities as your requirements change. Only VAX systems offer this flexibility.

- **Digital Network Architecture: Uniting the Computing Power of Your Entire Organization.**
Digital builds a diverse range of processors so that you can install only the computing power you need, right where it's needed, even under your desk. But, your processing needn't stop at the computer near you. Our hardware and software can take your work to systems down the hall or around the world. DNA, the Digital Network Architecture, defines an integrated set of networking capabilities that will work as well for you in the future as they do today.

The link through which VAX, PDP-11, and DECSYSTEM processors communicate with one another is Digital's own networking system, DECnet. Digital's Ethernet Local Area Network technology inexpensively connects systems to systems and terminals to systems in a local geographic area via a high-speed coaxial cable. Every device supporting DECnet and attached to the Ethernet cable has access to all of the network resources. Our Terminal Server product connects terminals to multiple hosts, using the Ethernet to increase productivity and computer availability.

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Digital's Internet protocol emulators – like the IBM* 2780/3780, IBM 3271, and Control Data Corporation's MUX200 – let VAX users exchange information with other vendors' computer systems. You can work on a program-to-program basis or send and receive batch jobs and files between VAX systems and most mainframe systems. Our DECnet/SNA Gateway lets you communicate and share information between a Digital network and an IBM SNA network. Digital's Packetnet System Interfaces let you communicate over public packet-switched networks (PPSNs) using the X.25 and X.29 protocols.

Our network architecture accommodates several different ways of communicating from system to system and establishes a framework for us to add new compatible networking tools. We want to make sure you'll be able to take full advantage of new communication technologies as they become available.

· **Digital Storage Architecture: Your Data Is Protected, Shared, and Accessible.**
Mass storage peripherals supported by VAX systems include disks, magnetic tapes, and an intelligent mass storage server. The disks and magnetic tapes transfer large blocks of data to and from memory without processor intervention, relieving the CPU of these tasks.

Our intelligent mass storage server, the HSC50, enables as many as 15 VAX processors to access the same information at very high levels of performance. It connects to the Computer Interconnect (CI) in a VAXcluster, enabling all nodes to communicate. The functions and extensive data integrity and availability features of the HSC50 mark it as the forerunner of future storage systems.

In the VAXcluster environment, CI products let your systems grow with your applications. Increase your computer power when you need it by adding another VAX processor or additional mass storage products. CI products can also be configured redundantly to avoid single points of system failure. VMS software and CI products allow users to share computer resources among cluster nodes, to increase system performance, and to ensure the availability and integrity of data.

Digital Storage Architecture is a carefully designed framework for current and future storage growth. With Digital's storage solutions to complement your VAX systems, you gain the advantages of easy, incremental system growth, superior I/O performance, data integrity, and file transport compatibility.

During the last ten years the computer facilities at Fermilab have supported over 2,400 scientists conducting experiments in particle physics, probing deeper into the structure of matter.

*Data in a VAXcluster can be accessed
over the network simultaneously by
individual users as they work at all levels
of an organization.*

The VAX family has such a broad array of fully compatible computer systems
and software that you can choose the configuration and the cost to meet your
present needs, without overlooking your future needs. We've worked hard to
make sure that what you buy today will still be useful to you when your organi-
zation expands.

All users, from clerical workers to engineering professionals to managerial staff,
can have the computer and software support they need, whatever their level of
expertise. So, select a system now and you can move upward or downward in
size, power, storage, and capabilities – as your needs change.

In addition to choosing the hardware configuration that's best for you, you can
choose the software environment, as well. Of course, there's VMS. But also avail-
able on VAX processors is the ULTRIX-32 system, the Digital-enhanced Berkeley
4.2 BSD version of UNIX* software. ULTRIX-32 may be the right choice for non-
realtime, multiuser timesharing systems in which an industry-standard operating
environment is required. Digital also offers, as part of VMS, the VNX product
set. With UNIX-like capabilities, VNX lets users access the many features of VMS,
including networking and clustering. And our VAXELN tool kit can be used
for dedicated time-critical applications such as laboratory data collection and
factory automation.

For convenience to you, we've packaged our smaller systems. You can order
MicroVAX, VAX-11/725, and VAX-11/730 systems in a variety of packages –
Digital does all the work of configuration, you simply order by number. In addi-
tion, several of our most popular system configurations are offered as Standard
Systems – prebuilt and preconfigured for simplified ordering and the most im-
mediate delivery schedule.

