

Computer Advances

January/February 1985



Now the HP 3000 in many languages

The newest addition to the ever-growing feature set of MPE, the operating system of HP 3000 Business Computers, is Native Language Support (NLS). NLS is offered across the entire HP 3000 line, from the new Series 37 Office Computer, which serves

small work groups, up to the Series 68, which supports as many as 400 terminals. MPE is part of the Fundamental Operating Software of the HP 3000, offered free of charge to customers.

(continued on page 2)

What is Native Language Support?

NLS is a set of software capabilities that helps you adhere to local language conventions and processing much more easily. For example, NLS helps ensure proper processing of character sets, collation sequences, currency conventions, and time and date formats. In single language environments, the new Application Message Facility lets you change messages in the catalog without having to recompile the application.

Boosts productivity, ease of use

Because NLS can handle such language idiosyncrasies, it can boost programmer productivity in multinational and international firms. Using NLS can eliminate much of the drudgery involved in hardcoding localization capabilities into applications.

NLS helps make the system easier to use for the end user as well as the application programmer. Programs written using NLS offer a natural, local-language interface to end users. With NLS you can design a program so that two users from different countries can access it on the same system, and both users can communicate in their own native languages.

Supports 15 languages

NLS Support is provided for 15 languages, including American English, Canadian-French, Danish, Dutch, English, Finnish, French, German, Italian, Katakana, Norwegian, Portuguese, Spanish, Swedish, and Native 3000 (the way English was processed on the HP 3000 before NLS).

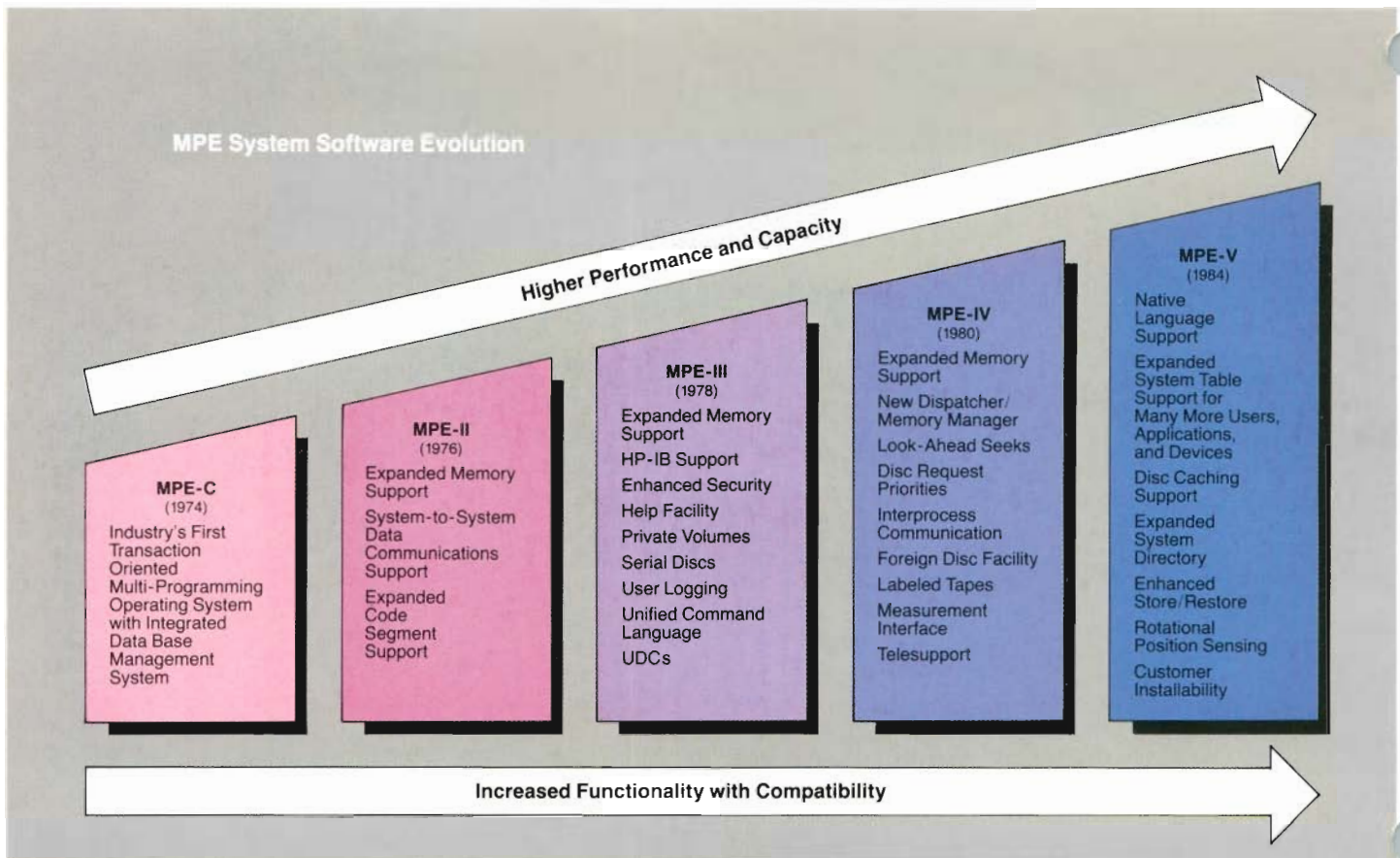
In addition to MPE, the following HP 3000 software has been enhanced to support NLS: Sort-Merge, VPlus, KSAM, IMAGE, Query, FCopy, and COBOLII.

