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HP Professional

THE INDEPENDENT MAGAZINE FOR NEWWAVE COMPUTING ▲ VOL.6 NO.7

JULY 1992

NEW WAVE

Workgroup Computing

- New Inroads For Image Management
- Where Is HP's NewWave Office Headed Now?

SPECIAL REPORT: WORKSTATIONS

- Solid Modeling Leads To Solid Sales
- From The Lab: A Sweet Suite From Clarity

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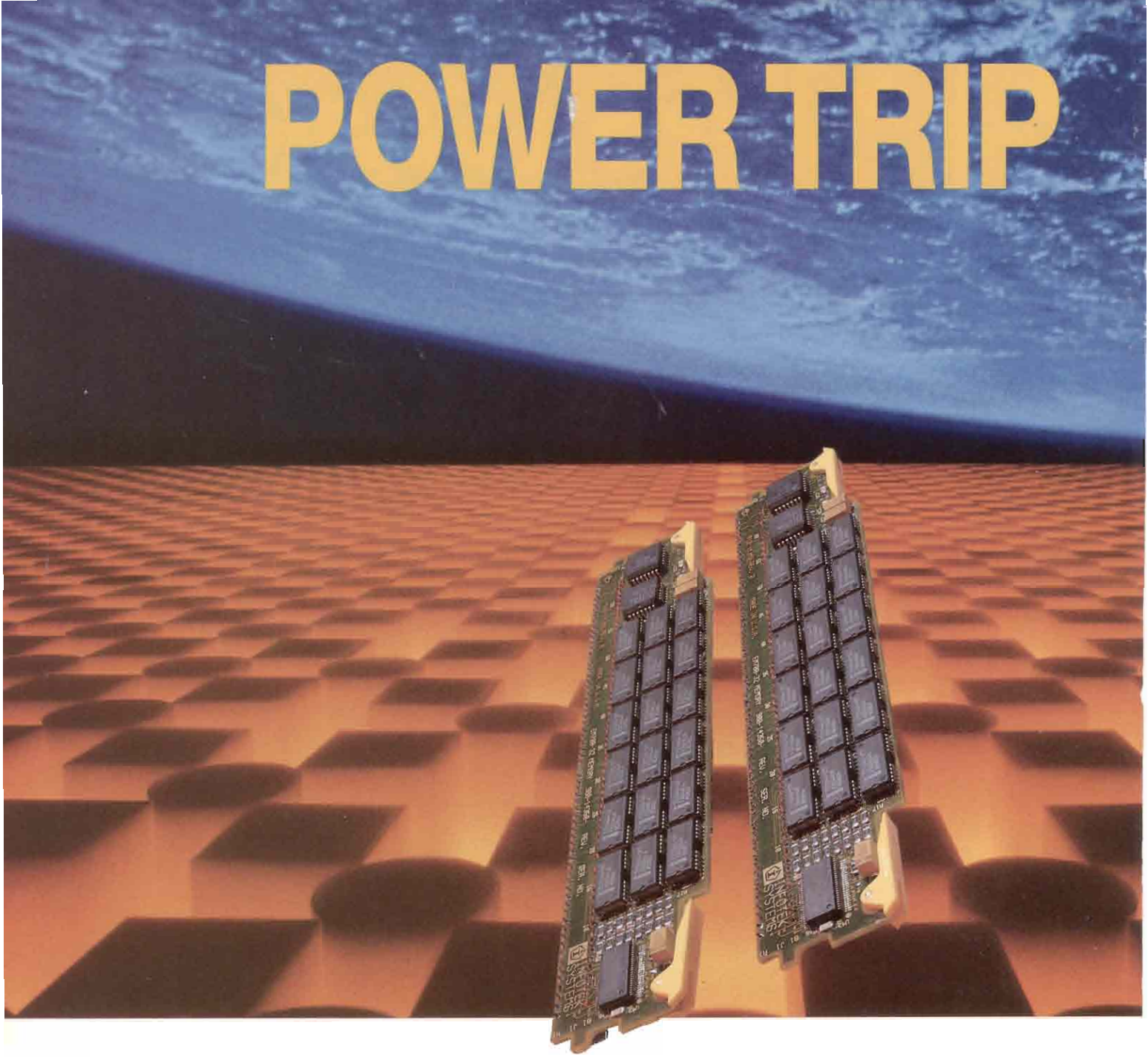

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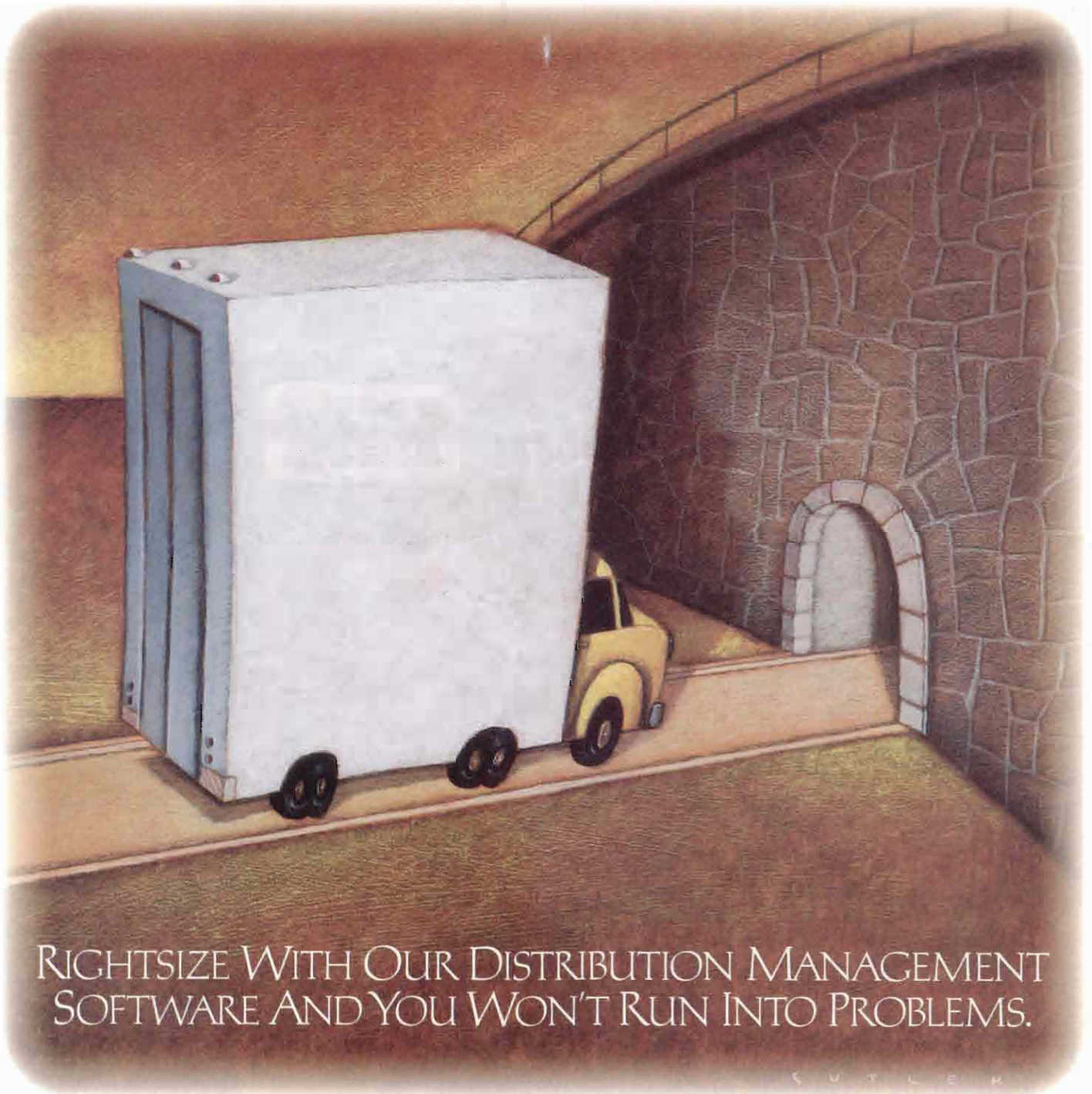

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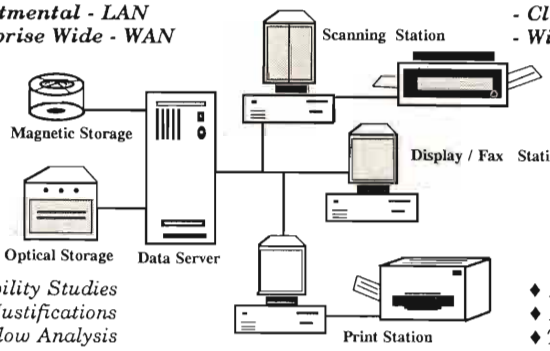

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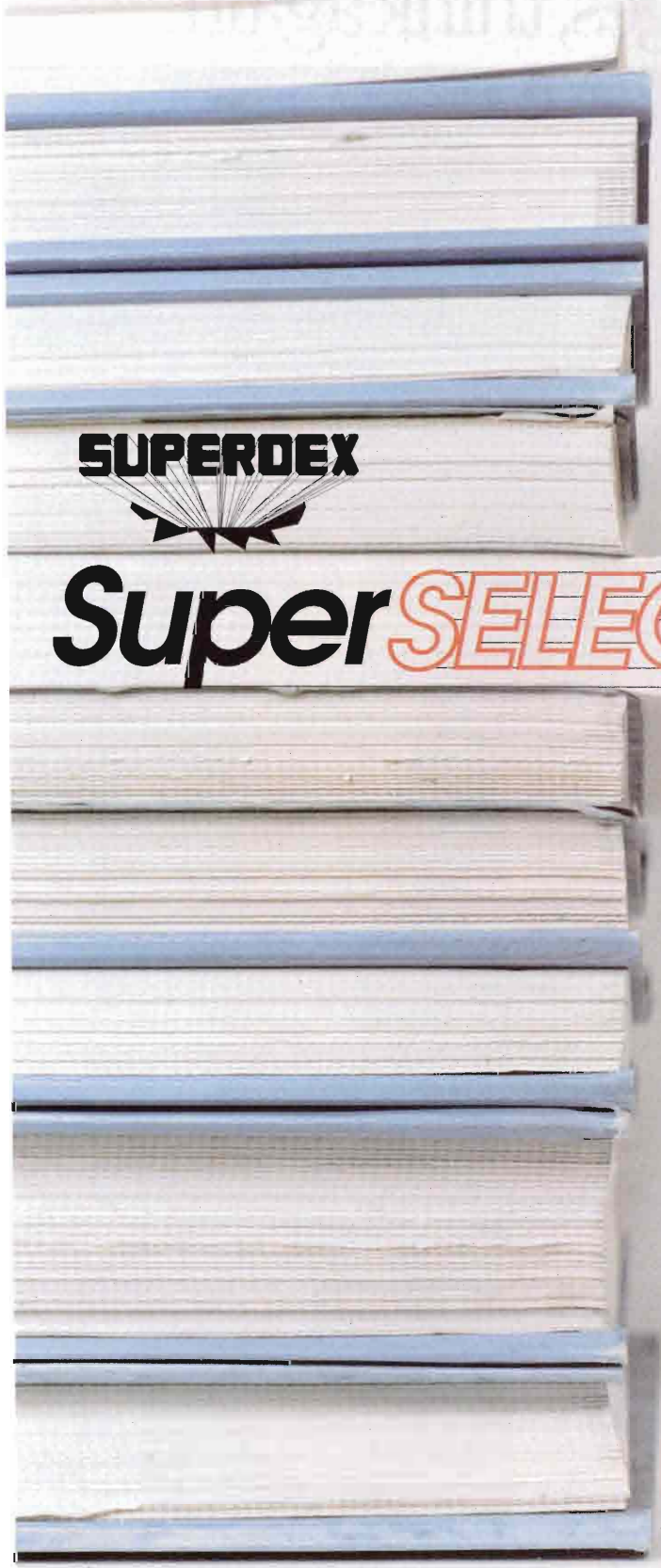

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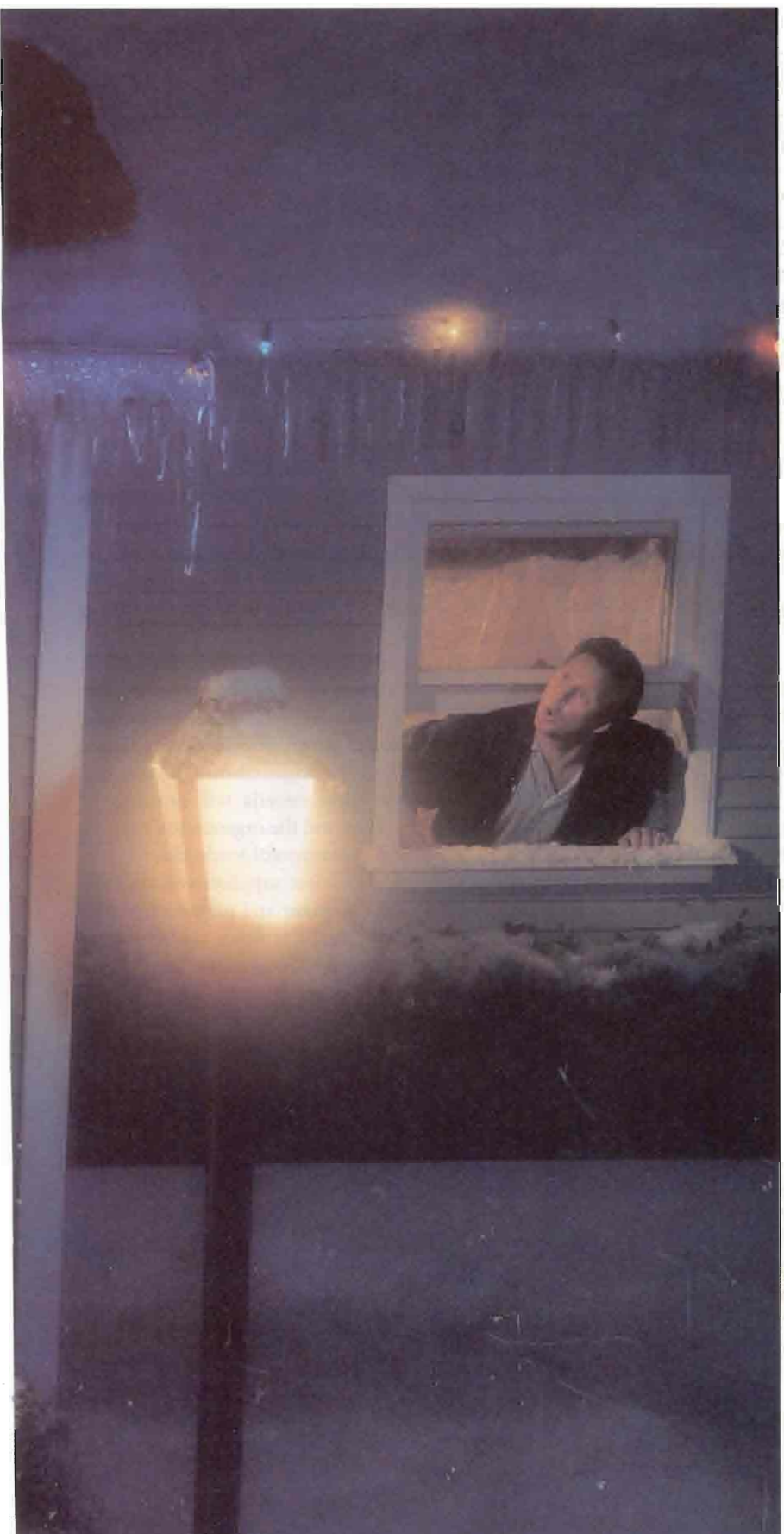

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The Quest For Quality

By Grant Evans

The other evening, I stood outside my father-in-law's barn as my brother-in-law hitched a sickle bar mower to a shiny red 1955 Farmall Cub tractor. The grass along the road had grown waist-high and it needed cutting. As he wrestled with the device, I couldn't help but admire the soft, happy purr of the idling Farmall's engine.

I commented to my father-in-law that I never before noticed how quiet and *new* that old tractor sounded (It's older than I am, yet sounds better than my 1988 Subaru.). He responded, "Of course — back then they made things to *last*." He has another tractor — much larger — of the same vintage. I think it needed a new tire a few years ago.

The tractor engine got me thinking. It's hard not to be exposed to American industry's new-found obsession with quality. It's everywhere. A few weeks ago, I saw a PBS documentary that dealt with nothing but quality — specifically, how German companies have come to be so renowned for it. On this side of the ocean, many companies have incorporated the word "quality" into their slogans, others repeat it over and over in their ads.

How many of us haven't heard of the Malcolm Baldrige National Quality Award? A few years ago, I attended the Baldrige ceremony where President Bush presented the award to IBM's Rochester division — which makes the AS/400. Within days of the ceremony, recipients were displaying Baldrige symbols in their ads. IBM went so far as to slap navy blue stripes emblazoned with Baldrige emblems on AS/400 cabinets. We have two such boxes in our lab here at Professional Press.

It was shortly after the 1991 award ceremony that I started wondering about this compulsive quest for quality. Was it genuine? Was it positive? Sure, quality's great — I'm all for it. It's just that when winning such an award is driven purely by marketing objectives, it seems somewhat detached from the ultimate judges of quality — the consumers. A cottage industry has sprouted from the quality obsession. These days, you can hire someone to coach your company on how to be in the running for a Baldrige Award — a sherpa to lead you to the high peaks of marketing nirvana. In some corners, the quest appears to have strayed from the intended path.

But what about the consumer? Rather than spending hundreds of thousands of dollars trying to conform to voluminous Baldrige guidelines, why not pick up the phone, give some customers a jingle and listen to what they have to say?

According to the recent International Quality Study, a joint project by Ernst & Young and the American Quality Foundation, American computer company executives are facing a considerable challenge if their aggressive quality objectives are to be met. Changes in new product design, manufacturing, customer relations and even executive compensation will require a mind-set overhaul at nearly every level of the organization.

Computer company brass surveyed predict increased emphasis on customer input in the creation and design of new products — through customer visits, feedback and benchmarking. This new emphasis is attributable largely to increasing customer sophistication about technology. Although such a grass-roots approach to quality entails considerable re-tooling for many U.S. companies, it is nothing new to Japan and Germany (the dreaded "global competition") who traditionally have had bigger ears for their customers.

But while placing more emphasis on customer input will be crucial, there is increased pressure for computer companies to boost performance on other fronts — all at once. For example, senior management performance has traditionally been gauged on individual achievement and the organization's profitability. The study found that while these criteria will remain, the individual's ability as a team player and the organization's quality performance will also be used as managerial yardsticks.

Similarly, the criteria used to select suppliers will undergo some modification. Although computer and peripheral manufacturers will not de-emphasize the price factor when evaluating suppliers, in the future they will pay more attention to product quality and reliable delivery.

Sheer product performance will remain an important strategy, but greater importance will be ascribed to reliability, conformance to standards and adaptability.

And as companies strive to meet these diverse quality objectives, they can't allow the increased demands lengthen their time to market. In order to gain that much-sought reputation for quality, a balance must be struck.

You know, the same principles probably apply to tractor manufacturers.

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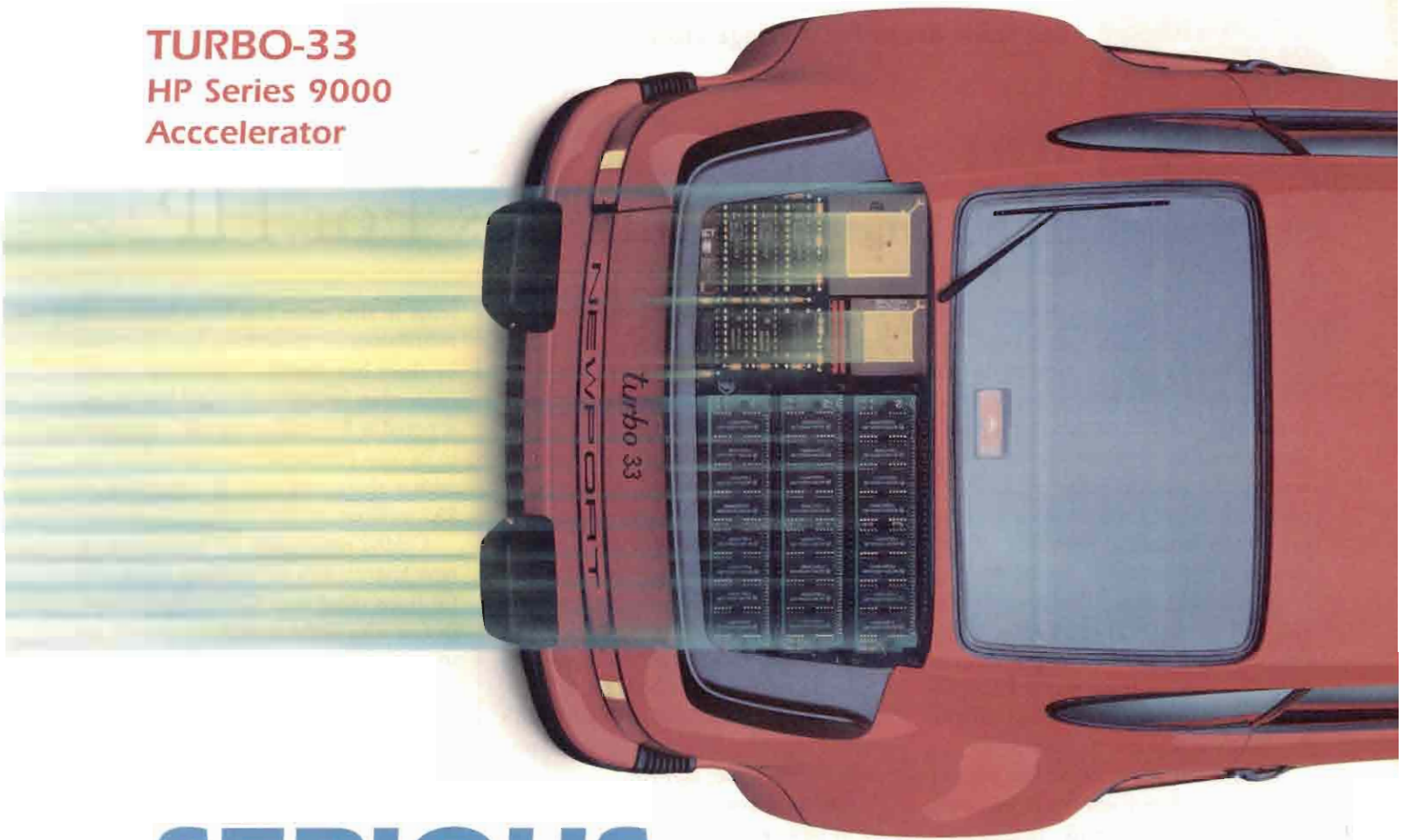

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INDUSTRY WATCH

Bill Sharp

Emerald Sparkles For HP

"Pssst! Yo, over here!" An urgent hoarse whisper came to me from a dank and dark, rain-soaked alley just off the waterfront of Boston. It was shortly after 11 p.m. — dark as a politician's heart. I was on the way to my car. Office hours had been long of late, but the big project was out the door, so I was dancing along, dodging puddles and gaping craters in the quaint, brick-paved streets as I neared my vehicle. Whispers didn't interest me, so I concentrated on skipping lightly along without stubbing my toes on the pavement.