With System Building Block (SBB) menus and options, you design a system to
include the components that suit your needs. Buy the basic processor and add the
peripherals, console terminal, and communications and input/output controllers
that best fit your application. SBBs are available for the VAX-11/730, VAX-11/750,
VAX-11/780, VAX-11/785, VAX 8600, and VAXcluster systems. The components you
choose are assembled, tested, and shipped, with guaranteed Digital support.
The SBB approach allows space for future expansion, making it simple for you to
enlarge your system. We've made it easy for you to build a system tailored to
your needs – and even easier to expand it when your business grows.

Unique in the industry, a vaxcluster is a multiprocessing system of several vax computers. This configuration of up to 16 vax-11/750, vax-11/780, vax-11/785, and vax 8600 processors, and intelligent storage subsystems functions in certain combinations as a single, large, highly powerful system. Users can access any data in the vaxcluster whether it is stored on local disks or on the hsc50 intelligent mass storage subsystem. And multiple paths for data to travel protect against downtime.

The advantages to you include redundancy (for data availability, should a fault occur), global data sharing (for easy data updates and access), and high performance. With several processors sharing the load, you gain speed, protect your data, and optimize disk storage. Supported by our versatile vms operating system, cost-effective vaxclusters offer resource sharing and an efficiency that is unmatched in the industry.

Ideal applications for vaxcluster systems include research, transaction processing, CAD/CAM, process control, and communications. With both the flexibility of vaxcluster configurations and the expansion capabilities, you can configure a cluster to meet your needs within your budget.

Choose from vaxcluster System Building Blocks to build systems to your exact specifications. vaxcluster systems permit expansion of the configuration, as needed, without interrupting the existing systems or programs. This expansion can range from adding users to adding an entire processor. Adding processing power and storage with a vaxcluster will expand the architectural limits of your present system, preserving your investment. The vax-11/785 Dual vaxcluster System and the vax Minicluster, which is comprised of two vax-11/750 processors, can be ordered as System Building Block configurations for fast order turnaround. Or, if you are planning to buy your first vax, you can start with one vax-11/750, vax-11/780, vax-11/785, or vax 8600 processor and add vaxcluster capabilities as your organization grows. You'll be building a vaxcluster system that offers more protection for your data than has ever been available before.

Your computing needs will change as you develop new applications and as departments grow at different rates. Add a system to a fast-growing department and link this system to your cluster. Users will have access to the most recent information and to everything the vaxcluster has to offer. Give people the power they need while retaining their departmental computer – the best of both worlds.

If the VAX architecture makes all VAX systems alike, what makes them different? The answer is performance. And price.

The VAX architecture defines family compatibility, not design implementation, so our engineers can take advantage of different technologies to offer compatible systems in a range of price and performance levels. Today we have twelve systems, including VAXcluster systems, to choose from, so people doing all kinds of work can take advantage of VAX benefits without buying more than they need.

· MicroVAX: The Extension of the VAX Family to Desk-level Microcomputing.

The MicroVAX system is the 32-bit microcomputer with VAX architecture, VAX performance, and VAX compatibility. Now there are VAX computers to meet each of your computing needs – at your desk, department, and data center. In a local area network, your MicroVAX can access data across the entire VAX family, including VAXclusters. You can even communicate with systems from other computer manufacturers. When you buy a MicroVAX, you're assured that all of your applications can be transported gracefully to larger VAX systems anytime in the future.

MicroVAX I, with a 28-Mbyte disk and 800-Kbyte diskette drive, fits easily under a desk – with space to add options later on. You can have 32-bit computing power for up to four users without rearranging your work environment. And you can expand the one Mbyte of memory to 2.5 Mbytes as your needs change.

MicroVAX II is Digital's highest-performance supermicro. In its single-board supermicrocomputer package, MicroVAX II delivers all but a fraction of the VAX-11/780's power. The private memory interconnect handles memory transactions, freeing the Q-bus for faster, dedicated input/output. The MicroVAX II gives you up to 9 Mbytes of memory, a Winchester hard disk, and a 90-Mbyte cartridge tape as backup. But that's not all of the storage options. A Digital 800-Kbyte dual floppy-disk drive adds yet another choice.