8-bit peripherals required

NLS requires terminals and printers that can support 8-bit character sets in order to encode and properly process alphanumeric, numeric, and special characters. A complete description of NLS peripheral support is available in an appendix of the Native Language Support Reference Manual—contact your local HP Sales Office for a copy.

This manual, which describes in detail HP 3000 Native Language Support, is available through your local HP Sales Office.

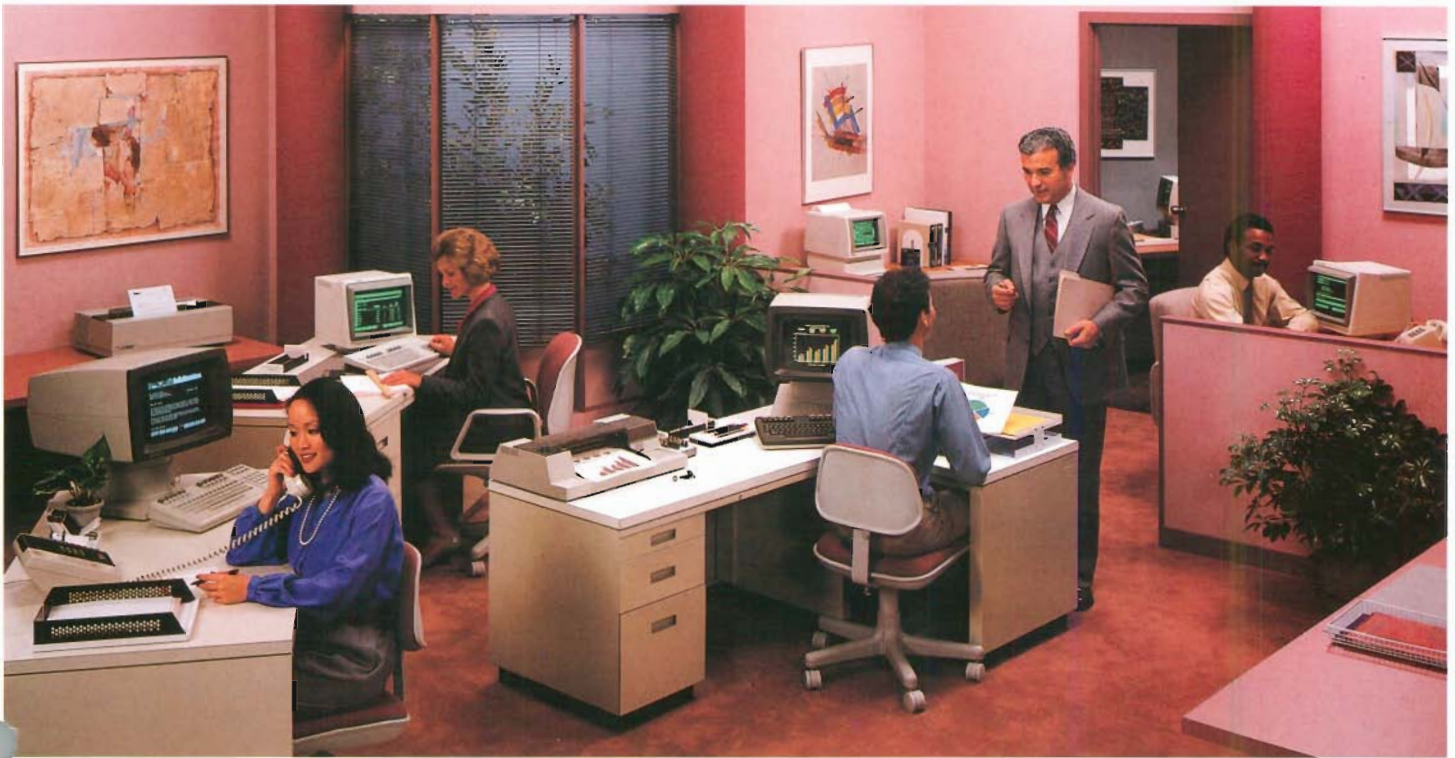
For additional information, contact your HP Sales Rep.