I heard the brick bat whistle past my left ear just before it struck the pavement beyond me with a thunk, rattling over to the picturesque granite curbing. The hoarse voice chuckled, and a short, grizzled fellow in a heavy gray raincoat stepped out of the alleyway. "Just getting your attention. Now let's talk business here. Wilbur's my name, and I'm selling mainframes — and selling them CHEAP."

I raised my hand in objection, about to turn away, when the man grabbed both lapels of his coat and threw it open. I was preparing to stalk away in disgust when I realized that he as wearing a pin-striped dark blue suit and the insides of his raincoat were lined with little oblong boxes taped into place. A faint hum came from his direction.

Maybe this view of the future is a *slight* exaggeration, but HP seems bent on driving the computer business along the path to downsized systems — step by relentless step. If you believe HP, mainframe owners today have a tough time arguing against the smaller, faster and cheaper-to-own HP PA-RISC systems in both proprietary and open operating system flavors.

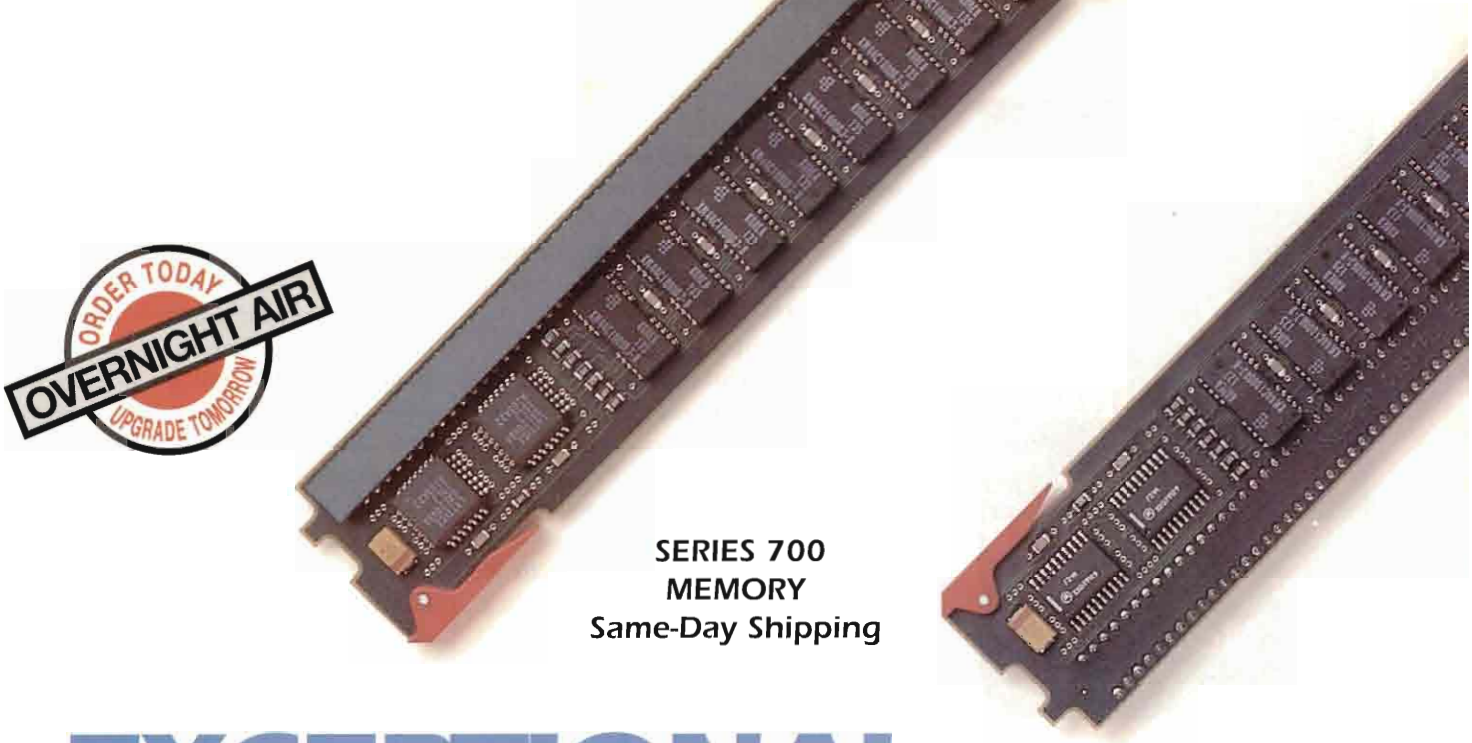
In mid-May, HP announced nine new HP 3000 and 9000 high-end, multi-processor commercial systems, officially dubbed HP Corporate Business Systems, but code-named Emerald. According to HP, the computers, HP's first that reach solidly into the mainframe class, exceed the performance of it's previous high-end systems by better than 60 percent, and exceed the performance of 90 percent of installed IBM mainframes. HP's new top-end system, the HP 3000 Model 992/400, offers performance equal to that of IBM's 3090-600J, Big Blue's largest water-cooled mainframe, says HP.

HP's new systems use less floor space — as little as 1/20th the floor space required by a traditional water-cooled computing monster and its associated cabinetry . The new 890 and 990 models are roughly the size of your refrigerator, though they cost a tad more than the average icebox. Power required by the systems is also *much* less than traditional mainframes — something like that used by three hair dryers. Three-year cost of ownership for IBM's ES/9000 Model 740 is noted as $15 million by HP, compared to its own comparably configured system with a three-year cost of ownership of $2.7 million.

Oddly, even while HP is pitching its new systems as a downsizing alternative for firms using large IBM systems today, its first sales of the mainframe models are to existing HP users who see savings they can make by moving from minicomputers to mainframes.

FMC Corp. (Chicago) expects to save a cool $1 million over the next five years by moving to a hot new HP 3000/992/200 this summer. Rather than running separate HP minicomputers in five cities, FMC will combine the systems from two offices in Pennsylvania and one each in Florida, Arkansas and Mississippi onto one large system in Dallas.

"In the past, HP didn't have enough



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power on the high end to accommodate our needs," says Bill Nadzak, HP program manager for FMC Corp. "Now, with the larger HP systems on the high end, we can have five divisions running over a WAN connected to one Model 992 at our Corporate Computing Center in Dallas. What prompted the whole thing is that some of our divisions wanted to upgrade their systems, so we looked at the new boxes and ran the numbers. We will save a significant amount of money."

But HP expects downsizing onto its systems at all levels to continue feeding its computer sales growth. Foxboro Co. (Foxboro, MA) began moving applications off mainframes several years ago and onto HP minicomputers, reducing MIS staffing from 225 people in 1987 to its current staff of 115, while cutting order processing time dramatically and saving $10 million per year in reduced MIS costs.

3M, of St. Paul, MN, already a big user of HP systems with a network of more than 160 HP 3000 systems nationwide, plans to cut operating costs 20 percent by consolidating seven management systems onto three high-end HP 3000 systems, including an HP Corporate Business System. Liberty Bancorp Inc., in Oklahoma City and Tulsa, will combine its business systems on two HP 9000 Corporate Business Servers, an 890/100 and an 890/200, this fall.

Savings such as those experienced or anticipated by these HP customers are fueling HP's strong growth in high-end computers at a time when other computer companies are slogging through a protracted sales slump. Market forces are pinching firms worldwide, making them look for savings wherever they can be found. This is why offering mainframe cost reductions of up to 80 percent sounds very exciting. HP notes that more than 100 IBM customers moved applications to HP business systems during the past year. Meanwhile, Dataquest, the San Jose, CA-based market research firm, notes that more than 46 percent of the mainframe sites it surveyed during 1991 are currently downsizing.

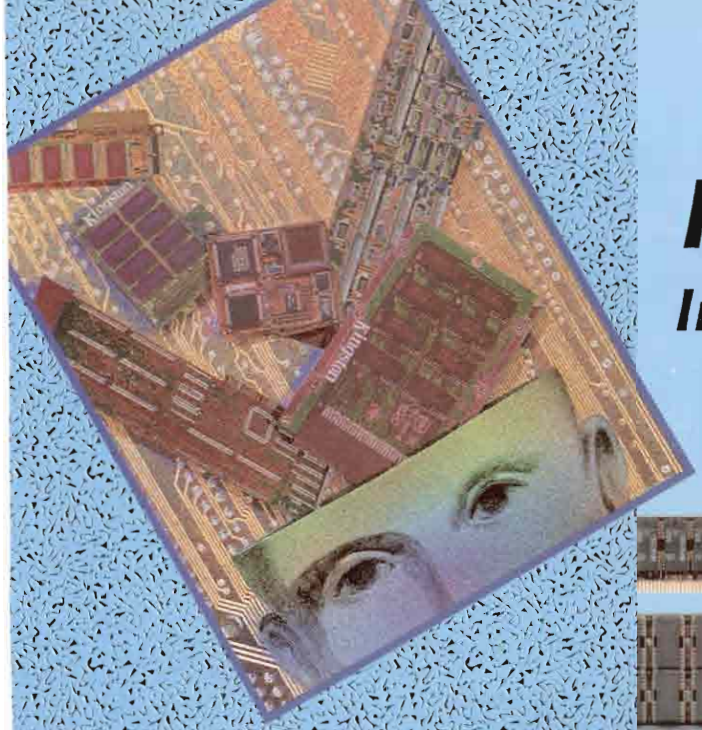
Senior analyst Carolyn Osgood of International Data Corp (IDC), of Framingham, MA, expects HP's Corporate Business Systems to "make some inroads into the IBM 43xx business. HP is going after the low-hanging fruit — older, low-end accounts where users are disillusioned with IBM and are looking for more open systems than IBM provides now. HP has stronger open systems in both its product lines than IBM."

But while she credits HP with increasing momentum in its downsizing initiative, Osgood points out that IBM has a downsizing program of its own for customers that want to move down to the AS/400, a highly successful proprietary system with a large installed base of generally satisfied customers. To displace significant market share from IBM's mainframe business, she says, HP will have to better understand IBM customers, and the tools, service and support products that are unique to their market.

HP 3000 Corporate Business Systems are slated for availability in August. The five new models range from the Model 990/100, with one CPU, 192 MB of memory and performance of about 114 transactions per second (TPS) for $365,000 to the Model 992/400, with four CPUs, 256 MB of memory and performance of about 420 TPS for $925,000. All models offer memory expandable to more than 2 GB, up to 690 GB of disk storage, 112 I/O slots, MPE/iX operating system and support for up to 2,300 users.

HP 9000 Corporate Business Servers are scheduled to be available in October. These four models include the HP 9000 Model 890S/1, S/2, S/3 and S/4, ranging in price from $335,000 to $650,000. Each system comes with HP-UX operating system and 128 MB of memory, and can handle up to 4,500 users.

Sound like great fun? Got room for a fridge-sized box? Go ahead and talk to Wilbur, but check in with HP as well. If HP sales people don't hang around in alleys these days, it's probably because they don't need to. ■



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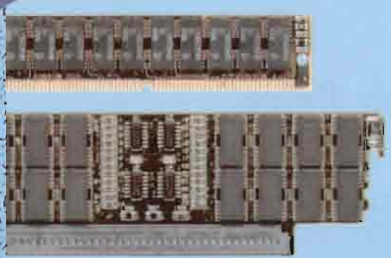
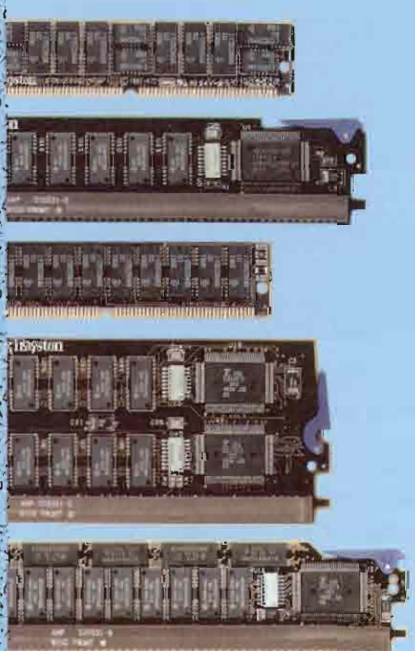


9000 300 & 400

- 345
- 375
- 380
- 400dl
- 400s
- 400t
- 425e
- 425s
- 425t
- 433s



9000 700 & 8x7

- 700/RX
- 705
- 710
- 720
- 730
- 750
- 807
- 817
- 827
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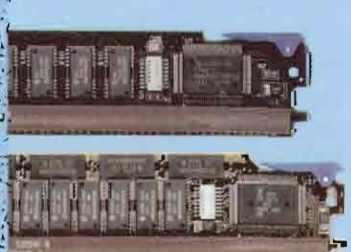
- 847
- 857
- 867
- 877



3000 9x7 & 9x7LX

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- 947
- 957
- 967
- 977
- 917LX
- 927LX
- 937LX
- 947LX
- 957LX
- 967LX

CIRCLE 281 ON READER CARD

NEWS & TRENDS

HP Downsizes The Disk Drive

World's First 1.3-inch Disk Drive Offers Savings Over Solid-State Memory

HP continued its recent flurry of smaller/cheaper/new-and-improved hardware roll-outs last month with the introduction of the Kittyhawk Personal Storage Module (PSM), the industry's first 1.3-inch disk drive.

The matchbox-sized Kittyhawk PSM, which holds up to 21.4 MB of information, combines the attractive cost of disk drive technology with the removability, small size and shock resistance of solid state memory. According to HP, the PSM will find a broad range of applications including palmtop, pen-based and subnotebook computers; printers; fax machines; medical equipment; and communications and digital imaging devices. Commercial uses could include video game cartridges, digital copiers and on-board voice/imaging mail for cellular phones.

Unlike the 2.5-inch and 1.8-inch drives in use today, the Kittyhawk PSM also provides a degree of ruggedness typically associated with solid-state devices. HP employs a technology which it likens to an automobile's air bag collision detector to sense impending impact and revert the drive — enabling Kittyhawk to withstand 10 times the shock of previous small drives.

The HP Kittyhawk PSM (shown here in actual size) offers a number of advantages over existing small disk drives.

According to Bruce Spenner, GM of HP's Disk Memory Division, the Kittyhawk PSM represents a number of economies over existing small-form disk drives. AT&T Microelectronics helped reduce the number of integrated circuits in the module to seven — as opposed to the 20 or 30 usually used in today's 1.8-in. and 2.5-in. drives. The savings in space, weight and power translate into a lower cost-per-megabyte than conventional solid-state memory. HP estimates that 20 MB of solid state memory has an OEM price of $1,000, or $50 per MB. The HP PSM's initial cost runs about $12 per MB.

The Kittyhawk PSM features an 18-millisecond average seek time and supports active, idle, standby and sleep modes.

In addition to AT&T Microelectronics, HP tapped Citizen Watch to provide microassembly and automated manufacturing. According to Spenner, the storage device can't be manufactured like a conventional drive because it contains components that are too small to be manipulated by human hands. "The fact the Citizen has the technology to drive screws you can't even see with the naked eye speaks to its ability to overcome this issue," Spenner notes.

The unit's custom disk drive controller was manufactured by Cirrus Logic.

Single-unit OEM evaluation units are available today for $450. HP says that volume OEM pricing for the Kittyhawk PSM should be around $250, and production units are slated to ship this fall. — *Grant Evans, Managing Editor*

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Unison, Tymlabs Plan Merger

Companies Sign Letter Of Intent, Plan To Offer Integrated Product Line.

Unison Software and Tymlabs Corp., two prominent suppliers of software for the HP 3000 and 9000 markets, recently announced that they had reached an agreement in principle to merge their worldwide operations.

Unison (Mountain View, CA) and Tymlabs (Austin, TX) have yet to decide on a name for the combined entity, but Tymlabs CEO Morgan Jones, who will head the combined company's marketing efforts, tells *HP Professional* that the companies' respective headquarters are expected to remain open, and that operations will be consolidated in the U.K. At press time, certain other issues remained unresolved.

The merger is expected to affect thousands of MPE and HP-UX users in the U.S. and abroad. Jones notes that the new company will enjoy substantial development resources and that the combination of data center management and connectivity products for the HP 3000 and 9000 platforms will put the company in a unique position to serve its merged customer base. "As we integrate our products into a cohesive set of data center tools, we plan to pay careful attention to our existing customers by providing cost-effective and logical upgrade paths," Jones says.

Unison President and CEO Don Lee also anticipates integration of the companies' products, and foresees an acceleration in plans to port products to HP-UX.

Unison is best known for its MAESTRO batch job scheduler, SpoolMate report distribution software and media management products. Last year, the company L.A.-based Business Systems International and KLA/Express.

Founded in 1980, Tymlabs is notable for its BackPack backup software for MPE V and MPE/iX systems, as well as for its Session family of PC-to-host connectivity products. The Session line is sold by HP under the AdvanceLink label.

Tymlabs recently announced a business agreement with Cognos, under which Cognos will license Tymlabs to incorporate features from Cognos' QUIZ software into Tymlabs PDQ product. In addition, the companies announced that they agreed to drop the pending copyright infringement lawsuits between them without any admission of liability.

HP "Welcomes Back" Classic Support Customers

New Promotion Designed To Lure MPE V Customers Back To HP Support

In an effort to encourage MPE V customers who have discontinued their hardware and software support to reinstate their contracts, HP has initiated an incentive-laden "Welcome Back Program."

Under the program, which runs from July 1 to December 31, 1992, customers can sign up for hardware support, software support, or both.

On the software side, customers will receive MPE V release 2P. In addition, HP will waive the set-up support charge (equivalent to 18 months of HP BasicLine) if the customer: 1) signs a one-year support contract; 2) cancelled support prior to July 1, 1992; 3) demonstrates validly-licensed HP proprietary software through the appropriate certificates or proof of license, and; 4) submits the HP Product Software Record Sheet to provide a record of software to be updated prior to shipment.

MPE V customers who have dropped hardware support in the past will also be encouraged to resign with HP. For those customers who opt to reinstate HP service with a one-year contract, HP will waive the inspection fee to verify the system's operating condition (the inspection will still take place).

Dial-A-Server

HP Speeds Up Delivery Of Low-End HP-UX With "QuickShip/800" Program

In order to expedite the shipping of its entry-level HP 9000 Series 800 business servers, HP has started a new program which enables customers, VARs and distributors to order systems via a toll-free phone call.

Dubbed QuickShip/800, the program promises to deliver a pre-configured system to the customer in less than seven days after the receipt of the order. By late in the year, HP plans to cut the delivery time to three days.

To ensure the rapid delivery, HP has assembling the pre-configured systems, or "bundles," in advance. The four bundle options were determined by analyzing the most-frequently ordered product configurations for models 807S, 817S and 827S. The bundles are optimized to support 8-, 16-, 32- or 48-user environments. The fixed menu of components for each bundle includes the Series 800 server, pre-loaded HP-UX operating system, memory, tape backup, system console, LAN and user ports. In addition to the bundled hardware and software, customers a year of hardware and software technical support services.

QuickShip/800 bundles range in price from $17,977 for the 8-user Model 807S with 16 MB of main memory, 677 MB of disk and 2 GB DDS backup device to $59,743 for a Model 827S configured for 48 users with 64 MB of memory, 1.3 GB of disk and the 2 GB DDS device. The QuickShip/800 order line is (800) 637-7740.

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CIRCLE 105 ON READER CARD

Lotus Realtime On HP RISC Workstations

HP Positions Its Workstations As Workhorses In Financial Services Market

HP recently underscored its intention to provide leading-edge solutions for the financial services market by announcing the availability of Lotus Realtime on the HP Apollo 9000 Series 700 workstation family and HP 700/RX line of X terminals.

Lotus Realtime software (Lotus Development Corp., Cambridge, MA) transforms the popular Lotus 1-2-3 spreadsheet package into a high-performance, real-time analytical tool. Lotus Realtime running on HP workstations will allow users to spot market trends more quickly — making it a very useful tool for traders, analysts and portfolio managers.

To kick off their joint marketing effort, HP and Lotus demonstrated the product at the Securities Industry Association conference in New York June 29 through July 1.

According to Larry Crume, Lotus vice president of International Product Development, the combination of a real-time spreadsheet solution and the price/performance and networking capabilities of the 700 Series makes for one of the most attractive options available to the financial services market.

Lotus-Realtime version 2.1 is a clientserver-based application — allowing it to run locally with Lotus 1-2-3 in single-user environments, or in a server-based system with Realtime and 1-2-3 supporting a network of workstations and X terminals.

As of press time, pricing for Lotus Realtime for the HP workstations and X terminals was not available.

For Your Information

■ KL Group (Toronto) announced the release for version 2.2 of the XRT/graph family of products for Motif, XView and OLTI X Window toolkits. XTR/Graph is a window widget and application tool that lets developers embed dynamic graphs and charts in their X windows applications. (416) 594-1026.

■ Information Builders Inc. (IBI; New York) announced that its FOCUS 4GL and Enterprise Data Access (EDA)/SQL family of client-server software products will operate on HP's recently-introduced Corporate Business Systems. FOCUS and EDA/SQL for the Corporate Business Systems will be available upon release of MPE/iX 4.0 and HP-UX 9.0. (212) 736-4433.

■ Servio Corp. (Alameda, CA) and HP announced that Servio has been named an HP Value-Added Business Partner. Also, Servio's GemStone object database and GeODE object development environment will be available for the HP Apollo 9000 Series 700 PA-RISC workstation family. (510) 814-6200.

■ Micro Technology Inc. (Anaheim, CA) announced its fifth consecutive year of record revenues and the opening of a Scandinavian subsidiary based in Stockholm, Sweden. (800) 999-9MTI.

■ Research Systems Inc. (RSI; Boulder, CO) has been chosen as an Industrial Partner by researchers working on the Sequoia 2000 Research Project. RSI will provide IDL, a scientific analysis and visualization software environment. (303) 786-9900.

■ The 1992 Scientific Computing and Automation Conference and Exposition: "The Summit for Scientific Computing" will be held October 14-16 a the Hyatt Regency, Crystal City, Washington, D.C. (408) 297-6800.

■ Wesson Taylor Wells and Associates Inc. (WTW; Columbia, SC) has been engaged by the telecommunications facility of the United Arab Emirates to perform a strategic information systems planning project. (803) 699-5781.

■ Systems Strategies Inc. (New York) announced that it has been chosen to participate in HP's Premier Solutions Provider Program. In accordance with the program, the two companies will perform joint marketing activities and HP will refer sales opportunities to Systems Strategies. (212) 967-8368.