The MicroVAX operating system is an evolution of Digital's powerful, general purpose VMS system and gives full virtual memory support to MicroVAX. Because you purchase the MicroVMS license according to the number of users, not system capabilities, you can save money. Many programming languages and software packages for use in office automation and database management are available. In fact, any nonprivileged native-mode code (code not written in PDP-11 instructions) prepared for any VMS system will execute unmodified on the MicroVAX.

MicroVMS is ideal for general purpose business computing or for image processing. In addition, the VAXELN toolkit optimizes realtime applications. And because VAXELN programs run on dedicated MicroVAX systems without an operating system, you can reduce overhead for all kinds of industrial automation projects.

For all its compactness, Microvax still gives you the power and virtual address space you need for applications like data handling in educational settings and industrial process control. Microvax handles the complexities of factory automation, especially where control is distributed via a local area network. In the sciences, Microvax systems perform large-scale data collection and reduction, where large amounts of data are collected rapidly and time-critical response is mandatory. At the desk level, Microvax manages your office with a variety of software packages.

Microvax can be your entry into the vax family of computer systems, or perhaps you'll choose several as additions to your existing investment in larger vax systems. Either way, you are assured of the established standards for vax: quality, reliability, and compatibility.

VAXstations Are the Technical Workstations for the Engineering and Scientific Community.

vaxstations provide the computing power and design capabilities for complex, desk-level applications. Until now, engineers and designers had to share resources with other users. vaxstations can be optimized for specific applications so that your key applications can be run, uninterrupted.

vaxstation II meets your demands for features such as multiwindowing, multitasking, and high-resolution graphics. These features are demanded by today's more challenging applications, like schematics capture, mechanical drafting, mapping, composite graphics document processing, and architectural engineering and construction. And because the new Microvax II and Microvms form the foundation of vaxstation II, you are able to bring the computer industry's recognized standard in 32-bit computing to bear on these applications and many others.

Standard vaxstation II features include 2 Mbyte system memory, a floating-point instruction accelerator, a 19-inch flicker-free, monochrome display, a 31-Mbyte hard disk, a 400-Kbyte dual floppy drive, Ethernet interface, mouse, tilt-swivel monitor stand, Microvms operating system with workstation windowing software, including vt100 and Tektronix* 4014 emulation, and gks graphics interface. Options include up to 7 more Mbytes of vax memory, a second 31-Mbyte disk, an la50, la210 or ln03 printer, and an asynchronous interface. All this gives you the flexibility, power, and networking capabilities you've come to expect from all vax systems.

vaxstation 500, Digital's high-resolution color graphics workstation, has been designed to handle mid- to high-end technical applications. Based on the compact Microvax I, the vaxstation 500 system incorporates the Tektronix 4125 color video terminal. Of course, this stand-alone system can also be linked to other vax and pdp-11 computers. Applications in electrical and mechanical cad, cartography, molecular modeling, and research are perfect for the vaxstation 500.
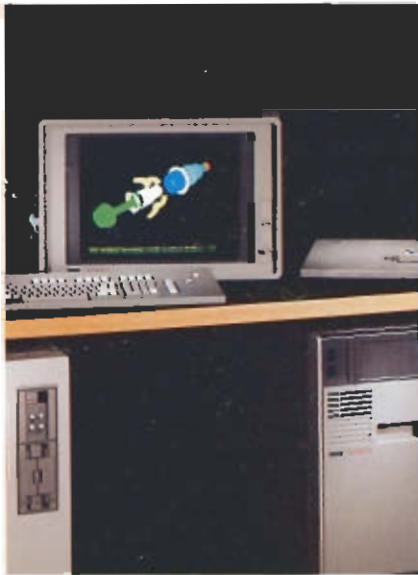
The vaxstation 500 system consists of a Microvax I processor with one Mbyte of memory, a dual 400-Kbyte floppy-disk drive, a 31-Mbyte Winchester hard disk, and a graphics subsystem. The graphics subsystem consists of a 19-inch color monitor, 80826/80827 graphics processor, 256 Kbytes of display list memory, 16 million color palette, and keyboard. Options include 3D wireframe and solid-shading upgrades, additional video memory planes, mouse, tablet, and interfaces to Tektronix color graphics printers and plotters.