NLS is but the latest step in MPE's ten-year growth in functionality. MPE's upward compatibility means that application programs written a decade ago will run on current releases of MPE without changes.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.



HP 3000 computers give new meaning to full-service banking

When Delaware Trust Company calls itself a full-service bank, it means just that. Besides checking, savings, and other standard banking services, this 85-year old Wilmington, Delaware, bank provides such extras as detailed real estate listings, class-action lawsuit processing, an audio-response network, a customer tracking system, and investment custody programs.

A sophisticated in-house computer network built around two HP 3000 systems enables Delaware Trust to provide these and many other services.

"We've built up our network over a period of seven or eight years," said Mike Yacyk, vice president and deputy controller. "We started out many years ago with an IBM mainframe computer. However, we found that certain needs simply couldn't be filled by a mainframe system. We have been able to develop unique programs more easily and quickly with the Hewlett-

Packard equipment."

The first Hewlett-Packard equipment installed was an HP 2000 computer, used for key-to-disc processing and developing customized banking software. As the applications grew, the computer system had to be expanded to provide a computerized growth path over the next decade.

"We evaluated many vendors for both hardware and software before deciding to stay with Hewlett-Packard," Yacyk said.

When the search was completed, the bank chose the HP 3000 to expand and upgrade its system. Relying on the IBM 3031 mainframe for basic data utility, the system employs as its next level the HP 3000 Series III, with one Mbyte of memory, and the HP 3000 Series 48, with four Mbytes of memory. Supporting this equipment is a variety of terminals, word processors,

peripherals, and microcomputers (predominantly HP Touchscreen personal computers), all tied directly to either the HP computers, the IBM mainframe, or both.

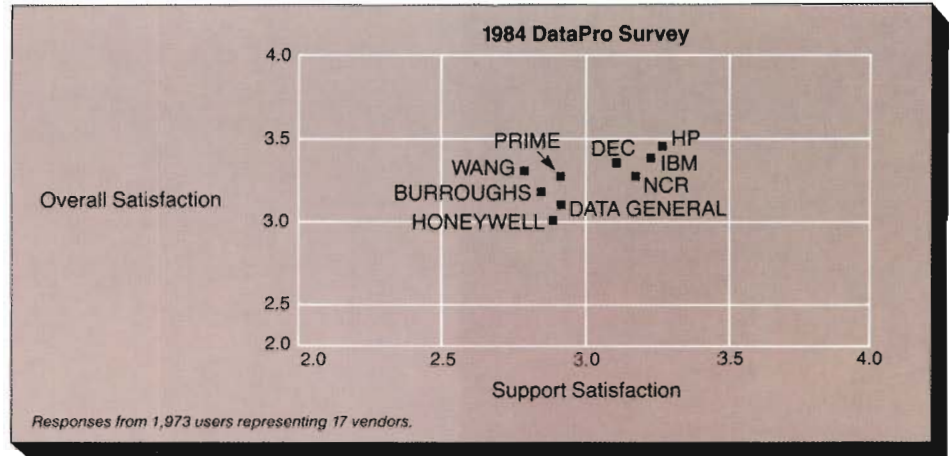
"The HP 3000s process most of the information," said Yacyk. "I can't say enough about the flexibility and communications capability of this equipment. It allows us to handle custom programming easily, to get into huge data bases and produce detailed reports quickly, simply, and economically.

"The ability of Hewlett-Packard equipment to perform well in a diversified environment has made a big difference in the way we're able to perform the standard banking services. And it's allowed us to make strides in areas that one doesn't generally associate with banks," he concluded. "We foresee a continuing expansion of the network as we find new applications to run on it."

Customer-acclaimed support helps you get the most from your HP 3000

According to two independent surveys*, HP customer support rates first among minicomputer manufacturers. Of the HP users responding to the survey, more than 90% use HP 3000 minicomputers. One of the reasons for high customer satisfaction among this group is the prompt, effective support they receive from HP's new Response Centers.

Designed to concentrate support resources, Response Centers are staffed with experienced support personnel and equipped with sophisticated tools. Satisfied users have discovered



Users of HP minicomputers register highest degree of satisfaction with HP in general and HP support in particular.

that both hardware and software problems can often be resolved over the telephone. Because resources are concentrated, users have been able to return their systems to operation quickly. And local HP support representatives can focus local resources on account management, consulting and training activities.

HP ships modems with all larger models of new HP 3000 systems in the U.S. so that users can take advantage of remote diagnostics as part of HP's Tele-Support program. Customers purchasing system-level support contracts can obtain services such as software "patches" and remote analyses of hardware problems through the Response Center. Extensive security features keep remote access under the customer's control.

HP 3000 owners can choose from the full range of support services and tailor a support program to their particular needs. With hardware services ranging from uptime guaranteed to basic, next-day response coverage, and software services ranging from implementation assistance and training to documentation and media updates, the selection is both complete and flexible.

