Professional Press Publication

# HP Professional

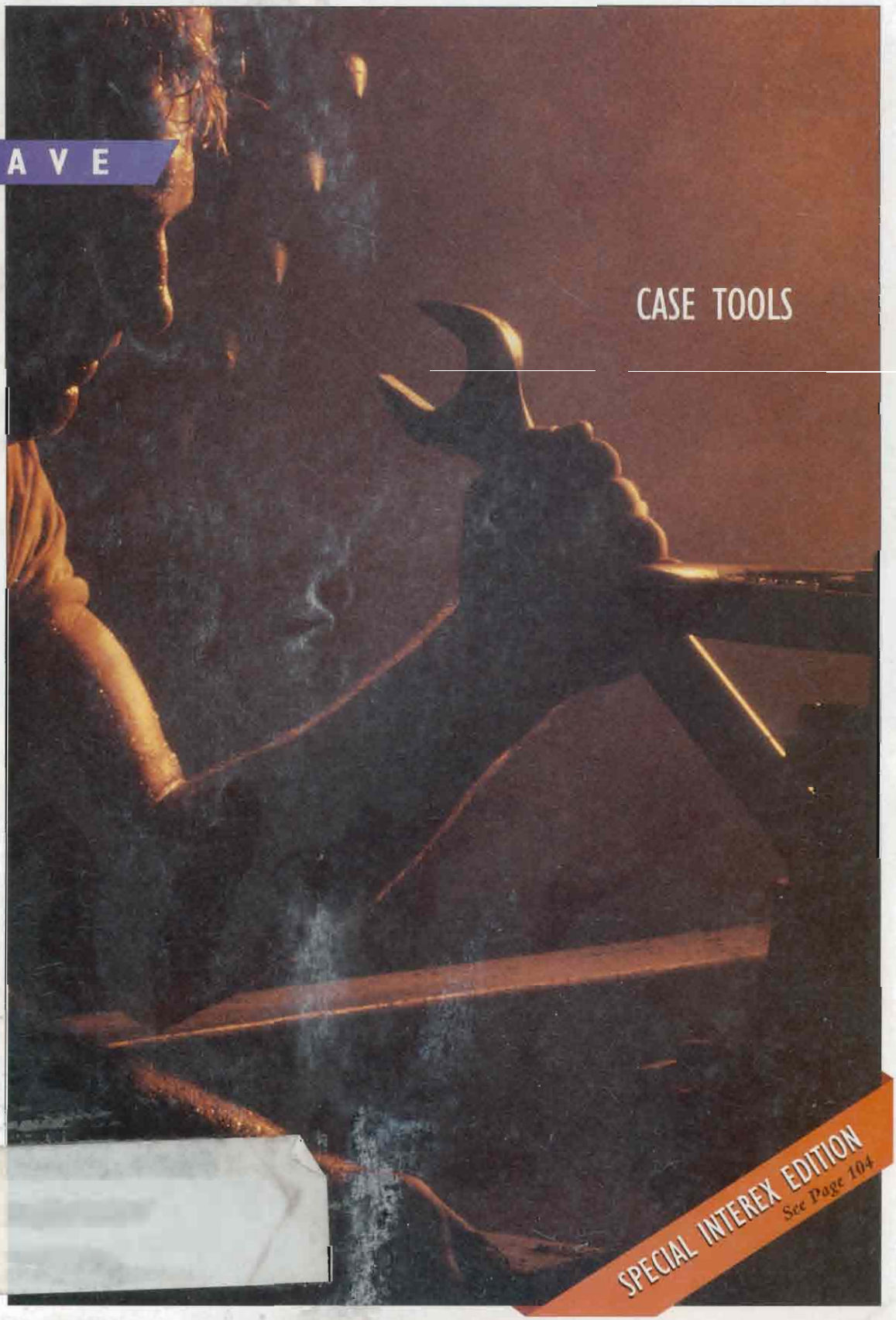
THE INDEPENDENT MAGAZINE FOR NEWWAVE COMPUTING ▲ VOL.5 NO.7

JULY 1991 ▲

NEW WAVE

## Information Systems

- A Case For CASE: Can Your Development Organization Survive Without It?
- Image Management: HP AIMS For A Paperless Office
- 4GLs And Database Tool Sets Make Tracks For New Platforms
- News & Trends: HP Debuts 16 New PA-RISC Business Systems

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HP PROFESSIONAL ISSN 0986145X is published monthly by Professional Press, Inc., 101 Witmer Rd., Horsham, PA 19044. Subscriptions are complimentary for qualified U.S. and Canadian sites. Single copy price, including postage $4. One year subscription rate $30 U.S. and Canada: $60 foreign. All orders must be prepaid. Second Class postage paid at Horsham, PA 19044, and additional mailing offices. POSTMASTER: Send all correspondence and address changes to HP PROFESSIONAL, P.O. 616, 101 Witmer Rd., Horsham, PA 19044.


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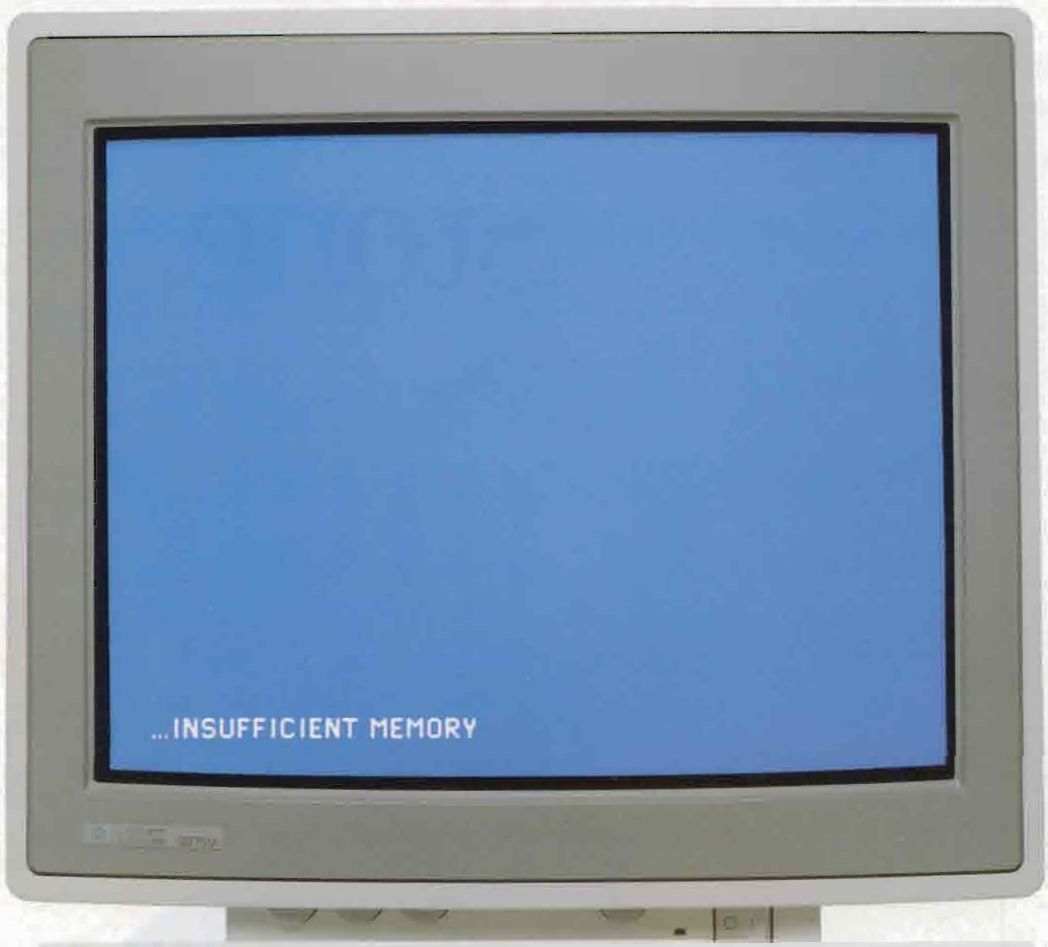


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# The Year Of Hewlett-Packard

**By Don Marks**

The face of computing changes rapidly, and nowhere is this more clear than at Hewlett-Packard. One year ago, at the Boston INTEREX conference, HP was touting the promise of NewWave Computing and hailing itself as the open systems leader. Joel Birnbaum's landmark speech on client-server architecture and the announcement of a 67 percent increase in UNIX sales over 1989 figures were the feathers HP wore prominently in its corporate cap.

But lurking in the background were a handful of problems. First, there were serious rumblings from the HP 3000 installed base. Many users, distressed by the unbundling of TurboIMAGE and the relegation of RAPID products to mature status, were questioning the very vendor loyalty that had kept the HP 3000 alive and HP atop the customer satisfaction surveys.

There also were concerns about HP's viability in other market segments. Long a leader in workstation technology, HP had been slow to mobilize after its purchase of Apollo. The biggest disappointment was that the marriage had not yet produced a RISC-based workstation. HP badly needed PA-RISC to compete with Sun, DEC-MIPS and IBM's new RS/6000 muscle.

## The Comeback

Right now, from our bed of roses, it's hard to remember how uncertain things seemed last year. But one vivid memory sticks in my mind. As I was taking my seat for Birnbaum's keynote address, I heard someone nearby say, "This is the year for HP. They either put up or shut up." At that moment, it dawned on me what the competitive pressures of an open systems market were going to be.

In October, a few months after the Boston conference, Technical Editor Bill Sharp and I traveled to Cupertino for three days of sun and press briefings. Despite all the gloom and doom we'd been reading in *The Wall Street Journal*—the incessant warnings of impending recession and widespread fears of a downturn in the computer industry—something exciting was happening at HP. It was unmistakable and it was happening across product lines. We've since learned what all the excitement was about—the second generation of PA-RISC, the most powerful and scalable RISC architecture in the industry today.

In the first quarter of 1991, while IBM and DEC were mumbling apologetically about recession and narrow margins, HP let loose a flurry of industry-leading new technologies and smart policy decisions. What's more, unlike IBM, it did so without alienating its installed base.

The first big victory took place at the Reno ICMS in March. The Application Support Division, headed by Marc Hoff, established a Software Technology Center—a real R&D lab dedicated to support for MPE V, TurboIMAGE and the RAPID products. This was a crucial decision, because it won back the hearts and minds of dedicated customers.

The Reno surprise was followed shortly by the stunning public announcement of the Series 700. Even the most jaded UNIX cowboys had to break stride at 76 mips for $20,000. HP wisely backed up the industry-shattering announcement with support from more than 40 major vendors offering commercial and technical applications running on the new systems and a blistering ad campaign that took the battle straight to Sun and DEC and IBM.

By June, Rich Sevcik, general manager of the Commercial Systems Division, was at our door with an HP 3000 947LX, a brand new PA-RISC box that weighed 50 pounds, was the size of a PC and could outperform a comparably-priced DEC VAX or IBM AS/400 for about half the price of either. The 16 new "Nova" systems that HP proceeded to announce (see page 14) represent still another astonishing—and formidable—advance in computing technology.

With PC-level pricing—the new entry point for an MPE XL machine is $14,500, as opposed to roughly $22,000 for the HP 3000/922—HP's new low-end systems are well-suited for business-critical network applications. With the addition of several midrange servers to both the 3000 and 9000 lines, HP broadened an already varied repertoire of enterprise networking solutions. Configured as servers in large-scale, client-server environments—or as hosts, for those old-fashioned data center types—these systems supply the power to support large numbers of users and the reliability to handle mission-critical applications.

Back in March, several analysts I talked to suggested that 1991 could be remembered as the year of the Series 700. With the introduction of these new systems, which put the Series 700 chip set to work in multiuser systems and servers, all that has changed. Thanks to the Nova systems, 1991 has become the year of Hewlett-Packard.

Don Marks

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**INDUSTRY WATCH**

**Bill Sharp**

**HP Forges Links With LynxOS As Real-Time Systems Head For PA-RISC**

# Real Time Goes Big Time

It's no secret that the HP 1000 turns 25 this year. That makes it five years older than DEC's PDP-11 and certainly one of the oldest architectures anywhere. HP recently fired up one of its first HP 1000 models, the 2116B, alongside a current high-end A900, both using the same software. That two computer models 25 years apart can use the same software is as impressive as it is unusual.

The importance of real-time computing has reached a broader market. Real time is now *real big time.*

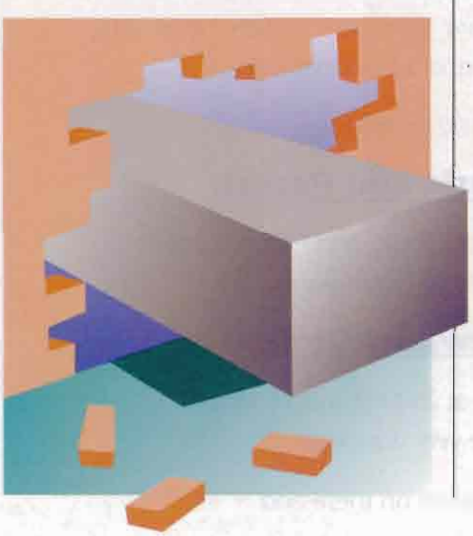
In its simplest form, "real time" means fast. For some very simple, dedicated real-time systems, being fast alone is good enough. But as soon as applications and computer systems become at all complex, the application developer must be able to predict that the system will respond to crucial commands within a specified window of time.

Bruce Campbell is general manager of HP Data Systems Operation, where HP 1000 systems come into the world. He puts real time in meaningful perspective. In a steel plant, a real-time system decides whether a slab of steel weighing several tons and moving rapidly on a conveyor will go in direction A or direction B. "You have 100 milliseconds to make a decision. If you're late with the decision, the slab will go out the back wall of the plant." This is called "hard" real time, because the responsiveness of the computer *must* be assured. It's especially hard if you're between the slab and the wall.

UNIX, originally developed as a time-share system, divides its time equally between processes. But hard real time requires complete control over the allocation of machine resources. That means that when the steel slab comes hurtling down the conveyor, there is no argument about which task under computer control is the most important. Resource allocation is totally "unfair," so there is a predetermined set of priorities for compute processes, which makes the interrupt response time of the system predictable. The HP 1000's RTE operating system functions handles these processes.

"Soft" real time provides a more egalitarian system, but one that allows application developers to tune the response behavior of the system in the desired direction. It improves the speed and likelihood of quick response times for important processes. This kind of system is somewhat unfair in resource allocation, but not completely predictable in response times. HP-UX with real-time extensions functions this way, as do several other versions of UNIX improved for real-time use. The extent to which manufacturers have improved the real-time responsiveness of their particular UNIX varies considerably.

Then there is UNIX. UNIX without modifications for real time is scrupulously fair in parceling out its computational ability, and therefore, makes a poor real-time system. It would happily play Dungeons and Dragons with some person on lunch break while the steel slab repositions itself through the wall and into the parking lot. Sometimes being fair is not such a great idea.



## Real-Time Market Share

Real time is no shrimpy market, says Campbell. He estimates the market sales per year at between six and 10 billion dollars, depending on your definition of real time. "A lot of people in the past have built their own real-time systems. Lots of them are now seeing that they want to be able to buy their computing platform from a stable vendor who will do the basic engineering necessary to evolve that product. As an application evolves, it becomes more and more difficult for an individual to maintain such a system."

So the roll-your-own old timers are turning into off-the-shelf real timers. And what would they like to pull down off the shelf? Open systems for flexibility and low cost, and RISC for performance and value.

Until recently there were only two choices for HP users seeking real-time systems: RTE and UNIX. For years, RTE on the HP 1000 was the only sensible solution. Fast, reliable and highly regarded in the real-time field, RTE is the basis for real-time systems so important to some companies that they try to hide the fact that they are using RTE in order to maintain their competitive edge. The HP 1000 with RTE is a hard real-time system. There are other proprietary systems on the market as well, including DEC's VAX ELN, to mention one.

As UNIX has developed, many vendors have added real-time improvements. These seek to give users the benefits of open systems while avoiding large,

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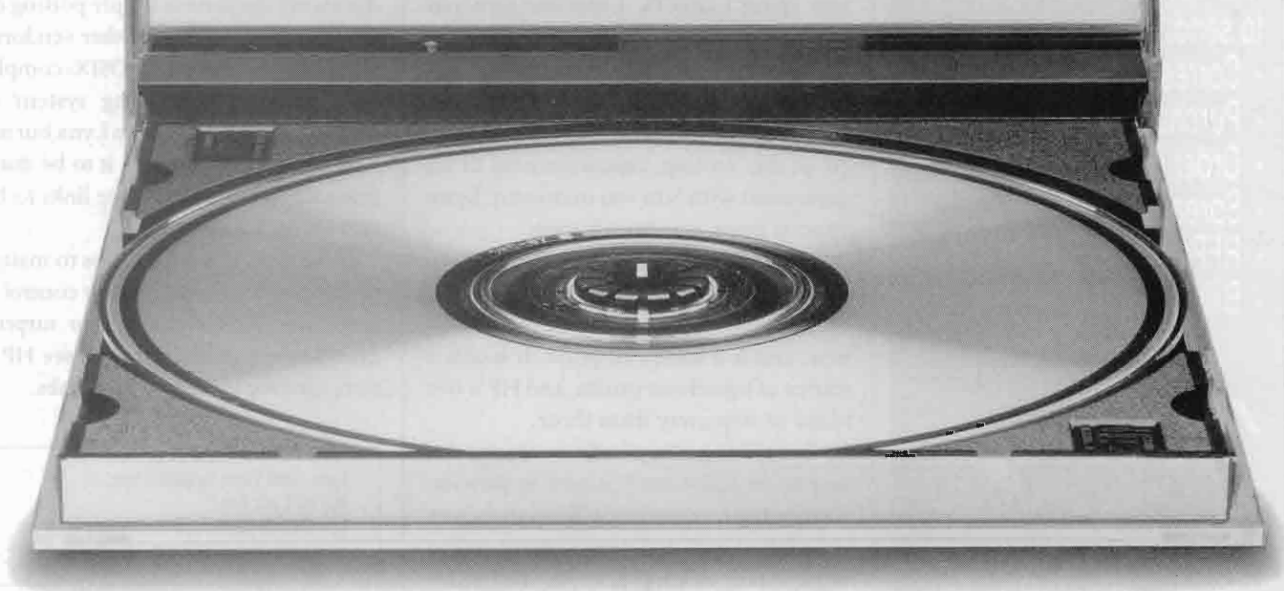

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unplanned holes in the wall from errant steel slabs. These extended UNIX operating systems can't be used for hard real-time applications, but are more than adequate for multiple soft real-time uses. HP-UX is probably a better than average example of this kind of compromise.

## Lynx To Open Systems

But can't we have an open systems solution that qualifies for hard real-time applications? Until recently, you were out of luck. That was before Lynx Real Time Systems Inc. (Los Gatos, CA) thought to do the unthinkable—rewrite UNIX. Only this time, instead of making the assumption that the operating system must be scrupulously fair to all users, the folks at Lynx decided to make their operating system scrupulously *unfair*, thus making it a good real-time system. At the same time, they made their operating system POSIX-compliant, so all the folks out there who know and love UNIX can use LynxOS when they need hard real-time performance.

Pretty neat. So neat, in fact, that when IBM looked around for a real-time operating system to help fulfill its part of NASA's Space Station Freedom project, it chose LynxOS. And when the space shuttle launches or lands, wind conditions are monitored moment to moment by a system using LynxOS. Lynx has garnered quite a bit of attention and respect for its development work. The firms that already have some agreement with Lynx include HP, CDC, Data General and IBM. As of this writing, announcement of an agreement with Sun was imminent. Lynx expects more agreements soon.

## Whither The 1000?

Real time is HP's oldest computing business, and is a source of pride. It is also a source of significant profits, and HP is not likely to step away from those.

But HP is getting ready to change the face of its real-time business to provide users and new customers with more choices in building new real-time systems and in maintaining existing systems. The exact form and timing of those changes are hazy because HP is being cagey.

Don't wave bye-bye to the HP 1000, mind you. It's not going anywhere. Support for both the 1000 and RTE are likely to continue for quite a few years. Large real-time installations involve big investments and are maintained for years between upgrades. However, HP's real-time RISC seems to be about ready.

Getting RISC to the real-time market has taken HP longer than its customers would have liked. Why has it taken so long? "That's a good question," says Campbell. HP has had to set priorities about where to place its RISC resources, and real time was not on the top of the list. Campbell and company have had to wait their turn for PA-RISC products like the ones that have ignited commercial and workstation markets for HP, but the wait should be over soon.

It looks like HP soon will offer two or three real-time operating systems. Even with RTE's new links to other platforms and nifty new capabilities, such as HP's SoftBench development environment on the 1000, the old warhorse can't function as an open system. HP-UX will do for lots of soft applications, but not for the new hard stuff—HP needs Lynx for those customers, and knows it.

HP's agreement with Lynx licenses the technology underlying LynxOS to HP for "possible" use in RISC-based computers. This is *not* the same as simply porting over the operating system, as other vendors are doing. Expect instead a POSIX-compliant hard real-time operating system that borrows significantly from Lynx but is not limited by it. And expect it to be distinct from HP-UX with effective links to both HP-UX and RTE.

Look for HP's fast systems to maintain their place in robots, process control and aerospace. And don't be too surprised, once we're past the rehab, to see HP real time guiding still more steel slabs.

Lynx Real Time Systems Inc.
16780 Lark Ave.
Los Gatos, CA 95030
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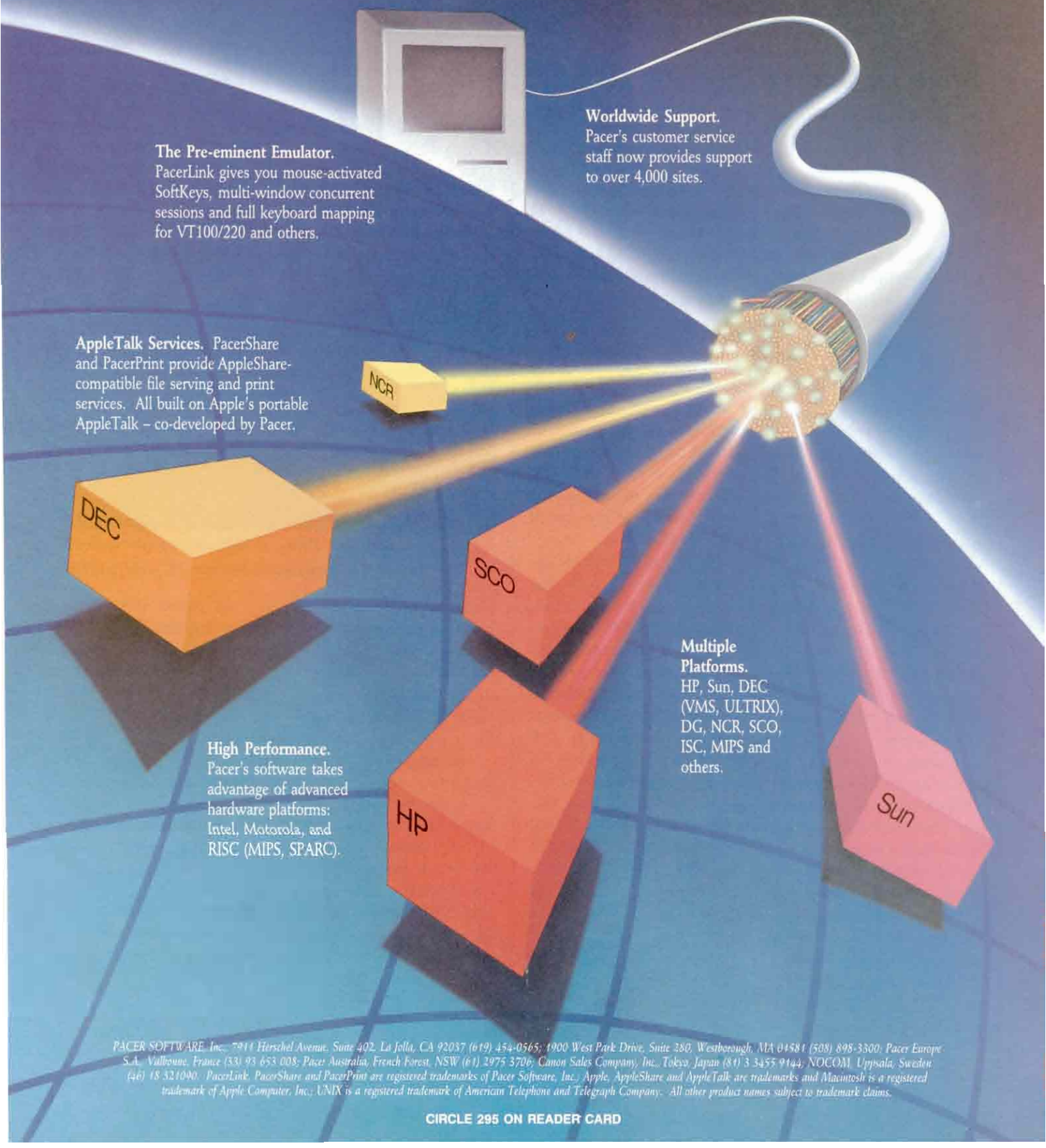


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# HP Rolls Out 16 New PA-RISC Systems

*Super "Nova" Systems Burst Price/Performance Records, Small Footprint Machines Outperform IBM AS/400 And DEC VAX*

In a pre-announcement briefing at the offices of *HP Professional*, Rich Sevcik, general manager of HP's Commercial Systems Division, described 16 new PA-RISC offerings HP has added to its HP 3000 and 9000 lines.

Announced on June 24, these new business systems and servers provide significantly higher price/performance levels than their industry competitors—delivering up to six times the performance of comparable IBM AS/400 and DEC VAX midrange systems. The new systems, code-named the "Nova" project within HP, are the successful culmination of a year-long effort to bring the latest in PA-RISC technology to the company's MPE XL and multiuser HP-UX platforms.

Pulling no punches in the face of recession-weary competitors, HP continues to roll out high-performance new technologies at an industry-setting pace. This announcement extends its two existing lines of RISC-based multiuser systems, adding 10 new 900 series systems to the HP 3000 family and six new 800 series models to the HP 9000 line. According to Sevcik, HP expects the Nova systems in both the HP-UX and MPE XL lines to be deployed primarily as multifunction or dedicated network servers for applications, databases and communications.

Thanks to HP's densely packed submicron CMOS chip technology together with double-sided surface mount technology and multilayered circuit board design, all of the new systems squeeze into dramatically small deskside packaging.

Several models from the low-end through midrange levels of performance are avabilable in a PC-size chassis only 17 inches high and less than nine inches wide. A double-wide chassis, which is rack-mountable and accommodates more internal disk space, is also available for mid-priced and high-end systems. Despite their small size, even the narrow footprint machines integrate a 1.3 GB hard disk, 5 GB DAT drive and up to 192 MB of memory.

## PA-RISC, The Sequel

The Nova systems make use of HP's second generation RISC architecture, PA-RISC 1.1—the same chip set used in HP's industry-wowing Series 700 workstations introduced earlier this year. Because the new systems offer binary compatibility with the HP 9000 Series 700 workstations, the company can now supply one family of RISC-based systems from the desktop to the data center.

In comparison to other leading systems, PA-RISC's new performance levels are little short of spectacular. Preliminary benchmarks show the 947LX performing at a rate of 33 transactions per second (TPS), making it one of the few systems on the market likely to break the $15,000 per TPS barrier. When final benchmarks are complete, HP expects this system to lead the industry in price/performance. Likewise, the midrange to high-end systems easily break away from their competitors. The 957LX, for example, provides comparable performance to the VAX 6500 or AS/400 Model D70, at about half the price.

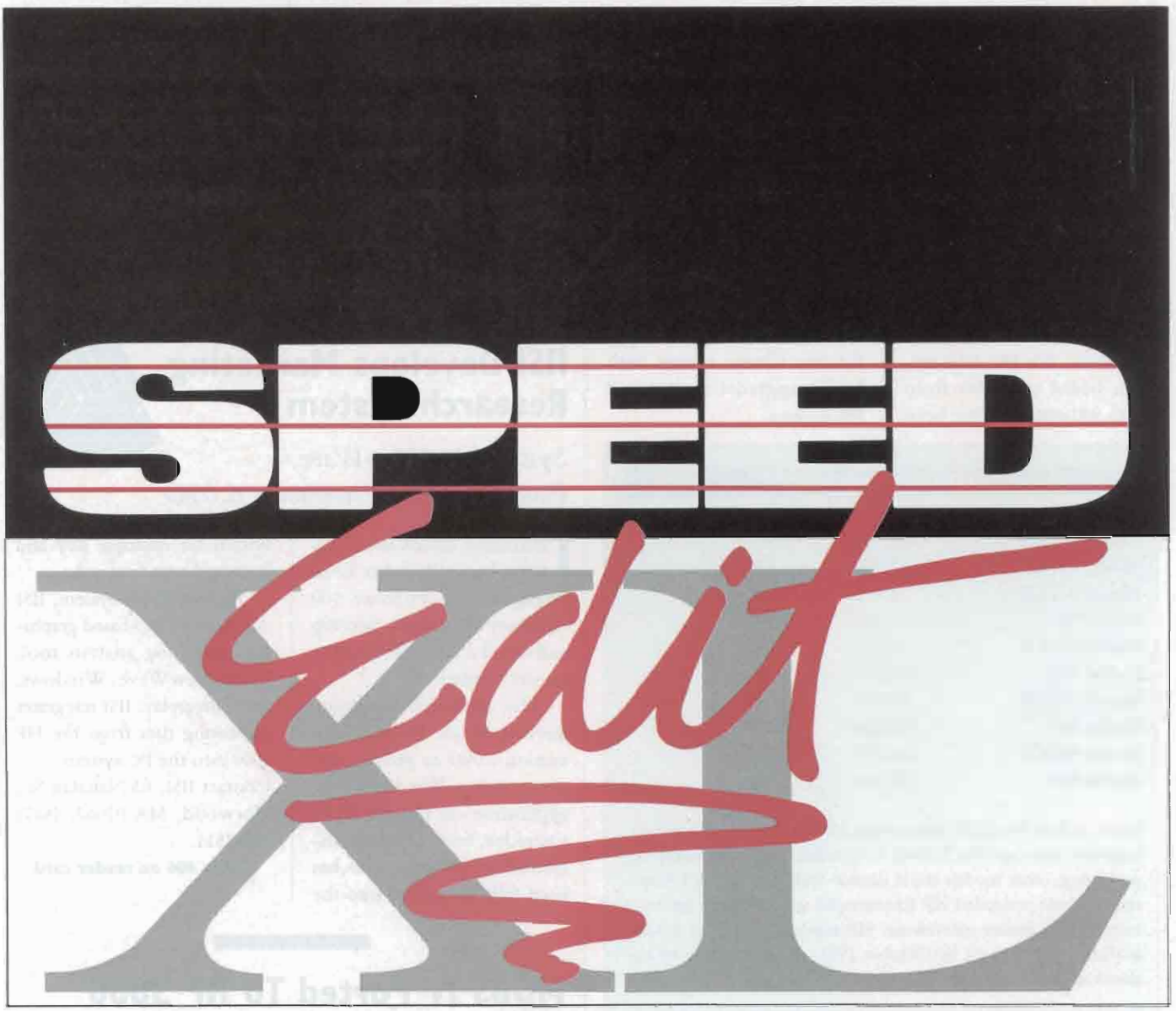
*New HP 3000 and 9000 systems offer mainframe performance levels in PC-size packaging.*

As proof of PA-RISC's ongoing development potential, Sevick notes, HP has guaranteed performance improvements of at least 75 percent per year — and this estimate could be conservative. "Real PA-RISC performance has increased at more than 100 percent per year," says Sevcik, adding that "This pace could easily continue over the next five years."

## Upgrade Yours

In an effort to protect the investments of customers who bought into PA-RISC in the first generation, HP plans to

# Text Editing Like Never Before




## All New - State of the Art - Native Mode MPE-XL

This isn't just SpeedEdit ported from the Classic/3000 to MPE-XL. Not by a long shot. We've packed in features and facilities that haven't been possible with the many constraints imposed by the Classic/3000's. This is a total rewrite and is 100% compatible with the versions of SpeedEdit for DOS, MS-Windows, OS/2, HP-UX, SunOS, SCO Unix, Interactive Unix and the list goes on. We even have X-Windows versions of SpeedEdit as well. Just a few of the new features: Language sensitivity, word wrap, support for ANY compiler (HP or not and as many as you like), numbered editing (and the ability to save just the changed lines), typeahead, complete undo-redo, keyboard macros, full programability, file selection lists, group edits, high speed scan & edit, split screen (up to eight files showing), left and right scrolling without special terminals, and more, much more!

There's special support for COBOL, C, SPL, PASCAL and Fortran with the ability to handle unusual languages like SQL (Allbase), Reflection Command Language, and Advancelink script files. SpeedEdit can handle virtually any length file and can handle wide files as well.

A changes only mode of operation is a must for maintaining third party source code, since it allows you to keep your changes completely separate from the original source while still viewing and editing the changes in place.

The cross platform capability is of great importance as we all recognize the growing intermarriage of dissimilar systems. With SpeedEdit available on all the most popular platforms, you won't need to perform the mental gymnastics of jumping from one editor to another. By providing both character and Windows versions for each operating system, we have both the most advanced character based text editor, and the most sophisticated and in many cases the only professional level text editor for the native Windowing environment.

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Bradford Business Systems, Inc. - 23151 Verdugo Dr. #114 - Laguna Hills, CA 92653 / (714) 859-4428 - Fax (714) 859-4533

slash prices on board upgrades for both HP 3000 Series 900 and 9000 Series 800 customers. Prices on all processor and memory board upgrades have been reduced to provide existing customers with access to the performance advantages of the new systems at the same relative price points.

For HP 9000 systems, processor board upgrades have been reduced by as much as 34 percent. For HP 3000 systems, board upgrades from 960 to 980 systems have been reduced by up to 29 percent, while board upgrades from 935 to 949 models have been reduced by 41 percent and accompanying memory upgrades by 60 percent. Pricing on board upgrades for 922, 932, 948 and 958 systems has been scaled back by up to 26 percent and accompanying memory upgrades reduced by 47 percent. For MPE V users, HP is offering trade-in credit for one Classic system with board upgrades to 960 and 980 systems.

**HP 3000 Series 900**

| System Unit | Price | Max. Users |
|---|---|---|
| Model 917LX | $14,500 | 8 |
| Model 927LX | 18,000 | 20 |
| Model 937LX | 32,000 | 32 |
| Model 937 | 42,000 | 32 |
| Model 947LX | 37,000 | 250 |
| Model 947 | 68,000 | 400 |
| Model 957LX | 65,000 | 600 |
| Model 957 | 100,000 | 600 |
| Model 967LX | 110,000 | 600 |
| Model 967 | 170,000 | 600 |

Prices include PA-RISC system unit, MPE XL, standard memory, hard disk drive and DAT drive. LX models use narrow footprint packaging; other models are in double-wide chassis. All LX systems include preloaded HP Easytime/XL menu-driven operator interface for greater ease-of-use. HP expects to have all models available for shipment by October 1991. All systems can be ordered any time after June 24, 1991.

**HP 9000 Series 800**

| System Unit | Price | Max. Users |
|---|---|---|
| Model 807S | $12,895 | 208 |
| Model 817S | 20,000 | 368 |
| Model 827S | 25,000 | 368 |
| Model 837S | 43,000 | 432 |
| Model 847S | 65,000 | 432 |
| Model 857S | 95,000 | 528 |

Prices include PA-RISC system unit, HP-UX, standard memory, hard disk drive and DAT drive. Models 807S, 817S and 837S use narrow footprint packaging; 827S, 847S and 857S use double-wide chassis. HP expects 807S, 817S and 837S to be available for delivery by August 1991. The 827S, 847S and 857S are scheduled to be available by September. All systems can be ordered any time after June 24, 1991.

According to HP, these upgrade incentives are designed to prevent any current PA-RISC systems from becoming obsolete. HP spokesperson Jim Christensen notes that "HP customers should avoid having to replace their current systems because they are obsolete." The strategy instead is to offer existing PA-RISC users field upgrades that provide easy, low-cost growth paths to higher performance levels. Customers then can move gradually toward new generations of PA-RISC taking affordable steps as the need arises. — *Don Marks, Managing Editor*

## IISI Develops Marketing Research System

*System Uses NewWave, PowerPlay And Powerhouse 6.09D*

Innovative Information Systems Inc., (IISI) has been engaged by a Fortune 500 company to design, develop and install a corporate market research system.

