

Engineering Milestones in Digital's History

Digital Equipment Corporation was founded in 1957. Since then, Digital's engineers have consistently delivered outstanding computer systems, network products, software, peripherals, storage systems, and semiconductor devices. This special section in the tenth anniversary issue of the Digital Technical Journal chronicles the engineering milestones in Digital's history from 1957 to May 1995. Many industry "firsts" can be found in this chronology, beginning with the PDP-1 minicomputer through the record-breaking Alpha microprocessor. The milestones noted here represent a range of products and many years of computer engineering design and development.

A new software system, the TOPS-20, is based on multiprocess operating system advances. The TOPS-20 operates on the DECSYSTEM-20 system, which was built on the KL-10 processor.

VAX/VMS version 2.0 is released with the industry's widest offering of languages on one system, including VAX-11 FORTRAN, BASIC, PASCAL, COBOL-74, and PL/I; DSM; and PDP-11 CORAL 66/VAX.

Digital announces the ALL-IN-1 integrated office software. It runs on a network and combines applications such as word processing, mail, calendars, and databases.

Digital introduces a range of personal computers—the Professional 300 series based on the PDP-11, the Rainbow 100 based on the Intel 8086, and the DECmate II based on the PDP-8.

Digital ships the HSC50 controller, its first intelligent disk subsystem.

ULTRIX version 1.0 is introduced—Digital's implementation of the UNIX operating system.

Digital introduces the VAX ACMS (Application, Control and Management System), which is its first transaction processing product.

Digital introduces Local Area VAXcluster systems, extending distributed computing to the work group.



The CVAX+ chip, manufactured in 1.5-micrometer CMOS technology, ships in the MicroVAX 3800/3900 and VAX 6300 systems.

Digital announces its broadest set of desktop products to date, including DECwindows, its X-based windowing system; the VAXstation 3100, based on CVAX; and the DECstation 3100, its first RISC workstation.

The NVAX chip, Digital's fourth VAX microprocessor, is implemented in 0.75-micrometer CMOS technology and ships in the VAX 6600. NVAX incorporates the pipelined performance of the VAX 9000 and is the fastest CISC chip of its time.

Digital introduces the AlphaServer 2100 system. Supporting up to four processors, the industry-standard PCI bus, and three operating systems, it met engineers' goal of price/performance leadership.

Digital introduces the HiNote Ultra. Only 1-inch thick and weighing less than four pounds, the Ultra is the first portable computer to combine light weight with desktop functionality.

The world's first minicomputer is the PDP-5. It is Digital's first 12-bit machine.



Digital's first 16-bit computer is the PDP-11/20. It includes the world's first unified memory and I/O bus, the UNIBUS. The 16-bit PDP-11 architecture became the world's most successful family of minicomputers. The RSTS timesharing operating system is developed for the PDP-11.

RSX-11M, a real-time operating system for on-line control, is introduced for use on the PDP-11. RSX-11M concepts are precursors to those in the VMS operating system.

Digital's Network Architecture is developed. This architecture will evolve from one focused on the RSX family of operating systems to an architecture that encompasses large, open, distributed networks.

The VAX architecture committee meets for the first time.

The PDP-8/A is the last 12-bit system based on discrete logic to be introduced.

Digital ships the DECsystem-2020, its least expensive and last 36-bit computer system.

Digital received 74 new patents during the decade.

The VAX-11/750 is introduced—the second member of the VAX family and the industry's first gate-array-based 32-bit system.

The RM80 disk is announced and is Digital's first product based on Winchester technology.

DECnet Phase IV is introduced, significantly increasing the number of nodes possible in a network from hundreds to many thousands. DECnet Phase IV began the migration from old point-to-point networks to the new multipoint Ethernet. Concepts in the DECnet architecture were incorporated in international standards.

DECtalk, a text-to-speech system that allows computers to talk, is announced.

Digital becomes the first company to register a new semiconductor chip under the Semiconductor Protection Act of 1984 (the MicroVAX II chip).