*DataPro survey of minicomputer users in the United States, 1981 through 1984. INPLIT survey of "User Service Requirements—Small Systems," 1984.



Teams of hardware, software and application engineers work together to answer questions and resolve problems for HP customers.



AUSTRALIAN AREA NEWS



THRUST INTO SPACE

The HP 41C handheld computers aboard the space shuttle flights are the best known HP products in the program, but hundreds of others are involved . . . from pre-launch to landing.

For Hewlett-Packard people watching the drama of the space shuttle aloft, it's been a thrill to know that HP 41C handheld computers have been on board each of the eight flights since 1981.

Less well known, however, are the major roles played by hundreds of other HP products of all types behind the scenes in the U.S. space program run by the National Aeronautics and Space Administration (NASA).

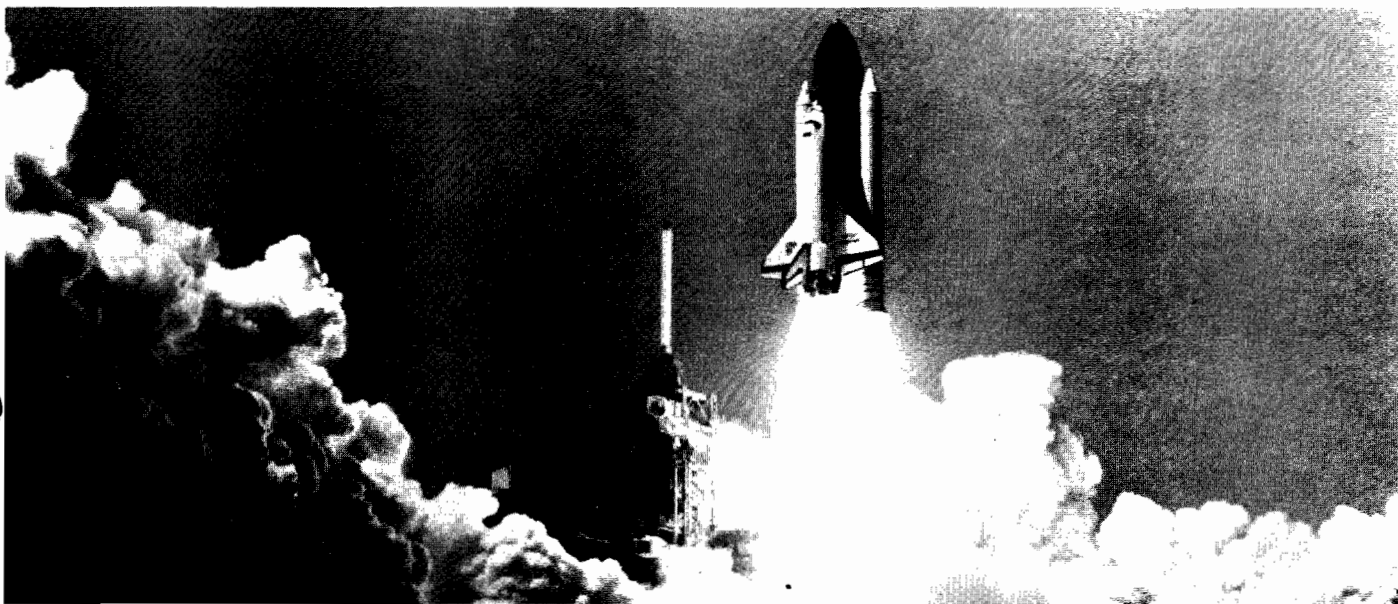
Take the mechanical arm that's stored in the shuttle's cargo bay until its 50-foot reach is needed for a special task in space. On the second Challenger flight, astronauts Sally Ride and John Fabian manoeuvred the arm by

remote control to release a satellite into space, then repeatedly grab and retrieve it. They proved that the gangling boom with its wrist assembly and grasping mechanism could be used in the future for recovery of satellites that need repair.

The smoothness of the arm's operation was not just good luck, however. In a room above the Mission Control Center at Lyndon B. Johnson Space Centre in Houston, Texas, every possible movement of the arm is calculated in advance by NASA's Remote Manipulator System (RMS) simulation. Originally designed for an HP 9825, then upgraded to the 9835 and 9845, the simulation program

now runs on an HP 9000 while continuing to use the same BASIC language. Attached to the controller is an HP 1350A graphics translator with three HP 1311B cathode ray tube displays that show a three-dimensional model of the shuttle viewed simultaneously from the front, the side and above.

The RMS simulation envisions the exact placement of the payload in the bay and helps determine the order in which to get items in and out of the bay with proper clearance. It can "look" into the bay from the vantage point of any of the closed-circuit TV camera locations in the four corners or two others on the arm's wrist and elbow.