The application is being developed on Powerhouse version 6.09D to provide the users with a Windows-type application on the HP 3000. Omnidex, from Dynamic Information Systems, also has been fully integrated into the system for multiple key and keyword text retrieval.

As part of the system, IISI developed a PC-based graphical marketing analysis tool. Using NewWave, Windows, and Powerplay, IISI integrates marketing data from the HP 3000 into the PC system.

Contact IISI, 63 Nahatan St., Norwood, MA 02062; (617) 769-7511.

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## MDBS IV Ported To HP 3000 Under Portable NetWare

*Fourth Shift To Expand User Base*

Fourth Shift Corp., mdbs and HP announced a major porting agreement between the three corporations.

The port of MDBS IV to the HP 3000 under Portable NetWare will allow Fourth Shift and other MDBS IV developers to move high-volume client-server applications to a more powerful server platform while retaining PC workstations and the Novell LAN operating environment.

Fourth Shift's MRP II product is based on MDBS IV, the client-server DBMS from mdbs Inc.

Contact mdbs Inc., Two Executive Dr., P.O. Box 248, Lafayette, IN 47902-0248; (317) 463-2581.

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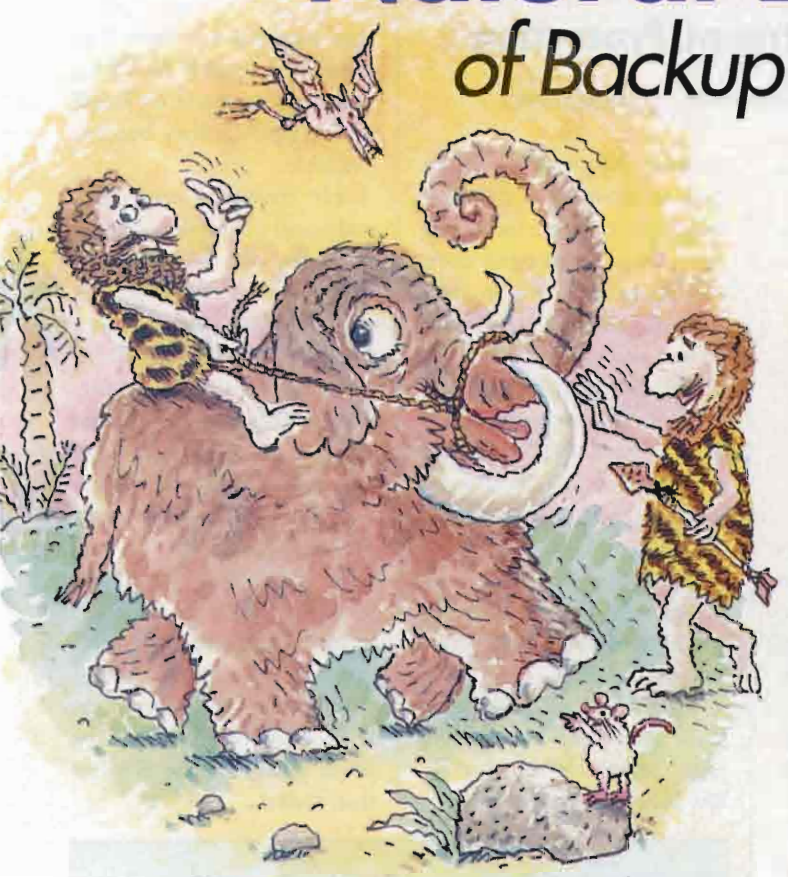
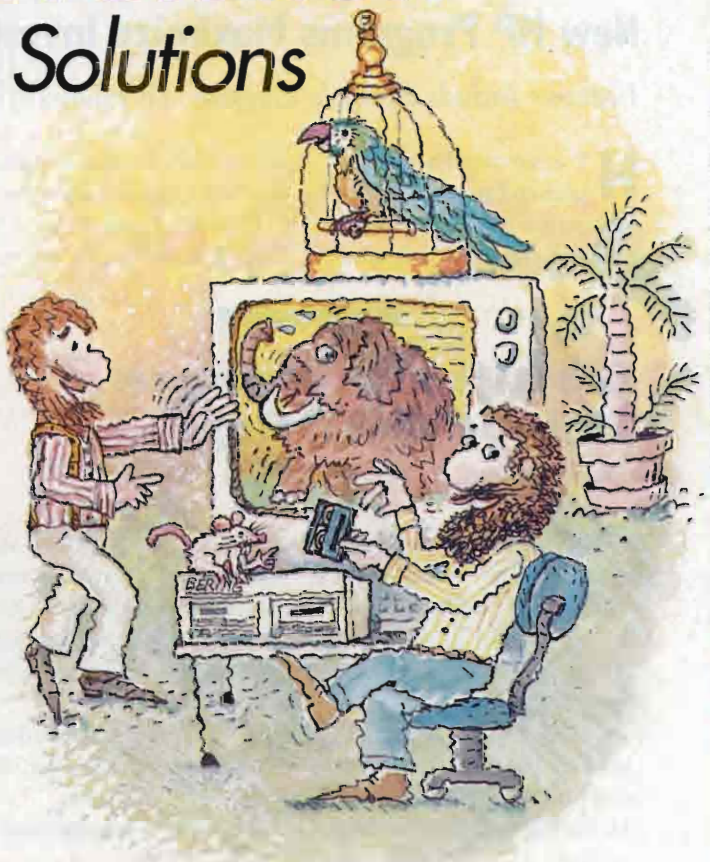
# Natural Evolution
## of Backup Solutions



*Eeeeek! Trying to backup a mammoth database used to be a task of historic proportions.*



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# New HP Programs Maximize Investment Protection

*Features Include Flexible Upgrade To High-Performance Workstations*

HP announced a series of sales and marketing programs that maximize investment protection and flexibility for both HP and competitive workstation customers.

The HP Apollo Trade-Up, Flex400 Lease and CPU and memory upgrade programs help customers plan their transition to future technologies, while protecting their current investments in such areas as hardware, software, service and support.

The program lets customers trade in their existing HP Apollo, Sun, DEC and IBM workstations and receive up to $4,500 credit toward the purchase of a higher-performance HP workstation or server. The amount of credit is determined by the type of systems traded.

The Flex400 Lease program provides HP customers with several options that allow them to invest in leadership workstation technology today yet flexibly and economically upgrade to future technologies as they become available.

HP customers can obtain additional investment protection for their Motorola 680X0-based workstations through CPU and memory upgrades, that will be offered until September 30, 1991. During this period, customers can upgrade their CPU and RAM to boost system performance by up to 11 times.

In addition, the HP Apollo 40 Plus program has been extended indefinitely to continue to provide HP Apollo 9000 Series 400 customers with a guaranteed path to more than 40 mips for less than $5,000.

# Collier-Jackson Announces Client-Server Strategy

*Host System Runs MPE XL, UNIX*

Collier-Jackson is previewing the first phase of its World Class Series applications operating in a client-server (C/S) mode at Interex in San Diego.

Collier-Jackson defines the client in a C/S environment as an IBM compatible PC that will run the user interface and the online portion of its applications. The server is a host system running MPE XL, UNIX or VMS that manages the database and runs batch applications.

Contact Collier-Jackson, 3707 W. Cherry St., Tampa, FL 33607; (813) 872-9990.

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# Micro Focus And HP Sign Support Agreement

*HP And COBOL/HP-UX Users Benefit*

Application developers programming with HP's COBOL/HP-UX language on the HP 9000 platform will have enhanced levels of support, following the signing of a two-year support agreement between HP and Micro Focus.

COBOL/HP-UX, based on Micro Focus COBOL/2 will continue to be supported directly by the HP support staff, but under the new contract, the support staff now will work with a Micro Focus team completely dedicated to the HP 9000/HP-UX platform.

This latest agreement between Micro Focus and HP provides for a day-to-day relationship between the two companies. HP and Micro Focus will work together in the areas of quality assurance, training and marketing where the COBOL/HP-UX product is concerned.

Contact Micro Focus, 2465 E. Bayshore Rd., Suite 400, Palo Alto, CA 94303; (415) 856-4161.

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# SL Corp. Assumes Development, Support for HP IVI

*Provides Training, Core Technology*

HP and SL Corp. announced an agreement that SL Corp. will provide continuing product development, training and support for HP's Interactive Visual Interface (HP IVI) customers.

HP IVI, built on technology licensed from SL Corp., is a user-interface development toolkit built on the industry-standard X Window System. HP IVI runs on the HP 9000 Series family of RISC-based computers.

HP IVI and SL-GMS (the core technology used in HP IVI) are used to build, modify and manipulate dynamic graphic display screens for applications such as cell control and manufacturing. The systems have been designed to reduce both user interface development and maintenance time. In addition, the program integrates 3-D widgets with 2-D graphics in one consistent user environment.

Contact SL Corp., Ste. 110 Hunt Plaza, 240 Tamal Vista Blvd., Corte Madera, CA 94925; (415) 927-1724.

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# NOW THAT 10GB FITS ON AN 8MM TAPE, WHAT ARE YOU WAITING FOR?

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# International Insights

## HP Expands In Eastern Europe

*Opens Joint Venture In Hungary*

HP announced several moves to strengthen its presence in the countries of East Central Europe (ECE), which includes Albania, Bulgaria, Czechoslovakia, Hungary, Poland and Romania.

HP said it has established a Budapest-based joint venture for sales and support with Controll, a private Hungarian firm that has been an HP authorized dealer for PCs and peripherals since 1989. Employees from Controll and the HP sales office in Budapest will staff the new joint organization.

HP also announced it has established a sales and support subsidiary in Czechoslovakia, with offices in Prague and Bratislava. Both organizations opened May 1, 1991.

Early last year, HP began adapting its sales, marketing and support organizations, and business relationships in response to changes in the ECE economic environment. Because of similar recent economic changes in the Soviet Union, HP also has increased its presence there over the past year.

## GEC Marconi Named Master FUSION Distributor

*To Represent Entire FUSION Line*

Network Research signed GEC Marconi Software Systems (Borehamwood, U.K.) as its master distributor for the FUSION family of networking products in Europe, Africa and the Middle East. GEC will expand the scope of Network Research's international distribution network by signing additional distributors in local markets.

GEC will represent the entire line of FUSION products, including FUSION Network Software for HP Basic and Pascal, PC/NFS and FUSION server. GEC also will distribute the FUSION Developer's Kit, a TCP/IP toolkit for network developers.

Contact Network Research, 2380 North Rose Ave., Oxnard, CA 93030; (805) 485-2700.

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## HP, MELCO Announce PA-RISC Purchase And Licensing Agreement

HP and Mitsubishi Electric Corp. (MELCO) announced a purchase and technology-licensing agreement related to HP's standards-based Precision Architecture-RISC (PA-RISC) products and technology.

MELCO will purchase more than 10,000 HP-UX-based workstations and servers, that are based on a UNIX system. MELCO will use the HP computers as a component of custom-developed solutions to meet specific customer requirements.

Both companies expect the relationship to expand over time, encompassing additional two-way technology licensing and exchanges as well as joint development efforts.

## Fuji Bank Orders $7 Million Open-Information System From HP

HP announced that Fuji Bank Ltd. chose HP as the chief supplier and architect of an open-system-based computer network valued at more than $7 million for use at Fuji headquarters in Tokyo, Japan.

The system, that has worldwide networking capabilities, will include HP 9000 Series 800 multiuser computers based on a UNIX system, HP 700/X display stations or X terminals, HP OpenView systems and network-management capabilities, and a host of other HP software and networking equipment and services. Also included is an HP NetAssure support agreement to help Fuji manage and maintain its multivendor network.

The system is based on HP products that conform to industry standards. It will provide Fuji with client-server computing infrastructure from which to perform end-user information processing functions.The system will enable Fuji personnel to develop their own applications, make more effective use of detailed customer-transaction data, analyze inter-bank information, and handle other end-user banking tasks more efficiently.

## HP Selects Distributors For Latest PA-RISC Boxes

*New HP 9000/3000 Systems Made Available In U.S. And Japan*

HP announced three distributors for its new PA-RISC-based HP 9000 Series 800 and HP 3000 Series 900 systems in the United States and Japan.

The distributors include Canon Sales Co., Hall-Mark Electronics Corp., and Lex Electronics.

The companies will distribute the systems directly to end users and through HP's network of Value-Added Resellers (VARs), which deliver HP products to manufacturers, retailers, distributors, government and service industries. The new systems are based on RISC technology and provide the industry's best price/performance for use in enterprise computing environments.

Canon Sales Co. will deliver HP 3000 systems to customers in Japan through its VARs and direct sales force. Hall-Mark Electronics Corp. will distribute the HP 9000 systems in the U.S. Lex Electronics also will distribute the HP 9000 systems in the U.S.

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# HP Professional Editors To Speak At INTEREX

*UNIX, Quick! Author To Conduct Book Signing*

*HP Professional* UNIX Editor Andy Feibus and Review Editor Joel Martin will make presentations at this year's INTEREX conference in San Diego, CA (August 5 - 8). Feibus, who is also the author of *UNIX, Quick!* from Professional Press books, will speak on "Application Migration Between UNIX Platforms." His talk, which will be followed by a question and answer session, will be appropriate for UNIX users at any skill level, but will be specifically targeted at the concerns of software developers.

In addition to making this presentation, Feibus will sign copies of *UNIX, Quick!* at the Professional Press booth (#508) from 1 to 3 p.m. on Monday and Tuesday, August 5-6. Copies of the book will be available at the booth for $30.

Review Editor Joel Martin will speak on "Distributed Processing at Harvard University." Martin is Associate Director of Development Computing Services at Harvard. Other *HP Professional* staff attending the show include Managing Editor Don Marks, Technical Editor Bill Sharp, HP 3000 Editor John Burke, and DP Labs Technical Editor George Frueh.

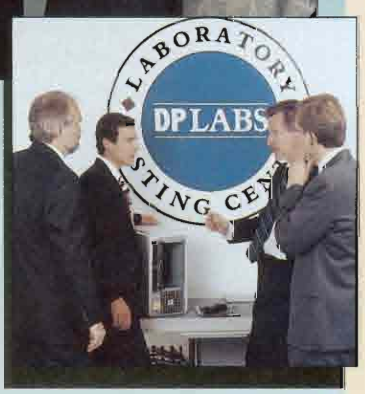
# HP Launches DP Labs' Open Systems Partners Program

*Hewlett-Packard Opens The Way For New Consortium*

Professional Press's DP Labs Laboratory and Testing Center honored Hewlett-Packard as the first charter member of its new Open Systems Partners Program. In an awards ceremony at DP Labs headquarters in Horsham, PA, Lab Manager David Miller, presented Rich Sevcik, general manager of the HP's Commercial Systems Division, with a plaque commemorating Hewlett-Packard's extensive support for DP Labs and its open systems network.

The Open Systems Partners Program is an exclusive consortium, developed by DP Labs, which includes industry-leading vendors committed to open systems computing. DP Labs manages a multivendor network that includes CPUs from HP, HP Apollo, IBM, DEC, MIPS and Sun. The lab tests over 100 products each year on the network and publishes in-depth product reviews in *HP Professional*, *LAN Computing* and other Professional Press Publications.

HP, long known for its commitment to open systems, was the first company to be invited into the program. DP Labs' Miller cites HP's membership in the Open Software Foundation, its leadership role in the UNIX marketplace and it's standards-based NewWave Computing strategy as reasons for HP's inclusion in the program. He also notes that HP has been the most cooperative of major vendors in supplying systems for evaluation and review. "HP took the initiative more than a year ago to provide its equipment to DP Labs," says Miller. "More than any other vendor, HP has viewed the lab as an opportunity to demonstrate its ability to work in a multivendor, open systems environment."




***HP's Rich Sevcik (second from left) accepts the Open Systxems Partners Program award from DP Lab Manager David Miller. Also present were Managing Editor Don Marks and Professional Press Executive Editor Linda DiBiasio. (Right) HP 3000 Editor John Burke (far left) joins Miller, Sevcik and Marks to examine HP Nova systems.***

According to HP's Laura Cory, director of marketing for the company's Networked Systems Group, the program fits in well with HP's NewWave Computing strategy and its overall efforts to foster open systems, client-server computing. "The Open Systems Partners Program will provide technology users a vivid view of a true, multivendor environment," says Cory, "DP Labs' commitment to demonstrate open systems across hardware, software and networks will prove to users that interoperability can be achieved today."

OPEN SYSTEMS PARTNERS PROGRAM

# Why SUPERDEX Instead of Omnidex?

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Why are so many people moving to SUPERDEX? The answer is: it's easy to use. Since SUPERDEX uses the same intrinsics as IMAGE, there is little new to learn. Status information is communicated via the standard IMAGE status array, and error messages are reported by standard IMAGE error routines. This means programmers do not have to learn new intrinsics. And, as a result, many existing IMAGE programs can utilize SUPERDEX immediately.

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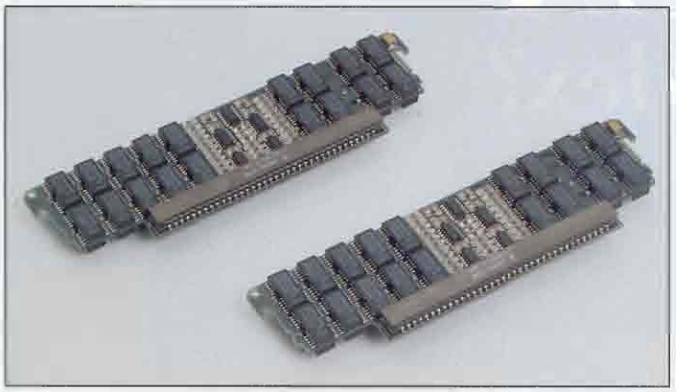
# More Memory, Please



## Let Clearpoint's HPME-400 Memory Array Cards Fulfill Your Workstation's Daily Requirement Of Memory

Software applications that enjoy a daily diet of number crunching are likely to have a large appetite for memory. Graphics and CAD packages, for example, are prime candidates for high memory consumption.

HP users typically run memory intensive applications. The desktop models 9000/400dl and 400t often are used for engineering applications such as CASE and technical publishing, and graphics-intensive applications that reproduce scientific visualizations or simulation.

Memory requirements needed to maintain window managers and graphical user interfaces place heavy demands on local RAM and limit the ability to run other applications.

Helping to meet the memory needs of the HP Apollo workstation market is Clearpoint Research Corp. (Hopkinton, MA).

The HPME-400 series of memory array cards provides 4, 8, 16 or 32 MB of 100 percent-compatible memory for the HP Apollo 9000 Series 400. The HPME-400 is compatible with desktop models 400dl, 400t, and 425t, deskside models 400s, 433s, and models 345 and 375.

An HPME-400 array card measures 6.5-inches by 1.75-inches by .062-inches, and fits onto the processor board. It works with any factory installed memory, and supports the processor-based error correction and detection (EDC) for high reliability. The HPME-400 array card is user-installable and no jumper configuration is needed.

The HPME-400 array card is populated with one or four megabit, page mode, 80 ns, DIP (Dual-In-line-Package) DRAMS (Dynamic RAMS). It is identical in performance and configuration to the HP equivalent.

To support HP 9000 Series 400/345/375 interleaving, the HPME-400 array card is installed in two-board sets. The HPME-400/4 (4 MB of memory) contains 2 MB of memory on each board. The HPME-400/8 (8 MB) contains 4 MB on each board, the HPME-400/16, (16 MB) contains 8 MB on each board, and the HPME-400/32 (32 MB) contains 16 MB on each board. The boards are four layers deep with separate power and ground, and are populated on both sides using surface mount devices.

"We have been pleased with the performance of the HP Apollo 9000/400 product line," says Karla Marshall, product manager. "It is a great migration platform for Apollo users." But, Marshall adds, the memory demands of these new products are substantial.

All Clearpoint memory boards are subjected to a 72-hour dynamic burn-in while running on Clearpoint's Universal Memory Tester (UMT). The UMT is a 68010 microprocessor-based computer. It runs an individualized HP bus translator to access bit-specific diagnostic tests.

The HPME-400/4 is populated with 4-MB of memory and is priced at $1,090; the HPME-400/8 includes 8-MB of memory and is priced at $2,030; the HPME-400/16 has 16-MB of memory and is priced at $3,970; and the HPME-400/32 is populated with 32-MB of memory and is priced at $7,940.

Clearpoint workstation memory products are supported by a lifetime warranty, a 24-hour product support toll-free hotline, and a next-day repair/replace policy.—*George Frueh, Technical Editor*

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# Why SUPERDEX Instead of Omnidex?

## The Bottom Line.

Why are so many people moving to SUPERDEX? The answer is: price! Product cost is just the tip of the iceberg. Product training and development can amount to much more than the purchase price of an indexing product. SUPERDEX reduces development time and requires less training. So you can take advantage of indexing technology, while significantly reducing your overall cost.

## Familiar Programming Techniques.

Unlike Omnidex, SUPERDEX uses the existing IMAGE intrinsics and error message handling. Thus, programmers are already familiar with SUPERDEX. This means your programmers are already trained. Likewise, the development and implementation efforts can be reduced to a minimum. As a result, productivity will increase and users will enjoy the benefit of indexing lookups and retrievals at a very low cost.

We *challenge* you to give SUPERDEX a try! For more information on SUPERDEX or a FREE demonstration copy call a BRADMARK representative today at 800-ASK-BRAD, and discover why so many people are moving to SUPERDEX.

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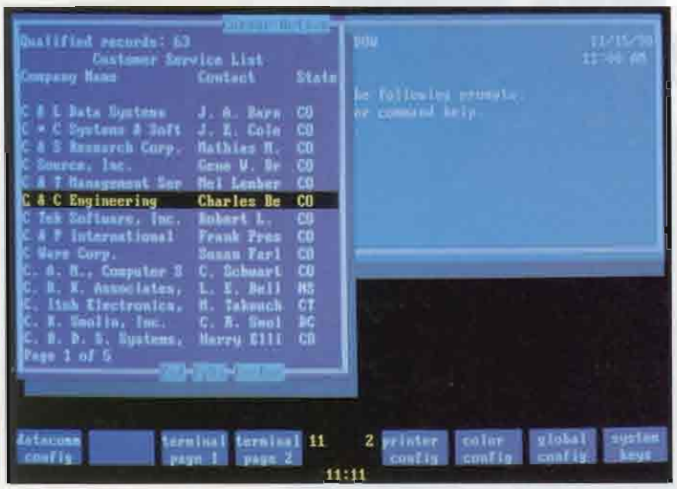
# Break The I/O Blockade




## OMNIDEX Online Is A Suite Of Software Tools Designed To Deliver Direct Access To Your Databases

Over the years, CPU clock speeds have increased, nanoseconds have been shaved off the access time of memory chips, and RISC-based architectures are letting the hardware do more of the work.

Despite these hardware improvements, one area that still bogs down a computer's performance is I/O, which runs comparatively slower than the CPU. For example, as the I/O section locates, selects, and retrieves records in a database, it creates an "I/O bottleneck." The CPU must "wait" for the I/O to finish performing its tasks before it can proceed.

Helping to relieve the I/O bottleneck is OMNIDEX Online from DISC (Dynamic Information Systems Corp.; Denver, CO), a suite of software tools designed to perform interactive database queries online. OMNIDEX Online has three components: OMNIDEX, OmniWindow and OmniQuest.

OMNIDEX accesses subsets of data by indexing all records in a database. In actuality, only a small part of the record is stored in the index. This helps cut down I/O activity and reduces the work of the entire computer system in locating the records.

Records are retrieved by giving "human" selection criteria to the system such as name, address, part description or phonetic spelling. Any field, word, or value can be indexed and used as a selection definition.

Multiple fields and even data sets can be combined to narrow down the list of qualifying records. Data selection is rapid and reports traditionally requested and run in batch mode can be prepared on-the-fly by non-technical users.

"OMNIDEX Online gives any user the ability to look for information he needs immediately," says Terry O'Brien, vice president of DISC. "And it gives the DP director the ability to add that capability to his system with virtually no code changes."

OmniWindow is an interface tool that provides a PC-like window inside a running application. You can perform quick look-ups within applications, import selected records directly into applications for report manipulation, and search for data using partial values, ranges of values, AND/OR/NOT values, or qualifiers in multiple fields and sets.

Interface procedures are written using the Omnidex Access Language (OAL) and an editor. The OAL supports customized calls, or provides standardized defaults for easy preparation.

OmniWindow runs under both MPE V and MPE XL, and operates with PowerHouse Development, PowerHouse Development QTP, HP QUERRY, and Run-time with Reporting or Reporting only QUIZ license. OmniWindow works with OmniQuest to provide instant access to information through QUIZ, QTP and QUERRY.

OmniQuest is a seamless interface between QUIZ, QTP, QUERY, and other report writers and the OMNIDEX IMS (Information Management System). OmniQuest accesses records through the rapid OMNIDEX indexing mechanism.

With OmniQuest, users can select and retrieve records based on virtually any criteria across multiple fields and sets and qualify records based on free-form text (keyword and hypertext retrieval). "Drill down" reports can be created on the fly looking for successively greater levels of detail interactively with the system.

OMNIDEX Online is priced from $8,000 to $40,000 depending on HP cpu.—*George Frueh, Technical Editor*

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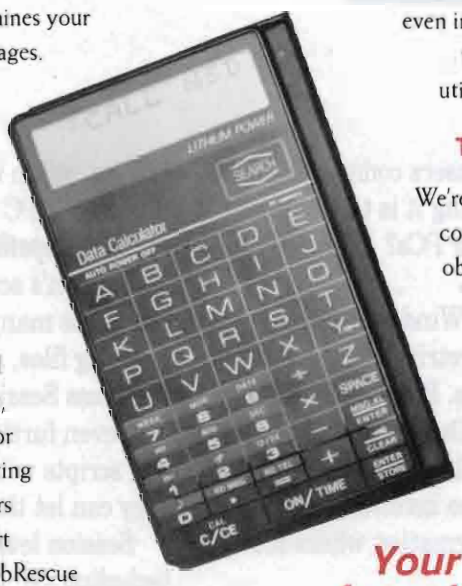


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# Hosts and PC's have

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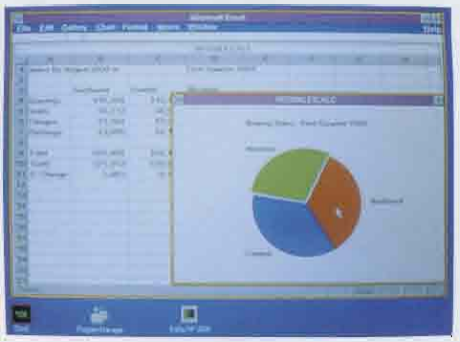

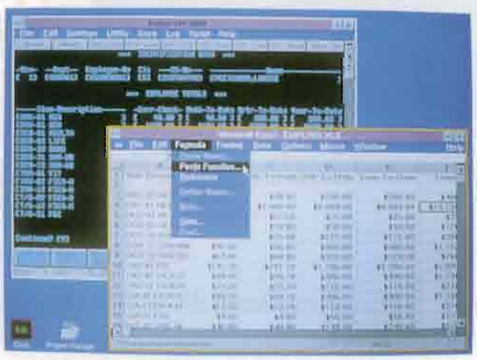

***Your financial department needs an easy way to extract data from the HP host and manipulate the data in a spreadsheet for analysis. Session and Excel, working together, can do this automatically every morning, providing up-to-the-minute data for crucial financial decisions.***

Are you tired of listening to users complain about how difficult and time-consuming it is to get host computer information into their PCs?

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Using Business Session® for Windows, scripts can be created that automatically retrieve host data and pass it to Windows applications. Because Session supports Microsoft's Dynamic Data Exchange (DDE), Session can talk to programs like Microsoft Excel™ and Word™ for Windows, with no involvement on the part of the user. This puts information where it's needed, when it's needed, and allows easy analysis using your PC applications.

**Automate repetitive tasks.**

Session's scripting capabilities can be used to automate many repetitive tasks, such as log-ons, printing files, and creating and deleting files. And Business Session for NewWave takes task automation even further, allowing users to transfer files or run scripts with a simple drag and drop. Better yet, they can let their Agents do the work.

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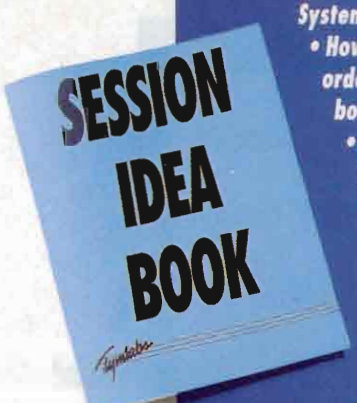


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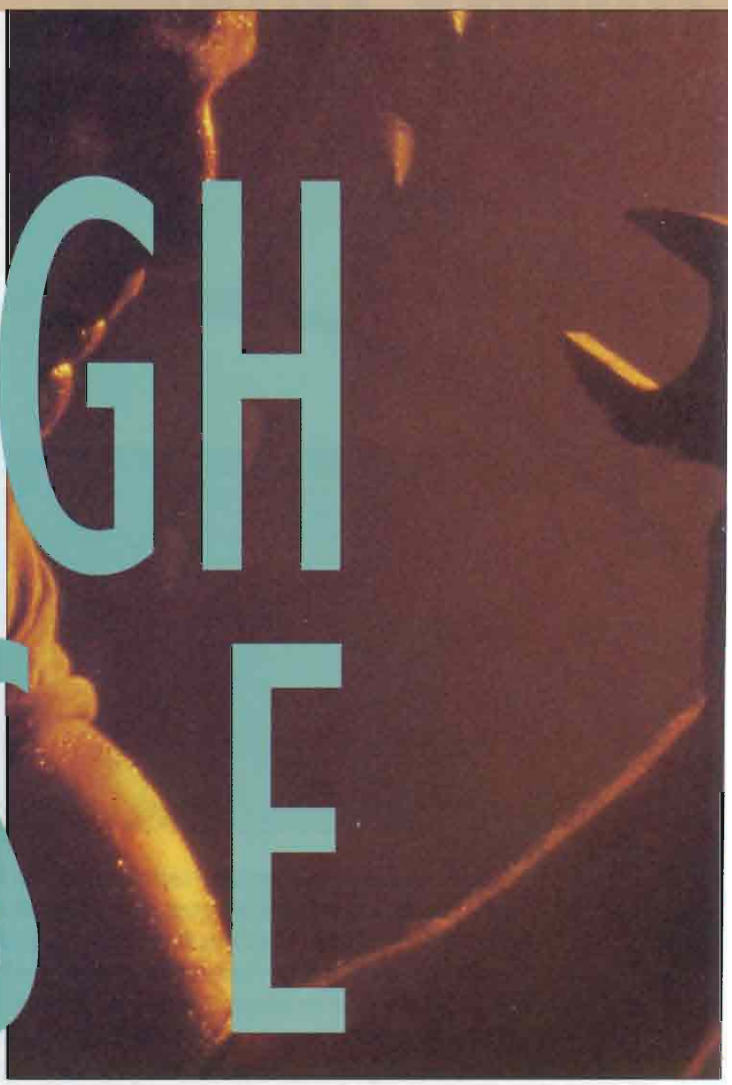
# TOUGH CASE



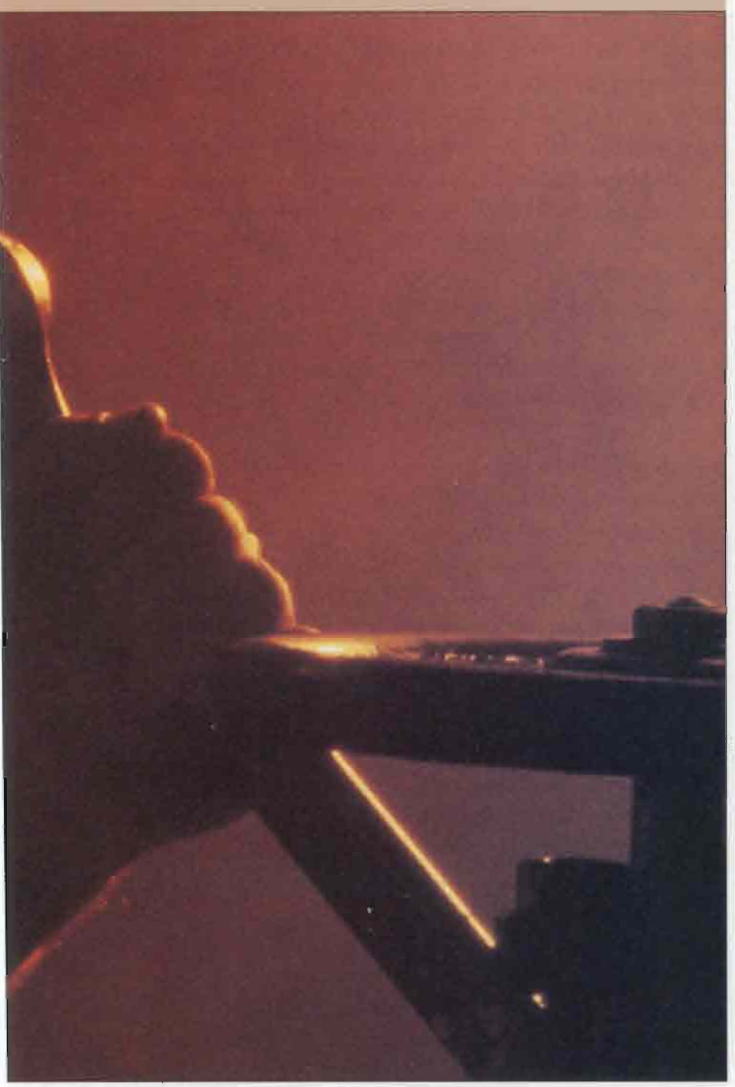
BY JOHN P. BURKE

## Two Hard Questions Face Today's MIS Managers: Can You Afford To Bring CASE Into Your Organization? Can You Afford Not To?

Increase productivity. Improve quality. Decrease project request backlogs. Reduce development costs. Improve percent on-time project completion. Lessen manhours spent on maintenance. Limit budget overruns....

Items like these appear on every MIS manager's list of objectives. Why? One obvious reason is that the potential for software systems has been oversold in recent years, and developers now are forced to bear the unpleasant consequences. Perhaps we just don't have the tools to deliver on our promises. Perhaps it is just a fact that reality always will lag well behind vision. Whatever the case (pardon the pun), we are desperate for something, anything, that works. Is it any wonder that the allure of a concept that claims to address, or even eliminate, all of these problems is nearly irresistible?

Enter CASE, Computer-Aided Software Engineering. CASE has been talked about for some time, by both visionaries and vendors. So far, however, it's been slow to catch on, and success stories are rare. Its halting progress has many MIS managers



wondering if CASE isn't just another fad, more the product of vendor hyperbole than reality. Nevertheless, there are still a lot of believers who herald CASE as nothing less than a revolution in software development.

CASE is the generic acronym for an array of software programs and a philosophy of development that help automate the System Development Life Cycle (SDLC) (see *Table 1*). Taken literally, CASE is the application of computer tools to software engineering. Pick up any ACM or IEEE computer journal and you are likely to find articles on or referencing various aspects of software engineering. Not so for CASE—except in the advertisements. In truth, formal CASE is still more a marketing concept than reality. But what a concept!

CASE has created a flurry of activity. It seems that nearly everyone is claiming its product is a CASE tool. And in one sense, any computer tool that aids in the development cycle is a CASE tool. Thus, a code generator might be considered a form of CASE. A product that automatically generates documentation might also be a CASE tool. One could, I suppose, argue that the first CASE tool was the online text editor, since it freed the programmer from the keypunch and the 80-column punch card. It was probably also the start of the confusion about CASE.

An array of alluring CASE products coupled with the lack of a unifying or simplifying concept has created a tremendous hype/reality gap. This has two insidious effects. First, hype has inflated expectations, which lead to early frustration when individual CASE tools or approaches do not turn out to be overnight cures. Second, the hype deluge is leading users to narrowly focus CASE at just part of the software development problem.

Most CASE marketing stresses increased productivity, but productivity is wasted without attention to quality. CASE can help you do things better, faster—or so we've all been told. But CASE improperly employed will only enable you to build more quickly the same lousy systems as before. The resulting confusion is predictable. Firms tend to take a very short-term view, rush to get a tool for a specific project and then wonder what's wrong with CASE.