The combined strengths of Microvax and superior high-resolution graphics displays, both monochrome and color, make vaxstations one of the best work-station solutions available. Users have access to hundreds of Digital and third-party software programs developed for the vax family – one of the largest sets of these scientific and engineering applications in the industry.

vaxstation: your stand-alone graphics workstation that's a vax. Now, your engi-neering team, from manager to staff, can function in the same vms environment, an environment that extends from a single-user vaxstation to a vax 8600 or vaxcluster System supporting many departments.

- **VAX-11/725: The VAX Family's Entry-Level Minicomputer.**
The vax-11/725 packages the power and reliability of the proven vax-11/730 processor in a smaller vax/vms system. This compact, quiet, and transportable system was designed specifically for the open-office environment by combining innovative packaging techniques with the new RC25 Winchester disk subsystem. The vax-11/725, 40 percent the size of the vax-11/730, is appealing both as a low-priced, multiuser system, supporting up to eight users, and as the vax processor for a single-user workstation.

This powerful vax that acts as the departmental processor for general business and office automation can also be used for software development, cad/cam, and scientific analysis. Scientists and engineers can have computational power next to them, under their desks. And, at the department level, Digital's office software equips the vax-11/725 system for report writing, for electronic mail, and for maintaining personal calendars. Our advanced networking can connect several vax-11/725 or other vax systems to put all of your users in touch. vax-11/725 users can access the data in other vax systems via Ethernet or DECnet, using the smaller system interactively while time-consuming batch jobs are relinquished to larger vax systems. vax compatibility makes it all possible.

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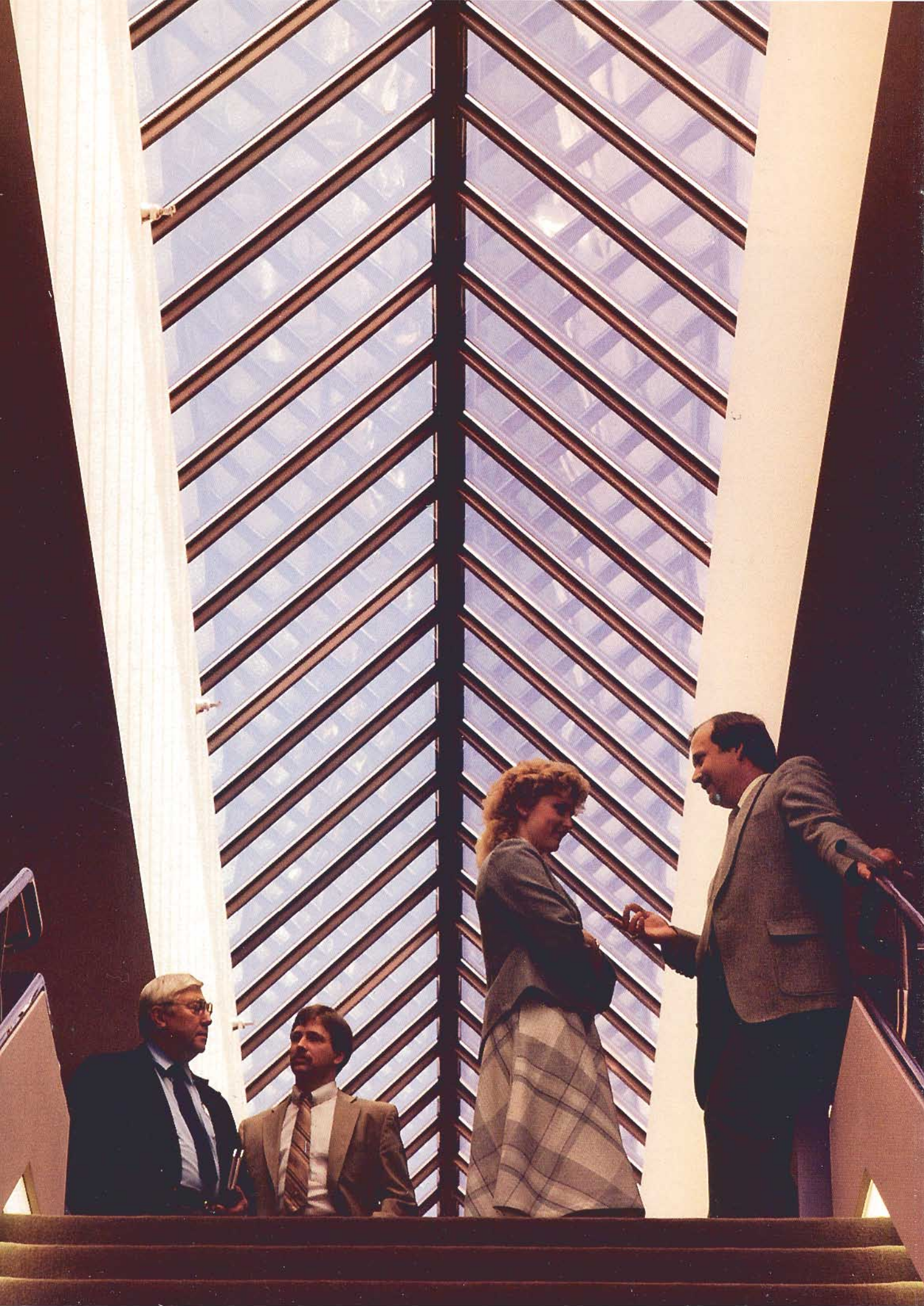
The RC25 disk provides the reliability and performance of Winchester technology with the flexibility of removable media. Of the 52 Mbytes of storage, the first 26 are on a fixed platter, while the remaining half are stored on an 8-inch removable cartridge. The RC25's intelligent controller adds to the impressive performance of the VAX-11/725 processor by offloading several disk-handling functions.

