

Computer Advances

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Forward-thinking Factory

Using HP computer systems and ASK[®] manufacturing software, National Production Systems slashes inventory by 45% and improves plantwide productivity

HP and third parties: problem-solving "partnerships"

Working with third parties helps HP provide our customers more effective solutions and lower costs.

By Dean Morton

In today's marketplace, the need to provide solutions to our customers' problems has become an imperative. Yet no single organization working alone could ever hope to offer the hardware and software necessary to serve all possible markets. Nonetheless, HP is committed to satisfying our customers' solutions needs with quality products at competitive prices. It's an idea rooted in our corporate objectives. To help accomplish this goal we've enlisted many of the finest third party organizations and applied their vertical market expertise to our computers. The success of these endeavors has enabled Hewlett-Packard and its third party associates to deliver a broader range of solutions at lower costs.

More solutions at lower costs

Looking back over the years, I've seen our relationship with third parties grow from a simple opportunistic channel of distribution to a more complex strategic relationship that affects nearly all aspects of our business. For example, as computer companies witness greater price competition, the need for specialized, cost-effective distribution channels has grown in importance. Likewise, as software plays a more significant role in satisfying customer needs, our growth is limited from the "supply side" by our ability to develop a full range of solu-

tions using only internal resources. Today we find our third parties serving two basic functions: either as channels of distribution or as sources of solutions. These functions can be combined in various ways by third parties to provide you with comprehensive solutions and services.

The results of all these efforts benefit you in two ways. First, because we use alternative channels of distribution, we can lower product costs through higher volumes, and pass these cost savings on to you. Second, we can deliver solutions that effectively address many applications, reducing your need for additional software development. For example, HP works closely with CompuTrac, Inc., a leading value-added reseller to the legal profession. As a result of this successful association, today CompuTrac provides a highly sophisticated, computer-based solution offering financial management, office automation, and litigation support to the legal profession, a market segment atypical of HP's traditional emphasis.

Expanding our commitment

We're also building relationships with organizations whose skills extend beyond those of standard solution suppliers and channels of distribution. These special relationships help us expand our

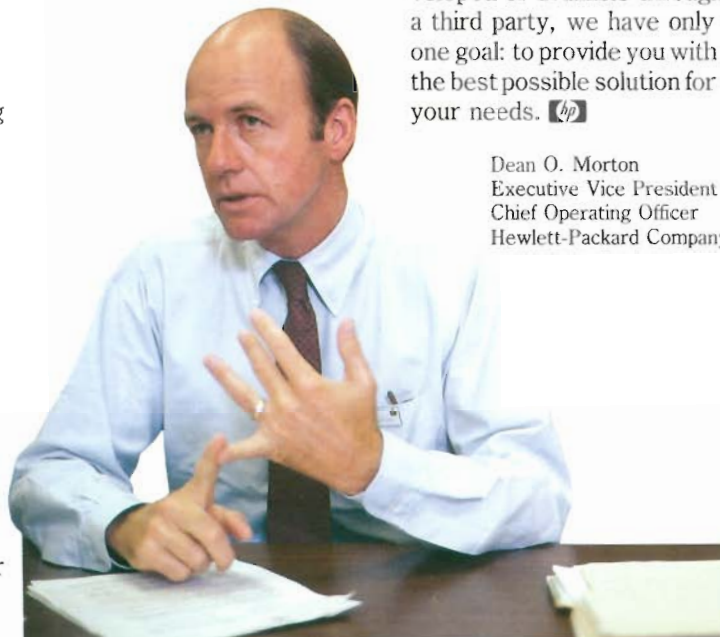
commitment and improve our ability to develop custom solutions for unique customer needs. As an example, when a major automobile manufacturer came to HP with a difficult production problem, we looked to Southwest Research Institute for assistance. We combined our expertise in computer-integrated manufacturing with Southwest Research's skill in creating effective customized solutions. Together we delivered a state-of-the-art automatic test system for automobile dashboards that produced the results the customer demanded. Without these kinds of relationships, I doubt difficult problems such as this could be solved; but I'm proud to say that today it's one more example of the solutions HP can deliver.

Alternatives that ensure satisfaction

These examples demonstrate another important point: The qualities we search for in these third party organizations extend beyond their market expertise. We look for sound financial credentials and reputations for delivering quality products and services. That's important to us because we want you to receive the same level of long-term excellence from these companies as you've come to expect from HP.