■ PROCASE Corp. (Santa Clara, CA) announced the signing of a cooperative purchase agreement with AT&T for its SMARTsystem software development and maintenance environment. (408) 727-0714.

■ UniPress Software Inc. (Edison, NJ) announced that Ericson's Sun XView-based CASE tools software is being made available on HP Apollo 9000 Series 700 workstations. (201) 420-5047.

■ HP announced an agreement with Atria Software Inc. (Natick, MA) to provide Atria's new software configuration management system, ClearCase, on HP's PA-RISC-based workstations. ClearCase features version control, environment management, configuration management and policy/process control. (508) 650-1193.

■ SEDASIS (Brest, France) has introduced a new line of add-in memory boards for the HP Apollo 9000 Series 700 workstation line. The 8- 16- and 32-MB boards feature an ECC and come with a five-year warranty by swap. (33.-98.41.70.90).

■ Frame Technology (San Jose, CA) announced that it will extend its UNIX software licensing strategy to include a personal license along with its original fixed and floating-license products. (408) 954-3964.

■ HP announced that Cadre Technology (Beaverton, OR) has purchased 15 copies of HP's C++ SoftBench software development environment to be used for designing and developing portions of Cadre's TEAMWORK family of CASE products. (401) 351-5950.

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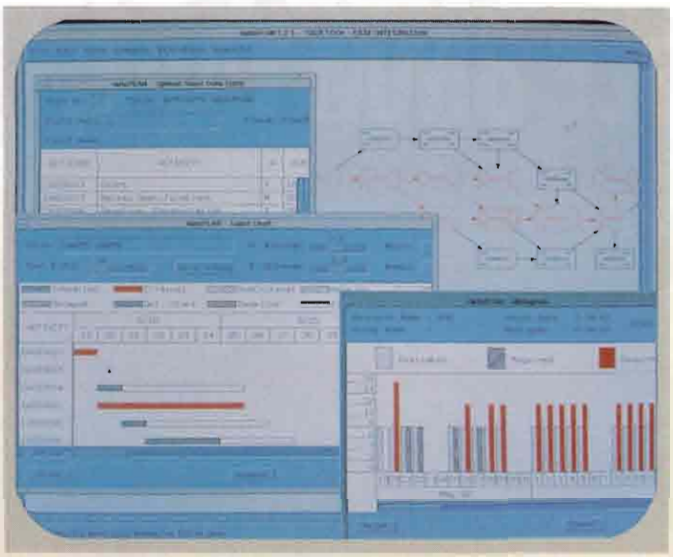
CIRCLE 112 ON READER CARD

Workstation-Based Project Management



Digital Tools Helps You Cover All The Bases With Its AutoPLAN Project Management Software

Who's on first? What's on second? Where's third? And, how much do we owe the guy behind the plate? You may not manage a baseball team, but you may be the project manager at your company, responsible for knowing the status of every company or department project. Digital Tools' (Cupertino, CA) AutoPLAN may be the right project management software to help you organize your group's projects and keep you up to date on the status of every player at every stage of the game.

This interactive project scheduling and control package is for UNIX-based systems, including the HP 9000 Series 300, 400 and 700 workstations running HP-UX and Motif. To promote open systems, AutoPLAN is designed for distributed processing environments to provide office automation on networked workstations.

AutoPLAN is best suited for those who need to plan, coordinate, monitor and control the progress of several activities that together make up one project. Incorporating AutoPLAN into your work schedule will help you organize a project's many tasks and resources. You can check the relationships between each variable of the project and propose "what-if" scenarios to help gauge, or predict the costs, gross production, time commitment, resources, and so on.

To capture the company-wide involvement and status of a project, you can also access information from sales, marketing, development and manufacturing. The generated reports can then encompass the cost, time and resources from all elements of the project.

AutoPLAN's GUI masks the complexity of project scheduling. AutoPLAN employs a graphically interactive canvas drawing system that allows you to create projects free form. The GUI is mouse-driven, so you can drag and drop to create, link and move tasks.

The AutoPLAN upgrade for the HP 9000/700 series now incorporates subproject features that allows you to identify a task in AutoPLAN as a summary or parent task. This parent task can be broken down to lower levels of detail or child tasks, and then linked to other projects located on the program's project path.

Duration and finish dates, as well as resource and cost information, can subsequently be calculated for the parent task based on the sum total of the child task. Because the subproject can be blown up into child tasks, the rest of your team then can know the actual costs, dates and resources required for each portion of the project.

A good manager will see to it that the players know what the situation is, and getting it down on paper will increase their understanding. AutoPLAN provides you with presentation quality charts and custom reports for generation on PostScript printers and HP-GL plotters. It also offers plotter or printer output to screen so you can review the graphics before printing.

The software is $2,995 per license for a floating license and $1,495 for a node-locked license. — *Andrea Zavod, Associate Editor*

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CIRCLE 493 ON READER CARD

Completing The Cycle

Tektronixs' Phaser II PXe Printer And 4511A Interface Let You Share The Wealth Of Information

So you have a 64-color display of your latest brainstorm glowing on your terminal's screen. Looks good, too — plenty of colors, multiple fonts, some calculations and a pie chart. However, you need to show this and 12 other screens, along with 100 pages of text, to 18 clients in a presentation tomorrow morning halfway across the country.

Tektronix (Wilsonville, OR) helps complete the presentation cycle with its Phaser II PXe thermal wax transfer color printer and 4511A Ethernet interface unit. The printer and the interface takes your presentation ideas off the desktop and puts them into the hands of those who need it.

Katherine Melcher, Tektronix marketing communications program manager, says that the 4511A replaces the larger, more awkward 4511, which was the size of a PC. "Any group, especially in the engineering or scientific environment, doing finite element analysis or image presentations can use this system," maintains Melcher.

The 4511A is about the size of a modem, attaches anywhere along your Ethernet network and lets you take advantage of TCP/IP protocols on your Ethernet network. Any number of workstations connect to the Tektronix family of color printers, including the new Phaser II PXe color printer.

The interface does not limit any of the printer's functions, nor does it degrade the server in any way. In fact, because it accepts UNIX lpr spooling commands, the 4511A offloads print jobs from the file server, relieving the print services on a UNIX Ethernet network.

The 4511A supports BSD UNIX 4.3 and AT&T's System V UNIX, with lpr extensions on HP, DEC Ultrix, IBM RS/6000, MIPS, Silicon Graphics and Sun.

With no host software to load, you should be able to install the 4511A in about 15 minutes using thick 10Base5, thin 10Base2 or twisted pair 10BaseT.

After configuring the 4511A and your workstations to identify the Internet addresses and queue names, the 4511A switches the printer among PostScript, HPGL and text mode at a rate of 90 KB per second.

The 4511A comes with its own power supply, a two-foot PC parallel port-to-printer cable, 50 ohm T-connector and terminator.

The Phaser II PXe is a 300-dpi thermal wax transfer color printer that implements Adobe Systems' PostScript Level 2 software. The Phaser II prints on transparency film, paper and fabric transfer media of 8.5 by 11 inches and 8.5 by 14 inches. The color is melted off a ribbon on the printed surface allowing for a smoother quality paper.

The Phaser II PXe is not limited to a workstation environment. Supporting Macs, PCs and VMS systems, in addition to the optional 4511A connectivity, the printer contains parallel, serial and AppleTalk ports, in order to accommodate multiple users and systems on your network without changing cables.

The print engine found in the Phaser II PXe incorporates a 16-MHz AMD 29000 RISC processor. It comes with with 17 standard Adobe fonts that are expandable to 39 fonts. A base memory of 4 MB is upgradeable to 8 MB.

Combined, the 4511A and the Phaser II PXe printer let you use your network's presentation abilities to its fullest. The 4511A lists for $1,495 and the Phaser II PXe is priced at $4,995. — *Charlie Simpson, Technical Editor.*

Tektronix Inc.
Graphics Printing and Imaging Division
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After all, anyone can use third party software to hastily patch cosmetic "features" onto a mediocre accounting system. But what will a patchwork system cost you in terms of reliability and support down the road?

On the other hand, foresight, planning and careful engineering take time. But we wouldn't have it any other way. And after living with our software for a while, we think you'll agree that our time (and your money) have been well spent.

So, if you're in the process of evaluating financial software, why not consider a high-yield investment for the future: Financial Management Systems from Mitchell Humphrey & Co.

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CIRCLE 154 ON READER CARD

3000/9000

PROMISES TO KEEP

BY PAULA JACOBS

NewWave Office — When Introduced, It Was A Radically Different And Innovative Approach To Office Computing. Where Is It Headed Now?

With the introduction of NewWave Office more than two years ago, Hewlett-Packard pioneered the second generation of Integrated Office Systems (IOS). At the time, HP's strategic emphasis on cooperative computing and an object-based graphical user environment represented an innovative concept in office computing. This flexible approach was radically different from that of many hardware vendors whose office systems were tightly coupled with their hardware platforms.

Designed as an open systems solution, NewWave Office provides communications, decision support and information-sharing services, including e-mail, network-wide ad hoc query and terminal emulation capabilities. By creating a seamless interface between applications, NewWave Office helps enhance productivity and efficiency, enabling users to exchange and integrate information across a multivendor, enterprisewide environment.

When NewWave Office was first introduced, the approach was certainly innovative. But that claim is no longer valid. Many other multivendor platform office solutions are available for UNIX and client-server environments. And today, user expectations demand flexibility and freedom of choice as bare-boned requirements for LAN environments.

Nevertheless, has HP legitimately delivered on its promise for an integrated office solution? What kind of widespread acceptance has NewWave Office achieved? And what is the prognosis for its future? We asked these questions of HP, ISVs, industry consultants and customers, and found an interestingly varied set of reactions.

On the one hand, customers sing its praises. But some sources say that NewWave Office has not fared as well as expected.

For veteran users such as Ken Joseph, technical manager at the Solano County City Counsel Office in California, NewWave Office provides exactly the functionality required when the system was first purchased two years ago. More than 60 users on an HP 980/100 system at Solano County have been pleased with the resource sharing and information access that NewWave Office provides.

For American United Life of Indianapolis, which also installed NewWave Office two years ago, it has met the company's needs for information access, resource sharing and an executive office system. According to Sam Stone, vice president, Pension IS, the company originally purchased NewWave Office as an opportunity to do client-server computing, taking database information stored on the mainframe and presenting it to various levels of management. For example, using resource sharing, American United Life stores contracts and other information on the server. In-house departments, clients and brokerage houses can access this information over a LAN.

Another user who praises the merits of NewWave Office is Peter Strombom, vice president, Information Services, of Meriter Health Services, a 500-bed community hospital in Madison, Wisconsin. According to Strombom, Meriter Hospital purchased NewWave Office in order to provide high-level managers with an Executive Information System (EIS) that incorporates NewWave Office and PowerPlay, a drill-down reporting tool from Cognos, an HP NewWave Developer.

At General DataComm in Middlebury, Connecticut, NewWave Office has been used successfully for approximately two years. According to Director of Business Operations John Hannon, NewWave Office was selected as part of an overall corporate UNIX client-server strategy, which includes a transition to AIM and UNIX workstations. "NewWave Office certainly makes my life a lot easier," says Hannon. The product meets a variety of company needs, including object storage for contracts and business operations.

Miles To Go

ACCORDING TO HP, during the first 18 months after the announcement, an estimated 2,000 copies of NewWave Office shipped to approximately 1,000 customers. Although current figures are unavailable, the company claims that NewWave Office is still shipping at the same rate.

Presently, NewWave Office, which supports both SCO UNIX System V Release 3.2 and Novell NetWare, consists of a suite of 40 software products and services. These include

The primary hurdle is helping users to be more comfortable with client-server technology and applications.

HP-UX, MPE XL and MPE V and UNIX/386 server components, such as HP Information Access, HP LAN Manager and HP OpenMail. HP also offers a variety of client services and applications that provide PC mail, shared resources, networking and word processing functionality.

In addition, through the WaveGroup Developer's Program of Independent Software Vendors, HP offers business intelligence, document management and process automation applications, such as EIS, decision management tools and content-based text retrieval.

In business-intelligence applications, NewWave Office allows data to be gathered efficiently from sources inside and outside an organization in combination with PC-based tools. With document management, users can capture and organize all types of data and documents for shared use in enterprisewide computing. Process automation or workflow communications helps automate business applications, such as expense reports and travel requests, with e-mail and fax.

HP's Steve Jeffery, marketing manager, Corporate Computing Systems Operations, notes a recent shift from MPE customer orders to those from new UNIX customers, i.e., 60 percent are from new UNIX customers and 40 percent are from HP's traditional MPE base. According to Jeffery, NewWave Office has enabled the company to penetrate new accounts. Current NewWave Office users include large HP customers in information-intensive industries, such as service, process manufacturing, pharmaceutical, insurance, financial services and telecommunications.

However, Jeffery admits that NewWave Office must still overcome some obstacles. He says that the primary hurdle is helping users to be more comfortable with client-server technology and applications. Consequently, the sales cycle involved in implementing a totally new client-server strategy is often long. Users are also cautious because of problems associated with products such as IBM's OfficeVision and NCR's Cooperation. In any case, Jeffery admits that while interest is growing and many customers are piloting office systems, HP really doesn't anticipate significant growth until 1993.

To demonstrate its commitment to NewWave Office, HP has increased the number of corporate resources dedicated to NewWave Office. There's also a nationwide Swat team, originally assembled to market NewWave but which now focuses on specific strategic opportunities.

Ann Palermo, director of Office Systems Research at International Data Corp. (of Framingham, Massachusettes,) emphasizes that HP Office is available and on sale today, unlike some competitive systems that have not shipped. "The real issue for the company is the management of third-party products. There is significant opportunity to position NewWave Office as the delivery vehicle for collaborative applications. One challenge is to help users relate to the NewWave user interface because of the confusion between the terminology NewWave and NewWave Office."

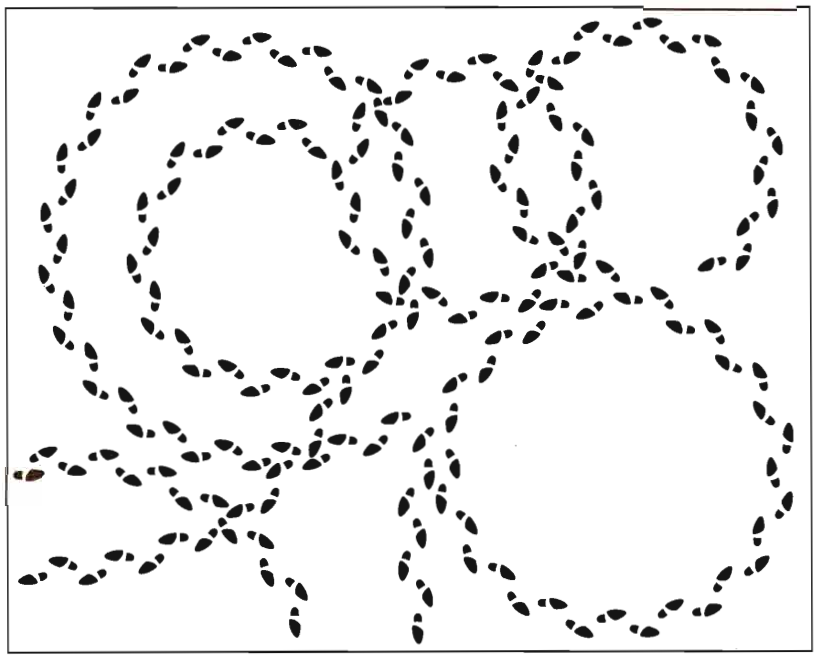
However, some knowledgeable sources close to NewWave Office say that all is not well. They point out that very few programs have emerged recently from the Cooperative Computing Systems Operations, the group chartered with NewWave Office and which has reportedly undergone several reorganizations. One HP sales representative mentioned that HP is maintaining a low profile for NewWave Office. Other problems include the competition HP now faces in the PC LAN world and the fact that HP sales representatives do not sufficiently understand NewWave Office and therefore find it hard to sell.

Both HP sales representatives and NewWave developers cite the inherent difficulty many hardware vendors face in selling third-party software products. For example, it is extremely time-consuming for HP sales representatives to learn the intricacies of software products when they are actually focusing on selling solutions. HP sales representatives readily admit that they really aren't motivated to sell NewWave Office when their commission structure is based on hardware sales. And, with the number of components NewWave Office comprises, no wonder there's room for confusion.

Another problem is the term "NewWave." Many customers mistakenly use NewWave and NewWave Office interchangeably. NewWave is a graphical user interface environment that integrates PC applications. NewWave Office, on the other hand, is a suite of multiplatform, client-server products and services that provide communications, decision support and information access services.

NewWave Developers Program

SINCE THE INITIAL ANNOUNCEMENT, HP has touted the merits of the HP WaveGroup Developers Program. The original program goal was to create integrated solutions that solve business problems for customers. Under this program, HP selected a group of third-party software developers whose applications complement NewWave Office. The program was chartered to create solutions that are tightly integrated with HP NewWave Office products and services, focusing on three strategic areas: business intelligence, document management and process automation.



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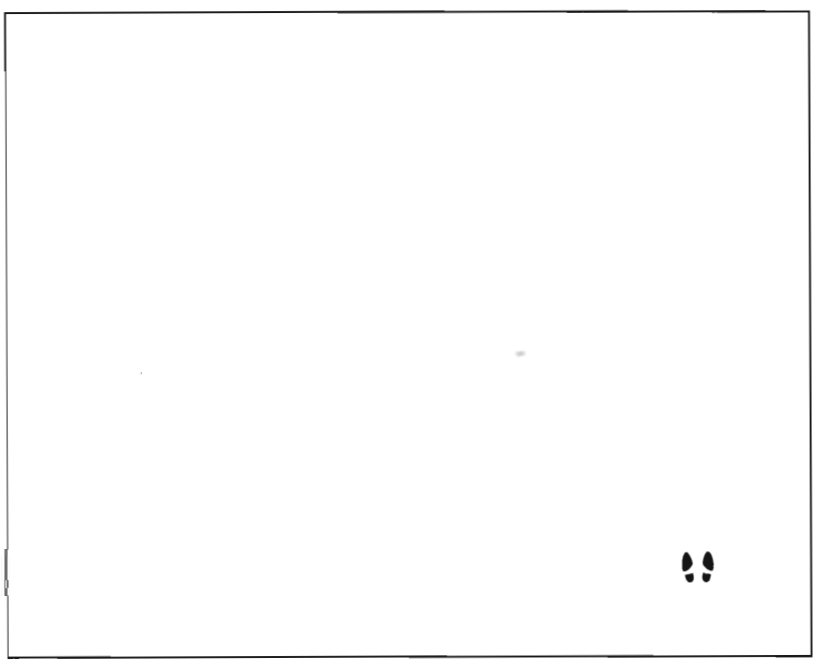

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When HP originally introduced the NewWave Developers Program, some consultants and customers expressed concern about HP's ability to deliver the same high-quality service and support with third-party products as with their own products. However, interviews with both customers and NewWave Developers indicate that HP has indeed kept its promise. HP support specialists have received third-party training and provide first-line support. HP works closely with third-party developers when additional support is required.

Barry Goss, director of marketing at Verity Inc., a document retrieval company and a NewWave Office Developer, is convinced that HP has a winning strategy in place. Under a joint development agreement, Verity and HP will provide document management products based on Topic, Verity's intelligent document retrieval system.

Barry Gillespie, director of marketing at JetForm, also a NewWave Office Developer, is quite positive about the ongoing relationship with HP. Specifically, he praises the technical and marketing support HP has provided JetForm, and attributes many of the sales of JetForm's to the NewWave Office efforts.

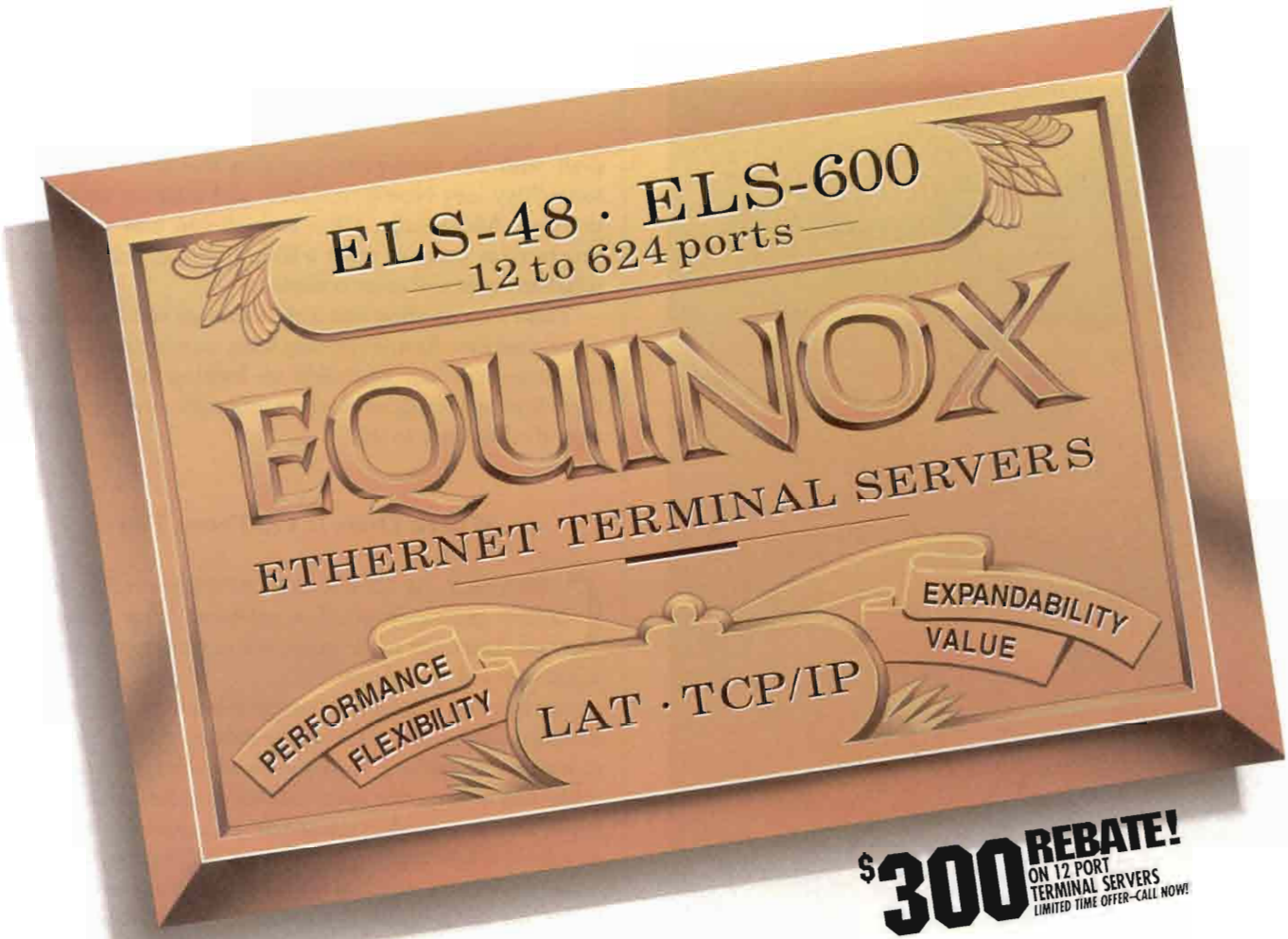
However, the reluctance of several NewWave Office Developers to discuss either the program or their relationship with HP does not augur well. One manager, who would speak only anonymously, noted that his company's relationship with HP did not meet expectations relative to its experience with other vendors. He felt that sales did not measure up, but attributed it to the long sales cycle engendered in positioning NewWave Office as part of a new corporate client-server solution.