The small, cool-running member of the VAX family, VAX-11/725 is available in three configurations with up to three Mbytes of memory. Options include a floating-point accelerator, an additional 52-Mbyte RC25 (104-Mbyte total for the system), and several methods for communication between systems.

· VAX-11/730: The Highly Expandable, Affordably Priced VAX.

The VAX-11/730 is the highly expandable member of the VAX family—smaller and lower priced than the larger VAX systems. It takes VAX capabilities into almost any environment, supporting up to 24 users. You have more disk storage options and communication options than with our smaller systems. And you can add the optional floating-point accelerator to increase performance in engineering, scientific, laboratory, and other numeric-intensive environments.

Two-thirds the size and about half the price of our next larger processor, the VAX-11/730 is fully compatible with other VAX family members. It can be your entry into 32-bit computing or part of a network that extends VAX capabilities down to the project- or section-level of a department. The versatile VAX-11/730 is an ideal distributed processing network node or department-level host, front-end machine, or remote concentrator. Sized to the needs of office environments, it's also perfect for clerical, professional, and managerial tasks, and as a dedicated program development system.

Choose a low-cost, rack-mountable industry-standard chassis or specify a VAX-11/730 system from SBB menu selections. The rack-mountable system includes one Mbyte of main memory and six additional expansion slots. The SBB cabinet and menu systems include two Mbytes of main memory and 12 additional expansion slots. There's plenty of space for you to add the options of your choice. The CPU, which fits on just three modules, has room for you to add several more Mbytes of memory.

Your VAX-11/730 system can support over five million bytes of memory (three million in the SBB configurations) in a 10.5-inch-high (27-centimeter) chassis. The small size, low price, and large memory make the VAX-11/730 very attractive.

At John Fluke Manufacturing Company, leading manufacturers of electronic test and measurement devices, VAX computers connect users at the desk, department, and data center levels, providing them with up-to-date information—through shared access to data.

· VAX-11/750: Midrange Performance at an Economical Price.

The VAX-11/750 is Digital's midrange VAX processor. Ninety percent of the VAX-11/750 hardware logic is implemented in custom low-power gate-array circuits. A single gate-array chip performs the functions of 25 standard integrated circuits. Fewer components account for the compactness, reliability, and low-cost of VAX-11/750 hardware.

The total software compatibility of the VAX-11/750, its impressive performance, and its competitive price make it ideal for small firms and for individual departments within large organizations—anywhere that large-system capability is needed by users with restricted budgets or workspace. The VAX-11/750 supports up to 64 users in a wide range of environments, including banking, education, and engineering. And the VAX-11/750 is the most economical way to start a VAXcluster. With the advanced Digital Network Architecture behind it, your VAX-11/750 can also be linked to smaller VAX-11/725 or MicroVAX systems to connect professionals in their offices with the capabilities of the larger system.

Like the larger VAX systems, the VAX-11/750 can take advantage of Digital's advanced storage system design. Our intelligent disk controllers offload disk management functions from the host system, saving the CPU for other tasks.

The VAX-11/750's console subsystem consists of a TU58 cartridge tape drive and a DECwriter terminal. Options include a floating-point accelerator, extended-range floating-point microcode, additional memory modules of one Mbyte each (up to a total of eight Mbytes), and memory battery backup.