Because these efforts have expanded the alternatives available to our customers, we've made a concerted effort to keep our sales people well versed in alternative third party options. We sell HP solutions only when they are the best solutions for your needs. Whether it's HP developed or available through a third party, we have only one goal: to provide you with the best possible solution for your needs. 

Dean O. Morton
Executive Vice President
Chief Operating Officer
Hewlett-Packard Company



HP Computer Museum
www.hpmuseum.net

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The Portable keeps HP customer support on-line during hurricane



The HP Portable computer recently enabled HP customer support people to work from their homes in the middle of a hurricane — providing continuous service and “customer satisfaction second to none” to hospitals in Massachusetts.

When hurricane Gloria came roaring up the US East Coast on September 27, 1985, most of Massachusetts was scurrying to stock up on flashlights, batteries, food, ice, water, and other important supplies. As the storm approached, people returned home from work and made sure all was in order for the anticipated onslaught.

HP's Health Care Productivity Operation (HCP) in Andover, Massachusetts, like other Boston-area firms, dismissed employees so they could return home before the full fury of the storm struck. But the hurricane posed a special problem for HCP, which markets computerized hospital information systems.

As operations closed and other people were heading home, HCP's on-line customer support group was faced with a special challenge: How could they continue to provide round-the-clock call-in service to handle customer questions and problems?

On-line customer support is extremely important to hospital information systems users. These systems perform critical activities like electronically admitting patients, ordering tests, managing inventories, issuing paychecks, billing, and managing other hospital finances.

The plan: The Portable in action

HCP quickly devised a plan to continue supporting these hospitals from the homes of the support group. Hospital computer users were called to let them know that HCP would continue to provide systems support during the impending storm. They were given phone numbers to call and backup numbers in case they couldn't get through to the primary contact.

HCP people felt confident they could pull off such a plan because they knew they could rely upon The Portable, HP's powerful, battery-operated portable computer. By linking The Portable by phone to a hospital's HP 3000 computer, HCP support representatives could stay at home and work callers through any question or problem.


"The battery-powered feature of the computer came in especially handy," recalls Chas Burr, support manager for HCP. "When crashing tree limbs brought down power lines and shut off electricity to the homes of the support group,

we still had the capability to provide customer support. In fact, two members of our group resolved customer problems during the height of the storm, with one of them calmly working on the problem by candlelight."



With hurricane Gloria toppling power lines and whipping 100 mph winds outside, HCP's on-line support team maintains customer support.

The result: "extraordinary" customer support

All seven of HCP's client hospitals kept information systems going during Gloria's onslaught; and every service call got a quick response. Robert DiSarcina, director of information systems and patient revenue for the Somerville Hospital in Somerville, Massachusetts, recalls the effort and ingenuity of HCP's support team during the storm: "Like HP, we were directly in the path of Gloria. We knew firsthand that it would require extraordinary measures to continue with business as usual. As a result of the support team's plan, all our questions were answered and we didn't miss a beat." 

Forward-thinking Factory

Faced with the strong possibility of fast growth in 1981 and looking for ways to cut through costly manual manufacturing and office management systems, National Production Systems (NPS) turned to HP computer systems and ASK manufacturing software to save money and improve productivity. Now, after having reduced inventories by 45 percent with minimal downtime, and streamlining interoffice communications, NPS looks forward to even greater productivity gains in the future.

NPS, a division of National Supply Company and Armco, employs more than 300 people to manufacture rod and hydraulic pumping systems and fluid controls products for the oil field. Their facility in a Los Angeles suburb spans eight buildings and houses a series of complex machining processes — from turning and grinding to honing and metal spraying.

"We needed hardware that supported sophisticated software, yet was rugged enough for our machine shop environment," recalls Darryl Makepeace, National Production Systems' manufacturing manager who spearheaded the effort to automate.

The best solution turned out to be an HP 3000 computer system; HP office automation products like HP Word for word processing, HP DeskManager for electronic mail, and Design Support Graphics; and ASK MANMAN® software to run the plant.

ASK Computer Systems is one of Hewlett-Packard's leading value-added resellers. Their manufacturing management software, running on the HP 3000 computer, helped HP offer NPS a completely compatible automation package.

HP information systems save time and money

The NPS office staff found that HP's information systems helped them cut costs right away. It didn't take long before communication expenses to their company headquarter mainframe computer in Houston, Texas, dropped by more than 50 percent.

