

# HP Professional

THE MAGAZINE FOR HEWLETT-PACKARD ENTERPRISE COMPUTING ▴ VOL. 6 NO. 11

NOVEMBER 1992

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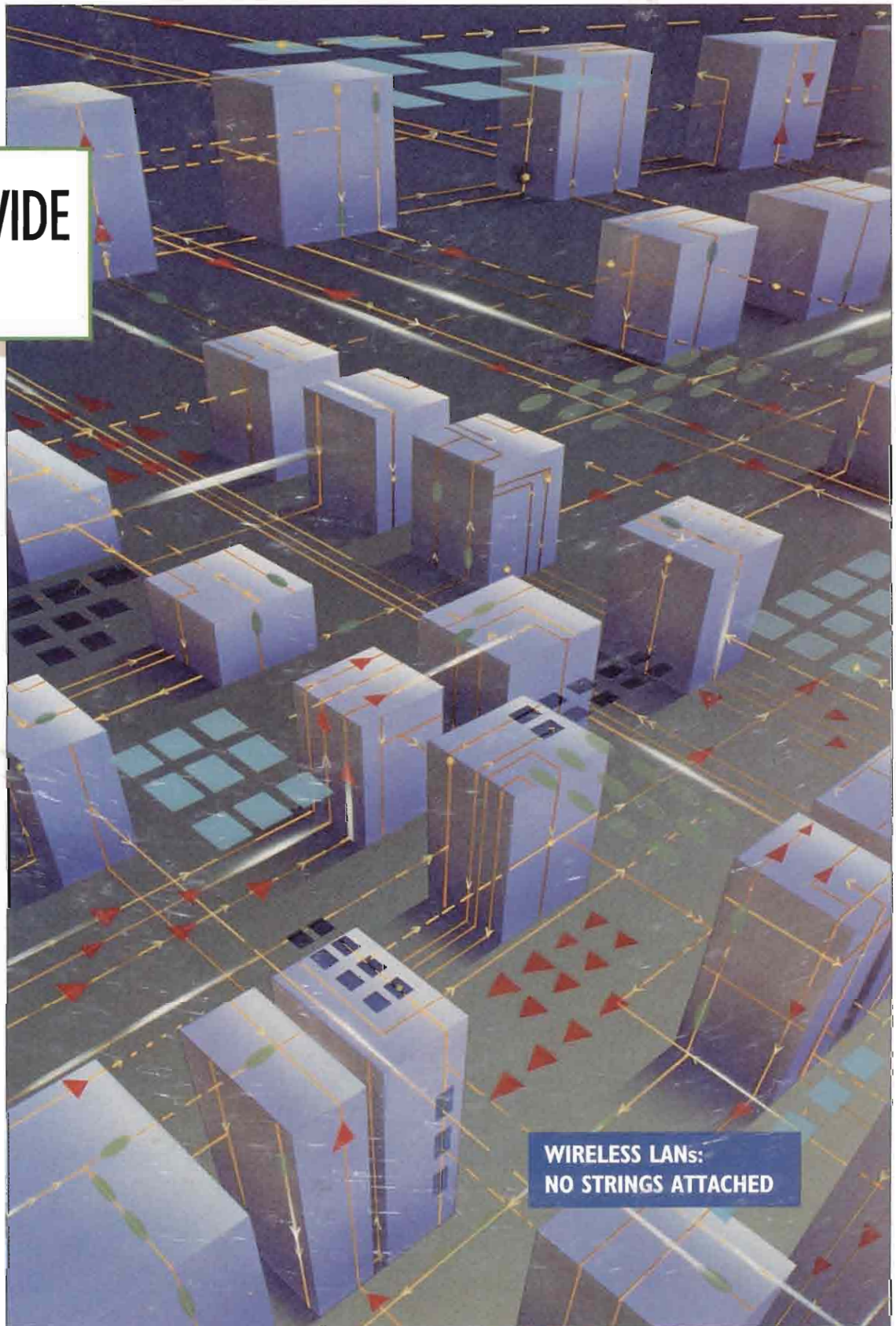
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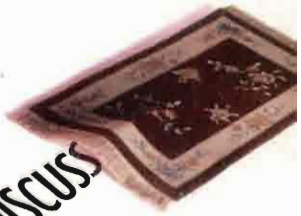


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# No More Status Quo



By Don Marks



kinds are striving to “flatten” their organizations into lean, tightly focused — yet still flexible — fighting machines.

The conventional wisdom about downsizing is that by simultaneously streamlining work practices and moving decision-making power closer to where a company’s work gets done, more cost-effective organizations will result. With the help of distributed computing and instantaneous communications, so the theory goes, fewer people will accomplish more work in less time. If the strategy succeeds, corporate shareholders will reap its fruits in the form of improved returns on investment and stabilized profit margins in an increasingly competitive global market place.

Nowhere has the rush to re-engineer had greater impact than in corporate MIS organizations. In the quest for a decentralized information infrastructure, PC LANs, workstations, X terminals and UNIX servers have superseded centralized mainframe and minicomputer architectures long maintained by MIS. RISC technology, miniaturization and the ruthlessly competitive PC clone market all have spurred the growth of low-cost distributed information systems. Existing data center systems now play host to but a few I/O intensive applications.

Such is the situation that confronts many, if not most, MIS organizations today. And the pressure to cut costs escalates with each successive recessionary quarter. Indeed, many organizations have gone so far as to scale back their workforce first, and then attempt to implement the technology needed to make remaining workers more productive. In these and other beancounter-driven scenarios, direction, know-how and simplified corporate solutions are sorely lacking.

Into this void steps a new HP organization: the Cooperative Computing Systems Division (CCSY). Its charter: to pull together standards-based HP hardware, enabling middle-ware technologies (such as HP OpenMail and Information Builders Inc.’s Enterprise Data Access/SQL) and a bundle of third-party

applications and services in order to deliver — in neat, easy-to-itemize packages — a complete information infrastructure for a global enterprise.

Targeted at HP’s largest customers — Fortune 200-class named accounts — these cooperative computing solutions encompass most of the major legacy platforms you would expect to encounter in the multiple data center information network of a typical international corporation. Systems integration assistance from CSC Partners and SAIC, along with HP’s own expanded Professional Services Organization, ensures that customers’ existing systems, be they IBM mainframes, AS/400s or DEC VAX/VMS machines, interoperate as transparently as possible with the HP-UX servers supplying the real horsepower for these new enterprise-wide applications.

## A New Foundation?

What CCSY offers is nothing short of a new foundation for information systems — the fundamental building blocks of the ubiquitous “information utility” that HP’s new CEO Lew Platt has been predicting for the last few years. And you can buy it today — or, perhaps more accurately, you can hire HP to custom build it for you.

The question that remains unresolved, of course, is what happens to the knowledge workers displaced by the information technology they themselves help to create and implement?

Perhaps retraining people for high-tech computing jobs, as both Bill Clinton and George Bush suggested during this year’s presidential campaign, is no longer the desirable alternative for our society that it once was. Retraining, yes, by all means, but to what end? In all likelihood, future employment opportunities will be found in IT-enabled versions of long-standing professions, such as health care, accounting, law and banking. Tomorrow’s knowledge worker needn’t be a programming wizard or database guru: Suddenly, the ability to solve basic business problems has become much more apropos.

While changes in our society as a whole may take place in fits and starts, in the information technology industry the cry for change is frequently sounded and almost always heard. In fact, as HP once again has demonstrated, in computing, there can be no such thing as a status quo.

A handwritten signature in black ink that reads "Don Marks".

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**INDUSTRY WATCH**

**Bill Sharp**

Maybe no strategy can last more than three or four

years in this business, but NewWave Computing is gone. Just when I thought I might someday understand it, too! It makes me feel really frustrated — kind of like a dog that finally got its chewing bone all slippery-slobbery and situated right in the middle of the living-room rug, and *snatch*, they take it away.

Rather than struggle to get my NewWave Computing strategy bone to my liking, I now can gnaw away on Distributed Object Computing (DOC). This is HP's new wraparound marketing theme intended to encapsulate and promote object-oriented HP technology.

Saul Marcus, product line manager for the HP DOC program, explains that HP's goal is to link all of its object-oriented technologies and base them on emerging standards in order to:

- Make interaction of people, applications and systems over a network as easy as interactions within a single system.
- Make the creation and maintenance of networked applications and services easy for developers.
- Allow easy interoperability among users next-door and worldwide.
- Allow networks to scale to tens of thousands of users.

HP products targeted for integration into this DOC environment include:

- HP NewWave (the desktop manager).
- HP Visual User Environment (HP-VUE).
- HP OpenView network management system.
- HP OpenODB object-oriented database management system.
- HP C++/SoftBench computer-aided software engineering tools.

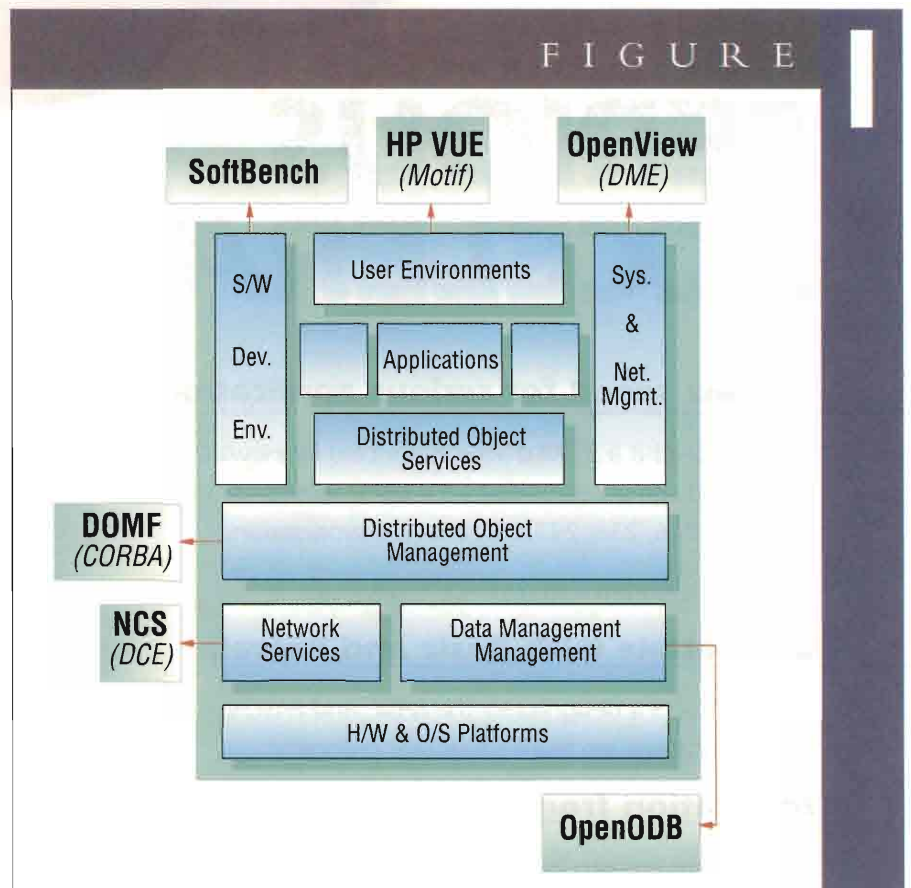
But hey, wasn't NewWave Computing going to do much of the same thing? Not quite. NewWave was based primarily on Windows technology. HP's new object strategy requires a basis for its systems that will relate to more user interfaces than just Windows. In other words, HP wants to tie in *everybody*.

**Object-Oriented Future**

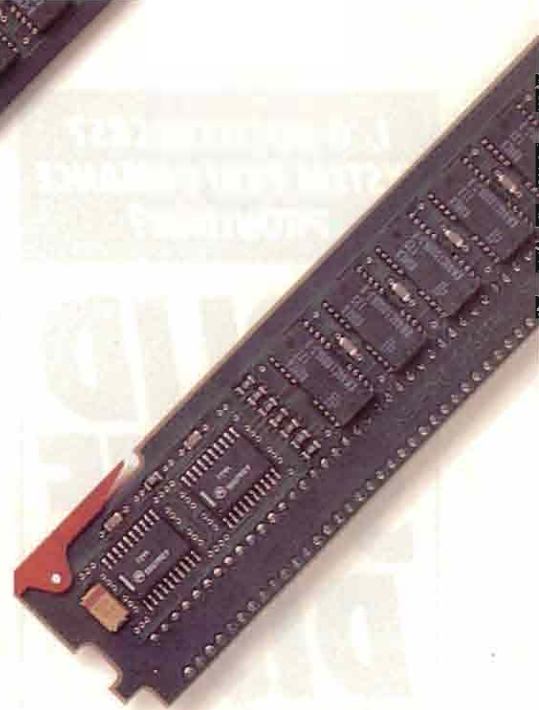
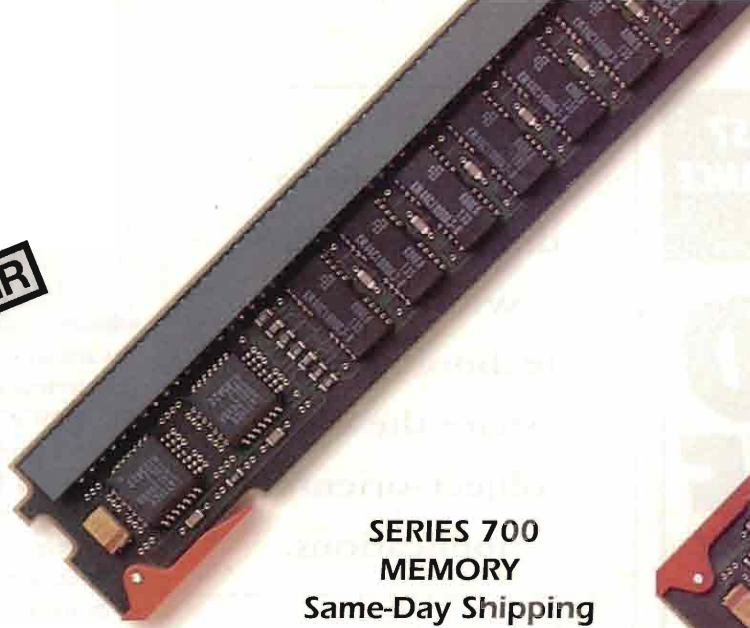
This work springs from HP's aggressive involvement with the Object Management Group (OMG), an organization founded by HP and others to develop standards for object technology. OMG

developed the Common Object Request Broker Architecture (CORBA) standard to allow users to use object technology without having to move to a new operating system. CORBA also allows existing "legacy" applications and data that are not object-oriented to run on new object-oriented systems; these applications simply won't take advantage of the object capabilities. Companies can move to the object-oriented systems in stages, when they are ready or when they can afford the expense and disruption of the change.

Part of the CORBA standard is the



HP's framework for Distributed Object Computing, showing links to existing standards and products.



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Systems from  
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technologies can  
share the same  
object-oriented  
applications.

Distributed Object Management Facility (DOMF) technology developed jointly by HP and SunSoft. DOMF makes it possible to develop distributed, object-oriented applications that function independently of an operating system, graphical user interface or networking protocol.

Thus, systems from different vendors with varying technologies can share the same object-oriented applications. This places HP on a different path than IBM/Apple, whose promised new object-oriented operating system might require a disruptive shift. HP hopes to make the transition painless, says Marcus.

"Today, you can click and drag a spreadsheet into your word processor at your workstation," explains Marcus. "Customers want the ability to have a user at his workstation point and click at any spreadsheet, graphic, fax or whatever — and that object might be in any system on the network anywhere around the world — and simply drag that into the user's document." That ease of integrating any object regardless of its location is Marcus' objective.

"If a multinational corporation in Minnesota finds that customers are returning the product in Los Angeles," says Marcus, "they might want to get people in those locations to exchange a video of the defective product and documentation. In a video teleconference, they might drag and drop such objects into a common work area onscreen. Our customers want this, and it may be a reality later in the '90s."

Customer demand definitely exists

from larger firms that need such linkages in place. HP recently announced that it will accelerate its development efforts on a DOC environment.

In the meantime, the object-oriented solutions available now continue to garner attention in the marketplace. The Petrotechnical Open Software Corporation (POSC) has licensed documentation for HP OpenODB as a basis for defining standards to help petroleum companies manage and exchange information more effectively.

POSC selected OpenODB from a field of 29 submissions. This, along with the successes of other HP object-oriented products, indicates that HP is headed in an effective direction with its program, and we can expect to see lots more objects, with attendant clicking, dragging and dropping, in our future.

### Future-Oriented Objects

So, OK, you say, I like the sound of this, so give me some networked objects to chew on now. Sorrrrrrrry. You can't have it yet. We are talking about future object bones here. Just to give you something to gnaw on in the meantime, however, let's take a look at the likely object future.

**1993:** Pieces of the puzzle will be going out to large customers and developers. HP's DCE, which began going out to large customers in 1992, will be available. HP's DOC layer will head out the door in 1993.

**Beyond 1993:** HP will begin shipping object-oriented products that take full advantage of DOC, according to Marcus. Does this mean that DOC versions of HP's object products will change them, so you will need upgraded versions to play along? Yep, says Marcus.

But this is an evolutionary process, and that's what makes these new bones from HP a bit more tasty than the old ones. We may have quite a while to work them over and make them all slippery slobbery in the middle of the living-room rug before anyone tries to snatch them away again. And next time, I plan to growl. ■

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Through a new Script Window, you can create query language scripts, which automatically create Motif-based graphical windows. New icons on the Schedule Summary window allow you to find commonly used planning functions easily. And, new commands in the Command Window allow for a better interface between the software and UNIX operating systems.

What stands out about the Advanced Planning System is its Planning Engine. Here, MRP runs are complete in seconds, whereas conventional MRP planning systems often take hours.

According to Cal Monteith, an inventory control manager at Compaq Computer, prior to the company's implementation of the Advance Planning System, MRP runs required six hours of CPU time per week. During this time, all computer functions were halted, leaving users without means to complete their work.

John O'Connell an independent consultant specializing in manufacturing systems for Pitney Bowes, boasts about the power of APS on his HP 9000/700 Series when assessing the reduced CPU time. "Run time off a VAX took 17 hours, while running off the workstation takes three minutes," says O'Connell.

Users can access data from the host-based MRP II system and can manipulate data to pose any "what-if" scenario in order to adjust to chang-

ing business requirements. Interactive planning of master production and materials and capacity planning makes for more accurate and responsive logistics plans.

John Sawyer, project manager of the Advanced Planning System at Sikorsky Aircraft based his interest in the product on its success at a sister company.

"We had seen the APS implemented at a sister company, and thought that the the simulator capacity could be helpful in planning future company activity say in sales or marketing," says Sawyer.

We used the simulator capacity [prior to implementing an MRP II system] with other MRP planners to show how an MRP II system would affect our general business planning and to help in decision making processes."

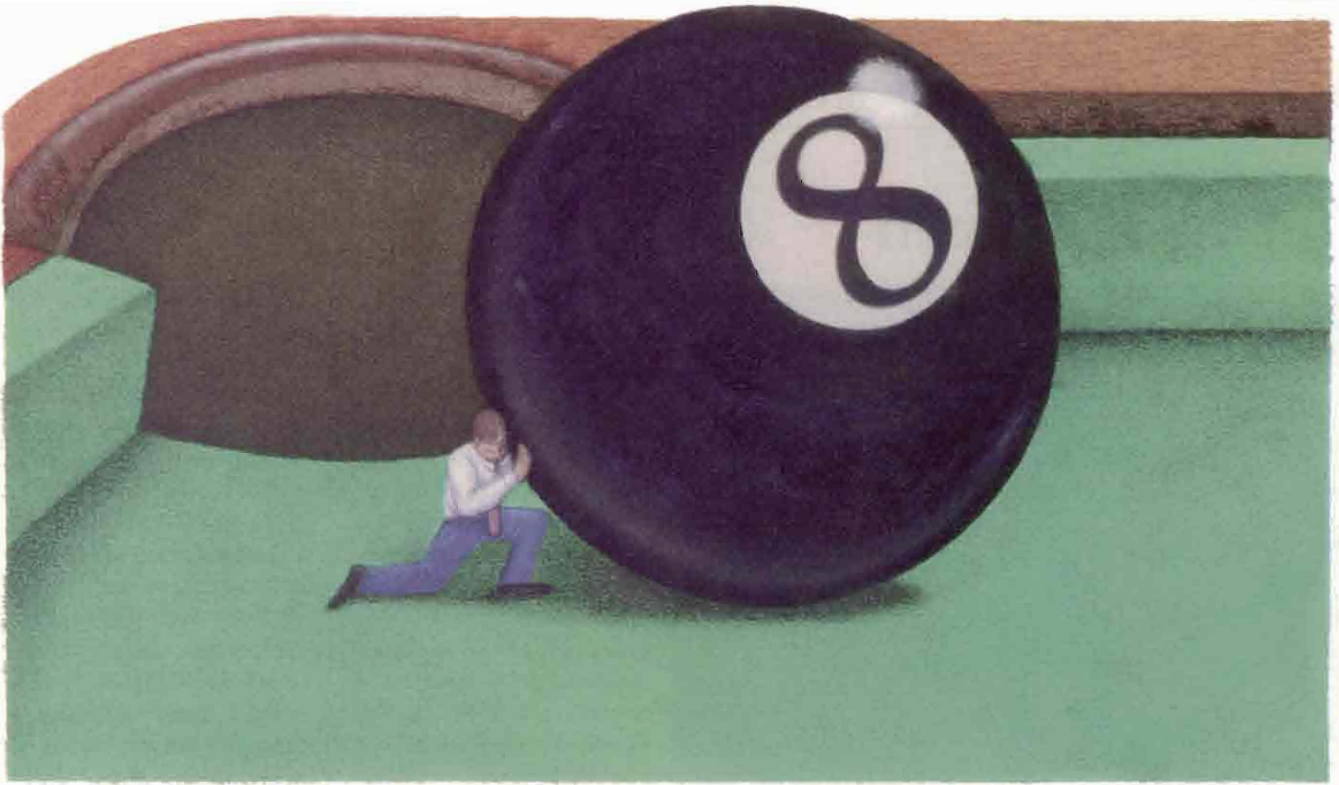
CARP Systems' APS is available on the HP 9000/700 Series. It works with home-grown MRP II systems as well as commercial packages such as ASK's MANMAN. Prices range from \$140,000 to \$400,000 depending on host MRP systems and data volumes. — *Andrea Zavod, Associate Editor*

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*I Hate It When This Happens!*

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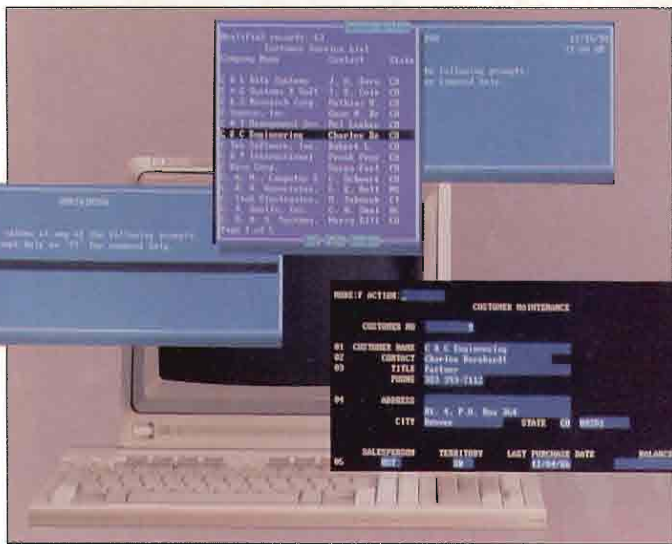
**SOFTWARE DESIGN FLEXIBILITY** - During a recent survey of over one thousand HP3000 users, we found that 93% of the users of our competitors' products also program in COBOL to overcome the limitations of predetermined logic. PROTOS is completely free of such restrictions.