HP also appears to be sending mixed signals about the future of this program. According to Judy Watts, marketing programs manager for NewWave Office, "In essence, the WaveGroup Program was established to recruit the 'right' software application companies to join the NewWave ISVs. Its objective was to build a grouping of software applications that were written to NewWave APIs for linking and embedding, agent support and object models. With the 4.0 release of the NewWave Environment, it is no longer required or recommended to write specifically to NewWave."

Strategy For The Future

HEWLETT-PACKARD WILL INTRODUCE a significantly enhanced version of NewWave Office in early fall 1992, according to Steve Jeffery. Currently in beta test, the next revision will add more functionality for business intelligence, document management and e-mail, in terms of integration and breadth of clients as well as support for the Macintosh and UNIX desktop environment. It will also offer a higher level of integration and improved networking, e-mail and database connectivity. The focus will be on sharing information among workgroups and across enterprises.

With this announcement, HP will expand the number of



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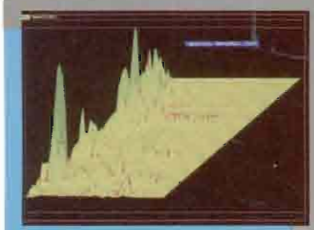

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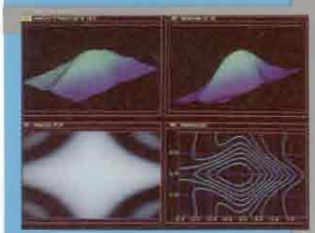

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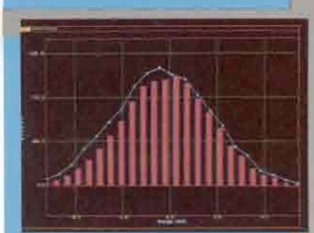

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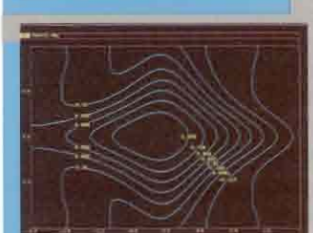

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deals with key third-party providers that can integrate their technology into NewWave Office and improve overall functionality. Additionally, HP is streamlining how products are structured in order to make selling, ordering, delivery and installation easier and more consistent.

There's no question that a clear strategy and the right positioning are key. As one HP Swat team member said, "We have had successes where customers are looking for a broad set of capabilities and strong networking. But right now we don't have a good office story to sell."

Where Does It Go From Here?

CERTAINLY, HP NEWWAVE OFFICE has set the stage for a new generation of office products. It has added a creative dimension to the office, with a prototype solution that is intuitive and easy to use.

But let's face it, selling a strategic solution is never easy. And the introduction of a client-server strategy into an existing organization requires a totally new mindset, education and redirecting of corporate resources. For example, chances are that any IOS strategy involves integration with existing networks and an inherited Information Technology (IT) legacy. While most organizations may agree that client-server computing is in their future, the reality is that in most large organizations, IT expertise still revolves around skill sets strongly rooted in centralized, larger scale systems. Defining the road map for this strategic direction may take a while, and finding the correct route is not always a straight path.

Despite some initial difficulties and disappointing sales, HP may still have a bright future as an IOS player for several reasons. First, HP's strong reputation and foothold in the UNIX market, together with solid networking capabilities, are certainly valuable trump cards. Second, NewWave Office is real and available, with ample reference accounts. Third, and most important, plans to introduce a new, highly robust version of NewWave Office indicate that HP has a coherent office strategy in place.

The obvious question is this: Can HP bank its office strategy on a future release of NewWave Office? More important, can HP effectively sell integrated office solutions? The answer is a qualified yes, assuming proper positioning and sales force training. While sales of NewWave Office may be somewhat disappointing, it's hardly time to issue a death sentence. Let's wait until the much-anticipated release is on the market before declaring a verdict.— *Paula Jacobs is a marketing consultant and writer based in Framingham, MA. She specializes in the implementation of new technologies.*

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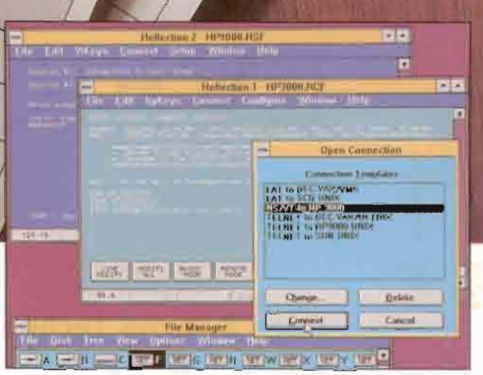

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IMAGE IS (NEARLY) EVERYTHING

Once A Niche Technology, Imaging Has Come A Long Way In A Short Time — Permeating New Markets With A 50-60 Percent Annual Growth Rate

By Bill Sharp

Imaging adheres to the well-known disease theory of technology (which I just made up). According to the theory, any effective new technology will expand in two primary stages. During the first, the original technology strain multiplies with increasing speed, replicating itself in large numbers of very similar systems. During the second stage, the technology mutates and combines with other technologies to create significant numbers of different hybrid technologies. The speed with which these mutations and combinations arise and multiply is directly proportional to their perceived economic value.

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- Recreate missing dataset files
- Rename fields, items, datasets
- Change primary path definition

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- Capacities of all datasets
- Characteristics of data items
- Characteristics of datasets
- Paths
- Schema

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- Cremate databases (first erase and then purge all datasets)
- Rename databases

Restructuring

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- Data items to databases
- Fields to datasets
- Datasets to databases
- Paths between masters and details
- The sort feature to paths

Delete:
- Data items from databases
- Fields from datasets
- Datasets from databases
- Paths between masters and details
- The sort feature from paths

Change:
- The characteristics of data items (and their fields) in all datasets
- The characteristics of fields in a specific dataset
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Imaging will reach nearly $2 billion in sales for the U.S. alone this year, and is growing at an impressive 50 to 60 percent per year.

hot item. These applications represent the primary infection of the marketplace with the imaging disease.

Today we report the first strong evidence for new strains of the imaging disease, as it mutates away from the first easily identifiable forms and into new, less recognizable strains. In all three of the cases noted above, imaging takes on some new form that promises to start spreading rapidly outward into the business population. Paradoxically, in marked contrast to the usual result of infection, afflicted businesses seem to benefit strongly from most imaging illnesses.

How's That?

AT OTICON, THE DANISH hearing aid manufacturer, they like to shred the mail before it ever reaches anyone's desk. More than 225 sales and service employees work in a "paperless" office. In the mailroom, their letters are opened and scanned into an HP Advanced Image Management Software (AIMS) system that is coupled to HP NewWave, which delivers the resulting electronic mail. Once the scanning is verified, letters are shredded and sent out for recycling. On the way out of the building, the newly formed confetti passes through the cafeteria in a transparent chute so employees can see evidence of their "paperless" progress. Oticon expects the new system to improve productivity by 30 percent over three years.

In New York City, November's elections appear certain to strongly endorse one candidate — new electronic polling lists generated using an imaging system developed by Andersen Consulting of Chicago. Using the system, the New York City Board of Elections is phasing out its old system of massive voter registration books that required constant manual updating to keep them accurate. Instead, the Board of Elections will use its new imaging system developed on HP AIMS and running on HP hardware, linked to a voter database residing on an IBM mainframe.

A few days before each election, a new printout of voter names and signatures is ready to use. The system is called Signature Capture, Reproduction and Imaging system for the Board of Elections (SCRIBE). Brooklyn, the Bronx and Staten Island will use the system during the November elections. When fully implemented next year, the system will include information on more than three million voters. Voters will notice less waiting at polling places, and the signature book for voter verification is smaller, cleaner and better organized.

Remarkable Marketing Research

HP's MARKET RESEARCH and Information Center in Cupertino, CA., is home to some very talented people charged with a task that has historically been rather frustrating: Supply marketing research and information as required by hundreds of HP marketing professionals around the world. AIMS Product Manager Nikola Cowburn describes trying to get information from Cupertino to Pinewood quickly and accurately using older systems as frustrating. Each facility tended to do its own research. "We do a tremendous amount of research, and it terrifies me to think of how often that work is duplicated," she says.

Jim Douvikas, a project manager with the center, intends to change that by building a centralized research system based on HP AIMS. "The process before was completely manual access. The objective of this system is to redesign the business research process to impact HP's profitability. There is no other integrated research facility available inside or outside HP."

Douvikas says the system will be available 24 hours a day, worldwide, to provide both syndicated market research from outside vendors, as well as HP's original research. Documents will be viewed in their original form using AIMS and can be printed or faxed from AIMS. The application will include system security. He intends to use the system to eliminate redundant research, eliminate research mistakes, allow marketers to focus on using information rather than finding it, and to improve the quality of marketing decision making.

A $2 Billion 1992 Market

HP's DUAL INTEREST IN imaging, both as a product for sale and as an internal tool, makes good sense. According to Bruce Silver, director of Image Management Systems with BIS Strategic Decisions (Norwell, MA) imaging will reach nearly $2 billion in sales for the U.S. alone this year, and is growing at an impressive 50 to 60 percent per year in spite of the sagging economy.

Imaging growth, says Silver, centers around new features and

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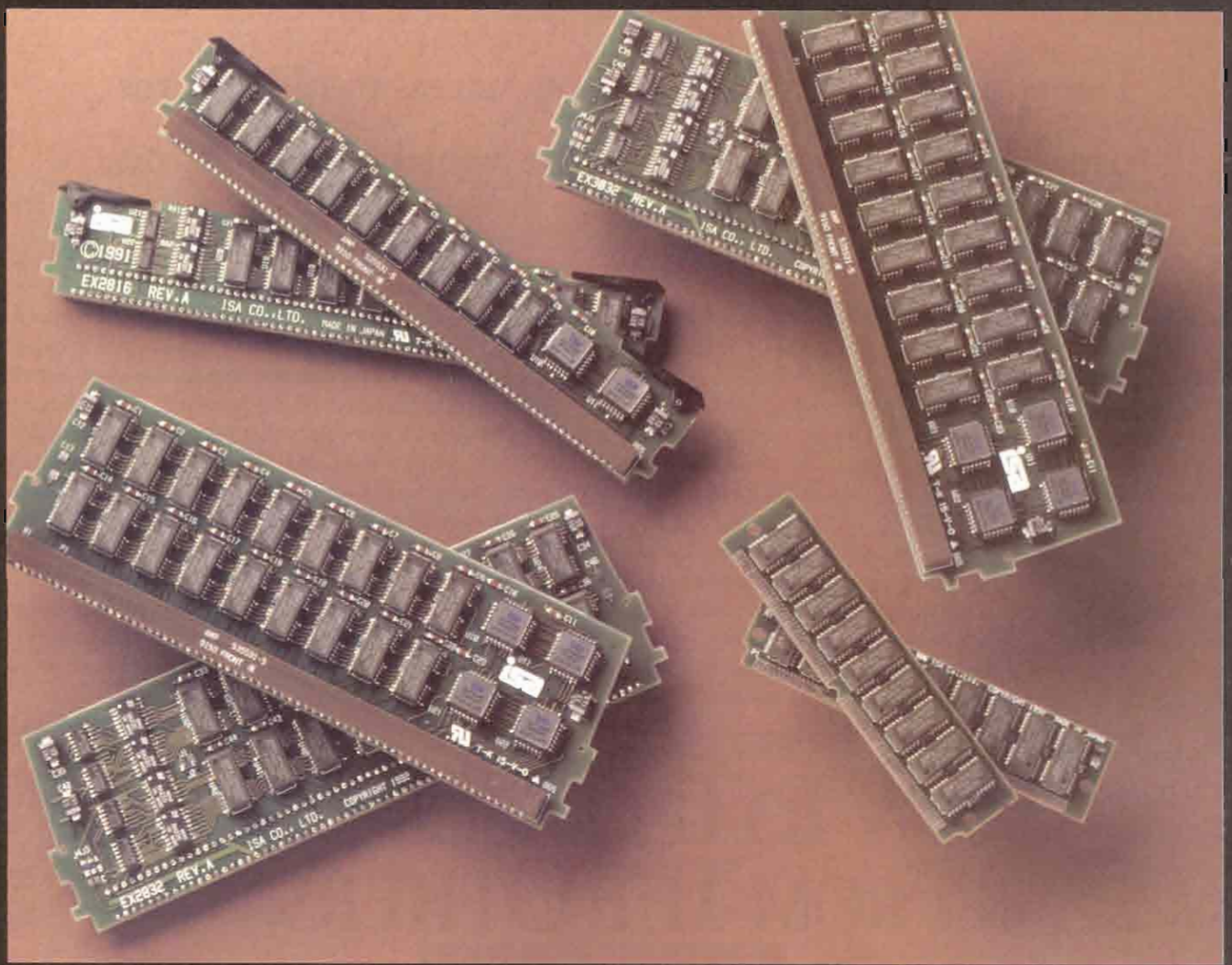

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Depending on your application, access to old records on your imaging system may be a total waste of time or utterly crucial.

functions and moving imaging onto open systems with standard platforms, which is music to HP's ears, as its product resides on the UNIX-based HP 9000.

Integration, the glue that makes systems really work on daily tasks rather than just sounding like they might work, is the thrust of imaging now. Developing real systems and solving some of the problems that crop up when you grab hold of a new technology and find you are going for an unexpected ride.

One of those fast and not-so-funny rides takes place just after you've gotten your new imaging system up and running, and some wise-guy asks if we can get at the *old* records. Most imaging user wannabes visualize being able to call up any old record at the drop of a hat as they respond to inquiries almost instantly on the new system. This would be accurate except for one assumption. Many new imaging systems are priced to include hardware, software, maintenance and even training — but they cleverly omit backfile conversion.

Backfile conversion sounds like plumber's jargon, but it refers to bringing all your old paper, film or magnetic storage records into the new imaging system. Depending on your application, access to old records on your imaging system may be a total waste of time or utterly crucial to keeping the business afloat.

This would be less of an issue if backfile conversion weren't rather costly. "It can cost from five cents to a dollar a page," says Silver of BIS. "If you have 10 million documents and you pay 25 cents per page, you've got $2.5 million in costs." — And that doesn't include the cost of the system.

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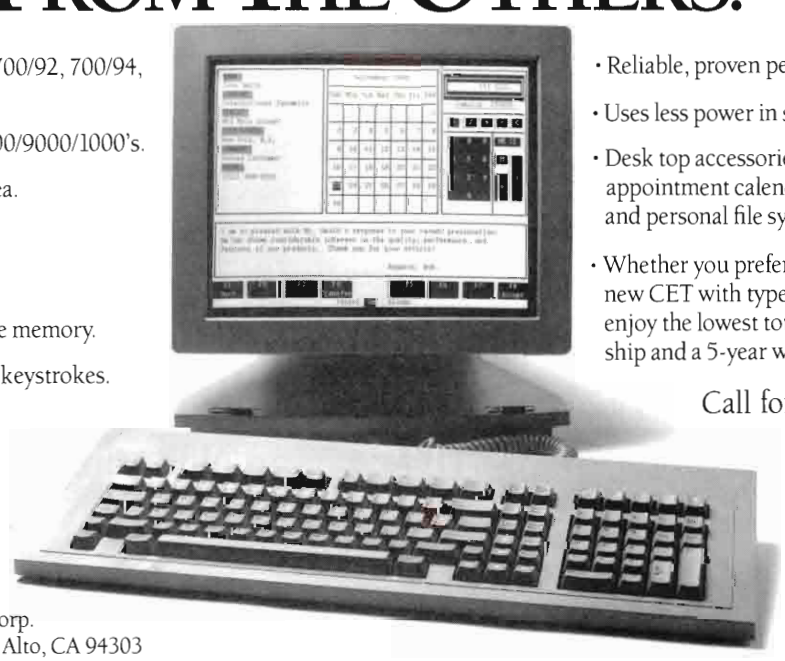

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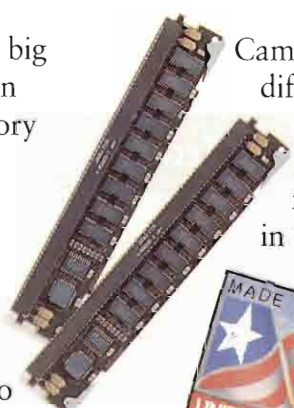

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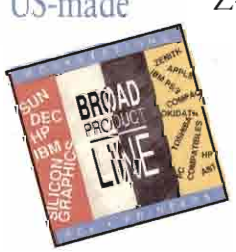

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CIRCLE 294 ON READER CARD

The process generally includes processes very much like original data entry into the system, including scanning of paper documents as well as careful data entry and indexing for effective retrieval later. Data entry and indexing are the most expensive portions of the process as they are both labor-intensive manual processes. In some cases, large jobs may benefit from converting documents first to film and then scanning them into the imaging system as a second step.

Because its cost is high and its usefulness varies from one imaging application to another, backfile conversion should be considered before an imaging system is purchased, says Steve Fontana, Imaging Division manager for Software Systems Technology (New York).

"Look closely at the cost justification of a new imaging system," he says. "It should include the cost of making all the necessary documents available in the new system. The backfile conversion cost must allow you to make these documents available to the system when your imaging system comes online or shortly after, or you could have serious trouble. Include these costs in the total price of the imaging system."

Some applications, such as pension and insurance applications, may require backfile conversion of all existing documents, while an accounts receivable application may require no backfile conversion at all. "But if you have insurance applications with a previous history, it doesn't do you any good to account for just new paper in your imaging system and ignore older paper in the file cabinet."

Once you determine that your imaging application requires backfile conversion, you have three options, says Fontana.

1. Ignore it — Just because it would be smart and efficient does not mean you have to do it. Many hardware manufacturers, painfully aware of the costs of backfile conversion, elect to simply not mention it in selling you an imaging system. You can elect to ignore it as well.

2. Do the conversion internally — By converting your documents internally, you can reduce the cost of the process and perhaps protect sensitive documents. On the down side, this solutions must be managed carefully to ensure the necessary documents are online when you need them — converting internally can take quite a bit longer.

3. Contract with an outside service bureau — If speed is crucial or the job is huge, consider using outside help. People who specialize in this kind of work may complete the job much faster, and can likely set up several parallel processes. This

[Overlapping Technologies And Markets]

Boundaries between technologies and products grow increasingly vague with time, as computers offer increasing amounts of processing capability and links between solutions become more capable. While HP AIMS shares in the image *management* market, the nearby image *processing* market is moving along as well. Because it is easy to confuse these markets due to their similar names, and as their technologies in part overlap, here is a peak at image processing.

Silver of BIS simplifies the distinction nicely: "Document imaging is not about processing but about image management. There is relatively little intelligent processing of the image data." HP AIMS and its relatives take the image data you scan into the system and store it, allowing you to later retrieve and manipulate that image in simple ways. As noted, this is a large and rapidly growing business.

Image processing is much less concerned with the management of image data and much more concerned with the enhancement and interpretation of complex image data. Here the focus is on processing or computation using the image as a starting point.

Dennis W. Morgan, special programs manager for BDS Inc., Sterling, VA, works not in the realm of insurance claim forms and canceled bank checks, but with images from nuclear magnetic resonance systems, high-resolution mapping, and image enhancement from space and underwater photography. BDS, a systems integration firm, works not with personal computers but with UNIX workstations to get the processing power to do their work.

What is changing in this market is that, where complex image processing has required dedicated, custom computer systems in the past, UNIX workstations have enough power to get the job done now. Morgan sees the HP 700 series as an emerging favorite in this high end market. "What makes the whole thing work is the HP 700 series. It is perfectly designed for processing images from satellites, remote sensing, medical systems and defense work." HP's model 750 workstation for complex image processing "will crush anything else out there," he says.

Applications that used to require systems costing $500,000 to $1 million now can use the HP 750 at a fraction of the cost. And once applications are moved over to UNIX, they can be ported to other vendors' UNIX systems if need be.

What can this kind of processing power do? "You can take photographic images of adjoining areas, one from 5,000 feet and another from 10,000 feet, and the system can generate a combined image in one scale and register that image to a specified scale to help update a map. The workstation does not do this alone, however. BDS last month issued release 1.2 of its Xcalibur high performance image processing software for use with UNIX workstations.

HP 700 workstations and Xcalibur are teaming up to provide new visualization and analysis software for the National Institutes of Health (NIH). BDS will design and develop the Multimodality Radiological Image processing System (MRIPS) for the NIH by extending the 2-D and 3-D capabilities of Xcalibur. MRIPS will be used to analyze data from computerized tomography (CT), nuclear magnetic resonance (NMR), magnetic resonance spectroscopy (MRS), positron emission tomography (PET), single photo emission computed tomography (SPECT), digital subtraction angiography (DSA) and ultrasound. — *Bill Sharp, Technical Editor*

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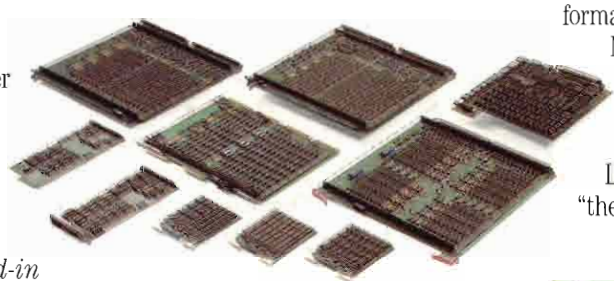

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solution may cost more than doing the job internally. Offshore data entry may help to hold costs down, says Fontana.

HP's Imaging Products

EACH LARGE VENDOR OF computing hardware, and quite a few software vendors, offer imaging products. Digital and IBM are happy to take your money, and Lotus-Development Corp. is extending its successful groupware product Notes to provide imaging capability as well. Naturally, HP is not planning on being left out of all this.

HP's imaging products were developed in Pinewood, England and the marketing program is run from that location in tandem with groups in California and Colorado.

Nikola Cowburn manages much of the marketing for HP AIMS. She notes that recent changes in the product's capabilities include:

- AIMS runs on Windows 3.0.
- You now can FAX images from the AIMS database.
- You can route incoming FAXes into the AIMS database or route them on to other people using AIMS.
- Dynamic data exchange allows integrating AIMS with existing databases on HP 3000, DEC VAX or IBM systems.
- AIMS supports HP rewritable or WORM optical drives from 10 to 93 GB, and Signet third-party drives up to 1.27 TB.