Explains NASA's Dave Homan, who designed the simulation software. "It has the same control algorithms as the shuttle's on-board computer. By using special function keys we can imitate the shuttle's hand controller for translational movement (up and down, forward and back, right and left) and rotational movement (pitch, yaw, and roll)." The preliminary calculations in Houston are critical since the on-board system has no allowance for collision.

(An HP 9835-based RMS simulation is kept downstairs in Mission Control as a backup tool to rework procedures in real-time during flight if necessary.)

To calculate control of the shuttle itself, another simulation in the same room employs an HP 9825 desktop, HP graphics translator and two CRTs with a TRW software package. It has been used before each flight to simulate the position and velocity of the shuttle and its distance from such targets as satellites or astronauts floating in space.

These days NASA aerospace engineer Eric Mitchell is simulating a docking exercise that will be done on flight 13. Using a backpack manoeuvring unit, the astronauts will fly to a satellite and lock onto it with a docking probe so the shuttle can move in.

"We're playing with lives here," Eric says. "If you want to roll in or move to the right the system shows how you have to do it. The astronauts rely on this system. It may be small but it packs a wallop."

It's not unusual for one of the astronauts to drop by to watch the simulation systems in operation. Both are under the wing of the Mission Planning Analysis Division, which has responsibility for developing flight trajectories, guidance and power consumption from launch to landing. With the current increased emphasis on the U.S. space program, NASA is now sending up a flight a month and MPA Division Chief Ron Berry is beginning to crank up for double that number soon.

"We'd designed our computer capability on the assumption that flights would become less and less complex and we could phase out highly skilled engineers," he said. "Instead, the flights are staying complex and we continue to need engineers and complex planning tools".



Dr. Norman Thagard tries on the space suit which the astronauts use for activity outside their vehicle. An HP LED display on the chest pack gives readings on the suit.

Between 20 million and 100 million numbers are generated for each flight. His division has ordered seven HP 9000s to experiment with transferring mainframe computer programs to distributed desktops on engineers' desks to increase productivity. HP's Houston South office is supporting conversion of the software.

The NASA division is also exploring the idea of putting navigational software on the shuttle that would eliminate its dependence on Mission Control during descent. Communications satellites are now going into orbit and the navigation sensors already on board the shuttle appear capable of receiving strong signals. An HP 9000 will take raw data from telemetry during and after flight and assess how well the tacans work.

In addition to Johnson, three other NASA installations manage aspects of the space shuttle program: the launch vehicle at the Marshall Space Flight Centre in Huntsville, Alabama; tracking and communications systems at Goddard Space Flight Centre in

Greenbelt, Maryland; and launch facilities at Kennedy Space Centre in Florida.

All of HP's computational equipment is widely used throughout NASA for both business and technical applications — sometimes in dramatic situations. In 1979, the HP 1000 system at Johnson was pressed into service on one-hour's notice to predict exactly where parts of a disintegrating Skylab would hit in the Australian desert.

In the firing room at Kennedy are two HP 1000s which monitor and store information from a sophisticated broad-band bus that supports all types of communications at the launch facility. HP's technical computers serve as a diagnostic tool if problems develop, since the various computers hooked on the band must operate without interruption during flight.

An HP 1000 computer-aided drafting system has been installed by a NASA contractor in Houston for custom design of test equipment and small mechanical, electrical and

architectural pieces that fly on the shuttle. One of the first projects for which it will be used is packaging for a Swiss-designed experiment to incubate various cultures.

At Goddard, 13 HP 1000 systems work together in a high-speed data network that makes certain the shuttle maintains communications contact with ground stations at all times.

NASA and its contractors use instruments from virtually every HP division to develop, test and support the sophisticated electronic equipment used in all NASA programs.

Some of those instrument applications are particularly close to the excitement of shuttle flight:

Desktop-controlled data acquisition systems at Marshall measure the various strains that space boosters must endure when ignited for launch. The costly boosters are recovered and refurbished for use again.

In the final stage of countdown before flight, four HP spectrum analyzers are used at Kennedy to measure all the frequencies and levels of the radios aboard the shuttle.

HP oscilloscopes, logic analyzers, microprocessor development systems, data analyzers, voltmeters, frequency counters and other general test equipment are used to maintain and support systems in Mission Control - the nerve center during flights.

There are HP cesium frequency standards and microwave synthesizers in 12 tracking stations around the world to provide precise time and frequency information for the correlation of data during flight.

Other HP instruments are used in the exacting pre-launch testing. At Johnson, HP's data logging systems and dynamic signal analyzers serve in structural analysis conducted at the vibration and acoustic test facility.

High-power SCR power supplies from HP provide the power for a full-sized mockup of the shuttle used for simulation and testing of the electrical systems. (During actual flight the shuttle must depend on expensive batteries.) Marshall uses an HP data acquisition system to test the cooling system for a space telescope which will fly on Spacelab II in 1985.