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# Out In The Open



DISC Delivers  
Improved  
Performance For  
TurboIMAGE/iX—  
And Drives  
OMNIDEX Into The  
Relational World

At INTEREX '92, Dynamic Information Systems Corp. (DISC; Boulder, CO) premiered OMNIDEX for Open Systems. The new release, Version 3.0, delivers improved performance and usability for the TurboIMAGE/MPE user base. More important for DISC, it moves OMNIDEX into the open systems arena and extends the product's advanced indexing technology to relational databases and non-MPE platforms.

The real value of OMNIDEX resides in its search flexibility and blazing performance. Highlights of version 3.0 include:

- Keyword searches, a word or value occurring anywhere in a field.
- Multiple key retrieval with Boolean and relational operators.
- Wildcard and pattern matches.
- Case insensitive, phonetic (soundex) and synonym searches.

- Optimized joins.
- Ten to 100-fold increase in speed over conventional capabilities.

For retrievals and index creation, the new OMNIDEX is three to four times faster than the previous version. Sophisticated data compression techniques have reduced indexes to less than one third of the space required under Version 2.0. A new point-and-shoot utility, OmniUtil, simplifies the creation and maintenance of indexes. (Indexes now can be external to the target database, eliminating downtime during index creation.) And OMNIDEX 3.0 is completely integrated with the new TurboIMAGE/iX third-party indexing APIs so that it can be accessed through standard IMAGE intrinsics.

## Relational Juggernaut

The extension of DISC's indexing technology to RDBMSs (Oracle, ALLBASE, Informix, and Interbase — with more to follow) and new hardware platforms (HP 9000/HP-UX and RS/6000 AIX — with VAX/VMS to follow in '93) means a performance boost for open systems devotees as well.

The increased flexibility of relational database technology generally comes with a cost: poor retrieval performance. Complex queries that select data according to multiple search criteria can require enormous CPU and disk resources, particularly in processing joins. Relational databases typically use one

key at a time to select data and seldom offer full keyword retrieval.

OMNIDEX changes all that, eliminating the RDBMS performance penalty while increasing functionality.

At INTEREX, I witnessed a demonstration of OMNIDEX interfaced with Oracle on a HP 9000/730 running HP-UX. For multiple criteria selections, OMNIDEX provided at least a 100-fold performance improvement. A SELECT that required almost three minutes using standard Oracle SQL took less than two seconds under Oracle with OMNIDEX.

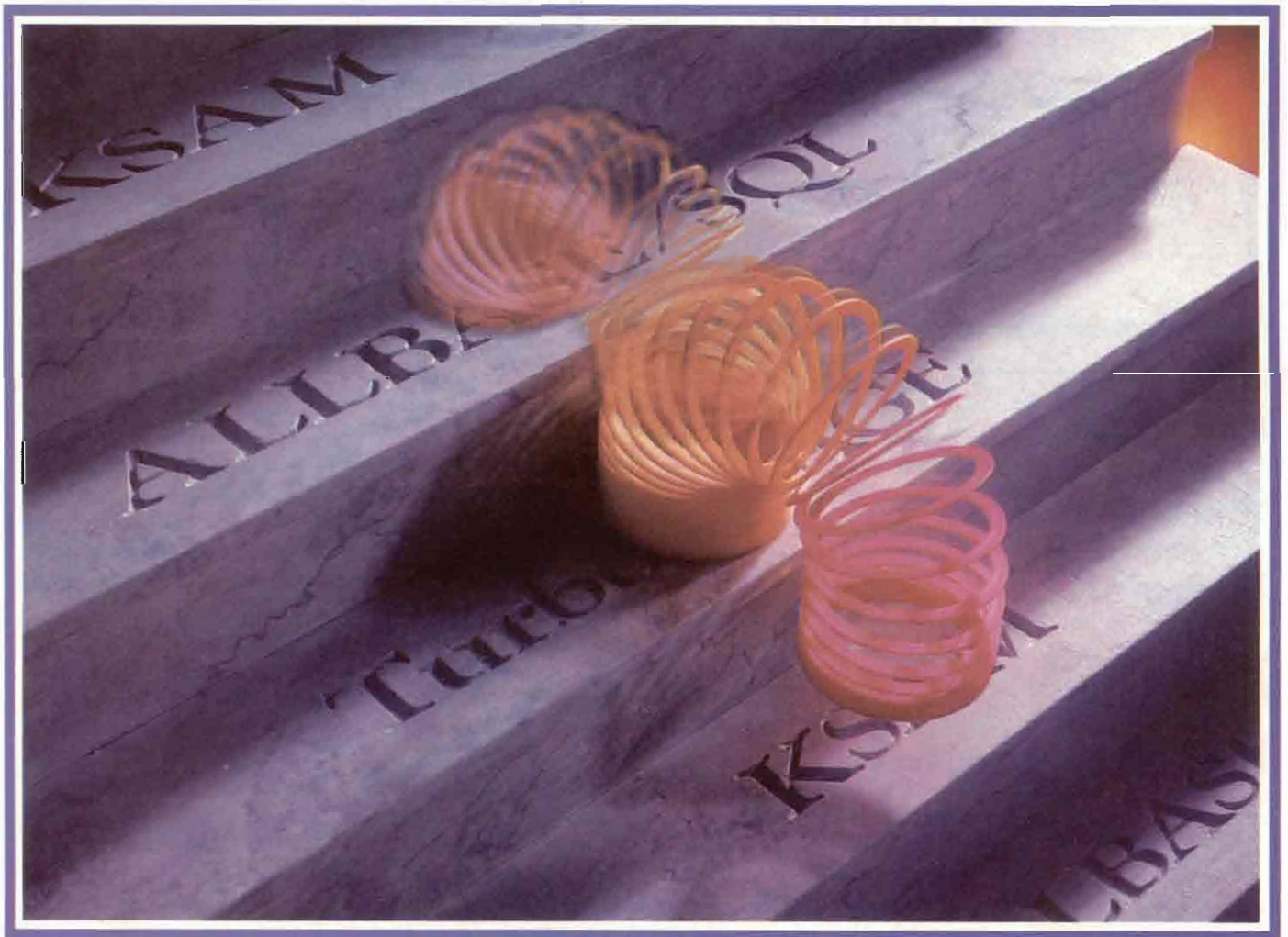
With OMNIDEX 3.0, DISC realized its indexing technology could be transferred to other DBMSs and platforms—that it was not tied to, nor dependent on, TurboIMAGE and MPE. In what was probably a bet-the-company move, OMNIDEX was re-engineered in C and simultaneously ported to multiple databases on multiple platforms.

The OMNIDEX 3.0 indexing kernel for TurboIMAGE/iX ranges in price from \$5,000 to \$31,500 depending on CPU size. The interface modules range in price from \$2,000 to \$12,500. OMNIDEX for Open Systems is priced at a per-user rate of \$500 to \$2,000 plus integration consulting fees. — *John Burke, HP 3000 Editor*

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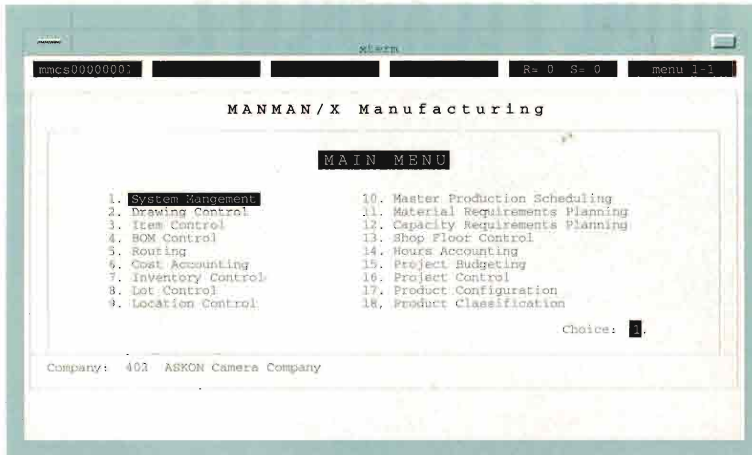
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# MANMAN Returns



ASK Computer  
Systems Braves  
The Open Systems  
Jungle With  
MANMAN/X

ASK Computer Systems' flagship product, MANMAN, has been implemented in HP 3000 and DEC VAX environments worldwide for nearly 20 years. The package provides software solutions that help companies streamline manufacturing operations, control costs, manage inventory and maintain delivery schedules.

MANMAN/X is ASK's next generation of manufacturing business management software. Consisting of 27 integrated modules, the package runs on UNIX-based systems from HP, DEC and IBM. The software supports the INGRES Intelligent Database and the ISAM file system, and delivers concurrent operation in French, German, U.K. and U.S. English.

MANMAN/X provides two principal user tools — foundation and customizer.

Foundation lets you modify tables, the data dictionary and security parameters. Customizer lets you modify menus, screens and reports. Eventually, ASK

plans to make these tools database independent for those who want to develop applications using other databases and integrate them with MANMAN/X.

In addition to the MANMAN/X tools, you can use INGRES/Windows 4GL, Ingres' GUI-based tool and INGRES/Vision, a character-based tool to develop new applications that run with MANMAN/X.

## A UNIX Hat Trick?

ASK maintains that MANMAN/X provides manufacturers a large, stable resource for a UNIX-based solution. Industry analyst Alice Green of Industry Directions, an independent research firm, believes, "As far as the big names, ASK is the first to move to UNIX platforms. However, this doesn't change the landscape of manufacturing decision making. ASK's entry into the ring in itself doesn't make UNIX a viable platform. It does make ASK a player in the UNIX market."

Green states that the desire to enter the European market drove the development of MANMAN/X. Green says, "Even though other large software developers will enter the UNIX arena. MANMAN/X has given ASK a strong foothold that leverages the company in Europe."

Green describes MANMAN/X as "catering to the

made-to-order market." She explains, "As companies become more flexible in meeting custom orders, the conducting of transactions such as order entry, tracking and delivery of products changes. MANMAN/X addresses this new way of doing business."

Matt Neimeyer is the MIS director for Groth Corporation, a beta site for MANMAN/X. Groth develops and supports safety and environmental products for the chemical, petroleum refining and power industries.

Groth evaluated many alternatives before selecting MANMAN/X. Neimeyer says, "We wanted a 4GL that supported multi-languages and allowed multiple windows-type applications."

In addition, MANMAN/X fit into Groth's plan to achieve the European ISO-9000 certification. "The certification will demonstrate to the European market our total commitment to quality. By allowing us to closely monitor and control all aspects of manufacturing, it fits our company's goals."

Pricing for MANMAN/X is user-based starting at \$25,000 for an eight-user system. For a 128-user system, MANMAN/X ranges from \$250,000 to \$300,000. — Charlie Simpson, Technical Editor

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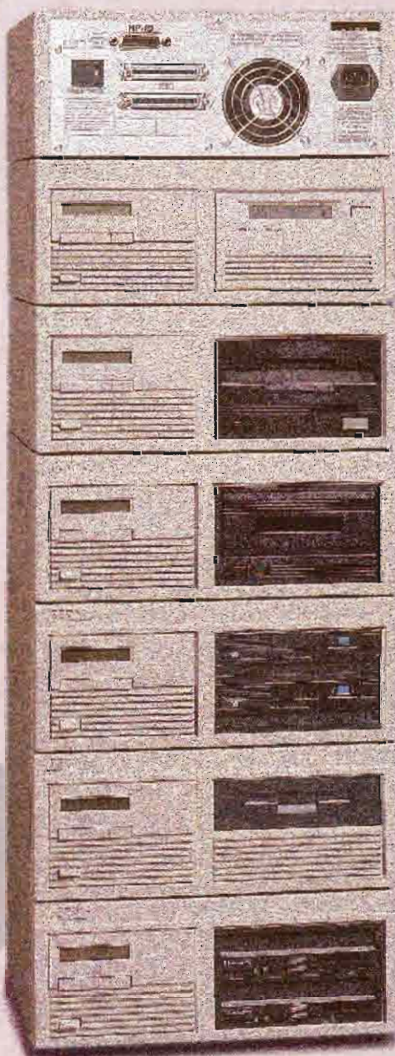


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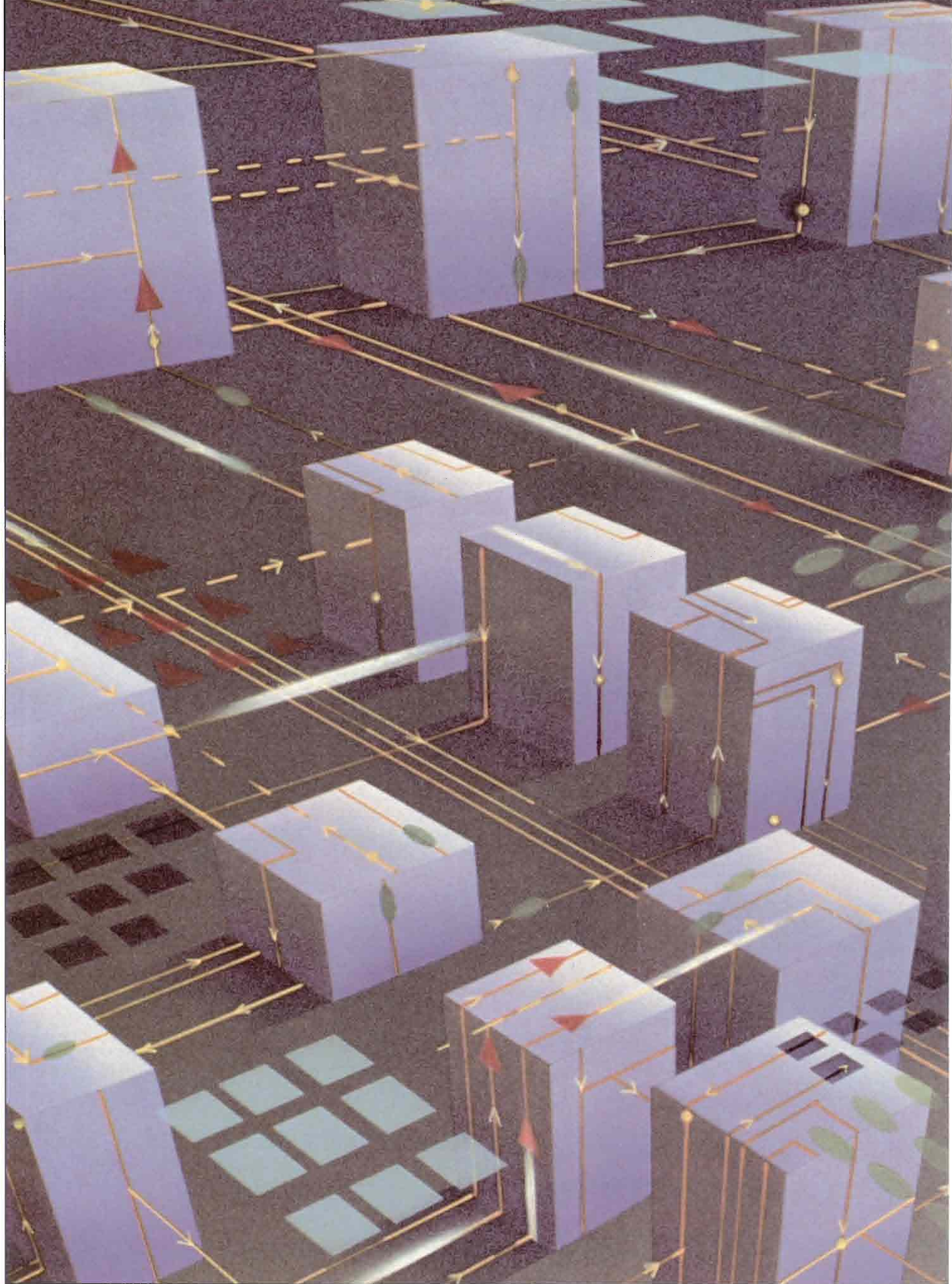
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# NO STRINGS ATTACHED

**The Ultimate In Portable Computing,  
Wireless Data Networks Signal New Freedom  
For Manufacturers**

By Paula Jacobs

In the competitive automobile manufacturing business, it's critical to be able to track machine failures and monitor defective parts in real-time. The factory floor environment also requires equipment that's reliable, easy-to-move and can withstand rugged conditions.

That's why Ford Motor Company's Plastic and Trim Products Division relies on Radio Frequency (RF) terminals to input data to its manufacturing applications. The plant uses Norand wireless terminals that connect over a radio frequency backbone and broadcast equipment to HP 9000 (720 and 730 Series) computers running HP-UX, Oracle and U.S. Data's FactoryLink software, which is also linked to an IBM mainframe.

"We needed a flexible way to input data," says Dave Lewis, supervisor, Manufacturing Systems Section, Plastic and Trim Products. Because the company already had an RF backbone

in place for its IBM equipment, Lewis says, it was easy to add additional RF equipment for the HP manufacturing application. The RF terminal is configured with a dual-host controller that supports both the HP system and the IBM mainframe used for a materials management application. Remote data collection on the HP system is part of a suite of factory floor applications designed to track downtime and monitor defective parts.

"Meanwhile, the hand-held units are intrinsically safe," says Rick Evans, CIM systems analyst at Ford. "Press operators or quality control workers can take them right into paint mix areas, and update information on-line."

"Remote data collection is essential on the factory floor, but hardware devices can be quite expensive particularly as factory floor devices must be relocated frequently," explains Ross Goldman, Ford's system analyst who designed the system. "However, with wireless, this problem is no longer true. We now have a reliable, flexible system, with communications among our different computer systems."

And at Hewlett-Packard's DeskJet production facility, when material handlers need to order parts, they simply enter their order right from the production line into an LXE RF wireless handheld terminal. This device, connected to a Radio Frequency Base station, communicates over a TCP/IP

LAN connected to HP 9000 systems located throughout the Cameth, WA, site.

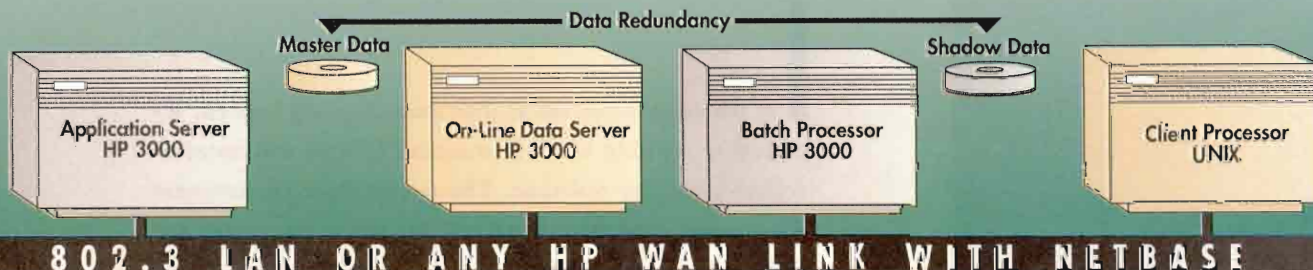
"Flexibility is key," says CIM Software Engineer, Joan Armstrong. "With handheld terminals on their belts, the plant's material handlers use the DemandLink manufacturing application to request parts from our inventory stores."

In addition to material management, wireless terminals also offer significant benefits for inventory control, labor tracking and work order status. In receiving, they can help eliminate delays and improve quality control. For warehousing applications, the benefits include real-time cycle counting and more accurate FIFO stock rotation. In shipping, the use of wireless terminals can provide faster invoicing and improve the verification of complete shipments.

### HP Palmtop Hits The Airwaves

**H**EWLETT-PACKARD HAS MADE a significant commitment to wireless on several fronts. As a member of WINForum (see sidebar, "Datacom's Slice Of The Dial") HP has been working with participating companies and the Federal Communications Commission (FCC) to support a new radio spectrum for voice and data transmission.

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If your organization has a need for more processing power, transparent network file and program access, or fault tolerance, NetBase is the solution. Whether it's Unix, MPE, or DOS based clients, NetBase services allow you to preserve your hardware and software investment while moving toward Open Systems solutions.

Companies needing more compute power can simply add another computer and use NetBase to distribute their applications. The result is better performance and less cost.

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- Immediately improves performance for users of NS/3000
- Shows network activity for security and monitoring
- Uses low overhead transport algorithms
- User exits (API's) increase functionality and flexibility
- Support for NFS clients



## DATAKOM'S SLICE OF THE DIAL

The Wireless Information Networks Forum (WINForum) is an alliance of industrial, user and research community members who are working together to obtain, and effectively employ the radio spectrum for user-provided, voice and data personal communications services (User-PCs). WINForum has concluded that User-PCs should be developed in the Emerging Technologies bands at 2 GHz.

WINForum evolved from a working group of the computer industry concerned with a spectrum for wireless LANs, as originally proposed by Apple Computer in its petition for 40 MHz of radio spectrum to be allocated for Data-PCs.

Participating members of The Wireless Information Networks Forum include approximately 30 companies, including PC, workstation, and minicomputer manufacturers; telecommunications vendors; and networking companies. Members include HP, Sun, DEC, IBM, Rolm, AT & T, Ungermann-Bass, Windata and other leading vendors.

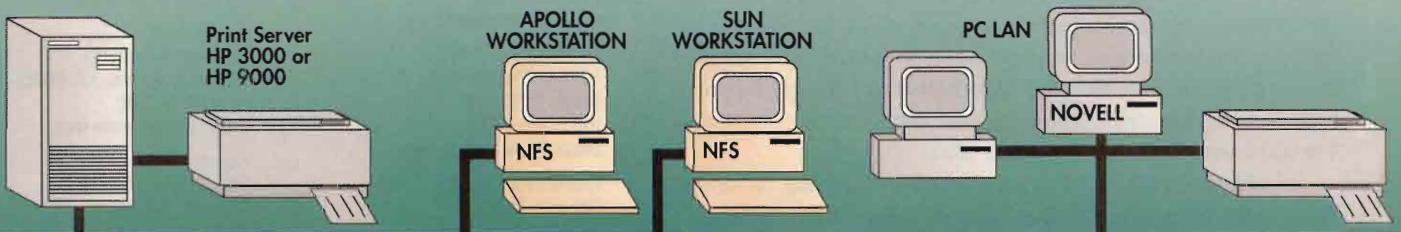
HP is also the first vendor to offer wireless communications for a palmtop computer and has formed marketing agreements with Ericsson GE Mobile Communications and Skytel, leading third-party wireless vendors for both wireless one-way and two-way communications.