HP AIMS is a UNIX-based client-server image management system that uses personal computers running MS-DOS and MS-Windows for applications processing. By basing AIMS on its open systems UNIX architecture, HP makes it easier for both its own and third-party developers to integrate the product into other systems. This is in part why Andersen Consulting, which works with all the major vendors, chose to use HP AIMS as the basis for the SCRIBE system in New York City, which links to a large IBM-mainframe-resident database. The same ease of establishing links made the integration of AIMS with NewWave possible for Oticon in Denmark.

The core of HP AIMS is the DataManager, a relational database management system (RDBMS) jointly developed from Informix products by Informix and Plexus Software. AIMS DataManager resides on an HP 9000 server and includes Informix TURBO and SQL, along with enhancements for managing objects up to 2 GB in size. Other typical elements in an imaging system include magnetic storage for the server, optical storage for image data, scanner, scanning station personal computer, display personal computer stations for imaging work, print server and laser printer as well as a fax server. It will come as no surprise that HP is happy to supply any or all of these for your imaging pleasure.

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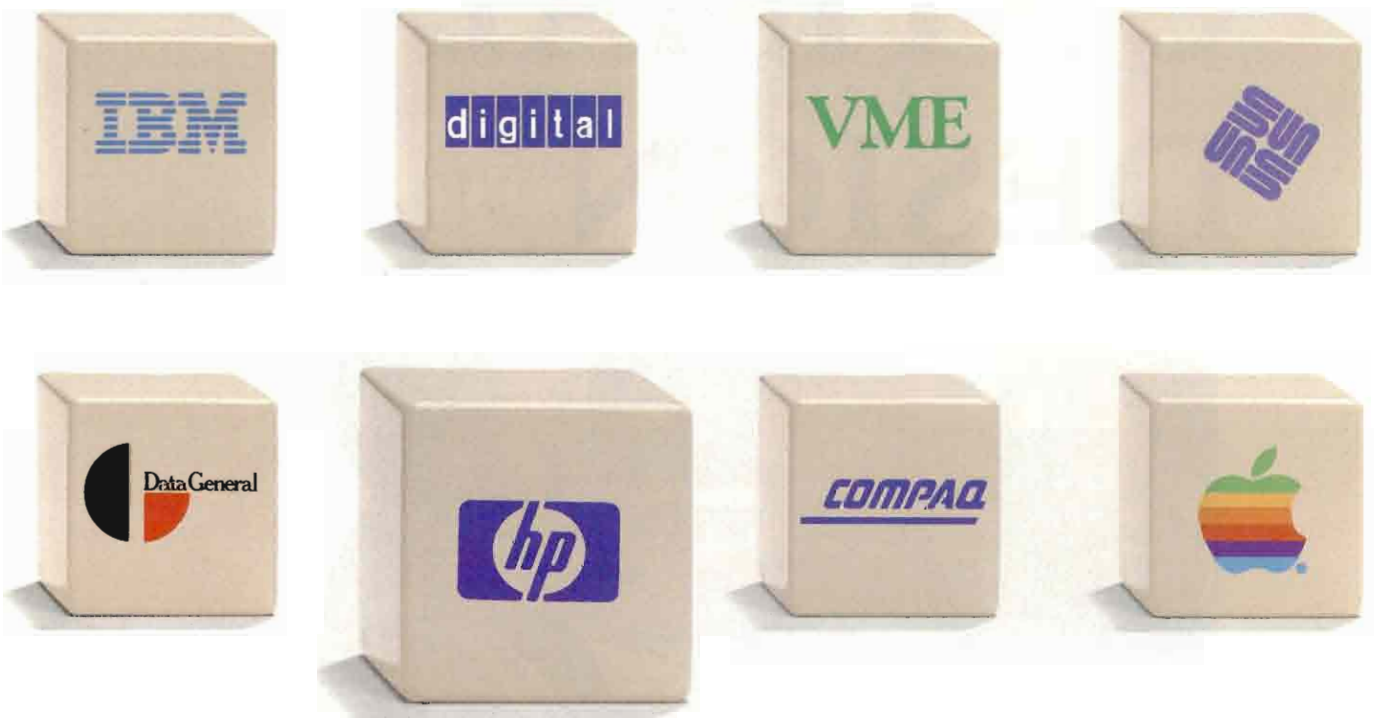

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SPECIAL REPORT: WORKSTATIONS

OPTIMAL DESIGN

Solid Modeling Leads To Solid Sales For Aircraft Controls Manufacturer

BY PAUL BENSON

Talk to Jim Hart and you'll gain a fresh appreciation for the design-optimization process.

Hart, manager of Proposal Engineering at Eaton Corp.'s Aircraft Controls Division, has recently overseen the implementation of a solid modeling system at the Denville, NJ facility.

The division is one of the world's leading suppliers of cockpit controls and electromechanical actuators to the aviation industry. Its products are found aboard every type of aircraft — commercial, military, business and private fixed-wing, helicopters, short take-off and land (STOL), and vertical take-off and land (VTOL) aircraft like the Boeing Vertol Osprey.

Typical cockpit controls include landing gear controls, flap selector controls, trim controls, fire emergency controls, power quadrants and custom control panels. These instruments serve as the interface between the pilot and a host of linear and rotary electromechanical actuators, which are also designed by the Eaton Aircraft Controls Division.

"These actuators, which are designed to perform a wide variety of functions reliably under the most severe conditions, can

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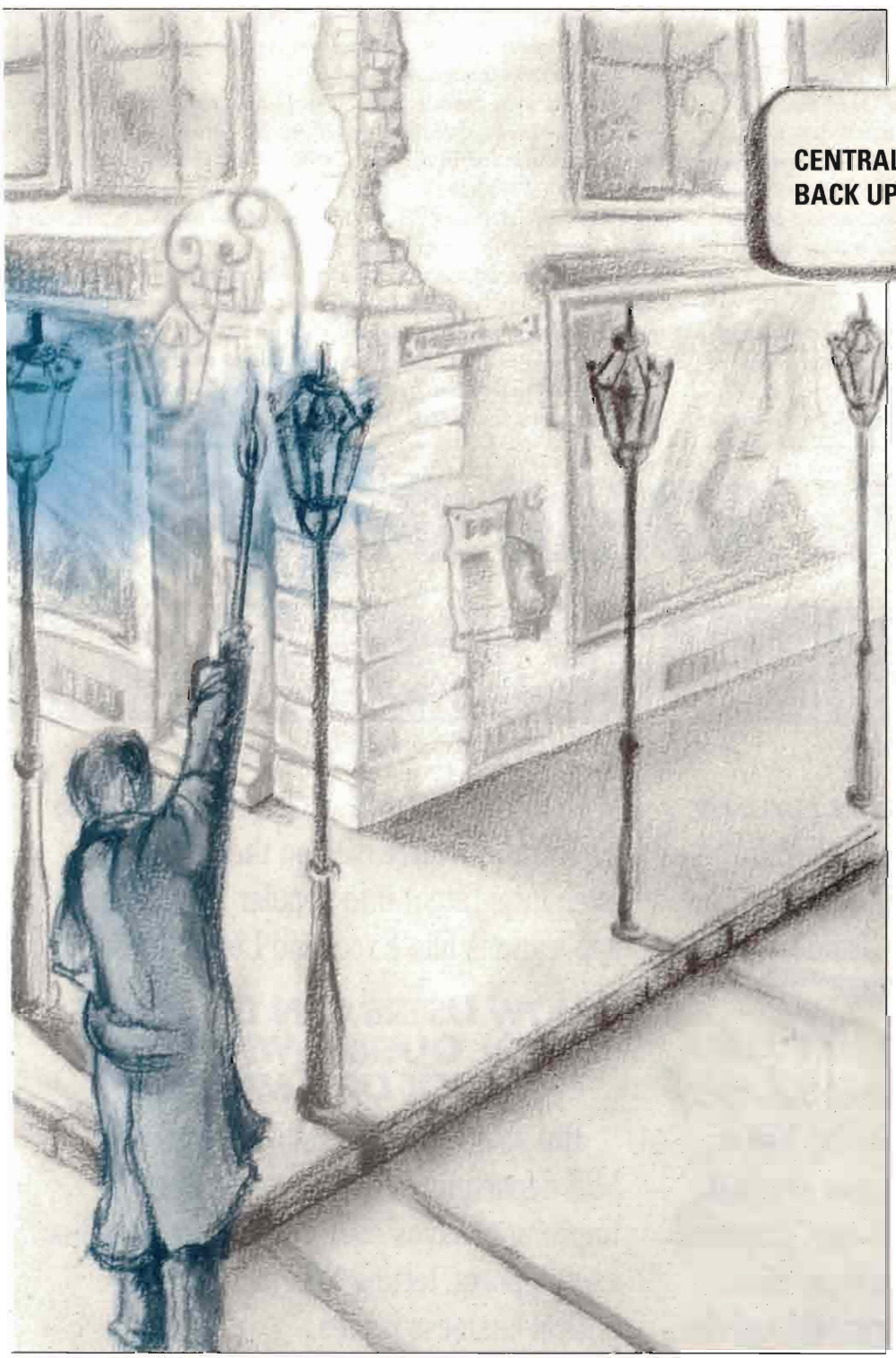

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HEWLETT PACKARD

*through interoperation with Quest Plan-B

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control almost anything on an aircraft," Hart explains. "They operate the aileron and rudder trim tabs, and open and close doors everywhere from oil coolers to auxiliary power units. They also regulate fuel control devices and lock and unlock everything from landing gear to bomb racks."

Indeed, Eaton has designed and manufactured 145 different actuator models. Since 1972, when the company first entered the aircraft actuator business, it has shipped more than 35,000 units. Despite this considerable volume, these are custom-designed and manufactured pieces.

Such a high degree of custom design and relatively low manufacturing volume ("Fifteen-hundred pieces at one time is a very large order for the aircraft business," Hart points out), Eaton became increasingly interested in methodologies that could trim design and manufacturing time. Not only would such efficiencies help contain costs, they would contribute to the company's competitive edge in a highly competitive international market. Any competitive edge would lead to increased sales.

Enter solid modeling, or 3-D design.

"Hewlett-Packard's ME30 modeling, design and drafting system allows us to optimize a design in a much shorter period of time, so it's a cost-saving operation," Hart says.

"The time it takes to get initial thoughts on paper or onto a computer screen is about the same," he notes. "We cannot hurry our own processes."

Hart notes that once the initial design is set, CAD shines.

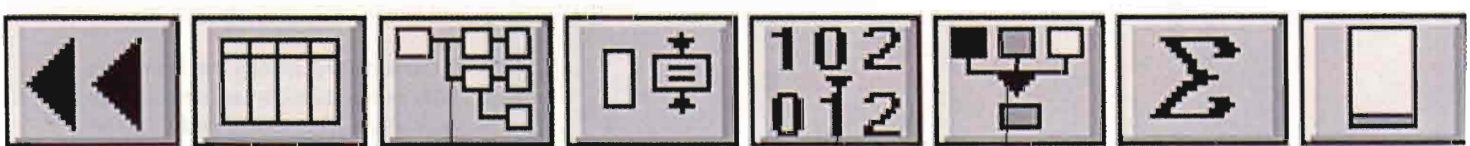
"Design changes and 'what-ifs can be done very quickly on the system," Hart notes. "In addition, the information is a geometrically correct entity — accurate to 15 significant decimal places." Solid modeling becomes a tool for design optimization, he maintains. He figures the optimization is on the order of three-to-one.

"Frequently, we have an existing design and a customer needs one similar to it. We can call up the model and amend the design almost immediately."

Although solid modeling is still fairly new to the division — the ME30 package running on HP Apollo Series 700 workstations was installed in the fall of 1991 — it's already paying off for Eaton. "We can do a better job of getting our products out the door," Hart says. "The system allows us to do a better job — faster — in our designs."

Competition in the aircraft business boils down to more than just dollars; contracts can be won or lost on the basis of control and actuator weights and sizes. The smaller and the lighter, the better. To this end, Hart notes that solid modeling provides a competitive edge by providing increased accuracy and quicker analysis than traditional design methods.

WE HAVE SOME GRAPHIC



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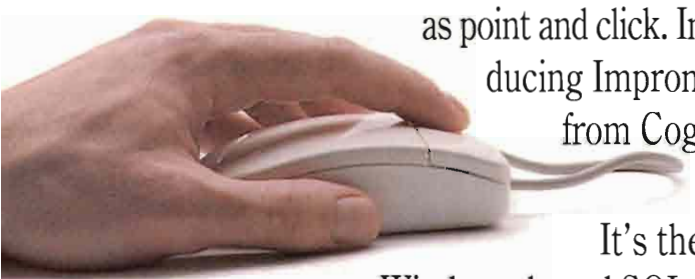

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"We have to supply the smallest, lightest product that we absolutely can," Hart emphasizes. To achieve this, finite element analysis can be performed using data from the HP ME30 package. Until recently, such analysis was performed manually, requiring initial data to be keyed into a separate analysis program.

Economy Of Time

Prior to the installation of the solid modeling system, the average time from design to market was a little over a year. "In order to remain competitive, we had to do better than that," Hart recalls.

Once the division decided to upgrade from conventional 2-D drafting and manual rendering, it contacted Eaton's Manufacturing Technology Center (MTC), the corporation's Cleveland-based manufacturing think tank. The MTC acts as a resource center, evaluating the uses of systems and processes within Eaton. It identifies and recommends hardware and software products currently available within the company and the industry.

The MTC also acts as a coordinator when a particular division within Eaton wishes to introduce a new system. In such cases, MTC naturally wants to know why the new hardware and/or software software systems are required. This was the case when the Aircraft Controls Division proposed solid modeling — and the MTC concurred with the division's new automated engineering approach.

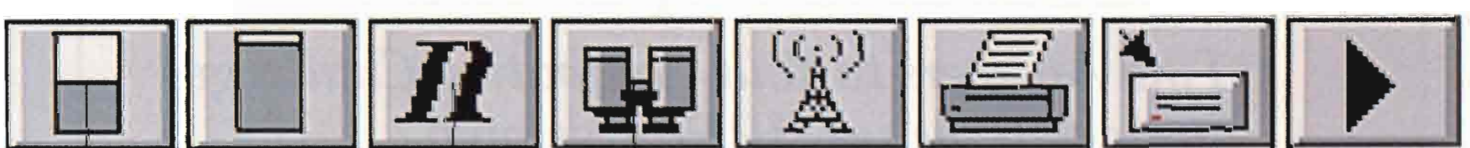
"We reviewed with MTC our need for HP's ME30 with the HP-DMS (Data Management System) package running on the Series 700 workstations," Hart says. He points out that the division required the solid modeling because of the complexity of their designs and the number of new products. In the first ten months of 1991, the division designed seven new products. "Just the sheer volume of new products would justify the system," claims Hart.

But there was another equally important consideration. "Our customers' environments are in solid modeling," Hart explains. "We'd been getting pressure from them to start supplying engineering information in intelligent graphics (IGES) format."

The division opted for the HP-DMS because of the critical nature of its products, Hart says. "We needed configuration control." For years, the division controlled inventory and sales orders on a mainframe using MAPICS. Data pertaining to drawing revision levels and serial numbers was manually entered into the system.

With the advent of electronic drawing and design, data man-

LANGUAGE FOR SQL.



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In addition to HP's ME30 and DMS systems, the Aircraft Controls Division is in the process of incorporating SmartCAM.

agement provides a database to electronically control all drawings and revisions. HP-DMS also offers authority levels to let in or lock out those users authorized to alter designs.

In addition to HP's ME30 and DMS systems, the Aircraft Controls Division is in the process of incorporating SmartCAM, a tool path generating program and coordinated measuring system.

Technicians programming SmartCAM to manufacture parts take information from drawings and enter the data into the machining program, which in turn generates a tool path. There is, however, a direct link between SmartCAM and the HP system. The design geometry in ME30 is passed onto SmartCAM, which then automatically generates the tool path based on that data. By eliminating the need for machinists to input the information, this link is expected to save time.

"Since the solid model is an accurate geometric representation of the part, everything is there for the machining program to produce the part just as the model says it should be," Hart says.

The same geometric information is applied to measure the parts after they have been machined. Thanks to a Sheffield Cordac system that bristles with probes to check a machined piece on three axrs, there's no need for manual inspection. Manual inspection not only takes longer, but is subject to human error.

According to Craig Crossley, the division's business unit manager, "Our mission is to solve our customers' problems. To that end, we can now offer fast and accurate supporting engineering data electronically.

"We can respond in the most professional way," Crossley adds. "And companies that can do that open more doors to more markets." — *Paul Benson is a South Orange, NJ-based freelance writer and photographer.*

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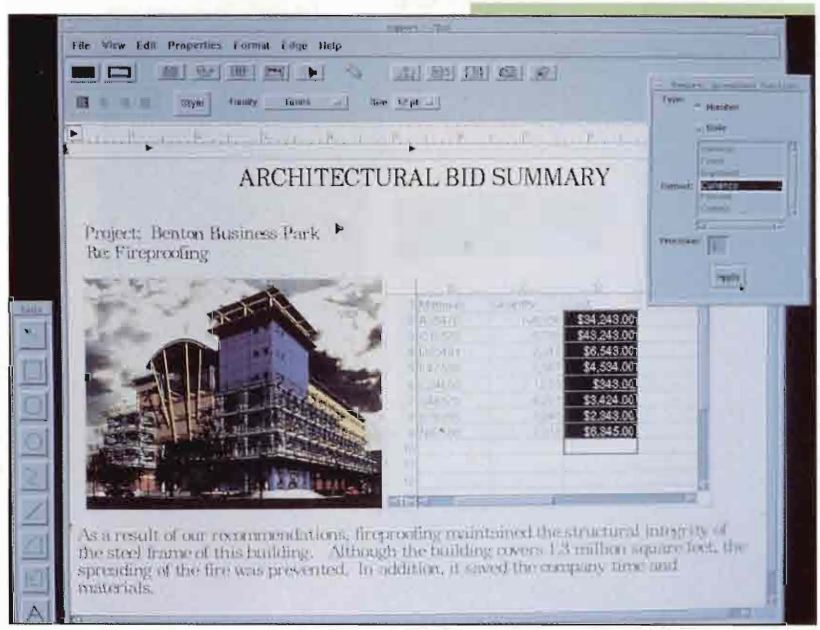
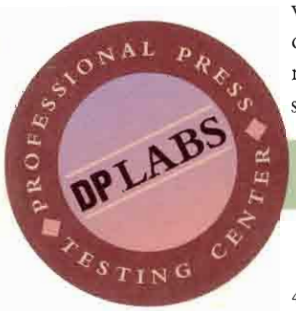


Figure 1: Rapport's control panel includes menus and buttons to access its object-oriented features. Application buttons for word processing, art, spreadsheet, images and audio appear on the left side.

Undoubtedly, the advent and acceptance of windowing protocols, GUIs and distributed, client-server architectures have revolutionized the way we do computing. I know that during a typical session, I could have half a dozen or more windows open running various applications on different platforms. I'm sure that power users out there can do much better than that.

Curiously, though, while multiple windows have dramatically changed my computing style, I find myself doing many things the traditional way. For instance, even though I'm working on one document as the final result, I'll have one window open to do word processing, another to work with a spreadsheet package, one for e-mail and maybe a fourth to work with a graphics application. A lot of cutting a pasting may have to be done between windows to get the final result. If I change anything (such as a worksheet, which then changes a pie chart), I must retrace steps, patch and repair to update the final document.

To compound matters, I'd like to send the entire document — text, worksheet, graphics — "the works," to users on the network who might have



By David B. Miller

completely different applications to handle these things.

Why shouldn't plunking a worksheet, a pie chart or an image in the middle of a document be as easy and as natural as starting a new paragraph? And why should I have to twist my document into a Philly soft pretzel every time someone else needs to have it?

Look No Further

Answers to these questions are coming from Clarity Software Inc. Its Rapport product for UNIX systems rolls a word processor, spreadsheet, presentation graphics, audio capabilities and electronic mail into one integrated package. We can only take a tip of the iceberg view of this suite of applications, but a description of what we could do with it should whet your appetite to go back for more.

We installed Rapport Version 1.13 on our HP Apollo 9000 Model 710 with 16 MB of memory and a 400 MB hard disk, running HP-UX version 8.07 and Motif. Rapport requires 45 MB of disk space. A minimum 16 MB of RAM is recommended.

Use

To provide an idea of Rapport's power and flexibility, we'll take you through a sample document, exercising many of Rapports capabilities and tapping its features.

Let's assume you need to write a memo or letter outlining the sales performance of your different sales territories. You want to include text (obviously), a worksheet, perhaps some graphs, some of your own homegrown artwork (you're a closet Picasso) and even a few audible words of praise to your highest achievers. (In this review, we won't include disparaging remarks aimed at the slackards.) Can that be done with one package? Let's see.

First, fire up Rapport with the rapport command. You'll soon see the Rapport window and control panel as shown in *Figure 1*. In addition to the "standard" menus that you've become accustomed to using in Motif-based applications, the control panel's first row has icons for each basic function, such as word processing, art, spreadsheet, images, audio and mail. The menus and control panel will change depending on which application you're using.

Why shouldn't plunking a worksheet, a pie chart or an image in the middle of a document be as easy and as natural as starting a new paragraph?

We'll start with the word processor to type the memo's text. All the bells and whistles you'd expect from a package like this are present. Changing items such as justification, font, point size, etc., are only a few mouse clicks away. Text color also can be changed easily so that you can fully emphasize those high and low points to your salespeople who also have access to color monitors. You can establish standard styles for paragraphs and documents so that your correspondence retains a consistent look.

After typing your initial paragraph, you want to whip up a quick worksheet and a bar chart to highlight each region's profits. Nothing too detailed, just some basic solid information.

After placing the cursor where you want the spreadsheet to start, clicking on the spreadsheet button creates a spreadsheet object with rows and columns into which you type your sales data. Everything you'd expect in a full-blown spreadsheet program is available. In no time, you've finished the worksheet outlining your region's profit data.

You want more. A chart would be nice. Rapport doesn't short-change you here either. The spreadsheet's chart option lets you create all your favorite graphs. You decide to create a bar chart displaying the manager's name and profits for each sales region.

You create these graphs using methods learned by using similar spreadsheet tools. After positioning the cursor, a mouse click positions the chart. You also decided to use the Paste Linked option to place the chart in your document. That way, if you change your worksheet for any reason, Rapport will automatically update all the charts that are affected.

After a few more words of praise and encouragement, you decide to dramatically lighten the tone of your memo. Although you flunked stick-figure drawing in Art 101, you can't resist the inclusion of some artwork in your memo to express how pleased you are about the company's progress.