HP Word's capabilities proved a big time-saver to the company: some reports can now be made in one-fifth the time it took to do them manually. "What sold us on this office automation package was that we can access graphics, HP DeskManager, data files, and other application software, as well as use high-speed, quality printers," says Makepeace.



Lois Gervais

Bar coding tracks work-in-process. An NPS machine operator. After the job is finished, the operator uses bar coding to log

Not everyone liked the idea of using electronic mail at first, he adds, but it didn't take long to win them over. "Now nearly every staff member is on HP Desk, a few people have terminals at home, and we have some HP 125 desktop computers out in the field. HP Desk allows us to maintain contact just as if we were at the plant."

Routine contact between departments and supervisors — which previously took hours or days — now is efficiently accomplished in minutes thanks to electronic mail messages sent via HP Desk from terminals scattered throughout the plant floor and offices.

"We recently announced a reorganization," explains Makepeace. "I sent the message simultaneously to 26 people,



or uses a numerically controlled lathe to turn and cut pipeline. in the process on an HP 3000 computer.

and they had the information long before it could have been posted. Before HP Desk, we might have called a meeting to announce the organizational changes. Since most of us are too busy for meetings, this feature is really a plus for us.

"In the offices, maintenance work orders are sent electronically via HP Desk to get fast action from our maintenance repair department. The old system took days for maintenance to receive the written work order and log it in. The maintenance supervisor couldn't be more pleased with the electronic process."

Computerized improvements to manufacturing processes

ASK's manufacturing software, running on an HP 3000 computer, has proven as successful in the NPS plant as HP's busi-


ness products are in the office. The most striking benefit: NPS's pipeline inventory has been reduced by 45 percent since the system was installed in 1982. "MAN-MAN® includes a system which recognizes each order requirement as it is introduced, compares product demands with inventory and work-in-process, and recommends action. The result is a system of tight control on all the elements of our complex manufacturing process," says Makepeace.

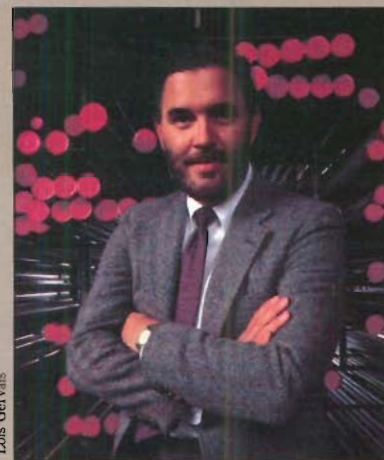
A second useful tool, from Peripheral Software, is called Striped Lightning. It's an ASK MANMAN-compatible bar coding system which permits a job to be recorded and tracked through every step of the manufacturing operation.

A commitment to quality

Darryl Makepeace says NPS management has experienced firsthand HP's commitment to quality. "We started with the HP 3000 Series 44 computer, upgraded to the Series 64 the following year, and now have a Series 68. During this entire time the Series 44 never failed, and we had virtually zero downtime.

"Clearly HP's products have promised and delivered a growth path for us. We were able to migrate from one series to another almost painlessly."

There have been several unexpected benefits of automating, he adds. For one, departments like purchasing, order management, and production control — once a hubbub of noise — are now unusually quiet. "Automation has resulted in a dramatic reduction in office distractions," says Makepeace. "We also use automation as a recruiting tool. When we advertise for personnel, we emphasize that we have a computerized office." 



Lois Gervais

"Before the HP 3000 computer system was installed, our work functions were virtually manual. Our computerized information system has helped NPS increase sales and has cut by more than half the time it takes to prepare routine reports.

"Because our manufacturing operation runs 24 hours a day, we could lose \$1,000 every hour we're down. Fortunately, we've had minimal downtime with HP's products and ASK software."

Darryl Makepeace
Manufacturing Manager
National Production Systems

Putting Computer-Integrated Manufacturing on the MAP

Leading manufacturers are looking to computer-integrated manufacturing (CIM)—the integration of a factory's unconnected "islands of automation" to form a plantwide factory information network—to bring about future increases in plant productivity. CIM is universally viewed as the best way for manufacturers to make the productivity, quality, and throughput improvements needed to be competitive in today's increasingly demanding world markets. Because CIM requires close coordination of production operations and the transfer of large amounts of information between computers and other machines across the plant, the equipment must be assembled into one integrated system. But no single maker of manufacturing equipment can supply all the compatible computers, instruments, and other equipment for an effective CIM operation. The Manufacturing Automation Protocol (MAP) offers a solution to this problem.