Hewlett-Packard's other product groups are also represented:

- An HP 12-digit red LED display is used in the chest pack built into the upper portion of the space suit. It gives readings on oxygen pressure and levels, battery voltage, water temperature and gas pressure in the suit and is part of a warning system that includes audible alarms. (Before flight, an HP 3054DL data acquisition system tests the suit's batteries and an HP waveform recorder checks out its electrical systems.)

- HP's analytical equipment has been used for years by Johnson's Cruise Systems Division to check the toxicity of gases given out by plastics and other materials under the special conditions encountered in space. Today an HP gas chromatograph does the testing, including routine checks run in the chamber for any Freon 21 refrigerant that might have escaped.

- Spacelab IV, scheduled for 1985, will include two HP 77020 ultrasound instruments. Requiring only minor modifications, HP's off-the-shelf equipment will be used to measure cardiac images of personnel on board.

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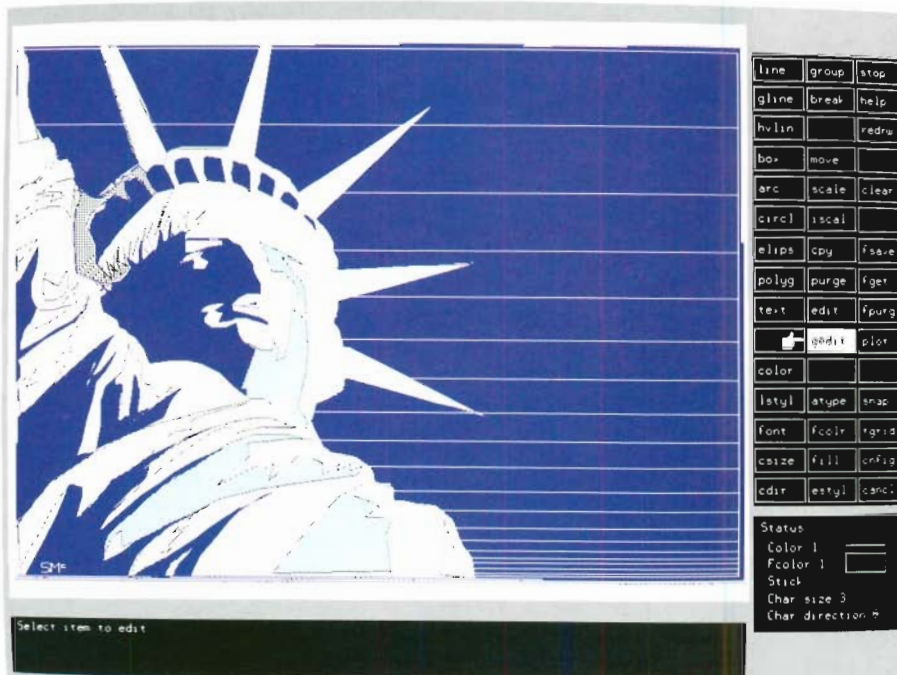
New graphics and text editors increase versatility of HP Series 200 workstations

Two new products for the HP 9000 Series 200 workstation help you prepare presentations or reports quickly and effortlessly.

Graphics Editor/200 is a general-purpose drawing program you can use to create presentation graphics of all kinds, including pictures, simple schematic diagrams, flow charts, forms and text slides.

Features include:

- an easy-to-use menu-based command system
- a windowed screen displaying a "drawing board" command menu with two windows for status, prompts and on-line documentation.
- output options that include printing on paper, and plotting on paper or transparencies
- ability to create pictures using a mouse, data tablet or keyboard
- electronic merging of graphics into a report created with HP TechWriter document-processing software.



Using **Text Editor/200** you can write and edit memos, letters, and reports without learning to use a complicated word processing system. The word-processing package is menu-driven

and includes the ability to sort lists.

Handheld computer system for technical professionals on the move

Now you can carry around your own complete handheld computing system in a briefcase or create a desktop system for office or lab. The HP-71 handheld computer works with a new family of peripherals and powerful software to provide a flexible system for technical professionals on the move.

A complete handheld system

With built-in HP-IL (Hewlett-Packard Interface Loop), the HP-71 can talk to and work with a variety of peripherals including:

- The **HP 9114 portable disc drive**—disc access to a handheld computer with the convenience of battery operated portability
- The **ThinkJet personal printer**—80 column printing in a portable, quiet environment

