The Magazine For Hewlett-Packard Enterprise Computing

HP Professional

MAY 1994

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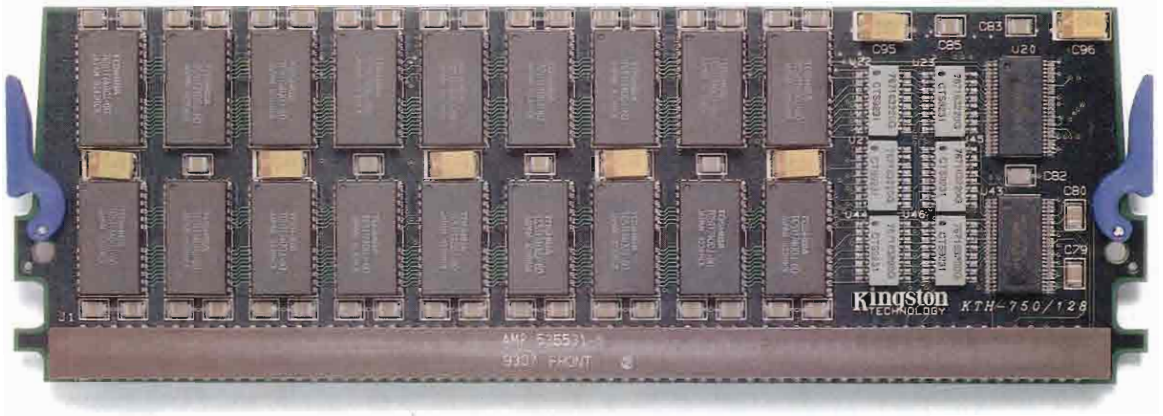

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CIRCLE 499 ON READER CARD

A Different Spring Cleaning

It Takes More Than A Weekend To Get On The Road Again

By Charlie Simpson

Every spring, I roll out my '72 Dodge Challenger, a fully-restored Canary Yellow Classic, from the garage and prepare it for the summer.

While pushing the car into the driveway, I proudly told my wife it was an investment the entire family could enjoy. After four years of restoration and rummaging around junkyards, the car is truly a work of art. After we purchased our home, I convinced my wife that this car, the same year and model I drove in high school and college, could exist in harmony with our open system, our new home. In return my wife informed me that the garage was my room in the house. Technically, it really isn't in the house, but considering I had already lost every other room, including the basement, I thought it was a pretty fair deal.

For four years, the garage was my environment. I restored, re-engineered and tweaked my ultimate subsystem — a 360 Interceptor, 4 barrel, yanked from a '72 Dodge Charger (not to be confused with the Challenger). Granted it's not a track screamer but it's never let me down and it still turns heads in certain circles.

So each year I lower the beast off the blocks and change the fluids, filters and plugs. Of course, there is always a problem or two before it is road worthy — a leak here, a short there. And I curse the beast. But when it roars to life and my wife, my two-year-old son and I climb in for the first run to Dairy Queen, the bruised knuckles and the 57 trips to the auto supply shop are forgotten.

This year, however, when I ventured out into the garage for this annual ritual, it was cluttered with tools and supplies needed to make both systems run — shovels and rakes, lawn furniture, paints and plasters, jacks and lifts, wrenches and ratchets, and a barbecue grill.

Along with the tools were toys and trikes that arrived shortly after the birth of our son. I'm sure it wasn't an intentional countermining effort on my wife's part, it's just that there were extenuating circumstances and that was how things worked out. Like it or not, *my room* somehow had become part of the open system.

This year, changing economics is driving IS managers to examine technology trends like client-server, open systems and OOP in order to downsize, resize and rightsize. And, the advent of ISO 9000 certification is prodding an early spring cleaning in many corporations. One issue IS managers face when they open that door is where will my HP 3000 system fit in the future of so called "open computing"? But, realize that these words don't mean sweeping away existing systems for a complete replacement solution.

Although HP would love to continue to sell the 3Ks as a standalone solution, it is clear that they need to address interoperability. Systems such as the HP 3000 may exist in an open environment but how much work will it take and at what cost? What tools and what toys will be required, and what will be sacrificed to make room for them?

Finally, this spring cleaning cannot be a weekend of simply changing plugs. It will require months of planning and evaluating, followed by possibly years of implementing, defining and refining. As MIS managers begin to open their IT garages and see what can be saved and what can't, they must not be too hasty. Despite all of the daily reminders about the new, improved technological advancements, the computer industry is still only in its late spring.

What really must be open in your future computing plans is your perceptions and your options. So don't continue driving only that same system for the sake of driving a classic .

Incidentally, we're selling the Challenger this summer, as it no longer meets our needs. Although it will hurt to part with it, the new sport utility will somehow ease the pain. We'll see if the investment pays off.

Charlie Simpson

Go Directly To Sales

I've put this off long enough. I know this old computer can keep going for a while, but if I put off my replacement decision too long, it will fail, and service won't make any sense. I'll be in a mad panic to buy a new system and work will come to a standstill while I get the new one running.

So I pick up the phone and dial HP Direct at 1-800-637-7740. Naturally, the first thing I get is voicemail. I have my choice of information about:

1. Presales technical assistance and literature on HP 3000 and HP 9000
2. Ordering assistance, pricing and availability
3. Mass storage product information
4. Printers and supplies, Vectra PCs, networks, scanners and netserver products

Also, the confident disembodied voice intones, if I am desperate to get my fax machine into the act, I can simply fax my order to HP at (408) 345-8398.

I punch 4 because in all likelihood I will buy another personal computer rather than a 2,000-person business-class server for just the two of us here. Unexpectedly, after having listened to only the first electronic voice, I reach Sandra Bryant. I ask how business is doing, and she tells me the phone line team is experiencing "big-time growth." Many more HP products are available over the phone lines and the volume of calls is climbing steadily.

We talk about my needs, and I wonder aloud if an HP OmniBook could meet my requirements. Bryant sadly informs me that the OmniBook won't accept an external monitor connection — yet.

As I whimper briefly about wanting that terrific battery life so I can sit up in bed at 3 a.m. writing my novel, we talk about the more realistic vision of an HP Vectra. Bryant offers to have a PC technical support person call to talk to me. She gives me a callback ID number and says I should receive a call within the next day.

Less than 24 hours later, I get the call and hear about the newest Vectra VL2 series low-end personal computers, which start at $1,799 without a monitor. Two days after that first phone call, I receive a package of literature about the Vectra products.

Now I'll grant you that nobody from HP stepped through the front door to shake my hand and down donuts and java for two hours while we yakked about my decision, but the process was quick and informative. And HP didn't try to push me into buying something I might not be happy with over the long haul.

Encouraged, I called back to HP Direct again, this time punching in a 1 for information on HP 9000 products. Again I explain that I want a small system to help two people work effectively. Does an HP 9000 product make sense?

"You might be better off considering our PCs," she says, "but I'll have someone on our pre-sales technical staff call you to

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CIRCLE 246 ON READER CARD

Sales income from the test and measurement and computer systems through HP Direct services totaled nearly $25 million in 1993.

discuss the particulars." Again I'm given a call ID number.

Sales support engineer Hector Curiel called me two days later. He quickly zeros in on software as a crucial part of our decision. Yes, we are using several PC-based software products not available on UNIX. Replacing this software on UNIX would add considerably to our system costs. We then talk hardware.

Curiel enjoys his job. "I'm having a lot of fun selling workstations because we're on the cutting edge with both price and performance. Customers are very open when they talk to us now, and we have a lot of clout in the market with these products."

The new low-end HP 9000 Model 712 workstation starts at $3,995, which is a great price for the product, but more than I need to spend for word processing — our primary application. We briefly discuss using a paired system of workstations and X stations to hold down the cost per seat, but it is still considerably higher than a low-end PC solution.

Now for the moment of truth. This is where we separate the really great sales people from the ones who just want to make money. Curiel says I really need to buy a PC because our tiny company, with just two PCs running word processing, does not need UNIX workstation power. Curiel knows, and I know, that I'll call him again when my needs change and recommend him to others because I feel I can trust him.

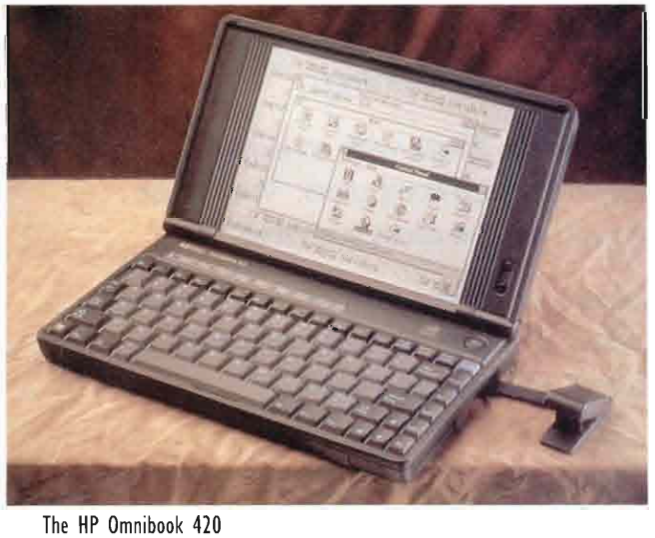
HP appears to be doing its best to build the same kind of reputation for quality and trust in direct telephone sales that it has already with the person-to-person, press-the-flesh sales that have helped make it the number two company in the U.S. computer business.