MAP is a specification for computer-to-computer communication originally developed by General Motors Corporation (GM). GM's goal for MAP is to identify a set of internationally-adopted standards that enable equipment from different computer makers to communicate in a factory. So far, equipment from Hewlett-Packard, Digital Equipment Corporation, International Business Machines, Allen-Bradley, Gould, and Motorola have been linked successfully in MAP demonstrations.

Making computer-integrated manufacturing a reality

MAP will enable manufacturers to link together any computer and manufacturing automation equipment they choose, without the expensive custom-written software and specially-built interfaces now required. MAP makes CIM significantly faster, easier, and less costly to achieve.

When MAP emerges as a fully-developed, internationally-accepted specification, it will allow computers, programmable controllers, robots, and intelligent devices used to automate factory floor machines and equipment to communicate on the same network. As one of the world's leading suppliers of products and solutions for CIM, Hewlett-Packard endorses MAP because, in essence, MAP is necessary to make CIM a reality.



Towards the factory of the future: the Manufacturing Automation Protocol (MAP) will set standards for fully-integrated computerized manufacturing systems.

HP's commitment to MAP

HP made an early and enthusiastic corporate commitment to support MAP. Today HP remains at the forefront of efforts to establish MAP as the international standard for multivendor factory networks. For example:


- HP was one of 21 companies participating in the MAP demonstration at the Autofact '85 show in Detroit, Michigan, in November 1985.
- HP successfully completed the first operational MAP pilot at General Motors.
- HP was selected for a major role in the General Motors Truck and Bus program, which is considered the most significant MAP installation at GM for 1986.
- HP is committed to implementing MAP on all its major computer families — HP 3000 business computers, HP 9000 engineering workstations, and HP 1000 real-time "automation engines."

Foundations for MAP:

HP's networking strategy

Hewlett-Packard's decision to support MAP was an easy one, because HP previously had adopted a company-wide networking architecture and strategy called HP AdvanceNet. The main goals of HP AdvanceNet are to enable users of all HP computer families to easily do distributed processing, to link personal computers to their information management networks, and to integrate computers from other vendors into multivendor networks.

HP AdvanceNet products will continue to be developed and offered to users who need complete network functionality today. MAP will be the HP solution when many companies are required to operate in an environment where existing MAP capabilities adequately meet the users' communications needs. In electing to support

MAP, Hewlett-Packard is enhancing its established position as a leading CIM vendor. When MAP is a reality, HP and other CIM suppliers no longer will force a manufacturer to choose between them on the basis of which company has the best proprietary network. Instead, Hewlett-Packard and other MAP vendors can compete on the quality of their CIM solutions. 

HP DesignCenter: Effective tools for design engineers

HP's new DesignCenter is a design environment that integrates computer hardware and software to speed the product-development process for electrical- and mechanical-design engineers while reducing costs. The new products provide tools for engineers engaged in computer-aided engineering (CAE), computer-aided design (CAD), and computer-aided manufacturing (CAM).

The foundation of HP DesignCenter solutions is a networked family of HP 9000 technical workstations, offering you a choice of 16/32 or 32-bit microprocessors running industry-standard operating systems, such as HP-UX (HP's enhancement of the AT&T UNIX™ operating system). The DesignCenter environment includes a family of HP peripherals such as mass-storage devices, printers, plotters, high-resolution graphics displays, and more.

HP DesignCenter applications software and hardware tools include:

- **Electronic CAE** — used for front-end product development, offering schematic capture, simulation, and outstanding documentation with links to physical design systems.

- **Engineering graphics** — includes tools for schematic drawings, printed-circuit-board layouts, mechanical engineering artwork, and technical writing.

- **Mechanical CAE** — offers 2-D, 3-D, and solids modeling, finite element and plastic molding analysis, and test analysis, with links to numerically controlled machine tools.

- **Microprocessor software development** — for rapid design of microprocessor-based products, with powerful emu-



HP DesignCenter solutions are based upon a family of HP 9000 technical workstations that can be easily networked together.



The DesignCenter includes a compatible family of HP peripherals — including high-speed, high-resolution plotters that dramatically increase the impact and understanding of graphic information.