Clicking Rapport's Art button creates space for some free hand drawing. You're able to muddle your way through a bright yellow happy face at the end of your memo using the shapes available from the Art Tool and Color palettes. This will be much appreciated by your salespeople, you reason to yourself.

Sending Forth

Okay. You're ready to distribute the memo. Printing to a Postscript printer is an easy way to produce the final product. But, you need to go one better than that. Sales managers in each region want an online copy so that they can make some comments and send their replies back to you.

Rapport's mail system, based on

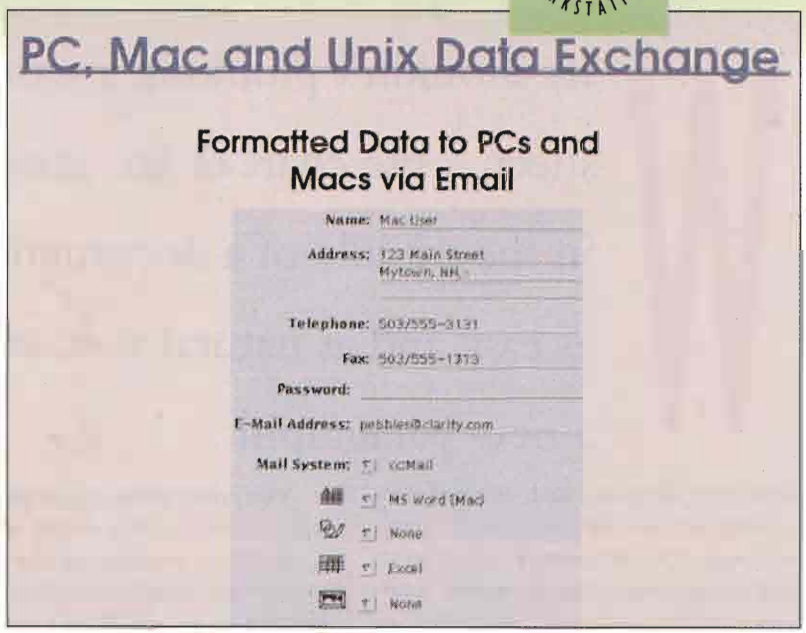


Figure 2: This sample address book entry shows how a PC user needs to receive the various parts of a Rapport document.

UNIX sendmail, and a host of optional format conversion modules, can be employed so that your memo not only is sent to other Rapport users, who receive the memo complete and intact, but it also can be sent to your salespeople who might be running on other platforms with different systems to handle mail, spreadsheets, text, graphics and so forth.

Before sending your memo, you double check your personal Rapport Address Book, which contains profiles of each recipient. A sample profile is shown in *Figure 2*.

In addition to address information for each user, you also check to make sure that your memo is handled according to each recipient's special requirements. For example, you realize that Rapport hasn't been deployed to all of your UNIX systems and not everyone has a graphics package to handle the artwork you've in-

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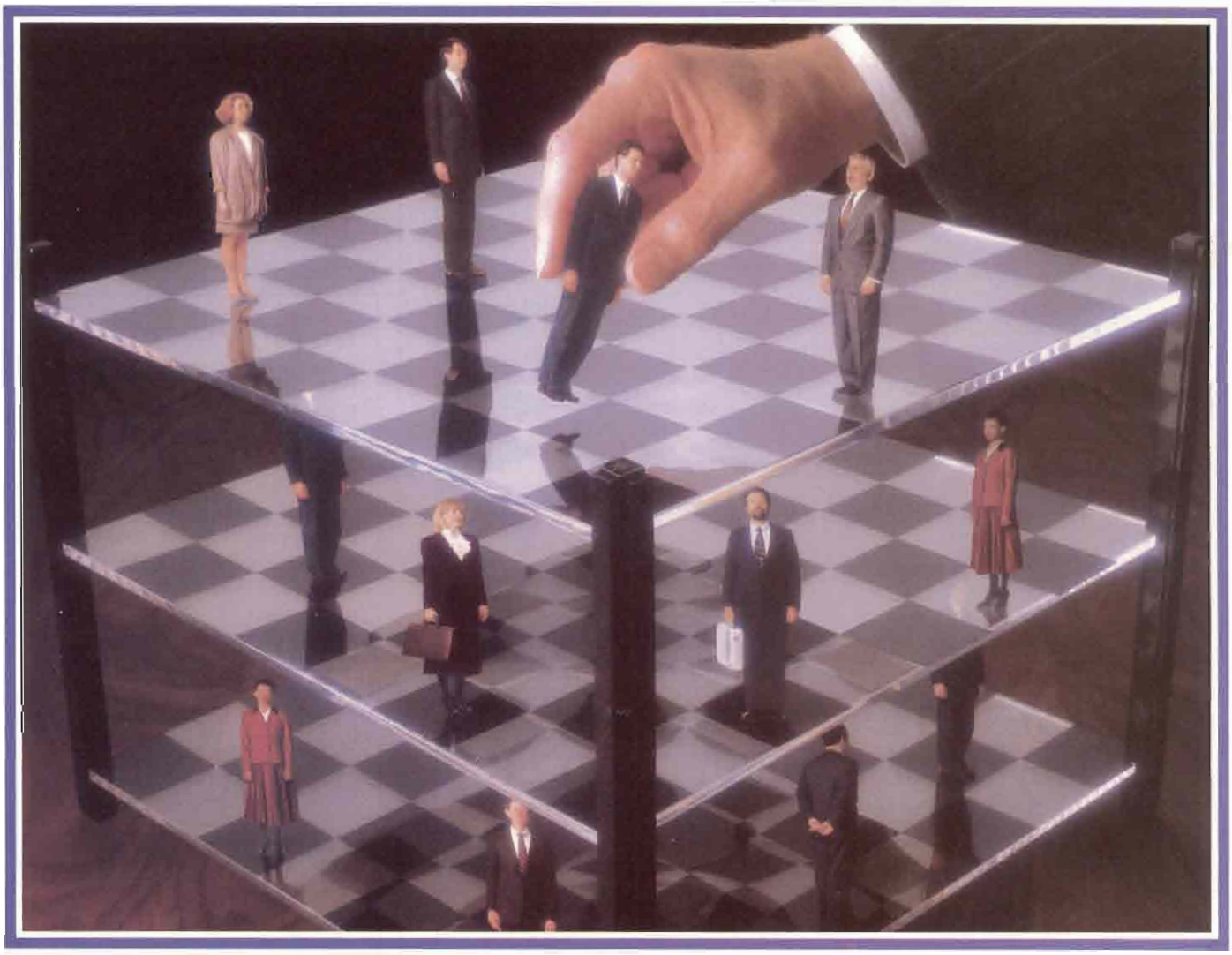

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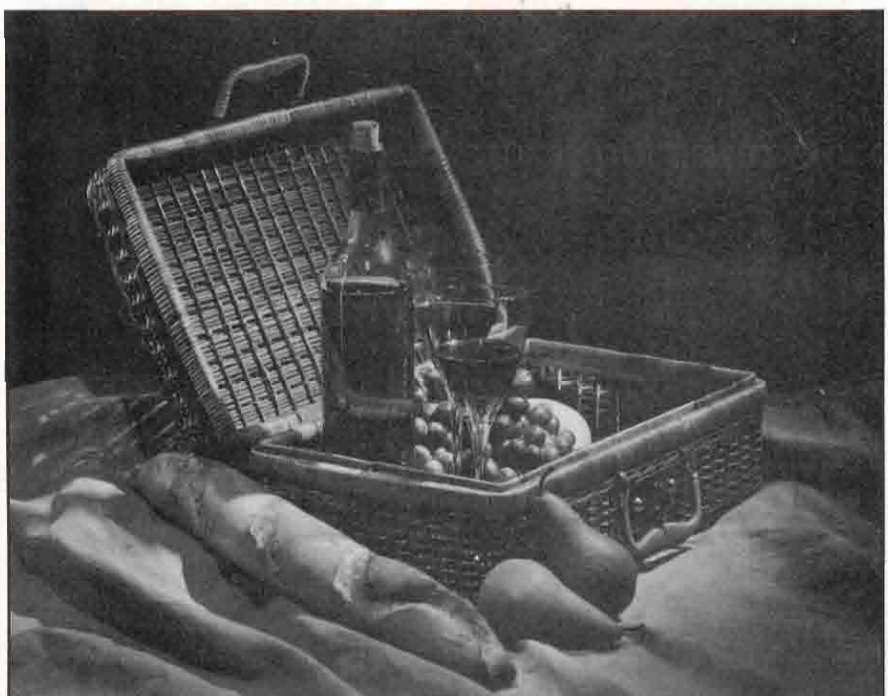
cluded in your memo. Additionally, you need to put the worksheet portion of the memo in Lotus .WK1 and Microsoft Excel formats for some folks using PCs and MACs, while others may not have a spreadsheet at all.

Rapport analyzes the profiles for each mail recipient and converts the memo and all of its parts (text, worksheet, chart, artwork) accordingly. For example, sending the sample memo to a user on our HP 9000/834 who only has UNIX mail on his system produces a message with a text description of what would normally appear there if the recipient were running Rapport.

Rapport's converters can handle many scenarios. For example, if you wanted to mail this memo to a PC user who runs cc:Mail, Wordperfect, Microsoft Windows 3.0 and Lotus, Rapport would break your memo into parts and create separate files for text, graphics and worksheet, each in the target format specified in your Address Book's recipient profile.

Getting Attached

One problem you face is that some of your work is done in other packages. For



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Rapport Version 1.13

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Price: $895 per seat

Platforms: HP 9000/300, 400 & 700 series workstations running HP-UX 8.07 or later and Motif. Many other UNIX platforms are also supported, including DEC Ultrix and IBM AIX.

Clarity Software, Inc.

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example, you've got a lot of worksheets that were created by Informix Wingz. How easy can they be incorporated into a Rapport document?

Rapport provides the capability to have other applications attached to it. This will allow you to launch Informix Wingz, for example, from within a Rapport document. Several popular packages are already "registered" with Rapport for use inside a Rapport document. These include Informix Wingz, AutoCAD, FrameMaker, Interleaf, the Island Graphics products, Lotus 1-2-3 and WordPerfect.

A special Applications menu is used to select the "foreign" package. An object is created for that package in the document at the current cursor location. After that, double-clicking the object will invoke the application. We successfully attached Informix Wingz to Rapport and were able to create worksheets and charts directly from within the document on which we were working.

Untested Waters

If only you had received your audio equipment for your HP 9000, you could have recorded "CONGRATULATIONS!" in your own voice to be heard by anyone who had similar capabilities on the receiving end. Again, Rapport's object-oriented nature lets you attach an Audio object anywhere you want in your memo — to a piece of text, an image, a worksheet cell, wherever you want the comment to occur.

Also, when the new company logo is finalized, you'll scan that in and make it available through Rapport to anyone in the company who needs to incorporate it into their documents. Finally, next week, you'll be able to use Rapport's slide presentation capability to put together a proposal for some potential new customers.

The idea that I could create a document in which adding a worksheet or an image or some artwork just as naturally as typing text really impressed me. Many of us are capable of using a variety of software packages, but being able to access them all in one application is a real advantage. Rapport makes multimedia documentation an easy-to-achieve reality. Its ability to convert documents to many popular formats and make them available via e-mail makes it an interoperability champ. Being able to attach other packages in addition to or in place of some of Rapport's features provides chameleon-like flexibility.

We all know how fast workstation performance is increasing while prices tumble. But many of us not in the scientific or engineering fields might have wondered what everyday office and business applications were available to run on that blazing hardware. Now we know. ■

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Performance Probe

Get All The Information You Need About Your System With This Performance Monitoring Package From Strategic Software

The commercialization of UNIX has created the need for many tools and features commonly found on operating systems that were designed for the commercial market from the ground up. For example, UNIX and security were rarely uttered in the same breath. Another area that's been in need of attention is system and performance monitoring tools.

Probe/X, from Strategic Systems Inc. (Seattle, WA), provides a variety of tools to help you obtain a picture of what your system is doing and what resources are being consumed. It can help you track down and resolve system bottlenecks as well as help you do capacity planning and performance analysis.

Installation

We installed version 2.02 of Probe/X on our HP 9000/834 running HP-UX version 8.0.

Installation was a breeze. An install script takes care of most tasks for you. The only decision you have to make is whether or not you want to load the driver that handles response time and disk I/O information. You also must call Strategic to obtain a user license key.

There are more than 30 displays of in-

By David B. Miller

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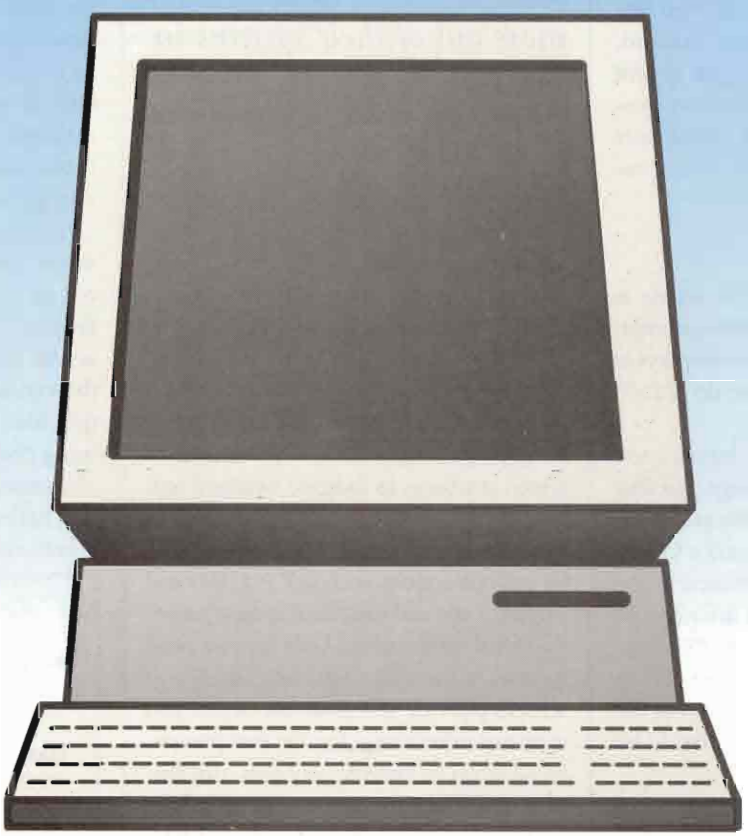

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formation you can generate with Probe/X. We'll go into a few of them to give you an idea of the level of system and performance detail you can acquire.

Although you don't have to run Probe/X as superuser, doing so is a good idea for three reasons. First, you can run Probe/X with a nice value that allows it to monitor systems even while high priority processes are running. Second, Probe/X will temporarily activate system accounting to provide the necessary process termination information. Third, only the superuser can activate the special response time driver.

Use

Getting Probe/X running is as simple as typing "probex" at the system prompt. Probe/X supports X-windows displays as well as ASCII terminals that do VT100 emulation.

In addition to displaying information on a terminal, data can be logged to disk and used as input to other programs for analysis. Log record formats and a C language header file are documented in the Probe/X manual. A logging information file is needed to govern Probe/X's logging behavior, such as the length of the measurement interval, the duration of the logging and what type of data should be logged.

Logging can also be done in the background. You can set Probe/X up to run at any specified time, collect the data you need and exit.

Probe/X's screens are easy to get around. Context sensitive help can be gotten by pressing the "?" key on any screen. Entering "h" on any screen displays the list of available "hotkeys" that you can use to access any of Probe/X's various screens.

What kind of information can Probe/X provide? Here are summaries of the major categories.

Global information. The "big-picture" stuff. The Global screens provide an overall view of what's happening regarding processes, memory, terminal activity, user activity and response time measurement. This is a good place to start. You can work with more detailed screens after you determine what major areas need attention.

Packages such as Probe/X go a long way in helping system managers get more out of their systems in a rather painless fashion.

Process information. One line of data is displayed for each process. You can control whether or not you want to view system processes and processes which were not active since the last time Probe/X displayed new data. Probe/X uses screen attributes to indicate swapped out, new or recently dead processes. You can also display screens that highlight particular process activity such as CPU, I/O and memory use and process response time.

Detail information. Let's say you need to track a particular process. The Detail screens provide statistical, file access and memory information for any one process. In addition to system managers, this feature could be used by program developers trying to write efficient code and how need to monitor the behavior of a single process.

I/O information. A screaming CPU doesn't always provide the best performance, especially if your I/O subsystem is suffering. Probe/X's I/O information displays let you look at disk and tape. You can monitor the effectiveness of your buffering and caching schemes. Filesystem use and I/O activity level can be scrutinized. You also can get valuable information on your network devices and their performance.

System information. These screens provide information on system tables, device configuration, file space and storage utilization.

Probe/X's documentation is clear and understandable. It's also a good learning tool for performance non-gurus who need to interpret what Probe/X's displays are telling them. Context-sensitive help is also available from within Probe/X, just by pressing the "?"

Growing up learning and using another operating system that starts with "V" and ends in "S," I just assumed that the kind of performance and system monitoring tools available there would be available on any serious operating system. When I dove into UNIX, I quickly realized that there were a lot of neat tools, but some of them were hard enough to *find* let alone use.

Packages such as Probe/X go a long way in helping system managers get more out of their systems in a rather painless fashion. There's no need to remember several utilities or to have to poke around the various and sundry UNIX configuration files. The common interface makes using Probe/X easy.

System managers and developers alike will benefit from having Probe/X available to them. ■

Probe/X

Price: $495 to $3,595, depending on CPU.

Platforms: HP 9000, IBM RS/6000, SCO 386, SCO MPX, SCO ODY, Interactive, Sun SPARC compatibles.

Features:

- Easy to install and use.
- Overall and detailed information can be displayed.
- Should be a real help for managers and developers alike.
- Logged data can be used as input into analysis software.

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CIRCLE 119 ON READER CARD

MANAGING YOUR HP 3000

John P. Burke

"This Is Not Your Father's Hewlett-Packard."

A New Paradigm For HP 3000 Customers

Your relationship with HP is changing, whether you like it or not. If you use the HP 3000 and TurboIMAGE, it is time for action. A Hewlett-Packard executive — I think it was Rich Sevcik, general manager of the Commercial Systems Division — made this comment at the INTEREX conference in San Diego last August. Events since then demonstrate that the phrase fits HP better than it fits Oldsmobile. What it means to you, the HP 3000 customer, is that a new paradigm (the new HP loves that word; the old HP would never use it) is necessary in your relationship with Hewlett-Packard.

In his address to the same INTEREX conference, HP's Lew Platt introduced the acronym OILUS, the first letter of which stands for the goal of making ordering HP products easier. "Wouldn't it be nice to order our products easily?" Platt asked the audience. Those in attendance applauded long and loud.

So What's New?

Has the product ordering relationship changed? Most certainly. Can we order HP products more easily? No.

I work in the Philadelphia area. Since at least the mid-'70s, HP has had a large, active local field sales office. That is, until last fall. For several months, I had been talking with an individual in the local office about migrating to HP PA. One day I called to ask some questions and was told the person no longer worked there, but someone would call me back soon. Okay, I thought, people leave companies all the time. When I got the call back I was told that as part of the sales re-organization, our account would now be handled through telemarketing out of Rockville, Maryland — three hours away! Over the next few weeks I learned that several other people I had known for years also were no longer working for HP.

At about the same time, I was thumbing through the HPDirect catalog and noticed that it was out of date. [Started around 1982 with great fanfare, HPDirect was a direct-mail catalog operation with everything from calculators and supplies to terminals and manuals.] I asked an administrative assistant to call and request a new catalog. The result? Like the people in the local office, HPDirect no longer exists. It has been replaced by the Supplies and Accessories Reference Guide, which is only a shadow of the old HPDirect.

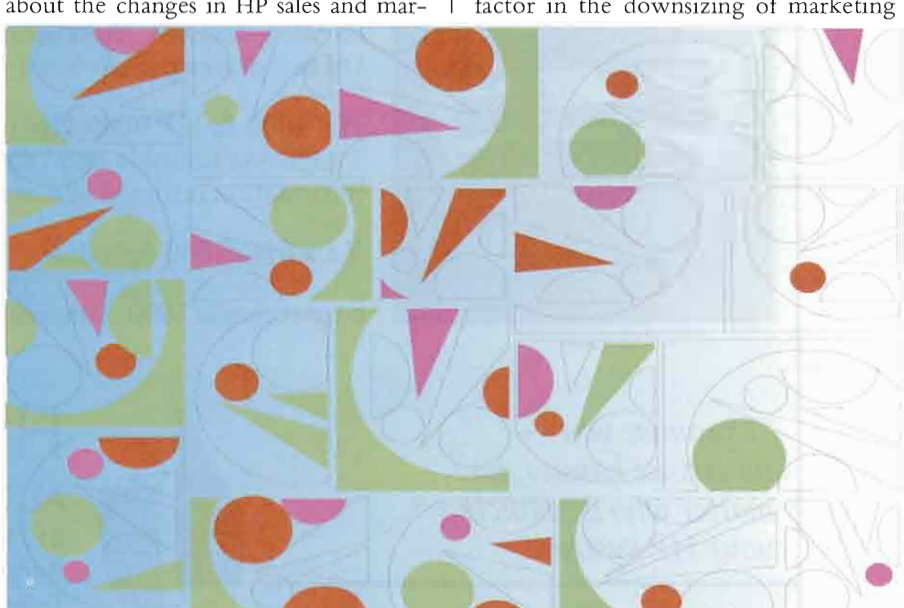
So What Gives?

I had the opportunity to talk with Manuel Diaz, general manager of CSO/Americas; Sharon Jacobs, manager of Direct Marketing; and Penny Thayer, manager of Business & Channel Development, Direct Marketing Organization, about the changes in HP sales and marketing. Allowing for my probably-not-totally-objective interpretation, here is what they had to say.

Last fall, the sales organization was restructured to target specific markets and specific classes of customers. Sales used to be organized along product lines. A salesperson might try to sell to a manufacturer one day and a retailer the next. Under the new paradigm, sales people will be more narrowly focused on a particular market segment in order to better know the customers' specific needs and applications.

At the same time, HP decided to focus on major, high-visibility accounts. It's the trickle-down approach. If you have a few high-profile accounts, it becomes much easier to sell to the smaller accounts and sign up VABs — a variation of follow-the-leader. Large accounts also are more profitable, with a higher return per sales effort.