## The Anatomy Of CASE

UPPER CASE (SOMETIMES CALLED front-end) products are concerned with the overall planning environment within which a system must work. This is sometimes referred to as "information engineering." An example of such a tool is PC Prism from Intersolv Inc. (Rockville, MD).

Middle CASE (sometimes combined with Upper CASE and jointly called Upper CASE) products are concerned with the automation of the front-end analysis and design activities of the SDLC. These products facilitate the automation of the systems analyst's job. They aid in the "logical" design of systems. This includes the defining of a logical model for the system under development. Data flow diagrams or Entity-Relationship diagrams are often used to develop this logical model. Also in this stage of the design, an initial data dictionary is developed to define the elements in the system. Examples of Middle CASE tools are Intersolv's Excelerator, DesignAid from Nastec Corp. (Southfield, MI) and IEW/ADW from Knowledgeware (Atlanta, GA).

Lower CASE products facilitate the automation of the physical design and implementation activities of the SDLC. The physical design is the stage where the programs are actually coded, tested and made operational. Examples of Lower CASE tools include

Telon from Pansophic (Lisle, IL) and Magec from Magec Software (Dallas, TX).

Several other concepts are increasingly being considered part of CASE, as well. Two of the most important, reverse engineering and re-engineering, are intended to help you redo what you or someone else has already done. Reverse engineering is the process of analyzing a system to identify its components and their interrelationships and create representations of the system in another form or at a higher level of abstraction. As one wag said, "When designing new or future systems, if you don't know where you are, a map won't help."

The latest craze within CASE is re-engineering, aka renovation and reclamation. Re-engineering is the process of identifying what you've got in order to help determine what you can do next. Re-engineering combines the skills of reverse engineering with forward engineering to redevelop applications.

## Approaches To CASE

EARLY CASE EFFORTS WERE characterized by single-user, single-phase tools. Each tool was separate from every other tool and each performed a distinct function. Clearly, only modest improvements could be made in productivity and quality when the tools and users performed in relative isolation.

***Integrated CASE.*** In the world of isolated tools, one tool might for example, handle logical design but have no way to generate code or even pass on its design to a code generator. The need existed for software that could address the entire SDLC. Not surprisingly, the marketplace has responded to the problem in several ways. Each way stresses the need for integration, which, simply put, is the ability to bring together tools from all parts of the life cycle to operate as one. Thus was born I-CASE.

***Single-Vendor I-CASE.*** Single-vendor I-CASE environments provide a central repository for storing project data, as well as the tool-coordination mechanisms and methods for controlling and monitoring all project tasks. One problem with these systems is that they lock you into a single architecture. If you want to use most of the tools provided by your single vendor but also want to use a point product from another vendor, you'll be reduced to using primitive IMPORT/EXPORT facilities. Also, many if not most single-vendor I-CASE products are available only on a single hardware platform.

Examples of the single-vendor (I-CASE) approach are Texas Instruments Inc.'s Information Engineering Facility (IEF), CGI Systems Inc.'s PACBase, Cognos's POWER CASE, and Commercial Timesharing Inc.'s Communications and Applications Series.

***Framework.*** Realizing that many organizations are unwilling to lock into one vendor's CASE architecture, some vendors are beginning to offer overall frameworks for software development. Examples are HP's CASEdge and IBM's AD/Cycle. Frameworks don't perform actual software development functions but provide an environment that can integrate tools from other vendors. Within this environment is typically a common user interface, a central project repository and tool coordination facilities.

Frameworks typically perform only on proprietary platforms and can require extensive effort to add a new tool to the environment. However, HP's SoftBench, a single software product that integrates programming in different languages across multiple platforms is a notable exception to this rule. (See Richard Riehle's article, page 40, for more information on the SoftBench environment.)

According to HP, its CASEdge strategy is part of a larger, overall Knowledge Program for system development. Got it? The glue that holds everything together is SoftBench. SoftBench is a tools integrator that works by providing messaging and a common user interface. HP's strategy is to provide the framework for third-party tools that may already have a presence in the market.

To this end, HP is forming partnerships with various tool vendors and porting the SoftBench environment to other hardware platforms in the hope of creating a de facto standard. HP's approach does not yet include a repository (they are supposedly waiting on the development of a standard) in contrast with IBM, which has chosen a proprietary mainframe-based repository as the integration technique for AD/Cycle.

***Vendor Alliances.*** The most primitive method for integrating CASE tools is to use tool-to-tool interfaces from vendor alliances. These interfaces usually

TABLE I

| SDLC | Front-end CASE | Back-end CASE |
|---|---|---|
| Inception | Upper CASE | |
| Feasibility | | |
| Specification/Needs Analysis | | |
| Design | Middle CASE | |
| Coding And Testing | | |
| Implementation | | Lower CASE |
| Maintenance | | |
| Reverse Engineering | | |
| Re-engineering | | |

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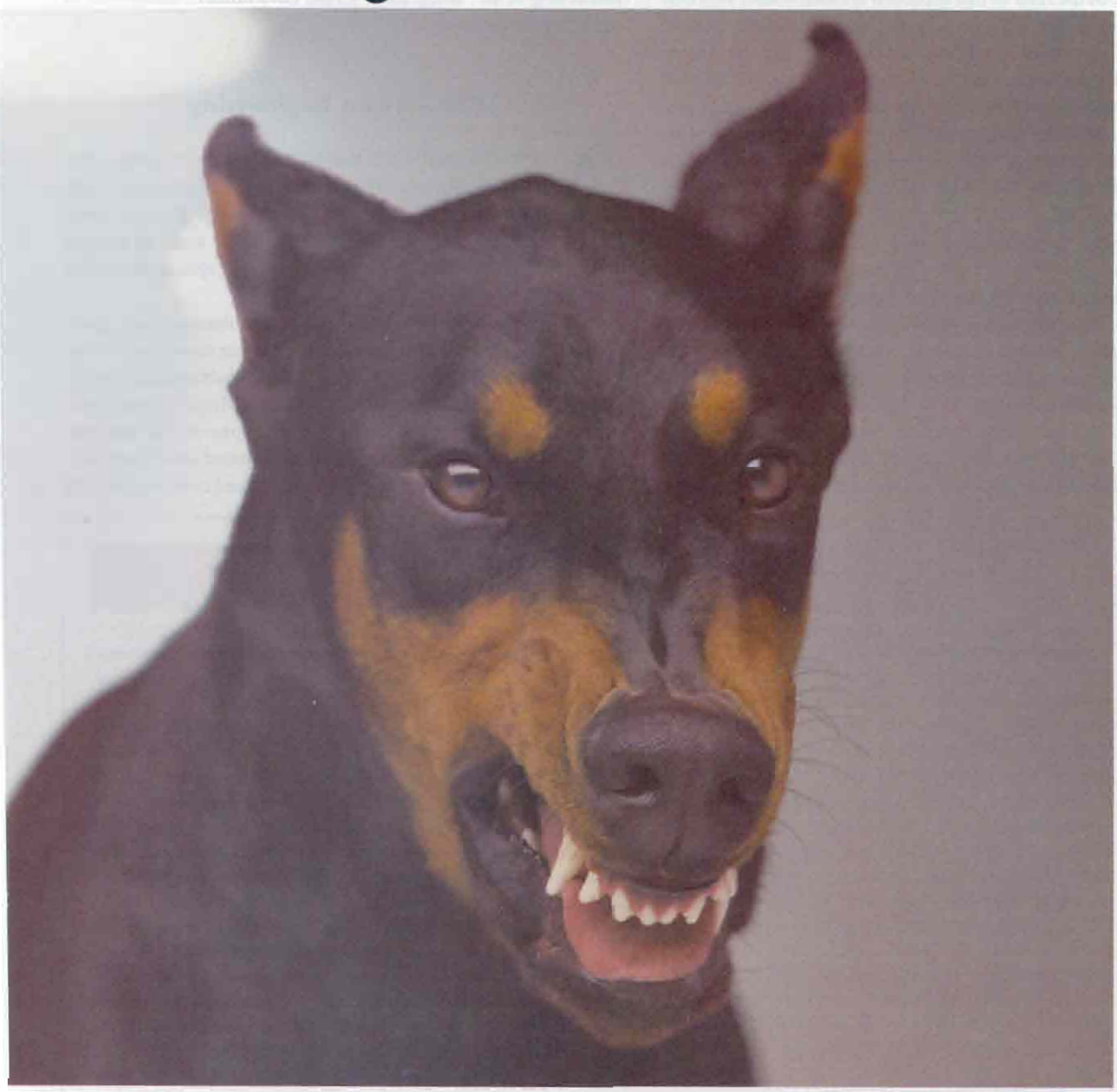

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are provided through import/export facilities or file-transfer mechanisms. Some refer to this approach as multivendor I-CASE.

Tool-to-tool interfaces may be the most primitive way of achieving multivendor flexibility, but they are also the oldest, simplest and most commonly used mechanism for CASE tool interconnection, especially between analysis/design tools and code generators. The primary function of these interfaces is to read and write information from one tool's data dictionary to another's, eliminating the need to re-enter data and thereby reducing data entry errors.

Vendors with "best-in-breed" tools tend to want to leave the problem of integration to someone else; however, they may not want to become yet another participant in someone else's framework. They are also increasingly aware that an isolated CASE product is less likely to sell. Thus, they form strategic alliances with vendors of compatible tools to create the appearance of an I-CASE solution.

One example of such an alliance was the September 1990 announcement that brought together IDE (Software through Pictures), Saber Software (Saber-C), Frame Technology Corp. (FrameMaker) and Interleaf (Interleaf TPS Coreplus) in the marketing of an "integrated" CASE environment comprised of their individual pieces.

## IPSE - Team Engineering

AT THE SAME TIME that I-CASE was developing in the U.S., the Integrated Project Support Environment (IPSE) movement was gaining adherents in Europe. IPSE products concentrate on the infrastructure, such as project management, intrateam communications, text systems and office functions.

IPSE attacks productivity and quality problems typically associated with software development by seeking to optimize team communication. An example of an IPSE product available on the HP 9000 is Maestro II from Softlab GmbH (Munich, Germany).

The IPSE approach assumes that everyone in the software development process has access to an automated environment in order to optimize the productivity, quality and controllability of

### [SOFTWARE ENGINEERING: A CASE HISTORY]

Since organizations began using computers to meet business needs, two problems have plagued their efforts: low productivity and poor quality. At the same time, enormous strides in hardware and software technology, coupled with growing end-user expectations, have resulted in a gap between what users want and what their organizations' data processing department can deliver. End-user tools and 4GLs have helped close the gap, but producing a quantum leap in data processing productivity and quality requires a radical new approach.

The function of MIS departments historically has been to automate manual processes, and although that function has been greatly expanded in recent years, the automation of formerly manual processes is still the prime charter for many MIS organizations. It is ironic therefore that they do so by using some of the most labor-intensive manual processes still in use in corporate America: systems analysis and programming. The amount of time it takes to write programs typically accounts for only 15 to 25 percent of the development cycle. Thus, even with code generators and 4GLs, 75 percent of each project is done by people and done largely by hand.

The poor quality of many applications produced today is an even greater problem. The tremendous effort expended on systems development is often misdirected. Why? Poor understanding of user needs; miscommunication between developers; poor management of the development project. As a result, the applications do not fully address the needs of the end user and therefore do not support the business needs of the organization. Software engineering principles can help improve quality but are time consuming and labor intensive.

Software engineering itself is a formal discipline born in the 1970s out of the structured programming movement. In a recent Communications of the ACM, software engineering was defined as "the systematic application of methods, tools and technical concepts to create complex, software-intensive systems that meet technical, economic and social objectives."

Unfortunately, software professionals must still fight the battle for legitimacy. In fairness, we brought much of the fight upon ourselves. At one time, many of us cultivated the hacker image—or the programmer as creative artist—so if "real" engineers snicker at the notion of software engineering, can we blame them? After all, the results have been short of expectations, and programming and design often have lacked a discipline and methodology—both of which are the very hallmarks of engineering.

Considering programming as an art is too often simply an excuse for sloppy logic. There is art and creativity in programming—they are essential ingredients—but they properly reside in the ideas and the algorithms behind the program, not in the creation of the program itself. In this way, you could define software engineering as the process of transforming art and creativity into something useful.

As such, software engineering provides a framework for the systems development process. It lays down a set of rules or methodologies that break down the stages of system development into activities and tasks, with defined deliverables for each. This approach uses many of the principles developed in other engineering fields. For example, like other kinds of engineers, software engineers typically use diagrams to define and communicate their goals (e.g., entity-relationship diagrams, which model information requirements; function hierarchies, which model business functions; and data flow diagrams, which model the interaction between functions and data).

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the overall project. Within the IPSE environment is a central project repository and tools for configuration, process, project and requirements management in support of team engineering. The key to IPSE is that *everyone* in the project, from project manager to programmer to analyst to administrator, must be tied into the same communications infrastructure.

Structured methods can help ensure project control, and various types of CASE tools aid in producing quality output. But sharing a common communications infrastructure is the key to increasing productivity. Shared communications allows users to automate information availability to all team members, which in turn enables the team to do its job more efficiently.

In Europe, multivendor hardware environments are much more common, so IPSE vendors have been required to address development interoperability. Given the heterogeneity of European computing environments, the typical IPSE is architecturally separated from host environments in order to develop software for many different targets using the same software tools.

European government agencies also tend to have strong commitments to specific life-cycle methodologies, and they are not all necessarily committed to the same ones—although the Euromethod project is seeking to adopt a common methodology by the 1992 time-frame. However, given the existing state of computing in Europe, IPSE products have had to accommodate various design methodologies and provide for extensive customization.

## Enterprise CASE

ENTERPRISE-CASE OR E-CASE stresses comprehensive company-wide interoperability between multiple heterogeneous architectures. In the 1990s, we will see the logical combination and convergence of I-CASE tools and IPSE infrastructure into E-CASE, examples of which are HP's CASEdge, IBM's AD/Cycle and Digital's Cohesion strategies.

The I-CASE approach, embodied in such products as IEF, from Texas Instruments, concentrates on tightly integrating front-end analysis and design tools with a specific back-end generator for a particular database, language and target hardware environment. I-CASE suffers from a lack of infrastructure or life-cycle support functions, which leads to problems in large projects. IPSE focuses on communication and project infrastructure but lacks adequate front-end and back-end tools.

The "E" in E-CASE is a critical success factor because communication must be enterprise-wide in order for this approach to work. The "I" in I-CASE and IPSE is also critical to success. To compete in the 90s, companies will require an IS strategy that is

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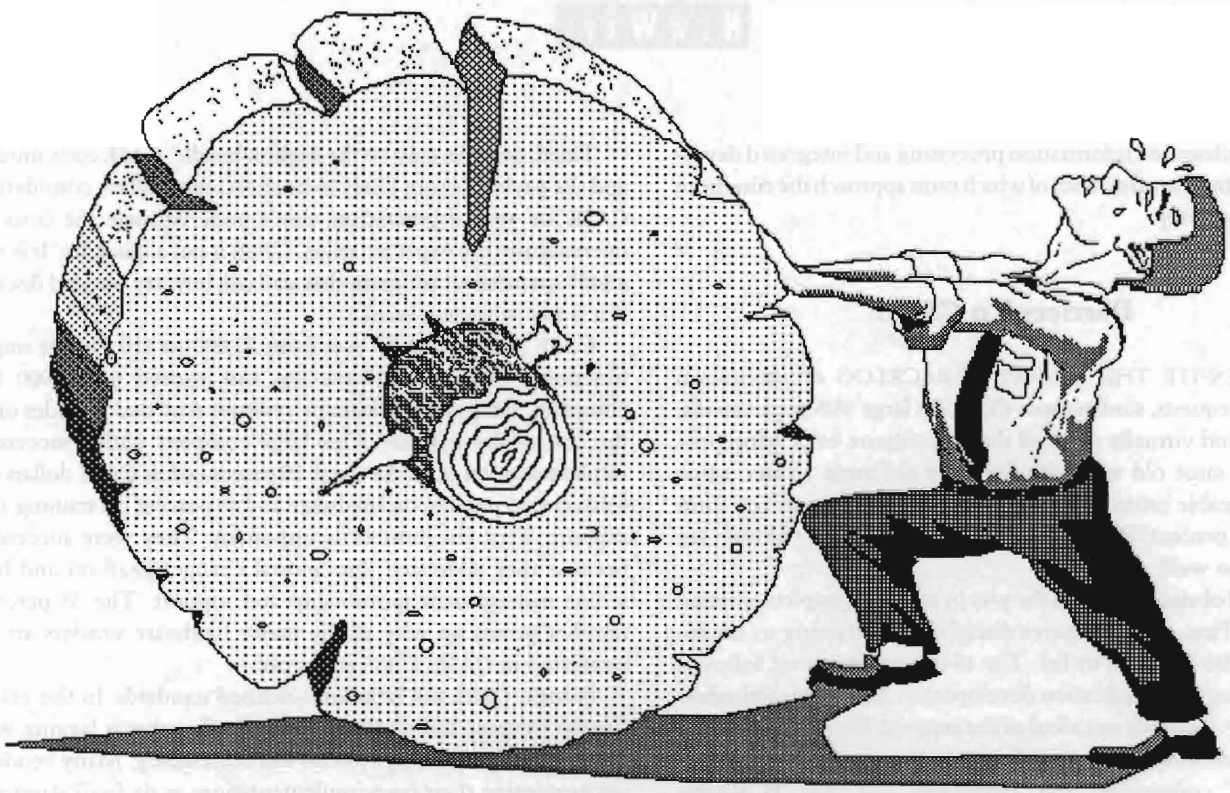

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based on integrated information processing and integrated development infrastructures; both of which must approach the enterprise comprehensively.

## Barriers To CASE

DESPITE THE GROWING BACKLOG of application requests, studies show that most large MIS departments, and virtually all small shops, continue to develop programs the same old way with the same old tools. In fact, some knowledgeable estimates show a CASE penetration in any form of only 15 percent. Why? Certainly not because the old ways are working so well!

Several obstacles stand in the way to increased implementation of CASE. First, CASE requires discipline and training to implement or else it is sure to fail. The IS department must follow a methodology for application development. No more methodology *du jour*. This can run afoul of the artsy-craftsy approach taken by many software developers. Second, there is a perception that only "big" companies, "big" developers and "big" IS departments can benefit from CASE.

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Third, and this may be the highest hurdle, CASE costs money and the payback is not likely to be short term. When considering CASE for your organization, don't underestimate the costs or overestimate the expected gains. CASE is not a quick fix. It is not a $495 spreadsheet program that you can buy, try out and discard if it is not what you want.

CASE tools generally cost from $2,000 to $10,000 for single function PC-based products but can exceed $1,000,000 for complete, integrated mainframe systems. And that includes only the cost of the software. One large company with a successful implementation of CASE spent 16 percent of its CASE dollars on software, 35 percent on hardware and 49 percent on training and support. That last number is important. They were successful because they addressed the cultural changes head-on and had senior management sponsorship and support. The 35 percent number points up why all the major hardware vendors are so interested in CASE: CASE sells iron!

Fourth, CASE still lacks well-defined standards. In this era of "open" systems and standards, the CASE market is lagging way behind with proprietary systems still dominating. Many vendors are promoting their own implementations as de facto standards and because the interfaces are published each vendor delights in proclaiming itself as having an "open" CASE strategy. Plug 'n play has not yet come to CASE.

Fifth, it's difficult to demonstrate on the bottom-line the productivity and quality gains CASE affords. People understand these tools are helping them to do a better job of designing and building systems, but it's difficult for them to prove a specific percentage in savings on development costs or on future maintenance costs.

## Caveat Emptor

SUPPOSE YOU CLEAR all those hurdles and you're ready to take the plunge. How do you go about implementing CASE? Corporate culture has always been a difficult thing to deal with, but it can make or break your CASE project.

"It is the most traumatic and devastating change an organization can undergo," says a CIO at a major corporation with a *successful* implementation of CASE. That's a bit of hyperbole perhaps, but it points out that to successfully implement CASE throughout the software development organization means that every aspect — people, methodologies, tools and processes—is transformed, all by the adoption of CASE.

Buying a CASE product is easy, but getting it to work in your organization with consistent, beneficial results is a real challenge. It requires the same kind of planning that should apply to the implementation of a new DBMS or MRP system. Otherwise, you may find you own a collection of sophisticated CASE tools that hardly ever get used. You also may find that you have more chaos with CASE than without it.

Successful users identify three basic steps for implementing

CASE technology in a software development organization: determine underlying methodology, select appropriate product(s) and provide extensive training for the entire development organization. Because the implementation of CASE tools is a lengthy process involving numerous people, users shouldn't expect major results overnight. The most important and long-term benefit may in fact come in application maintenance, because CASE tools make it much easier to maintain systems over time.

This lengthy process means that the CASE implementation needs to have top management support and proceed in small, measurable steps for maximum continuity and effectiveness.

In contrast to the economy in general, and despite all the barriers, the CASE market appears to be expanding at a phenomenal rate. According to a recent report from Frost & Sullivan, CASE software sales will quadruple from $672 million in 1990 to $2.9 billion in 1994; hardware used for CASE should triple from $1.2 billion to $3.1 billion, and associated implementation services should jump from $2.4 billion to $9.1 billion.

Behind the CASE demand is a proliferation of computer systems that are outrunning the ability of unaided programmers to upgrade and maintain them, let alone write the new code needed to make use of new computer hardware or new projects. Results using CASE have trailed expectations, however, due in part to exaggerated vendor claims and the lack of standards.

CASE has become the latest in a long line of "silver bullet" alternatives. Unfortunately, software engineers are slowly rediscovering that there are no silver bullets or magic pills when it comes to designing and implementing large systems. You must understand software engineering goals, principles and methods before playing video games. Used properly and with a good understanding of the software design and construction process, CASE can be a valuable asset to productive development of reliable, efficient and maintainable software systems.

Productivity gains don't happen overnight. CASE tools must be carefully selected for corporate objectives and then mastered by their users. In many situations, the tools may have to be modified to connect to other pre-existing tools.

CASE is starting to bring increased productivity and improved quality to software development groups. But the gains do not come without some pain. Successful adoption of CASE will take time and resources and will usually mean a radical change in the way you do data processing. The results, however, will ultimately be worth it. Every organization that hopes to improve its data processing capabilities, productivity and ability to compete should explore how CASE could help it succeed in the future.

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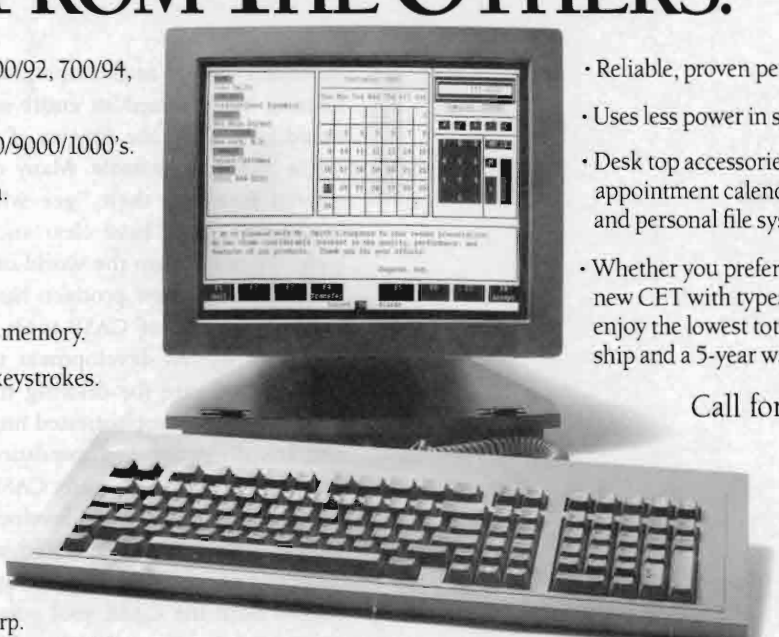

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# A Space For CASE

## The Future Of Software Engineering Is Wide Open, And HP's SoftBench Environment Offers Room For Development

BY RICHARD RIEHLE

Increasing interest in the emerging discipline of software engineering has spawned an entire new industry of products devoted to making the process of software construction a little easier and more reliable. Many of these products are characterized more by their "gee-whiz" looks than their actual usefulness. Some have clear ancestral roots in the world of gadgetry rather than the world of engineering.

Many of the new products have been introduced under the general heading of CASE tools (Computer-Aided Software Engineering). As development tools, they vary from simple graphics software for drawing trivial diagrams connected by directed lines, to sophisticated implementations of a "method" that actually generates compilation code.

One problem with many CASE tools is their parochial view of the world of software development. If you have a favorite editor, it might not be usable with a particular tool, or the configuration manager you bought last year may be incompatible with the CASE tool you purchase this year. A more serious liability for a CASE tool involves your choice of programming language. Suppose you build a product in C, then

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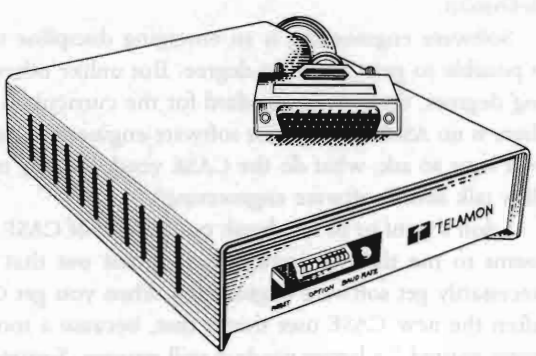


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later discover that you should have used Ada. Will your CASE environment allow you to make the transition? And, can you integrate multiple CASE tools into a single CASE development environment?

There's another problem related to the fundamental idea of CASE. The last two letters of the acronym, "SE," mean different things to different people. There is no clear definition of "software engineering." For many programmers, it refers to the ability to code low level routines in assembler or C. For others, it's unrelated to coding except as a by-product of the design process. There have been attempts over the years to codify a definition for software engineering, but there is no consensus thus far. Even the Special Interest Group on Software Engineering (SigSoft) of the Association for Computing Machinery (ACM) offers no agreed-upon definition.

*The SoftBench tools currently provided by HP include a program editor, program builder, static analyzer, debugger and development manager.*

Software engineering is an emerging discipline in which it is possible to get a graduate degree. But unlike other engineering degrees, there is no standard for the curriculum. Likewise, there is no ASME or IEEE for software engineers. Consequently, you have to ask, what do the CASE vendors really mean when they talk about software engineering?

I don't want to be too harsh on the idea of CASE. Rather, it seems to me that it's important to point out that you don't necessarily get software engineering when you get CASE. Too often the new CASE user thinks that, because a tool is "computer assisted," a better product will emerge. Sometimes CASE tools just help build bad software products faster. The fancy diagramming tool or layered windows may only provide the illusion of improved productivity and better design.

## HP's Best CASE Scenario

THE PEOPLE AT HEWLETT-PACKARD seem to have been thinking about these software engineering issues when they developed its CASEdge strategy. It's obvious that at present there are no standards for CASE tools, let alone software engineering. Consequently, HP chose to approach the CASE market with a clear vision of a murky future for CASE products. The word that best describes the HP approach is "open."

Like other vendors, HP seems to understand that, despite academic squabbles about the nature of software engineering, people do need computer-based productivity tools to construct software. They also understand that, among the current proliferation of tools, some products will be more useful than others. Someone must have asked how can we avoid getting locked into a technology that will become obsolete? The answer to that question propagated another question. How can HP make a marketing opportunity out of the answer to the first question?

The answer to the first question was to follow the lead of another innovator, Atherton Technology, and create a "software backplane" for a product HP called SoftBench. The resulting HP marketing opportunity became a strategy for porting SoftBench to other platforms, such as Sun Microsystems SPARC architecture and IBM's RS/6000. In fact, SoftBench has helped launch HP into the third-party UNIX software business. It's one of HP's few software products that's designed to be ported to other computer systems.

SoftBench is a platform that allows third-party (non-HP) software vendors to integrate their CASE tools into a single coordinated development environment. It includes the ability to coordinate differing operating protocols. You can think of SoftBench as a kind of programmer's workbench. Just as a carpenter's workbench may have a set of tools for building cabinets, the programmer's workbench has a set of tools for constructing software. And just as a carpenter may need to add a new type of clamp to his toolset, the programmer may need to add a new kind of editor, debugger, or language. SoftBench is built on HP-UX and the X-11 Windows environment using OSF/Motif.

Fortunately, the SoftBench user isn't required to learn the esoterica of X Windows or OSF/Motif. However, you will need to learn how to navigate through the X Window System via the icons and cursor management facilities.

## A Software Work Space

THE "BACKPLANE" IN SoftBench is analogous to the card cage in a PC or other electronic device. If you have an HP Vectra or any other IBM PC clone, you've probably looked inside and noticed some empty expansion "slots" soldered to the large circuit board at the bottom of the machine. These hardware slots are available for third-party circuit boards for special functions, like emulation cards or internal modems.

SoftBench provides the equivalent of expansion "slots," but for software. Also, the analogy doesn't hold long because software is more flexible. With the hardware device, there are a small number of fixed slots. With SoftBench there are no practical limits.

If you intend to use SoftBench, you'll probably want to explore the third-party tools available for it. The SoftBench tools currently provided by HP are limited to a program editor, program builder, static analyzer, debugger and development manager. Because of the open, multiplatform opportunities with SoftBench, there is an increasing number of CASE tool suppliers that have integrated their toolsets into it. Also, the basic HP version currently supports PASCAL, FORTRAN and C.

For Ada, you will want to look at Teamwork from Cadre Technologies or Software through Pictures (STP) from Interactive Development Environments. Both Teamwork and STP support C, as well. There are also tools for building C++ software systems.

SoftBench is designed to support two levels of integration, control and presentation. Control integration consists of the HP-provided tools mentioned in the previous paragraph. The programmers's editor is reminiscent of the EMACS editor found in UNIX, but you can substitute/add **vi** or some other editor if you prefer. It is a graphical editor with some built-in syntax checking. You can use a mouse to point and shoot objects on the screen.

The Program Builder is integrated with the editor and the compilers. The programmer can even automate the compile and link process over a network. The Debugger is typical of debuggers everywhere. It does, however, operate as a multi-


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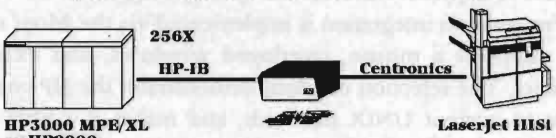


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**SoftBench features include flexible message protocols, ease of installation, dynamic communication between tools, a message distribution mechanism and multiple methods for tool integration.**

window facility, and the displays are more graphical than one finds with text-oriented debuggers. The programmer can set breakpoints for tracing source code statements, register status, program stacks, or variables. Windowing debugger information is useful for keeping track of what is being viewed at any particular moment.

The Static Analyzer is a nice cross-reference tool for determining the location of variables and calls to functions. A better, separate tool, is HP's Branch Basis Analyzer (BBA), the close equivalent of a coverage analyzer. But BBA is not included as a part of basic SoftBench. Finally, there is a version control tool called the Development Manager. This is essential for managing large, multiprogrammer projects. It is astonishing how many projects fail to meet their target dates because of poor version control to support final software system integration.

Presentation integration is implemented via the Motif model and supports a mouse, overlayed windows, and excellent graphics. The selection of Motif demonstrates the HP commitment to current UNIX standards, and makes it a little more palatable for third-party vendors to invest in supporting SoftBench. Sorry, MPE users, HP does not indicate any plans to port SoftBench to MPE environments—although its plans to implement POSIX on MPE XL may change this situation.

## Open Minded

HP'S COMMITMENT TO standards is also evidenced by its support of TCP/IP, NFS, Ethernet and other emerging standards. There is even support for IBM 3x70 terminals. The networking capability of SoftBench is of special significance. When SoftBench is installed on a remote node, it can be used by a user at any other remote node on the network. Such remote execution is transparent for the convenience of the programmer. Even SoftBench data may be distributed across the network without any special action by the user.

The openness of SoftBench is one of the things that makes it more attractive than some other tools in its class. Some of the features that make SoftBench a good platform for other tool vendors include flexible message protocols, ease of installation, dynamic communication between tools, a message distribution mechanism and multiple methods for tool integration. Any SoftBench user can integrate new tools into the "backplane."

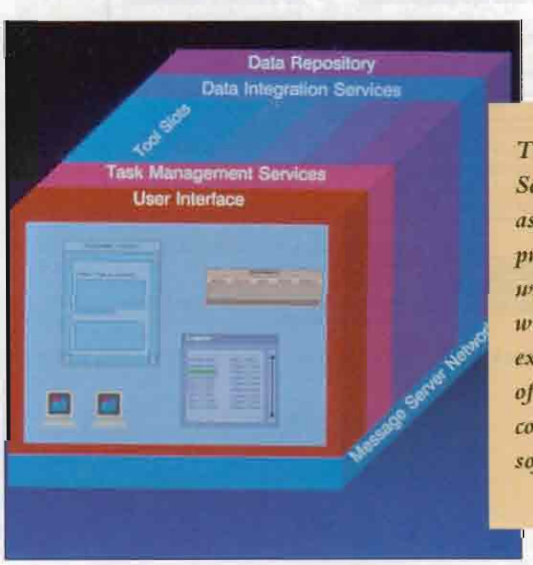
Tools may communicate selectively. That is, one CASE tool can talk to another while, optionally, ignoring the existence of others. Moreover, the tool integrator is not required to modify his product to install it into SoftBench. This is especially important for those CASE tool developers who already have a working product. No one wants to change his product to work in a different environment.

SoftBench uses a "trigger" mechanism to initiate messages between tools. Some messages may be "event driven" while others may be "data driven." Depending on the type of message, it may be independent of a user action or interactive with the presentation to the user. These messages can be designed to coordinate the actions of one CASE tool with some other development tool.

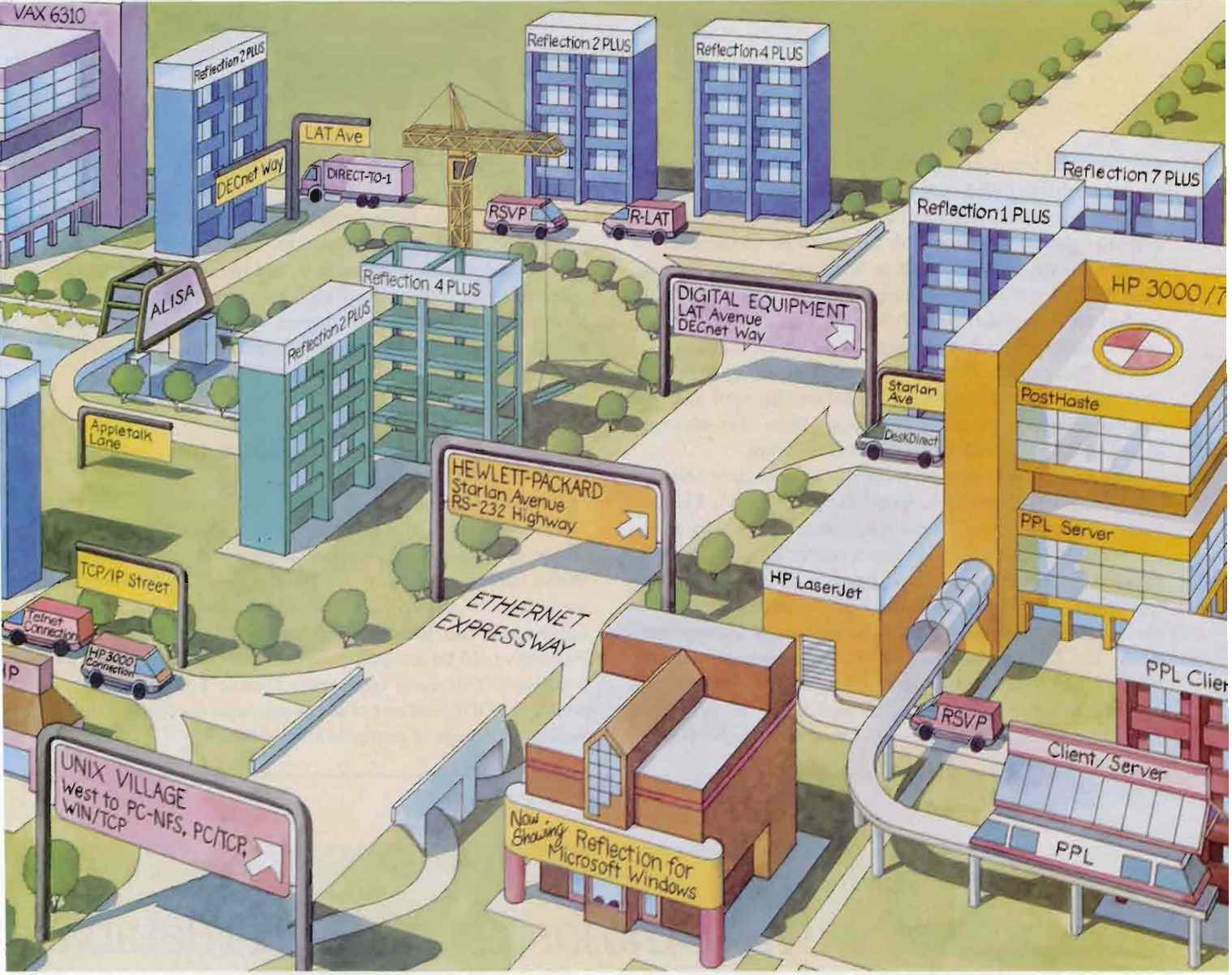
The broadcast message server in SoftBench is sometimes referred to as a "multicast" message distribution mechanism. This provides a capability for multiple messages between tools to flow independently of user input. Its implementation is beyond the scope of this article, but HP believes it is more efficient than a simple message server.