WHAT'S BEHIND THE DMO

HP's direct sales effort has been around for a while, but started with much smaller goals in mind. HP DMK was an ordering service for accessories and supplies that had lots of customers. HP's Customer Information Center (CIC) also goes back a few years as a centralized service for pre-sales product literature.

When it committed to the importance of its dealer network a couple of years ago, HP moved accessories and supplies out to the dealers. At the same time, HP combined the sales portion of DMK with the information portion of CIC and reissued the HP Direct name.

This portion of HP is now called the Direct Marketing Organization (DMO). The folks who work here can still sell you something as small as a cable if you insist, although they may recommend that you call a dealer. Their claim to fame, however, is selling peripherals, PCs, workstations and small servers. And they'll happily give you information about even the largest systems if you ask.



The HP Omnibook 420

Naomi Miller, HP Direct program manager, admits that this is still a small portion of HP's total business, but points out that it is growing rapidly. Total calls to DMO have increased from 800,000 in 1990 to 2.2 million in 1993. Sales income from the test and measurement and computer systems through HP Direct services totaled nearly $25 million in 1993, about evenly split between the two groups.

The computer portion of the program is growing very rapidly, says Miller, who expects that portion of the business alone to reach $20 million sales in 1994. While that pales in comparison to the corporation's total sales in the $20 billion range, handling sales over the phone frees up HP's sales people to spend their time with the customers who most need their expertise.

WIN SOME, LOSE SOME

While not everybody loves buying computer products by phone, many people appreciate the convenience. Miller says 40 percent to 50 percent of HP Direct customers are repeat buyers. To keep them calling back, Miller and company have to be efficient in meeting customer needs. She says they try to answer 85 percent of customer questions within one business day, but are currently running at about 75 percent.

Catalogs are more appealing now as well. HP has separate catalogs for HP 3000 and HP 9000 products, with several pictures of what could be professional models — but, hey, these are the people who actually answer the phones!

As HP and other computer companies struggle to preserve profits in a marketplace of falling prices, cutting the cost of each sale becomes paramount. HP Direct is an important part of that effort for HP, and is likely to grow rapidly. But don't expect the in-person sales folks to disappear anytime soon. Miller says that while successful, HP Direct is not for everyone. "On any given day, somebody says we saved their life, and somebody else is irritated as all heck at us."

That's life on the phone lines. But don't take my word for it. Experience this for yourself. Call HP Direct today with your questions. Just tell 'em Bill sent you. ■

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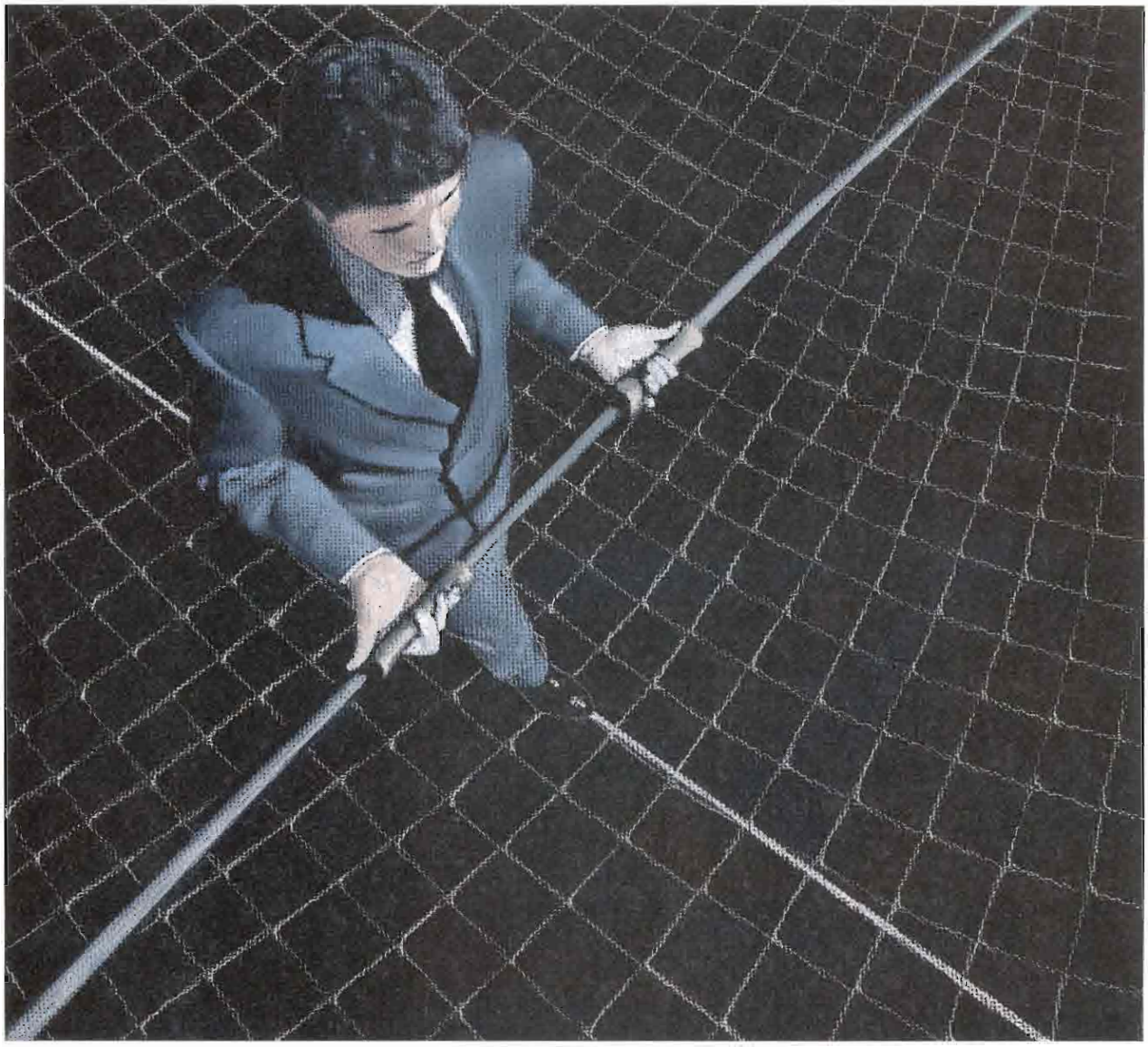

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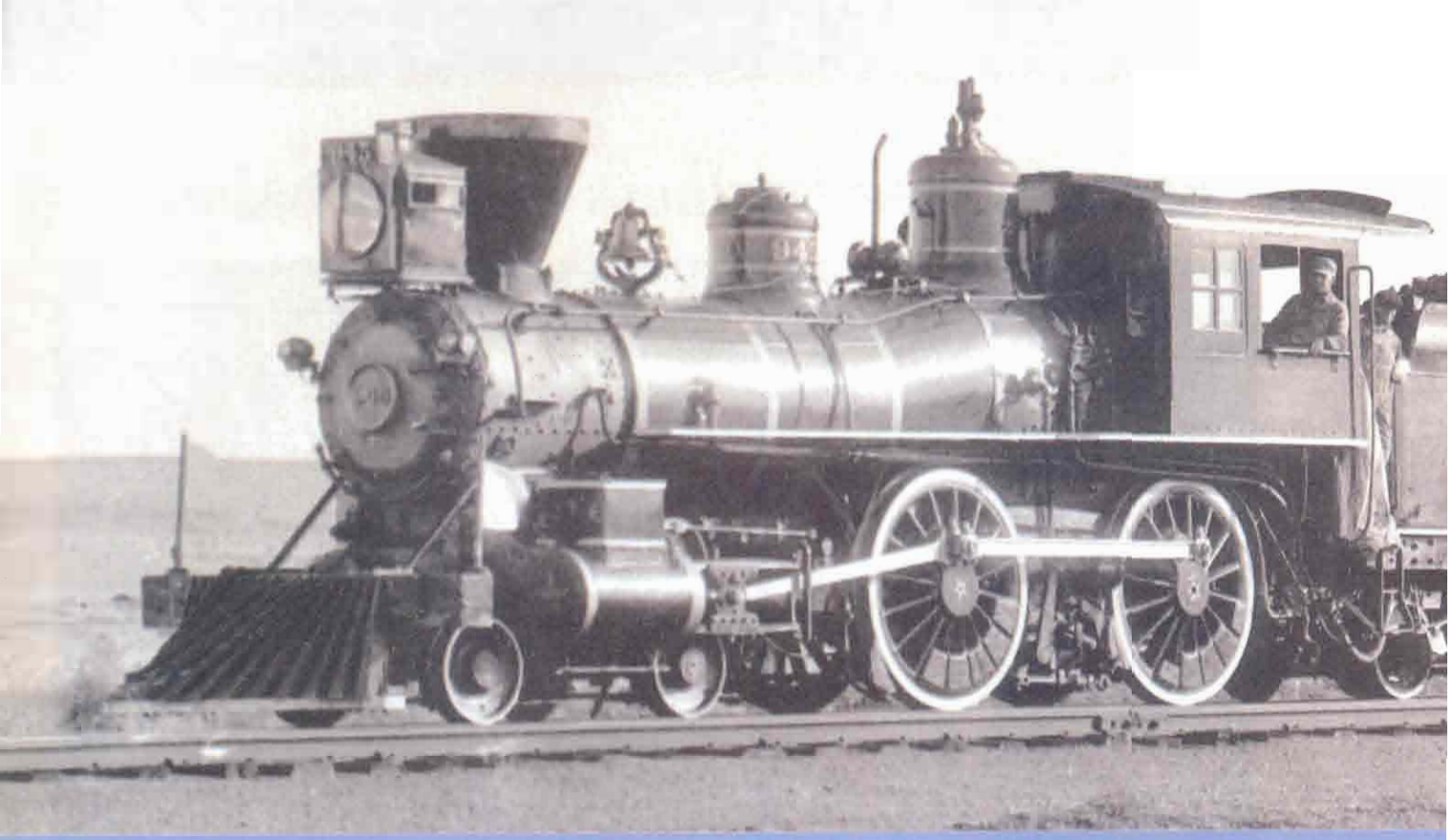