Additionally, HP had been under pressure from the Wall Street walletheads to reduce its head count, and this was a factor in the downsizing of marketing



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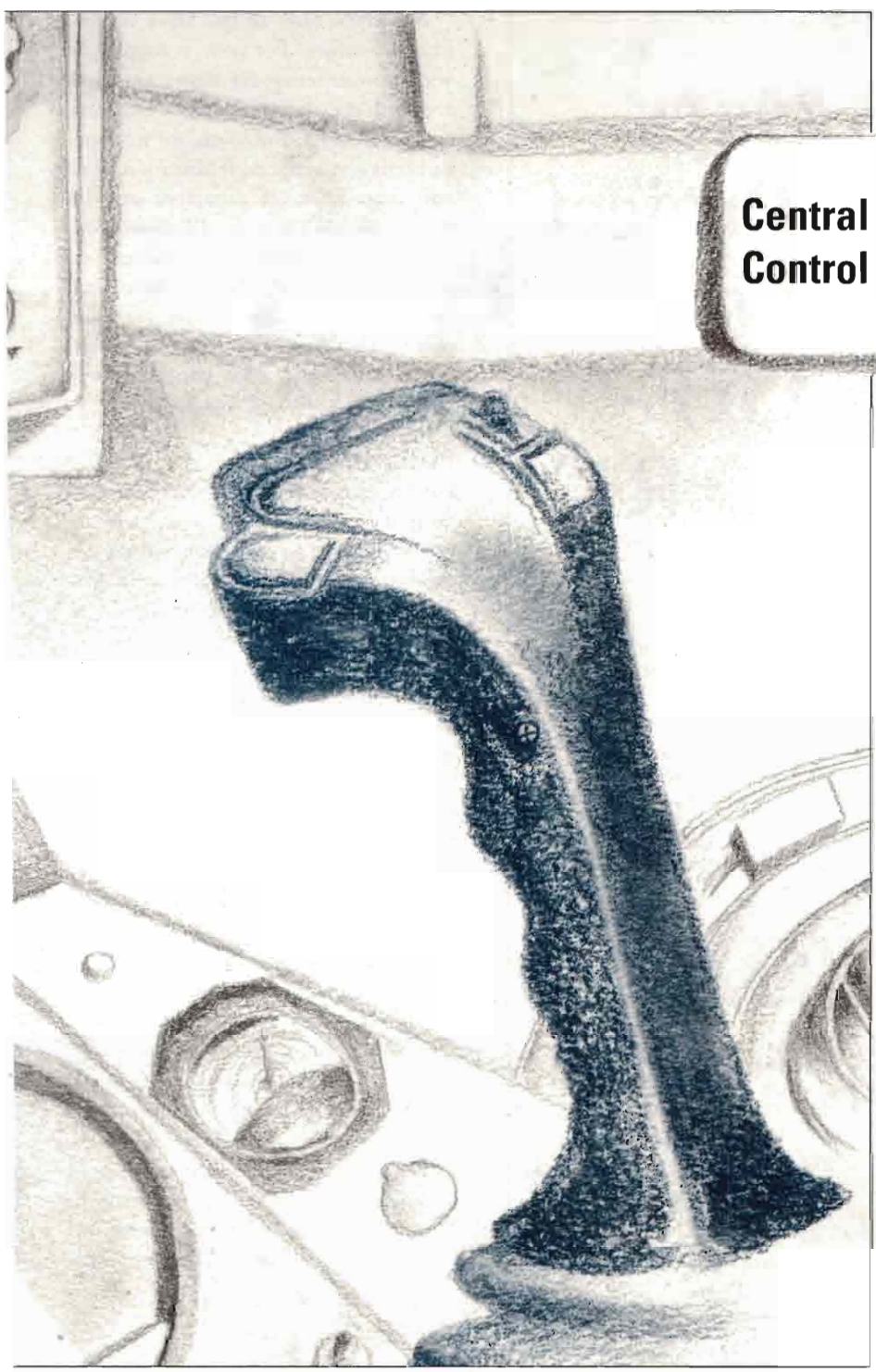

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CIRCLE 471 ON READER CARD

and the elimination of HPDirect. I was told that HP has worked hard to establish its products in various independent distribution channels and that these resellers were objecting to having to compete directly with HP. [A new catalog, the Business Computer Catalog, which covers some of the same areas as the old HPDirect, was scheduled to appear May 1. As of May 15th, I had not yet seen a copy so I cannot comment.]

All vendors, not just HP, struggle with how to handle existing accounts. Once the initial sale is made, it is often several years before another significant purchase is made. Commissioned sales people are not going to spend much time with an account that is only going to generate a disk drive or a few PCs. Telemarketing is seen by HP as a cost-effective way to handle the smaller members of the installed base.

So where does all this leave the existing customer? For now, it leaves you with telemarketing for larger purchases and with distributors, business suppliers, computer stores, and so on, for small peripherals and supplies. It also means that you must be more proactive and demanding. Don't wait for HP to call you, because they probably won't. Unless you are a heavy hitter (read: Fortune 500), you are going to have to rely more and more on publications such as *HP Professional* to find out what your vendor is doing technically and strategically.

Platform Dilemma

HP has caught itself in a trap where its greatest strength — the same hardware engine driving an extensive and diverse product line — also becomes a liability. To promote HP-UX, it must sell against its own MPE/iX.

I know of two Philadelphia-area companies, HP 3000 users since the '70s, who are switching to UNIX. One is a done deal and is happening as you read this. The other will happen as soon as the business climate improves. The decisions were more political than technical, with outside consultants (drooling no doubt over potential fees) singing the siren song of UNIX and going over the head of MIS management to the executive suites. Both companies are staying with Hewlett-Packard and converting to HP-UX — so if you look at the HP big picture, things look pretty good. From the perspective of current HP 3000 customers, things are decidedly less rosy.

HP has done an excellent job of protecting its customers' investments in MPE. Of course, as I have pointed out before in this column, MPE V support is

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s MPE dying? Will it still be viable in the year 2000? The answer, again, is up to you.

one of the all-time great examples of a cash cow. Support will continue so long as there are sufficient customers, a critical mass, willing to pay. The same caveat applies to MPE/iX.

Over a year ago, I wrote that only two midrange, proprietary operating systems were sure bets to be around in 2000: OS/400 and VMS. I made this prediction not because these are better than all the others, but because they, like the languages COBOL, FORTRAN and RPG, have achieved the critical mass necessary for long-term survival. I said MPE could go either way depending upon how hard and how well it is marketed. Everything else is doomed. Events of the last year or so only strengthen my opinion.

What HP has accomplished with PA-RISC is simply amazing. With the introduction of the HP Corporate Business Systems, PA-RISC bolsters its claim of spanning the largest range of RISC-based systems in the industry: from the $4,990 705 diskless workstation up through the mainframe-class Corporate Business Systems. Furthermore, HP execs confidently claim systems in the pipeline that will continue the tradition of PA-RISC as the price/performance leader.

But, and this is a big "but," since this is a column on the HP 3000, there are two storm clouds on the horizon: MPE/iX does not span the entire range of PA-RISC offerings, and HP seems loath to push MPE/iX.

There was a time when the HP 3000 was the flagship system for Hewlett-Packard. No more.

The smallest platform currently supporting MPE/iX is the 917LX, which, for a usable configuration, is a $20,000 system (without any software). This does not compare well with low-end UNIX, VAX or AS/400 multiuser systems or networked PCs. Part of the problem is technical since, and there is no pretty way to say this, MPE/iX is a memory pig and all that memory costs money. The other part of the problem appears to be the mindset of those in Cupertino who do not see a need for a true low-end/desktop MPE/iX system.

One Choice Is No Choice

Just as there is room for Cobol, FORTRAN, RPG, C, and so on, there is room for both HP-UX and MPE/iX. However, since HP seems to be going out of its way to be impartial, it is up to users of the HP 3000 to be proactive (that word again) and promote MPE/iX as the industrial-strength operating system it is.

F. Alfredo Rego, of ADAGER renown, is circulating an excellent monograph through SIGIMAGE channels called "Is IMAGE dying? Who cares?" in which he proposes a simple ABC action plan to promote IMAGE since HP will not. Rego writes:

"You can help tip the balance, which is now overwhelmingly biased against IMAGE, by annotating the good things that IMAGE has to offer and the bad things that plague non-IMAGE would-be panaceas (point A), by broadcasting your insights (point B), and by cooperating with SIGIMAGE and the Hewlett-Packard IMAGE Laboratories (point C).

"Is IMAGE dying? The answer is up to you."

Is MPE dying? Will it still be viable in the year 2000? The answer, again, is up to you. — *John P. Burke is the system manager for Construction Computer Center, Conshohocken, PA.*

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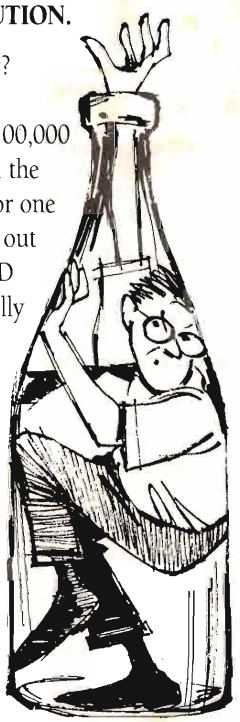

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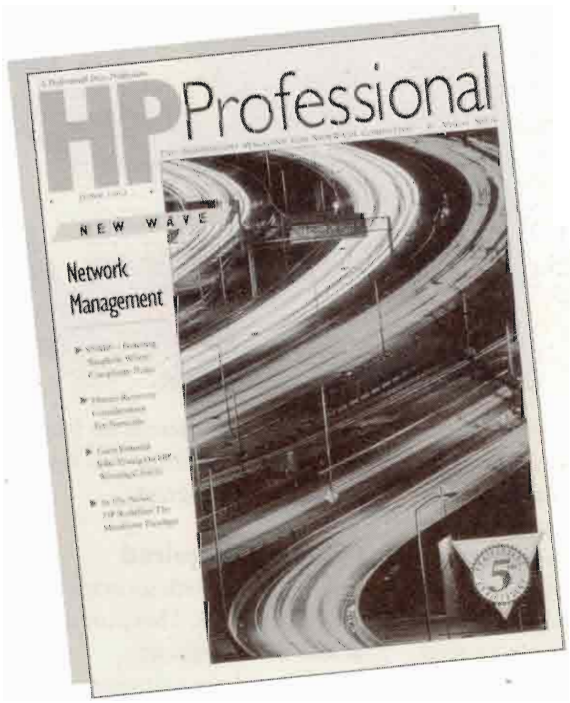

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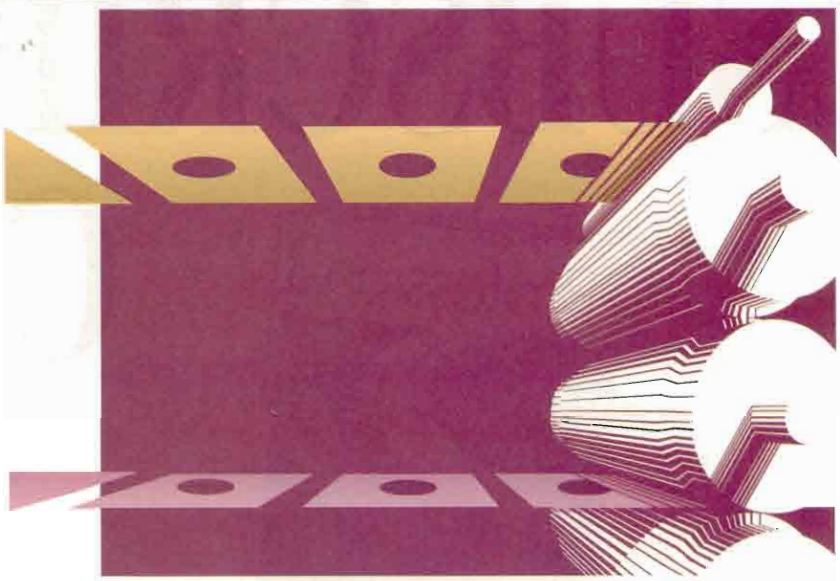
OBJECTIVELY SPEAKING

Richard Riehle

Some Questions Arise When Considering Reuse Of Software Objects In OOP

Recyclable Software?



A more frequently stated reason for object-oriented programming is the opportunity to reuse software objects. Those opportunities do exist, but only when carefully planned, and only when made a part of the "culture" of the software development organization. Also, optimal software reuse cannot be adequately achieved with most currently popular programming languages.

Leveraging Versus Reuse

When considering reuse, it's important to differentiate between software leveraging and reuse. Software leveraging is the ability to take advantage of existing software to create new software. Leveraging usually requires making small modifications to the existing software. These modifications may be as simple as altering the data type, changing the number of iterations, or tweaking the code to enhance its efficiency. Another characteristic of software leveraging is the serendipity factor. That is, the success of the leveraging process is often the result of happy accidents. For example, one programmer might tell another about some existing piece of code that does something wonderful.

Reuse is sometimes compared to the hardware world of integrated circuits. The so-called "software IC" notion is based on the idea that a reusable component can be used, as is, without modification. If the component requires change, it isn't reuse, it's leveraging.

The benefit of reuse over leveraging is straightforward. As a component is reused over time, it tends to become more mature. Its behavior becomes predictable. Once you make any modification to a software component, however minor, the probability for errors increases. Therefore, unmodified reusable components reduce the chance of errors. Leveraging introduces the opportunity for errors. Reusable components are pretested. Leveraged code requires additional testing procedures before it can be used.

The ideal place for a reusable component is in algorithms. This is the procedural part of the code. The benefit of this is to eliminate some of the complexity usually associated with software design. Algorithms are the principal source of programming errors. If you can implement an algorithm independent of data type, you reduce the probability of error.

The concept of a reusable algorithm requires a feature called genericity. The best implementation of this feature in an object-oriented language is probably Eiffel. Ada, still an object-based language, has the most effective generic capability of any existing language, but it lacks inheritance and polymorphism. Consequently, Ada provides an excellent capability for generalization of algorithms. As of this writing, there is no language that gives you everything you need for the perfect reuse program.

Planning Required

Organizations with successful reuse programs plan well. This planning falls into at least five categories:

- Managerial commitment and support.
- Personnel responsibility.
- Library system implementation.
- Software personnel training.
- Continued measurement of results.

It seems almost trite to include managerial support on this list. However, this is where the process breaks down first. Once the deadlines and budget are set for a project, every milestone has the potential of being a crisis. The incentives for reuse are preempted by the exigencies of management impatience. If the nature of designing with reusable components is not made clear early, it may appear that no progress is being made in completing the project. Why is this?

Traditional software project management has emphasized top-down design.

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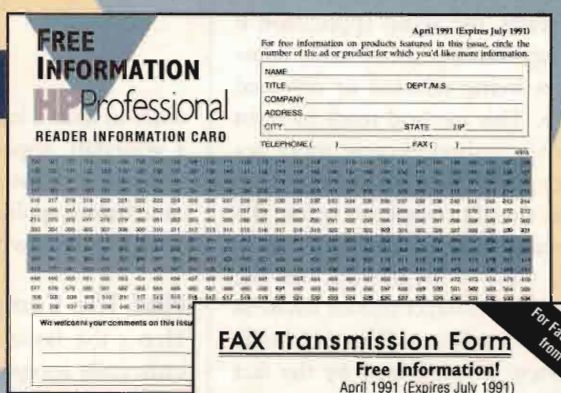

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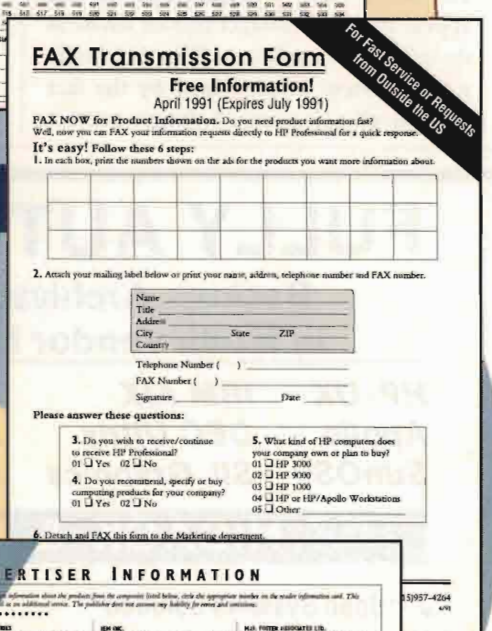

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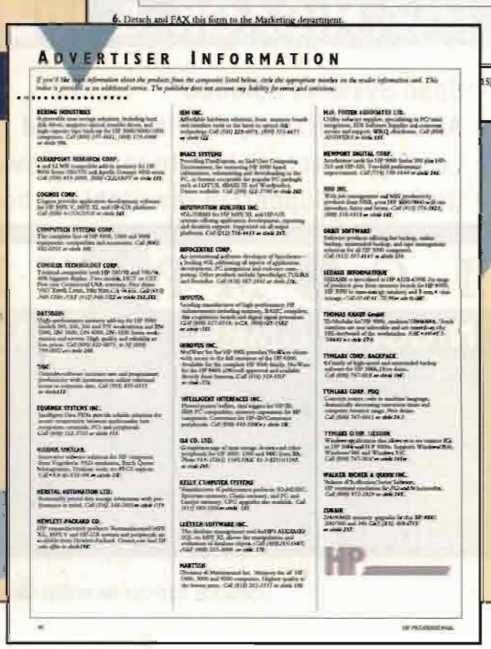

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The project life cycle has been represented by the waterfall method, a model for software development introduced more than 20 years ago. This model has been comfortable because it gives the illusion of orderly development and appeals to a straight-line mode of thinking.

Object-oriented design, however, is not a straight-line method. It is definitely not top-down. Instead, it is a process that combines top-down and bottom-up design. Typically, the actual application is designed top-down as the reusable components are being selected or designed bottom-up. This method tends to resist the waterfall method because more activities are proceeding in parallel, and some were already completed before the project ever started. Unfortunately, from an outside view of the project, this can appear to your management or client as disorder and confusion. This politically negative view is not abated by the fact that an object-oriented design project tends to have a longer design period than a waterfall, top-down design project. This means that it seems to be a long time before application programmers are actually put to work coding.

Object-oriented design is a process that combines top-down and bottom-up design.

Find The Component

Here's the fascinating part. There's no universally accepted classification scheme for components. Some authors, such as Grady Booch, have attempted a taxonomy of components for data structures. This has benefited designers in Ada and C++ who use the Booch Components. The U.S. Army has been developing a reuse library called RAPID. C++ implementations usually have a large predefined library of components that can be used in inheritance mechanisms.

As we mentioned, Eiffel and Ada both have a generic capability. In interpreted object-oriented languages such as Smalltalk, reuse is relatively easy, because there is little concern for data types. An intermediate object-oriented language such as C++ introduces both opportunities and problems. The opportunities reside in inherent polymorphism of components. The problem with C++ is the current lack of a generic facility, but this will be solved in future implementations of the language standard.

It would be nice if we could identify software components as easily as we do

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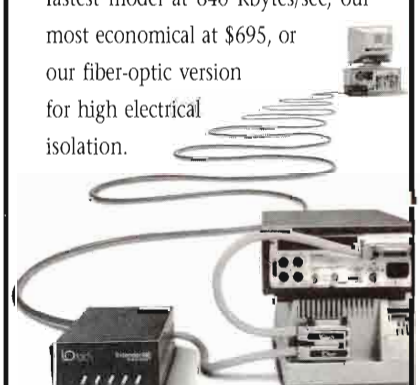

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electronic components. For example, any electronics designer can look at the colored bands on a resistor and know its ohm rating. Such visual indicators aren't useful in software. And we are a long way, as an industry, from agreement on any kind of software component taxonomy. If there is any deterrent to implementing a reuse program, it will be the delay in solving the library science problem, not the technical problem of creating components.

It probably seems odd that the main obstacle to software through reusable components is an information retrieval problem, not a programming language or component design problem.

The Reuse Program In Place

If the potential for reusable components is identified early, the project manager can assign programmers to search for and test existing components. In some cases, it will be necessary to design and build your own components, but that should be a last resort.

When we say talk about responsibility, we mean there should be a corporate commitment to reuse, and someone with adequate technical credentials should manage that commitment.

Hewlett-Packard has an internal program for software reuse. The HP program is currently under the direction of Dr. Martin Griss at HP Labs in Palo Alto, CA. Westinghouse has a reuse program and even has a corporate newsletter devoted to the subject. Others in the software industry are less enthusiastic about reuse. Bill Joy, at Sun Microsystems, has been cited for his deprecation of any software that is based on reuse. Such negative attitudes regarding reuse originate in the notions that software should be as efficient as possible and that reusable components are too generalized to be optimal under all conditions.

To many, reuse means include files used to build C and Pascal software systems, or COPY files used in COBOL applications. Although these files do represent some level of reuse, they are at the most primitive level. From our definition of reuse, it will soon become clear that standard implementation of languages such as Pascal, C, COBOL, and Fortran do not include the qualities required for a truly successful reuse program. Object-oriented languages such as C++, Smalltalk, Eiffel and Objective C include more of the required qualities. Eiffel and Ada have the one feature required for algorithmic independence: a generic capability. — *Richard Riehle is president of AdaWorks in Palo Alto, CA.*

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GFKT Hamburg Boosts HP Memory Capacities

GFKT Hamburg, a European manufacturer of HP-compatible memory products, released a series of new memory boards for the HP 9000/720, 730 and 750, as well as for HP 9000/8X7 and HP 3000/9X7 systems.

Equipped with 16 MB DRAM chips, the new boards enable memory capacities of up to 256 MB for HP 9000 Model 720 and 730 workstations, 768 MB for the Model 750, and up to 1,024 MB for HP 9000 Series 8X7 and HP 3000 Series 9X7 systems. The 1 GB of memory on the 8X7 and 9X7 systems is achieved with the addition of a new extender card.

GFKT Hamburg lists delivery times of about four weeks for the new boards.

Contact GFKT Hamburg, Frankenstrasse 29, D-2000 Hamburg 1, Germany; (40) 2373010.

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M.B. Foster Offers Upgrade To EDI Windows Software

M.B. Foster Associates introduced EDI WINDOWS, an EDI control and translation software product.

EDI WINDOWS can concurrently support multiple versions of X12, EDIFACT, TDCC, UCS and WINS standards to include all industry and trading partner specific subsets. It features pop-up windows, pull-down menus, online help and a flexible, on-line mapping module that simplifies integration of EDI with applications. It can be defined to perform communications, transfer data, execute EDI translation, send mail, create reports, update applications, extract data from applications and execute user programs. Jobs can run on demand, on an unattended schedule, or as called from within user programs.

For a limited time, EDI WINDOWS is extending a discount offer for companies wishing to upgrade from their present PC, HP or VAX-based EDI software system.

Contact M.B. Foster Associates Ltd., 50 Water St., P.O. Box 580, Chesterville, Ontario, Canada K0C 1H0; (613) 448-2333.

Circle 400 on reader card

Precision Visuals Releases PV-WAVE Version 4.0

Precision Visuals Inc. announced version 4.0 of the PV-WAVE Command Language (CL), adding functionality in connectivity, data access and manipulation, graphical display and ease-of-use.

New features for connectivity include dynamic linking and direct linking, allowing PV-WAVE to integrate with other commercial packages or custom software. CL version 4.0 also features an Encapsulated PostScript Interchange (EPSI) output driver and a new PICT output driver that enables PV-WAVE graphics to be exported in standard formats for display with Macintosh software. New data access and manipulation features are date and time data structures, data connect routines, and table tools. New graphical display techniques employed by CL version 4.0 include a rendering function based on ray-tracing techniques and automatic calendar plots for time series data.