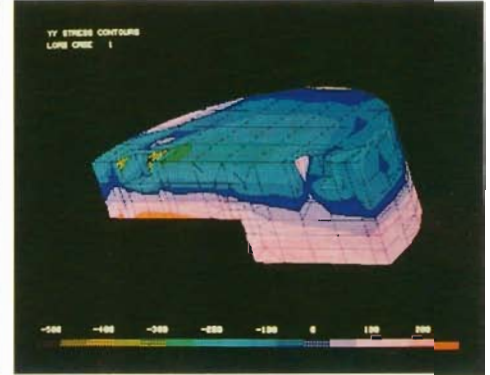
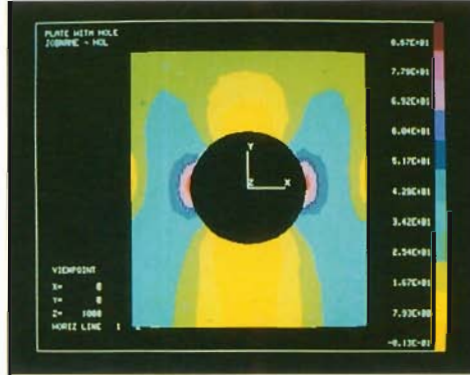
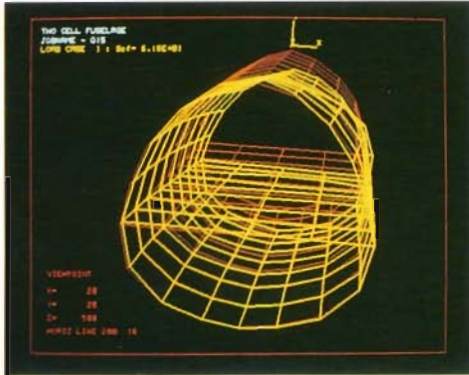
Power and flexibility

The HP-71 packs a 64K-byte ROM-based operating system—larger than those offered by many desktop computers—into a space the size of a small book. The HP-71 combines BASIC and calculations mode to provide a computation tool for technical professionals that makes number crunching easy and fast.

Solve it with software

New software on the HP-71 system includes curve fitting for statisticians and mathematicians, math functions which incorporate IEEE floating-point math standards, fast circuit analysis, surveying, financial analysis, and a versatile text editor. In addition to these software modules HP provides extensive documentation, development languages and media to encourage third-party vendors to develop hardware, software and interfaces for the HP-71.

A complete mechanical design solution — from design to final part



With the introduction of HP-FE Finite Element Analysis—the newest mechanical engineering software on HP 9000 workstations—Hewlett-Packard now offers a one-vendor solution for all parts of the mechanical design process.

HP's mechanical engineering design tools for the HP 9000 are the result of a careful analysis of the computer-aided-engineering cycle. During design, through analysis and simulation, and finally to numerical control tape preparation, HP's strategy is to make the mechanical design process as streamlined as possible by using the initial design data as the foundation for each of the functions.

All-purpose drafting system: HP-Draft

The design process starts with an idea transformed into a design using HP-Draft, an all-purpose drafting system that can be used, for example, to produce parts and assembly drawings.

Comprehensive editing capabilities let you change drawings quickly and easily.

High-performance finite element analysis: HP-FE

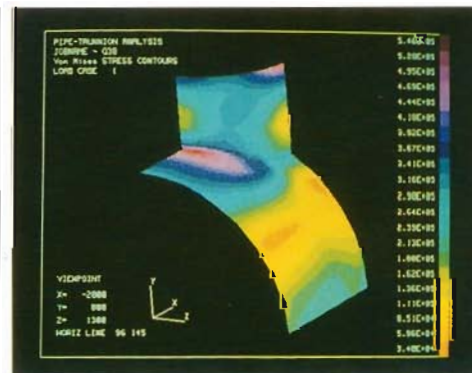
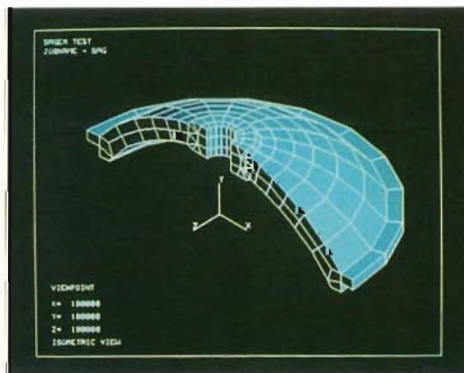
When the preliminary design is complete, the geometry of the drawing can be transferred to HP-FE for testing and modification before prototyping. Using HP-FE you can analyze 2-D and 3-D structures on linear static, modal and dynamic heat transfer problems. The user interface allows automatic mesh generation, interactive editing and effective pre- and post-processing. Engineers can create high-accuracy finite element models interactively right at their desks, without extensive training.

Powerful fabrication tools: numerical control links

To aid prototyping and final manufacturing, HP-Draft also links to CAP/CAP and Weber numerical control (NC) programs for part machining.

The HP-Draft/NC system link saves time, assures accurate NC machining, eliminates costly errors, and integrates part design into the manufacturing process. Because NC systems and HP-Draft are supported on the same hardware, engineers can share resources and peripherals.