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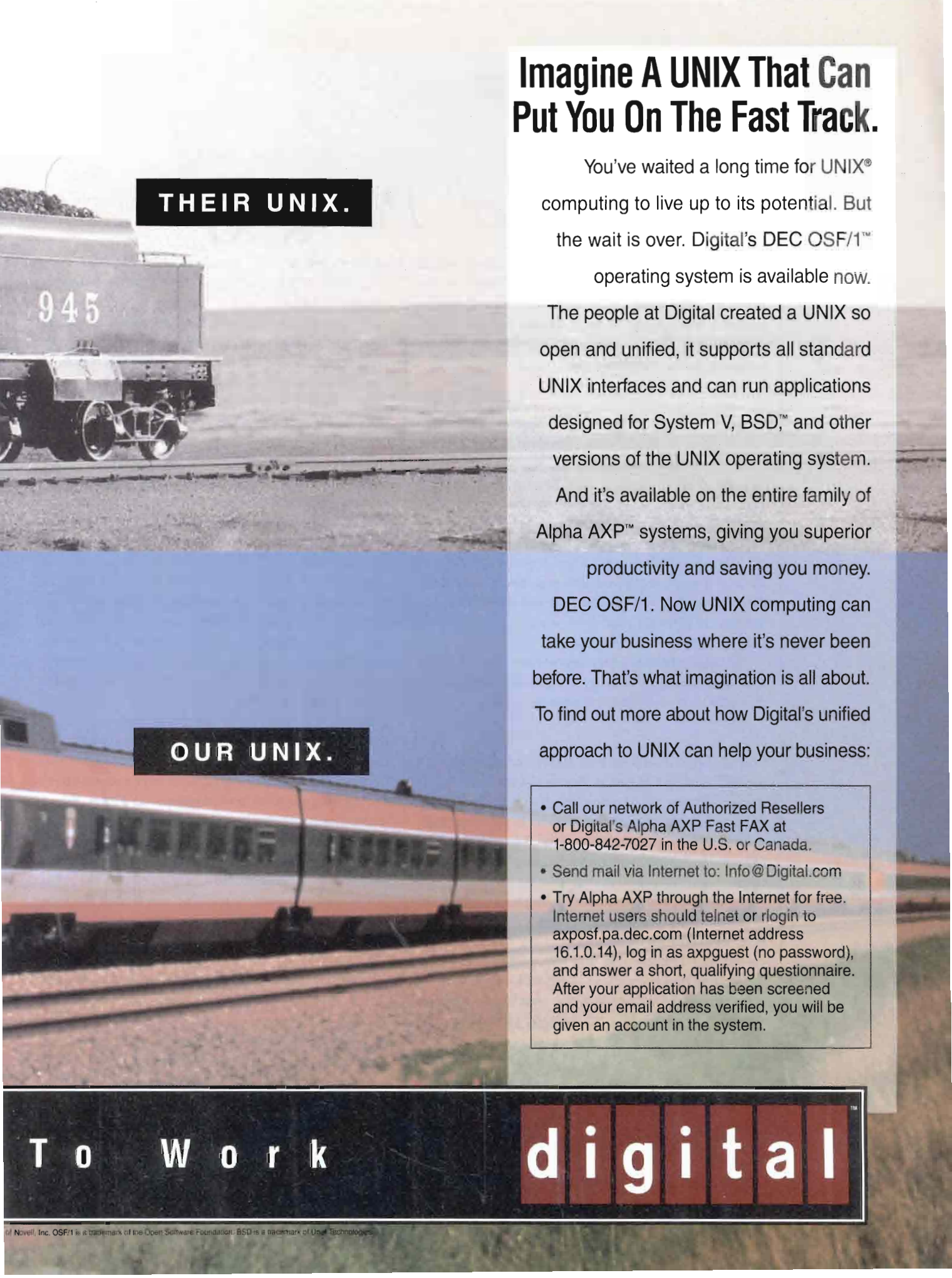

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More 'Killer' Pedagogy

There was one important software glitch that [Richard Riehle] forgot [in his "'Killer' Software" article in the February 1994 issue]. How about the AT&T #4ESS failure a while back? What a disaster for one stupid simple line of code. Just thought I would write because I am also in the telephone field.

Jeffrey D. Gupta
Systems Technician
Mid Plains Communications Systems

Yes, the AT&T error is a direct function of using C for important software. It has long been my contention that C is dangerous unless there is absolutely no available alternative. Safety-critical applications software should be developed using reliability-directed languages. There is potential relief from C++ if it used correctly, but almost no one is using C++ correctly. Most C++ developers are still locked into a C mindset, so otherwise good C++ designs get implemented with the same mushy code typical of C applications.

The important issue is not going to be languages. It is going to be a continuing effort to apply engineering attitudes and principles to the development of software. —RR

I enjoyed [Richard Riehle's "'Killer' Software"] article in the February 1994 issue. As mentioned, there aren't many software engineering programs around. I am looking forward to starting a Masters in software engineering at Seattle University this Fall. I would like to get involved in SigSoft, and was wondering how to contact them.

As an aside, your comment "A bug is an unexpected event or entity that invades your program from outside" evoked a lot of discussion in my area today. My co-workers opinion was that any event should have been taken into account, so it was still a mistake if the programmer did not handle some "unexpected" event. What is an example of a true bug, by your definition?

Stephen R. Bement
Software Engineer
Seattle, Wash.

SigSoft is a special interest group of the Association for Computing Machinery, an international organization for computing professionals. For more information, contact: ACM Member Services, 1515 Broadway, 17th Fl., New York, NY 10036-5701; (212) 626-0500, or on the Internet at ACMHELP@ACM.org.

The first identified computing "bug" was a moth that invaded the circuitry of a hard-wired computer and shorted a relay. It was unpredictable, random and entered the system from outside. A contemporary example is cosmic radiation. It is always there, seldom creates a problem, but when it does, it is random, unpredictable and enters system from outside. —RR

Interesting [And Another Thing] column in the February [1994] issue discussing "Re-engineering" and the lack of "real" understanding by programmers about the systems they work on everyday. At Procase we found that the ability to fully understand large amounts of source code at the program level is the largest factor in any software project. This inability to fully understand source code results in changes being made without understanding their impact, compromises in quality, and schedules being created without knowing the true scope of the task. And, the system ends up with no logical rhyme or reason.

More and more software development environments are being faced with code that has grown to be too large for quick analysis and easy maintenance, and because the original programmers have moved on — the learning curve for new programmers is long. When pressed for time programmers will hastily make changes without knowing the true scope of the task. Programmers waste time trying to understand dead code that sits in a system wasting space. Companies will use what few resources they have available to rewrite a program from scratch rather than re-use existing code.

Lori Plumlee
Marketing Coordinator
Procase

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CIRCLE 354 ON READER CARD

Keeping a lid on the soaring cost of remote communications is a concern of many expanding companies today. According to Kim Krieger, manager of MIS, Hilton Grand Vacations (Orlando, Fla.) was looking for a single box to establish a nationwide network that would connect their 18 resorts, so they chose Micom's NetRunner product because "Micom was flexible and had a good reputation in that field."