The multicast message server mechanism includes the capability for programmatic interfaces. If a function is visible on a SoftBench menu, it can also be called from another program. The "trigger" mentioned earlier can start a chain of messages between SoftBench tools via these programmatic interfaces. One could think of this as analogous to a UNIX shell script; a script of SoftBench messages.

The tool builder is not required to use the multicast mes-




*Think of SoftBench as a programmer's workbench with an extensive set of tools for constructing software.*

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sage server to integrate a product into SoftBench. HP has included a product called "Encapsulator" to facilitate integration. Encapsulator is relatively easy to use and requires less technical expertise than direct access to the multicast message server. Some software products, such as Software through Pictures, have their own GUI and may rely on the message server. Others find the Encapsulator easier to implement, particularly when there is no other existing graphical capability for the tool.

The Encapsulator attaches an interface capability to the tool that enables communication between the tool and the SoftBench interface mechanism. Encapsulator takes advantage of the UNIX **stdin/stdout** logical device feature.

The tool vendor can program the Encapsulator interface using the Encapsulator Description Language (EDL). This language looks a lot like C, and can be learned quickly by an experienced C programmer. An Encapsulator file (EDL file) defines the window interface, the program interface, and message interfaces. For example, the window interface might include menus, menu selections, radio buttons or message windows. The message interface could define types of messages, triggers, and intertool messages. The program interface will describe how the capabilities of the tool will be accessed using the message interface information. Once the EDL file is compiled, it is "encapsulated" and run-time support is the task of SoftBench.

Once a tool has been encapsulated, it behaves as if it were part of the SoftBench environment. The SoftBench user has no knowledge of the Encapsulator, and needs none. For a programmer using SoftBench, all tools are created equal, and there is no need to know how they were integrated into the product. One could think of this as an application of the software engineering principle of "information hiding."

## Open Acceptance

Industry response to SoftBench has been enthusiastic. And because HP has begun to port the product to non-HP computer platforms, support has grown even stronger. Sun SPARCstations have become a favorite development environment for a lot of UNIX jockeys and SoftBench has found a home on the Sun. IDE already announced that Software through Pictures would be integrated on the SPARCstation version of SoftBench. This seems appropriate because Tony Wasserman, president of IDE, was one of the people who encouraged HP to broaden the range of platforms for SoftBench.


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Other HP Value Added Business (VAB) partners, such as Softool, also have integrated their products on HP SoftBench for SPARCstations. Verilog's Logiscope, Cadre's Teamwork and Caseware's configuration management product are all currently running on the SPARCstation version of SoftBench. A wide variety of other products are available to support every stage of the software life-cycle. There are also products for specific application environments; for example, embedded systems, database development, business data processing, or scientific programming.

HP users can no longer be considered hardware mavens only. Now that HP is a software company supporting other platforms, we may need to redefine what an HP user really is. Of special note in the list of vendors given above is Cadre. They are one of HP's premier VAB partners, along with IDE, Verilog, Yourdon, and Softool. Cadre is also one of the earliest supporters of the HP CASE effort, and their product, Teamwork, was once listed as an HP product, HP Teamwork. Cadre was, in effect, an HP OEM. That relationship has changed, but Cadre continues to be a strong player in the HP CASE market.

An important development in the CASE world is the advent of the Portable Common Tools Environment (PCTE). Hewlett-Packard has been active on the committees defining the PCTE standard, and SoftBench has been designed with that standard in mind. PCTE is in the public domain, and provides a set of common services for organizations building software tools. PCTE is still an emerging standard, and more ideas will surely be introduced to it over the next few years. —*Richard Riehle is a software engineer for AdaWorks, Palo Alto, CA.*

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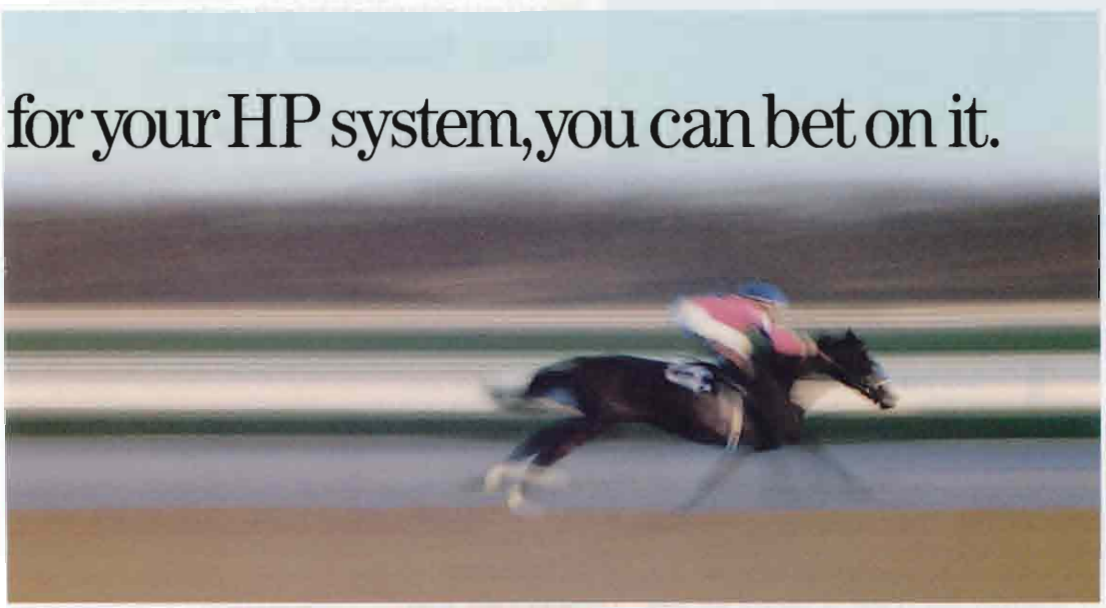

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# Image Conscious

## In Low Profile Locales, Image Management Systems Are Bringing Information Retrieval Into Sharp Focus

BY BILL SHARP

Thunder Bay, Ontario doesn't seem like a focal point in the computer industry. And although it is less remote than Ear Falls, Oxdrift or South Porcupine, Ontario, and likely bigger than the three of those combined, Thunder Bay is nonetheless a bit off the beaten path. It sits atop the hump that is the northernmost part of Lake Superior, well away from Ontario's rapidly growing population center in Toronto.

But such musings are of little concern to inhabitants of Thunder Bay. Fame is assured for now. Those in town who are aware of it take considerable pride in having one of the world's largest document imaging systems in their midst. The system, which already holds more than 10.5 million documents, is of next to no use if you're angling for lake trout in Superior's deep, cold waters. And the moose and bear up here are completely unimpressed.

If you happen to be a human inhabitant of Ontario born

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## Easy Connectivity

While wireless terminal networks have proven themselves cost-effective, connectivity to existing networks has not always been easy...until now. LXE's RF Base Stations with a TCP/IP Telnet interface offer seamless integration of LXE ANSI Terminals into standard Ethernet networks. As illustrated above, LXE Terminals are transparent to computer operating systems running applications on your Ethernet Network. The LXE RF Terminal has a powerful terminal mode (ANSI-RF) which complies with ANSI X3.64 and is optimized for RF applications. Additional VTxxx terminal modes include VT52, VT100 and VT220 emulations. Applications are developed entirely on the host computer using ANSI compliant development tools and the same programming languages used for CRT applications.

LXE wireless ANSI terminals through TCP/IP can access a wide variety of host computers on a network, including: AT&T, Digital Equipment Corporation (DEC), Hewlett Packard (HP), NCR, Stratus, Sun, Unisys and UNIX based systems, such as IBM's RS-6000.

## RF Network Control

The LXE RF Network Controller acts as a Telnet terminal server connecting the LXE system to an Ethernet network through TCP/IP. In addition to the TCP/IP network interface, an LXE Network Controller has the flexibility to communicate with other hosts via SNA/SDLC or asynchronous data links. The network controller can connect up to four host links simultaneously.

That means, for example, that an operator with an LXE RF Terminal emulating a DEC VTxxx terminal can easily access any computer connected to the LXE Network Controller through the use of a unique LXE "hot key" feature. Multiple terminal emulations coexisting in the LXE Terminal allow this type of switching between hosts.

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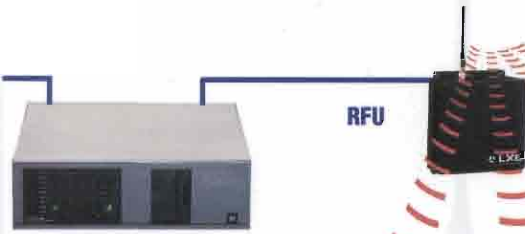


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since 1925, however, you'll be happy to know that your birth certificate is stored here in an optical jukebox. So are all your many marriage certificates and the birth certificates of any offspring you've brought forth or adopted between fishing trips. And if, alas, you're no longer with us, don't feel left out — *that* certificate is here, too.

So why place a document image processing system of such massive size in the rather modest environs of Thunder Bay? Computers and wide area networks have progressed to the point where the Canadian province of Ontario decided there would be little penalty for locating such a data center at a relatively remote site. And, it further reasoned, why not move some of the growth away from rapidly swelling Toronto?

Electronic imaging, also called document image processing, is the ability to electronically scan a document, convert it to digital information (digitize it), display the image on a computer, and modify, store, retrieve and index that information. Augmentations and variations on this theme are making it possible for many firms worldwide to offer new or improved services, dramatically reduce costs or achieve a competitive advantage.

Paper shuffling is big business, says Scott McCready, director of Imaging Services for IDC/Avante Technology (Framingham, MA). This year U.S. businesses alone will spend $1 billion designing and printing paper forms, and then spend an additional $60 billion processing those forms. Electronic imaging helps to create order amid the paper chaos.

## Too Big For Its Niches

SEVERAL TECHNICAL CONFERENCES each year now are devoted to providing information about new imaging methods. The largest of these, the conference of the Association for Information and Image Management (AIIM), drew 32,000 attendees to Washington, D.C. in April. Other conferences and meetings sponsored by IDC/Avante and BIS CAP International draw crowds as well.

HP estimates that the imaging market, growing at better than 50 percent per year, will surpass $12 billion worldwide in 1994. The reason for all the fuss is the potential payback from imaging systems used effectively. For example, when a major airline saved $1 million by implementing imaging, it considered the savings a freebie. What it really sought—and got, was a 75 percent reduction in the time its skilled mechanics spent prying aircraft maintenance information from old microfilm readers. The benefit for them was getting planes back into service faster. In another senario, a regional bank accelerated customer response by 24 hours in its credit card processing system using imaging. The bank also reduced head count and increased productivity by 20 percent.

In Ontario, meanwhile, the Registrar General's Office in the Ministry of Consumer and Commercial relations had a problem. It manages 18 million documents concerning Ontario citizens, including all birth certificates. Some time ago the government decided that the registry would convert more than half of its records to a new document imaging system and move the physical operation to the other end of the province at the same time.

**"If you don't want to change anything, you're probably not a good candidate for image management technology," says Scott McCready, director of Imaging Services for IDC/Avante Technology.**

Imaging made it possible to reduce total staffing for the registry to 114 from 147, even though a new facility has been opened in Thunder Bay. Records storage space has been dramatically reduced, equipment maintenance costs cut back and many new costs avoided by making systems more efficient. Actual budget savings for the registry will be $1 million per year, says Allan Zimmerman, manager of technology innovation for the Ontario Ministry of Consumer and Commercial Relations (Toronto, ON). But the savings figures don't reflect other benefits such as dramatically improved customer service, improvements in data security and database backup to prevent information loss in the event of fire.

## Adopting An Imaging System

CORPORATIONS PLANNING on adopting an imaging system must be aware of the operative word in this sentence—*planning*. Without careful planning, say the experts, you might just as well take your imaging investment money to Las Vegas or Monte Carlo and roll the dice.

Ontario's registry actually had an atypical advantage in adopting its imaging system—it had no entrenched users to stand in the way. Because the bulk of the data system has been moved to a site 900 miles from Toronto, only a few employees made the move, so executing a radical systems change was simplified. Most imaging systems will be run by the same employees

that used to sit by the systems being replaced. Implementation is best undertaken using a team approach that gives all parties concerned a chance to buy into the new system. Consider including MIS, senior management, business units, records management, customers, consultants, systems integrators and hardware vendors.

Pick the first imaging application for your firm carefully. IDC/Avante's McCready suggests the best example installations will be those:

- Where the function and its importance is widely understood so benefits will be clear.
- Where a significant positive return on investment is likely.
- Where early implementation mistakes won't place the company at risk.

One of the more maddening tendencies of businesses is that they change frequently in both structure and function. After a while you catch on to the fact that this kind of frequent change typifies well-run companies. Imaging requires this kind of self-examination for effective use. Automating a wasteful process throws away corporate money by the truckload. "If you don't want to change anything you're probably not a good candidate for image technology," says McCready.

Professor N. Venkatraman of MIT's Sloan School of Management agrees. Venkatraman in fact feels this is true of an information technology. "The benefits of investing more and more in technology are going to be minimal if you just want to superimpose the technology on your existing organization." He identifies four levels of technology implementation, typified by increasing levels of process reorganization:

- Localized use for a single location or viewed as a pilot program has little value. Pilots peter out and commitment collapses.
- Internal integration helps move information between processes, yielding some significant benefits. This method often fails to make changes in pre-existing processes, however, limiting gains.
- Process redesign restructures an organization or process to take advantage of information technology. This can be difficult and time-consuming to execute, but can produce large improvements in efficiency.
- Network redesign extends the process to resources outside the company. This is obviously more difficult yet, but can produce very large improvements.

***Hewlett-Packard's Advanced Image Management System (AIMS) lets users convert paper-based information into digital form to make the tasks of storing, retrieving, filing and manipulating information more efficient.***

Venkatraman cites a midwestern bank that improved its productivity by 52 percent, reduced errors and improved response time. The bank dropped the number of discrete steps in its process to three from nine by implementing imaging and process redesign.

Retrieving a birth certificate at Ontario's Registry used to mean finding an index number on the IBM mainframe, then trekking back to the records room and finding the right book among 40,000 volumes each weighing 40 pounds. Then the sought after record was taken out of the book, copied and replaced in the book. Because of the many requests per day, the process used to take about three days to produce a copy.

Using imaging, the process is down to a few minutes for all but the oldest records. The time-consuming part of the process is filling out a form at the counter, collecting fees and getting the index number from the IBM mainframe. The imaging part of the process is over in a minute or so, allowing people to place an order and wait for the copy. "Retrieval for 98 percent of our requests is now automated," says Zimmerman. "We don't have to chase through files to find things."

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Process redesign resulted in a system where new documents coming in the mail are scanned into the system as soon as they reach the mail room and are never touched as paper again. Within a few minutes, the new document is available to be called up in either Toronto or Thunder Bay.

## HP AIMS For Imaging Market

BECAUSE THE IMAGING market is booming at a time when much of the computer industry is going bust, there are a number of vendors just wiggling and itching with excitement in anticipation of helping you. Pick your favorite large vendor and call them if you like—they have, or will at least say they have, solutions ready for you. Alternatively, you can bring in a consultant who may be able to help you from planning to maintenance in seeing the project through.

First, learn enough about the technology so that you can protect yourself. McCready is a proponent of talking to customers using the systems, particularly unhappy ones who will tell you about product weaknesses. He also suggests that you avoid sole-sourcing your system. "Providing a competitive environment for vendors will reduce costs by 25 percent," asserts McCready.

Consultants provide another avenue toward imaging. Consultants can serve as a guide in sorting out vendor information. Be aware that they may be working closely with one or more vendors, to the point where they look very much like a vendor to you. Be cautious and learn enough about the process and the systems that neither vendors nor consultants can stand around with their hands in your pockets.

Zimmerman considers his organization to be a large IBM customer, but when the final six bids came in for the project, the best offer turned out to be from HP. HP in turn immediately brought in Anderson Consulting to pull the system together and serve as primary contractor. Zimmerman sees Anderson as a smart way to go to avoid drowning in technical details. No single vendor could supply everything needed for the system. By contracting with Anderson for a turnkey system, Zimmerman off loaded lots of headaches to the consulting firm.

Hardware for the registry includes an HP 9000 835 PA-RISC minicomputer functioning as an image system server and linked to 64 HP Vectra SX PCs. The 64 document imaging systems are linked through LAN connections. A wide area network links Thunder Bay and Toronto systems together. Online storage capacity is 576 GB. Optical jukeboxes from both HP and Cygnet are part of the system.

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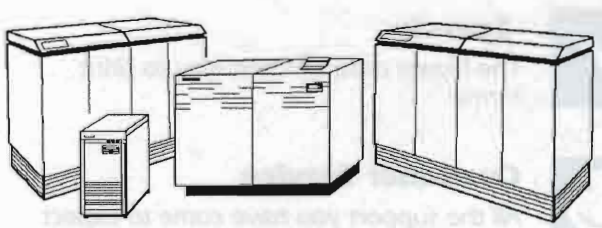

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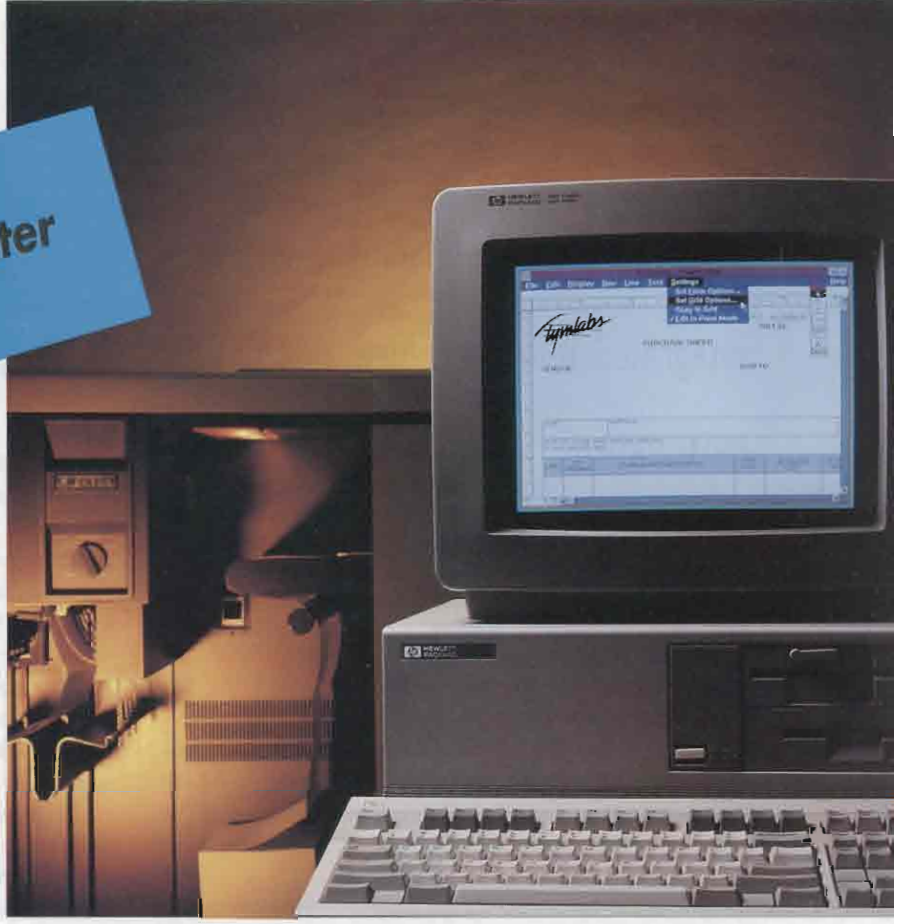

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**As imaging becomes more tightly integrated into the office automation environment, HP believes NewWave Office will come into the picture for many AIMS users.**

Software for the Registry application is HP's Advanced Image Management System (AIMS). AIMS was developed by HP using base technology licensed under an OEM agreement from Recognition Equipment Inc. (Dallas, TX). Plexus Software is a subsidiary of Recognition.

AIMS uses MS-Windows as its user interface to make living with imaging simple. The mini controls the database, as well as optical storage jukeboxes, and functions as a server for the client Vectra PCs. An advanced image processor card installed in each PC allows it to compress or decompress imaging data when communicating with the server.

The database for AIMS is based on Informix Turbo, extended to accommodate large objects. HP is looking at moving AIMS onto UNIX workstation platforms in addition to the PCs in use now. Color is also on the way, and awaits only the completion of another industry standard.

### Imaging Enters The Office

NEWWAVE OFFICE WILL BE another addition to AIMS, though not immediately. As imaging becomes more tightly integrated into the office automation environment, HP believes NewWave will come into the picture for many AIMS users. NewWave Office and AIMS have been demonstrated running together, and a customer in Denmark planning a paperless office will be using both. AIMS and NewWave will be offered together on the price list early next year, according to HP.

Phil Dowding is VAB development manager for HP's Pinewood Information Systems Division (Pinewood, U.K.), home of HP's AIMS product. The product fits well with HP's goals of automating the office and with client-server and open systems products. He says target markets for AIMS are banks, insurance companies, government, pharmaceutical companies and hospitals.

"If they don't get their paper under control, many of them will go out of business," he says. "They have to be very responsive to their customers and they can't afford to lose information. If there's a piece of paper on my desk and I can't find it in the mess, HP won't go out of business. But for an insurance company, keeping track of paper is essential."

HP has found that no two imaging applications are alike, so marketing of AIMS is almost totally through value-added businesses (VABs). A VAB is a firm with expertise in the target market who can provide the software and systems integration that will meet the customer's needs. HP now has 25 partnership agreements for firms selling AIMS. About half of the actual system sales have been through Anderson Consulting to date, he says. The VAB method of selling the product has been a successful one, says Dowding.

"We have gotten into sites that never had HP systems before and in fact were IBM sites," he says. "They compared systems and HP suited their needs. HP AIMS is based on open systems, so it enables them to expand later with less trouble."

Dowding says sales are about evenly split between the U.S. and Europe, with most sales going to government and health care customers. This evidently is because HP's partners are more active in these areas.

Imaging may save money when used effectively, but you can't buy it with pocket change. You can set up a low-end server with a single workstation for about $40,000, but a realistic imaging system with multiple workstations will cost from $100,000 to a million dollars or more, says Dowding. "The actual cost will depend on how much optical storage is needed, how many client workstations are served and how much value is added by the VAB."

When this story was written, HP was very excited about its success in the imaging market, with more than 60 large systems installed worldwide, and just back from gathering in 2,000 qualified leads at the AIIM show. But challenges remain. People in different places handle paperwork in very different ways, so automating paper processes on an international basis will take considerable effort. Standard workflow methods and forms will be essential to making imaging and other advanced information technologies function across international boundaries as well as they do close to home.

In the meantime, people with vision and a charter to be aggressive will move ahead. Planning for adopting advanced systems, such as imaging, into Ontario's Registry looks out at least eight years, says Zimmerman. "Each year certain projects will be examined. Next on our list is automation of company registration and that might start within a year. Land registry is another." These represent millions upon millions more documents. Imaging is just getting started.

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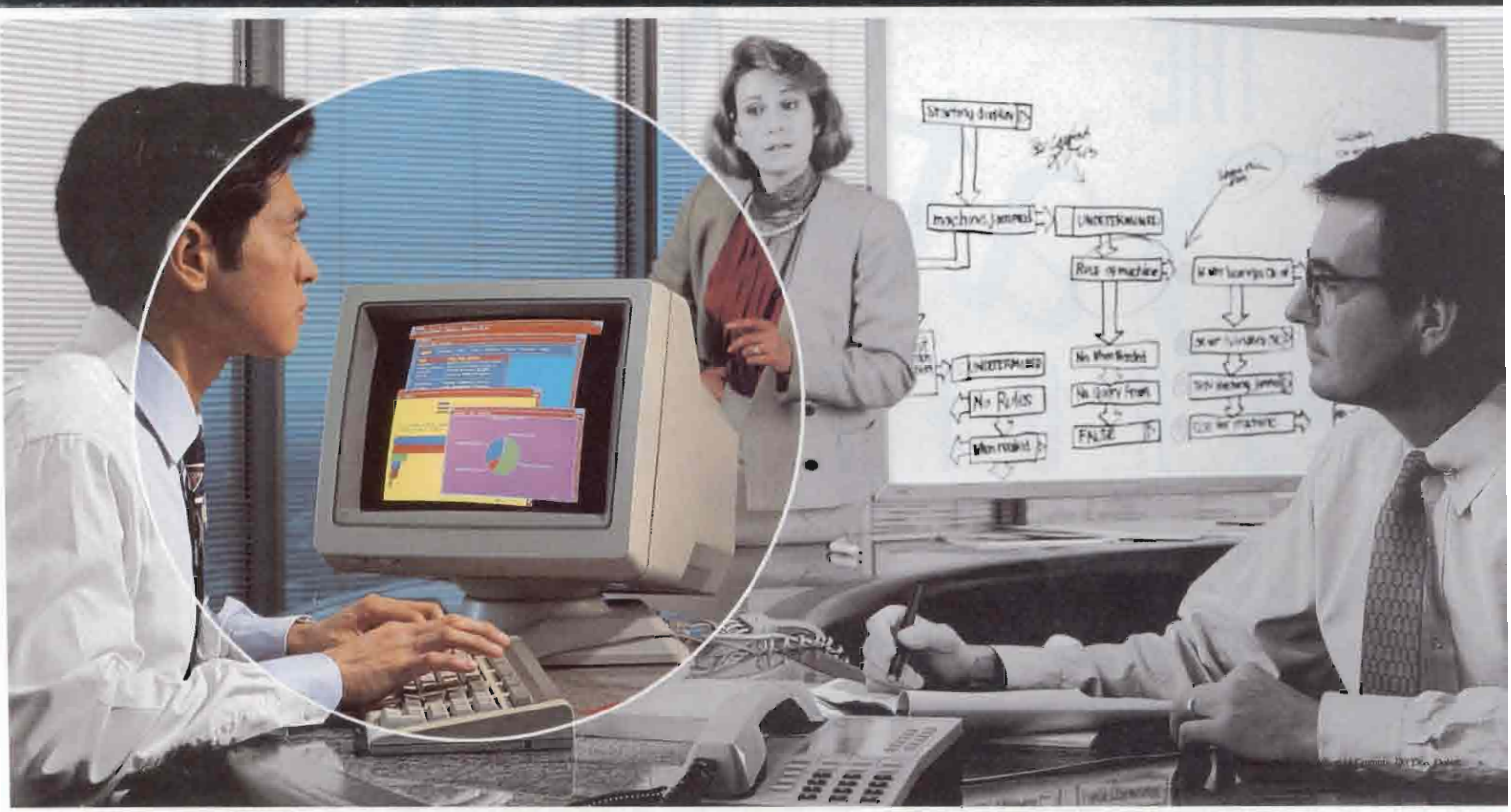

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# THE Database SHUFFLE

BY GORDON MCLACHLAN

## Third-Party 4GLs And Database Tool Sets Put On Their Platform Shoes And Hustle Off To Other Architectures

Multiplatform DBMSs are starting to attract a lot of attention nowadays. The economic benefits of downsizing, coupled with the data processing advantages of distributed and client-server data management make them a desirable commodity.

Of course, the most desirable multiplatform DBMSs would be "open" systems. The currently approved dogma holds that the only good system is an open system, and who can argue with the need for interoperability, portability and scalability? We need it. We need it bad.

Unfortunately, the standards for distributed DBMSs are still in a considerable state of disarray and "open" has a more limited meaning. In the DBMS world, we're happy just to get portability between platforms. Scalability is taken for granted, but interoperability between different databases is still a luxury that only can be indulged at great expense.

Guess what? We're in trouble again.

The golden rule of standards is simple: Do unto yourself after others have done unto themselves. In other words, if you have the luxury of waiting, take advantage of it. Things will be better later on. If waiting is a luxury you can't afford, you'll just have to fake it.

### The Silk Purse Approach

IF YOU ALREADY HAVE a significant investment in hardware and applications that you need to "protect," you might not be in the mood to switch DBMSs just yet. Even though official open systems dogma holds that relational DBMSs and SQL servers are going to be our salvation, this view is generally propagated by UNIX and PC wizzies who don't have 250 man-years of code to convert. The rest of us would rather have extensive periodontal surgery than try that maneuver.

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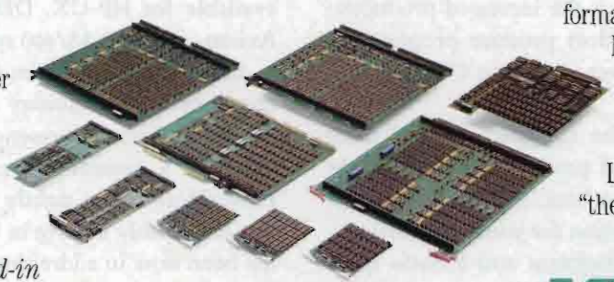

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technology. You can make a silk purse out of a sow's ear by putting a good 4GL front-end onto the databases you're already using. It's not exactly standard, and it might even seem like a kluge, but it can work quite nicely. *Table 1* shows the DBMSs supported by 4GLs for HP platforms.

If you're already using one of the 4GLs on the list, and it supports your other platforms, stay with the program. If this would be a new purchase, you have to decide if you're a candidate for the "old" 4GL technology or for a shiny new RDBMS.

One obvious advantage of 4GLs is the increased productivity they promise over 3GLs. Vendors promise programmer productivity gains of 10-to-one over strangling COBOL or C code by hand.

Proprietary 4GLs also tend to be easier to use and more comprehensive than the SQL-based productivity tools of the RDBMSs. For reasons we'll get into later, SQL is not yet mature, and may be a second-rate solution for your application.

4GLs also can span different platforms and DBMSs quite nicely, and they provide a high degree of application portability between the systems they support. Central dictionaries/repositories make the location of data — and its DBMS — virtually transparent to the programmer or user.

Of course, all this means nothing if a given 4GL doesn't span all of your platforms. You also have to consider for yourself how a non-standard approach is going to work in the long run.

According to Cognos, its Power-House family is the most widely used 4GL for the HP 3000 MPE V and MPE XL systems, with more than 60 percent of the market. PowerHouse also is available for HP-UX, DEC VAX, Data General Eclipse and Aviion, and IBM AS/400 systems.

PowerHouse products for HP platforms include the 4GL, a complete data dictionary and the StarBase RDBMS, OEMed from InterBase. Its presence in so many commercial HP shops makes it a natural contender for enterprise-wide use, but PowerHouse is so tightly focused on the commercial market that it's notably lacking in UNIX implementations. Cognos also has been slow in addressing PC integration.

The soon-to-be-announced Power-House 7.00 will provide a Windows 3.0-based PC client that will put a fresh face on the venerable Cognos workhorse. IBM RS/6000 AIX and DEC-station ULTRIX ports announced in June also will help PowerHouse stay a contender. Still, the lack of support for SQL or third-party RDBMSs is a limitation, and Cognos hasn't made any commitment to support them in the future.

Infocentre Corp.'s SPEEDWARE 4GL isn't as popular as PowerHouse and runs on fewer platforms, but it has well-integrated PC capabilities and supports client-server and distributed database models.

Traditionally an HP 3000 tool, SPEEDWARE has been redeveloped to be both DBMS and platform-independent, providing an opportunity for new ports. Versions are available for MPE V, MPE XL, DOS, OS/2 and HP-UX.

FOCUS, from Information Builders is most familiar in the IBM marketplace, where its roots are, but IBI claims that FOCUS supports more platforms than any other 4GL. It certainly looks that way.

Unfortunately, FOCUS's focus on the IBM world is still evident in its PC integration and client-server tools. Support for DOS or OS/2 clients with MPE XL and UNIX servers is nonexistent. The lack of support for MPE V

TABLE 1

| Product | Focus | PowerHouse | SpeedWare |
|---|---|---|---|
| Vendor | Information Builders | Cognos | Infocentre |
| Platforms | MS-DOS<br>MPE XL<br>HP-UX<br>OS/2<br>Other UNIX<br>VAX VMS<br>AS/400<br>VM<br>MVS<br>Wang VS<br>Tandem | MS-DOS<br>MPE V<br>MPE XL<br>VAX VMS<br>AS/400<br>DG Eclipse<br>DG Aviion<br>RS/6000 (planned)<br>ULTRIX (planned) | MS-DOS<br>MPE V<br>MPE XL<br>OS/2<br>HP-UX (3Q91)<br>SCO UNIX (4Q91-1Q92)<br>AIX (4Q91-1Q92)<br>AS/400 (4Q91-1Q92) |
| DBMS Support | TurboIMAGE<br>ALLBASE/SQL<br>OS/2 EE Data Manager<br>OS/2 SQL<br>Server<br>Oracle<br>Ingres<br>Rdb<br>RMS<br>DB2<br>SQL/DS<br>other IBM 3rd party<br>other UNIX | TurboIMAGE<br>ALLBASE/SQL<br>StarBase<br>Rdb | TurboIMAGE<br>ALLBASE/SQL (3Q91) |

***Multiplatform 4GL comparisons. This table is provided for example only and is non-inclusive.***

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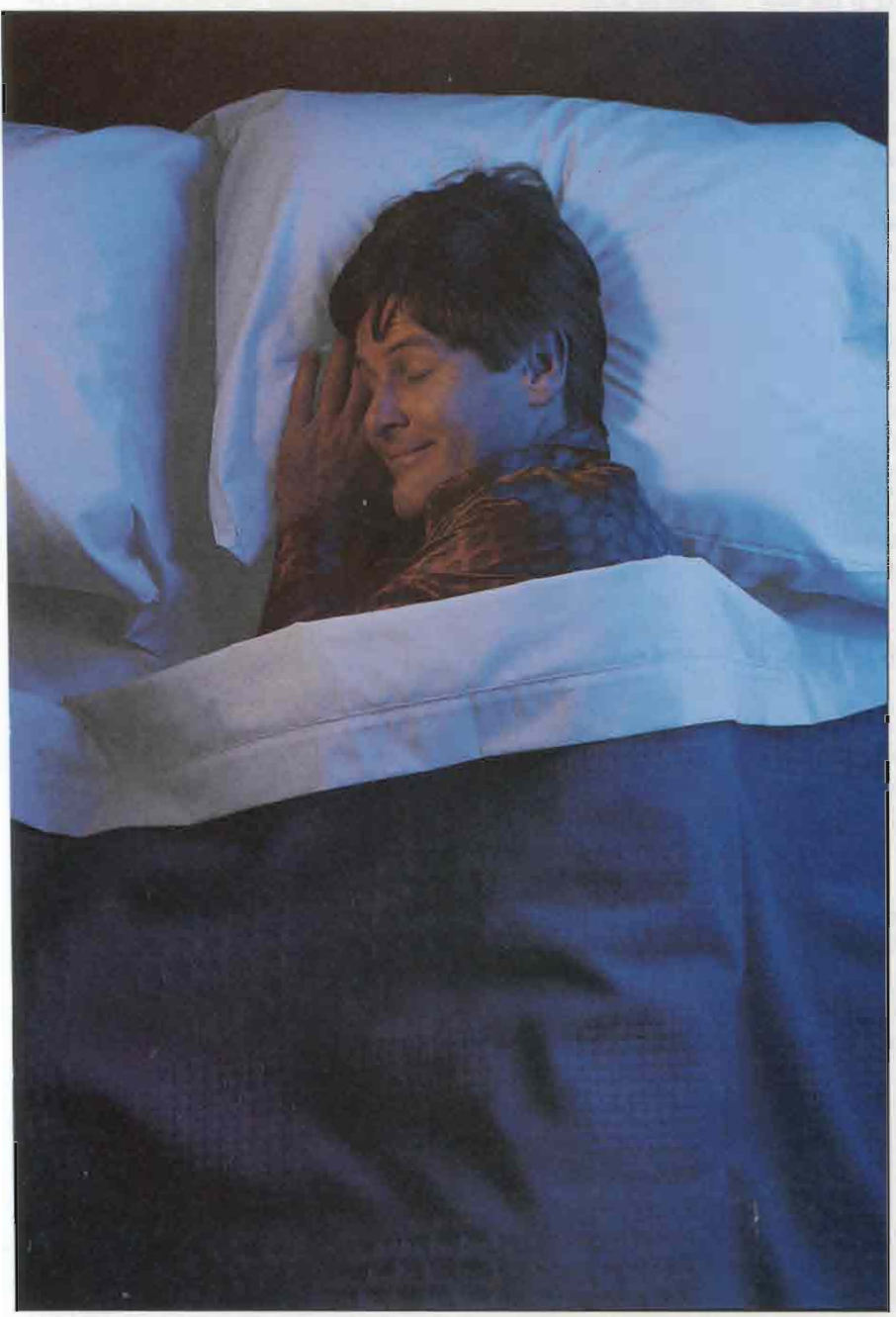

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systems is also a serious drawback in the HP market. We still love our Classics.