Along with its clustering capabilities, gate array logic efficiency and compact size make the VAX-11/750 a natural choice for department-level applications in large organizations or demanding central-level applications in smaller organizations.

· VAX-11/780 and VAX-11/785: High-powered Performance and Capacity.

The VAX-11/780 and VAX-11/785 share several key design features. Completely open-ended, they support the widest range of peripheral products of any VAX family members. This richness of peripherals makes these systems extremely versatile. Both offer the choice of CI, MASSBUS, and UNIBUS communication interfaces. With System Building Blocks, you choose from mass storage, communications, and console terminal menus to configure the VAX-11/780 and VAX-11/785 to your specifications.

Built for large or complex operations, they are typically found in research, government, manufacturing, universities, banks, and other environments that require continuous processing of large programs under heavy use. With the Digital Storage Architecture, you have the advantages of advanced storage system design. Our mass storage controllers monitor and control the activities of a number of storage devices, freeing the CPU for your most critical needs.

As part of a local area network or the beginning of or addition to your vaxcluster system, VAX-11/780 and VAX-11/785 processors can serve as hosts in distributed processing networks or can offload interactive timesharing operations like program development from larger systems. As stand-alone systems or as part of your vaxcluster, these processors give you the high performance you need for data center processing. And, of course, they can be linked to the other VAX systems in your local or wide-area network so that data can be accessed and shared by users throughout your organization.

· **VAX-11/780: The Architectural Model for the Entire VAX Family.**
The VAX-11/780 uses proven Schottky TTL technology to give you the performance and power you need for your most demanding applications. It can support up to 100 interactive users.

The basic system consists of the VAX-11/780 CPU, two Mbytes of memory, a UNIBUS expansion cabinet, and the VMS operating system. Options for the VAX-11/780 processor include a floating-point accelerator, extended-range G and H floating-point microcode, a writable control store and microprogramming tools, up to 32 Mbytes of memory, and memory battery backup. There's also an upgrade kit that will upgrade your existing VAX-11/780 to a VAX-11/785.

· **VAX-11/785: Increased Performance Through Advanced Circuit Design.**
The added performance and variety of VAX-11/785 configurations make it a choice for more demanding applications.

The VAX-11/785 increases the performance of the VAX-11/780 through advances in circuit design. These advances speed data flow through the processor, improving response time for realtime and office information applications, and increasing the capacity for computation in compute-bound applications. In commercial timesharing applications you can add more users.

Floating-point G and H data types and writable control store are standard on the VAX-11/785 system. As an option, add the floating-point accelerator for greater performance in numeric-intensive environments.