Digital introduces the VAX 6000 system, based on the CVAX chip. VMS version 5.0 is released in September; with symmetric multiprocessing, this version provides a high degree of parallelism and effective use of multiprocessors. The VAX 6000 becomes the most successful mid-range computer family in Digital's history.

The VAX 9000 mainframe is introduced. It incorporates numerous technological advances, including high-density ECL macrocells, multi-chip module packaging, and heavily macropipelined architecture. The VAX 9000 is Digital's last system not based on microprocessor technology.

Digital introduces DECnet Phase V which supports OSI standards and networks of essentially unlimited size.

Digital introduces 64-bit computing with five new Alpha computer systems, the OpenVMS operating system, multiple compilers and networks, and new open business practices.

Digital ships OSF/1 UNIX for Alpha systems.

Digital delivers its first video-on-demand system for an early broadband communications trial.

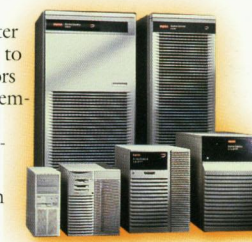
OSF/1 version 3.0 ships with symmetric multiprocessing support and the first wave of cluster capability.

Digital describes the 21164, its newest Alpha microprocessor, which provides peak processing power of more than one billion instructions per second. The chip is the industry's first to operate at 300 MHz.

Digital introduces its Venturis family of desktop PCs for general business use.

Digital introduces the AlphaServer 8400, its most powerful computer system. Supporting up to twelve 21164 processors and 14 gigabytes of memory, the 8400 creates breakthroughs in large-database performance.

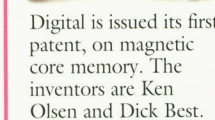
Digital outlines its plan for virtual networking and the integration of LANs, WANs, and ATM.



Digital opens in Maynard, Mass., with 3 employees and 8,500 square feet of production space in a converted woolen mill. Engineers begin developing a laboratory module.

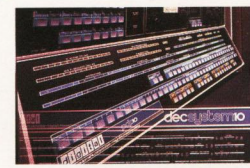


The company's first product, a system module, goes on the market.



Digital is issued its first patent, on magnetic core memory. The inventors are Ken Olsen and Dick Best.

The PDP-15 is Digital's last 18-bit computer system and the first implemented with integrated circuits.



The KI-10, Digital's third 36-bit processor, ships in the DECSYSTEM-10 system.

Digital announces the RT-11 real-time operating system designed for applications such as monitoring and control.

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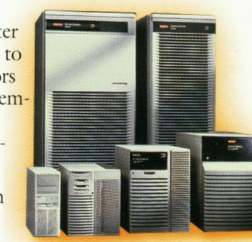
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Digital ships the PDP-4, its second 18-bit computer.

The PDP-8 is Digital's second 12-bit computer system and is the world's first mass-produced minicomputer.

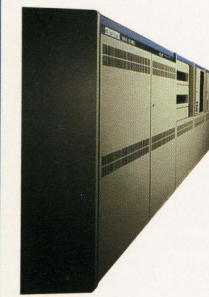
At the close of the decade, Digital had been granted 15 patents.

The PDP-8/E, featuring a unified backplane bus (Omnibus), is introduced.

Digital develops the DEC Data Communications Message Protocol (DDCMP) as a standard for its future computer-to-computer communications.

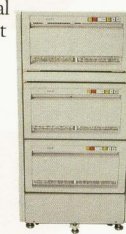
The PDP-11/70 is the most powerful PDP-11 shipped to date and the first to use cache memory.

The first member of the VAX computer family, the VAX-11/780, is introduced. VAX represents the "virtual address extension" of the PDP-11 system's 16-bit architecture to a 32-bit architecture.



The most advanced networking in the computer industry—DECnet Phase III—is introduced. DECnet products made it possible to build networks of over 200 nodes, considered very large in 1980. Phase III was supported on seven operating systems and three hardware families.

The VAX-11/730 is the third and—at the time announced—the lowest cost member of the VAX family.



RA60 and RA81 disks and Digital Storage Architecture advance Digital to the forefront of storage technology.