All things considered 4GLs may be too traditional and politically incorrect, but they just might keep you going for a while longer before you have to bite the SQL bullet.

## The Nuts And Bolts Approach

THE MOST DIRECT ROUTE to open DBMSs would seem to be the SQL/relational high road, instead of the 4GL low road, but somehow we got cut off at the pass by them standards varmints.

RDBMSs, which are basically flat files on steroids, have been around commercially for about 10 years, although they've been keeping computer scientist-types occupied for almost 20.

SQL was originally developed by IBM and offered with their DB2 mainframe RDBMS. By the early 1980s, SQL was an industry standard, despite the fact that nobody was using relational databases. As it picked up steam through the early 1980s and dialects of the "industry standard" multiplied, a formal ANSI SQL standard was released in 1986.

As enshrined in the DB2 and ANSI specs, SQL falls far short of what we can call a 4GL. Designed for defining and manipulating relational tables, it lacks many of the niceties needed in a development tool, and doesn't specify what an RDBMS is, or how different implementations are supposed to work together.

Vendors have had a field-day "adding value" to the ANSI and DB2 standards so that SQL would be more useful as a development and end-user tool. Among the enhancements added by various parties have been:

- Interactive SQL for ad hoc queries and reports.
- Application programming interfaces (APIs) for various languages.
- Special math, statistical and string functions.
- New field types, such as decimal numbers and the binary large object (BLOB) data type for storing graphics and other unruly binary data.
- Table "cursors" to make set operations easier to deal with in traditional procedural languages.
- Referential integrity checks to make sure that records referenced by another record actually exist, and to define the order in which records have to be added and deleted.
- Stored SQL procedures that can be called with a single statement, eliminating client-server overhead for complex actions and allowing user-defined functions.
- Transaction managers to synchronize database updates and back out incomplete transactions.
- Roll-back and recovery features.
- Page or row-level locks.
- Transaction deadlock detection.

ISO also has taken up the SQL challenge and is working on a Remote Data Access (RDA) specification for linking remote databases over networks. ANSI is now also finalizing the specifications for SQL Level 2, that will add a lot of meat to the spec.

At this point, it's clear that ANSI and ISO won't be able to fix all the problems with SQL and RDBMSs, so yet another standards group has popped up to develop the mother of all SQL specs: the SQL Access Group.

The SQL Access Group is a vendor organization that was formed in 1989 by such notables as HP, Digital, Sun Tandem, Informix, Ingres and Oracle. Sybase joined the effort last year, and as usual, IBM is sitting this one out, seeing no reason to screw with the sublime perfection of its four incompatible versions of SQL.

Using ANSI SQL and the ISO RDA as a base, the SQL Access Group is trying valiantly to fill in the gaps between the formal standards and come up with RDBMSs that really interoperate.

In the meantime different dialects of SQL are incompatible, different DBMSs can only work together using proprietary gateways like those used by the 4GL vendors, and many of the anticipated advantages of happily cooperative RDBMSs are still eluding us. Same old story.

The official RDBMS from HP is ALLBASE/SQL, which runs on HP-UX and HP 3000 MPE XL systems. Heavily emphasized by HP in its quixotic quest for openness, ALLBASE does provide a convenient bridge between the MPE and HP-UX worlds, being both fast and cheap. Optimized for the PA-RISC architecture, ALLBASE isn't as fast as HP's network-model TurboIMAGE DBMS, but it's catching up. Unfortunately, it isn't available on any competitor's platforms, making it best-suited only for all-HP networks.

Effectively out of the development tools business, HP has entered into technology transfer and strategic partnership deals with Cognos, Gupta Technologies, Infocentre, Information Builders and Ingres to build the front-end tools for ALLBASE. HP even went so far as to buy 10 percent of Ingres' parent company ASK to cement the deal.

The approach taken by Oracle is to port their RDBMS engines to everything except Nintendos. With this approach, the SQL APIs and development tools are standard, but Oracle can only interoperate with IBM's DB2. Oracle's claim to fame is hardware independence, and they deliver it in spades.

With the momentum gained in its porting frenzy, Oracle is undoubtedly the major force in the third-party RDBMS field, but it has been giving up ground to some of its hungrier and technically snazzier competitors.

Ingres, like Oracle, relies heavily on portability, but also provides interoperability with more foreign RDBMSs via its Ingres/Net gateways. Gateways are currently provided to DEC's VAX Rdb and RMS, and IBM's IMS, DB2 and SQL/DS RDBMSs.

Neither Oracle nor Ingres can provide 100 percent interoperability with their gateway targets, because of inherent differences in the systems, but they're a start.

Oracle's tools are still rooted in the age of the character-

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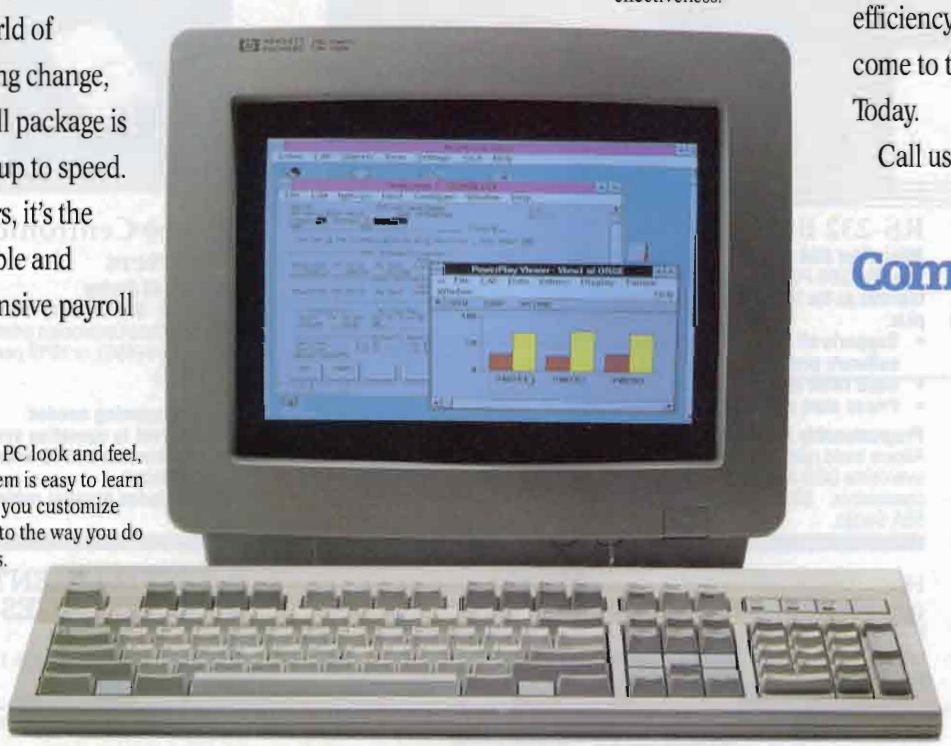

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oriented terminal and they have only recently started getting the GUI facelifts all those people with workstation clients want.

Ingres' UNIX-based Windows/4GL is a healthy 4GL environment that's pretty to look at, owing to its X Window displays and menuing. Other 4GL-type facilities built into the database provide more "intelligence" than standard 3GL/SQL tools.

## The Cautious Approach

ONE OF THE LOVELY features of the client-server model is being able to add functionality to the network in smaller chunks than you can in a typical mini or mainframe environment. It may make sense to combine traditional 4GLs and SQL-based RDBMSs and straddle the fence for a while.

If you have some new applications that would benefit from SQL and relational DBMSs, bring some new servers online or add compatible RDBMSs to your existing platforms. Supporting multiple databases is always a hassle, but you have to weigh that against the costs of a wholesale conversion or having to forego SQL-based RDBMSs entirely.

If you were getting bored because networks were getting too easy, here's your chance to have some fun again.—*Gordon McLachlan is a consultant with National Tech Team in Dearborn, MI.*

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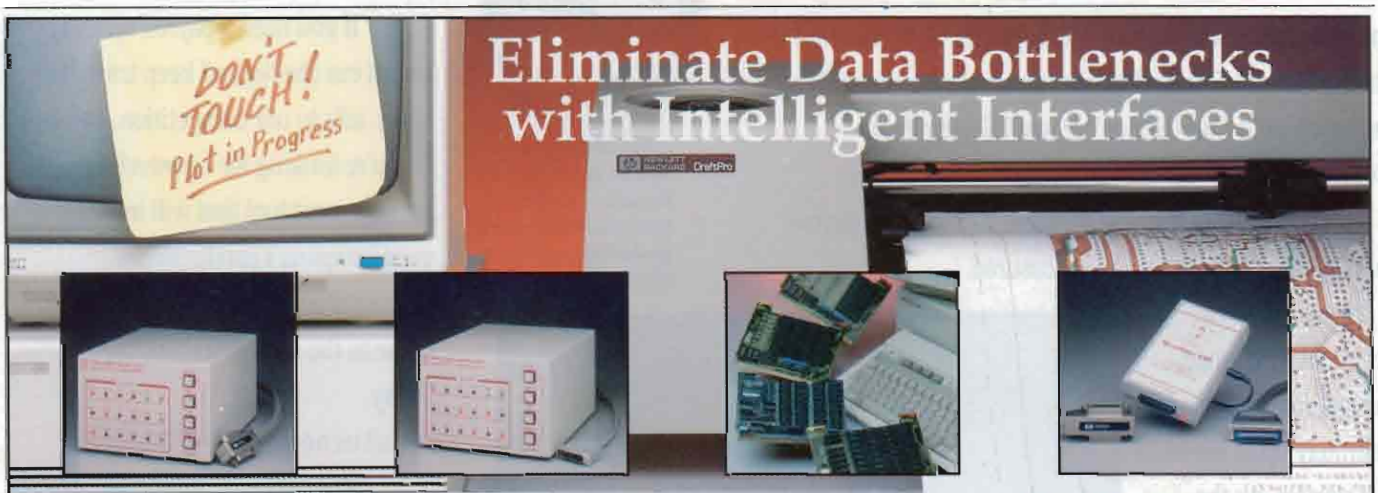


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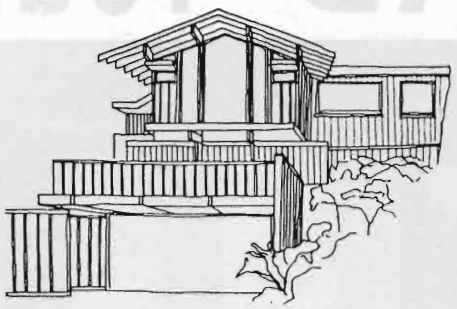
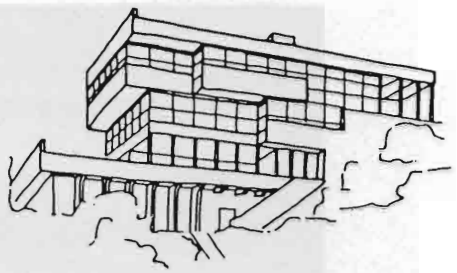


MPE/XL HP-PA Architecture



HP-UX Architecture

If you have mixed architectures in your environment, managing spooler output is complex and messy. Users need to send their reports to a printer located nearby, regardless of the system that the printer is physically attached.

With NBSpool, printing instantly becomes simple and practical. Simple, because no application or configuration changes are necessary. Practical, because printers become a network resource that can be accessed from all architectures including MPE, MPE/XL, Unix, and even PC Lans.

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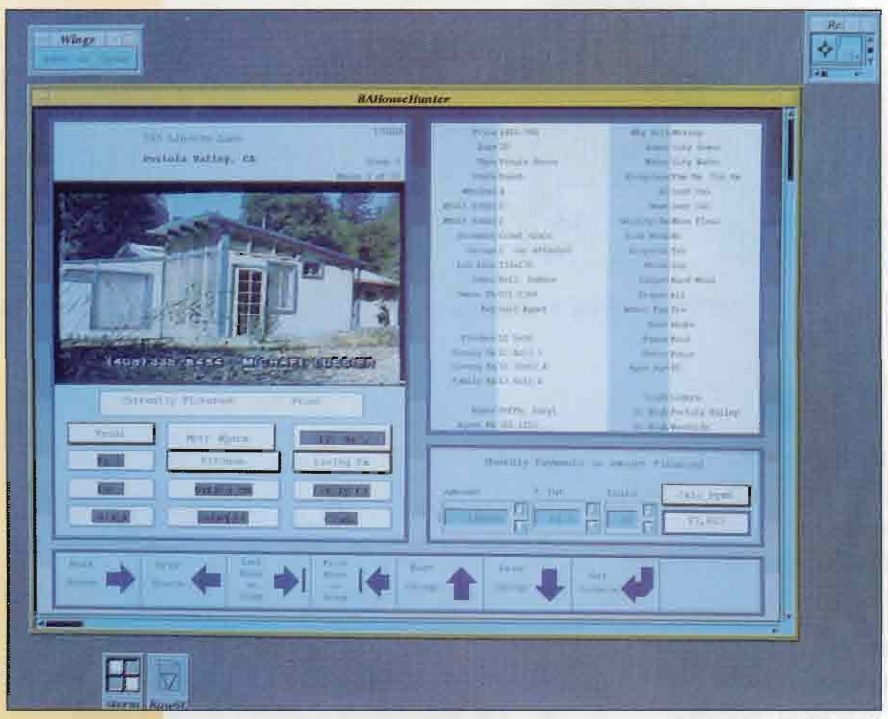
# SPREAD Your Wingz



**Glide Through Calculations — And Presentations — With This Graphical Spreadsheet From Informix Software**

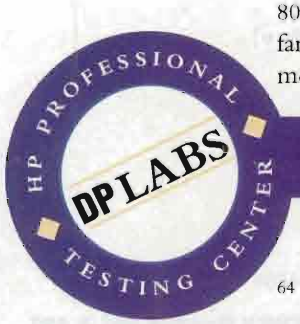
Spreadsheets come in a variety of flavors. Some fall into the plain-Jane, black-and-white category for business applications, while others belong to the number-crunching, engineering environment.

Wingz, by Informix Software Inc. (Lenexa, KS), is a graphical spreadsheet that falls into its own category. Calculation becomes an art as Wingz quickly and easily communicates multiple meanings from any set of numbers.

## Preparing For Takeoff

Wingz runs on HP 9000 300/400/700/800 workstations. For the 300 and 400 families, HP-UX 7.03 or later is recommended. Wingz will run under HP-UX 7.0; however, Informix says this version of the operating system doesn't include Xserver enhancements, which improve the operation of the spreadsheet. Wingz requires HP-UX 8.0 or later for the 700 family of workstations and 7.0 or later for the 800 family.

We installed Wingz version 1.1a on our HP 9000/360 workstation running HP-UX 7.0. We extracted the installation script and placed it in **/tmp/Wingz.install**. Once the installation script has begun, Wingz shows you the default directory and path used for installation. You're also given the opportunity to enter your own directory and path. Wingz is executed by typing




By George T. Frueh

# "Let them laugh now. With Eventide's new Ether Board, I've turned this 'obsolete' Series 200 into an Ethernet workstation!"

At Eventide, we strive to maintain scientific objectivity no matter what, but the thought of all those "orphaned" Hewlett Packard desktop computers out there wouldn't stop haunting us. Finally, we called a special engineering meeting. "This world needs an Ethernet interface for Series 200 and older Series 300 HP workstations," we told our engineering brain trust, "...and it needs one in a hurry. Shared Resource Manager is just too slow. Sure, HP's SRM-ux software speeds things up by allowing users to run SRM over an Ethernet LAN. But with HP's SRM network cards, you need an extra SRM network card in the server—and an extra slot to put it in, which many servers don't have. To make matters worse, many Series 310 and 320 models and all Series 200s won't recognize LAN cards, so you'd still need to boot from a local disk."

Our supply of midnight oil nearly ran dry but, in the end, our engineering department came through with flying colors. Our new Ether Board solves *all* the problems mentioned above, plus a few more. It turns "outmoded" Series 200 and 300 computers into networked workstations—with Ethernet network performance, typically five to ten times faster than Shared Resource Manager. In addition, Ether Board comes with Eventide's proprietary BOOTROM that allows *all* Series 200 computers (along with older 310 and 320 models) to boot using a central server.

Ether Board is fully compatible and interchangeable with HP LANIC cards—just plug it into the DIO backplane bus of any Series 200 or 300. A ThinLAN BNC connector is included, so there's no need for the MAU (Medium Attachment Unit) required by HP cards. And despite its added capabilities, the Eventide Ether Board is far less expensive than HP's Ethernet card.

But does the Eventide solution *really* work? Every bit as reliably and as impeccably as the HP-compatible RAM products we've been supplying to FORTUNE 500 companies, government agencies and educational institutions since 1971. Call Eventide today for information on the Ether Board WLZ-320 Network Interface, and bring all your HP computers together on Ethernet.

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**Wingz** at the HP-UX prompt.

Upon executing Wingz, a menu bar appears along with the Wingz worksheet window. The Wingz menu bar is separate from the worksheet window and can be moved to any position on the screen. The menu bar contains: File, Edit, Go, Format, Sheet, Graph, Script and Window. Each are selected via point and shoot with the mouse.

The Wingz Tool Box is a complete set of 10 tools that enable you to enter data into worksheet cells and create objects, buttons and charts. There are also line, arc, oval, rectangle, and poly tools for drawing graphic objects.

The Worksheet Tool helps you to select cells and text in a text field, and to operate controls such as stepper buttons. The Object Tool is used to select, move, manipulate or delete objects. Objects include buttons, controls, text fields, charts, imported pictures and shapes created with the drawing tools.

*The Chart Tool can be used to create a chart representation of the data in your worksheet.*

Buttons created by the Button Tool can be any size and can be placed anywhere on a worksheet. You define a button to perform a sequence of steps after clicking on it.

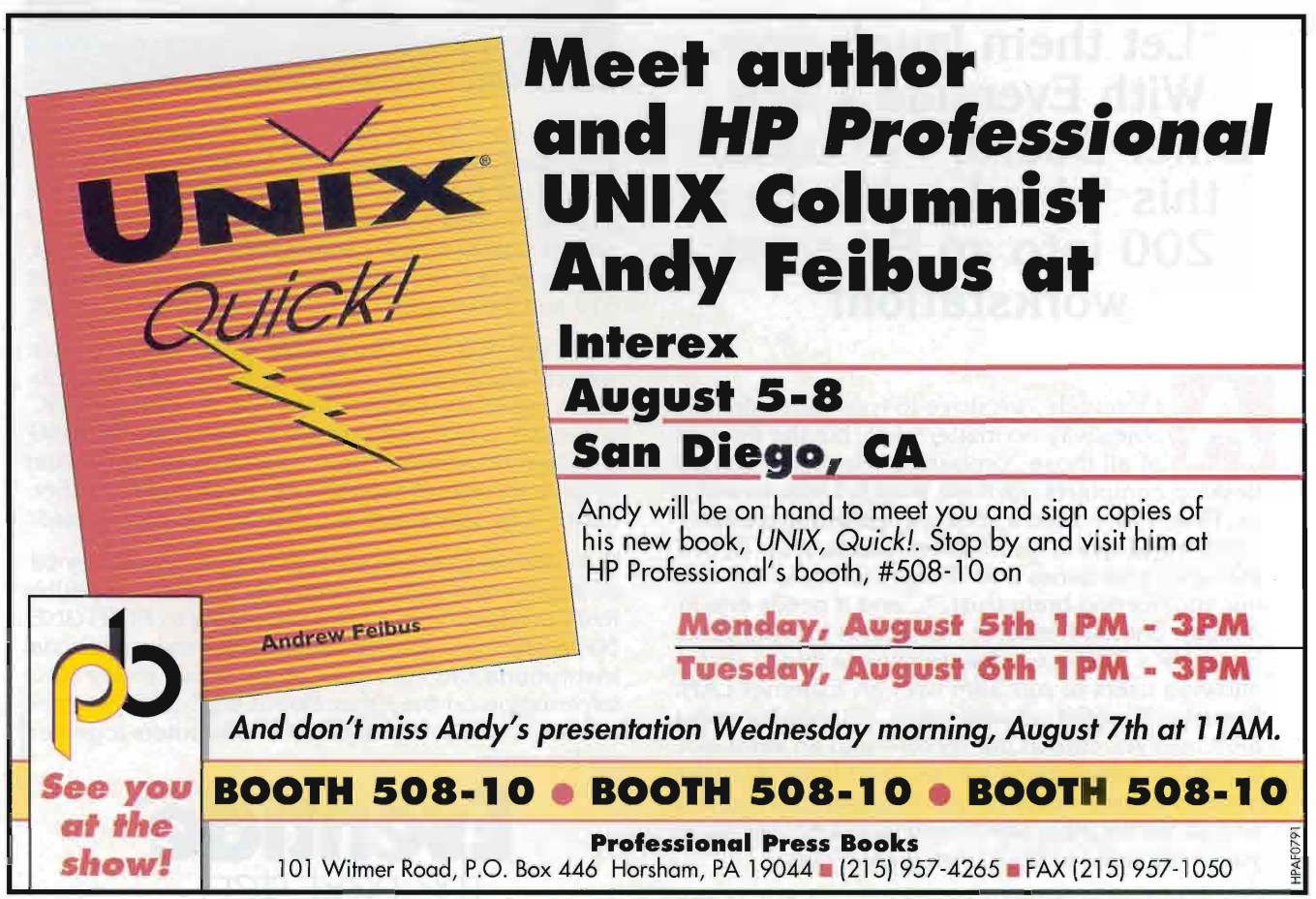
You can create text fields in your spreadsheet using the Text Tool. Each text field functions like a word processor providing word wrap, indents and tabs. With text fields, you can insert headlines, paragraphs or a single word to further define your application.

One of the more powerful tools in the Wingz Tool Box is the Chart Tool, which can be used to create a chart representation of the data in a worksheet. Twenty basic types of charts are available, ranging from simple bar and pie charts to 3-D combination charts.

The Wingz Drawing Tools consist of five tools that are used to create lines, arcs, ovals, rectangles and polygons in a Wingz worksheet. Each of these tools has dedicated icons and is accessed the same way as the other tools.

## Going For A Test Flight

TestFlight is a demo that comes with Wingz. It's menu driven and effectively demonstrates the features and function-

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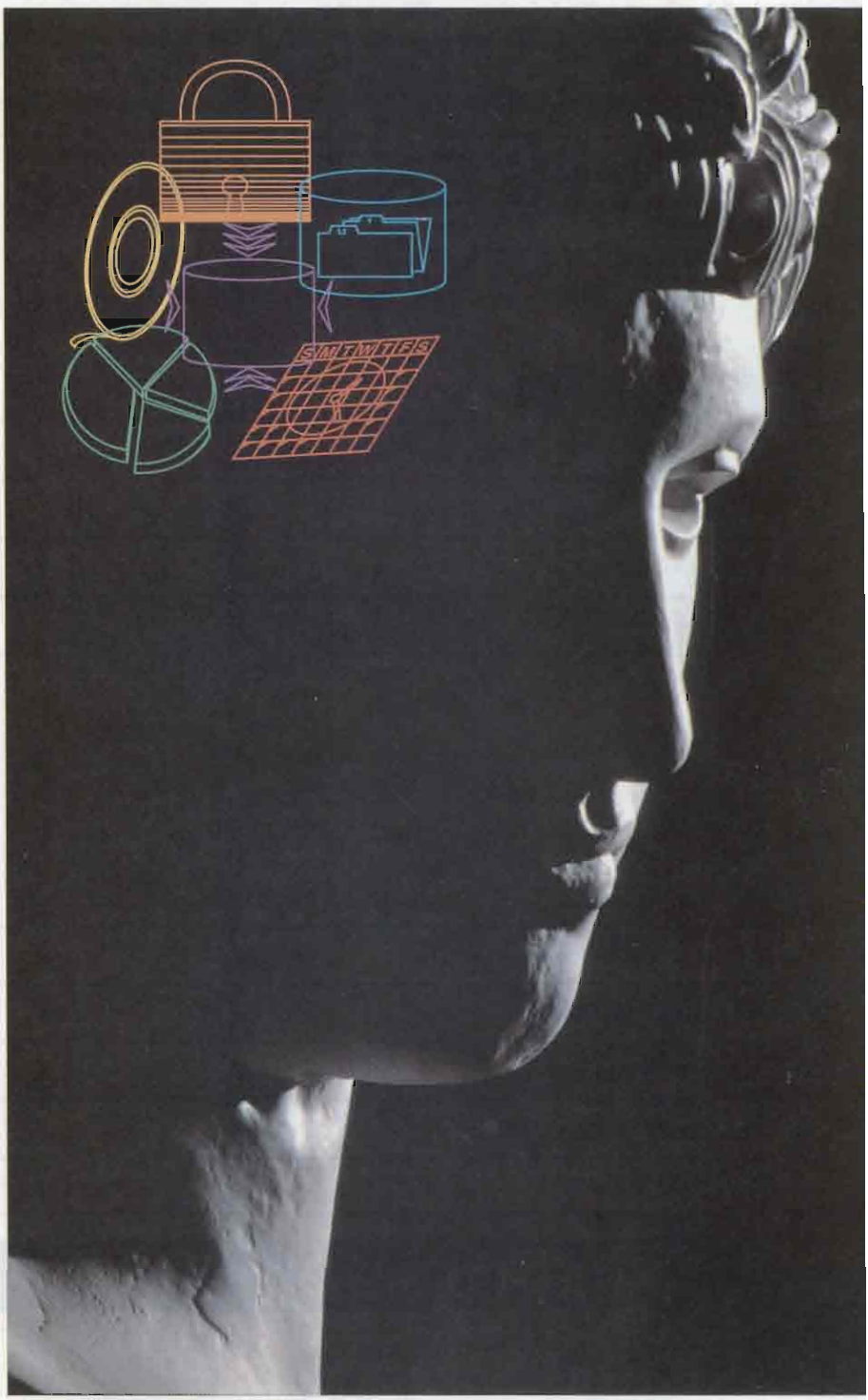


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ality of Wingz. You start TestFlight by first running Wingz. From the menu bar click the File menu, and then Open from the submenu. TestFlight's demon file, **TestFlgt.wkz**, is located in **/Wingz/TestFlight/**.

When you run **TestFlgt.wkz**, a worksheet containing four menu items appears: Using TestFlight, We're in Business, Charts Unlimited and Arts & Leisure.

Using TestFlight provides a brief description of TestFlight and how to navigate through the menu system. We're in Business offers an example of a 1040A income tax form and two working calculators — one to calculate loan payments and another that provides currency conversions between the dollar, DM, franc, yen and pound. There's also an example of linked sheets. Linked sheets enable you to link worksheets so cells on one sheet can reference cells on another.

Charts Unlimited provides a whole host of 2-D and 3-D graph and chart types including bar, line, layer, step, combination, horizontal and pie. Also included are technical charts that demonstrate Wingz HiLo, XY, Scatter, Polar, Contour, Surface and Wireframe graph capabilities.

Arts & Leisure displays drawings and objects — many of which were created using the Drawing Tools. There's an example of a scanned-in image. Wingz gives you the ability to read in scanned images and then resize and position the image anywhere on the worksheet.

## Bird's Eye View

Creating and viewing 3-D Surface and Wireframe graphs that rotate is an easy task for Wingz. We created and rotated several objects of our own in different directions simultaneously. The Wingz HyperScript control language made the animation easy to do.

The first step was to enter the graph data into a worksheet. Our data consisted of four numbers. After entering it, we selected the Worksheet Tool and highlighted the data to graph.

We selected the Chart Tool from the Wingz Tool Box and highlighted the same area previously selected with the Worksheet Tool. Once an area is highlighted with the Chart Tool, a small bar chart appears. You can move this small chart to any position on the worksheet and change its size.

At this point, you can change the graph type to any of the available types within the Graph menu. Located at the bottom of the Graph menu are the graph types — Surface and Wireframe.

Clicking Surface causes the existing bar chart to immediately turn into a Surface chart. You can resize or reposition


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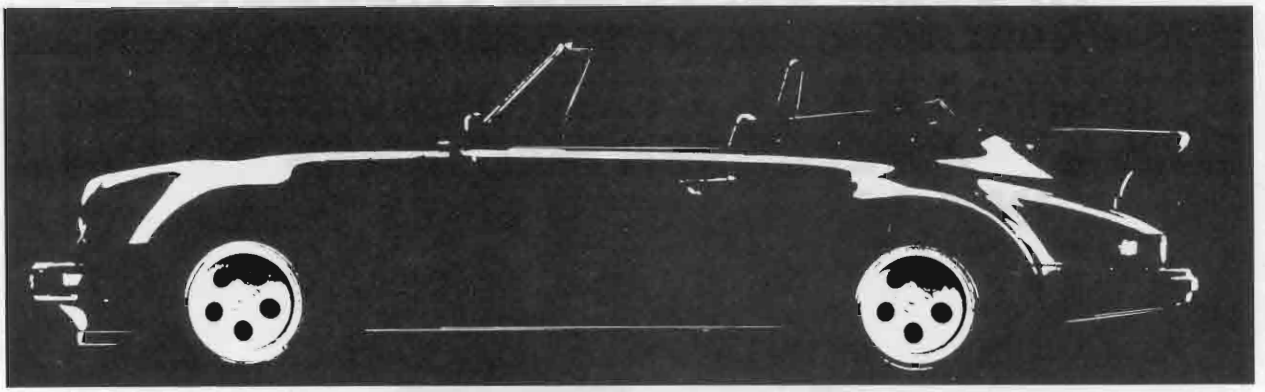

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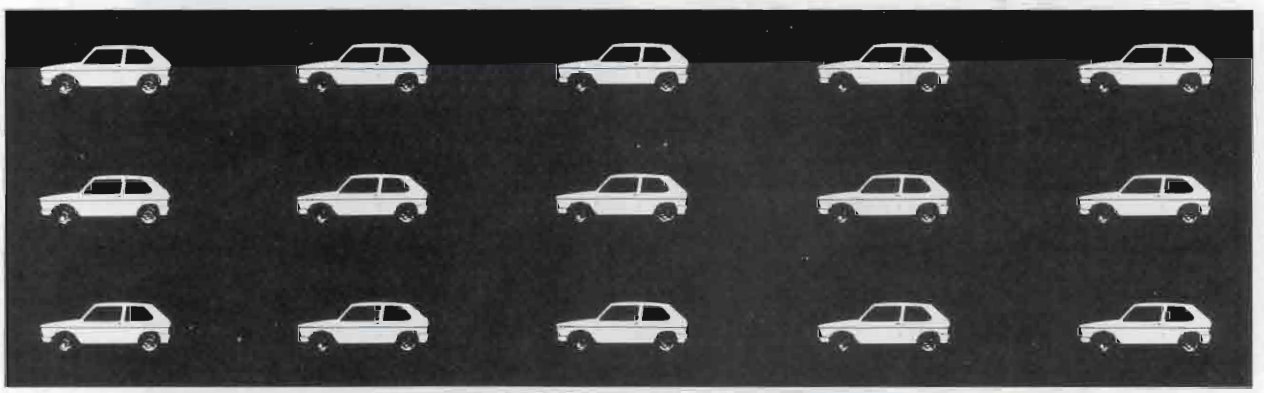

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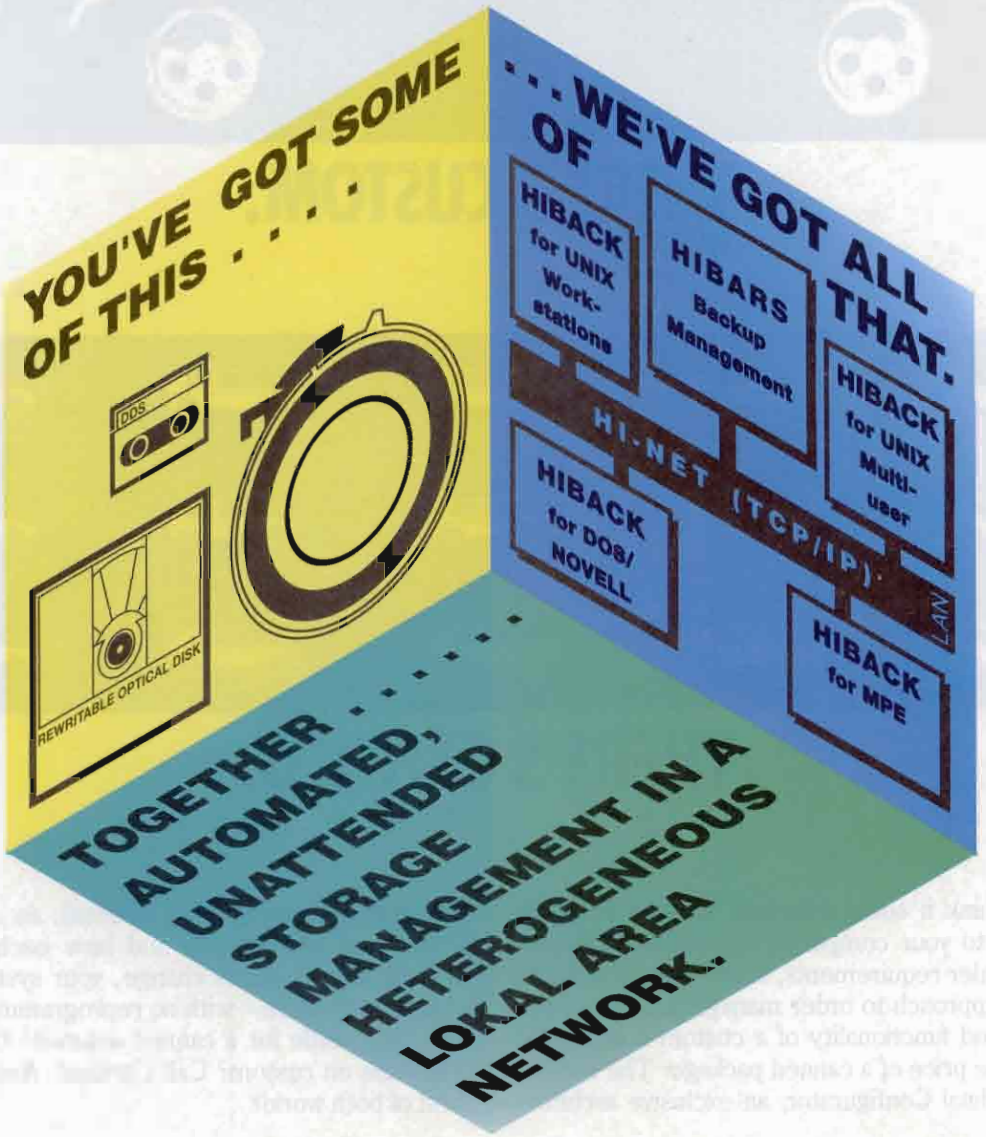


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*The tools provided for creating charts, illustrations and text reports make Wingz a dynamic spreadsheet.*

the new chart anywhere on the screen.