Wireless one-way communications enables users to receive one-way radio broadcasts of messages and updates. To address this need, HP makes both Skytel Skystream and Motorola's NewsStream product available.

Skytel and HP are jointly marketing the Skystream wireless communications link to the HP 95LX palmtop. HP 95LX users who subscribe to the Skytel paging service can receive text messages or calendar and spreadsheet updates from Skytel's satellite-based messaging network in 170 major metropolitan areas and cities throughout the U.S. Also required is the Skystream advanced information receiver and the HP Mobile Data Link, HP's cradle and software to connect the HP 95LX with the Skytel receiver (actually manufactured by Motorola as "NewsStream"). Mobile Data Link and Skystream are boxed and sold by HP retailers.

Together with the HP 95LX, the Motorola NewsStream provides the same capabilities. Users also must subscribe to either the Skytel or the EMBARC national paging services.

# WITH NETBASE YOU'VE GOT IT!

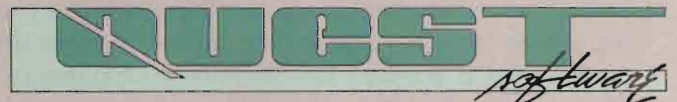


## GROW WITH NETBASE-UX

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Using NetBase/UX, applications designed to run on your host machine can be off loaded to a Unix processor or workstation and directly access TurboIMAGE databases on the HP 3000 computers. Since NetBase/UX maintains a centralized directory that defines the database names and locations available to Unix users, administration is simple. When a Unix application opens a TurboIMAGE database, NetBase/UX automatically establishes a connection to the target HP 3000. Since NetBase/UX uses high speed network caching algorithms, access is fast. If your data center is downsizing, looking toward Open Systems or just needs an increase in overall processing power, get the boost you need with NetBase/UX.

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Users must purchase the NewsStream receiver and cradle as well as EMBARC software from Motorola.

"We feel that the HP 95LX is an ideal platform for wireless because it is so small," says Clain Anderson, manager, Solutions Development Group at HP. "We recognize the importance of mobile information products, particularly the need for solutions to surpass simple paging."

For two-way communications, HP 95LX users can subscribe to the RAM Mobitex network, which provides for two-way radio broadcast of messages and information in 10 major metropolitan areas and cities throughout the United States. By connecting the Ericsson GE Mobidem portable modem to the HP 95LX serial port, users can send and receive messages via the Mobitex network, which uses "packet radio" technology. Users also can engage in interactive PC sessions with other Mobitex users via the Mobidem modem and the HP 95LX.

HP also offers two-way communications with infrared beam for transferring data or print output. By placing two HP 95LXs with built-in infrared ports opposite each other, users can transfer files from one to another. Additionally, when combined with an infrared JetEye sensor box from Extended Systems, the HP 95LX can send data to a LaserJet printer.

### Message: Ubiquitous Computing

**P**AUL CALLAHAN, AN ANALYST with Forrester Research (Cambridge, MA) says that sales acceleration and service delivery are the two critical areas for wireless applications, and cited timeliness, cost, and the opportunity for increased customer contact as three key factors when considering wireless. According to a 1992 Forrester Research Wide Area Wireless Data Network Strategy Report, U.S. wide area wireless shipments are expected to grow from 138,000 units in 1993 to 784,000 in 1997.

Several wireless technology options are emerging. Wireless Wide Area Networks (WANs) provide connectivity throughout the United States, while Wireless Metropolitan Area Networks (MANs) provide connectivity within the major metropolitan areas. Supporting these technologies are packet radio, packet cellular, circuit cellular and satellite.

In addition, wireless local area networks provide connectivity within a limited area, such as a factory floor, multistory building, campus, or within a single floor. Still in its infancy stage, products such as Windata's FreePort wireless LAN, may prove effective where flexibility and mobility are key requirements. For example, manufacturing facilities and factory floors, with their thick concrete floors and noise interference, are often difficult environments in which to set up LANs. A wireless LAN offers an attractive alternative. Other useful wireless LAN applications in a manufacturing setting include inventory control for warehouse locations where it is often not practical to install cabling.

Alan Reiter, group executive editor, Mobile Data Report,

envisions a mix of wireless networks "because of the different advantages they offer." He explains that paging is an economical approach for one-way communications, while cellular is effective for two-way communications, such as electronic mail. "While most computer companies have awakened to the potential of wireless data, there's still uncertainty about its ultimate usage," says Reiter. "However, wireless may prove attractive for many specialized applications, particularly where it can improve job performance."

Brice Clark, mobile communications program manager at Hewlett-Packard says that the company sees wireless as a popular option for personal communications, but considers wireless communications and technologies such as wireless LANs as a complement to rather than a complete replacement for wire. "As for the future, computer companies have a vision of ubiquitous computing," says Clark. "As an enabling technology, wireless extends people's access to technology wherever and whenever it's required." — *Paula Jacobs is a marketing consultant and writer based in Framingham, MA, who specializes in the implementation of new technologies.*

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# REAL TIME WAITS FOR NO ONE

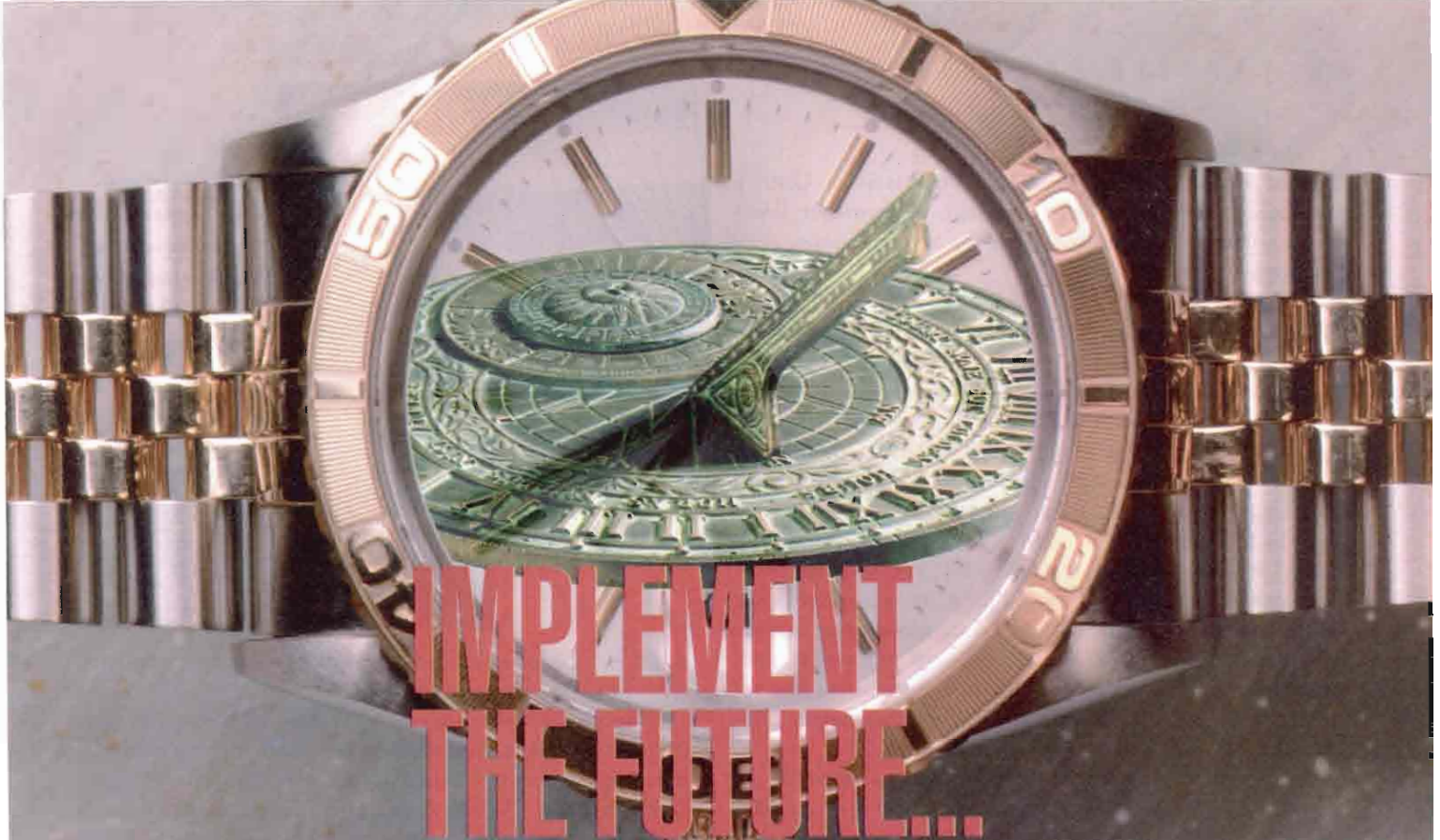
With The HP 1000 Entering Its Dotage, HP Introduces New RISC-Based Industrial Workstations And A Board-Level Real-Time System

Keep a computer system around long enough, and it develops a following with loyalty that approaches religious fervor. Or maybe it's the other way around; loyalty promotes longevity. In HP circles, the HP 1000 real-time system—now more than 25 years old—is just about as legendary as is Digital's PDP-11 in the DEC community.

Unfortunately, the downside to legends is that—like Ronald Reagan—they're *old*. Although there are thousands of companies blithely running their process control and data acquisition applications on HP 1000s—with no plans in place to change—people putting new real-time systems in place want younger, peppier, cheaper, standard systems.

Until recently, HP hasn't had much to offer them. HP 1000 users have looked longingly at the inestimable price/perform-

BY ELAINE APPLETON



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ance of HP's Series 700 PA-RISC workstations. Until a few months ago, however, those high-performance, low-priced systems remained unavailable for anyone running real-time applications.

### The Young Lions

**I**N LATE SEPTEMBER, HOWEVER, HP announced the first Series 700 model capable of running a real-time operating system. The HP 9000 Model 742rt is a 50 MHz, VME board-level computer capable of 57 mips. HP rates the system, based on the new PA-RISC 7100 chip set, at 60 SPECmarks. Compared to full-scale HP 1000 systems, it's cheap—under \$9,000. And it's standard—kind of. It runs HP-RT, a POSIX-based real-time system that, to developers and users, looks and smells like UNIX, but that, thankfully for real-time applications, doesn't behave in UNIX's blindly fair, time-sharing manner. Rather, it's designed for hard real-time applications, meaning that responses to interrupts are predictable (in real-time jargon, "deterministic") and bullet-train fast—under 100usec.

The first of a family of HP-RT based systems, the 742rt sits in two 6U VMEbus slots. Standard on-board I/O includes Ethernet, SCSI II, dual RS232, AUI and Centronics.

The 742rt, which should ship early next year, is designed to provide the real-time community with many of the benefits already accorded to PA-RISC users: client-server architectures; PA's great price/performance; the HP-UX development environment, including SoftBench CASE tools; and, because of its UNIX-based operating system, a useful synergy with HP-UX and other UNIX platforms that already sit in manufacturing and other real-time environments.

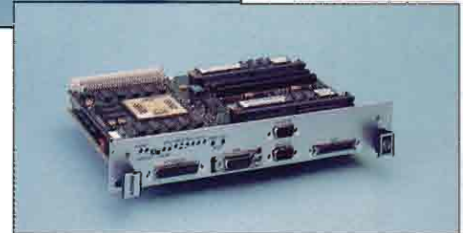
All of that means, theoretically, that operators and developers comfortable in the UNIX environment won't have to struggle (any more) to learn a proprietary real-time operating system like RTE. Instead, they'll be able to run both real-time applications, like process control, and non-real-time applications on UNIX platforms and with familiar UNIX system calls and application programming interfaces.

### Long Time Coming

**H**P FOLLOWED A TORTUOUS route to standards-based real time, at times taking two steps back for every one taken forward. In the early 1980s, Eastman Kodak Co. (Rochester, NY) had one of the largest installations of HP 1000 systems around—more than 100 systems churned away, gathering data in the lab and on the manufacturing floor. But HP didn't keep up with real-time technology from 1983 to 1985, and Kodak—like other HP 1000 user organizations—moved away from the 1000, says Paul Gerwitz, a systems analyst and part of a group responsible for Kodak's midrange computing. While Kodak still uses HP 1000s, most newer applications were designed around VAX/VMS systems. Kodak wasn't



*Model 742rt real-time computer system (shown in standard VME crate) and the Model 742rt real-time computer system (front view).*



alone: HP was losing its lead in real-time. Almost 10 years later, HP is struggling to regain that lead.

Over the last several years, while HP has been trying to chart its real-time course, HP 1000 users have been moving non-real-time applications to UNIX, says HP 1000 Program Manager David Fastenau. "What's been missing for the majority of our customer base is somewhere to take their hard, true real-time microsecond-deterministic response-time needs," he says.

That's the issue HP addressed when it began working with Lynx Real Time Systems Inc., the Los Gatos, CA, developer of Lynx OS and a crucial partner in the creation of the 742 RT. The 742's operating system, HP-RT, is actually Lynx OS dressed up with some HP-UX calls and tools. Self-hosted development is impossible, but developers can use HP-UX tools on servers like the Series 800 to create and debug applications for the 742, and download those programs to the real-time system. For development in the same "box," the 742rt can be built in to a new HP-UX industrial workstation, the 747i, also introduced in September.

### The Lost Art Of RTE

**T**HIS REAL-TIME SYSTEM IN UNIX's clothing addresses an increasingly serious problem in the real-time community: a lack of willing, experienced HP 1000 programmers. "We just look and look and look and look [for them]," says Kodak's Gerwitz. Rare is the programmer who can maintain an HP 1000 application, especially because RTE—and the needs of the data acquisition—encourage developers to write at the bit level. People with the experience and "ability to answer the very difficult questions that developers can come up with ... are very difficult to find," Gerwitz says.

But this dearth of HP 1000 programmers is only one reason why a standards-based real-time system could be appealing to HP 1000 users who have been awaiting a next generation. Another is cost.

"The problem that the HP 1000 has had ... is that it was rela-

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tively costly," says consultant Nelson. "Although you might be able to buy an A400 for under \$15,000, when you bought software and disk and LAN adapter, by the time you loaded it up and installed it, you were talking about \$100,000 for a single CPU. That's a whole lot of money to spend on a single cell. If I were designing [systems] I would seriously say I want something cheap, especially if it has the HP name on it."

### Real-Time Migration

**W**HILE THE 742rt IS LIKELY to be a welcome addition to HP's real-time offerings, questions remain. Migrating from RTE probably won't be easy. RTE system calls will have to be changed to their POSIX equivalent, although this is not a difficult task, says HP's Fastenau. But drivers to HP 1000 I/O cards will have to be rewritten as VME drivers—a step up in difficulty. And, says Fastenau, if users have "microprogrammed the A Series or the E and F Series ... our recommendation would be to redo that in a higher level programming language — in C."

In fact, the HP 1000 migration path is still unclear enough that HP systems engineers will be available to help user organizations determine whether they should port or rewrite applications. And in an apparent admission of the difficulty of moving applications, HP is donating to INTEREX several migration tools originally used to migrate from RTE-A to HP-UX, including the Migration Analysis Utility (MAU) and Libnat.A.



Model 745i Industrial Workstation.

But migrating from RTE to any alternative platform would be a problem, and in the final analysis, any standards-based real-time system has a high probability of success, despite such potential headaches. Why? As consultant Nelson puts it, "I would not buy a system today that was not standards-based, unless it had a feature I just couldn't get elsewhere." — Elaine Appleton is a freelance writer, specializing in technology and information systems, based in Newburyport, MA.

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### COULD PA-RT BOX YOU IN?

When is UNIX not UNIX? Any system manager worth his salt should by now be asking whether a UNIX-like operating system that has been rewritten from the ground up to rid the OS of its essential "UNIX-ness" can coexist smoothly with HP-UX.

It seems perverse, but then, this is the world of standards we're talking about. According to Inder Singh, president of Lynx Real Time Systems Inc., developer of Lynx OS, the operating system upon which PA-RT is based, Lynx OS is as standard as it gets. That means it:

- Runs UNIX applications (almost 100 currently run on Lynx OS, but Singh admits they have yet to be ported to PA-RT).
- Includes TCP/IP and NFS connectivity protocols.
- Will support X.25, DECnet and ISO through third parties.
- Employs the POSIX 1003.4 real-time extensions (still in draft form). This draft is "basically an application programming interface," says Singh—calls necessary to support several realtime functions in a standard way. The draft includes calls for realtime scheduling, semaphores, asynchronous I/O, contiguous files, support for timers and locking memory.
- Supports X-client and OSF Motif GUI libraries.

On top of all that, HP added many of its own tools (in a modular fashion, so you can choose what you need) to the multiprocessing,

multithreaded Lynx OS to come up with PA-RT, the idea being that PA-RT should not only link gracefully to HP-UX systems, but that the only way to develop applications for systems running PA-RT will be to do so on HP-UX servers and workstations. You'd use the HP-UX development environment for designing, compiling and linking real-time applications and the RT kernel, as well as HP-UX hosted cross debuggers for kernel, driver and application development. Additionally, the OS supports HP-PA Assembly, HP C/ANSI C, C++ and the Ada compiler, run-time libraries and support. On the hardware side, the 742rt offers HP 700/RX X Terminal support, as well as that of many HP SCSI devices, HP 700/x Serial Terminals and HP Centronics printers.

No one's promising everything will be easy. But in an era that's seeing real-time operating systems move into the hearts of automatic teller machines (ATMs) and HP Laserjets as well as air traffic control towers, voice-mail systems and medical laboratories, the more links HP can make between its new real-time operating system and its tried-and-true HP-UX environment, the better.

Those links keep harried systems managers from feeling, well—all boxed in.



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# THE RAGE TO RE-ENGINEER

**Downsizing Fever  
Has Swept  
Corporate America —  
Now MIS Must Steer  
The Course  
To Enterprise-Wide  
Client-Server  
Networks**

With technology changing at such a rapid pace, it's easy to be confused as to the potential future directions of corporate IS. Regardless, the end result of these developments should benefit the user community by giving them the information resources they need where and when they need them.

Because of the rapid increase in computer performance and the evolution of standards, business organizations now have an opportunity to achieve two important goals: reduce and contain costs and implement an information technology that can grow and adapt with the business.

This brings us to the original justification of hardware downsizing—or if you prefer, “rightsizing.” The meaning behind these concepts boils down to the strategic migration from older mainframe architectures onto distributed (and preferably open) platforms that provide a stronger foundation and growth

By David J. Rubinstein

path for the future. The added benefits of this migration are cost reduction (in many cases as much as 20 to 60 percent), cost containment, increased functionality and numerous intangibles.

### Best Of The Buzzwords

**I**N ENVISIONING THE '90s, *Business Week* identified downsizing as one of the key buzzwords of the decade. For the business community, downsizing has taken on the broad definition of revamping an organization's structure. In MIS terms, it is commonly interpreted as "shooting the mainframe." More accurately speaking, new technology has presented us with opportunities to rightsize information systems.

Let's not confuse the issue — we're not talking about scrapping the mainframe and replacing it with a PC LAN. That's simply not a realistic prospect. Hundreds, if not thousands, of person-years have been invested into mainframe system development and operation. However, in many situations, such as end-user reporting, it's clearly advantageous to offload applications from the mainframe onto a midrange system.

Information processing is moving back to where it originated: the desktop, the department and the regional office.

In the past, many businesses have restructured in order to accommodate their computer systems. For some companies, this added measure of structure was welcome. For others, computer systems represented a necessary evil. Jobs, departments and information flow were changed and readjusted in order to provide the most effective use of the computer system. The flexibility of today's computing environments offers organizations a chance to turn the tables. Businesses now can re-engineer themselves without giving first consideration to the computer system.

### Cost-Conscious Computing

**A**MONG THE MANY CONSIDERATIONS that come into play when downsizing is discussed, money ranks as the top issue. And, in computing terms, money matters boil down to price/performance. The processing power found in many of today's midrange computers (such as the HP 3000 Series 990) is equal to and in many instances greater than many IBM mainframe models. Not only has the price/performance been improved dramatically, but the cost of operating and maintaining the systems also has decreased.

PA-RISC is one of the best examples of why operating costs have decreased. PA-RISC puts the mainframe-class processing power on a single chip, while the IBM mainframe has hundreds of chips performing the same functions. The simpler the design of a computer, the easier it is to maintain the hardware. This translates into lower support costs.

Also, mainframes require special environmental controls, such as water- or air-cooled equipment. There are on-going costs associated with maintaining this environment such as greater

Downsizing has taken on the broad definition of revamping an organization's structure.

In MIS terms, it is commonly interpreted as "shooting the mainframe."

power consumption, floor space and additional equipment maintenance requirements. All of these factors add up to considerably higher operating costs when compared to midrange systems and servers.

The hardware alone costs 30 to 60 percent more to operate in the IBM mainframe environment than, an HP system. Even IBM's midrange AS/400 costs considerably more to own and operate than a comparable HP 3000. And the RS/6000, despite price cuts, is still more expensive than the HP 9000.

Mainframe software costs make the economic argument for downsizing even more compelling. For example, the software licence fee for a 4GL tool can cost half as much on the HP system as on a mainframe. This cost ratio also can be translated to the software support costs. This provides more evidence in favor of rightsizing in a cost benefit analysis.

The cost justification of an HP system versus is the IBM mainframe is overwhelming. Studies show that by replacing the mainframe with HP 3000s or 9000s where appropriate, the business can realize a payback in less than three years. The economic justification is overwhelming, but it's also important to examine other factors when making the downsizing decision.

### New Standard Bearers

**R**ECENT ADVANCES IN system standards (i.e., open systems or a standard within a product line such as MPE with integrated POSIX-compliance) provide businesses with more flexibility when choosing hardware, software and development tools. Standards have brought us many new and enhanced capabilities, all of which help lower operating and development costs, as well as increase productivity.

With standards-based hardware and software, the size of a system can be configured to match the organization it's

supporting. This is called scalability. The idea of scalability and portability is extended into the development environment.

Many of today's development tools can be used on PCs, allowing a developer to be more productive. A developer no longer has to wait for a program to compile because the compile stream is competing against the production system. Many MIS departments are purchasing low-end systems for development. The software then can be ported to the production systems.

This strategy provides a dedicated development environment whose test environment can mimic the production environment. Also, by being on a low-end CPU, the development licence and support costs are less than on a larger CPU.

Development tools also have become more flexible and powerful. Under a NewWave or Windows environment, multitasking can be introduced into the development process. A programmer can execute a program in one window, use a debugger in a second window, while reviewing the source code in a third. And, all of this is being performed on a dedicated CPU. Studies show that the improved development tools along with a dedicated processor have increased development productivity by about 30 percent. Productivity increases extend beyond development as well. The implementation of client-server architectures has had a great impact on the way business is conducted by placing computing power closer to the user.