The NetRunner 1000E Internetwork Feeder from Micom (Simi Valley, Calif.) supports multiport bridging to allow voice, fax and data traffic to share the same leased line with remote LAN bridge traffic. The NetRunner 1000E Internetwork Feeder is ideal for point-to-point applications where there is heavy LAN and voice traffic filtering up to 10,000 packets per second (64-byte packets) and forwarding at up to six times the wide-area link speed.

In addition, high-speed access into a NetRunner 1000E Internetwork Node allows growth into multinode, multibridge networks for almost unlimited LAN, voice, fax and data connectivity. Users can access the NetRunner Command Facility locally or remotely, or through the LAN. It includes an SNMP agent with public domain MIBII (monitor only).

The NetRunner 1000E also features automatic data compression for increased throughput and internetwork links from 2400 bps to 128 Kbps for sub T1/E1 applications. The Spanning Tree is compatible with all IEEE standard 802.1D-compliant bridges which prevents network loops. The 1000E Feeder supports up to 12 bridges per cluster and multiple clusters per network.

The 1000E Feeder employs fast packet cell-based multiplexing and leading edge compression technologies to maximize bandwidth utilization and throughput. It can be expanded into multinode, integrated NetRunner networks, consisting of NetRunner 1000E and 500E Internetwork Nodes and 50E Internetwork Feeders to meet future internetworking requirements.

The Hilton Grand Vacation site currently has two 1000E and ten 500E models controlling five processors running HP 9000 computers (807s, 827s, 867s and H40s).

The 1000E Feeder performs automatic filtering on destination addresses with additional configurable filters available for broadcast, multicast, source address, protocol type and pattern match. This ensures forwarding of permitted packets only.

The Multi-Site Integrated Internetworking (MSII) software package allows a user on a NetRunner internetwork to access any site on the WAN for voice, fax, data and LAN communications. MSII connects multiple NetRunner locations together creating a single private integrated internetwork. This package includes voice/fax switching capabilities which allow users to call any location toll-free on the NetRunner LAN-WAN networking using minimum bandwidth, yet providing high-quality voice performance. Up to 250 remote locations are supported.

Price for the 1000E, as a network feeder starts at $5,900 and with dual Ethernet ports at $8,700.

—Deborah Schwartz, Assistant Editor

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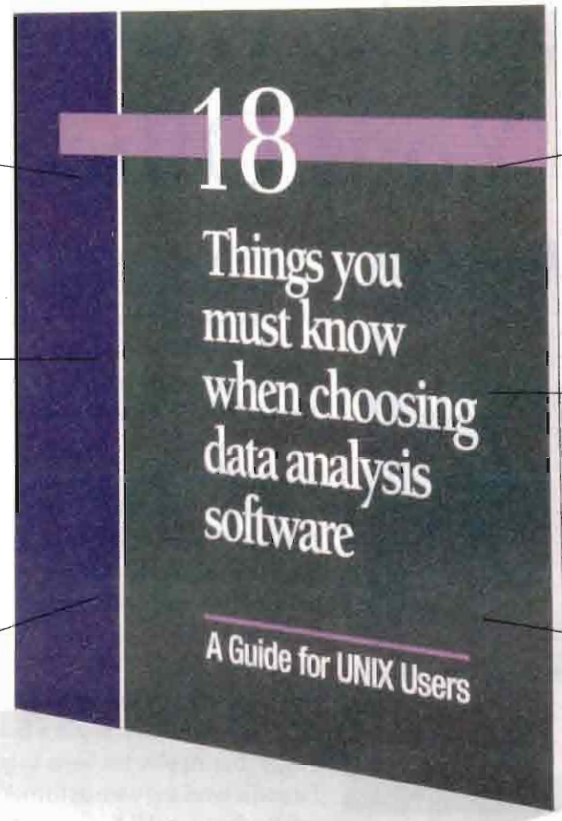

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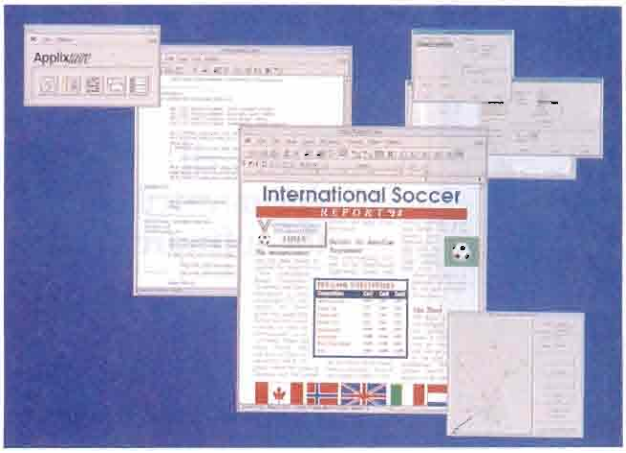

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CIRCLE 355 ON READER CARD

As your networked applications begin to grow, so does your need for a product integrating personal applications and business data. One such product is Applixware from Applix Inc. (Westboro, Mass.).

Based on Applix' Aster*x technology, Applixware was chosen by Roger Lutz, manager of program managment with the Information Systems Group at Federal Express (Memphis, Tenn.), because it was a one-of-a-kind product. "To my knowledge, it was the first product that integrated spreadsheets, graphics and word processors in a UNIX RISC environment." Applixware offers personal office functions, local and wide-area information sharing while integrating with external data sources, including messaging APIs and multimedia data types such as video, audio and images.

The available modules are Applix Words, Applix Graphics, Applix Spreadsheet, Applix Mail and Applix Data.

Federal Express is running Applix Words, Graphics and Spreadsheets on HP 9000/700s to provide complete office automation for its station managers. They are testing Applix Data, but Lutz says it will be a while before it is fully operational. "It is still a little buggy, but Applix has been helpful and is working with us to make it fully functional," Lutz says.

Applix Words includes mail-enabled compound document technology, live links to Applixware applications and third-party products, framing, table support and international dictionaries, thesauri and spell checkers.

Applix Graphics is a drawing package with unlimited color support, a parts library with color pixel editing, incremental zoom and unlimited point sizes, and user-definable fill patterns, brush styles and shapes. Also available are importing/exporting and filter options for over 20 graphics and desktop publishing packages, such as WordPerfect Graphics, X Bitmap, HP-GL, FrameMaker (MIF), Interleaf (ASCII and RTF) and MacPrint.

Applix Spreadsheets features real-time data feeds, callback functions, goal seeking capabilities, drag-and-drop cells, built-in database functions, projection tables, multiple views and live-links to graphs and Applix Data.

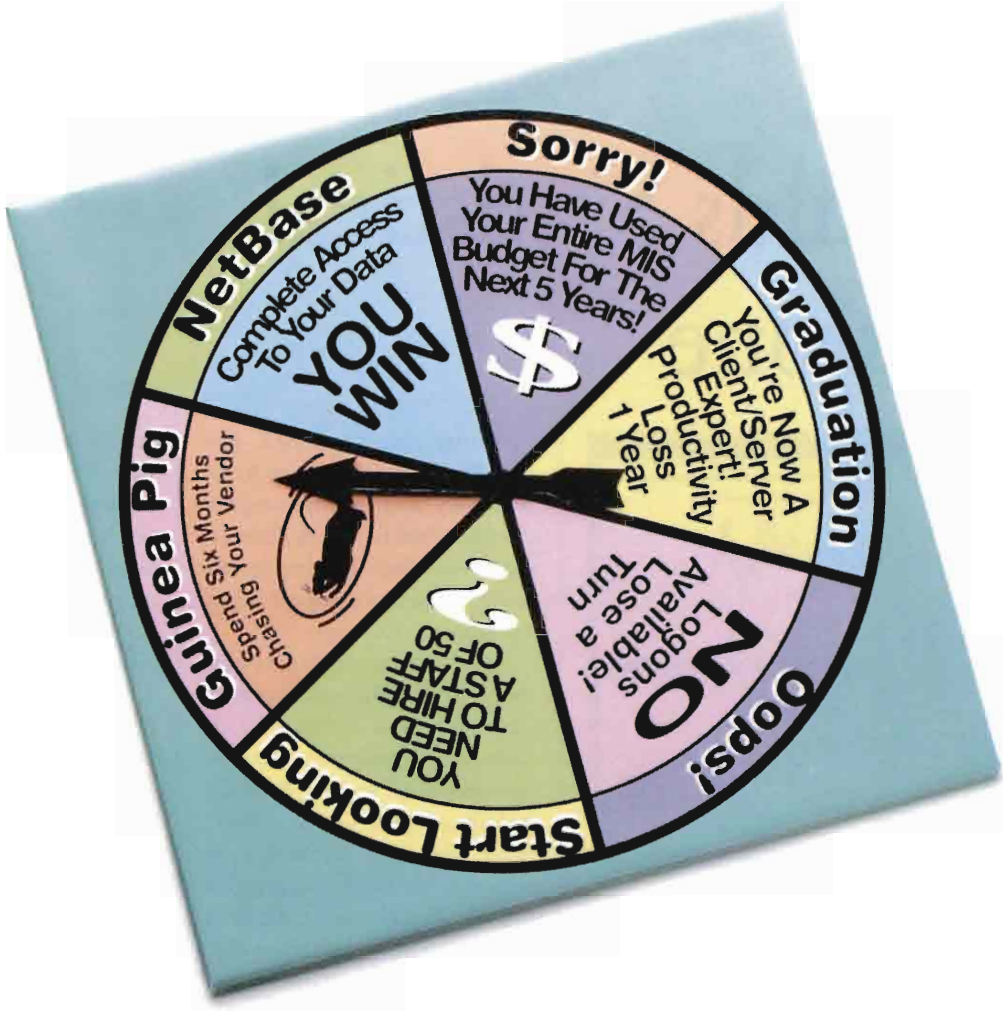
Applix Data can access data in Informix, Oracle, Ingres and Sybase RDBMSs while providing a graphical means to query, access and share information, tables and views. Extracted data is automatically updated when the original changes.