To create a Wireframe chart from the same data, you reselect the data using the Worksheet Tool and then highlight the data using the Graph Tool. From the Graph Menu, you choose Wireframe. A Wireframe representation of the data then appears.

The Graph Menu gives you the option of changing the perspective of your graph. You can alter the Elevation, Rotation and Distance. To do this, you select 3D-View from the Graph menu. This creates a 3-D view of a box.

A vertical scroll bar, Elevation, lets you change the elevation view of your graph from 0 to 90 degrees. A horizontal scroll bar, Rotation, lets you change the angle of rotation from 0 to 360 degrees.

Changing either of these scroll bar settings results in a new view of the box displayed. When you're satisfied with the new view, select OK, and the new perspective is reflected in your Surface or Wireframe graph.

## Autopilot

The Wingz Hyperscript control language lets you write scripts to rotate your graph and change elevation. You can write your own script by hand, or use the Learn function from the Script menu.

With the Learn function, all of your keystrokes and mouse selections are recorded into a growing script. Once you're in the Learn mode, you can go back to the Graph menu, select 3D-View, and change the perspective of your graph in small increments. Each new perspective will be recorded. When you're finished recording, click Learn again to turn off the Learn Mode.

You can save the Script you generated using any name you wish. Once saved, you can playback or Run your script by selecting Run Script from the Script menu.

The Wingz documentation is complete, and all functions are well documented. The User's Guide provides an introduction to Wingz and its features, as well as a HyperScript Manual that explains the HyperScript control language syntax. A reference manual and an installation guide also are included.

Wingz is more than a sophisticated spreadsheet. The tools provided for creating charts, illustrations and text reports make Wingz a dynamic spreadsheet. What's more, the easy to use HyperScript control language enables you to transform data into effective presentations. ■

**PLATFORMS:** HP 9000 Series 300/400/700/800, Apollo, Data General, DEC, IBM RS/6000, Macintosh, MIPS, Motorola, NeXT, SCO ODT, Silicon Graphics, Sun, Windows 3.0 / OS/2 Presentation Manager

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# Efficient Backup

## IEM's 4mm And 8mm Tape Drives Provide Gigabytes Of Storage On A Single Cassette

The more new types of storage technologies surface on the market, the more questions MIS managers have to ask. Will this storage device really be an asset on my network? Will it benefit my users? Will the benefits outweigh the cost?

If you're running an HP 9000, 3000 or 1000 and you've been considering adding an 8mm tape or 4mm DAT drive to your system, IEM Inc. (Fort Collins, CO) may be able to provide some answers to your storage questions.

The ET-4830 high capacity 8mm tape drive is an 8mm video cartridge tape system that employs the helical-scan technology as its recording format. It's capable of storing up to 2 GB of data on a single cartridge.

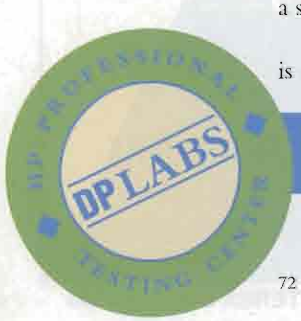
The DT-4410 DDS format DAT drive is a 4mm tape drive that uses the Digital Data Storage (DDS) format as its recording format. It uses DAT cassettes and is capable of storing 1.3 GB of data on a 60-minute tape. Higher capacities are achieved with data compression.

Both units can be configured to attach to a host via HP-IB or SCSI interface, and both emulate the HP 7974/7978 streaming magnetic tape drives. They both will work with existing software and programs as directly connected drives.

### On A Test Drive

We created two separate backup configurations using the ET-4830 8mm and the DT-4410 4mm tape drives with our HP 3000.

In the first configuration, we attached the ET-4830 8mm drive to the HP 3000




By George T. Frueh

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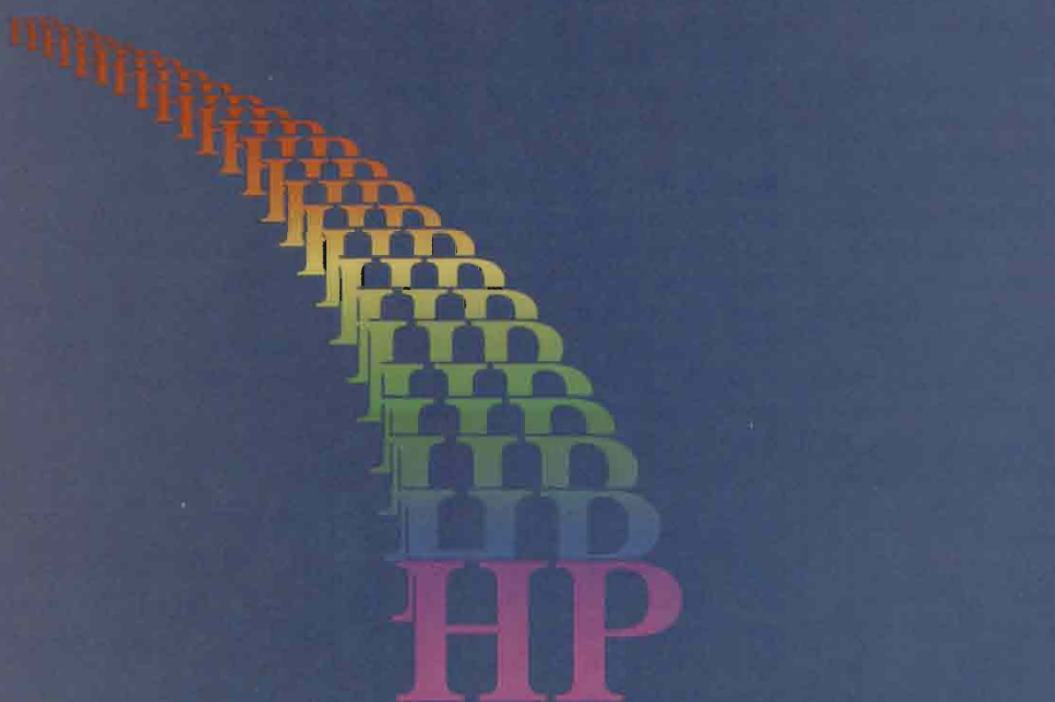


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via an HP-IB interface. The front panel of the ET-4830 contains two diagnostic LEDs, a NEXT and CHOOSE button, and an LCD character display to relay information to the user and to display options that may be selected.

The rear of the ET-4830 contains a switch pack, an HP-IB connector and the AC input connector. The switch pack contains eight switches used to set the address and operating characteristics of the unit.

These switches are set to a default value at the factory. Switches one, two and three set the HP-IB address, switch four specifies how an offline request from the host will be handled, switch six is used to enable/disable LEF Logical End of File) mode, switch seven is used to indicate how the BSR (Backward Space Record) command should be implemented on the ET-4830, and switch eight used to enable/disable the LBOT (Logical Beginning Of Tape) header option.

After attaching the ET-4830, we configured the switch pack to the recommended configuration settings in the user's manual for HP 3000 operation. We set up the 3000 to see the drive as a 7978 tape drive, and assigned it LDEV 10. HIOTAPE2 was used as the driver, and we assigned IEM8MM to the device class. AUTO-REPLY was also turned ON.

If a tape is present in the drive when the unit is powered on, it's automatically loaded following the self-test. The unit reads the switches in its switch pack, and goes online. If there's no tape in the drive when the unit is powered on, the LCD display indicates that the unit is waiting for a tape. When a tape is inserted, it is loaded and the unit then reads the switch information in the switch pack.

The NEXT and CHOOSE buttons are used to cycle through and select various options displayed on the LCD. NEXT is used to cycle through the available options, and CHOOSE is used to choose the option displayed on the LCD.

We powered up the drive with no tape present. After inserting a tape, the LCD displayed the message 2239 MB Free. We backed up all files on the HP 3000 by issuing a file equation and then the STORE command. The two commands are:

```
:FILE GTF8MM;DEV=IEM8MM
:STORE @.@.@;*GTF8MM;SHOW
```

During the first three minutes, I/O activity was generated on the 3000. File transfer began at about the four minute mark. A total of 1,244 files, measuring approximately 53.08 MB, was stored in a time of 10 minutes, 15 seconds following the initial four-minute period. This yielded a total backup time of 14 minutes, 15 seconds.

## Backup With The DT-4410

In the second configuration, we attached the DT-4410 4mm drive to the HP 3000. Because this drive also emulates the 7978 tape drive, we set the switch pack on the back of the drive to the same HP-IB address as the ET-4830, changed the device class to IEM4MM and then swapped drives.

The front panel of the DT-4410 is similar to the ET-4830. However, the DT-4410 has a cassette LED and a drive LED. The cassette LED relays information on the status of the tape media, and the drive LED relays information on the status of the drive and indicates bus activity. Both LEDs turn on during the power-on self-test.

The DT-4410 has a main menu system that's always enabled. As with the ET-4830, the NEXT and CHOOSE buttons are used to cycle through the available options and choose the option that's displayed on the LCD.

We powered up the drive, and then inserted the 4mm tape. The LCD on the DT-4410 doesn't display the amount of data storage available on the tape as does the ET-4830.

Again, we backed up all files on the HP 3000 by first issuing a file equation and then the STORE command. During the first three minutes, I/O activity could be seen on the HP 3000. File transfer began after three minutes and 45 seconds. Again, 1,244 files measuring approximately 53.08 MB were stored in a time of eight minutes following the initial period. This yielded a total backup time of 11 minutes, 45 seconds.

In both cases, backup of all of our files on the HP 3000 took under 15 minutes using the STORE command. IEM states that the HP utilities DBLOAD/DBUNLOAD, DBSTORE/DBRESTORE, COLDLOAD, FCOPY, RELOAD and SYSDUMP have been tested with the DT-4410 (4mm) on the HP 3000 under MPE V. The drive also has been tested using BACKUP/3000, from ORBIT, and BackPack from Tymlabs.

In addition to the STORE utility, IEM states that the ET-4830 (8mm) has been tested with the RESTORE and SYSDUMP utilities. The drive also has been tested using BACKUP/3000, BackPack and DBTUNE, from Hi-Comp America.

Both the ET-4830 and DT-4410 make excellent and efficent alternatives for routine backup and data storage. ■

### ET-4830 8mm DT-4410 4mm Tape Drives

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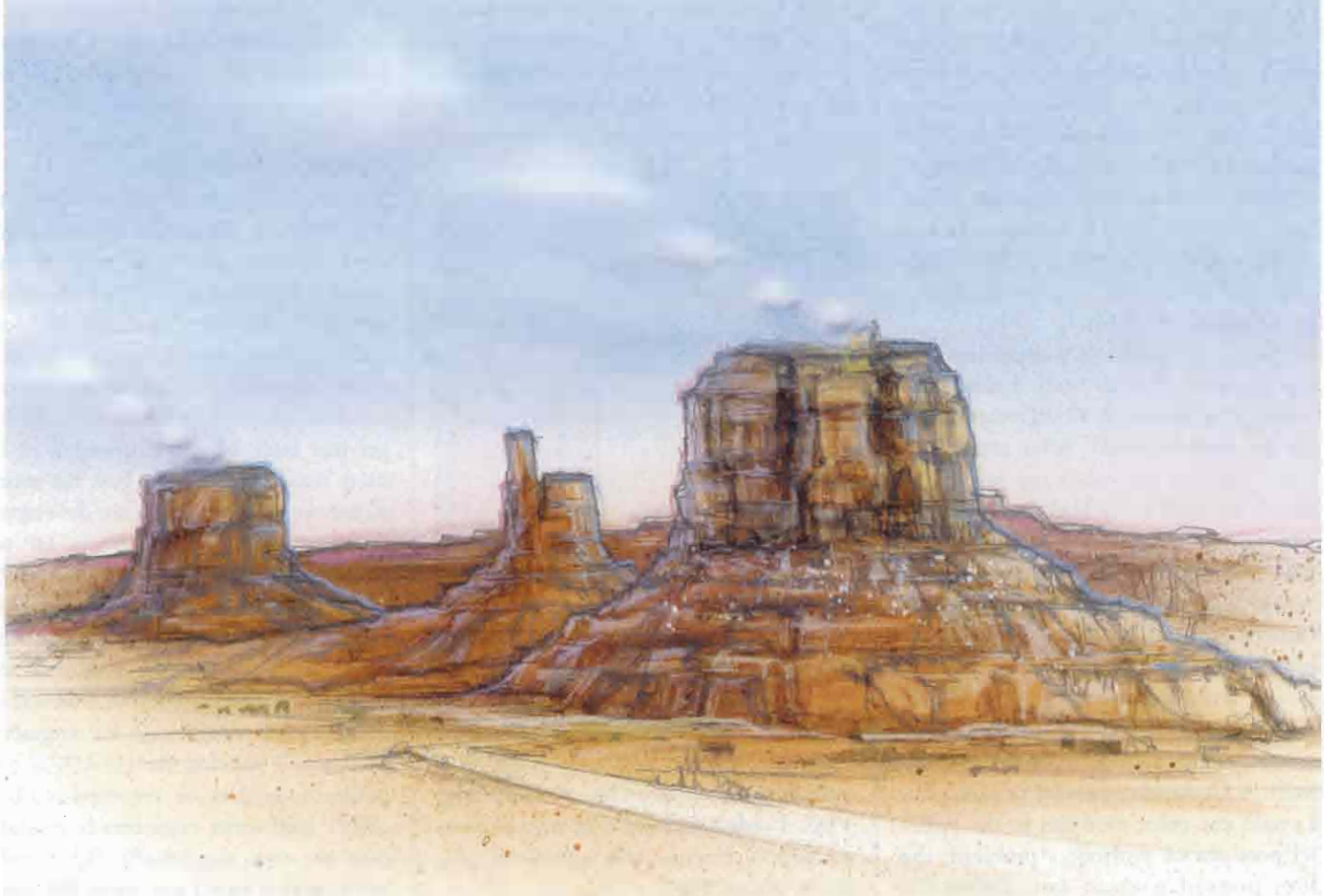

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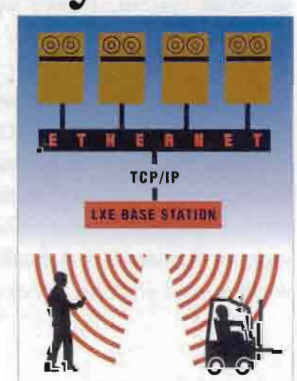


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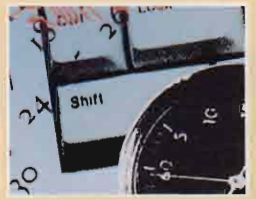





Andy Feibus



# Summertime Musings

Time to take the laptop computer out to the pool, put some beach tunes on the boombox, lean back in the lounge chair, put on my shades, relax, and catch up on all those little thoughts I've been meaning to discuss.

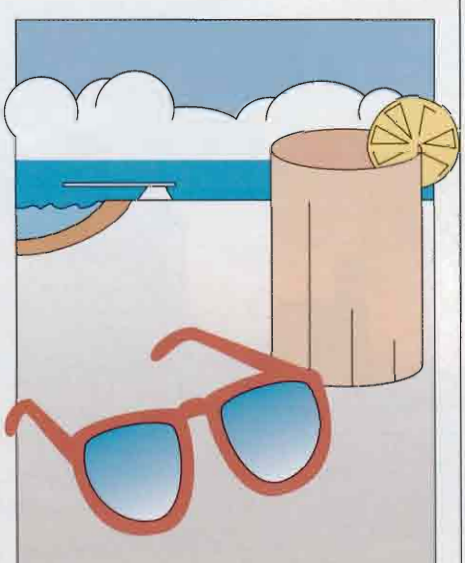
First, in the March column ("The State of Portability"), I compared several of the currently popular "UNIX" systems for portability and compatibility. Some additional notes:

- After seven weeks of waiting (and being classified priority one), I finally received a fix for my X Windows problem on the IBM RS/6000. After one week, Data General provided me with OSF Motif 1.1 (and X 11 Release 4), which corrected the same problem. Seems only IBM isn't moving quickly to Motif 1.1 and X Version 11 Release 4; DEC, Data General (DG), and HP are already shipping it (as of April).
- Following up on another RS/6000 complaint: I tried to connect a color printer to the RS/6000 using the system's built-in Centronics parallel printer port. I could **cat** color plot files to the parallel port device without a problem; the files printed without fail. Using the spooler interface, however, was another animal entirely. After two days of trying to figure out how to use the IBM print spooling system, I gave up and called support.

I already had a simple **lp** spooling model that would work with both the HP 9000 and the DG AViiON systems. I also had the **lpr** configuration for both the Sun and DEC workstations. I passed this information immediately to the support department. I finally received a workaround after six weeks.

Total time needed to port the product I was working on to the IBM RS/6000: 4.5 months. Compare that to the three weeks required to complete the port to the HP 9000 Series 300/400.

- I was taken to task by a friend who wanted to know about my experience



porting the code to a DEC VAX running VMS. I didn't include it in my previous discussion, because this column is primarily about UNIX.

But because she asked: The VAX port was a major pain. The FORTRAN code moved without a hitch (once I understood the VMS code development tools), and much of the operating system-specific code was already in place from a previous release. Otherwise, I never would have been able to complete the port. Creating any VMS-specific code was tortuous. I spent about six weeks porting the code to VMS and kept having bad dreams afterward... Only kidding a little.

- With SunOS Version 4.1, Sun added POSIX.1 compliance. It's still not "UNIX," but at least it's more portable now....
- An HP 9000 Model 720 appeared on my desk a few weeks ago — without a keyboard. Is the future of graphical user interfaces already here?

## Graphic Discussion

Speaking of graphical user interfaces, the war between Motif and Open Look is over. Actually, the "war" was mostly a lot of saber rattling and "go ahead, eat my day" rhetoric. The dust is finally clearing. If you want to know who won, count the number of major workstation vendors shipping Open Look. Did you get past one? The next question is: Do users really care, or is it just the workstation vendors and software developers?

According to some reports, HP will offer OSF/1 on the HP 9000 Model 720 sometime this summer. HP folks keep asking me the same question: "How is OSF/1 going to impact you and your customers?" From what I've read and the discussions I've had with HP engineers, any code I develop for HP-UX is only going to need to be recompiled under OSF/1 (and some engineers have said it may not even need that!). What strikes me as odd is that I get asked this question a lot.

Maybe I'm not looking at this correctly, but I just don't see OSF/1 as the last, best operating system. Nor do I think that customers are going to notice the difference, at least not initially, between OSF/1 and UNIX System V Release 4. If an end-user's required set of applications and user interfaces are present on both operating systems, they aren't going to care about the operating system.

Let me clarify this (I can already hear the screaming): I'm not implying that

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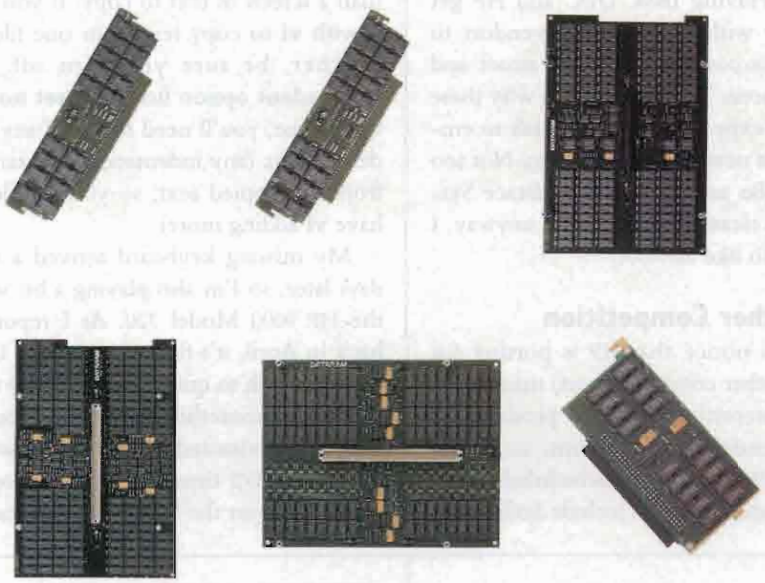

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*HP is porting many of its more interesting software products to other vendor's workstations*

supporting multiple processors, providing superior networking capabilities or better network-based administration or any of the other benefits OSF/1 has to offer aren't important. I just feel that many users don't care about these differences. If they do, then why do more then 50 million desktop computer users still use DOS?

None of this discussion implies that creating OSF/1 was wrong or that what the Open Software Foundation is doing should stop. AT&T/UNIX System Laboratories had too much of a monopoly on the "UNIX vision"; a competitor was necessary for the well-being of the industry. Having IBM, DEC and HP get together with several other vendors to form this competitor was a smart and timely tactic. I'm just not sure why these vendors expect everyone to rush to embrace this new operating system. Not too many folks are rushing to embrace System V Release 4, either! And, anyway, I happen to like HP-UX.

## The Other Competition

Did you notice that HP is porting (or having other companies port) many of its more interesting software products to other vendor's workstations, including Sun's SPARCstations? Scheduled or already ported products include SoftBench, HP VUE and OpenView. Look for other ports in the future, including HP VUE to DEC's DECstation.

I've been playing with the cut-and-paste features of the **xterm** and **hpterm** windows. Good stuff, if you have less than a screen of text to copy. If you use it with **vi** to copy text from one file to another, be sure you turn off the **autoindent** option first (use **:set noai**). Otherwise, you'll need to adjust any indented text (any indentation is obtained from the copied text, so you shouldn't have **vi** adding more).

My missing keyboard arrived a few days later, so I'm also playing a bit with the HP 9000 Model 720. As I reported back in April, it's flat-out amazing. Operations finish so quickly that I worry that I've done something wrong — but I haven't. Optimized code runs between two and 2 1/2 times the speed of optimized code on the Sun SPARCstation 2.


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"Please wait" messages are no longer necessary.

The current emphasis on GUIs means that workstation users need memory — lots of memory. UNIX-based workstations using X and OSF/Motif need at least 16 MB to run and at least 24 MB to run fast. The HP Apollo workstation catalog for Spring 1991 lists 8 MB of RAM for $2,500. IBM patted themselves on the back in March when it lowered the price of 8 MB of RAM to $3,400. Eight MB for a PC costs less than $600. Does error correction circuitry really quadruple the price of the memory?

According to my sources, by the time you read this, HP will be ready to introduce a half-speed version of the Model 720 priced at about $5,000. In other words, as fast as a SPARCstation 2 for about half the price. Also, Samsung is creating a 720 "clone" based on HP Precision Architecture, targeted for release later this year.

*The current emphasis on GUIs means that workstation users need memory — lots of memory. UNIX-based workstations using X and OSF/Motif need at least 24 MB to run fast.*

While we're on the subject of nifty new technology, wouldn't it be really cool to pop open an X window to view your favorite television program? Look for this concept to appear on your favorite workstation soon (some third-party vendors, including RGB Spectrum, are already offering it). I wonder if we could devise a software filter to eliminate commercials?

That about ties up my loose ends. If you plan to be at Interex or ADUS next month in San Diego, I'll be hanging out at the *HP Professional* booth. Stop by and say "Hi." Meanwhile, pass the suntan oil.—*Andy Feibus is an interplatform systems consultant based in Atlanta, GA, and author of* UNIX, Quick! *published by Professional Press.*

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**NETWORKING**

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# Network Knowledge

In the spirit of education, here's a networking information guidebook. If you study hard, this should give you a start in finding information on any networking topic.

## Chapter 1 — Network Address

No matter what type of network you're planning, some sort of host addressing scheme is required. If you're creating a totally private network with absolutely no contact with the outside world, you can simply make up the appropriate addresses. However, if you're going to be part of a public network or have plans to connect to one in the future, make sure your addresses are unique and registered to your company.

If you're connecting to a public packet network, the network vendor provides you with the required addresses. This would be the case when using an X.25 public network such as SPRINTNET (US Sprint Telenet), BT North America (Tymnet), or Infonet. The vendor assigns an address for each host connected to the network shortly after you contract for their services.

IP addresses for TCP/IP work a little differently. There is *one* agency in the world that controls and assigns all IP addresses — SRI International (more commonly known as the "NIC" to those who use the Internet). Other companies, such as Hewlett-Packard, can request blocks of addresses from the "NIC" and reassign them to their customers. More on this later.

First, you'll need to understand some facts about IP addresses.

- The Internet is growing at a rapid pace, and the commercial acceptance of TCP/IP is quickly using up IP addresses.
- There are only 127 Class A addresses, 16,383 Class B addresses, and 2,097,151 Class C addresses available in the entire world. Unless another address scheme is adopted, the address pool could run dry in a few years.
- Class C addresses are the easiest to get and a Class A address is next to impossible to get. Don't ask for more addresses than you need and reduce that number by using subnetting.

The NIC is funded by the Defense Data Network (DDN) Defense Communications System (DCS). Its job is to provide general user services to the people using MILNET and the Internet. The NIC is also the official repository of the DDN protocol documents, as well as the RFC (Request for Comments) collection and a variety of other online files. More on RFCs later, too.

SRI International, the NIC, coordinates many of the day-to-day operational details of the Internet. The NIC registers hosts, assigns IP network numbers, and issues MILNET access cards.

To request an IP address directly from the NIC, just call or write SRI International and they'll send you the paperwork. You don't have to be connected to the Internet to receive a registered address. Fill out the paperwork and send it in. Within two weeks you'll get your response.

Hewlett-Packard, as mentioned earlier, is also a source for IP addresses. Buried in the Network Planning and Configuration section of the *HP Network Manager Reference Manual (Volume 1)* is the magic mailing address. Write to, or have your HP service engineer contact:

Network Administration Office
Dept NET Information Networks
Division Hewlett-Packard Co.
19420 Homestead Rd.
Cupertino, CA 95014

This office not only handles IP addresses for HP, but for its customers as well. I contacted the Network Administration Office and asked what advice they could give us when requesting IP addresses. Here's what they said:

- People sometimes request many more IP network addresses than they need. Newcomers to networking sometimes think they need one network address for every host. Remember, one Class C IP network address will support up to 254

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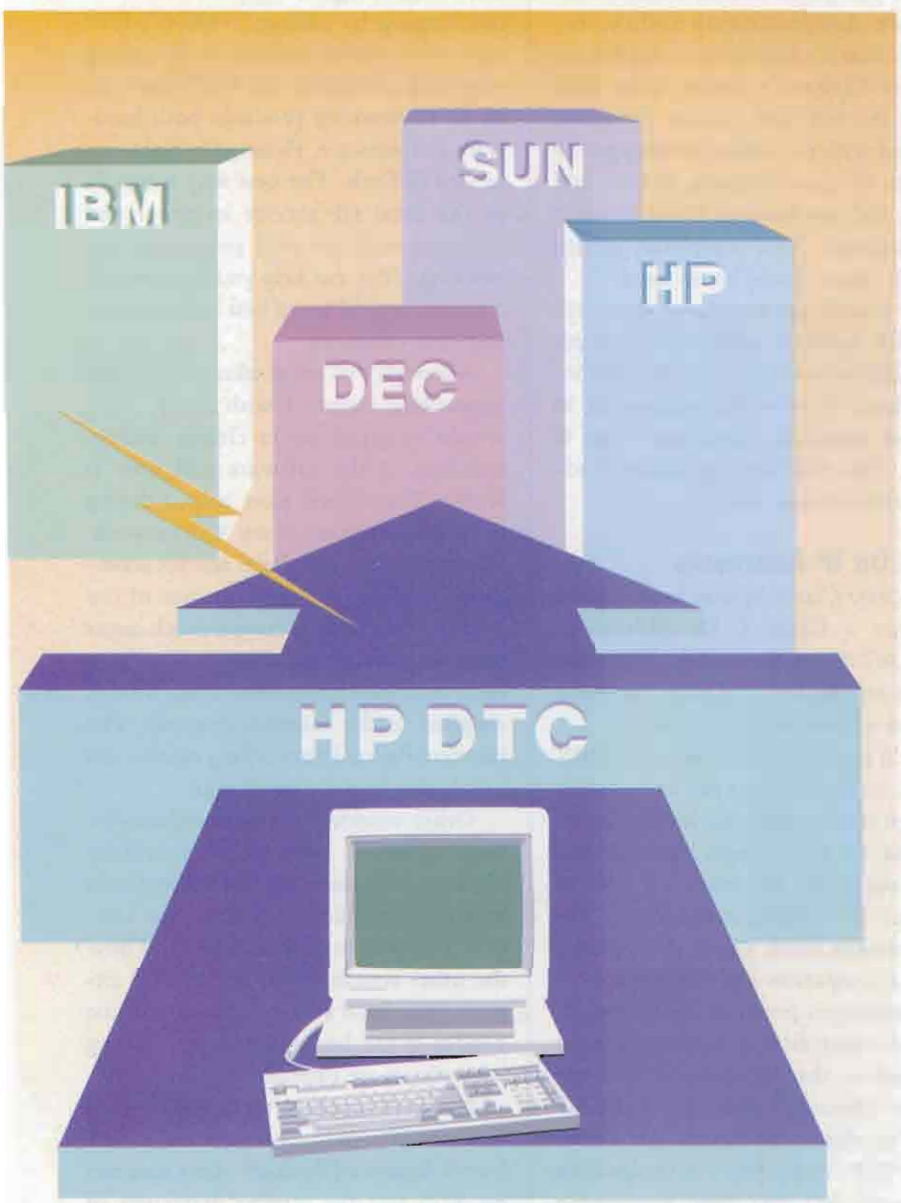


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hosts. (Host addresses 000 and 255 are reserved).

- The Network Administration office does deal directly with many customers. They also get requests from local HP offices. Having a request come in from the local HP office helps filter out problems, especially at customer sites that are new to networking.
- The Network Administration Office processes up to 20 address requests per day. They do procure more addresses from the NIC as needed. That's almost 5,000 new networks per year.
- When you get an address from the HP Network Administration Office, remember that it's registered at the NIC in Hewlett-Packard's name. You may contact the NIC and request the name associated with the address be changed to the name of your company. You should do this, and may have to, if you connect to the Internet. For a completely private network, there would be no need.
- Some people get greedy in their requests for network addresses. They ask for 50 addresses when they only need 10. If you have 10 networks with under 30 hosts per network, subnet one Class C address. This will save nine other IP addresses for someone else.

## Notes On IP Addresses

An HP 3000 Classic system requires you to enter a Class C IP address as 192.034.012 034. Software found on other vendors equipment may have you enter the same address as 192.34.12.34

You'll see the second format in UNIX systems. In fact, HP's is the only system I've seen that requires the leading zeros. Note that the HP example leaves out the period separating the Network portion from the Host portion of the address. On other vendors hosts, you'll always use a period as a separator and never spaces.

Subnetting is pretty straight forward. The best explanation on how to do it can be found in the *HP Network Manager Reference Manual (Volume 1)* for the HP 3000. I've referenced several good texts on the TCP/IP, but the HP explanation was concise and very clear. Remember to check your host software to make sure it supports subnetting.

## Chapter 2 — Instruction

Networking technologies and issues are changing at an increasingly rapid rate. It's tough to stay abreast and impossible to stay fluent with anything you don't use regularly. When it's time to start something new, a training course is the perfect thing to get up to speed. Here are some ideas on where to find them.

Hewlett-Packard holds training classes not only in the U.S. but internationally as well. You can get a copy of the education catalog by calling: 1-800-472-5277 ext. 31 (1-800-HP-CLASS) or by calling your local sales office. HP holds classes for all its networking products both hardware and software. Picking the right one can be difficult. The best way is to talk to the local HP service engineer and customer engineer who focuses on networking. They can help you select which course(s) would be of best value to you and your company.

Although I've never taken any of HP's networking classes, I wish I had. They would've given me a clearer understanding of the software and how it works. That would have helped during the implementation of my X.25 network. The networking products are not something you can just pick up out of the manual. You need to have a much larger base of networking knowledge for a successful implementation than what is supplied in the software manuals. The Hewlett-Packard networking courses can supply that knowledge to you.

Other vendors have similar classes for their network software. If you'll be working with some new equipment, you may want to take a class from that vendor. This will help you understand how the other system works and what it expects. The local sales organization of the vendor is the best place to start asking what classes are offered.

Network vendors, such as BT North America (Tymnet), also offer classes. BT North America (Tymnet) offers seminars on X.25 and the internal workings of their network. (Public networks are only

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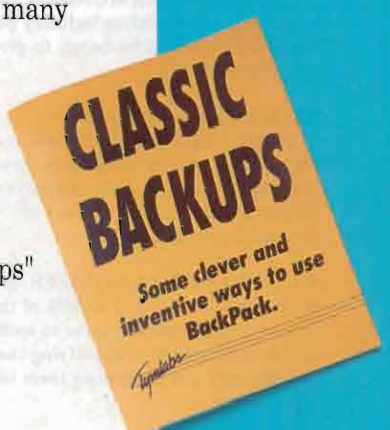


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standardized between the X.25 network interface and your host computer. The internal workings of a public network can be and for the most part are proprietary.) These classes can teach you how to use their particular utilities to monitor and control your part of the network.

There are many private companies that also provide networking instruction. For Internet networks, you should contact Interop Inc. Originally known as Advanced Computing Environments—a name since commandeered by another consortium—Interop provides seminars that are probably the best you can find. You can learn about TCP/IP, network security, routers and bridges, Internet naming and directory services (also called the Domain Name System, which is not to be confused with the HP Apollo Domain operating system), X Windows, OSI topics, and much more.

Most of the seminars are two days long and are held Monday through Thursday. This allows you to take one seminar on Monday-Tuesday and another Wednesday-Thursday. I've taken both the "Introduction to the TCP/IP Protocol Suite" and the "Internet Naming and Directory Services" seminars. Both provided information I've found useful on numerous occasions, including when writing this column. —*Tim "Ollie" Cahoon provides wide area network and HP technical support for the manufacturing operations of a Fortune 500 company.*

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PC TIPS

Miles B. Kehoe

# Agent Action

Last time, we recorded a NewWave Agent Task Language (ATL) script to add a specific card to a Windows Cardfile data file. Now, we'll make that script interactive, and generalize it so you can add any data to the cardfile.

As with any script you record, there are no variables in the script shown in *Figure 1*. And, there is no opportunity to allow for user interaction.

Remember that the command keys are enclosed with curly braces; {ENTER} works as if the user pressed the ENTER key, and {F7} is equivalent to pressing the F7 function key. The tilde characters near the end of the DO_KEYSTROKES command represent the ALT key. All of these characters were inserted by the Agent Task Recorder as we performed the keystrokes. Because the recorder won't capture mouse movements, all actions in the script must be keyboard actions.

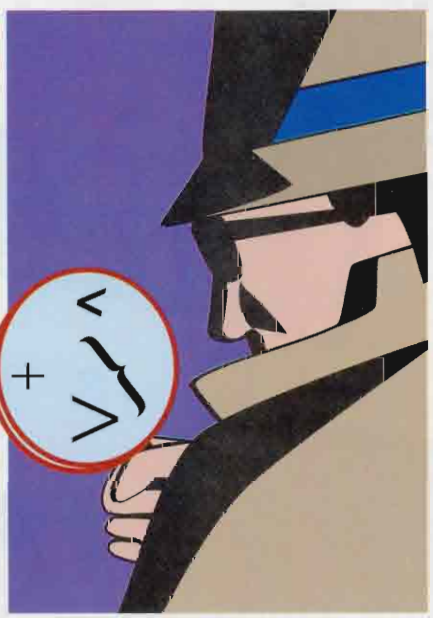
## Adding Variables

The first thing we'll add to this script are variables. Almost every computer language supports several different types of data, and the NewWave Agent Task Language is no exception. As with most varieties of BASIC, the ATL doesn't require you to declare variables before you use them. Unlike BASIC, any variable name can contain any type of data.

Variable names must begin with an alphabetic character and can contain up to 255 letters, numbers or underscore characters. To be practical, you should limit your ATL variable names to 32 characters or less. In addition, variables must end with a pound character (#).

Variable names aren't case sensitive: Customer_Name# is the same variable as customer_name#. In *Figure 2*, I've modified the script you saw earlier to use variables.

You'll note the similarities between this script and the one shown in *Figure 1*. Note that the DO_KEYSTROKES command performs the same way as it did before, except that the special keys, like



{ENTER}, are surrounded by quotes, while the variables aren't quoted.