The optimum solution for an engineering application requires a combination of flexible software and dependable hardware. HP has that combination today, with software and hardware solutions for mechanical engineering applications. Your investment in HP CAD/CAM solutions will be paid back in accelerated product development for years to come.



Publishing firm maintains close control of worldwide operations with HP computers

HP computers are making it easier for publishers like the Miller Freeman Publications to reach around the world — while exercising close control over their far-flung operations. Armed with The Portable and HP Touchscreen personal computers, editors and marketing representatives of the San Francisco-based magazine publisher can work on stories in London, Brussels, Chicago or Atlanta and still access the HP 3000 business computer system at the home office.

Leigh Freeman, vice president of publications, says, "It's a tremendous advantage to have our key creative and marketing people in those locations. Their proximity to companies they cover is important." Equally important is their ability to communicate with the home office.

Freeman explains, "Our editors plan layouts for each article on their computer screens — allotting space for text, photos and graphics. They transmit this to our photocomposition equipment in San Francisco, where everything is then composed on film."

Freeman and other top executives also use their computers at home. He says, "I can access information, including financial records, from our HP 3000 business computer system at the office. Since I'm responsible for the publishing and cost control of three groups of magazines — which comes to about 60 individual projects — it's easier to access information from the computer than it is to pore over financial reports." The computer's ability to refile the information automatically is as important as its ability to access data initially.

Besides using computers for word processing and photocomposition, the company also uses them for such applications as financial forecasting with Multiplan™ from Microsoft, and database work with Condor® from Condor Computer Corp. Like all publishing firms, Miller Freeman considers it essential to keep tabs on the amount of advertising carried in competitive magazines. It developed a special program to keep track of its market share — and considers this one of the computer's most important applications.



In Brief

- Motorola, Inc., Schaumburg, IL, has named Hewlett-Packard a winner of Motorola's first corporate quality award. HP won in the category of nonproduction materials. Winners were chosen from among 25,000 Motorola suppliers worldwide, based on analysis of suppliers' product quality, on-time delivery performance, price leadership and service.
- The Fall/Winter 1984/85 Computer Users Catalog is now available with 140 new products among more than 1,500 — providing HP calculator and computer users a full range of related supplies and accessories from which to choose. Detailed descriptions, full-color photos and equipment compatibility guides give you all the information you need to choose the right products for the job. To order in the U.S., call 800 538-8787. The international version may be ordered through your local HP Sales Rep.
- The first international users group conference to include the entire HP computer community — HP 3000, HP 1000, HP 9000 and HP personal computers — will take place in Washington, D.C. September 8-13, 1985. Interex, the International Association of Hewlett-Packard Computer Users, has issued a call for papers based on the theme "Information Crossroads of the 80s." Deadline for submission of abstracts is March 1, 1985. Contact the conference manager at Interex, 2570 El Camino Real, Mountain View, CA 94040, USA, 415 941-9960.

California winery improves quality and productivity with integrated HP computers

Using an integrated system of HP 3000 and 1000 computers, Charles Krug—the oldest operating family-owned winery in California's Napa Valley—is going high-tech in a bid to increase quality and productivity.

Today, HP computer terminals dot the winery that annually produces a million-and-a-half cases of Charles Krug premium and C. K. Mondavi wines. At the weight station, a display terminal linked to an HP 3000 business computer records the ripeness and weight of incoming grapes, as well as pH, acid and sugar content—all vital information needed during the crush that follows weigh-in. Much of the data can be gathered ahead of time on the telephone from growers, entered in the HP 3000 and checked at the weigh station as the grapes arrive. Once the grapes are crushed, they are piped to fermentation tanks.



"The post-crush fermentation and aging process is extremely critical and requires close attention," notes Krug president Peter Mondavi, Jr. It is here that the HP 1000 technical computer system comes into play. The HP 1000 monitors the temperature of glass-lined

fermentation tanks and controls the temperature of the stainless steel fermentation tanks. If, for example, a tank's temperature rises above 45 degrees, the computer will note the change and make the correction. "This feature alone will save us hundreds of workhours this year," Peter Jr. said.

"If I want to change the temperature of a storage tank, I will do it from the HP terminal at my desk. The HP 3000 will make out the work tag and the HP 1000 will make the change on request," he said.

The system will monitor electrical-power usage, assuring the most cost-effective, energy-saving methods are implemented. While the HP 1000 can be programmed to reduce power in areas that don't need it, the HP 3000 will provide power-usage cost projections for any area in a few seconds.

All prices quoted herein are \$US list and are subject to change without notice.

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Computer Advances is published every two months for Hewlett-Packard computer customers to keep you informed of new HP products and services and to help you get more out of your investment in HP equipment.

For more information on any of the products and services discussed herein, please contact your local HP Sales Office.

Note: Not all HP computer products are sold and supported in countries other than the US. Please check with your local HP Sales Office.

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