Applix Mail includes Mail and Open Mail allowing users to exchange and edit multimedia compound documents, messages and data files directly from source applications or the Applix Mail facility. Other features include spell checking, filing and conversions of incoming messages; shared folders and MIME compliance (Applix Mail only); and X.400 compliance (Open Mail only). Mail also offers translation filters for converting data into Applixware formats.

Underlying all the components is the Extension Language Facility (ELF), enabling users to adapt Applixware applications to suit their personal desktop.

Cost is $695 for a combined package of Applix Words and Graphics, including ELF; $495 for Applix Spreadsheet; $995 per seat for Applix Data; $195 for Applix Mail and $295 for Applix Open Mail.

—Deborah Schwartz, Assistant Editor



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According to Peyton Cole, vice president of marketing and sales at Tyecin Systems (Los Altos, Calif.), statistical analysis packages fall into two categories. "In packages with sophisticated features you regularly have to learn a language. It might have an X Window interface, but at a certain point, you have to go to a command line," he says. "Or, the packages with a point-and-click interface are generally too simplistic for our needs." After a nine-month search, Cole found BBN/Cornerstone from BBN Software Products (Cambridge, Mass.) which includes sophisticated features and a point-and-click interface.

Tyecin uses BBN/Cornerstone with its ManSim/X (manufacturing) and TestSim/X (assembly and test) simulation tools, which are used "to improve production of the facility by decreasing cycle times and improving the utilization of equipment and operations," Cole says.

Users have access to data over the network without leaving their desk. The Data Navigator provides direct, transparent access to data stored in remote databases including Ingres, Oracle, Sybase, RS/1 tables and ASCII files, as well as other BBN/Cornerstone datasets. This eliminates the need for time-consuming data interface and conversion programs.

Dynamic links make it possible to see results of changes in datasets, graphs and analysis objects simultaneously. For example, a user can highlight data in one graph using the brush tool and that data will be highlighted in related graphs. Data can be viewed as xy line and scatter plots, xyz scatter plots, 3D surface and contour plots. "It [BBN/Cornerstone] allows you to make decisions and run the simulator, then you can look at the reports and decide whether you made the right decisions," Cole says. "In as little as two minutes, you can answer: What if I add another shift on the weekend? Or add a new piece of equipment? It gives quantifiable answers before implementation."

According to Cole, the ability to program in an X Window environment with a point-and-click interface was a strong selling point. "With other toolkits, you have to learn a programming language," Cole says. "They claim they have an 'English-like' language, which makes it sound easier. But, it is not."

The dataset editor can manipulate, sort and organize data, or take advantage of optional advanced analysis modules, including multiple regression, multivariant analysis of variance (MANOVA) and principal components analysis.

Cole says Tyecin has written an interface from their products to BBN/Cornerstone using the Cornerstone Extension Language (CEL), an object-oriented development programming language and a set of development tools, to allow users to create a customized interface.

CEL provides networked access to multiple sources of data; basic and advanced mathematical and statistical functions; online help; interactive, graphic tools for data manipulation and analysis; modeling, transformation or simplification of the data; and integration and interoperability with external applications. Users don't have to declare or initialize variables before using them. Instead, they are given the type of the first value to which they are assigned.

—Deborah Schwartz, Assistant Editor

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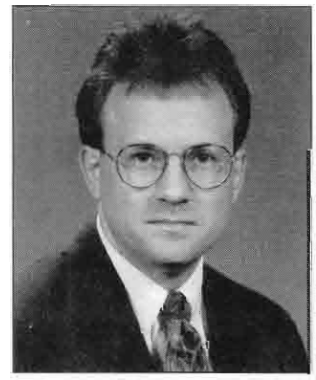

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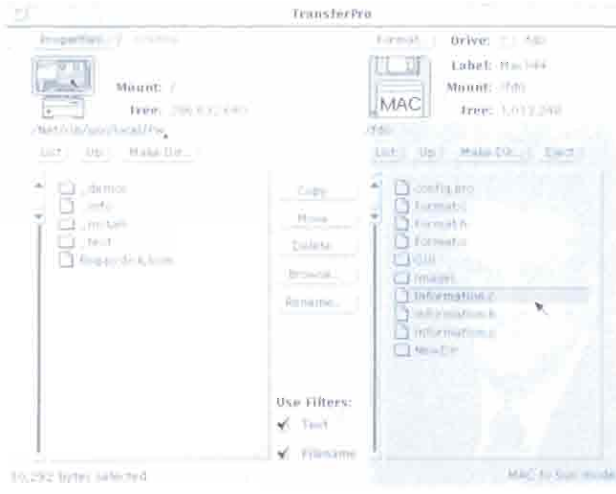

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CIRCLE 353 ON READER CARD

Transferring data files among different computer systems has never been easy. In fact, it's been downright frustrating. But you can get one step closer to interoperability with TransferPro from Digital Instrumentation Technology (DIT; Los Alamos, N.M.). With TransferPro for HP 9000/Apollo workstations, you can format, read and write 3 1/2-inch, 720 KB and 1.44 MB MS-DOS media and Macintosh 1.44 MB disks.

Floptical disks and a variety of external SCSI media such as Bernoulli and SyQuest removable cartridges are supported as well as magneto-optical cartridges. "Many of our customers are in multimedia or prepress desktop publishing," says Robert Justice, DIT's CEO, "and they want to send a large file to their publisher so they put it on a Mac-formatted Bernoulli or magneto-optical cartridge." It also is good for using Macintosh systems at home or PowerBooks on the road.

John DeRosa, senior manager of information services of the Motorola Improved Radio Services Group (Schaumburg, Ill.), uses TransferPro instead of Andataco's Liken or Insiginia's SoftPC because it's less expensive. "And we seldom need to run DOS or Mac tools in our [Sun] UNIX environment," he says.

Most of the management and scientists in the group use Macs and often take work home on a variety of SPARCBooks, PowerBooks and DOS-based portables, so "TransferPro bridged a gap for us," says DeRosa. "Most are binary-compatible FrameMaker document files, which are saved in MIF format. It's a breeze." TransferPro, however, doesn't support Macintosh 800K capacity disks.

TransferPro lets you format regardless of the current file system of the disk. The format command includes options for labelling Macintosh and MS-DOS disks and for performing low-level disk initialization. According to Justice, TransferPro provides a set of character filters for performing character conversions of ASCII files during transfers, "so you can do a filter on-the-fly during a copy."

Default conversion extensions include: .book, .ps, .eps, .ma, .wp5, .ai, .rtf, .tiff, .wkz, .winzw, .wk1 and .frame. You can add to the default list by editing the TransferPro.defaults file.

TransferPro doesn't require root access. "One of the advantages is that once the program is set up, the regular user can access floppies and Bernoulli without having to get the password," says Justice. TransferPro also automatically adjusts for file names for each system, so you don't have to rename each file.

Mike Fitzsimmons, a staff member at the Los Alamos National Lab (Los Alamos, N.M.) used TransferPro to view PostScript and Microsoft Word files on his HP 9000/735 workstation without mishap. But he has bigger plans: "I'll eventually need to transfer data files from the PC connected to my residual gas analyzer to my workstation."

TransferPro operates with a command line or under the Motif GUI. The command line version, designed to be used in UNIX shell scripts, allows third-party vendors to add Mac accessibility.

TransferPro requires HP-UX 9.x or greater and is distributed on three 3 1/2-inch disks, 1/4" cartridge tape or 4mm DAT tape. Single user licenses are $349; floating network licenses are $899.