The 32-Kbyte cache memory holds more data and is updated less frequently than the cache in other processors, adding to the performance advantage. The large cache size benefits users running applications such as CAD/CAM and simulation where programs contain many complex subroutines.
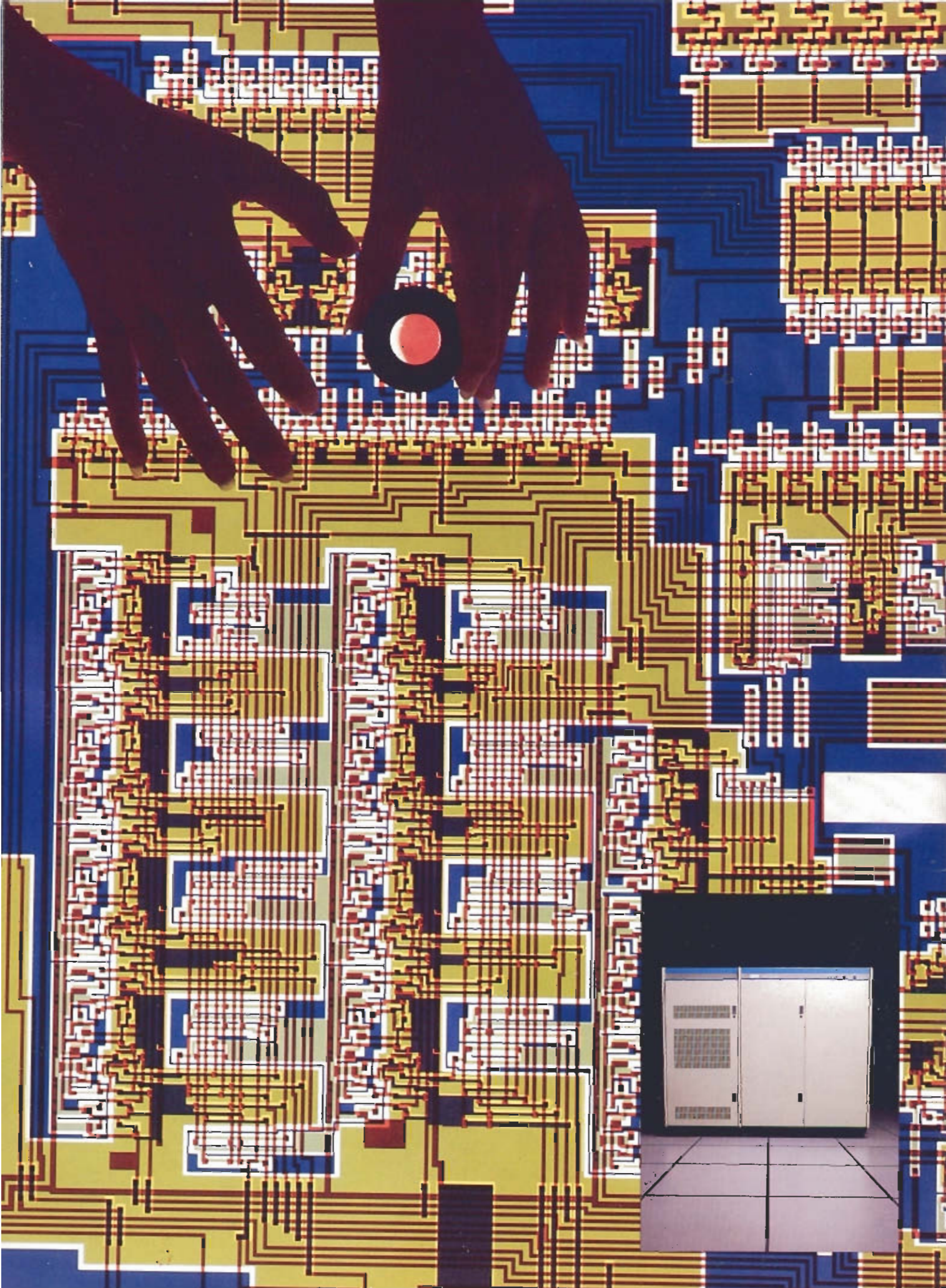
· VAX 8600: Now, the VAX/VMS Environment For Your Large Applications.

In our largest single-processor VAX, supporting several hundred users, we've used advanced technology to improve performance and reliability while retaining a small cabinet size. The VAX 8600 system uses advanced internal processor structures, previously found only in mainframe-class systems, to overlap processing of up to four instructions simultaneously. The result is a system with up to 4.2 times the performance of the VAX-11/780.

Configuring your VAX 8600 into a VAXcluster gives those who need it access to your data, protects valuable data because you have access through several processors, and provides you with the highest-performance VAX available. With the Terminal Server in the VAXcluster environment, a user can continue working on a second processor if one processor becomes unavailable. With a single keystroke, work can be continued on a second VAX that offers the same service, so that users don't lose any time. New methods of error logging, analysis, and recovery, formerly used only in much larger machines, have been built into the VAX 8600. This is especially important when several systems support your organization, as in a VAXcluster configuration.

The VAX 8600 CPU also features an optional floating-point accelerator and memory that can be increased to 32 Mbytes without an expansion cabinet. The Synchronous Backplane Interconnect (SBI) connects the processor to the I/O adapters. The flexible interconnect structure (with one standard and one optional SBI) allows the choice of CI, UNIBUS, or MASSBUS adapter products.

Like the other members of the VAX family, the VAX 8600 can function compatibly with other processors that you may already own. Digital's DECnet networking software links not only Digital systems through Ethernet, leased lines, standard telephone lines, and public wide area networks, but the DECnet/SNA gateway enables connection with systems in an IBM SNA environment, as well.

Now, stay in the VAX/VMS environment, even when running the large programs that always had to be transported to large scale systems. Your programmers won't lose time rewriting code or adding special instructions for another vendor's system. Watch your computing strategy pay off when all users access the same databases, know the same operating system, and use the same effective and efficient networking and storage architectures of VAX/VMS systems.