Training also is receiving a boost from today's standards. Graphical user interfaces (GUIs) make systems simpler to use. You no longer have to type in commands or navigate through cumbersome menu trees. GUIs allow you to relate to graphical objects. And, by concentrating on objects, it's easier to learn and retain system knowledge.

The result of these benefits is a more competitive business. Downsized systems eliminate unnecessary costs, allowing the business to invest more resources in development or direct more

money to the bottom line (a favorite of many stockholders). Downsized systems can place the resources at the appropriate level within the organization, thereby allocating more computing power at less cost to those who need it. Systems can be developed more proactively and productively, allowing the users to become more proactive and productive in their functions. This has a ripple effect on the organization as a whole — making the company more profitable, productive and competitive.

### Bucks, Guts And People

**D**OWNSIZING ISN'T A simple process. There are many challenges that lie ahead — technical, functional and people problems. The process is more involved than a simple one-for-one exchange and will likely require moving to more than one system. Remember, we're moving the processing to where the work is done — going from centralized to decentralized processing. This may mean putting a lead tracking system into regional sales offices and a warehouse/inventory system in each distribution center. The impact of such fundamental changes will be felt by users at all levels.

In the first phase of the re-engineering process, we look to the beginning of the systems development life cycle. We term this "information planning." This is the segment where the vision of future computing is defined and established. Business concerns are analyzed. What operational advantages can be established to maximize competitive advantage? How can you lower your cost structure? How can functionality be improved?

The downsizing process provides the opportunity to answer such questions. Moving from the centralized mainframe environment provides the opportunity to mold information systems into a framework that truly can support the future growth with a flexible, powerful architecture. This is the time to build that strong base — this is where management commitment is vital.

### RIGHTSIZING AND RE-ENGINEERING: FIRST ASK THE TOUGH QUESTIONS

Downsizing and re-engineering are not for everyone. There are many questions that should be asked before jumping into this process. Downsizing is a major commitment full of challenges and changes. Here are a few items you may want to examine:

- Compare your support costs for hardware and software against those of a comparable midrange computer.
- Compare your software license fees against those of a comparable midrange computer.
- Compare the percentage of your programming staff dedicated to maintenance of current systems to maintenance expected for off-the-shelf software.
- Compare the cost per mips.

Questions you should ask yourself include:

- What is the cost of maintaining your current computer facility, including power usage, cooling units and cost per square foot?
- Is there a need to expand the physical facility?
- How large is your development backlog and how productive is your current development backlog?
- Does compiling programs compete with production resources?
- Are your systems mainly batch?
- Would the business benefit from better functionality and improved response time?
- Do users constantly request data that creates more backlog for MIS? Could this data be more readily available in a client-server or desktop environment?

The economic argument for or against downsizing is easy to prove. The next step is to embark on the actual process. It isn't simple, but the rewards are tremendous.

Management commitment can be gained in many ways. One tool that we use often is the cost benefit analysis (CBA). As mentioned earlier, the economic arguments for downsizing are quite strong and the CBA is a powerful tool to get management signed on. In order to execute the downsizing plan, a budget will need to be allocated. It boils down to spending money to make money, and the CBA should bear this out. One of the best comments I've heard about the downsizing process was, "It takes bucks, guts and people."

The people issues are perhaps the greatest barrier to a successful downsizing project. Technical issues also pose some hurdles, but these are easier to overcome. From our experiences, we find the MIS staff the most resistant to change. They don't want to learn and operate in the new environment. After all, change represents the unknown, and fear of the unknown

is basic to human nature. And in recessionary times, job security is on everybody's mind. Contrary to popular belief, however, downsizing doesn't have to mean staff reductions in MIS.

The economic argument for or against downsizing is easy to prove. The next step is to embark on the actual process. It isn't simple (is anything in information systems?) but the rewards are tremendous. Now that American business has entered the era of downsizing and fine tuning their operations, MIS has the opportunity to set the tone and lead the charge. — *David J. Rubinstein is co-founder and vice president with Innovative Information Systems Inc., a Norwood, MA-based Systems Integrator and HP Mainframe Alternative partner.*

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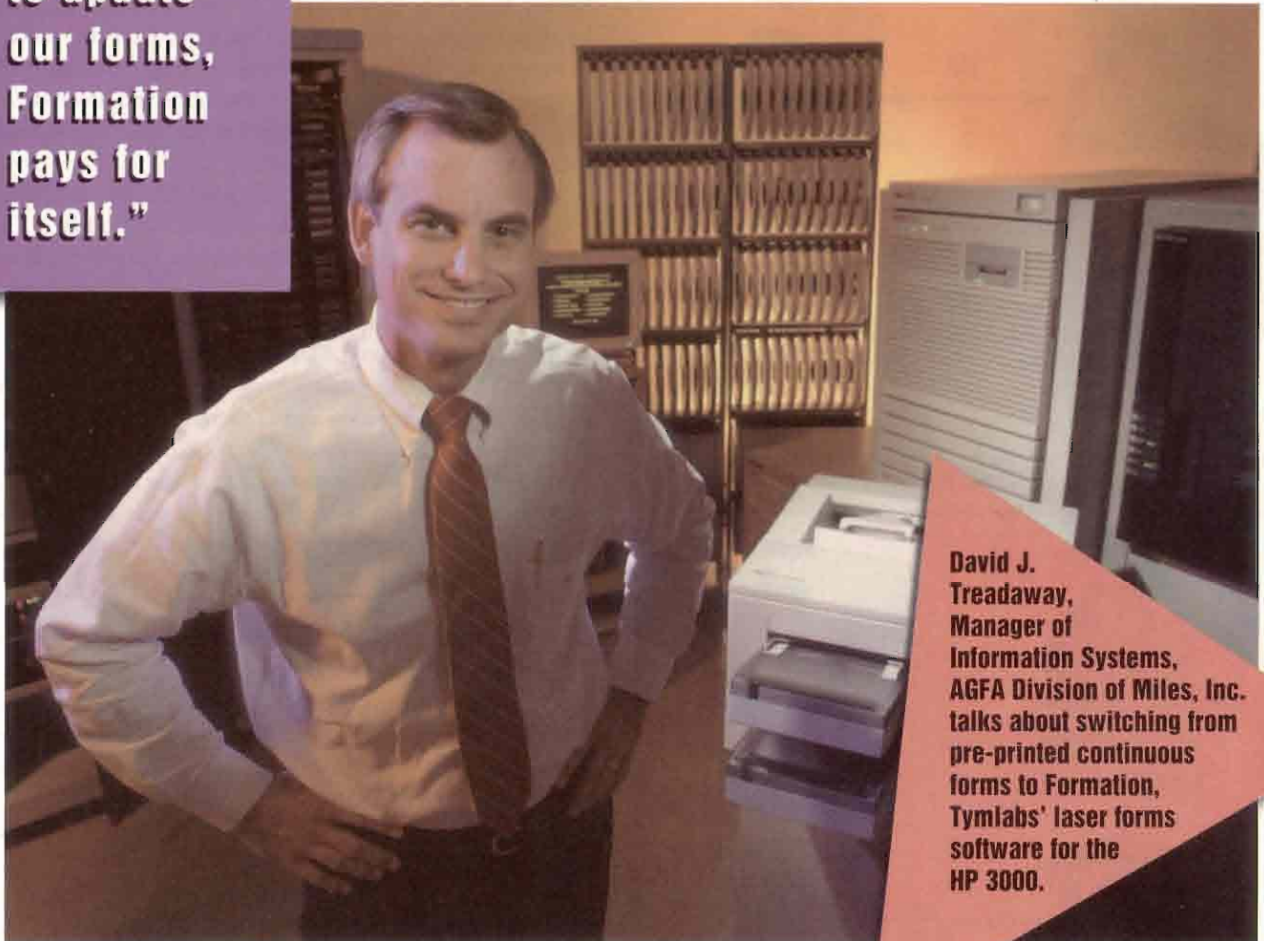
**BY** DR. TREVOR RICHARDS

Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) are drawing a lot of attention lately. They also are creating a lot of confusion as to which is which and which does what. EFT is the electronic alternative to checks; EDI is the electronic alternative to purchase orders and receipts. While the primary purpose of EDI is to move *information* electronically between business partners, the primary function of EFT is to move *money* electronically between companies and banks.

If both the transfer of funds and the transfer of remittance details are to be conducted electronically, both EFT and EDI must be employed. The marriage of EDI and EFT has been dubbed *financial EDI* (see *Figure 1*).

EFT payments can be made two ways: by wire transfer or through an Automated Clearing House (ACH). Wire transfer is an on-line, real-time payment system primarily designed to

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**David J. Treadaway,  
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*“It was no problem for us to cost-justify Formation. When we realized that Formation would cost less than a six-month supply of forms, we stopped right there. In fact, the savings have doubled or tripled since then, because on two occasions we have had to modify all our forms.*

*“First our company went through a name change. Then, a few months later, we had to add our tax ID number to all our forms. If we'd still been using pre-printed forms, we would have had to replace our entire forms inventory twice. With Formation, a programmer updated all our forms in about an hour.”*

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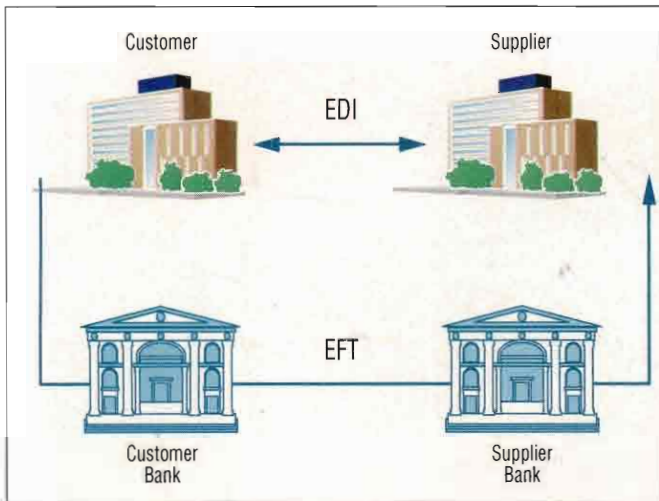


Figure 1: EDI and EFT: Partners or Adversaries?

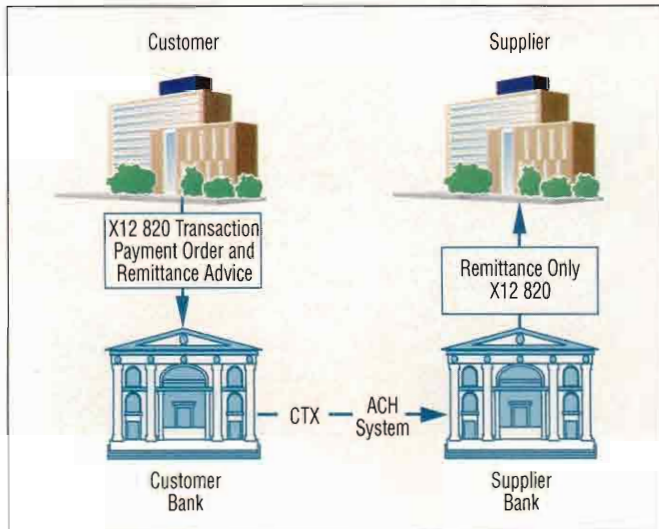


Figure 2: Supplier's bank delivers remittance data (820).

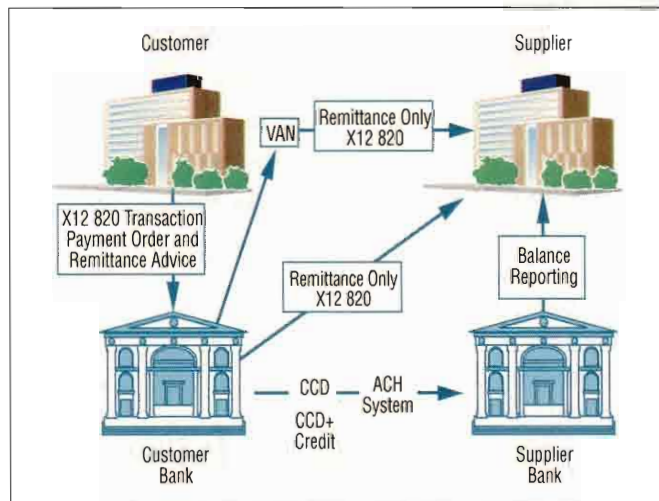


Figure 3: Customer's bank delivers remittance data (820).

handle large-dollar, time-critical payments, mostly between big banks. It moves funds and a limited amount of associated information. ACH, on the other hand, is a next-day funds settlement system, which can be thought of as an "electronic check." Because ACH also can move both funds and associated information, it has become recognized as the most appropriate payment mechanism for financial EDI.

Initially, the ACH system was used for the sole purpose of funds transfer, but in 1982, the National Automated Clearing House Association (NACHA) sponsored a study that helped corporations to define new formats for funds transfer that incorporated both payments and remittance information.

To support financial EDI and corporate cash management needs, NACHA designed four basic corporate trade payment formats: Cash Concentration and Disbursement (CCD), Cash Concentration and Disbursement Plus (CCD+), Corporate Trade Payments (CTP) and Corporate Trade Exchange (CTX). Both CCD and CCD+ are used primarily for funds transfer because they offer little additional information to be carried with the payment information.

The CTP format satisfied the need to concurrently move both funds and detailed remittance information through the ACH. Both the payment information and the additional free-form invoice data are held in a predefined, fixed-field format. But this format was later superseded by the more-flexible CTX format, which also permits both payment and remittance detail to move together through the ACH system.

The main feature of CTX is that it lets you encapsulate the entire ANSI X12 payment order/remittance advice transaction set (820)—the EDI equivalent of the envelope. The 820 transaction set can contain the payment information and/or the detailed remittance information related to the payment.

### Delivery VANs

FOR THE TYPICAL EXCHANGE of data via EDI, the customer and supplier often will use a Value-Added Network (VAN) to provide a store and forward mailbox service for the data transfer. In financial EDI, the obvious place to look for such a service for the transfer of payment and remittance details is the ACH system. Figure 2 shows how the transaction would work if both the customer's bank and the supplier's bank participated in the ACH system and the customer's bank could accept the ANSI X12 payment order/remittance advice transaction set (820).

First, the customer transmits the ANSI X12 820 transaction set to his bank, which in turn reformats the payment and remittance information into the NACHA CTX format. Then the CTX transaction is processed through the ACH system and received by the supplier's bank. The supplier's bank then extracts the remittance details and makes this information available to the supplier in the form of the ANSI X12 820 transaction set.



## ELECTRONIC PAYMENT STRATEGIES: THE CHECK IS ON THE WIRE

On any given day, the value of funds moved electronically in the United States is measured in trillions of dollars. (Remember Ronald Reagan's analogy of stacking \$20 bills from here to the moon?) While a good portion of these funds transfers are consumer-oriented (direct-deposit payroll, installment loan payments, mortgage payments, etc.), the hottest growth area for EFT is business-to-business trade payables.

Business-to-business payments represent a more significant challenge for EFT than do consumer transfers because significant amounts of business-specific information must accompany the payment. In order to streamline administrative functions (and make electronic payment worthwhile), organizations frequently combine EDI and EFT.

But today's businesses also have several other motivations for using financial EDI:

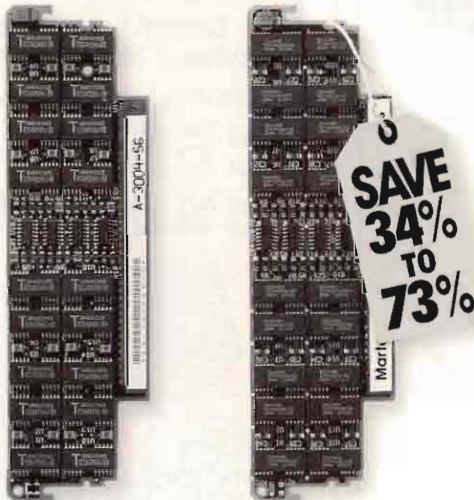
- Technology and standards are in place. Software, communications and banks with EDI/EFT processing capabilities now are readily available. The economic benefits continue to outpace costs.
- Businesses can close the administrative loop and reduce the time and costs associated with doing business. More than 50,000

organizations worldwide have been using EDI for buying, selling, distributing, invoicing and many other administrative functions. Paying electronically takes full advantage of the final phase in a business transaction cycle.

■ Governments and public agencies use it. The Federal government has adopted financial EDI as a key capability for the IRS, U.S. Customs, Medicare, GSA, DoD and other areas. Some state governments are also active. Many more will mandate the use of EDI to lower their operational costs, control cash flow and avoid the need to maintain a redundant paper-based system.

■ There are competitive advantages and cost savings. Organizations are realizing that the practice of "float management" adds no real value to their business processes. In fact, it ends up costing money to maintain open payment cycles. Many companies are sharing the benefits of financial EDI with their trading partners through increased cash discounts, thereby helping their suppliers to become more price-competitive. — *Jeff Kessler is a founding member of EDI Partners, Ltd., Minneapolis, MN.*

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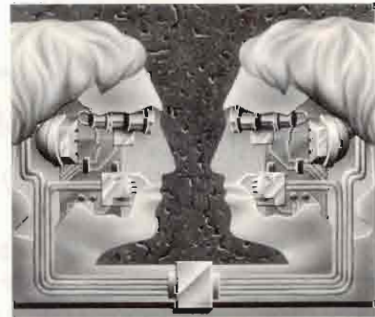


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If the supplier's bank can't process the CTX transaction, the remittance information is forwarded to the supplier, either directly through the customer's bank or indirectly via a VAN (see Figure 3). In this scenario, funds are transferred using either the CCD or CCD+ transaction, and remittance information is transmitted to the supplier in the form of the ANSI X12 820 transaction set.

### All The Way To The Bank

**T**RANSFER OF PAYMENT AND remittance information also can be accomplished in other ways. For example, VANs offer extended services to translate ANSI X12 820 transaction sets into various NACHA transactions, which can offer alternative scenarios.

However, I believe most corporations that implement financial EDI will feel comfortable with one of the two scenarios outlined above. These methods offer the most control over transferred funds and minimize the transfer of financial data through third parties. But, they also rely on the customer's financial institution to provide services above and beyond what banks typically offer. And at present, this may be the biggest

hurdle financial EDI faces. The term "Value Added Bank" is now being used to describe banks that enable their customers to implement financial EDI.

Many larger banks have added services that let their customers reap the full benefits of EFT and EDI — that is, to transfer funds and remittance details together through the ACH system. However, because many other banks are unable or unwilling to offer such services, several alternative scenarios are being used. Unfortunately, these other methods only serve to confuse prospective participants and delay their entry into the world of financial EDI.

Nevertheless, great benefits accrue to both customer and supplier when EFT and EDI concurrently transfer funds and remittance information. The customer gains control over his cash flow and reduces his payment processing costs. The supplier eliminates the extra expenses associated with paper-based checking, and the automated posting of remittance information removes errors associated with manual data entry. — *Dr. Trevor Richards is an EDI specialist with M.B. Foster Associates, a supplier of EDI products and services.*

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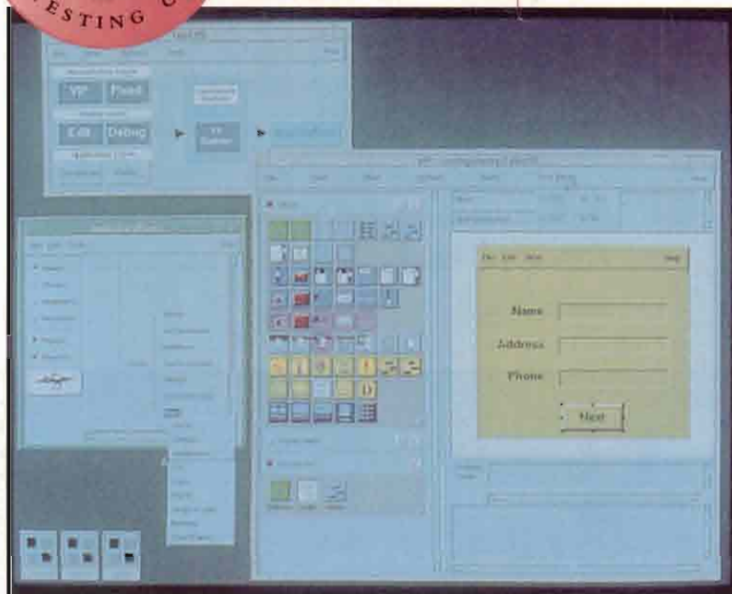
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# SOPHISTICATED GUIs

## TeleUSE 2.0.5

### OBSERVATIONS:

- Full-fledged UIMS, not just an interactive design tool.
- Allows quicker building of GUIs over do-it-yourself programming in C.
- Supports standard OSF/Motif as well as customized widget sets.
- Dialog scripting language allows independent development of application code and visual GUI interface.
- All code can be converted to C /UII for easy portability.
- Interpreted code and a debugger simplify the development process.

### PLATFORMS:

HP 9000/400 and HP 9000/700 and a host of other UNIX-based systems.

### PRICE:

\$7,500 for all platforms.

### Telesoft

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## TeleSoft's TeleUSE UIMS Lets You Build High-Class GUIs Faster And Easier

As computer interfaces move steadily from the text-based to the graphical, programmers find themselves involved in building increasingly sophisticated GUIs for their applications. However, the process of building a good GUI front-end is not easy. Relying only on the basic tools, such as Xlib, the Xt Intrinsics and C, can make GUI programming a time-consuming, tedious, if not arduous, effort.

The search for a solution to the GUI building problem has spawned a new class of programming tools: GUI builders and User Interface Management Systems. TeleUSE, from TeleSoft (San Diego, CA), is one such tool. TeleUSE's various components take the struggle out of building GUIs for your applications, and this allows you to concentrate on the bigger picture rather than on all the details of programming in "straight" X. We ran TeleUSE 2.0.5 on our HP 9000/425t running HP-UX version 8.0.

Building a GUI involves using TeleUSE's four major tools: the Visual Interactive Programming (VIP) layout editor, the D (a C-like scripting language) Dialog Manager, the Runtime Library and the UI Builder. You'll spend most of your time using the VIP and D to get your GUI built, tested and running.

The VIP WYSIWYG editing tool separates the graphical design of your GUI from the rest of your application.

DAVID B. MILLER

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User interfaces are developed by building VIP modules. Modules, in turn, are composed of widget templates, which are composed of other templates and widgets. Thus, the activity of building a GUI with VIP involves developing modules that are built from a hierarchy of widgets and templates.

Widgets used to build templates are grouped into TeleUSE modules and are selected from the standard OSF/Motif or TeleUSE-specific widget sets. The full Motif widget module includes all of the widgets with default attributes set according to OSF/Motif specifications. An OSF/Motif Style Guide-specific widget module is also available. Also, you can create your own custom modules of Motif widgets.