The square brackets, curly braces, tilde (~), up arrow (^) and plus (+) characters all have special significance in the Agent Task Language. Square brackets surround special macro commands, while curly braces surround special key names, like {ENTER}. The up arrow or the tilde indicate that the subsequent character is a Control or Alt character.

To use one of these special characters as data, you need to enter two of them. Note the syntax in assigning a value to Cis_Acct# in *Figure 2*. However, the Alt-F - S sequence and the Alt-F - X sequence to save and exit Cardfile are listed as single tildes. Because of the way DO_KEYSTROKES works, you also must use double characters even in data you interactively enter.

When you run the ATL script in *Figure 2*, the results are the same as the script in *Figure 1*. However, we've made a step in the right direction by using variables to store the information.

## Adding Input

Now that you've seen a script that uses variables, let's add interactive prompting for information. Perhaps the easiest way to accept user input is with the INPUT statement. The syntax of this statement is:

```
INPUT  var_name#  [LENGTH field_len]
   prompt_string
```

In the INPUT statement, var_name# represents the name of a variable into which NewWave will store the information the user enters. The prompt you'll see is indicated by prompt_string.

When a script is running, the INPUT statement displays a window on the screen with the prompt and with a single field. By default, the field is 20 characters in width. To provide a different length field, you can use the optional LENGTH keyword. Hence, to allow up to 32 characters to be entered in a field, you could use the statement:

```
INPUT answer# LENGTH 32
   "What is your name?"
```

Let's incorporate the INPUT statement into the ATL script in *Figure 2*. This modified script listing is in *Figure 3*.

The Agent Task Language script in *Figure 3* is useful, but it's not quite the general purpose tool you might really use in your day to day work. Let's improve

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FIGURE 1

```
TASK
FOCUS OFFICE "NewWave Office"
SELECT HPEN_cardfiletool "Cardfile" OPEN
FOCUS HPEN_cardfiletool "Cardfile"
DO_KEYSTROKES  "{F7}Kehoe{ENTER}Miles Kehoe" + &
               "{ENTER}CIS: 72466,723{ENTER}~fs~fx"
END
ENDTASK
```

*Basic Agent Task Language script.*

FIGURE 2

```
TASK
FOCUS OFFICE "NewWave Office"
Key_Name# = "KEHOE"
Full_Name# = "Miles Kehoe"
Cis_Acct# = "CIS: [[72466,723]]"
Save_and_Quit# = "~fs~fx"
SELECT HPEN_cardfiletool "Cardfile"
OPEN
FOCUS HPEN_cardfiletool "Cardfile"
DO_KEYSTROKES  "{F7}" + &
               Key_Name#  + "{ENTER}" + &
               Full_Name# + "{ENTER}" + &
               Cis_Acct#  + "{ENTER}" + &
               Save_and_Quit#
END
ENDTASK
```

*Agent Task Language script using variables.*

FIGURE 3

```
TASK
FOCUS OFFICE "NewWave Office"
Save_and_Quit# = "~fs~fx"
INPUT Key_Name# LENGTH 32 "Enter the key index:"
INPUT Full_Name# LENGTH 32 "Enter the full name:"
INPUT Cis_Acct# LENGTH 12 "Enter E-Mail Address:"
SELECT HPEN_cardfiletool "Cardfile"
OPEN
FOCUS HPEN_cardfiletool "Cardfile"
DO_KEYSTROKES  "{F7}" + &
               Key_Name#  + "{ENTER}" + &
               Full_Name# + "{ENTER}" + &
               Cis_Acct#  + "{ENTER}" + &
               Save_and_Quit#
END
ENDTASK
```

*Agent Task Language script using INPUT.*

the script even more using some of NewWave's additional functions and tools.

## Testing Conditions

To be useful in more than the most trivial of tasks, a computer language has to provide a way to change program flow based on changing conditions. NewWave's Agent Task Language supports several statements to allow both looping and testing of conditions.

The most basic way to test the value of a variable is with the IF statement. The general format of this statement is:

```
IF  Boolean expression
        if-actions
[ELSE
        else-actions
 ]
ENDIF
```

The if-actions and else-actions can be one or more statements. In fact, the ELSE clause is optional, as long as you remember to use the ENDIF statement. By using this statement, along with the reliable GOTO statement, you can write program segments like:

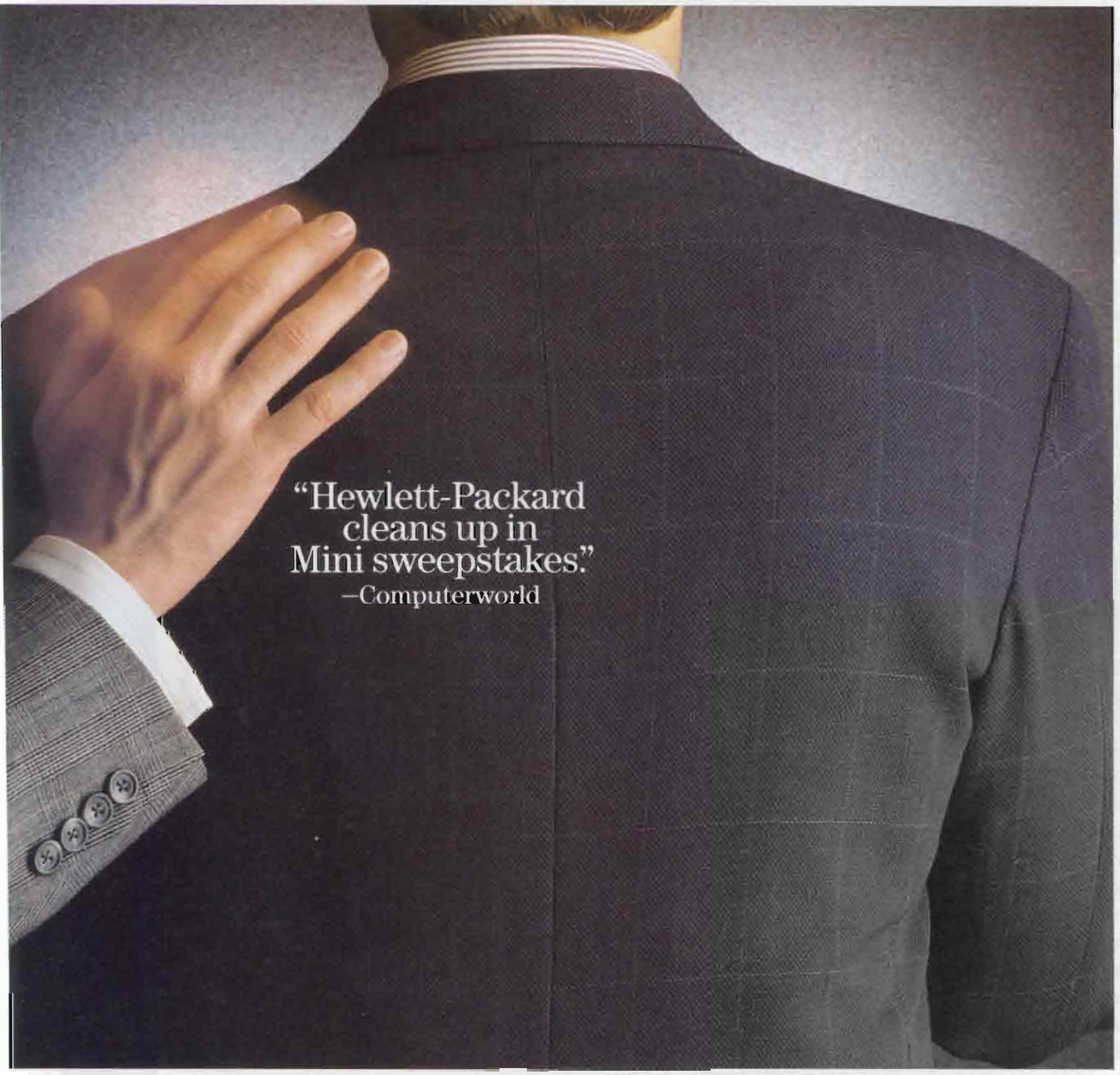
```
IF (answer# < 0)     Test for bad answers
        answer# = 0
        GOTO Next_Step
ENDIF
IF (answer# <25)
        GOTO Bigger_Number
ENDIF
IF (answer# > 200)
        answer# = 200
        GOTO Too_Big
ENDIF

LABEL Next_Step
...
```

I agree, this isn't an efficient example, but it illustrates the use of the IF statement, as well as the GOTO statement. It also includes a sample of a comment: Anything to the right of a single quote on a line is a comment and is ignored by NewWave.

In addition to the IF and GOTO statements, the ATL supports a WHILE looping construct. The general format of this statement is:

```
WHILE Boolean expression
        while-statements
ENDWHILE
```

The Boolean expression in both the IF and WHILE statements can include any

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[1]Computerworld, 9/24/90. [2]The Sierra Group, 1990.
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expression that evaluates to a true or false value. It isn't as robust as some compiled languages, but you can do expressions like:

```
( cnt# > 0)
(Name# = "Smith") AND (Amount# < 25000)
( value# <= 100)
( i# <> 0 )
```

Let's add these statements to the ATL script in *Figure 3* to get a script you can actually use.

You'll see I've changed the order some so the Cardfile application remains open while the ATL script executes. Also, I changed the script so the "save and quit" sequence occurs only after the user specifically types EXIT.

Because the variables entered with the INPUT statement are used later in the DO_KEYSTROKES statement, any special characters within the variables will be interpreted by NewWave. Thus, to enter square brackets, curly braces, the plus character, up arrow, or tilde within a data statement, you must enter two of them. Later, we'll insert error handling to test for these characters within entered data, but for now don't enter any of these characters when you execute your scripts.

The NewWave Agent Task Language supports another statement for input when there are a few choices, or when you want confirmation before beginning an operation. In NewWave and Windows, this is often accomplished with message windows and buttons.

The MESSAGE statement takes the general form:

```
MESSAGE  var_name#  prompt_string
   window_type button_type
```

This statement displays a window on the screen with the prompt specified in prompt_string. The window_type parameter can be one of the following:

```
HAND
EXCLAMATION_POINT
QUESTION
```

The EXCLAMATION_POINT window displays a small exclamation point within the window, and is often used to alert the user of a possible action. The

FIGURE 4

```
TASK
FOCUS OFFICE "NewWave Office"
' Initialize variables
Save_and_Quit# = "~fs~fx"
' Open the Cardfile application
SELECT HPEN_cardfiletool "Cardfile"
OPEN
FOCUS HPEN_cardfiletool "Cardfile"
WHILE ( 1 = 1)              ' Loop forever until EXIT
  INPUT Key_Name# LENGTH 32 "Enter the key index, or EXIT:"
  IF Key_Name# = "EXIT"
    GOTO All_Done
  ENDIF
  INPUT Full_Name# LENGTH 32 "Enter the full name:"
  INPUT Cis_Acct# LENGTH 12 "Enter E-Mail Address:"
  DO_KEYSTROKES  "{F7}" + &
                 Key_Name#  + "{ENTER}" + &
                 Full_Name# + "{ENTER}" + &
                 Cis_Acct#  + "{ENTER}"
ENDWHILE
' Only break out of loop when user types EXIT
LABEL All_Done
DO_KEYSTROKES  Save_and_Quit#
END
ENDTASK
```

*Agent Task Language script for card entry.*

FIGURE 5

```
TASK
FOCUS OFFICE "NewWave Office"
' Initialize variables
Save_and_Quit# = "~fs~fx"
' Open the Cardfile application
SELECT HPEN_cardfiletool "Cardfile"
OPEN
FOCUS HPEN_cardfiletool "Cardfile"
LABEL Start_Entry
      INPUT Key_Name# LENGTH 32 "Enter the key index:"
      INPUT Full_Name# LENGTH 32 "Enter the full name:"
      INPUT Cis_Acct# LENGTH 12 "Enter E-Mail Address:"
      DO_KEYSTROKES  "{F7}" + &
                     Key_Name#  + "{ENTER}" + &
                     Full_Name# + "{ENTER}" + &
                     Cis_Acct#  + "{ENTER}"
MESSAGE answer# "Add more names?" QUESTION YESNO
IF answer# = 1
      GOTO Start_Entry
ENDIF
' User says no more names, continue
LABEL All_Done
DO_KEYSTROKES  Save_and_Quit#
END
ENDTASK
```

*Complete Agent Task Language script.*

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QUESTION window displays a question mark. The HAND window displays a small STOP Sign, intended to warn the user about the consequences of a possible action. Which window type you use is up to you, but you should make the window match the type of message you are displaying. For example, "Really format your hard disk" is a question, but should probably have the HAND window type because of the nature of the action the user may take.

## Button Up

The button_type defines one of several types of prompt buttons defined in NewWave, as well as the possible values returned in var_name#.

The first button_type is OK. This causes a single button labeled OK to display in the message window. When the user presses the button, the value of 1 returns in the var_name# variable.

Another button_type is OKCANCEL. This displays two buttons, labeled OK and Cancel respectively. If the user presses OK, NewWave returns a value of 1 in var_name#; if the user presses Cancel, var_name# is set to 2.

*MESSAGE statements allow users to confirm their choices before beginning an operation.*

There are also button_types of RETRYCANCEL, YESNO, ABORTRETRYCANCEL and YESNOCANCEL. In each case, the first button returns a value of 1, the second 2 and the third 3.

Let's look at some valid MESSAGE statements in program segments:

```
MESSAGE go_on# "Are you ready to
   continue?" QUESTION YESNO
IF go_on# = 1  GOTO Ready
IF go_on# = 2  GOTO Not_Ready

MESSAGE ok#  "Press OK when you are ready"
EXCLAMATION_POINT  OK
```

Let's put all these together in the script we've been using. We'll add prompting with the MESSAGE statement, INPUT, looping and conditional testing in *Figure 5*.

This script should work fine in NewWave and let you add several cards to any card data file. Remember to avoid using the special characters within your input until we add error checking next time. We'll also create forms, discuss functions, and create custom message windows. *—Miles B. Kehoe is an online support manager for Verity Inc., Mountain View, CA.*

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# Counter Culture

It's somewhat ironic. In order for HP to convince commercial users that it has the best technology for their business needs, it has to play down its technical expertise. Of course, no one ever said man abides by logic alone; hence HP, like its competitors, has had to structure its sales approach so that businessmen don't suspect that it is too fixated on bits and bytes to understand the technological needs of, say, a department store.

Unlike some of its competitors, however, this approach represents a shift for HP and, consequently, presents certain hazards to ultimate success. First is the sheer difficulty of reorienting a company with an historically technical character into a commercial marketing organization. Second is that a more commercial approach risks alienating that traditional, technical user base; a risk that increases as the commercial approach becomes more predominant.

So far, HP's switch to a commercially oriented sale is succeeding, according to industry observers like Dataquest Europe Ltd. At its annual European Industry Conference, Dataquest Director Philippe de Marcillac said HP "has diversified quite well" from its historically heavy emphasis on the technical market.

## A Business Frontier

The change in HP's sales emphasis has come within the last several years. Says Rudi Schmickl, product marketing manager for multiuser products, Europe, "Five years ago the sales force was selling technical features to the end user level and I would say that has changed. For the large international customer, the Du Ponts and Shells of the world, the approach we're taking is selling the benefits of the solutions we have, not the technology. I think it's fair to say that the percentage of business-oriented reps in the HP sales force is higher today...[but] there is a certain gray area as well where you still find technical selling."

*HP's excellence is still its technical support and the quality and technological innovation of its products.*

Over the last couple of years in the U.K., the direct sales force has been providing more industry knowledge than technical specs to about 200 named accounts, says U.K. Value Added Business Marketing Manager Peter Critchley. "They [salespeople] must be business and industry managers rather than technical experts because people don't buy boxes anymore," he adds.

To do this, those salespeople learn general purpose business principles and consultative selling techniques and work with consultants to learn the industry. Still, HP value-added companies say the company hasn't reached the level of proficiency it needs for the type of commercial sale it has targeted. Points where HP is weak, allies say, include getting access to the right people in an end user organization, emphasizing the appropriate points to those people, and gaining an understanding of the commercial buying cycle and the role of indirect sales channels.

Heinz Weiler, director of project marketing at Softlab GmbH, Munich, says, "At the moment, HP's presence in and access to commercial shops is not good. The sales and support guys still have the flavor of being in the technical field. The HP people want to go there (to the commercial market), but they don't understand it and don't know the right people to get access."

Once the HP salesforce reaches the right executive, they often fail to make the right points to close a sale, says Roger Lawson, managing director of HP 3000 software maker Proactive Systems Ltd., (Orpington, U.K.) "Although HP has made steps to improve its sales approach to commercial users, they are still very bad at talking to major accounts; they don't know how to talk about what concerns senior managers," he says. "They talk about the technical benefits of their products instead of the issues senior managers want to talk about, such as long term stability and benefits of going with HP."

## Looking Blue In The Face

However little senior managers want to talk technology, HP's excellence is still its technical support and the quality and technological innovation of its products. For this reason, Critchley says, it's appropriate that the sales side reflects HP's technical expertise. "It's also fair to say that our image as a marketing organization, as quiet, conservative, and not very aggressive, probably steers us more toward presenting ourselves as a technical company," he adds.

As a result, says Lawson, the HP approach to commercial users, including the product literature and the training of

salespeople, doesn't match IBM's. "When I was a commercial user, for instance, HP almost lost the account to IBM because they weren't talking to the right guys about the right things," he adds.

In terms of pure commercial appeal, HP's Schmickl agrees that the company's sales pitch lags behind IBM's. The important difference, he says, is that HP comes from a heavier technical background than IBM. "We are improving in this area [of commercial marketing], but we're not yet fully there where they are. But we're working on it," he says.

HP also must try to better understand the commercial buying cycle, says Lawson. As a retail user, he says, the shop had 10 HP systems, representing one of the major U.K. accounts.

Nevertheless, HP changed the salesperson every six months. "All growing companies are dynamic," he says, "but if you're trying to sell 2 million pounds [Sterling] worth of equipment, the lead time on the sale is longer than the time the guy [salesman] is there. You can't build up any relationship like that."

Things have changed little, Lawson adds. "Two weeks ago I received a letter saying basically that as we're a fairly small business, we can't talk directly to an HP salesman anymore, we have to talk to a dealer. Now, I'm responsible for five HP 3000 systems worldwide; we must be one of their major customers, and we're not the sort of company that wants to deal with one of their distributors.

"It's been unclear lately even as to who our salesperson is, and now they seem to be saying we can't even talk to that salesperson," Lawson continues. "Neither did the letter say who we are now supposed to talk to. If HP treats its commercial customers like that, they're not going to get very far."

At HP in the U.K., Critchley acknowledges that criticism of HP for moving people around the organization too quickly is fair, but insists that the company is committed to developing long-term relationships and that it won't "force anyone to buy from channel distribution if they don't want to."

Given the repeated complaints from HP VARs about non-cooperation and interference, these relationships also seem to need improvement. "We aren't happy with way they compete with VARs or with the competition between VARs," says Rudi Husman, director of Cheops Technology, a VAR of HP 3000 software in Antwerp, Belgium. "For a little company like ours, it's difficult to have our own marketing staff, and these days it's not so easy to find new customers, so we would like to have some leads from HP," Husman says.

"We have very good software people, they have very good hardware people, and together we [could] do something," he adds, "But they are mostly interested in selling hardware themselves. [Also] in Belgium, [HP] VARs give discounts like I've never seen, but HP does nothing."

## Those Were The Days

While the commercial VARs say HP isn't commercial enough, the technical VARs, which still buy boxes, lament a decline in technical expertise among the salespeople. Didier Voeltzel, president of Brest, France-based Sedasis, which makes specialized storage peripherals for the scientific market, says "Our customers, which are laboratories and such, are not really happy with HP's approach to them. The level of technical expertise is declining in favor of a more commercial approach, and some have left HP as a consequence."

Schmickl counters, "I don't see us losing those [technically-oriented customer] contacts. One piece of feedback we get continuously from those guys is that HP listens to them more than the other vendors."

HP clearly has to expand its commercial user base to stay in competition with marketing giant IBM. In doing so, however, its salespeople, particularly those not selling to named multinational accounts, should remember their role in ensuring that HP continues to hear that feedback.

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MANAGING YOUR HP 3000

John P. Burke

# Required Reading

It's time for us to get down and dirty about system management. There are many useful little odds and ends, tricks of the trade, if you will, that are indispensable to an HP 3000 system and its manager. No, they aren't exactly earth-shattering flashes of technological insight, but they may help keep you employed.

Whether you're trying to make do with an aging, swayback Series 48 or breathlessly trying to harness all those frisky colts under a 980's hood, these strategies should help you do your job. If you're new at this, with a bright, shiny 9xx, congratulations. There are probably a few things worth knowing that they didn't teach you in school. But even if you're a grizzled, old veteran on the HP 3000—one of those who remembers the pizza oven systems and knows that CX doesn't necessarily refer to a sports car—you still might have a smidgen left to learn. This is for you, too.

## The Key Ingredient

Information, if studied and used, becomes knowledge that yields power. You never can have too much know-how about technology; it protects you against reinventing the wheel and wasting valuable time and resources. Information also can help you to avoid making the same mistakes others have already suffered through. In MIS, ignorance is definitely not bliss.

As an HP system manager, you'd be smart to subscribe to and at least skim HP specific publications, as well as a selection of general industry publications. The important thing is to receive a balanced collection of publications. Some are advertiser supported and free to qualified subscribers. If you're a system manager or MIS manager, you'll undoubtedly qualify. For under $200 a year, you can have more publications delivered than you can possibly read in a month.

So, now what do you do? If possible, flip through the issue at the same time you process your mail, logging and indexing those articles that are of interest. This way, six months from now you won't be rummaging through piles of magazines looking for an article you "know [you] read somewhere." Do *not* put the magazine in a pile on a shelf without at least skimming and indexing it, because odds are that if you do, you'll never look at it again. Try to set aside a specific time each week to read several of the most interesting or useful pieces. You won't succeed every week but at least, if you've done your logging, you will have the references when you need specific information.

*You often can learn more in the hallways and around the lunch tables at conferences than in the technical sessions.*

As a way of developing your staff, you could assign various periodicals to each member and then at a monthly meeting, have each present a synopsis of the publications he covered. Whoever is responsible for the information index should keep it in some electronic form that will allow at least keyword searching.

Once you get on various subscription lists you'll start receiving vendor literature. All kinds. Look it over and keep it on file. Vendor literature is often a good source of information on current trends. Also, even if you don't have an immediate need for any of the vendor's products, you never know what might happen next week.

## Birds Of A Feather

The next thing to do is make sure you're a site member of INTEREX and a member of your regional user group (RUG). This is automatic if the RUG is affiliated with INTEREX. The cost of membership may seem high, but you do get value for your money: contacts with fellow HP system managers, a variety of technical publications, and the proceedings from the yearly North American Conference and the Contributed Software Library (CSL). Don't overlook the CSL. It's updated yearly and the quality of the offerings continues to improve. It may take you a little time to wade through the listings, but every release is sure to contain a few gems you can use.

Go to as many user group meetings and conferences as your budget allows. You often can learn more in the hallways and around the lunch tables at these conferences than in the technical sessions, although the sessions can be quite worthwhile as well. Conferences present a good opportunity to see what the vendors have to offer and to get a feel for trends in hardware and software. They also offer a good chance to recharge your internal batteries.

Even if you go to a conference—and especially if you don't—the conference proceedings are invaluable as reference material. The quality of the papers and

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presentations improves every year, and because of concurrent sessions, you can't possibly attend all the talks that interest you. Also, consider presenting a paper yourself. The experience, while possibly nerve-wracking, will be extremely rewarding. Don't sell yourself short. If you have been in MIS for a few years, you have skills, knowledge and experience that should be shared.

The trend toward "plug and play," interchangeable hardware notwithstanding, computer vendors are still an excellent source of information about the products they sell. When was the last time you dialed up HP SupportLine? You do use it don't you?

Most of us have access to HP SupportLine as part of a software maintenance agreement. You can search software and hardware problems, HP news, tips, etc., and then place an electronic call for help. It's a little awkward to use, but well worth checking out. I know, I know. It's not a toll-free number. However, you can now access it through CompuServe, if that's more cost effective for you. If you don't know about HP SupportLine, you can learn more about it in HP 3000 Application Notes 64 through 68, all dated April 15, 1990, and in the HP SupportLine Guide. Talk to your account rep or SE about these.

Speaking of which—don't wait for an emergency to contact your SE, account rep or CE. Periodically, contact them with something easy and not time-critical just to establish and keep a good working relationship. They are people like you, so treat them the way you would want to be treated. Besides, a good, open rapport will help you in time of crisis and ensure that you get the HP information you need when you need it.

## Pause For Reflection

It's easy to get caught up in the excitement of the latest PA-RISC box, but if you're a system manager, what you have now matters more than what's new. Maybe you're obsessed with trying to squeeze one more year out of your rusting Classic machine. Or maybe you're swamped with project requests and feel that you're just moving piles of paper around on your desk, not accomplishing anything. Time out! When you reach this stage, it's time to take a breather and reflect on what your goals are.

Good (and usually employed) system managers spend part of their time trying to develop a better understanding of the way their company or organization works. Almost universally, their goal is to devise new ways the company can use existing technology to further its stated mission. When doing your reading don't just marvel in the new stuff, but try to relate it to the business of your business.—*John P. Burke is the system manager for Construction Computer Center, Philadelphia, PA.*

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KLA/Express now includes pull-down menus, pop-up windows, enhanced help subsystem and dialogue boxes to make configuration simple. This release includes priority, secondary and tertiary queues, override/default batch job priorities, batch job scheduling, automatic configuration scheduling and an application integration feature.

Users can enhance control of the system within their own applications beyond the process level. Now, users can identify priority functions within a process and ensure their CPU response time.

Contact KLA & Associates Inc., P.O. Box 14854, Clearwater, FL 34629-4854; (813) 784-5976.

*See KLA at Interex booth #534, 536*

**Circle 308 on reader card**

## Bering Introduces OptiPac 7100 Series

Bering Industries announced its OptiPac 7100 Series, a 3 1/2-inch removable magneto-optical disk system for all HP computers using HP-IB and SCSI interfaces.

The four models are hardware and software compatible with HP 1000 and 9000 computers using the HP-IB interface. The OptiPac 7100 systems have an average seek time of 35 ms and a formatted cartridge capacity of 128 MB.

Contact Bering Industries, 246 E. Hacienda Ave., Campbell, CA 95008; (408) 374-8300.

*See Bering at Interex booth #825, 827*

**Circle 393 on reader card**

## Proactive Displays Four New Products

Proactive Systems announced additional features to the FANTASIA software package — a new module of FANTASIA/3000 for converting HP 2680 Environment files for printing on HP LaserJets or the high-speed HP 5000 printers; a release of FANTASIA PC Forms Designer (for standalone use or with FANTASIA/3000). It includes the ability to "fill-out" forms on the screen before printing, improved text editing and justification; another module of FANTASIA/3000 for HP-DeskManager users allows messages to be printed in a user-definable format. Output layout can be varied and include typeset text, logos, and forms; and an interface between FANTASIA/3000 and Q-GEN so that users can produce typeset, compiled reports.

Proactive also announced FLEXIBASE/SQL, which provides similar facilities to the existing FLEXIBASE-IMAGE database management utility.

Contact Proactive Systems, Four Main St., Ste. 101, Los Altos, CA 94022; (415) 949-9100.

*See Proactive at Interex booth #1211, 1213, 1215, 1217*

**Circle 397 on reader card**

## BBS Releases SpeedEdit A.04

Bradford Business Systems released an enhanced version of SpeedEdit, a programmers text editor for MS-Windows, X Windows, DOS, OS/2, MPE XL and other operating systems and platforms. It offers more than 200 built-in editing functions and more than 100 user-tailorable settings.

The new release, A.04, offers support for new operating systems (HP MPE XL and SunOS ) as well as an enhanced feature set.

Contact Bradford Business Systems, 23151 Verdugo Dr., Ste. 114, Laguna Hills, CA 92653; (714) 859-4428.

*See BBS at Interex booth #601, 603*

**Circle 385 on reader card**

## Collier-Jackson Payroll Available With PowerPlay

Collier-Jackson completed an interface between its World Class Series Payroll system and Cognos' PowerPlay.

Teaming reporting and analysis capabilities with payroll information provides managers with labor analysis capabilities. Decision-makers can see graphic summaries of detailed payroll information. Dollars and hours can be viewed by labor categories across departmental boundaries and the information is automatically presented in pie charts, bar graphs or other user-defined graphics.

Contact Collier-Jackson Inc., 3707 W. Cherry St., Tampa, FL 33607; (813) 872-9990.

*See Collier-Jackson at Interex booth #1039, 1041, 1042, 1043, 1044, 1046*

**Circle 384 on reader card**

***This year's INTEREX HP Users conference will be held August 5-8 at the San Diego Convention Center. See product listings for vendor booth numbers.***

## Mitchell Humphrey Introduces Fixed Assets Systems

Mitchell Humphrey & Co. announced its latest release of FMS-Fixed Assets. Release features include: projection of the future depreciation of both real and projected assets for the life of the assets; additional defaults including record and tax location; support of up to 99 sets of valuation records for each asset; accommodation of ACE reporting in addition to the SEC 10-K, FASB-33, FASB-13 and FASB-96 reporting; support of different fiscal years when calculating depreciation by asset record or by user; accommodation of retroactive adjustments; mass maintenance features that can be used with real or projected assets and more.

Contact Mitchell Humphrey & Co., 11720 Borman Dr., St. Louis, MO 63146; (800) 237-0028.

*See Mitchell Humphrey at Interex booth #804, 806*

**Circle 388 on reader card**

## Multiple Part Electronic Forms Supported By Lasersoft/3000

Business Systems Int'l. Inc. released the Multi-Part Forms module for Lasersoft/3000. This allows users to replace preprinted form sets with electronic forms. The Multi-Part Forms module is included in release 2.0 of Lasersoft/3000.

Up to 99 parts (each an original copy) can be produced, automatically from a single page of output data. Each part may have a unique routing designation printed on it, and may be routed to a different printer or class of printers.

New features include the ability to automatically eliminate leading lines and leading characters from the data before printing. Blank data pages also can be removed from the data stream, eliminating unnecessary pages at the printer. In addition, a string of up to 33 characters can be defined as a page-eject literal. Each time the string is encountered, the page of data overlaid with the form will be ejected from the printer.

Lasersoft/3000 operates on the HP 3000 and supports all HP LaserJet PLUS laser printers and compatibles.

Contact Business Systems Int'l. Inc., 31225 La Baya Dr., Ste. 107, Westlake Village, CA 91362; (818) 879-9083.

*See BSI at Interex booth #813, 815*

**Circle 363 on reader card**

## SOTAS Int'l. Introduces Accountable Solutions

SOTAS International Inc., producer of the "Accountable Solutions" family of accounting and human resources software, now offers its products on the HP, Wang and other UNIX environments.

SOTAS' accounting and human resources applications offer a closed loop system that provides up-to-the-minute reporting; user controlled applications that allow accounting and personnel departments to control activity; data integrity that's preserved through SOTAS Security; international/multinational features; cash management tools; and system-wide ad hoc query/reporting tools.

Contact SOTAS International Inc., 192 Merimack St., Haverhill, MA 01830; (508) 372-0770.

*See SOTAS at Interex booth #217, 320*

**Circle 400 on reader card**

## Equinox Data PBX Lets HP 3000s, PCs Share Printers

Equinox Systems Inc. enhanced its range of DAT PBXs to allow printers normally dedicated to a single host computer to be shared between several host computers and many IBM and Apple Macintosh PCs.

Equinox also added a Printer Sharing Mode to its DS-5 and DS-15 Data PBXs, to allow a single printer to serve both as a host printer and as a shared printer between any number of PCs or other devices.

The Data PBX supports serial printers at data rates up to 19,200 bps, sufficient to keep a 600 lpm line printer or 12-ppm laser printer busy. Parallel printers can be supported with the addition of a serial to parallel converter.

Entry level pricing is $6,600 for a 24-line DS-5, and a typical 200-line system costs around $20,000, or $100 per line.

Contact Equinox Systems Inc., 14260 S.W. 119 Ave., Miami, FL 33186; (305) 255-3500.

*See Equinox at Interex booth #744, 746*

**Circle 390 on reader card**

See us at INTEREX Booth # 423 & 425

CIRCLE 101 ON READER CARD

## IEM Ships Jukebox Controllers

IEM released the model HS-6050 Rewritable Optical Disk Drive Jukebox Controller, which allows an optical disk autochanger (jukebox) using the SCSI interface to be connected to an HP machine using the HP-IB interface.

The HS-6050 allows users to attach HP's C1700A library system to HP 1000 computers under RTE-A, HP 3000 computers under MPE V or MPE XL, and HP 9000 computers under HP-UX.

The two CS-80 disk drives, which appear to the host when the HS-6050 is installed, are the actual magneto-optical disk drives that are part of the library system. Normal disk utilities and backup utilities function with these drives. The third device is the controller, used for sending commands to the library system robotics. Users have the ability to write to and read from this device using standard system read/write operations.

Contact IEM Inc., P.O. Box 8915, Fort Collins, CO 80525; (303) 223-4246.

*See IEM at Interex booth #710, 712, 914*

**Circle 399 on reader card**

## SD&G's Visual XL Available For HP 3000s

Smith, Dennis & Gaylord (SD&G) released Visual XL, a Microsoft Visual BASIC client-server application written for the HP 3000.

Visual XL works in a Microsoft Windows environment on HP 3000 Series 900 machines. The Windows-based graphical user interface utilizes an object-oriented development environment and includes pull-down menus, scroll bars and buttons to which the user may point and click through each application.

Native mode server and PC-based client processing combine to provide processing throughput to the BUSINESS/XL family of financial, project and marketing information systems. Visual XL also allows the user to drill down through layers of information within the BUSINESS/XL modules.

Contact Smith, Dennis & Gaylord Inc., 3211 Scott Blvd., Santa Clara, CA 95054-3078; (408) 727-1870.

*See SD&G at Interex Booth # 922,924*

**Circle 372 on reader card**

## FAX/3000 4.2 Release Offers Flexibility

STR Software Co. released Version 4.2 of FAX/3000, a combined hardware and software product allowing data to be sent directly from the HP 3000 to a remote fax machine.

The new Group-Send feature groups multiple documents destined to the same fax number and sends them out in a single telephone call.

High and low priority faxes can be distinguished by sending them to two different queues. Application programs can submit many documents to one queue while interactive users or other applications send fewer, high-priority documents to the other.

Contact STR Software Co., 3133 Briarmoor Ln., Midlothian, VA 23113; (800) 622-0630.

*See STR Software at Interex Booth # 621, 724*

**Circle 383 on reader card**

## HiBars Handles Archives And Storage

HI COMP introduced HiBars, (Hi Comp Backup Archival and Retrieval System) that works in conjunction with HI COMP's HiBack to handle archives and storage of large data masses in a networked environment. With HiBars, network backup can be both automated and unattended.

HiBars is a menu-driven user interface that enables managers to configure and schedule backup jobs for an entire LAN comprised of any combination of HP 3000 (MPE V, XL) and 9000 (300 and 800 Series) systems.

Backups can be performed locally on each node or over the network to a backup device shared by several nodes.

HiBars uses HiBack in conjunction with NET-IPC to compress data locally before it's transferred across the network to the target backup device. With HiBack, HiBars supports any device type including optical disk (autochanger or single drive) and 4 mm and 8mm tape formats.

Contact HI COMP America, 588 Broadway, Suite 810, New York, NY 10012; (800) 323-8863.

*See HI COMP at Interex Booth # 439*

**Circle 373 on reader card**

## CTI Offers CAS Software

Commercial Timesharing Inc. (CTI) introduced the Communications and Applications Series (CAS), an integrated software development toolkit and program set utilizing CASE technology.

CAS aids the application programmer by eliminating the requirement of systems level knowledge of operating systems and/or networking architecture for managing and using many computers in a standalone or networked configuration.

Contact Commercial Timesharing Inc., 2650 S. Arlington Rd., Akron, OH 44319; (216) 644-3059.

*See CTI at Interex Booth # 338, 340*

**Circle 396 on reader card**

## WRQ Gateways Link LAN-Based E-Mail To HP 3000

Walker Richer & Quinn announced two products that connect HP DeskManager users to PC LAN-based electronic mail systems.

MailMessenger for cc:Mail allows users on HP host mail systems to communicate electronically with their colleagues on the LAN-based cc:Mail.

MailMessenger for the Network Courier shuttles messages back and forth between HP Desk or PostHaste and Network Courier on the LAN.