At Digital's Large Scale Integration research and development facility in Hudson we've advanced integrated circuit fabrication to an art.

VAX systems are as notable for their dependability as they are for their performance and programming convenience. But beyond reliable execution, they are easy to maintain. Every VAX system supports system safeguards and user protections. For instance, VMS records critical system information redundantly. It performs continuous consistency checks on control information and parity checks on hardware components. Its dynamic bad-block handling prevents corrupted memory or disk areas from being used. And error-correcting code (ECC) automatically corrects single-bit errors and detects multiple-bit errors.

- **VAX Systems Provide Continuous Service – Even When They're Performing Diagnostics.**
Many computer systems can't execute diagnostics simultaneously with user jobs, so preventive maintenance operations – and repairs – often mean costly system downtime. VAX/VMS systems are different. Many of the VAX hardware diagnostics run concurrently with normal processing. You can check system reliability without disturbing your users. And even when you have to service individual components, VAX systems don't have to stop running. The VMS operating system can usually bypass components that are down.

- **Product Reliability Keeps System Maintenance Costs Low.**
Preventive maintenance is an integral part of every operation. At Digital we've worked hard to trim your ongoing maintenance costs and repair time, to keep the total cost of owning VAX systems low.

For the VAX-11/725 and VAX-11/730, we developed customer-runnable diagnostics. They're so easy to use even nontechnical people can isolate a failing component. So before you place a call to Digital for service, you can determine if a problem exists and isolate the hardware that needs service in a few minutes of testing.

All VAX systems can be diagnosed remotely. For the VAX-11/725 and VAX-11/730 we use this technology to provide remote support. With the remote support option our service engineers can access additional technical resources from your location to make quicker repairs.

For the larger systems in the VAX family, we offer remote diagnosis as the primary service tool. If you can't solve a problem yourself, dial the nearest Digital Diagnosis Center, set your console switch to "remote," and let our experts perform online diagnostics. With your permission, we can examine your error-log file, run additional tests, and help pinpoint your problems.

With customer-runnable diagnostics and remote support on the VAX-11/725 and VAX-11/730 and remote diagnosis on the larger systems, Digital's service specialists can usually come to your site knowing the cause and the solution ahead of time – and with the right parts in hand. We emphasize fast and easy maintenance, so your emphasis can be on getting full use of your system.

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When your system is delivered, a Field Service representative will install the system, run verification tests, and show you how it works.

· **Support Is There, When and Where You Need It.**
When your system is delivered, a Field Service representative will install the system, run verification tests, and show you how it works. For your convenience, we offer several hardware maintenance contracts. The right one for you depends on your location, usage requirements, and expertise. You also have the option of taking the faulty component to a Digital Carry-In Service Center or mailing it to a Module Repair Center for replacement by return mail.

Our Software Services organization helps you choose and install software and provides warranty support that includes updates, documentation, and telephone and onsite support. Extended services and a complete range of project management and applications consulting services are available through agreements that meet individual requirements.

We also offer all Digital customers formal systems training. Our Educational Services group develops convenient self-paced instruction packages and coordinates a worldwide staff of instructors who teach regularly scheduled courses. Also available are computer-based instruction courses so that you can learn by using your new Digital equipment, at your convenience, at your speed. Our curriculum of hardware and software courses spans introductory concepts to technical details. These can be tailored to your requirements and even presented at your place of business.

Our Computer Special Systems group, CSS, develops custom hardware, software, or complete turnkey solutions. Their services include designing special interfaces and high-performance peripherals and offering project-management advice.

One more way we can help you is through DECUS, the nonprofit Digital Equipment Computer Users Society. Although DECUS is supported in part by Digital, it's actually controlled by people who own and use our computers. Organized for the exchange of information and the discussion of common interests, DECUS sponsors local, national, and international meetings and publishes its own newsletter. Especially valuable is the extensive library of customer-contributed programs that DECUS maintains. When you become a member, all of them are available for little more than the cost of the media.

· **Consider what VAX Systems Can Do for You Now – and in the Years Ahead.**
You can learn more about VAX systems by asking your Digital sales representative for more information. Also ask for one or more of the following publications: *VAX Architecture Handbook, VAX Software Handbook, VAX Hardware Handbook, VAX Systems and Options Catalog, VAX Software Source Book, VAXcluster Software Technical Summary.*

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