—George A. Thompson, Technical Editor

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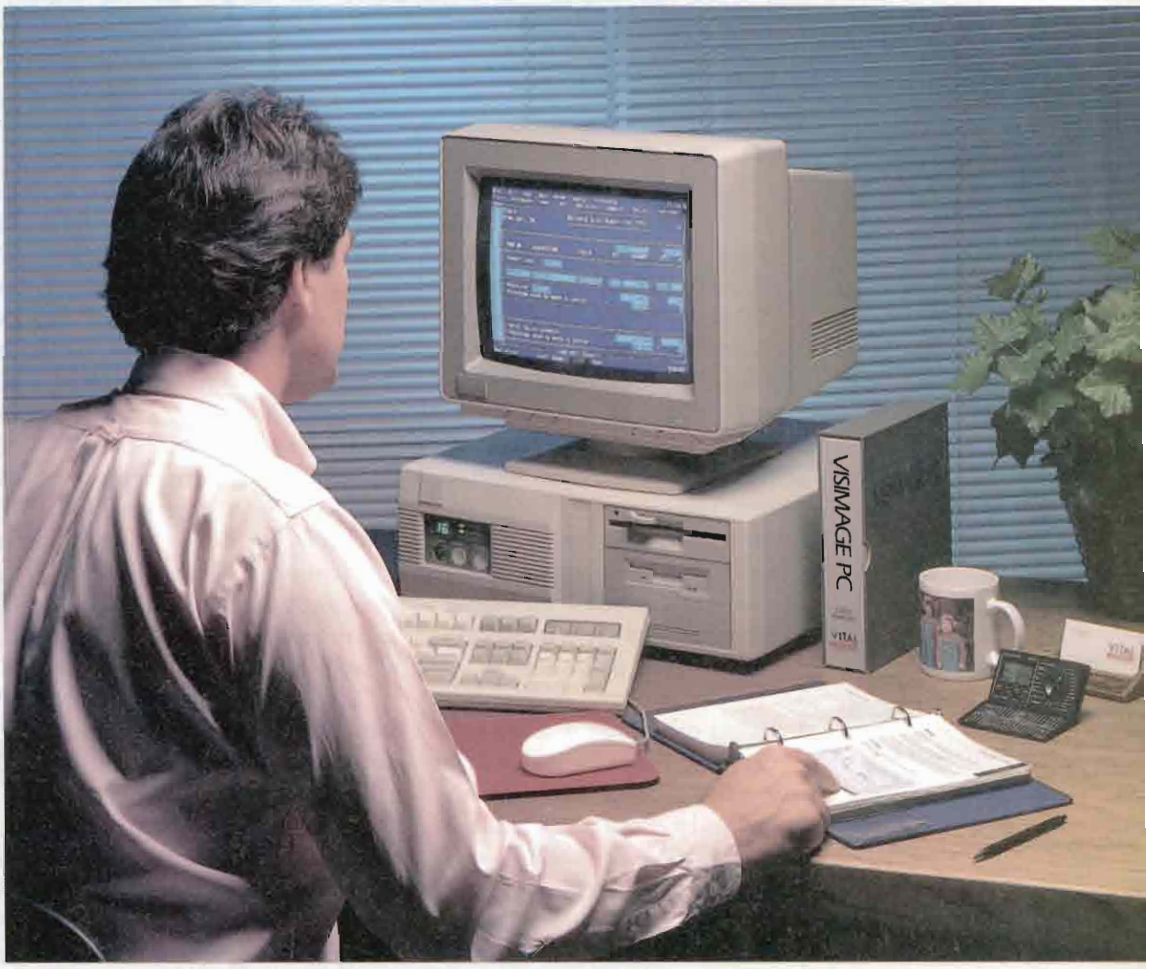

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CIRCLE 351 ON READER CARD

When the phone rings in the control room at National Breakdown (Leeds, West Yorkshire, U.K.), one of the over 2.5 million members is reporting an auto breakdown or emergency for which they are seeking assistance. Using the system implemented last August, an agent inputs the necessary information into TAGfax, an HP 3000 fax gateway from Tag Business Computing Ltd. (Kenilworth, U.K.). The gateway sends the details immediately to one of the group's garage service operators.

"We get some [service vehicles] out in less than 50 seconds, but it's usually just less than a minute, from the time it's dropped into the queue until the confirmation of receipt," says Tony Cousins, system development manager at National Breakdown. "We were pushed to do this because we guarantee that if we don't arrive within the hour, we will pay the member 10 pounds [$15]."

Due to its need for speed, National had to limit some of the flexibility in the product from TAG. "The original product was designed for HP 3000s to send purchase orders. There's no urgency for that. In our business, however, we are sending a fax that must leave the building within two minutes. The original software would allow any length of text, but we tailored it to allow only up to 22 lines of text plus the logo, for speed," says Cousins.

As a result, National Breakdown sent 29 percent, approximately 20,000 of its jobs in December by fax. Green Flag S.A. (Strasbourg, France), the company's sister operation, is said to be looking at the product as well.

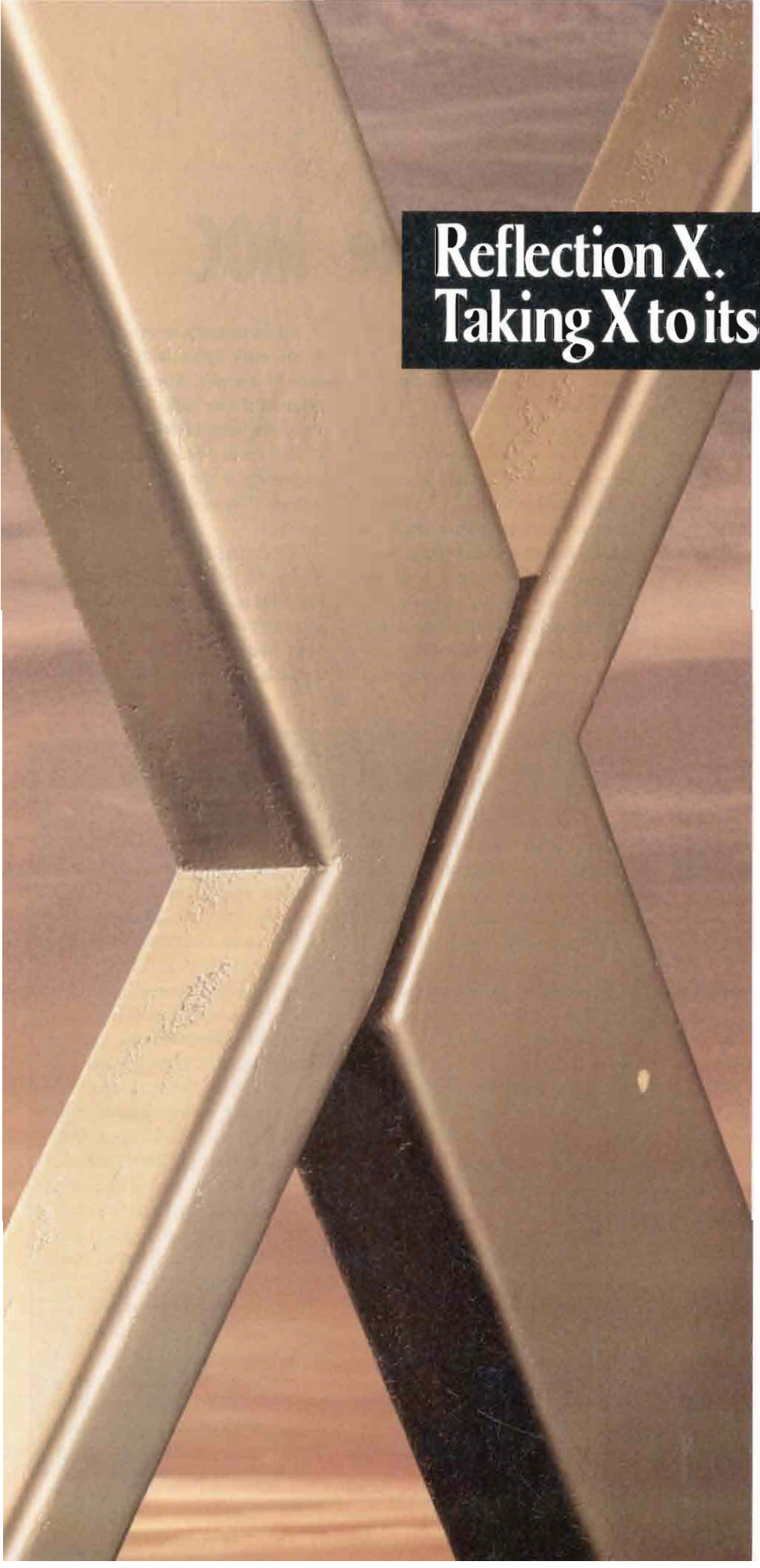
TAG Business Computing introduced its first product, a multitasking environment for HP 3000 terminals called TAGswitch in 1989, for which it had two clients, says John Ryrie, co-founder and co-managing director at TAG. Since that time, the company has grown to realize revenues last year of $370,000, up 20 percent over 1992, says TAG's other co-founder Tony Gibbon.

One of the two first users of TAGswitch was Courtlauld's Chemical, which is still running it on two HP 3000/949s and one 922 for over 100 users. Says Trevor Jyngell, project manager at Courtlauld's Chemical, "We've found it very useful. We tend to run everyone through TAG-switch to get onto the mainframe applications, even those on PCs."