MailMessenger for cc:Mail and MailMessenger for The Network Courier allow users to exchange both text and binary files and to send and receive mail via screens that are familiar. It routes messages using proprietary APIs for cc:Mail and Network Courier. It also uses WRQ's client-server protocol PPL for communication between the host and the LAN.

Contact WRQ Inc., 2815 Eastlake Ave. E., Seattle, WA 98102; (206) 324-0350.

*See WRQ at Interex Booth #319, 321, 323, 325, 327, 420, 422, 424, 426, 428*

**Circle 375 on reader card**

## CGI Introduces PACLAN/X

CGI Systems Inc. introduced PACLAN/X, the first full life cycle CASE product to operate in a UNIX LAN environment.

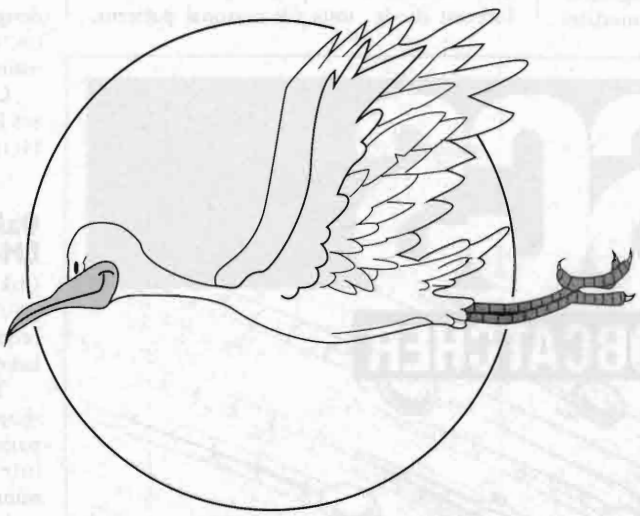
PACLAN/X uses a UNIX server to provide shared access to CGI's CASE Repository by a team of developers operating on a LAN. This architecture is suited for work-group development, an approach to developing applications that provides advantages over single-user PC-based CASE technology.

The first implementation of PACLAN/X will be on the HP 9000 Series 800 multiuser system, with network support provided by LAN Manager X. The PACLAN/X Repository will reside on a UNIX server and communicate with PC workstations that run under either OS/2 or MS DOS.

Contact CGI Systems Inc., One Blue Hill Plaza, P.O. Box 1645, Pearl River, NY 10965; (914)735-5030.

**Circle 405 on reader card**

# When it comes to migrating between MPE XL and MPE V. . .



# Some C Compilers are for the birds

Unlike other vendors' compilers, the CCS C *Migrator* is the only C compiler specifically designed to enable you to develop code which will run on *both* the MPE V and the MPE XL. One C language; two machines. What could be easier?

The Migrator compiler from CCS is packed full of powerful features which make programming in both MPE operating systems easier and less error prone. It includes a C compiler for the classic 3000 and for native mode MPE XL as well as source level debuggers for both environments. In addition to being ANSI standard, CCS' C compiler provides unique features like direct support for classic format floating point numbers on XL, unaligned structure fields, decimal string arithmetic and long pointer support for both MPE V and MPE XL. It's features like these that make interfacing with COBOL, IMAGE and other computers a breeze.

Licensing fees are less than half the cost of a compiler from the *other guys* and we'll even let you try before you buy with a free 30 day demonstration. So if you have to develop applications which migrate between MPE V and MPE XL, don't buy a compiler that's for the birds, get the Migrator from CCS. Anything else might turn out to be an albatross.

**CORPORATE COMPUTER SYSTEMS, Inc.**
33 West Main Street, Holmdel, N.J. 07733 Phone (908)946-3800
FAX (908)946-7167

CIRCLE 157 ON READER CARD

See us at INTEREX Booth 1011

## Demand Forecasting Provides Short-Term Forecasts

Lucas-Bear and Associates released Demand Forecasting Version 9. The system provides short-term forecasts for materials management in a range of industries and accommodates regular and promotional demand with forecasts at six-item and group levels.

User adjustments are permitted at all forecast levels with forcing between levels. The software develops an optimum initial forecast mode, tests for seasonal patterns, compensates for sporadic demand and allows online remodeling.

The new version includes user-defined growth and decay profiles, interactive graphics and enhanced data extraction capabilities. It's designed to run with the same functionality on the HP 3000 and other midrange, mainframe and micro platforms.

Contact Lucas-Bear and Associates Inc., 805 E. Willow Grove Ave., Philadelphia, PA 19118; (215) 836-5161.

**Circle 387 on reader card**

## Oak Grove Introduces LM-300 Formswriter

Oak Grove Systems Inc. announced the LM-300, a forms printer for production printing requirements including invoicing, bills of lading, bar coding and multipart forms.

The LM-300 is suited for backroom or shopfloor printing where heavy use (10,000 pages per month) is expected. Operator intervention during production runs is minimized by the LM-300's multiple paper paths (up to five different routes), and its ability to handle cut-sheet and continuous fanfold paper simultaneously.

The LM-300's Demand Document and tearbar that allows the operator to program the printer to pause for an interval while the last form is retracted. Menu selection, available on the user interface panel via the 16 character LCD also promotes ease of operation.

Contact Oak Grove Systems Inc., 1550 El Camino Real, Ste. 270, Menlo Park, CA 94025; (415) 325-1500.

**Circle 394 on reader card**

## Informix Upgrades SmartWare II

Informix Software Inc. upgraded its SmartWare II integrated suite of office automation software. SmartWare II version 1.5 includes advanced 3-D business graphics, extended memory support, Windows 3.0 compatibility and easy access to Informix SQL databases.

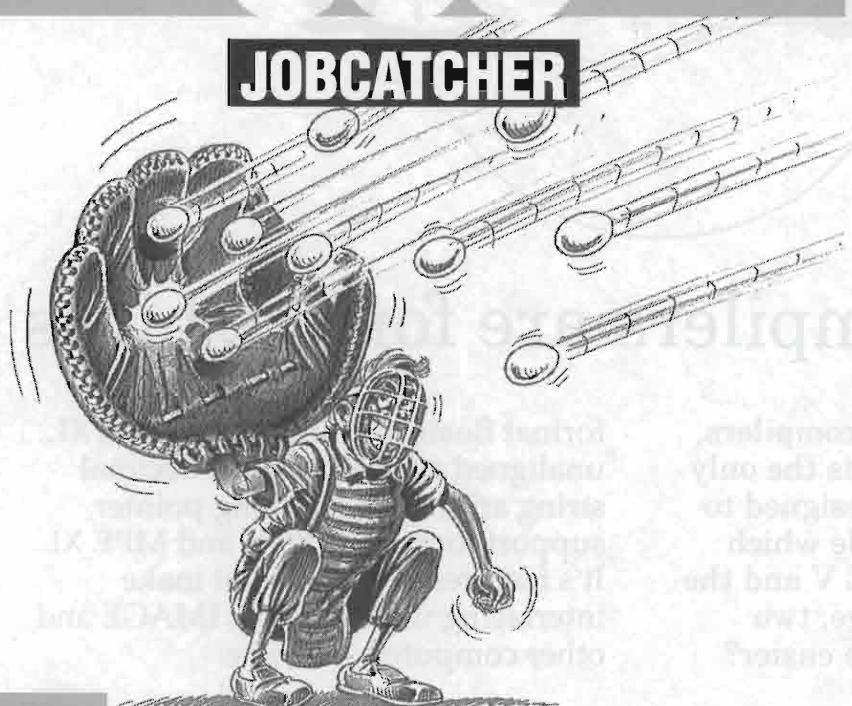
This version includes DataLink, a capability also included in Informix's Wingz multiplatform spreadsheet for graphical desktop environments. With SmartWare II-DataLink, non-SQL literate users on character-based DOS platforms can access corporate data through menu selections, and developers can use SmartWare II's programming language to create custom front-end database applications. Price is $699.

Contact Informix Software Inc., 4100 Bohannon Dr., Menlo Park, CA 94025; (415) 926-6300.

**Circle 382 on reader card**

SCS

JOBCATCHER



The Spool Control System from CT&S is an ideal operational tool for the brains in your computer. It checks error conditions and provides all information for examining the success or failure of jobstreams.

SCS checks Job Control Listings on-line, so you don't have to do that on paper. It collects the standard list of all jobs, checks for failures, stores the list in a database and highlights all exceptional error conditions. You directly know what is wrong. That's why SCS saves at least one hour of boring work a day, checking the $Stdlist output on paper.

SCS was developed by HP and currently runs on hundreds of computers at more than twenty HP sites. Its quality is mainframe. But its price is micro.

Your Manager from CT&S

For your free demo copy:
C.T.&S. bv, High Tech Center, Wattbaan 49, 3439 ML Nieuwegein, Holland.
Phone + 31 3402 50677 • Fax + 31 3402 50539

CIRCLE 300 ON READER CARD

There must be something better than the patch panel to switch users between systems...

I know but we can't afford it

We need more ports so all our terminals and PCs can access the host computer...

Can't afford it...

When the system goes down, we need a switch to move users to the back-up, without re-cabling...

Can't afford it...

Any hacker can dial in to our system. Can't we do something about security?

Can't afford it...

We need a LAN to share laser printers and high speed modems...

Can't afford it...

We need more Ethernet terminal servers...

Can't afford it...

# Now, the proven multi-purpose async connectivity solution you can afford

With Equinox, you **can** afford to network all your asynchronous terminals and PCs to your host computers — even when times are tough. Switch between hosts from your keyboard. Establish multiple sessions with a few keystrokes. Share ports among part-time users. Let users access printers and share modems. Even transfer files among PCs without installing a LAN.

Twisted-pair cabling keeps installation costs low and eases people and equipment moves. T1, Ethernet, RS-232, RS-423 and current loop interface options simplify connections in multi-vendor environments, cross-campus or cross-country. Built-in fault tolerance keeps you operational, and the system is supported by a full three year warranty.

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EQUINOX

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**800/275-3500**

**See us at INTEREX Booth # 744**

CIRCLE 115 ON READER CARD

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Z-RAM/332 is a 4 megabyte memory expansion for the HP-900 series 332
✔ Comes with a limited lifetime warranty!
Z-RAM/4MEG
2 MEGS $999 4 MEGS $1299
216 217 220 226 236 237 310 320
Z-RAM/4 MEG for the HP-9000/200/300 series machines is an innovative board that is configurable either as a 2 or 4 Megabyte board. Buy the 2 Megabytes and add 16 1 Meg chips to go to 4 megs later on as your memory requirements grow. 3yr warranty & 30-day money back guarantee. Address selection onboard.
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CIRCLE 171 ON READER CARD



## Contemporary Cybernetics Introduces Two QIC Streamers

Contemporary Cybernetics Group added two QIC streamers to its tape backup product line. The CY-3800 is a 1/4-inch cartridge streamer that can store up to 525 MB on a single tape and perform a complete backup in 45 minutes. The 150 MB streamer, the CY-3600, can run a backup in under 30 minutes.

The streamers follow the 5 1/4-inch half-height form factor and offer both SCSI and QIC-02 interfaces. The streamers are write compatible with QIC 24, 120 and 150 formats and read compatible with the QIC 24 format.

Both the CY-3600 and the CY-3800 are turnkey subsystems that include the drive, any required hardware or software interfaces, documentation, 12-month warranty and in-house support. The drives can be internally or externally mounted.

Contact Contemporary Cybernetics Group Inc., 11846 Rock Landing Corporate Center, Rock Landing Dr., Newport News, VA 23606; (804) 873-0900.

**Circle 379 on reader card**

## APPX Combines Portability, Business Software, CASE

HP and TOM Software Inc. announced a software-application development tool for UNIX environments. APPlication Xcellence (APPX) is TOM Software's first UNIX application and is designed for HP 9000 Series 800 business servers and systems.

APPX is a complete application-development environment that combines portability with a range of business software and CASE tools to facilitate front-end design efforts.

## Files Transferred Between Platforms Via IEEE 488

IOtech enhanced its line of IEEE 488 controllers by adding file transfer utilities for HP, IBM, Macintosh, Sun, NeXT and DEC computers via the IEEE 488 bus. When running the new transfer utilities included with each interface, any file can be transferred between computers.

The transfer program, Transfer488, is included with IOtech's interfaces for the PC, PS/2, Sun, NeXT, DEC, and Macintosh computers. Also included with these interfaces is a version of Transfer488 written in HP BASIC for the HP 9000 Series 200/300.

When the Transfer488 utility is executing on at least two computers attached to the IEEE network, it allows the user to specify source and destination files. It automatically checks to see if the source file exists at the specified location. If the destination file already exists, Transfer488 allows the user to avoid an unwanted overwrite. Both sending and receiving files are performed from one computer.

Contact IOtech Inc., 25971 Cannon Rd., Cleveland, OH 44146; (216) 439-4091.

**Circle 377 on reader card**

## Electronic Routing & Approval From Information Technologies

Information Technologies Int'l. announced a new application to electronically route and approve documents and forms on multivendor computer platforms.

Electronic Routing and Approval establishes a status and audit trail and the encrypted signature ensures proper approval and confidentiality. A complete transaction history is maintained so originators can establish dates and times for actions on documents. The audit log also records any invalid signature attempts.

Documents can be placed on hold and Electronic Routing and Approval will send automatic reminder notices. Forms also can be electronically deferred to receive appropriate signatures allowing for organization changes in authorization procedures. Documents can be sent serially in parallel or consensus style.

Contact Information Technologies Int'l., 1718 Lake St., Huntington Beach, CA 92648; (714) 969-6299.

**Circle 378 on reader card**

## R-Byte Introduces RB100 DAT Drive

R-Byte Corp. introduced the RB100, a high-performance, 3 1/2-inch, half-height, 4 mm digital audio tape (DAT) drive conforming to the industry-endorsed DDS tape format.

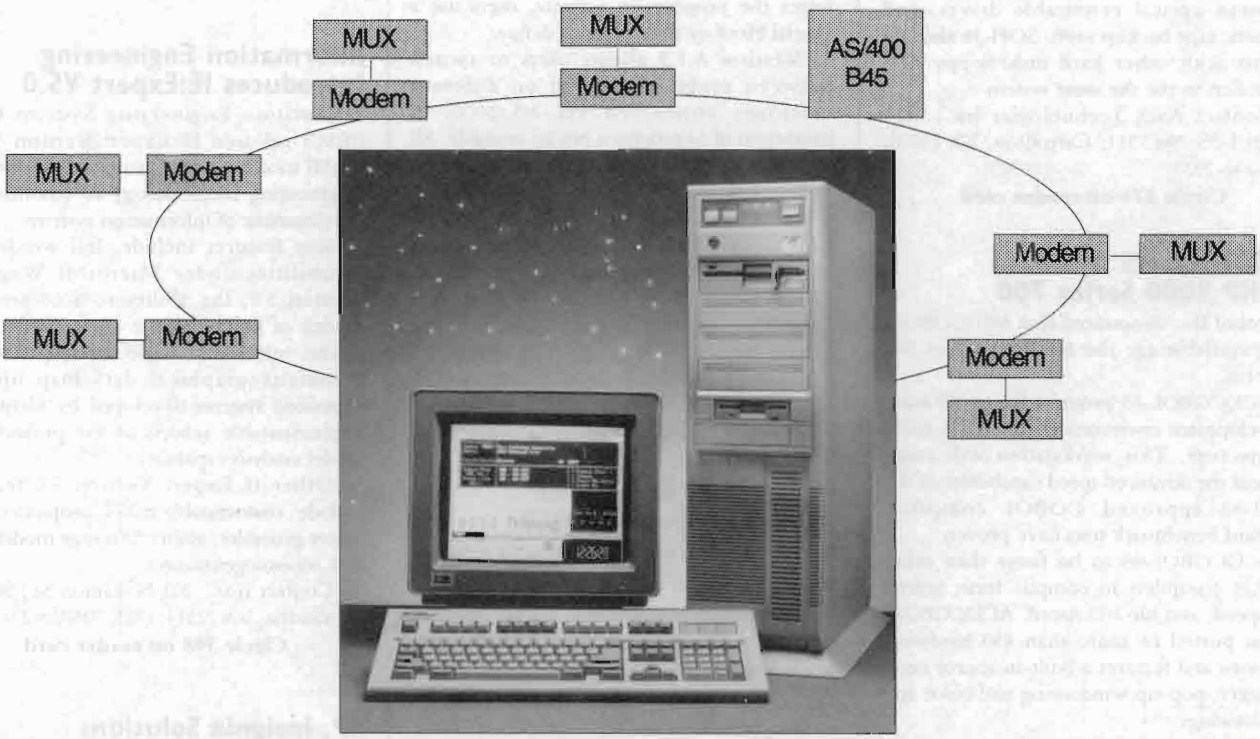
The RB100, with 1.34 GB capacity on a 4 mm, 60-meter tape cassette, and 2.01 GB on a 90-meter cassette, is one of the highest-performance 4 mm DAT drive to be introduced in the half-height, 3 1/2-inch class. The drive features a 233 KB per second sustained data transfer rate, 15 second average search speed, and an embedded SCSI that also supports all mandatory SCSI-2 commands.

Features of the RB100 include a 15 second tape rewind time; self-calibration without any manual adjustments (pots); an automatic tape length sensor enabling users to determine tape location on the head at any time; the ability to effectively read and write both computer grade and standard consumer audio media; and an operating temperature of 60 degrees Celsius.

Contact R-Byte, 2043 Zanker Rd., San Jose, CA 95131; (408) 452-8860.

**Circle 376 on reader card**

# LAN Technology . . . That's BOSS




Since the sum of the whole is never greater than the sum of the parts, the PCs you use in your LAN are critical to its success. For the ultimate in speed, clear images, quiet operation and smaller foot print, you'll want to rely on BOSS Technology. BOSS has carefully selected only the highest quality components to go into their PCs. So high that PC magazine claims, "you probably won't ever need the two year warranty"* that BOSS gives you. . . on site.

"Putting the best together" at BOSS doesn't end with quality PCs. In fact, that's just the beginning. Our technology puts together LANs that are so sophisticated many of America's top companies are depending on BOSS to keep them in the lead.

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*February 1991 486 Product Review Issue

CIRCLE 454 ON READER CARD

## Axes Technologies Introduces SOFI-16

Axes Technologies Inc. released SOFI-16, an industry standard PC-AT 16 bit bus controller that can be used in EISA bus machines.

Features of SOFI-16 include adaptive caching algorithms including: lookahead reads, deferred writes and elevator seeks.

Each board is configured with either 512 KB, 1 MB, 2 MB or 4 MB or cache memory.

The Device Drivers provide support for up to seven daisychained SCSI devices that include hard disk drives, CD-ROMs, magneto-optical rewritable drives, and magnetic tape backup units. SOFI-16 also can coexist with other hard disk/floppy disk controllers in the the same system.

Contact Axes Technologies Inc., 1620 North I-35, Ste. 311, Carrollton, TX 75006; (214) 446-2937.

**Circle 374 on reader card**

## ACUCOBOL-85 Available On HP 9000 Series 700

Acucobol Inc. announced that ACUCOBOL-85 is available for the HP 9000 Series 700 platform.

ACUCOBOL-85 provides Series 700 users a development environment for HP PA-RISC architecture. This workstation will complement the advanced speed capabilities of the ANSI-85 approved COBOL compiler. Standard benchmark tests have proven

ACUCOBOL-85 to be faster than other COBOL compilers in compile time, screen I/O speed, and file I/O speed. ACUCOBOL-85 has ported to more than 450 hardware platforms and features a built-in source code debugger, pop-up windowing and color and line drawings.

Prices for the HP Series 700 are $1,313 for Model 720, $1,575 for Model 730, and $2,100 for Model 750.

Contact Acucobol Inc., 7950 Silverton Ave., Ste. 201, San Diego, CA 92126; (619) 689-7220.

**Circle 391 on reader card**

## Camintonn Introduces Memory For HP 9000s

Camintonn Corp. announced new add-on memory for HP 9000 Series 300/400 workstations. Camintonn's CMH-9340-4 is a double-sided board that provides a maximum system memory of 16 MB for HP's model 340 and is compatible with HP 98268A.

CMH-9400-4/8/16/32 provide from 4 to 32 MB for HP Models 345/375/400dl/400t/400s/425s/433s. Each package contains two identical memory boards and support error correction circuitry. Each is hardware and software compatible with HP workstations. List price for all Camintonn HP memory is $200 per MB.

Contact Camintonn Corp., 22 Morgan, Irvine, CA 92718-2022; (714) 454-6500.

**Circle 392 on reader card**

## Riviera Software Announces Remote Access To HotKey

Riviera Software released version A.1.5 of its HotKey 3000 application switcher. HotKey allows users to switch between programs. To select the program to activate, users use a special HotKey that they can define.

Version A.1.5 allows users to switch between programs located on different machines connected via NS/3000. A maximum of 64 programs can be available. All the connection and control commands can be executed from the HotKey menu. HotKey also offers the possibility to toggle automatically from one system to another.

Version A.1.5 runs on both Classic and Spectrum machines. HotKey now supports HP terminal caching and 132 column Zentec terminals.

Contact Riviera Software, 7901 Havenwood Dr., Austin, TX 78759; (512) 346-0962.

**Circle 307 on reader card**

## Intech Ltd. Announces Sales-Desk For HP 3000s

Intech Ltd. released Sales-Desk, a product search facility that is useful for companies with large product lines, where it is impossible to remember the product codes necessary for placing orders.

Sales-Desk allows salesmen and managers to use portable or lap-top PCs to take orders on the spot and then immediately send them down the telephone line to the HP 3000 running a sales order processing system. They can receive information back from the HP 3000 in the same way.

Intech can provide all the necessary front-end screens for order taking, call logging, stock inquiries and delivery dates as well as looking up product codes by means of an electronic catalogue.

Contact Intech Ltd., Vale Industrial Estate, Horwich, Bolton BL6 5HT; (0204) 6996600.

**Circle 404 on reader card**

## HP Offers Emulation Tools For Sun

HP announced that its HP 64700 microprocessor-development tools, which are used by embedded-systems developers to write, compile debug and test microprocessor software, are available on Sun SPARCstation computers.

Sun SPARCstation users now can use HP emulation, analysis and cross-software development tools for designs employing Motorola 68000, 68302, 68331, 68332, 68020, 68030 and 68040 processors.

HP 64700 products were previously only available on HP computers and are part of HP's NewWave Computing strategy that's based on open-systems solutions and industry standards.

## Information Engineering Introduces IE:Expert V5.0

Information Engineering Systems Corp. (IESC) released IE:Expert Version 5.0, a CASE tool that implements the Information Engineering methodology to automate the development of information systems.

Key features include: full windowing capabilities under Microsoft Windows Version 3.0; the ability to accommodate models of unlimited size on a PC; dynamic, online, text-based model development and automatic graphical data map update; expedited systems developed by identifying implementable subsets of the project; and model analysis capability.

Other IE:Expert Version 5.0 features include: customizable tables; project control; report generator; ability to merge models; and SQL schema generation.

Contact IESC, 201 N. Union St., 5th Fl., Alexandria, VA 22314; (703) 739-2242.

**Circle 398 on reader card**

## HP, Insignia Solutions Announce SoftPC 3.0

HP and Insignia Solutions Inc. announced SoftPC 3.0, a high-performance version of Insignia's PC emulation software, for HP PA-RISC and Motorola-based workstations, business systems and servers.

SoftPC 3.0 allows PA-RISC workstations to run DOS software applications directly within an integrated HP-UX environment at computational speeds as high as those afforded by the Intel 80486 microprocessor. It provides HP workstation users with access to the more than 50,000 DOS applications and facilitates commercial users' migration from the DOS platform to HP-UX.

SoftPC 3.0 runs on the Series 300, 400, 700 and 800 workstations that support the HP-UX operating system, which is based on and compatible with USL's UNIX system. HP-UX also complies with X/Open's XPG3, POSIX 1003.0 and SVID2 interface specifications.

## Memory Boards Available For Apollo DN2500-5500

Martech, a division of Martinsound Inc., announced a new line of memory boards for Apollo DN2500-5500 computers. Martech's line is available in 4, 8, 16, 32 MB increments. These boards utilize parity-check error detection and are fully compatible with HP Apollo RAM.

Martech offers a complete line of memory boards for all HP 9000, 3000 and 1000 Series, including the HP Apollo ECC boards for the Models 400, 425 and 433.

Contact Martech, 1151 W. Valley Blvd., Alhambra, CA 91803-2493; (800) 582-3555.

**Circle 407 on reader card**

## O'PIN Systems Announces REVEAL 3.0

O'PIN Systems released REVEAL version 3.0, its electronic reporting software for the HP 3000. REVEAL delivers reports electronically giving users online access to reports right from their desk. Users can locate, display and print the exact information they need. Its PINPOINT distribution module assures that each user receives only the exact pages of a report they're eligible to see.

Enhancements include: direct access and ability to list and display $STDLISTs and other spoolfiles; ability to store Window set-ups, title lock parameters, and generation descriptions for particular reports; automatic background capture of spoolfiles; auto-purging of prior report generations by date; retention of additional information on prior report generations in report archives; and support for Reflection for Windows.

O'PIN also announced the introduction of a new product module that interfaces REVEAL with a WORM optical disk.

Contact O'PIN Systems, International Plaza, Ste. 635, 7900 International Dr., Bloomington, MN 55425; (612) 854-3360.

*See O'PIN Systems at Interex booth #520, 522, 524*

**Circle 403 on reader card**

## Cognos' InQuizitive Tool Brought To HP MPE XL Market

Cognos Inc. announced its InQuizitive end-user report writer for HP midrange computers running MPE XL 2.0 and higher.

InQuizitive enables end users to build simple-to-medium complexity reports using data available through Cognos' PowerHouse application development environment, including TurboIMAGE, KSAM, Cognos StarBase and other MPE data files. With a pop-up menu-driven interface and sophisticated report painter, users can produce many of the same kinds of reports they used to depend on MIS programmers to provide.

Contact Cognos Inc., 67 S. Bedford St., Burlington, MA 01803-5164; (617) 229-6600.

*See Cognos at Interex booth #803, 805, 807, 809, 900, 902, 904, 906, 910, 912*

**Circle 380 on reader card**

## Smoke And Mirrors Announces Destiny

Smoke and Mirrors Inc. released Destiny, a report publisher that allows MIS managers and programmers to enhance the output of existing software packages without the costly data conversion upgrading expense.

Standard data files are used to produce reports, charts and forms that take advantage of multiple fonts, text processing, window-like block handling, and drawing and graphing features. Destiny also integrates custom developed software packages with a common report publisher. This allows the systems integrator to reduce development costs and shorten delivery schedules.

Destiny is available on both UNIX and HP MPE and reports are portable between different platforms.

Contact Smoke and Mirrors Inc., 19 Columbia Ave., Takoma Park, MD 20912; (301) 270-0343.

**Circle 395 on reader card**

## Kingston Announces Memory Upgrades

Kingston Technology announced memory upgrade kits for the HP 9000 Series 400 workstations.

Kingston's memory upgrade kits of 4, 8, 16 and 32 MB support the HP 9000 Models 400dl, 400t, 400s, 425t and 433s. Kingston is currently developing memory upgrades for the HP 9000 Series 700 and 425e workstations.

In addition to the HP 9000 Series 400, Kingston also provides memory upgrades for the full line of HP LaserJets and Vectra PCs. Kingston's family of data storage subsystems support HP systems and provide flexible enclosures for hard disks, tape backups and optical drives.

Pricing is $1,450 for the 4 MB upgrade kit, $2,450 for the 8 MB, $44,950 for the 16 MB, and $9,950 for the 32 MB.

Contact Kingston Technology Corp., 17600 Newhope St., Fountain Valley, CA 92708; (714)435-2600.

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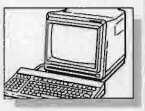
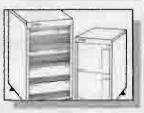
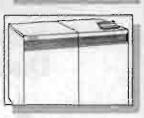

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# [ CALENDAR ]

## [SEPTEMBER]

**27-28:** The Oregon Regional Users Group (ORERUG) fall conference is scheduled to be held at the Hotel Newport in Newport, OR. Call (503) 221-7123.

## [OCTOBER]

**4-7:** CENIT Asia' 91, Hong Kong's Information Technology Fair is being held at the Hong Kong Convention and Exhibition Center, Hong Kong. Call Hannover Fairs USA, (609) 987-1202.

**13-15:** NTRUG, GHRUG, STRUG, BRUG and CENTEXRUG are holding their 2nd annual All-Texas Conference at the Radisson Hotel, Austin, TX. Call Terry Floyd (512) 345-3963.

## [DECEMBER]

9-11: Meckler Conference Management is sponsoring DIA '91 (Document Image Automation) at the Sheraton Washington Hotel, Washington, D.C. For exhibit information, call Marilyn Reed, for a conference program call Kim Devan at (203) 226-6967 or (800) 635-5537.

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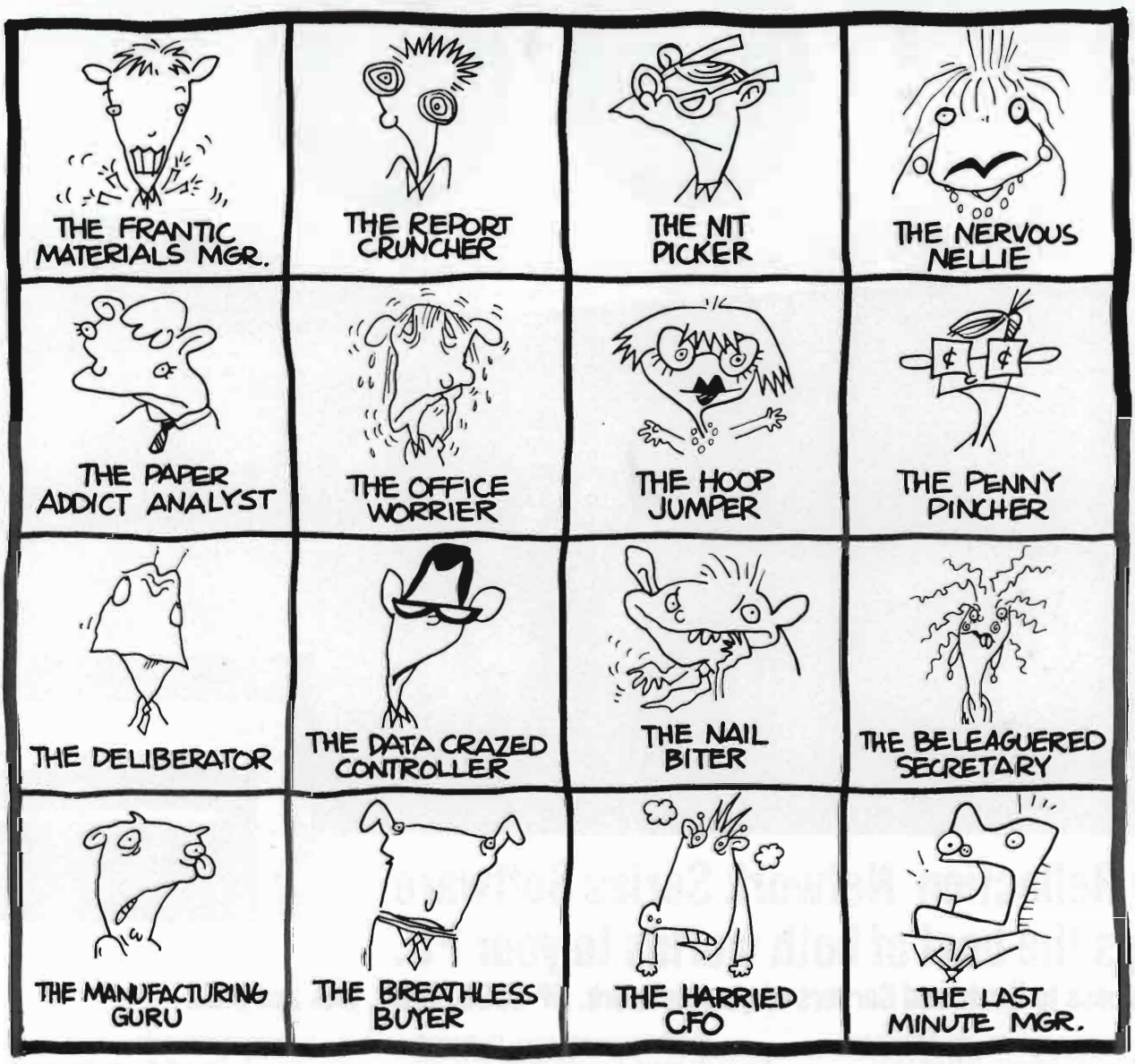


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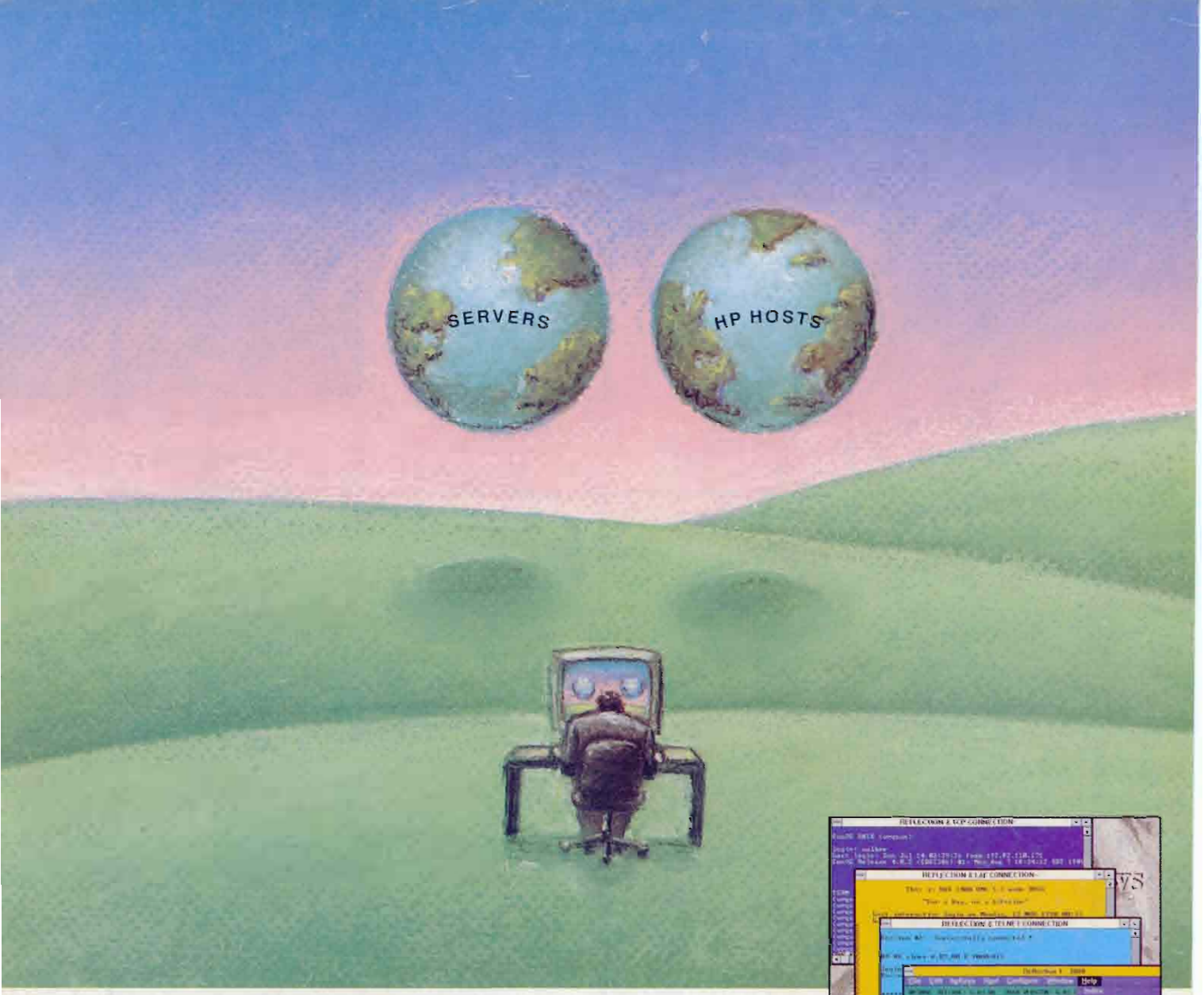

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