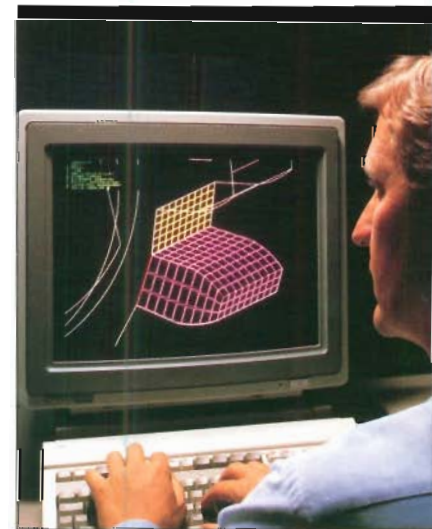
lation, hardware debug, and high-level analysis tools that link the processes of hardware and software code development for greater productivity.

- **Electronic test instruments** — provide fast, accurate measurements ranging from dc to the highest-speed logic families available.

- **Office automation** — tools for word processing, graphics, documentation, spreadsheets, project

scheduling, and more, to boost productivity in office-related tasks.

HP DesignCenter offers you everything you need to use CAE/CAD/CAM solutions most productively through a worldwide service and support network. HP DesignCenter support products include special service agreements, seminars, training, consultation, documentation, and applications assistance.



In addition to the mechanical CAE application shown running on the HP 9000 workstation, HP DesignCenter solutions include hardware and software for electronic CAE, engineering graphics, microprocessor software development, electronic test instruments, and office automation.

UNIX is a trademark of AT&T Bell Laboratories.

■ **AI Grants.** Three universities have received grants under HP's grants program of advanced engineering workstations and computer software for development and application of artificial intelligence (AI). The consortium of universities, titled "Exploring System Earth," will develop an innovative math and science curriculum for high school seniors and college freshmen. The consortium currently consists of San Francisco State University, San Jose University, and the University of Massachusetts at Amherst.

■ **Design Awards.** Two HP products were among winners of *Industrial Design* magazine awards for outstanding computer equipment designs of 1984: the HP Mouse and the HP 7978 streaming tape drive. This is the 31st annual presentation of the awards, which have been given in the past to such products as the Cuisinart food processor, Bausch & Lomb ski goggles, the IBM personal computer, and the Hewlett-Packard laser printer.

■ **Spectrum Program.** HP's next-generation computers are now under development in the program code-named Spectrum, and are scheduled to be introduced beginning in 1986. Recent articles in the *Hewlett-Packard Journal* discuss the new computer architecture and compilers. For copies of "Beyond RISC: High-Precision Architecture" (*HPJ*: August 1985), and "Compilers for the New Generation of Hewlett-Packard Computers" (*HPJ*: January 1986), write to the editor of *Computer Advances*.

New Products continued

New ASYST® software for the HP Vectra PC

ASYST Scientific Software is a new software package that meets the needs of scientific and technical professionals. It offers powerful graphics, statistics, data analysis, plus full HP-IB interface control. ASYST runs on the HP Vectra PC, IBM PC, IBM XT and IBM AT.

ASYST has a large set of powerful "words," or instructions, which are equivalent to whole programs in most other languages. With ASYST, one-word graphics and analysis commands reduce and transform your data into easy-to-analyze displays. Just a few of ASYST's features include linear and logarithmic plotting, polynomial mathematics, curve fitting, non-linear regression, and Fast Fourier Transforms.

Once the system is started, all capabilities co-reside in memory which means faster time to solution. Given all these features, ASYST offers the power and flexibility needed to solve demanding scientific applications.

ASYST is a registered trademark of MacMillan Software Company.

**HP ColorPro plotter:
for high-quality business presentations**



An engineer uses ASYST to collect data from a waveform recorder and analyzes the results on the HP Vectra PC.



The HP ColorPro eight-pen plotter quickly creates high-quality graphics for presentation transparencies or on paper for reports and handouts.

HP's new ColorPro plotter is the ideal solution for business professionals who need colorful overhead transparencies for presentations.

Graphics created with the ColorPro plotter help convey your message faster, and with more impact. When your graphics needs expand, the Graphics Enhancement Cartridge, available as an accessory, adds more advanced capabilities to your ColorPro plotter.

This eight-pen plotter creates high-quality graphics on transparencies for presentations, or on paper for reports and handouts. The ColorPro plotter's high resolution lets it produce smooth circles, straight diagonal lines, and crisp characters.

Whatever your personal computer — from the Apple IIe to the IBM PC, or the Compaq Deskpro to the HP Touchscreen computer — chances are that the ColorPro will fit neatly into your system.

To find out more about Hewlett-Packard or its products and services, please call your local Hewlett-Packard sales or service office. Note: Not all HP computer products are sold and supported in all countries.