While TAG's product line has historically focused on the HP 3000, it has realized that UNIX-based systems represent its "next logical development," says Ryrie. "We are HP people first and foremost, but we want to have products that will appeal to all users, so we will be porting all of our products to UNIX. We've started by rewriting TAGswitch because it's the hardest to do. We're looking for someone to beta-test it, particularly someone who wants to make the connection between [HP] 3000s and UNIX," he says. TAG's E-mail, which is free with TAGswitch, will be extended to X.400 and Internet by June, Ryrie says.

TAG Business Computing has approximately 90 sites in Europe, and has set up a company in Orange Country, Calif. which should be operative later this year.

—Marsha Johnston, International Editor



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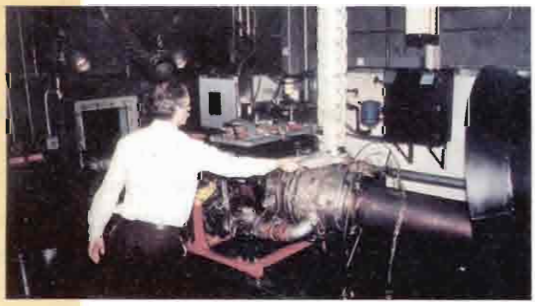
Coffee, Tea And The MOC

"Thank you for flying United." That's what you hear as you safely deplane at any of the 159 airports with United terminals. But if United's skies are as friendly as advertised, then you should thank the team at United's Maintenance Operations Center (MOC). Located south of San Francisco on 144 acres, the MOC maintains everything from coffee makers to jet engines on United's fleet of 550 airliners.



Part of the MOC's 3 million square foot facility is reserved for six automated jet engine "test cells" used for the overhaul and testing of all of United's jet engines. Two test cells are for testing the wide-body jet engines on 747s, 757s and 767s; two are for the narrow-body 727s and 737s; and two are for Auxiliary Power Units (APUs), jet engines that supply power for an airplane's electricity and air conditioning while it's on the ground, and for in-flight emergency power if necessary.

Because the MOC is responsible for ensuring that the specifications of jet engine manufacturers have been met, rigorous testing and analysis of the engines' performance is required. "When we do our engine overhauls, we analyze the data after the engine tests and put it in a database so we can track repairs to the engine versus performance of the engine," says Al Tipsword, project coordinator for Automated Test Systems at the MOC.

Because a plane's engines must be periodically disassembled, reassembled and refurbished, it's labor-intensive and time-consuming as operators throw switches and twist dials while following a script to measure and collect temperature, pressure and airflow data from many different sources. Test results were recorded on notepads of preprinted forms and log sheets.

All six test cells were automated in the early 1980s with HP 1000 systems (running Fortran). As the oldest of the six cells, the APU test cell was a likely place to start when United wanted to leverage its prior investment in the HP 1000 and investigate "open software and open systems."

Venturing in one step at a time, Tipsword decided "to leave the HP 1000 in the loop" while evaluating the potential of an all UNIX conversion. Currently, the APU test cells are built around a HP 1000

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Playtex Apparel Takes Stock

Today's online transaction processing (OLTP) systems are great at inserting and updating databases, but when it comes to providing fast answers for business decisions, they are less than efficient. The information necessary for a typical ad hoc report required by a business analyst may take days to specify and retrieve.

Traditional database management systems haven't focused on query processing or decision support. The solution is a data warehouse, a separate database that contains a historic record of business data, optimized for complex queries and analysis.

Data warehousing has solved a reporting backlog at Playtex Apparel, according to Sandra Tucker, MIS supervisor at the Playtex distribution center in Dover, Del. A subsidiary of Sara Lee, Playtex is currently in the process of migrating from a time-shared IBM mainframe to an HP 9000 client-server environment. Tucker says that before implementing a data warehouse from Red Brick Systems, generating meaningful reports for business analysts from the mainframe database was difficult.

Playtex sales and marketing analysts need to see order and shipment data. "They want to see it this way today, that way tomorrow, another way two minutes from now. On the mainframe, order and shipment data was on reels and reels of tape, and therefore not directly accessible to them. MIS was backlogged with requests for reports," says Tucker.

Following the lead of its parent company Sara Lee, which had compared several decision support systems, Playtex Apparel chose Red Brick Warehouse in 1992.

Because Playtex's online transaction system is still on the mainframe, the process for extracting data from the mainframe database and loading it into Red Brick Warehouse is still a little round about," Tucker says.

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MOC

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for data acquisition and a HP 9000 Model 425T running SL Corp.'s SL-GMS (Graphical Modeling Software) providing a real-time dynamic graphing environment.

Prior to its automation, APU testing was done manually by operators who mounted it in a soundproof room, then connected it to a myriad of gauges, meters and switches before completing the testing in front of an intimidating console of lights, gauges, meters, dials and switches in a separate room.

The time constraints and complexity of the project necessitated a GUI builder program, explains Tipsword. "So we selected SL-GMS and the HP 9000 to be our graphics system." Using SL-GMS, the engineers in United's Process Engineering Department discovered that it was simple to duplicate the switches, numeric displays and dials of the physical instruments on screen. With SL-GMS' demo library, several objects were simply copied and reused. Now, instead of flicking switches, operators begin the automated APU testing by touch screen input.

Meters and gauges are now represented by SL-GMS's dynamic graphical objects on the HP 9000 display. For example, when it's time for the oil pressure test, an "oil pressure gauge" appears on the screen. Now, the engineering department has a library of class objects they can adapt for other interfaces and projects.

After his foray into UNIX, networks and user interfaces, Tipsword is clear about the benefits. "The workstation and SL-GMS product were quite nominal [in cost] to things we had done in the past." "If we had to write the interface using the lower level X tools available, we would've spent more time and money." He also says that by going to a UNIX workstation, "we were able to connect to our engineering department's network." Consequently, the engineers now have direct access to the jet engine test data (residing on Macintosh file servers) for analysis.

In the future, United plans to transfer the lessons learned in the APU application to the wide-body test cells. "By installing the appropriate software and workstations in our wide-body test cells, we'll be able to access SGML-formatted documents directly from our file servers electronically submitted by airline manufacturers.

"We're looking at programmatic control of the documents, so that during the automated test of the engine, the software we've developed, will automatically scroll through the document," envisions Tipsword.

"As the tests proceed, the operator will have access to trouble-shooting and fault isolation information." Via hypertext links, the operator will be able to traverse documents containing prior problems and solutions as well as vendor provided trouble-shooting information through a touch-screen or mouse-driven X terminal.

Because of safety concerns, Tipsword is also thinking about installing video cameras in the test cells to observe the engine during testing.

Tipsword admits to climbing a steep learning curve in converting his HP 1000/Fortran experiences to UNIX/C environment. But, he intends to apply those hard earned skills when he upgrades all the engine test cells by eliminating the HP 1000s and replacing them with more powerful HP 9000s. Although the upgrade is being designed in-house by United, Tipsword says, "we will talk to HP in the final stages of our decision."

—George A. Thompson, Technical Editor

Playtex

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"We move data through a variety of COBOL extract programs that pull down the information I need from the IMS database on a weekly basis, and reformat it on the mainframe into an ASCII flat file structure that I then load into the Red Brick Warehouse using Red Brick's load program."

Loaded into the Red Brick Warehouse running on a HP 9000 server, data is directly accessible to the Playtex sales and marketing staff using HP Vectra PC clients.

After Playtex completes the migration off the mainframe, the online transaction processor will be Oracle, Tucker says. "Oracle has a download utility that can create an ASCII flat file. I plan to use that utility to dump data out of the Oracle database in a format that Red Brick can read directly. It will be a download out of Oracle and a load into Red Brick without the programming effort in between."

So far, Tucker is pleased with Red Brick's performance. "For example," she says, "I just churned a month of data for our export division, which is probably about a quarter of our total monthly data. It was finished in less than a minute. Previously it would have taken a couple of days to create the query, test it, install it, then mount and process the tapes. For a simple thing, it would have been at least two and a half days."

Now, Tucker says, with a better understanding of customers' buying trends, Playtex Apparel can leverage information in new product lines and marketing strategies.