TeleUSE's large work area displays the graphical content of the widgets selected for your application. From within VIP and the work area, all widget attributes and behavior can be customized from a pop-up Attribute Window. Many attributes are set with a click of the mouse. None of these items require direct coding. Callbacks to your application or to TeleUSE's own Dialog Manager D code are defined here as well.

As your application grows, VIP's work area may not be large enough to let you see the entire widget hierarchy. VIP's Tree Editor can be used to get a fix on the location of and relationships between the widgets and templates comprising your application. The Tree Editor provides the same function as the work area, but it also displays the entire GUI layout in one window.

### Can We Talk?

The D scripting language is used to write the dialog that interfaces the presentation portion of your GUI and your underlying application, written in C. The Dialog Manager (DM) code effectively separates your application from the GUI, resulting in a cleaner design that is easier to write and maintain, even when several programmers are involved. D modules are written in a non-procedural, rule-based manner. D code is similar to C, so C programmers should not have

**TeleUSE's various components take the struggle out of building GUIs for your applications, and this allows you to concentrate on the bigger picture rather than on all the details of programming in "straight" X.**

trouble adapting to its data types, syntax and structure.

A D script intercepts events generated from interaction with the static portion of your GUI, from other portions of the D code or from signals received from your application. Events can be set up for immediate execution, for execution after a time delay, or they can be queued and handled on a first-come, first-served basis. The handling of events means that rules contained in the D script are executed. Results from handling these events could trigger action at the visible presentation level or at the lower application level.

To begin, TeleUSE can generate a skeleton D code routine that examines the static presentation portion of the GUI you created. A stub is generated for

each callback you specified in each widget's attributes window. After the stubs are generated, you simply fill in the rules required for each callback. After the basic rules are written, you can expand the Dialog Manager code to handle other events.

A D routine can communicate with other D modules, with application code written in C, C++ and other languages, with Xlib and other lower level X Window System routines and even with the presentation component of your GUI through the TeleUSE runtime library.

D to C mapping is executed with Application Interface Map (AIM) files. AIM files resolve such issues as data type mapping between your application written in C and your dialog code. An initial AIM file is generated when you

## PUTTIN' ON THE RITZ: TELEUSE VERSION 2.10

Several new features make TeleUSE version 2.1 even easier to use than the version we tested. A Dialog Manager script editor has been added to allow creation and editing of D code from within TeleUSE. D events and callbacks can be automatically inserted into the D code. Other Dialog Manager improvements include better variable and type definition support.

A new Builder Tool lets you specify the final configuration and generates the final product without forcing you to deal with makefiles. The Node Search Tool lets you find nodes in the tree hierarchy — a handy tool for large projects.

Other features include a Form Constraints Editor, better handling of widget attribute selection and an enhanced Color Pixmap Editor.

Wrapped around TeleUSE is a new Session Manager that provides easy access to all TeleUSE functions as well as to third-party products.

Regarding code generation and formats, TeleUSE can now import UIL code generated from third-party products such as ICS's Builder Xcessory(tm). C++ calls can be made directly from the Dialog Manager code. Multiple C files can be generated from the presentation layer, speeding up the code building process.

Third-party tools, CenterLine's ObjectCenter C++ Development Environment and Pure Software's Purify, now are integrated with TeleUSE, providing for faster development of error-free applications.

build your application as described below. Also, AIM files are supplied by TeleUSE to map your D code to the TeleUSE runtime library and to the X Window System toolkit.

The D code debugger is particularly useful. The debugger can be invoked while an application is running, or an application can be started directly from the debugger.

When you attach an application to the debugger, the code is displayed in the debugger window along with other information such as D events that could be encountered and the breakpoints that are currently set. Commonly used debugger commands are available as pushbuttons. Other debugger commands are available from pull-down menus or from the command line.

### Custom Builder

A complete executable is built with the UI Builder. You don't have to worry about writing your own makefiles and the like. A simpler configuration file is all you need to generate UI Builder output. In fact, with the command **uxb guess**, the UI Builder will generate a best-try configuration file for you.

UI Builder accepts D and C source files, GUI description files generated by the VIP design edition (known as Presentation Component Descriptions, or PCD files) and other components such as object libraries. It generates several output files in selected formats including C and UIL.

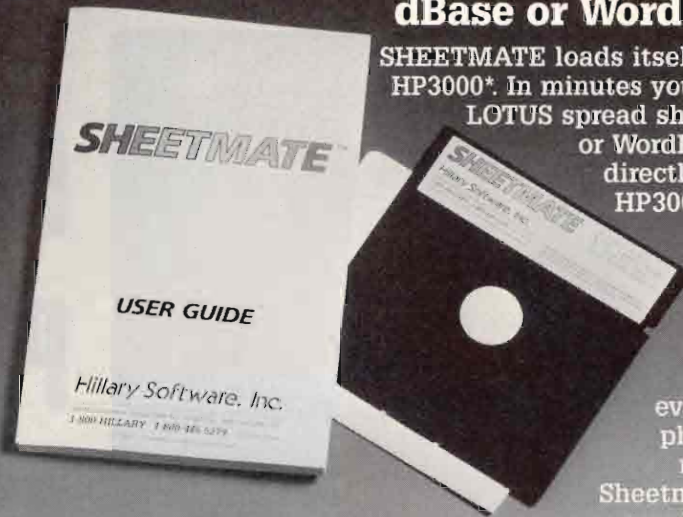
TeleUSE also provides a robust runtime library to complement the D language. Routines are included to handle widgets, X and D events. Convenience functions are included to interface to Xlib and to the Xt intrinsics. Many runtime library functions can be called directly from C.

Given that all the world is going graphical and given the difficulties of programming directly with the basic X Window facilities, it makes sense to invest in an interface design tool or UIMS such as TeleSoft. ■

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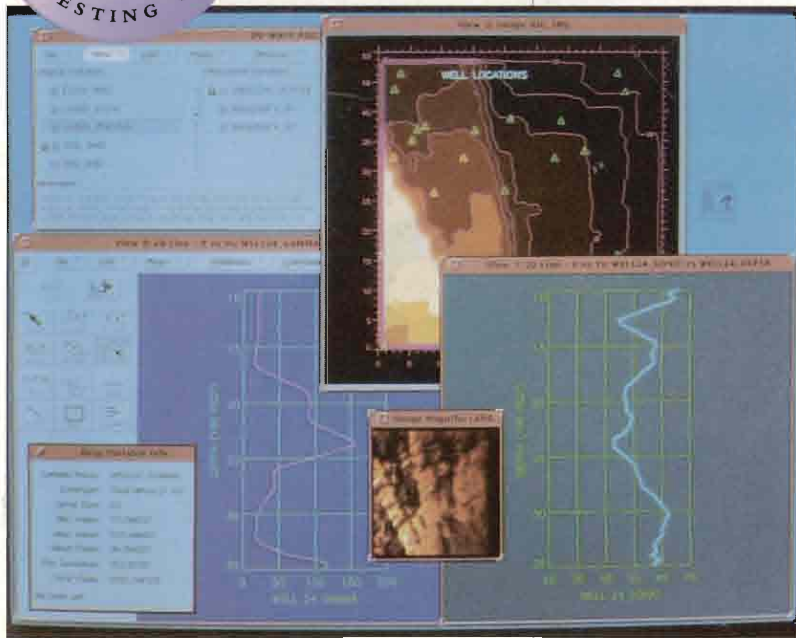
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# GET THE POINT— AND CLICK

## PV-Wave Point & Click V1.500

### OBSERVATIONS:

- Allows quick production of graphs and images from complex data.
- Motif interface eliminates need to memorize or reference command line syntax.
- Combines analytical aspects of a mainframe graphics manipulation tool with the features of a dedicated image processing system.
- Displays 2-D and 3-D graphics, supports animation for data flow visualization.

### PLATFORMS:

HP, DEC and Sun workstations

### PRICE:

\$4,500 for a single-node license

### Precision Visuals Inc.

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(303) 530-9329 fax

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## Precision Visuals' PV-Wave Interactive Data Analysis Tool Discovers Hidden Trends And Patterns In Raw Data

**P**recision Visuals' PV-Wave Point & Click visual data analysis software is leading-edge technology for the interactive viewing and analysis of complex scientific and engineering data. PV-Wave Point & Click is a Motif application that can run on the HP 9000 Series 700 workstations, as well as DEC and Sun Microsystems workstations. The Point & Click version retains all of the functionality of PV-Wave command line versions.

Visual data analysis software is used primarily for the visualization and analysis of technical data. The PV-Wave series is useful for quickly producing graphs and images from complex data. Visual representation of data is crucial to engineers and scientists, who must be able to quickly and easily analyze and reduce data to find patterns not easily seen in tabular form. PV-Wave allows technical users to display 2- or 3-D graphs, animate sequences of data or manipulate data using complex mathematical functions.

Installation is simple and standard across all supported platforms. You first create a home directory using the suggested default:

```
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```

**TONY FIORITO**





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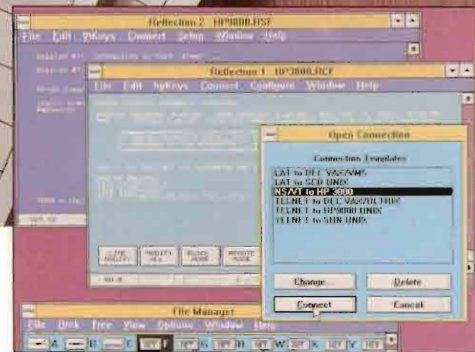
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After setting the default to that directory, the files are copied from the delivery tape. An installation script, `wvpt_install`, is provided to do the rest of the initial work. A softkey is entered to activate PV-Wave before it can be used. Precision Visuals provides its own license manager, as well as a manual that explains how to use it.

### Motif Bells And Whistles

Because the software is a Motif application, I was able to get started quickly. The Motif approach eliminates the need to memorize or constantly look up complex command line syntax. PV-Wave Point & Click delivers all the benefits of a GUI and uses all the tools available under Motif: pull-down menus, icons, push buttons, scroll bars and sliders. I could select choices from menus and lists and point and click with my mouse to select and highlight data. I felt as if I were actually interacting with the data, rather than just processing it.

To start the software, you must set a handful of environment variables, and a script is provided for that purpose. Then, a single command starts the Point & Click environment. The startup commands are:

```
source /usr/local/pvi/wavepcm/bin/
wvptsetup wavepoint
```

After that, you do everything from icons and menus.

Two features facilitate learning to use PV-Wave Point & Click: a detailed demonstration and an online tutorial. The demonstration walks you through 2-D, 3-D and animation graphics development. Step-by-step instructions are included as a text file, so you can repeat parts of the demo. First, I ran the demo all the way through, then replayed some of the more interesting parts. Finally, I printed the demo text and walked through those sections.

After completing the demonstration, I turned to the tutorial. This uses a separate information window to guide you through the key features of 2-D graphics generation, 3-D graphics generation (in-

## PV-Wave Point & Click delivers all the benefits of a GUI and uses all the tools available under Motif: pull-down menus, icons, push buttons, scroll bars and sliders.

cluding some image manipulation) and data animation.

### All Data Types Welcome

Aside from the fine user interface, PV-Wave Point & Click is internally complete and feature-rich. It can automatically read in a variety of data types and formats, process them using sophisticated mathematical or statistical techniques, and generate output for display, hardcopy, or input to other programs or systems.

You can get source data into PV-Wave Point & Click in several ways. The product can read ASCII data, native binary, 8-bit images, 24-bit images, TIFF files and Sun raster files. The ASCII input function can read both free and fixed formats. The fixed-format ASCII input function is particularly useful for those who need to import data from scientific or engineering codes, many of which can

produce tabular output. The product also can create custom input formats so that you can read in non-standard binary or image data.

I tested the fixed-format ASCII input function by first opening the Preview ASCII window on a tabular report file I previously created. It displayed the contents of the ASCII file. Then, using the mouse, I selected and defined headers, data records and data fields. Once everything was defined, I clicked on a push button, and PV-Wave did the rest.

Once you have pulled data into PV-Wave Point & Click, you can manipulate it in many ways to produce graphs and images. You can apply simple math functions, advanced math functions, curve fitting, statistical functions and image processing functions to source data to produce new data sets. Advanced math functions include Bessel functions, cross products, Gaussian integrals, fast Fourier transforms (FFT), differentiation and interpolation. Curve fitting methods include least squares, weighted least squares, polynomial surface, regression curves and spline methods. Statistical functions include correlation, histograms, maximum, mean, median, minimum, standard deviation and summing. (Noticeably absent were percentile functions.) Image processing capabilities include convolution, filtering, edge enhancement, resampling and FFTs.

### POINT & CLICK TO MORE DATA

Precision Visuals recently announced Version 2.0 of PV-Wave Point & Click.

The most significant feature in Version 2.0 is its Database Visualizer (DBV), a set of interactive tools that lets you query, subset and display tabular or row/column data. Users now can incorporate database management systems including Sybase, Informix and Oracle, to visually analyze data within graphs.

Another significant announcement associated with this new version is a price reduction of nearly 50 percent. You now can purchase a single floating license for \$2,495.

PV-Wave Version 2.0 now includes a date/time management and display, which allows you to automatically collect, process and display time-series with flexible calendar axes ranging from years to seconds. A feature called quick actions automates a variety of complex or repetitive tasks allowing you to move from data import to display in 70 percent less time than in the previous version. An Encapsulated Postscript Interchange output now allows you to integrate PV-Wave Point & Click images directly into desktop publishing products like FrameMaker or Interleaf.

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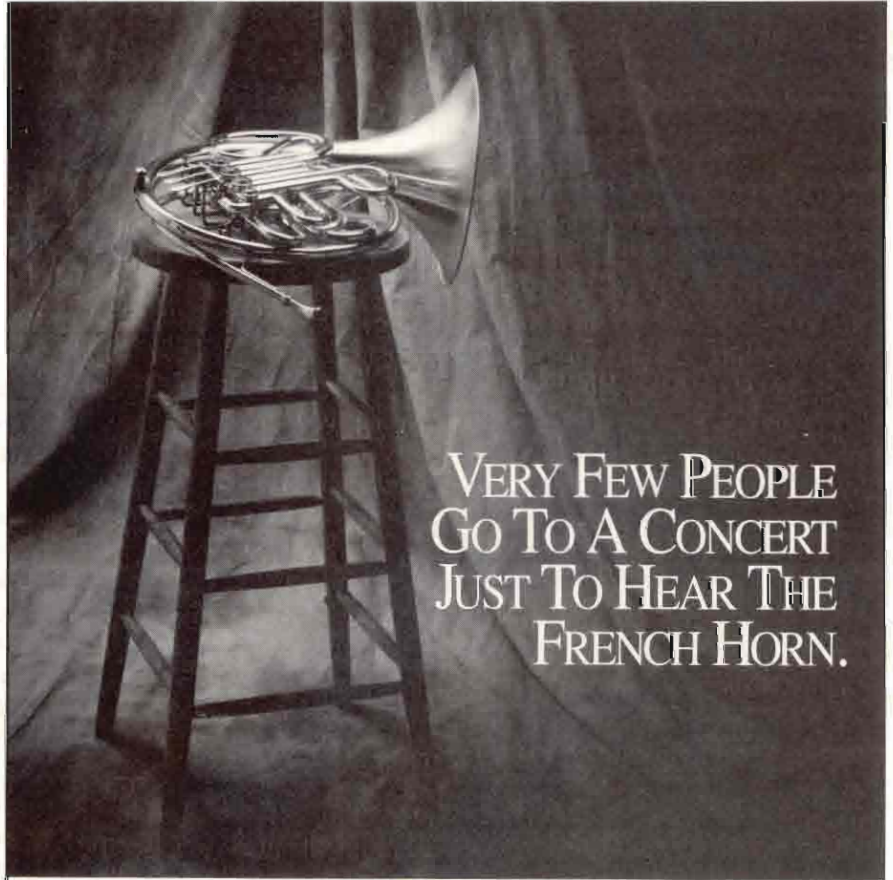
We tested many of these functions by manipulating data sets provided as examples with PV-Wave. The wide variety of options eliminates the need to use other packages to do statistical or mathematical analysis on the data before importing it into a plotting package for output generation.

You can get processed data and images out of PV-Wave Point & Click in an easy and flexible manner. Data export functions can deliver data in the most popular industry-standard formats. Output formats include HP-GL, HP-PCL, PICT, Adobe PostScript, QMS QUIC and Tektronix 4510 Rasterizer formats.

PV-Wave Point & Click is a superior product, combining the best analytical aspects of a mainframe graphics manipulation tool with the best features of a dedicated image processing system.

To provide the user with a choice of interface, Precision Visuals offers two versions of PV-Wave, the Point & Click

product and the original command line product, called PV-Wave CL. The company recently announced PV-Wave CL V4.0. Version 4.0 features added functionality to areas such as connectivity, data access and manipulation, graphical display techniques, and ease of use. ■



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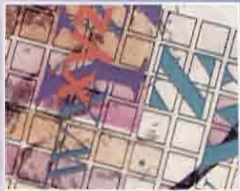
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## MANAGING YOUR HP 3000

John P. Burke

# A Resurrection

The HP 3000 is 20 years old this month. Albeit a little early, HP even held a birthday party celebration for it during INTEREX '92. Milestones like this cause one to ponder: Will there be a 30th birthday party? Or, will the HP 3000 disappear as so many of its former competitors have?

The short answer, I'm happy to say, is yes, there will be a 30th birthday celebration for the HP 3000. Hurricane Andrew may have crashed the party in New Orleans, but it didn't dampen HP's ultimate message: The HP 3000 is back and ready to kick some Big Blue butt. Both the system itself and HP's approach to the commercial multiuser market have changed. All indications are that the HP 3000 will be repositioned as a cost-effective alternative to IBM's wildly successful AS/400.

Two years ago, I didn't even think the HP 3000 would make it to its 20th anniversary. At that time, IMAGE, which has been synonymous with MPE since the computer's inception, had just been unbundled from the operating system—apparently consigning it to the database scrap heap in favor of ALLBASE/SQL. MPE V and other “mature” software products (and users) were being abandoned. All of HP's marketing talk was about how open systems (which two years ago still meant UNIX) and PC LANs were going to revolutionize the industry. But it hasn't quite happened that way—at least not yet.

Since that time, HP has performed an amazing self-evaluation and discovered that a strong, “open” HP 3000 is in the company's best interest.

With thousands of productive Classic HP 3000s still in use, HP realized it had a

The HP 3000 will  
be repositioned as a  
cost-effective alternative  
to IBM's wildly successful  
AS/400.

cash cow of enormous proportions on its hands—one that required only a modest investment in feed to maintain. Considering the low margins afforded by PA-RISC systems, HP also realized it was not in its best interests to be strictly a vendor of UNIX boxes. Consequently, in the last two years, more enhancements have been made to MPE and MPE XL than in the previous decade. Some analysts even go so far as to maintain that MPE/iX will be more “open” than many UNIX systems.

A note from the conference: POSIX.2 won't be a separate product as originally announced. It will be rolled into MPE/iX 4.5 along with POSIX.1.

### New Image For IMAGE

When does a non-relational database look like and act as, but still out-perform, a relational database? Answer: When it's TurboIMAGE/iX interfaced with DISC's OMNIDEX or Bradmark's SUPERDEX and outfitted with HP SQL for IMAGE.

What is HP SQL For IMAGE? It promises to be nothing less than a true read/write SQL interface for TurboIMAGE (availability: 1993; details about pricing available in late 1992). This product should not be confused with ALLBASE TurboConnect, which requires ALLBASE/SQL.

HP SQL For IMAGE represents a technical breakthrough of sorts. Rich Sevcik, who as head of the new Systems and Servers Group is now ultimately responsible for *both* the HP 3000 and HP 9000 lines, commented to me that HP SQL For IMAGE contains unique, possibly patentable features and is the first read/write SQL interface for a non-relational database management system.

Add to this announcement delivery of the previously promised critical item update feature (available also on MPE V systems!), AIF procedure exits, and the third-party indexing interface, and you have a flexible and robust DBMS. Other anticipated IMAGE enhancements include dynamic detail dataset expansion, increased DBINFO functionality, and an un-“deadlock”ing tool.

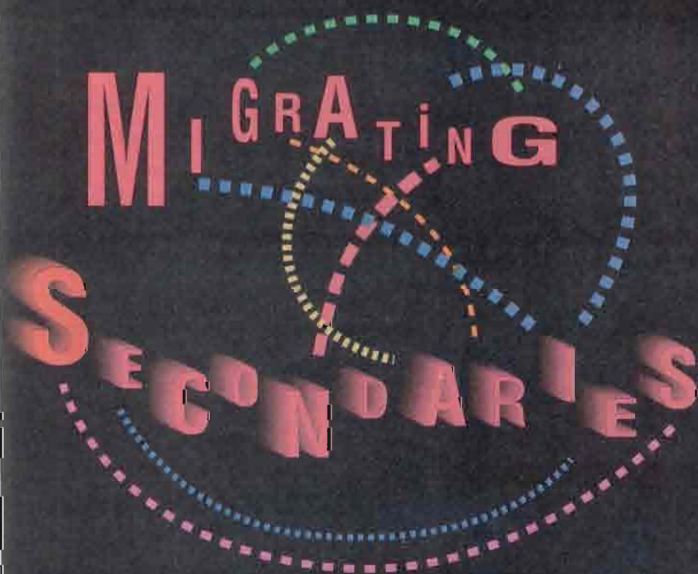
Of course, cynics might say that IMAGE is finally what it could have been years ago—before it became politically correct to speak only of relational DBMSs. Nonetheless, it hardly sounds as though this DBMS is being put out to pasture. Rather, IMAGE is better than ever, and it's still better than anything else.

### Check Out Those Ports

Not long ago, the only software vendors with booths at an INTEREX show were relatively small purveyors of HP 3000-only products: mom 'n pop operations. Not any more. The companies that cut their teeth in the HP 3000 market have expanded to embrace other platforms including the UNIX variants, VMS and even OS/400. Check it out. Practically everyone “does UNIX” now. Consider Cognos, Speedware, DISC, etc.

What's more, software giants such as Oracle have entered the HP 3000 market. Another example is the surprising

# Complaints



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TurboIMAGE Databases

TurboImage/XL Databases

TurboIMAGE/iX Databases

# Adager

## Hard to swallow for Spectrum?

Not at all, since Adager fees are independent of HP3000 computer type.

news that IBM has entered the downsizing fray by licensing CICS to Hewlett-Packard for MPE/iX and HP-UX! (Of course, rumor has it that some vendors had their arms twisted ever so gently by HP: "Want us to help you pursue the HP-UX market? Then port to MPE/iX also." If you run HP 3000(s), the new ports are good news regardless of how they came about.)

The uncertainty of the last few years has forced many traditional HP 3000 vendors to expand and, in the process, become stronger. Furthermore, market uncertainty has attracted many products to the HP 3000 from other markets. Both developments make the HP 3000 a more desirable platform than ever before.

### A Few Discordant Notes

I am an unrepentant cynic, so of course not everything about the HP 3000's future seems rosy to me. Patching of MPE — both the frequency of patches and the duration of the patch process — is a per-

sistent thorn in the side of system managers. It's ironic that a system known for high availability has an Achilles' heel when it comes to updating the OS.

Also, there is still unhappiness among the installed base over changes in sales support. This was the melt-down topic at the Atlanta ICMS management roundtable and continues to prompt lively discussion. Manuel Diaz, general manager CSO/Americas, in both his

address to the New Orleans conference and in the management roundtable, spoke extensively on this issue. He admitted some past mistakes, particularly in communication and promised a new "team" approach to answer the concerns. Unfortunately, he wasn't ready to provide details, so I guess we'll have to wait.

Would you like to continue to see articles on this topic?  
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yes 338 no 337

## BREAK OUT THE CHAMPAGNE!

I'm pleased to report that I just witnessed the installation of an HP 3000 917LX in *HP Professional's* DP Labs. Yes, I know, I said this was going to happen a year ago. But it's finally here.

With this addition to the lab, we intend to increase our coverage of HP 3000 nitty-gritty both in this column and in *HP Professional* as a whole. Product reviews, how-to articles and technical discussions all will receive greater attention, because we know these are what you're interested in and what you want to see more of. Thanks to HP's generosity, we now have even better facilities to provide the system management tips and product information you're looking for. — J.B.

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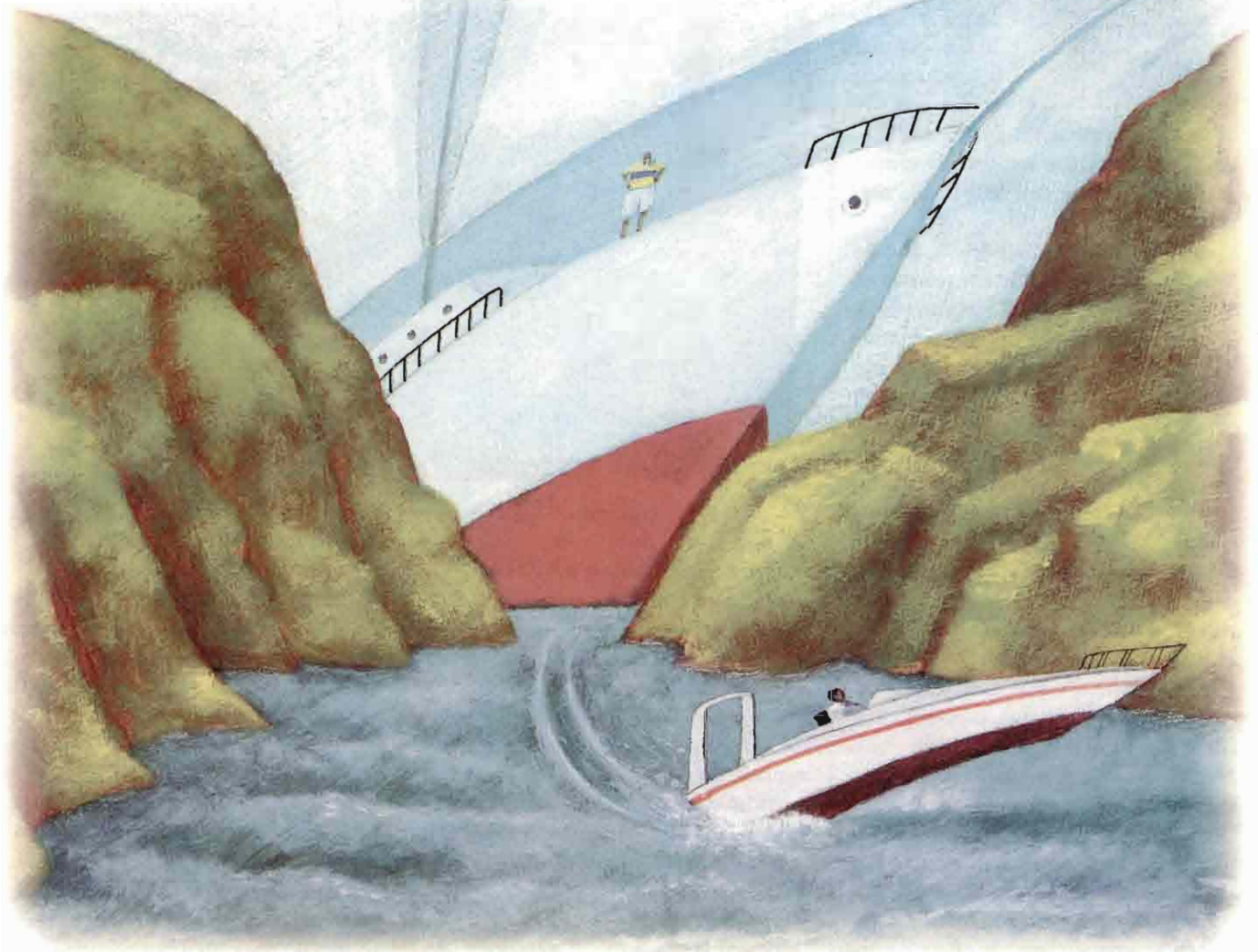
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**NETWORKING**

**Tim Cahoon**

# Terminal LAN

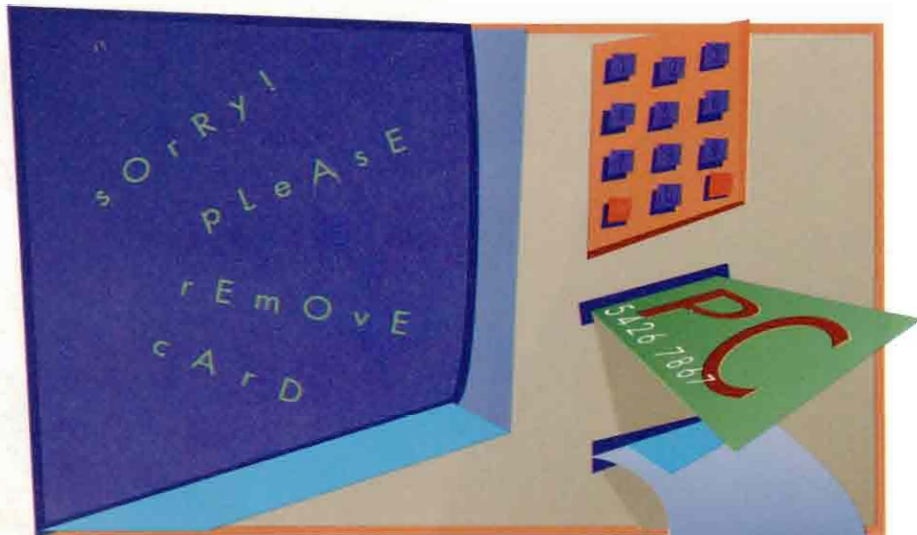
Does it seem like it will take a small miracle to get your PCs

to access systems across a network? Relax. There are a few terminal emulation products out there that offer viable networking options.

Walker, Richer & Quinn's Reflection Series of terminal emulation software is divided into HP and DEC product lines. The HP line provides complete emulation for HP terminals, plus VT102 and ANSI emulations. HP graphic terminal emulation is also available. The DEC product line is actually growing in popularity with UNIX users because many UNIX products support DEC/VAX emulation. All WRQ products are available for both the IBM PC and the Macintosh. A new product called Reflection 8 provides IBM 3270 terminal emulation from an IBM host via a Telnet TCP/IP session.

MiniSoft Inc.'s MiniSoft92 runs on IBM PCs and UNIX systems, including HP-UX, SunOS, SCO UNIX and XENIX. It's the only terminal emulator with block mode support that runs on UNIX systems. The software provides HP and DEC VT102 terminal emulation, but HP graphic terminal emulation is not available. MiniSoft takes a minimalist approach to connectivity: It offers terminal emulation and networking capabilities without many frills. This, the company believes, is exactly what most users really want.

Unison-Tym labs, on the other hand, goes all out with the bells and whistles for its Business Session for Windows product. Business Session is unique because it was developed solely for the Windows and HP NewWave environments. A DOS version of the product is



not available from Unison-Tym labs, although one does exist: It's HP AdvanceLink. Tym labs developed HP's basic terminal emulator as part of a long-standing development agreement.

Tym labs was the first to develop a Windows-based terminal emulator, and Business Session is still the only emulator that supports HP NewWave. It's available for both the PCs and Macs and provides standard emulations: HP term, DEC VT102 and ANSI. HP graphic terminal emulation is available only in the Macintosh version.

HP AdvanceLink is available in both DOS and HP NewWave versions. The NewWave version and Business Session are the same product, and this version is also available for the Macintosh. Because of the product development cycle, the version available from HP will be somewhat older than those available directly from Unison-Tym labs. The DOS version of AdvanceLink has been around as long as the Reflection Series from WRQ. AdvanceLink for MS-DOS provides both HP and ANSI terminal emulation.

One advantage of buying either or both of the AdvanceLink products is that

HP provides customers with worldwide support and one-stop shopping.

## Network Necessities

Before we take a look at the software components you'll need to network these products, let's take a quick review of the network link.

First, you must have a network interface card (NIC) with some software drivers. These drivers can be proprietary or they can conform to the NDIS, ODI or Packet Driver standards. These three standards allow your terminal emulation software to access the network through your NIC concurrently with your LAN software. You then can use LAN services, such as printing during your terminal session. Next, you need a protocol stack such as TCP/IP. On top of that you need to have Telnet, FTP or NS/VT—HP's proprietary virtual terminal program. Telnet and FTP allow you to access UNIX and other TCP/IP-based hosts. Finally, on top of all of this software, rests your terminal emulation program.

While all the emulators we've discussed support serial connections and proprietary NIC drivers, not all support



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the newer driver standards. The NDIS standard is basically supported by all the vendors, although MiniSoft's support is limited. With Novell NetWare dominating the network operating system market, it's surprising that only MiniSoft provides ODI support. The WRQ Reflection Series is the only emulator of-

fering support for the growing number of Token Ring users. And despite the fact that more of us are using UNIX systems, only MiniSoft provides support for the Clarkson Packet Drivers.

All the emulators use either TCP/IP stacks from third-party software vendors, or they provide their own. The WRQ

Reflection Series, Business Session and the AdvanceLink products all have optional modules that provide their own protocol stacks, as well as the Telnet, FTP and NS/VT software. MiniSoft92 is the only product that provides everything in the basic package. Reflection users need the 3000 Connection product, which includes DEC LAT, Telnet and FTP, NS/VT, a TCP/IP stack and NDIS drivers. Business Session and HP AdvanceLink users need one of the following: HP Officshare III, HP Network Services 2.1/MS-DOS, or HP ARPA Services 2.1/MS-DOS. All emulators, with the exception of MiniSoft92, support multiple concurrent network sessions.

Now for the nitty-gritty: Prices for terminal emulators vary tremendously. Reflection 1 (the HP 3000 emulator) and the 3000 Connection software are \$255 each. Minisoft92 is \$159, including all the network software. Business Session costs \$329, for the Windows only version, or a \$429 package is available, which includes both the Windows and HP NewWave versions. HP AdvanceLink for DOS retails for \$369, while the NewWave version is \$325. HP Network Services 2.1/MS-DOS and HP ARPA 2.1/MS-DOS retail for \$395 each. The HP network software is used by both the Business Session and AdvanceLink products. All of these products are available at discount when you buy multiple copies.

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**OBJECTIVELY  
SPEAKING**

**Richard Riehle**

# COBOL's Back In Town

Despite the popularity of 4GLs and object-oriented development environments, most application development teams still rely on COBOL to get the job done. Contrary to popular belief, COBOL is alive and well in the '90s, and the ANSI-85 standard has introduced features that can have enormous benefits in productivity, programmer satisfaction and cost control.

Sadly, many programmers aren't aware of these new features yet, and few programming managers have enough computer science education to understand the implications of these features. To develop COBOL-85 applications in the HP world, you need to be using MPE XL (MPE/iX) or HP-UX — MPE V won't do. If you're using either of those operating systems or intend to migrate to one of them, you should seriously consider the benefits of COBOL-85.

Among its many innovations, COBOL-85 introduces significant improvements in the techniques for building modular programs. In the past, program modules were designed around the PERFORM verb and all variable names were located in a "global" DATA DIVISION. With COBOL-85, the PERFORM verb has a new and reduced role. Its new role is to delimit a small collection of statements such as in-line loops, or multiple IF..END-IF statements. The programmer still has the option of using the PERFORM verb to call paragraphs/sections in the PROCEDURE DIVISION, but that is seldom a proper use of that verb under COBOL-85.

**Local CALLs**

COBOL-85 introduces a capability that implements both modularity and local-

ization: an enhanced CALL verb. A limited form of the CALL verb appeared in COBOL-74, but from the perspective of program design the new enhanced specification is a terrific improvement. Those with some experience with other languages, particularly PASCAL, will quickly recognize its value. In fact, anyone with a recent degree in computer science will understand how to build systems with the enhanced CALL verb, while those who know only COBOL probably will need to be re-educated.

Once your programming staff adopts a design method that uses CALL to enhance modularity and localization, you'll begin see benefits in the quality of your code, the ability to easily reuse existing "COPY" libraries, and greater productivity through team programming efforts. The old "COPY data-name REPLACING..." statement will go away, and you'll be able to use many of your existing COPY files exactly as they are

without modification. New COPY files can be designed to reflect the improved programming methods.

It will take time and patience to realize the benefits of COBOL-85's improved modularity and localization capabilities, but an ultimate increase in productivity will result from the investment in a new programming style. In fact, COBOL-85's enhanced modularity features should substantially reduce your program maintenance costs. And, if as in most programming organizations, maintenance consumes a large share of your programming budget, investment in COBOL-85 may free up resources you need to reduce your application backlog.

**What IF ...?**

Every conditional statement in COBOL-85 has an associated scope terminator. In earlier incarnations of COBOL, statements were terminated with a period (.). The absence or presence of a period at a

```

PERFORM UNTIL END-OF-FILE
  READ IN-FILE
  AT END
    SET END-OF-FILE TO TRUE
    IF DATE-LOG = EMPTY THEN
      CALL DATE-LOG-ERROR-ROUTINE
        USING BY REFERENCE DATE-LOG-RESULT
          BY CONTENT DATE-LOG-VALUE
    END-CALL
  END-IF
  NOT AT END
    IF TRAN-CODE = ADD-RECORD
      CALL ADD-ROUTINE
        USING BY REFERENCE ADD-RESULT
          BY CONTENT IN-FILE-RECORD
      ON EXCEPTION
        CALL ADD-ERROR
          USING BY CONTENT IN-FILE-RECORD
      END-CALL
    END-CALL
  IF ADD-RESULT = ZERO THEN
    CALL REPORT-ROUTINE
  END-CALL
END-IF
END-READ
END-PERFORM
    