Precision Visuals has extensively rewritten sections of CL's documentation and includes an Applications Guide, a hypertext online help system, and a codebook providing 10 example applications built as developer scenarios to solve common challenges.

PV-WAVE Command Language Version 4.0 costs $4,500 for a single floating license.

Contact Precision Visuals Inc., 6230 Lookout Rd., Boulder, CO 80301; (303) 530-9000.

Circle 399 on reader card

Datalogix Combines ORACLE With GEMMS ERP

Datalogix International Inc. announced GEMMS support for the ORACLE relational database management system.

ORACLE supports enterprise-wide integration through distributed, portable and open architecture. ORACLE enables organizations to integrate multiple computers, operating systems and network environments into a unified computing and data-sharing resource. The combination of GEMMS (Global Enterprise Manufacturing Management System) and ORACLE provides a CIM solution that offers RDBMS support, a 4GL, support for multiple hardware platforms and graphical user interfaces, and a client-server architecture.

Contact Datalogix International Inc., 100 Summit Lake Dr., Valhalla, NY 10595; (914) 747-2900.

Circle 398 on reader card

Worldtalk 400 Backbone Links E-Mail Applications

Worldtalk Corp. announced Worldtalk 400 for the HP 9000, a messaging integration server for PC-LAN e-mail.

Worldtalk 400 for the HP 9000 provides production quality conversions between industry leading e-mail applications such as cc:Mail, Novell MHS, Lotus Notes, QuickMail and Microsoft Mail. Worldtalk links these systems to each other and to other systems that have X.400 or UNIX smtp connectivity. The Worldtalk 400 system consists of gateways and servers that can be easily configured to each customer's specific requirements. The gateways typically reside on their native platforms (UNIX, DOS, OS/2, Macintosh) with configuration and management centralized at the Worldtalk server.

Pricing for Worldtalk 400 for the HP 9000 begins at $23,950 with gateways available separately at $1,500 each.

Contact Worldtalk Corp., 475 Alberto Way, Los Gatos, CA 95032; (408) 374-5600.

Circle 397 on reader card

UniPress Makes Sun XView Available On HP 9000/700

UniPress Software Inc. announced that Ericsson's Sun XView-based CASE tools

software is being made available on HP Apollo 9000 Series 700 workstations.

UniPress' XView Toolkit enables XView and SunView applications to be ported to HP, DEC and Silicon Graphics computers by recompiling the application source code. It provides a migration path from SunView to the X Window System, operating with many window managers, including Motif, OPEN LOOK and twm. The UniPress XView Toolkit is available for the HP 9000 Series 800, the HP Apollo 9000 Series 700, the HP Apollo 9000 Series 400, the HP 9000 Series 300 systems and servers, the DECstation family and the IBM RISC System/6000. A single CPU development license is $2,495. Contact UniPress Software, 2025 Lincoln Hwy., Edison, NJ 08817; (908) 287-2100.

Circle 396 on reader card

IDE Distributes RTM From Marconi

Interactive Development Environments Inc. announced that it will distribute Requirements & Traceability Management (RTM) developed by Marconi Systems Technology (MST).

RTM is a requirements traceability tool designed to ensure that developers' systems meet the expectations of users. RTM provides a requirements engineering toolset that allows the developer and the user to establish a set of formal requirements that can be agreed before work begins. As work progresses, the RTM ensures that each development activity is related to the original requirements and that all requirements are addressed throughout the development process.

RTM is currently available on Sun SPARC systems, DEC VAX systems running VMS, HP 9000 Series 700 and DECstation 5000. RTM runs under the X Window System with a Motif user interface and is fully POSIX compliant. RTM has interfaces to FrameMaker and Interleaf technical publishing systems. A typical four user system costs $42,500.

Contact Interactive Development Environments Inc., 595 Market St., 10th Floor, San Francisco, CA 94105; (415) 543-0900.

Circle 395 on reader card

CUFFS300 Provides Full Audit Capability

Serasoft announced the CUFFS3000 security management tool for the HP 3000.

CUFFS3000 permits the security manager to control many aspects of the password, including aging, password length and maximum attempts. Restricted access of a particular user, LDEV or session name to a date, time or day of the week is possible. LDEV or session name password maintenance is also available. CUFFS3000 includes a full audit capability with audit and warning reporting. CUFFS3000 is licensed at a price of $1,295 for the first CPU and $259 for each additional CPU.

Contact Serasoft, 295 East Industrial Park Dr., Ste. B, P.O. Box 5763, Manchester, NH 03108; (603) 644-3200.

Circle 394 on reader card

MetaCard 1.0 Creates Hypermedia And Applications

MetaCard Corp. announced MetaCard 1.0 hypermedia and rapid application development environment.

MetaCard offers the ability to create and modify applications and hypermedia documents using interactive tools and a scripting language. It is a full-featured UIMS that can be used to create a range of products from GUI front ends to UNIX commands to commercial grade applications. The MetaCard environment includes text editing tools that support multiple fonts, sizes and colors, automatic scrolling, search, sort and hypertext links. A complete set of full color image editing/painting tools are also built in. MetaCard supports the full range of Motif user interface techniques and controls, including toggle and push buttons, pull-down

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and pop-up menus, scroll bars, dialog boxes and floating palettes.

MetaCard supports HP 9000/300, SPARC, Sun 3, DECstation and SCO Open Desktop (ODT). Single user copies of MetaCard will sell for $495. Site licenses are available from $2,500 for 10 users up to $15,000 for 250 users.

Contact MetaCard Corp., 4710 Shoup Pl., Boulder, CO 80303; (303) 447-3936.

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SMARTsystem Supports Apollo 9000 Series 700

Procase Corp. announced the availability of the SMARTsystem software development and maintenance environment on HP Apollo 9000 Series 700 workstations.

Comprised of five modules, SMARTsystem is an integrated set of multiuser programming tools built on an object-oriented database that stores the program source code, any modifications made and all derived data, providing a model from which programmers can analyze both the overall structure and detailed components of a software program. SMARTsystem for the Series 700 lets software developers re-engineer large bodies of existing C source code to accomplish such projects as porting, maintenance, enhancement and software evolution for both host and embedded development projects. It also offers incremental tools for new development. SMARTsystem utilizes HP's SoftBench framework, which enables CASE tools to work together in a fully integrated software development environment.

Each SMARTsystem module is priced at $2,000. The entire system sells for $10,000. A network license manager allows customers to purchase only the quantity of each module needed for simultaneous use. In addition to the HP platform, SMARTsystem supports SPARCstations, IBM RS/6000 and DECstations.

Contact Procase Corp., 3130 De La Cruz Blvd., Ste. 100, Santa Clara, CA 95054; (408) 727-0714.

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EtherFlex & BridgePort Allow Multiplatform Print Sharing

Extended Systems announced new additions to the EtherFlex and BridgePort product families.

EtherFlex enables Novell NetWare 286/386, Novell NetWare Lite and Apple EtherTalk network users to directly connect to an HP LaserJet II, IID, III, IIID or IIISi printer. BridgePort allows PCs, Macintoshes and Sun workstations to share HP LaserJet IID, III, IIID and IIISi printers. BridgePort EX allows networked and non-networked users to share the same HP LaserJet IIISi. Automatic Language Switching (ALS) on the EtherFlex and BridgePort are completely transparent and determine whether an incoming print job is PostScript or PCL and configures the printer to the appropriate language. Font management technology assures Novell users that the appropriate soft fonts are reloaded to the printer automatically when the printer's language switches. Users have the flexibility to select the most popular Ethernet connections on a single network

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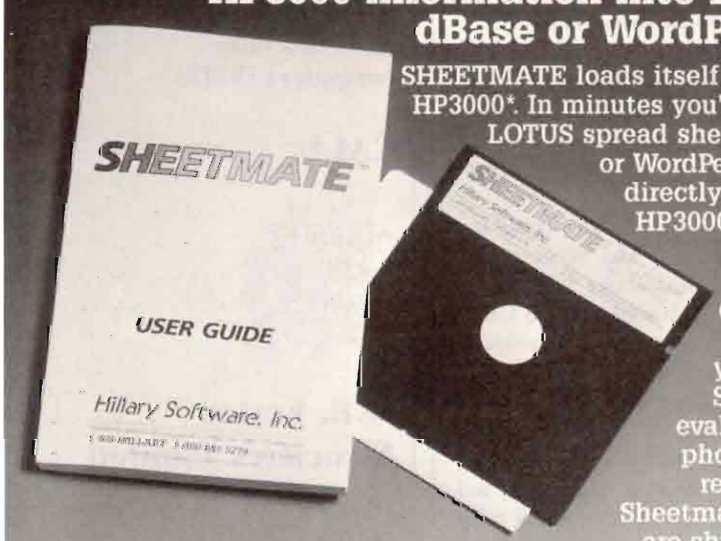

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card. EtherFlex and BridgePort EX support twisted-wire (10Base-T) and thin-coax (thin-wire, BNC) cabling connections in a single product.

Contact Extended Systems, 6123 N. Meeker Ave., Boise, ID 83704; (208) 322-7575.

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Micronics X Workstations Deliver Virtual Memory

Micronics Computers Inc. announced the PC4X X workstation system, offering X terminal users the protection of virtual memory.

Virtual memory in the X terminal environment provides the X Window Display Server with the capability to use the storage of a remote computer when it outgrows local memory in the terminal. The PC4X hybrid desktop platform can boot-up as either a diskless X terminal or a 486-based computer system (when configured with a disk drive). By custom tailoring system configurations with hard disk, memory and display options, the PC4X can be optimized for use as a network-ready DOS/Windows PC, a personal UNIX workstation or a DOS/UNIX application/file server. The PC4X has an average selling price ranging from $2,495 to $6,195, depending on volume and configuration.

Contact Micronics Computers Inc., 232 E. Warren Ave., Fremont, CA 94539; (415) 651-2300.

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HP BASIC Plus Presents Graphical Interface & Help

Workstation Source announced HP BASIC Plus, adding extensions to the HP BASIC language specifications including a GUI and online help.

HP BASIC Plus enables the user to easily create user interface graphics including any one of 29 graphics objects, dialog box objects, data display objects, input objects, and menu objects. Loaded as HP BASIC binary, HP BASIC Plus provides high throughput graphics and responsive menu and dialog box selections. It can be stored as part of the operating system, so it does not need to be loaded each time the system is started. HP BASIC Plus provides online help for all HP BASIC keywords, bringing the HP BASIC Condensed Reference Guide's information for HP BASIC keywords to the screen. HP BASIC Plus requires an HP 9000 Series 300 controller (with a bitmapped display) and an HP Measurement Copro-cessor on a PC or any controller that supports HP BASIC/UX. It also requires HP BASIC 6.2 or later. HP BASIC Plus uses 900 KB of RAM and 3MB of hard disk space.

Contact Workstation Source, 16 Auckland Close, Maidenhead, Berkshire England SL6 8QB; (0628) 75252

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HP Unveils New EtherTwist Networking Products

HP introduced a Ethernet-to-Token-Ring router and a thin coaxial hub to its Ethertwist family of networking products.

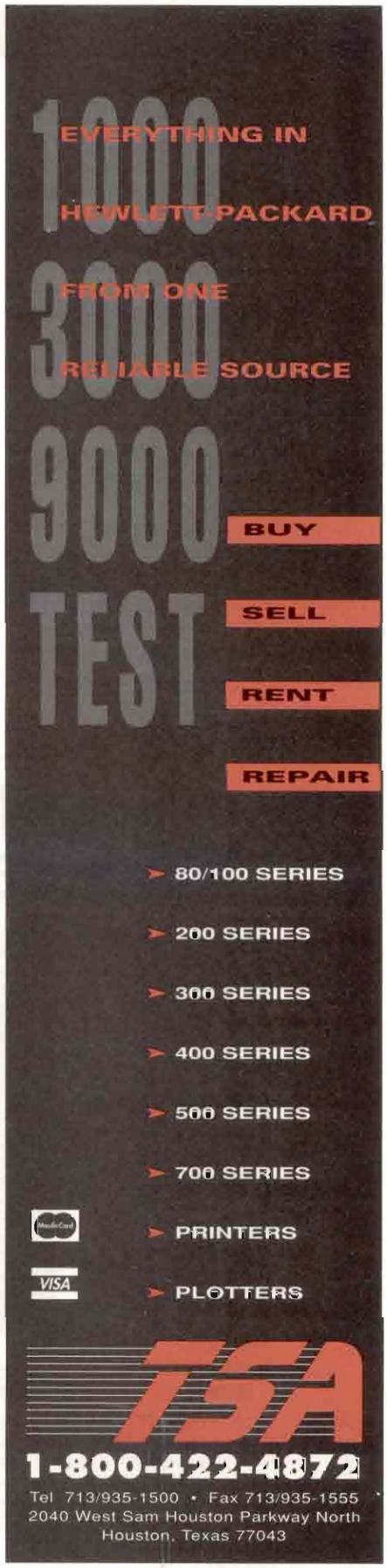
The HP EtherTwist 27286A Router TR allows users to integrate to Ethernet and Token Ring networks or migrate from Token Ring networks to lower cost 10Base-T LANs. Its four ports connect one Ethernet/IEEE 802.3 link, one Token Ring 4/16 Mbps link and two WAN links, each at speeds of up to 2.048 Mbps. It can transmit approximately 5,500 (64-byte) packets/sec. between Ethernet and Token Ring networks. The router is fully compliant with SNMP and provides concurrent operation of five standard-networking protocols: TCP/IP, DECnet IV, Xerox XNS, Novell IPX and AppleTalk II.

The HP Ethertwist 28692A ThinLAN Hub Plus is a multiport, thin coaxial repeater for use in Ethernet and IEEE 802.3 LANs. The new hub features nine thin-coaxial (BNC) ports and one AUI port and provides a scalable solution for 10-Mbps LANs using thin coaxial cable. The AUI port allows connection to thin or thick coaxial, fiber-optic or twisted-pair cables to support large or small networks in various configurations. It also provides support for SNMP/IP and IPX-based network management. The HP EtherTwist 27286A Router TR is $8,500. The HP EtherTwist 28692A ThinLAN Hub Plus is $2,900.

Dataram Presents 64 MB Memory Board

Dataram Corp. introduced a 64 MB expansion board-set for the HP 9000 Series 700 workstation.

The DR9700D/64 uses 16 MB DRAM technology, consists of two 32 MB boards and can be installed in any combination to



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increase memory capacity to 256 MB in Models 720 and 730, and to 384 MB in Model 750. The DR9700D/64 is completely hardware- and software-compatible with the HP workstations. The new board set sells for $14,000, with quantity discounts available.
Contact Dataram Corp., P.O. Box 7528, Princeton, NJ 08543; (609) 799-0071.

Circle 388 on reader card

Mesa/CTI Links Teamwork And Software Through Pictures

Mesa Systems Guild Inc. announced the Mesa/CTI CASE Tool Interface, linking Teamwork and Software through Pictures (StP).

Mesa/CTI is available for Sun and HP/UX workstations. Mesa/CTI enables graphics and text objects to be created in StP or Teamwork and then transferred to the other tool; complete or partial projects can be transferred in both directions. In addition, Mesa/CTI allows import and export of data directly from a menu in Teamwork or from StP's Main Menu. A command line interface is also available for additional user-process integration. Mesa/CTI uses the CASE Data Interchange Format (CDIF) as an intermediate format, making Teamwork and StP data available to any software development tool that can read CDIF. Also, by using CDIF, it is not necessary to have Teamwork and StP on the same network. Mesa/CTI also provides context-sensitive help, available in either a Teamwork window, StP window or a native shell window. Mesa/CTI is $10,000 for a single copy, with discounts for multiple copies.
Contact Mesa Systems Guild Inc., 168 Ninth St., Providence, RI 02906; (401) 421-9390.

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Hi-Comp Releases New Version Of HIBACK/XL

Hi-Comp America Inc. announced HIBACK/XLT, a new version of HIBACK/XL.

Enhancements featured in HIBACK/XLT include HINET, which allows high-speed data transfer across any LAN to a remote node from the node HIBACK is running on. HINET will also provide access to a MO-Autochanger (Rewritable Optical Disc Autochanger or jukebox) connected to a UNIX system from HP (HP 9000/300/400/600/700/800). This will let you include MPE XL 2.2-upward based systems to your fully automated backup strategy with HIBARS and HIBACK. In addition, all I/O going to or coming from storage media has been separated from HIBACK/XL into a new I/O process called HIBIOP, allowing HIBACK/XL to concentrate on data collection. You will also be able to use any other backup device connected to any other MPE system in the network. Finally, native mode spoolfiles are fully supported and will be implicitly linked into the spooler when restored.
Contact Hi-Comp America Inc., 419 Canyon Ave., Ste. 215, Ft. Collins, CO 80521; (303) 224-9700.

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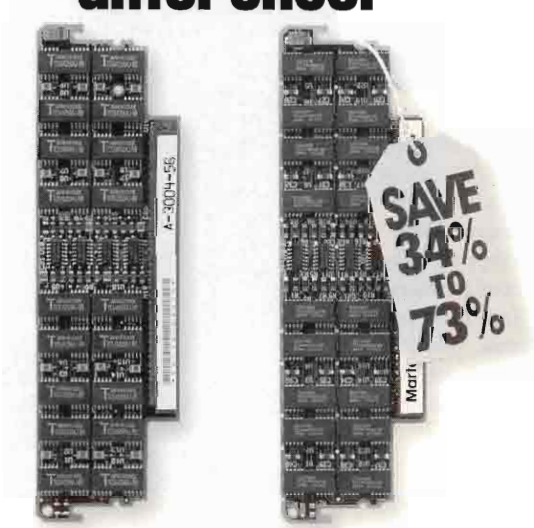

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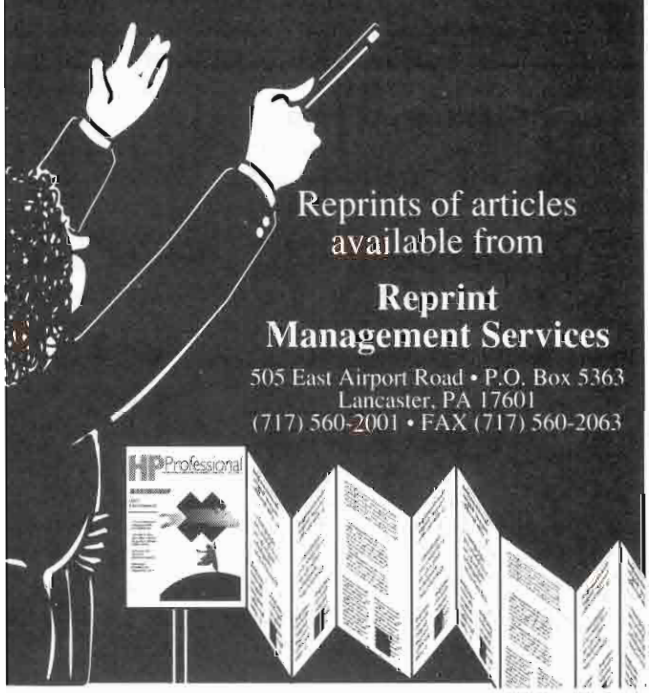

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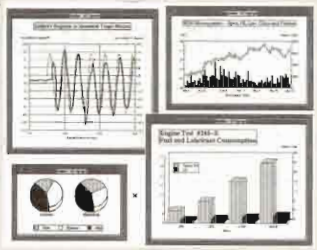

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Not-So-Great Expectations

There's been a lot of hand-wringing over computer systems productivity lately. A pair of macro-economic studies out of Harvard and MIT seem to show that there is no direct correlation between levels of IS spending and manufacturing productivity. While spending on computer systems has soared, productivity increases amble along at a meager couple of points a year.

These kind of numbers make beancounters jumpy because it's their job to guard the corporate jewels wisely. In these recessionary times, we have to be careful what we spend, and if the productivity increases aren't forthcoming, the funding won't be, either.

MIS managers don't like the implication that they're not delivering what they promised. All this nifty new technology is supposed to be put to good use. If most projects are cost-justified based on supposed productivity gains, the lack of quantifiable results makes it look like somebody's not doing their job.

Hard-line Luddites can use productivity numbers to point out — again — that they don't think computers are all they're cracked up to be. The old refrain usually sounds something like "I don't know much about computers, but I don't see the kind of results I expected for the investment." Well, I don't know much about beancounting, but I think that we got what we deserved, and I don't blame the computers.

In the first place, many new computer systems have nothing to do with productivity. Governmental regulations, for instance, impose a huge record-keeping and reporting burden on businesses. I won't try to address their merits, but I can't think of too many governmental reporting rules that have a positive impact on productivity or the bottom line.

In a similar vein, many companies have imposed their own onerous reporting strictures. Executive management seems to revel in daily or weekly production and sales reports, and loves to have full-color, 3-D charts of every trend and factoid that it imagines will help it to make timely and accurate decisions. I'm as big a fan of timeliness and accuracy as the next guy, but sometimes the bang just isn't worth the buck we spend for it. Turning all the bookkeepers into financial analysts doesn't equate with increased productivity.

Even systems that are supposed to be productivity-enhancing often miss the mark. The use of word processors, spreadsheets and presentation graphics packages are a case in point: It is invariably true that it is more productive to use these systems than not, but only if all the productivity gains aren't offset by busy work and non-value-added activity.

Word processing tends to lead to too many memos, spreadsheets to over-analysis of marginally useful data, and graphics packages to presentation overkill. That's why I have really mixed feelings about the usefulness of multimedia tools in business. Does the world really need full-color, animated, musically-scored budget presentations? Maybe if you're pitching a Broadway musical, but otherwise I think it's simply comical.

Even the automation of manual tasks — which has the clearest correlation to productivity boosts — has a dark side. One of the interesting effects of computer systems is that they tend to exacerbate the problems of bad manual systems. The problem is that while bad manual systems can often be compensated for by the development of informal processes and policies that paper over their deficiencies and inefficiencies, computer systems, by nature, must be patched with more software. Attempts to informally cope with bad systems usually cause more work for the hapless user.

The whole concept of process re-engineering and system "re-implementation" reflects this issue. We know that there are process improvements to be made, and it's a real shame that we missed them the first time out. Computerizing the existing processes didn't buy us as much as we had hoped for. I prefer to talk about re-engineering, rather than re-implementation, because it helps focus attention on the underlying processes, rather than the systems aspect.

Unfortunately, this is a nice, simple idea which is rather more difficult to implement. To re-engineer systems effectively, you have to start thinking like a process expert, and you must convince management that they should trust you to do it. As long as management regards its systems personnel as techies, they won't trust them with process issues.

So where does this leave us on the productivity question? I think the economists are right when they posit that there is little connection between how much you spend for computer systems and the productivity increases you can expect. We just need to go a step further. There is definitely a correlation between how much you *think* about your computerized processes and the gains you'll get. Computers don't kill productivity increases; people do.

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