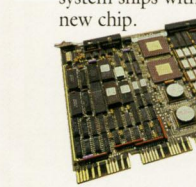
The J-11, Digital's last 16-bit microprocessor, and the first in CMOS technology, ships in the LSI-11/73.

Digital announces the Rdb relational database management system.

The VAX 8600 system is the first VAX implementation in ECL technology and the first to include macropipelining.

Digital introduces the VAXstation I, the company's first true 32-bit single-user workstation, and the DECmate III, the last 12-bit computer system.

The MicroVAX chip is Digital's first 32-bit microprocessor and the first manufactured with internally developed semiconductor technology. The MicroVAX II system ships with the new chip.



The CVAX chip, Digital's second 32-bit microprocessor design and the first manufactured with internally developed 2.0-micrometer CMOS technology, ships in the MicroVAX 3500/3600.



Digital extends its Network Applications Support (NAS) facilities to integrate MS-DOS, OS/2, and UNIX systems into the open DECnet/OSI network environment.

Digital was granted 305 patents during the decade, a 240% increase over the previous ten-year period.

The Mariah chip set, an improvement on the Rigel chip set, is manufactured in 1.0-micrometer CMOS technology and introduced in the VAX 6500 system.

Digital announces its intention to "open VMS" — to add to the VMS operating system support for the widely accepted POSIX standards of the IEEE.

The VAX 7000, Digital's most powerful VAX system, is introduced. It is field-upgradable to the Alpha 64-bit processor.

Digital and Microsoft ship the Windows NT operating system for Alpha systems.

Digital introduces GIGAswitch/FDDI, the world's first LAN backplane switch for FDDI, with more than 3 gigabits per second of bandwidth.

The 21064A chip, an improved 21064 in 0.5-micrometer CMOS technology, sets new performance records with its 275-MHz operations.

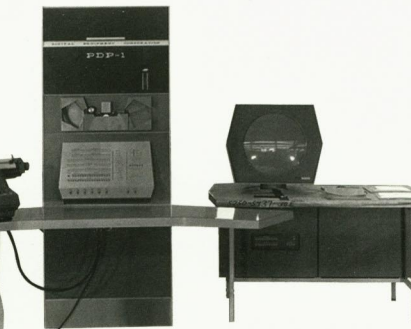
With the introduction of the GIGAswitch/ATM system and the ATMworks 750 adapter, Digital has the highest performance ATM products in the industry.

Digital ships the industry's first commercial high-performance Fortran compiler in DEC Fortran 90.

Patents issued to Digital now number 1521; 1127 patents were granted in the last five years.

digital

This chronology is based on the list of milestones in Digital At Work published by Digital Press, 1992. The list has been updated and considerably expanded with information from Digital's Corporate Archives. Photos are courtesy of Digital's Corporate Photo Library.



New models of the PDP-11 are introduced, the -11/05 and the -11/45. The PDP-11/45 provides extended memory and hardware floating-point operations. These are the first micro-programmed PDP-11 systems.

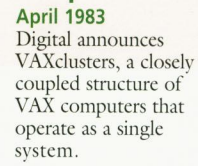
Digital announces the LA36 DECWRITER. It is the company's first successful printer, and it becomes the de facto market standard.

The LSI-11 is the world's first 16-bit microprocessor. It ships at the same time as the KL-10, the most powerful 36-bit processor to date.

The "Starlet" engineering team begins work on what will be the VMS (Virtual Memory System) operating system for the VAX computer.



The VT100 terminal is Digital's first ANSI-compliant video terminal. It becomes the industry's best-selling terminal and the de facto market standard. Earlier in the 1970's, Digital had developed its first terminal, the VT05. A second, the VT52, was the first terminal to be commercially produced.



Digital announces VAXclusters, a closely coupled structure of VAX computers that operate as a single system.



The VAXstation I/GPX is Digital's first technical workstation with accelerated graphics.



The VAX 8200 and 8800 systems ship. These are the first VAX systems to support dual processors. Both incorporate a new high-performance I/O bus, the VAXBI.

Digital introduces the DECtp systems environment which integrates the capabilities necessary to build large-scale transaction processing applications.



Digital introduces the DECpc LP series, its first internally designed, industry-compatible PCs.