```

Figure 1: Scope terminators implemented in COBOL-85.

critical location could completely change the meaning of a logical statement. Many organizations established rules proscribing the use of nested IF statements to prevent programming accidents. The prohibition of nested IF's often would result in long, confusing statements that were harder to maintain than necessary.

Under COBOL-85, a nested IF is no longer as difficult for the programmer to decipher. Every IF should have a corresponding END-IF. When there is one IF statement nested within another, the END-IF clearly establishes the scope of each. Even the READ statement has an END-READ. In fact, the introduction of

## COBOL-85 GOES GRAPHICAL

With the advent of high-performance desktop systems, flashy graphical applications and visual-intensive executive information systems became de rigeur. But COBOL, perhaps the most popular development language for commercial software applications, offered only the barest building blocks for screen design, report generation and presentation graphics.

Historically associated with industrial strength, no-frills, character-based applications, COBOL offered little competition for C, C++ or specialized development environments like Microsoft Visual Basic or Interactive Development Environment's Software through Pictures when it came to development of applications capable of generating high-resolution graphics.

With the introduction of AcuView, Acucobol's, COBOL-85-based integrated graphics package, all that has changed. AcuView, which is available as an add-on product for Acucobol-85 on HP 9000 700/800 workstations and servers, allows application developers to incorporate graphs, charts and tables into their COBOL applications. Any screen or report available in an ANSI-85-compliant ACUCOBOL-85 business application can integrate presentation graphics that visually convey information once relegated to character-based data fields.

Using only five simple COBOL verbs (INITIATE CHART, LABEL CHART, ENTER CHART DATA, SET CHART ATTRIBUTE and DRAW CHART), AcuView allows developers to make graphical display or reporting features available in any application. Users can view screens or print reports that incorporate a variety of chart formats, including line, bar and pie charts, as well as other customizable graphics options, such as color, text size, shading, outline and bullet formats. AcuView delivers more than 100 standard chart templates, which can be customized for the needs of specific applications. Character height, text placement, legends, shading, colors, and many other graphic elements can be adjusted according to user or application needs.

Application developers can also control how end users access graphics and can provide users with the option of customizing presentation formats where necessary. For instance, in a given application, a developer may permit users to customize a title or heading but require that the information be displayed as a pie or bar chart. Easy-to-use menus, hot keys and command lines can be implemented to make graphical capabilities more accessible to end users.

Graphics generated with AcuView can be displayed on an EGA or VGA PC monitor or on any X Window device, thus bringing COBOL-85-based applications into the client-server world of front-end workstations and PCs. Also, AcuView generated graphics can be printed on any a Postscript-compatible printer, HP LaserJet printer or HP 3630 PaintJet printers, as well as Epson-compatible dot-matrix devices. Prices for AcuView start at \$979. For more information, contact Acucobol, Suite 201, 7950 Silverton Ave., San Diego, CA, 92126; (619) 689-7220. Circle 313 on reader card.

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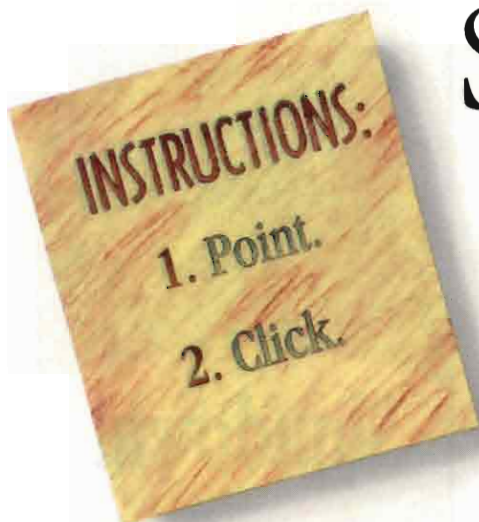
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You may have used other PC-to-host alternatives. And they may have worked just fine – as long as you had just DOS-based PCs. Take a closer look at Session, however, and you'll quickly discover that it's designed to work in today's graphical, point-and-click PC world.

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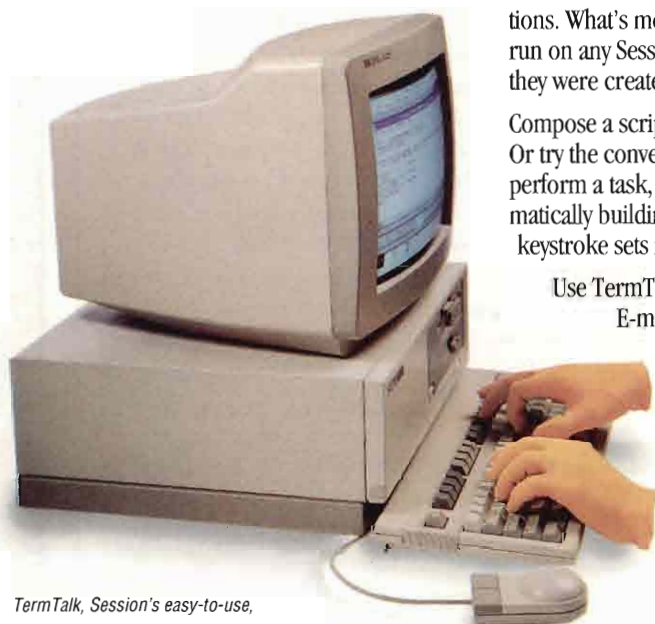
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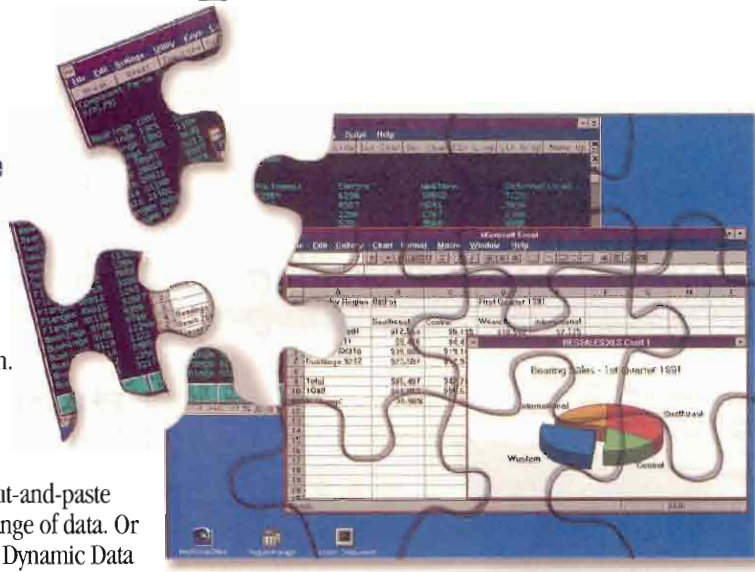
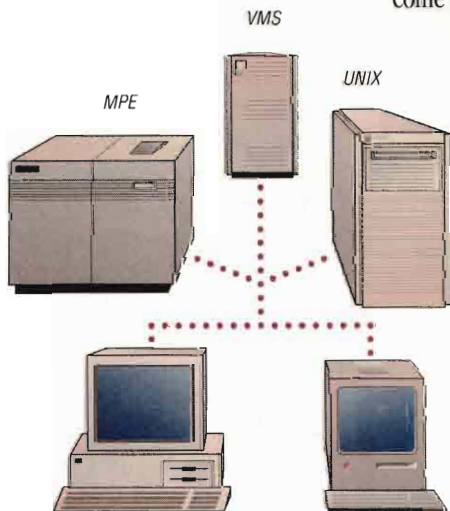
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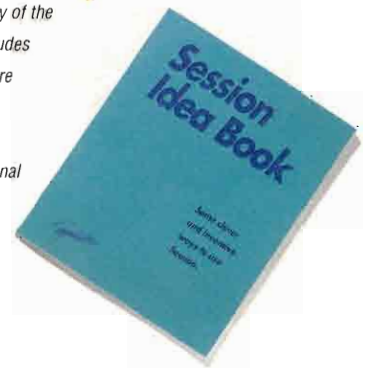
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Session lets you access data over all the popular networks.



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scope terminators, alone, is a good reason to use COBOL-85. The code fragment in *Figure 1* does not represent good coding style, but it does illustrate how scope terminators can be used in COBOL-85.

Notice the total absence of periods. No statement is complete without a scope terminator. Consequently, every statement is terminated by an END-... construct. There are some CALL statements nested inside the IF...END-IF state-

ments, and a perfectly readable IF...END-IF statement nested within another IF...END-IF. Also take note of the iteration structure defined by the PERFORM...END-PERFORM. This structure defines a loop that will terminate when we have set an 88 condition to true.

Even though the example shown is not good coding style, it is a good example for study. Your programmers can learn something about COBOL-85 from it. The important point to understand is the value of scope terminators.

### EVALUATE Options

Your systems analysts will appreciate this feature: COBOL-85 introduces a "case" selection capability with the EVALUATE..END\_EVALUATE statement. This is an important addition to the language because it greatly improves communication between the complex needs of the system user and the programmer. It is almost a "provable" construct. That is, you can actually use Boolean logic to prove the correctness and completeness of a well-formed EVALUATE statement. It can be used to bridge the gap between specification and actual COBOL code.

One of the systems analysis techniques that has fallen into disuse is the decision table, sometimes called a "truth" table. One reason for the decline in use of decision tables has been the difficulty of translating them into actual code. With COBOL-85, that difficulty disappears.

The correct use of the EVALUATE statement is as much of an accuracy issue as a productivity issue. But its effect on productivity cannot be ignored. Once again, the primary benefit in productivity is in program maintenance, rather than program construction. No one can doubt the virtue of the EVALUATE over consecutive IF...END-IF statements for simple clarity.

These few examples haven't exhausted the list of improvements in the ANSI-85 standard—not by any means. Also among the numerous new features are changes in array (OCCURS clause) initialization and processing, improved

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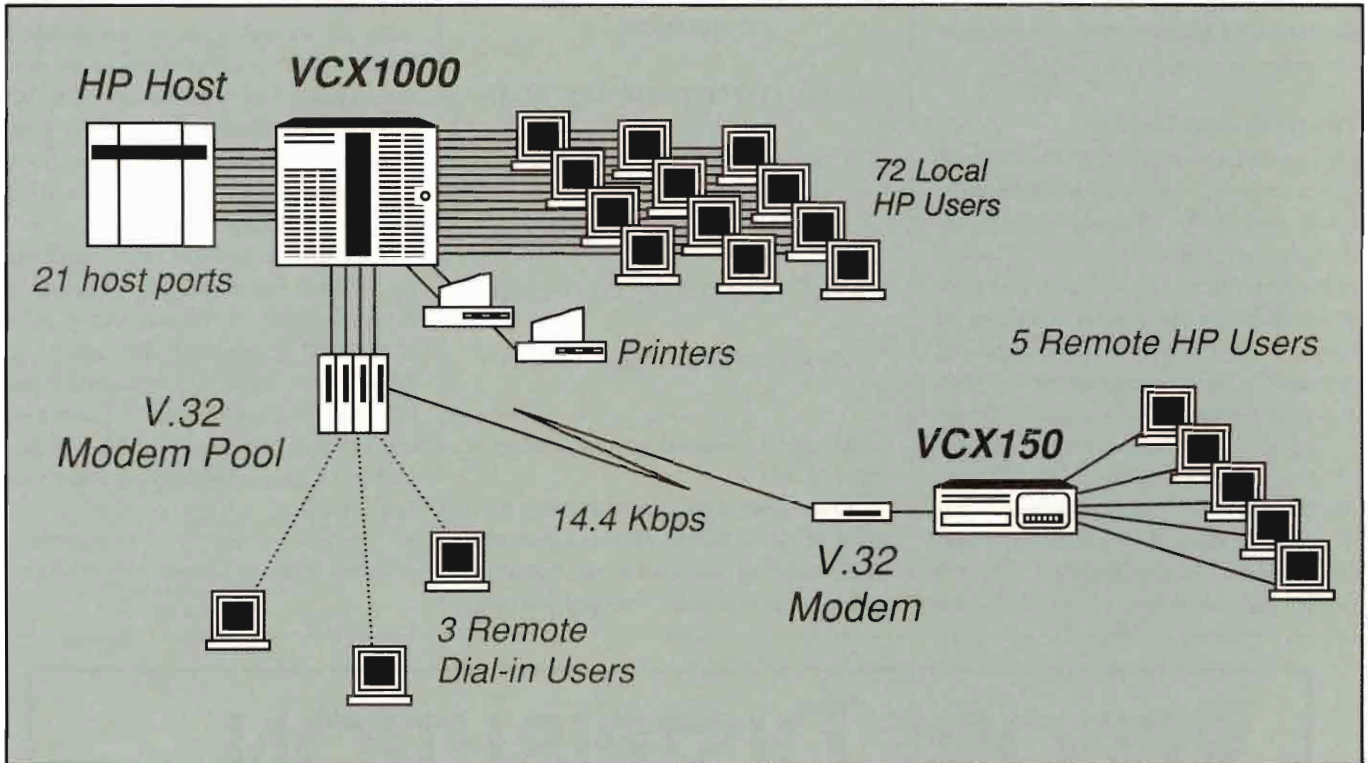
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exception handling, new conditional expression operators, better string manipulation, control of scope and visibility of program units, and more. There is even an INITIALIZE verb, and every COBOL programmer immediately discovers its benefits.

### Program For Change

Despite the advantages of COBOL-85, it's never easy to teach old programming hands new tricks. Nobody feels immediately comfortable making major changes in the way they design and construct software. Successful transition to COBOL-85 requires a programming manager who understands its benefits, and a commitment by top management to the education and training of your programming staff. It also requires you to impart sufficient understanding of modern programming methods to your systems analysts and designers, so that they can develop software specifications that

Successful transition  
to COBOL-85  
requires a  
commitment by top  
management to  
the education  
and training of your  
programming staff.

make effective use of the new features in COBOL-85.

Once your staff understands the benefits of COBOL-85, and can put that understanding into action, the transition will take care of itself. Your programmers

and systems analysts will soon see how it can make their work more satisfying, and the opportunities for career enhancement.

It is, after all, almost 1993—eight years after the introduction of the standard. Perhaps that's long enough to wait before actually taking advantage of an improved technology — especially since this technology can favorably contribute to the productivity and financial well-being of your enterprise.

One final note: Most of the textbooks on COBOL are dreadfully deficient in their treatment of software design using COBOL-85. In general, the authors are still old-time COBOL programmers who lack the training or vision to convey the real value of the new standard.—*Richard Riehle is a software engineer for AdaWorks, Palo Alto, CA.*

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# ADVERTISER INFORMATION

If you'd like more information about the products from the companies listed below, circle the appropriate number on the reader information card. This index is provided as an additional service. The publisher does not assume any liability for errors and omissions.

•••••

## ADAGER

The Adapter/Manager for IMAGE/3000 databases allows the manipulation of database objects with a wealth of action. Call (208) 726-8191 or circle 104.

## ALDON COMPUTER GROUP

Change management, quality assurance and program testing software. S/COMPAREHARMONIZER, ANALYZER. Call (800) 825-5858 or circle 163.

## BERING INDUSTRIES

Removable mass storage solutions, including hard disk drives, magneto-optical erasable drives, and high-capacity tape back-up for HP 3000/9000/1000 computers. Call (800) 237-4641, (408) 379-6900 or circle 105.

## BRADMARK TECHNOLOGIES INC.

Your total HP3000/IMAGE database solution that includes: DBGENERAL, the most complete general-purpose database utility available in the HP 3000 market. And SUPERDEX, the fully compatible indexing package that provides unprecedented data retrieval speed and flexibility. Both are reasons why Bradmark is committed to provide premier data management solutions. Call 1-800-ASK-BRAD or circle 184.

## CHESTNUT DATA SYSTEMS

Chestnut Data Systems provides three system software packages for HP 3000 minicomputer systems. CDS/SecReview, a security audit control system. Conveniently review security and require users to regularly change passwords. CDS/Scan, an online report display and archival system. View reports online, reduce printing and distribution costs and archive critical information to DAT or optical disk. CDS/ACORN, a batch scheduling and control system. Let users schedule and control their own production runs. Call (609) 662-1611, FAX (609) 662-3688 or circle 102.

## COGNOS CORP.

Cognos provides application development software for HP MPE V, MPE XL and HP-UX platforms. Call (800) 4-COGNOS or circle 117.

## COMPUSERVE/COLLIER JACKSON

Compuserve/Collier Jackson serves as a Hewlett-Packard Premier Solution Provider for the HP 3000 Series of midrange computers. Its products include financial accounting and human resource management systems for cross-industry business applications as well as newspaper systems for circulation, business and advertising management. Direct inquiries to: Gary Vigneau, vice president of sales and marketing at (813) 872-9900 or circle 111.

## COMPUTECH SYSTEMS CORP.

The complete line of HP 3000, 1000 and 9000 equipment, compatibles and accessories. Call (800) 882-0201 or circle 101.

## CONTEMPORARY CYBERNETICS GROUP

Contemporary Cybernetics manufactures a complete family of backup systems that range in capacity from the 150 MB QIC streamer to a 2 TB cartridge handling system. Call (804) 873-0900, FAX (804) 873-8836, or circle 112.

## CREATIVE SYSTEMS

HP 3000 specialists, software development, systems management, data processing solutions, HP/PC communications, barcode data collection solutions specializing in Compsec, MARS, SATO equipment. Call (800) 383-2700, in CA (408) 294-6595 or circle 164.

## DISC

OMNIDEX provides instant online relational access to corporate data. Combine OMNIDEX, OmniWindow and OmniQuest for a complete online information system that can be added to any application with little or no code changes — all through PC-like windows. Call (303) 444-4000 or circle 113.

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## EMULEX

Emulex's Network Systems business offers a complete portfolio of multi-protocol/multi-platform application servers for local and wide area network connectivity which include a line of communication servers supporting from 4 to 128 users; a portfolio of printer servers including the recently announced triple protocol MIO card for HP printers and plotters; and, wide area network interface cards for ISA/EISA/microchannel environments. Please contact Emulex Network Systems at (800) EMULEX3 or circle 178.

## HERSTAL AUTOMATION LTD.

Reasonably priced data storage subsystems with performance in mind. Call (313) 548-2001 or circle 119.

## HOOLEON CORP.

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## IEM INC.

Affordable hardware solutions, from memory boards and interface cards to the latest in optical disk technology. Call (303) 223-6071, (800) 321-4671 or circle 122.

## INFORMATION BUILDERS INC.

4GL/DBMS for HP MPE XL and HP-UX systems offering application development, reporting and decision support. Supported on all major platforms. Call (212) 736-4433 or circle 247.

## ISA CO. LTD. / TEXAS ISA INC.

Complete range of mass storage devices and other peripherals for HP 3000, 1000 and 9000 from ISA. Call (713) 493-9925, FAX (713) 493-2924 or circle 245.

## KELLY COMPUTER SYSTEMS

Manufacturer of performance products: RAMDISC, Spectrum memory, Classic memory, and PC and LaserJet memory. CPU upgrades also available. Call (415) 960-1010 or circle 185.

## KINGSTON TECHNOLOGY CORP.

Kingston Technology designs and manufactures memory upgrades for PCs, laptops, workstations and laser printers. The Kingston product line also features mass storage subsystems and processor upgrades. Call (800) 835-2545, FAX (714) 435-2699 or circle 281.

## MARTECH

Highest quality solutions at the lowest price available. Complete line of memory products for HP 9000, 3000 and 1000 computers. Also RAM for Apollo Domain Series 2500-5500. Ship from stock. Call for your pricing today! Call (800) 582-3555 or circle 220.

## M.B. FOSTER ASSOCIATES LIMITED

DataExpress the #1 End User Computing Environment and report writer. EDI Windows, translation software. Reflection and the Network Series. Call (800) ANSWERS or FAX (613) 448-2588 or circle 155.

## NEWPORT DIGITAL CORP.

Accelerator cards for HP 9000 Series 200 plus HP 310 and HP 320. Ten-fold performance improvement. Call (714) 730-3644 or circle 246.

## O'PIN SYSTEMS

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## ROSS SYSTEMS HP

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## SMITH, DENNIS AND GAYLORD INC.

Project Accounting and Financial Management systems featuring state-of-the-art tools. Call (408) 727-1870 or circle 497.

## TELEMON

Bisync and async communication tools for HP 3000 and HP 9000 users. Call (916) 622-0630 or circle 234.

## TRYONICS INC.

Tryonics Inc. is a provider of quality remanufactured HP/Apollo, Apollo Domain series workstations, spare parts, network and software consulting services. Circle 477.

## UNISON/TYMLABS CORP.

### FORMATION

Formation for the HP 3000 is a complete electronic forms solution that lets MPE V and MPE XL users replace pre-printed continuous forms with electronically generated overlays printed on plain paper using laser printers. Call (800) 767-0611 for free demo or circle 139.

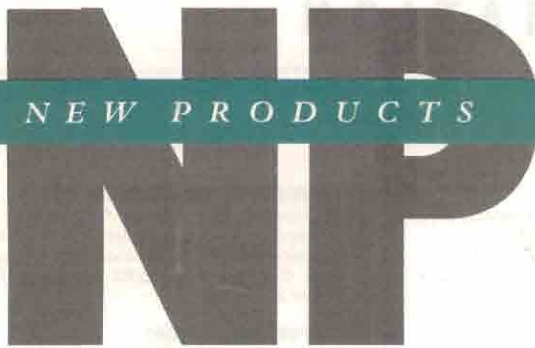
## WALKER RICHER & QUINN INC.

Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. Call (800) 872-2829 or circle 127.

## WTW INFORMATION TECHNOLOGY CONSULTING

A nationwide firm with extensive experience in HP and multiplatform environments. Services include systems integration, migrations and downsizing, project management, application development and information technology strategic planning. Call (803) 699-5781 or circle 180.





**AG Communication Systems Introduces Node Audit**

AG Communication Systems introduced Node Audit, a system administrator's tool that audits and corrects system file organization in a multinode network.

Node Audit monitors the software and system data contents of nodes on a network and ensures that they conform to a particular configuration. Node Audit can be configured to audit file content, file existence, recursive and non-recursive directory content, soft-link resolution, type manager conditions and different master nodes for each file/directory audited.

Node Audit also keeps a log of all changes it makes and helps determine the cause of environment corruption problems by aiding in the problem isolation process.

Contact AG Communication Systems, 2500 W. Utopia Rd., Phoenix, AZ 85027; (602) 582-7511.

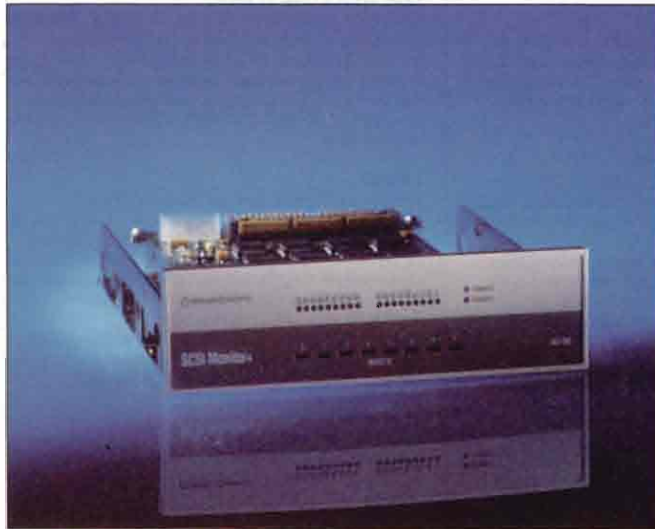
**Circle 397 on reader card**

**Applied Concepts Releases SCSI Monitor and Repeater**

Applied Concepts introduced the ACI-1097 SCSI Monitor Plus SCSI bus monitor and repeater for file servers, workstations and RAID disk arrays.

The SCSI Monitor Plus regenerates and conditions internal SCSI bus signals to improve internal and external computer and peripheral performance. The SCSI Monitor Plus contains proprietary switching logic and individual "active" terminators for both internal and external SCSI ports. This circuitry has been designed to condition and extend the distance of external SCSI peripherals to six meters (19.7 feet). The SCSI Monitor Plus supports a maximum data rate of 10 MB per second and conforms to ANSI X3.131 (SCSI-1) and X3T9.2 (SCSI-2) specifications with single-ended device termination.

The price of the SCSI Monitor Plus Model ACI 1097 is \$345.



*Applied Concepts,  
SCSI Monitor  
+ ACI 1097*

Contact Applied Concepts Inc., 5350-H Eastgate Mall, San Diego, CA 92121; (619) 453-0090.

**Circle 399 on reader card**

**Parametrics Presents Statistical Analysis Library**

Parametrics released its Statistical Analysis Library software package, available for HP workstations.

Designed to take you from data entry through all phases of data analysis and presentation, the Statistical Analysis Library offers a data manipulation front end and allows users to edit, scan, join, list, select portions, recode larger data sets, divide into subfiles and create variables by algebraic transformations, standardization, random numbers or user definition.

A range of routines is available from simple basic statistics like mean, standard deviation, variance, skewness, kurtosis, standard error, confidence intervals, coefficients of variation, correlation, and order statistics to general statistics, linear and non-linear regression, analysis of variance, principal components and factor analysis. It also includes a complete set of Monte Carlo simulation utilities.

Graphical or numerical outputs can be directed to the CRT, a file, or to an external printer or plotter for hard copy. Price is \$1,495.

Contact Parametrics Inc., P.O. Box 8035, Loveland, CO 80537; (303) 667-4030.

**Circle 389 on reader card**

**Penril DataComm Announces Async To LAN Connection**

Penril DataComm Networks introduced the WANserver product family that simplifies connection of async devices to LAN-based devices.

The async devices can access the LAN-based devices running TCP/IP Telnet or LAT sessions. Up to 272 async users or 1,200 LAN user sessions can be supported.

WANserver delivers a way to connect these devices by combining the terminal server and stat mux technologies together in one chassis.

WANserver is available with both 5- and 19-slot chassis. Price is \$12,995.

Contact Penril DataComm Networks, 1300 Quince Orchard Blvd., Gaithersburg, MD 20878; (301) 921-8600.

**Circle 392 on reader card**

## Multiview Adds To Its Financial Solution

Multiview Corp. announced two new features and a purchasing system for the Multiview accounting line. Drill-Down is an online inquiry tool that enables you to report on financial data at any level of the company's financial reporting structure. MultiLink is a micro-to-host link that provides Lotus 1-2-3 users with direct access to financial information maintained on HP 3000s.

Multiview Purchase Order offers four-way line-item matching between requisitions, purchase orders, receipts and invoices, and complete integration with Multiview general ledger and accounts payable.

Drill-Down and MultiLink are included with Multiview general ledger for HP MPE XL. The license fee ranges from \$10,000 to \$84,000. Multiview Purchase Order is one of an integrated series of financial applications designed specifically for HP 3000 computers running MPE XL or MPE V. The license fee ranges from \$5,000 to \$42,000.

Contact Multiview Corp., One Van de Graff Dr., Burlington, MA 01803; (617) 229-2225.

Circle 391 on reader card

## XRunner Automates Software Quality Assurance Testing

Mercury Interactive Corp. announced XRunner, the automated software testing system for applications running on HP 9000/700 series UNIX workstations.

Designed for X Window-based applications, XRunner lets software developers bypass manual Quality Assurance testing by completely automating Q/A procedures. The XRunner automated testing system works through a GUI, inputting keystrokes and mouse movements to an application. It then monitors screen output for expected, or unexpected, results, recording errors for later review.

XRunner automatically generates, fully programmable test scripts. XRunner also performs stress-threshold testing using multiple code loops.

Cost of an XRunner base package with five licenses begins at \$50,000.

Contact Mercury Interactive Corp., 3333 Octavious Dr., Santa Clara, CA 95054; (408) 987-0100.

Circle 390 on reader card

## HP Presents Low-Cost MICR Font And Toner Cartridge

HP announced a new laser printer magnetic-ink character-recognition (MICR) toner cartridge and MICR font that allows checks to be printed on HP LaserJets.

HP's MICR toner cartridge is compatible with the HP LaserJet III, IIID, II or IID printers. The cartridge offers the same plug-and-play installations as other HP LaserJet cartridges. When a MICR job is finished, a standard HP LaserJet toner cartridge can be reinserted in the printer for other documents. MICR toner has a higher iron content than regular toner. The toner is charged magnetically as it passes through reader/sorter machines.

HP's MICR toner cartridge is \$169.

## CrossWind Offers Character Based Version Of Synchronize

CrossWind Technologies announced character-based support for release 1.2 of Synchronize, the personal and enterprise-wide time management tool.

Synchronize uses a client-server mechanism and distributed databases to support large numbers of users spread across geographically separate locations. Synchronize allows schedules, tasks and resources to be managed transparently. The workgroup features include the ability to schedule meetings and resources, distribute agendas and memos, and send out reminders. Synchronize offers private daily, weekly and monthly calendar views, pop-up notes and automatically updated to-do lists.

As in the original X version, the same pull-down menus and keyboard accelerators are employed. Because they differ only in



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their interface, the underlying database works seamlessly with both.

Synchronize is \$100 per user and is available for the HP 9000 Series 300/400/700/800, the DECstation Series and IBM RS/6000.

Contact CrossWind Technologies Inc., 6630 Highway 9, Suite 201, Felton, CA 95018; (408) 335-4988.

Circle 388 on reader card

**ERDB Offers Performance And Predictable Response Times**

Automated Technology Associates (ATA) presented its real-time Entity Relational DataBase (ERDB), an optimized, entity-relational database offering performance improvements over standard relational database management systems.

The entity-relation structure allows developers to build in predefined query paths for the types of questions typically asked in a real-time operations environment. It manages complex relationships by using linked lists and indirect references to provide

direct access to the data. ERDB manages one-to-one and one-to-many relationships without complex schema structures, serial searches or custom code. A binary search feature assures that speed will not degrade as size and complexity increase.

ERDB's SQL interface allows access to data residing in ERDB via standard SQL commands. In addition, the SQL interface allows the user to export data directly into relational database files to support traditional analysis, reporting and archiving activities. ERDB utilizes standards such as SQL, TCP/IP, IEEE 802.3 and POSIX, along with ATA's published interface specifications to make it easy for integrators and developers to integrate it with other software modules or applications.

ERDB is available now for HP-UX, DEC VMS/Ultrix, SCO UNIX and SunOS. Licensing is CPU-based.

Contact Automated Technology Associates, 9000 Keystone Crossing, Ste. 1000, Indianapolis, IN 46240; (317) 573-9000.

Circle 384 on reader card

**Bradmark Gives SUPERDEX Level 1 To HP 3000 Sites**

Bradmark Technologies offers SUPERDEX Level 1 to all HP 3000 sites free of charge.

SUPERDEX Level 1 gives generic and partial retrieval through IMAGE for keyed lookups, along with range retrieval and concatenated indexes.

Call for more information on obtaining free copies of SUPERDEX Level 1.

Contact Bradmark Technologies, 4265 San Felipe, Suite 800, Houston, TX 77027; (800) ASK BRAD (275-2723).

Circle 375 on reader card

**LXE Ships Frequency-Hopping RF TERMINAL SYSTEM**

LXE added a new Spread Spectrum RF terminal system to its line of Radio Frequency Data Communications (RFDC) for materials handling applications.

LXE's frequency-hopping Spread Spectrum system divides the band into multiple channels, automatically hopping from one channel to another to avoid

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interference from other Spread Spectrum or Narrow Band users.

The LXE Spread Spectrum can operate with LXE Narrow Band systems in the same location using the same network controller. This allows users to take advantage of the attributes of both LXE Narrow Band and Spread Spectrum systems without worrying about them interfering with each other. The LXE Spread Spectrum network controllers and terminals also have the ability to handle high transaction throughput applications. Contact LXE Inc., 303 Research Dr., P.O. Box 926000, Norcross, GA 30092; (404) 447-4224.

Circle 387 on reader card

### MST Announces Requirements And Traceability Management

Marconi Systems Technology (MST) released Requirements & Traceability Management (RTM), a CASE tool designed to assess the cost of a proposed change in complex project requirements.

RTM enables you to manage objects by recording interrelationships, ensuring that you remain informed and in control throughout the project lifecycle. When a requirement, a piece of code, or any project item has to be changed, RTM's impact analysis can show the effect of that change on every aspect of the project.

RTM provides direct interfaces to industry standard CASE and reporting tools for analysis and design, configuration management and desktop publishing. Interfaces to Teamwork and Software through Pictures allow RTM to extract information directly from data flow diagrams and automatically trace relationships between requirements. Interfaces to configuration management tools allow direct versioning and tracking of the requirements documents and all RTM objects. Interfaces to Interleaf and Framemaker generate high-quality reports from within RTM.

RTM is available on the HP 9000/700, Sun SPARC and DEC VAX/VMS systems. RTM price begins at \$20,000.

Contact Marconi Systems Technology, 4115 Pleasant Valley Rd., Ste. 100, Chatilly, VA 22021; (703) 648-1551.

Circle 379 on reader card

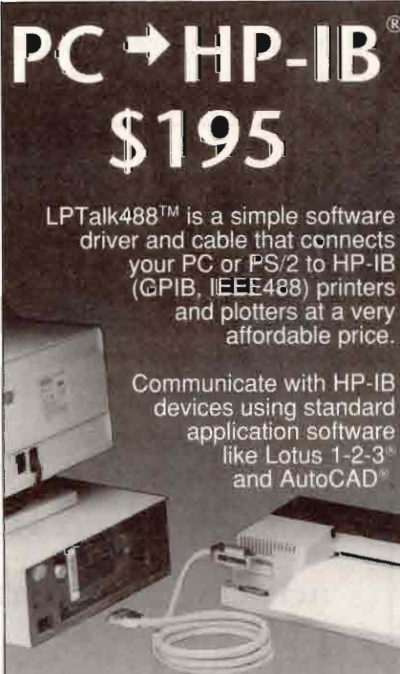
### groKker Offers Optical Character Recognition

Dakota Imaging presented a new release of groKker, a high speed Optical Character Recognition processor.

groKker scans documents, lifts data off forms and automatically indexes each document and stores the image and data. The data is then ready to be utilized by computer applications such as order entry, forms processing, databases, remittance processing, payroll timecards and tax returns.

groKker features high volume scanning of paper/microfilm forms at high speed, allowing operators to perform image-assisted data error correction. groKker includes a built-in, full-featured client-server database, and is directly compatible with database servers such as dBase III/IV, DB2, Ingres, Informix, Oracle and Sybase.

Contact Dakota Imaging Inc., 7130 Minstrel



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## Pro\_EDI

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Pro\_EDI is the most advanced, flexible EDI utility available for HP3000 computers today. With Pro\_EDI, you have the power to integrate EDI seamlessly with any application software.

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Pro\_EDI gives you complete control over the conversion of EDI data formats to the formats used by your own software. With Pro\_EDI, you can define transaction sets *exactly* as your trading partners do. You have total flexibility to define the files you use to interface with your applications. You can control, at the element/sub-element level, the conversion of data to and from the EDI formats and the application software formats.

Pro\_EDI supports all ANSI X.12 standards and derivatives (such as TDCC, VICS, AIAG, etc.), and UN/EDIFACT.

Pro\_EDI runs on all HP3000 computers, both MPE/V and MPE/XL.

### Usage-based pricing

Pro\_EDI pricing is based on the number of document types you need, *not* on the type of CPU you have. You pay for what you use, not for the size of your machine.

Pro Software, Inc.  
Suite 240  
725 Barclay Circle  
Rochester Hills, MI 48307  
(313) 299-0020 (Voice)  
(313) 853-2442 (FAX)

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Way, Ste. 130, Columbia, MD 21045; (410) 381-3113.

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**EISA Expansion Box Provides Series 700 With 7 EISA Slots**

Arrow Computer Enhancements announced the EEB-4700, an EISA Expansion Box providing intelligent EISA Bus expansion for the HP 9000 Series 700 workstations.

The EEB-4700 expands a single EISA slot in the HP Models 720 and 730 systems into seven full-featured EISA slots. The EEB-4700 holds up to seven EISA cards and allows the user to mix and match EISA, AT and XT cards. You can use the EEB-4700 with X.25 Ethernet cards for networking, SCSI-2 cards for adding disks and tape drives, and serial cards for adding modems and terminals.

EISA and ISA cards installed in the EEB-4700 function as if installed in the host workstation, ensuring completely transparent operation. The slots in the EEB-4700 are compliant with the EISA specification, and support both EISA master and slave

operation. Each slot also supports EISA auto-configuration.

The EEB-4700 package includes an EISA buffer card, expansion chassis, documentation, cabling and software. Price is \$4,500.

Contact Arrow Computer Enhancements, Arrow House, Longmead Business Centre, Blenheim Rd., Epsom, Surrey, UK KT19 9QN; 0372-742557

Circle 383 on reader card

**100+ GB Of Disk Storage On A Single SCSI Host Adapter**

Delphi Data announced RAIDER Model 6850, an intelligent SCSI Disk and Tape array with high performance caching and integrated tape backup system.

The 50 Mhz RAIDER Model 6850 increases system performance for LANs and minicomputers and can be configured from 660 MB to 100+ GB of disk storage on a single SCSI host adapter. Tape backups can be performed without host intervention and can be performed concurrent with normal system operation. Special operating system

drivers or patches are not required. RAIDER Model 6850 can be used on any system that supports SCSI disks, including HP, Sun, DEC, AS/400 and Novell. Price begins at \$4,990.

Contact Delphi Data, 2220 Hartford St., San Diego, CA 92110; (619) 275-2892.

Circle 382 on reader card

**S.O.R. Provides A Quick Reference Card For MPE/iX**

G.S. Communications released version 1.2 of Syntactic Online Reference (S.O.R.), an electronic quick reference card for MPE/iX professionals.

S.O.R. provides instant help on MPE/iX commands, intrinsics, error codes and messages, command interpreter variables, functions and more. New features in version 1.2 include documentation of View Plus intrinsics and better handling of dense VGA screen modes.


S.O.R. menus and topic screens are displayed in all VGA screen modes up to 132 by 60 characters. S.O.R. provides short but

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complete information on the syntax, parameters structure and available parameters for most common commands and intrinsics. Topics are cross-referenced allowing users to easily jump from subject to subject. S.O.R. is \$39.95.

Contact G.S. Communications, P.O. Box 29565, Richmond, VA 23242; (804) 750-1746.

Circle 381 on reader card

## EDA/SQL Enables Access To Enterprise-Wide Data

Information Builders announced Enterprise Data Access (EDA)/SQL server software for HP 3000 Series 900 business systems and servers.

EDA/SQL client-server software provides transparent, cross-platform access to relational and non-relational data residing anywhere in an enterprise. It enables 3GL and SQL-based tools on the HP 3000 to access databases such as ALLBASE/SQL, KSAM, TurboIMAGE and HP flat files.

The price for EDA/SQL server software is user-based and ranges from \$8,000 to \$118,500.

Contact Information Builders Inc., 1250 Broadway, New York, NY 10001; (212) 736-4433.

Circle 374 on reader card

## Holland House Adds NETPRINT Module To UNISPOOL

Holland House added a new module to the UNISPOOL multiplatform network spoolfile management system.

UNISPOOL/NETPRINT enables the

printing of spoolfiles to and from PC printers and to printers directly connected to a LAN via a LAN interface card or a print server. For PCs, UNISPOOL/NETPRINT prints spoolfiles on printers connected to your personal computer without interrupting your current PC task. For printers directly connected to your host LAN with a JetDirect or other TCP/IP-based LAN interface card, UNISPOOL/NETPRINT allows you to address these printers from any UNISPOOL/NETPRINT resident host.

UNISPOOL/NETPRINT is available for MPE V, MPE XL, HP-UX, DOMAIN, AIX, ULTRIX and SCO-UNIX hosts. Module prices start from \$1,000 on MPE systems, according to machine size, and from \$250 on UNIX systems depending on the number of users.

Contact Holland House, P.O. Box 91027, Austin, TX 78709; (512) 288-7540.

Circle 378 on reader card

## CY-8500 Enables Fast File Access On 25 GB 8mm Tapes

Contemporary Cybernetics Group introduced the CY-8500 8mm tape drive with a fast file access feature that allows UNIX users to access any file on a 25 GB 8mm tape in seconds.

The CY-8500 can store between 5 and 25 GB on one tape at speeds of up to 90 MB per minute. The CY-8500 features a liquid crystal display that shows command under execution, transfer rate, compression ratio, tape remaining and ECC rate on a 2-line, 40-column panel. Optional data compression allows the user to increase base storage

capacity by up to five times. Data encryption lets users control access to sensitive data through the use of encoded card keys. Rack mounting options, hard disk configurations and a variety of cable lengths provide configuration flexibility.

Two levels of Error Correction Code are implemented to ensure data integrity. The CY-8500 offer a Mean Time Between Failure rate of 60,000 hours.

Contact Contemporary Cybernetics Group, Newport News; (804) 873-9000.

Circle 380 on reader card

## Reporting Utility Added To MiniSoft 92

MiniSoft announced DataExpress reporting utility support with MiniSoft 92 for DOS and Windows.

DataExpress is an end-user reporting tool designed to perform extractions from HP 3000 host computers. Extracted information created by DataExpress will now automatically be downloaded through MiniSoft 92's built-in file transfer facility.

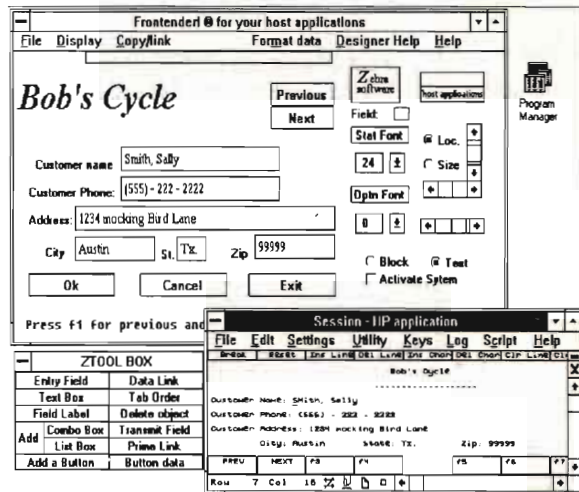
MiniSoft 92 is a terminal emulation and data communications package for IBM PCs and compatibles. Available for the DOS and Windows environments, MiniSoft 92 features extensive LAN support, a command language, and emulation of the 2392A and 700/92 CRT terminals.

MiniSoft for the DOS and Windows environments is priced at \$159.

Contact MiniSoft Inc., 13617 SR 9, Snohomish, WA 98290; (800) 682-0200.

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# At last! Windows frontends for your host applications !



*Frontender! gives you the ability to develop Window's frontends for your host applications in a 'real-time' environment. Your frontends will be communicating with the host as soon as you add your first screen object. Creating frontends has never been this easy or possible. All screen objects can be moved, sized, colored, or the font changed. Each object can have it's own Windows 'context sensitive' help. **Frontender's!** 'Hotlink' utility allows the host to update your spreadsheets and/or documents. With **Frontender's** auto-sync function you will never be out of sync with your host.*

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## eXclaim! VI.1 Offers SQL Interface To Ingres Database

Quality Software Products announced version 1.1 of eXclaim!, the X Window/Motif spreadsheet program. Version 1.1 features

an SQL connection to the Ingres Database System.

With the Ingres add-in for eXclaim! version 1.1, you can connect to Ingres databases, form SQL queries and extract

selected data directly into an eXclaim! worksheet. You can use eXclaim! as a data-entry tool for Ingres, and/or modify and update data previously extracted from a database. SQL queries can be typed directly or constructed with a few mouse clicks. You can save sessions, and queries for repeated use, independent of any particular worksheet. You can create new tables, columns and insert new data into existing databases.

Version 1.1 of eXclaim! is available on UNIX workstations running X Windows Version 11 Release 3 or later, or UNIX host computers connected to X client workstations for terminals. List price for a single-user floating license is \$695.

Contact Quality Software Products, 5711 West Slauson Ave., Ste. 240, Culver City, CA 90230; (310) 410-0303.

Circle 400 on reader card

## IMSL Announces FORTRAN Libraries For HP 9000/700

IMSL released Version 2.0 of the FORTRAN Libraries and the Interactive Documentation Facility for the HP 9000 Series 700 workstations.

The IMSL FORTRAN Libraries are a comprehensive resource of more than 900 FORTRAN subroutines for applications in general applied mathematics, special functions and for analyzing and presenting statistical data in scientific and business applications. The Interactive Documentation Facility provides online access to the essential printed documentation for the IMSL Libraries.

Price starts at \$5,250 for workstations and \$1,800 for PCs.

Contact IMSL, 14141 Southwest Freeway, Ste. 3000, Sugar Land, TX 77478; (713) 279-1000.

Circle 377 on reader card

## File Manager/3000 Provides MPE Command Front End

Software Development Resources announced release 2.0 of File Manager/3000, providing a windows-based front-end to the MPE command interpreter.

With File Manager/3000, file operations such as editing, viewing and sorting can be performed by pressing function keys. Release 2.0 contains several new features. Global Undelete enables you to immediately recover accidentally deleted files. Files deleted with the MPE Purge command are intercepted and transparently moved to a holding area for recovery purposes. In addition, disk space

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management policies can be defined to automatically trim, purge, archive and compress files that have not been accessed within a specified number of days. Contact Software Development Resources, 22032 Trailway, El Toro, CA 92630; (714) 770-7930.

Circle 395 on reader card

### Develop GUI Screens With Zebra's Frontender!

Zebra Software Development Co. announced Frontender! for Windows, a GUI development kit used for developing front ends to existing HP applications.

With Frontender!, you can develop GUI screens on the fly for your existing block and text mode applications with no changes required to the host applications. Users can also develop screens using buttons, text boxes, list boxes, drop-down combo boxes or multiline text boxes with scroll bars. A built-in synchronization scheme assures that the host and the PC are in sync and that the correct front-end is displayed for each host screen.

Frontender! requires Unison-Tymlabs' Business Session for Windows terminal emulation software to run, and uses Session's scripting language.

Contact Zebra Software Development Co., 2108 LeWood Circle, Austin, TX 78745; (512) 444-3320.

Circle 370 on reader card

### O'PIN Systems Presents Reveal 2.0

O'PIN Systems announced Reveal Version 2.0, an update of its paperless reporting software for the HP 3000, and the availability of ACSYS, its report storage and retrieval system, on the MPE XL series of HP 3000 machines.

Major enhancements to Reveal Version 2.0 include the ability to download report data to personal computers, a new "find all" string search, data compression for increased disk storage, automated tape archiving and the ability to toggle or switch back and forth between several reports. Reveal delivers information electronically and lets you locate, display and print the information you need. Its PINPOINT distribution module assures each user receives only the pages of a report they need and are authorized to see.

ACSYS, available now on MPE XL HP 3000 machines, provides long-term data storage on optical WORM disks to minimize

the use of microfiche and paper storage. WORM optical disks hold 800 MB of information, or about 250,000 pages. Contact O'PIN Systems, 7900 International Dr., Ste. 635, Bloomington, MN 55425; (612) 854-3360.

Circle 394 on reader card

### HP And Consilium Unveil WorkStream Open

HP and Consilium Inc. announced WorkStream Open, a manufacturing execution systems (MES) software re-architected to run on HP 9000 UNIX-based computers.

Previously available only on Digital's VAX line of computers, WorkStream Open is an integrated MES solution that provides plant floor operators and managers with current views of all elements of manufacturing, including people, equipment, materials, facilities and work instructions. MES software integrates plant floor operations in real-time, providing information and control to support continuous improvement.

WorkStream Open prices start at \$60,000, depending on the number of users and configurations.

### IEM Releases Backup, And Archive Librarian

IEM announced its Backup and Archive Librarian, which supervises all backup and archival storage from automatically starting scheduled store operations to managing data, media, storage devices and device maintenance.

Librarian supervises an unlimited number of full backups, incremental backups and restores. Files can be included or excluded by pattern, user, group or date, repeats can be specified by hours, day, date, day of week, month or year.

The Librarian includes two user interfaces. The command line interface provides scripting capabilities as well as access from text-only terminals, allowing the experienced UNIX user to access system-level commands. The X 11/Motif interface provides pull-down menus and graphical, intuitive access to all users.

Librarian's initial release will accommodate a variety of HP 9000 workstations and file servers either stand-alone or on a TCP/IP network.

Contact IEM Inc., P.O. Box 1889, Fort Collins, CO 80522; (303) 221-3005.

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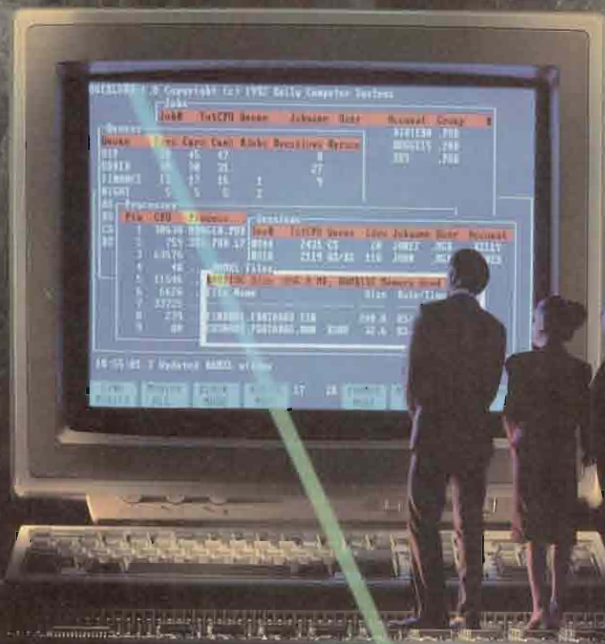
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### Editorial Focus -- Commercial UNIX

#### Scheduled Features\*:

- **The Fate of OSF/1** — Gordon McLachlan explores HP and other vendors' plans to incorporate features of the Open Software Foundation's much-vaunted standards-based operating system into their own "proprietary" versions of UNIX.
- **UNIX Payroll/HR Software** — Downsizing, client-server architecture and open systems have payroll and human resources software suppliers moving to HP-UX. Paula Jacobs examines the HP-UX migration plans of popular HP 3000 vendors and the arrival of IBM mainframe applications on the HP multiuser UNIX scene.
- **UNIX System Management** — X terminals, servers diskless workstations, PC X servers, who needs what and how do they all fit together? Marty Poniatowski takes an in-depth look at the issues facing UNIX system managers in commercial environments.

SPACE CLOSING: 12/4

MATERIALS DUE: 12/11

\*Articles subject to change.

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**Gordon McLachlan**

# What Users Really Want

During the past year, it seems like I've upgraded or

changed every PC software package I own. I don't think my experience is unique. With the switch to Windows and significant releases of packages coming out every 18 months, a typical user with a half-dozen applications has to assimilate a new one every four months or so.

For many of us, that's not a problem. We get paid to play with the new toys, and we might even enjoy it. I know I do. The kinkier it gets, the better I like it. The trouble is, most people don't share my enthusiasm for tearing off shrinkwrap. Some people like to actually use their software instead of wasting their time learning new versions.

If you want your users to get the most out of their systems, you have to give them a fair shot at it.

- Buy user-friendly software.
- Provide documentation and training.
- Give users hands-on support.
- Control the number of packages and upgrades.

The first thing I do when I get new software is to read the installation instructions and then set up the software. Then I throw the manual away. Actually, I keep the manual, but I absolutely refuse to read it before I start mucking around. I may be over-estimating my intellectual prowess, but I figure that if I can't learn how to use a package reasonably well without the book, then your typical user won't have any luck, with or without it.

Graphical user interfaces like Windows have made software much easier to use. A good Windows application will hand you the better part of its function on a silver platter. Learning an applica-

tion well may take as much effort as ever, but at least the first step — the big one — is a lot more manageable.

## Reading Is Fundamental

Speaking of manuals, how do you expect users to get a handle on their programs without the documentation? The quest for cheap software has led companies to negotiate site-licenses, serve applications on LANs, and even rip the stuff off. Regardless of the method, users don't get the manuals as standard issue.



If you aren't going to distribute manuals or books, at least tell your users what books they might find useful, and where they can buy some. Having ignorant users may make you feel smarter, but it'll make the support folks work harder.

Training is also important, and it should be a continuing process for all users. Maintaining a good training program is hard to do; when budgets are tight, training budgets are a tempting target. Coordinating a training program is an administrative pain in the butt, and it is not what you might call a technological challenge.

The key is the continuing process. Many people are trained when they first get PCs or software, but they only get the go-around once. When upgrades show up, we assume the users will pick up on the new features by themselves. What often happens, though, is that users ignore the new features and use the new version just like the old. Ignoring superfluous new chrome won't hurt, but vendors do put some good stuff in there, too.

User support means more than pick-

ing up the fragments after something blows up. Users always require some hand-holding, whether to pick up some tips, clean up a mess, or just to know you care.

Despite their supposed cost efficiencies, I'm dubious about the worth of the large, centralized help desks in vogue at big companies. For one thing, they're impersonal. For another, the support people are sometimes too far removed from the users to know how they really use their systems. If you don't know the financial analysis techniques they use, you can't support some spreadsheet hotshots, no matter how well you know the menu commands and the macro-language.

## Mingle With The Masses

If you don't give users the personal touch, they'll develop their own, probably in an informal support structure within their own departments. Having users support users can work decently, but don't delude yourself into thinking that you're saving the company tons of money by hiding your tech support behind a bank of phones. Sticking some formal support out among the users may be cheaper than the cost you're paying in lost user productivity for the informal support network.

The final thing you can do is to limit the proliferation of different software packages. Setting standards is one way to cut down the field. Another is to determine what your users' real needs are before recommending another application. Does that user really need a new graphics or statistical analysis package, or will your standard, outlandishly over-featured spreadsheet do the job? Do you need a page-layout program for a newsletter or manual, or can that fancy Windows word processor fill the breach? ■



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