—Sam Dickey, Contributing Editor

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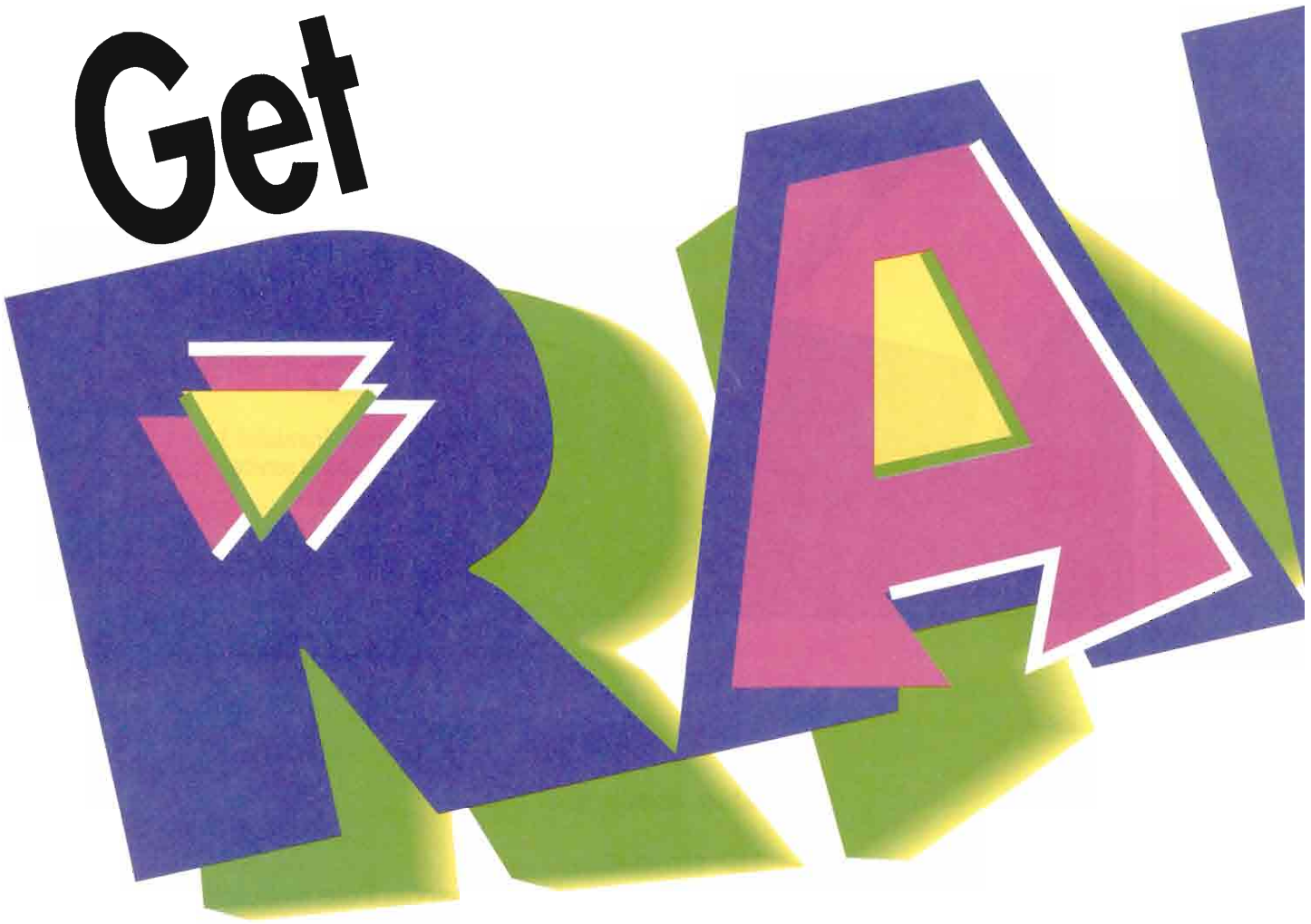

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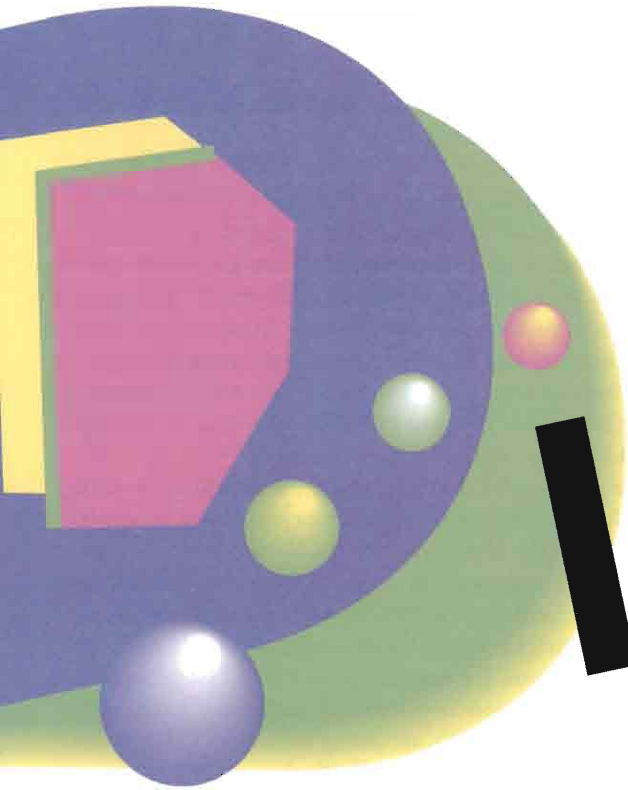

ical

You can have it good. Or you can have it fast. But can you have it good and fast? In a culture that thrives on instant gratification, we expect nothing less. But imagine the plight of software developers who are finding out that even good and fast isn't good or fast enough. Glass houses and corporate desktops are littered with the debris of tattered applications — not to mention burned-out programmers — left behind after 3GL, 4GL and CASE implementations that attempted to be both food and fast.

With object-oriented technology (OOT) sounding like a siren's call, running aground is a distinct possibility because it's not expected to mature for another several years. In the

GEORGE A. THOMPSON

A Killer Wave With Rapid Application Development.

mean time, shell-shocked IS managers and application developers are stunned as increasingly data-hungry knowledge workers demand access to enterprise-wide information. They want it fast AND they want it good. And what about the competitive business pressures your company is under. The CEO wants to one-up the competition today and have a good return on investment tomorrow. Is this a Sisyphean struggle?

RAD To The Rescue

DON'T DESPAIR. IT IS not a completely futilitarian exercise, especially if you believe in Rapid Application Development (RAD), the newest philosophy within the software knitting circles of the computing cognoscente. RAD, like most other terms in the computer industry, has no precise definition. Spanning just about everything from 3GLs to OOT, RAD is often mentioned in the same breath with 4GLs and object-oriented languages (OOL) as well as any number of other client-server products advertising RAD support. Steve Hendrick, software analyst for IDC (Framingham, Mass.), thinks that RAD is a direct consequence of the move towards client-server solutions and distributed computing. "The emphasis on moving information down and out into the enterprise has been a primary motivator for RAD," says Hendrick. "They are feeding off each other."

And the feeding frenzy is just beginning. Because all the client-server/RAD claims use the same terms — flexible, robust, automated — it's hard to separate fact from factoid. However, a consensus does seem be forming. Most analysts and vendors agree that RAD is best accomplished with second generation client-server tools that encourage iterative prototyping, allow the partitioning of applications across various computing platforms and have an object-oriented foundation. And increasingly, they must be capable of being easily linked to object-oriented analysis and design tools.

Contrary to popular delusions and the madness of the trade press, while first generation client-server tools have produced applications quickly, they have not readily produced the kind of good, bullet-proof programs necessary for mission-critical applications in a distributed, enterprise-wide environment. With their ability to quickly create GUIs as well as provide easy data access and navigation for knowledge workers, first generation client-server application development tools have been well-suited to encouraging RAD, according to Hendrick. He points out PowerBuilder from PowerSoft (Burlington, Mass.) as an end-user-oriented 4GL that supports RAD.

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But the PC-centricity of such tools has been a problem. "Most of the client-server tools [available today] are for developing client-based code," says Hendrick. These so called "fat clients" place the burden of processing on the desktop. Consequently, it's difficult for developers to spread applications across clients and servers in a department or enterprise. But according to Hendrick, "as client-server matures, we'll see products with the ability to partition code."

The maturation is already underway. For example, Cognos Inc. (Westboro, Mass.), well-known for its PowerHouse application development environment (ADE) on proprietary systems, including the HP 3000, announced PowerHouse Series 7, a version that increases support for third-party database software and improves the software's GUI building capability. PowerHouse Windows, one component of the PowerHouse Series, is intended to provide a "thin client" graphical front-end to PowerHouse applications that run primarily on the server.

More importantly, the PowerHouse Series will eventually be subsumed by Cognos' Axiant, a second generation client-server development tool that supports RAD through application partitioning and iterative prototyping. Axiant will support Sybase/Microsoft SQL Server, Oracle and Borland's InterBase through native APIs. Axiant applications also will support databases like DEC's Rdb and RMS, IBM's C-ISAM and OS/400 as well as HP's TurboIMAGE and Allbase.

Other vendors like Four Seasons Software (Edison, N.J.) and Uniface (Alameda, Cailf.) also offer 4GLs with a similar potential for encouraging RAD. Four Seasons provides rapid prototyping through its SuperNova GUI Builder. Once you develop your application, you can run it unchanged on Microsoft Windows, Motif or OpenLook clients. SuperNova can use a flat file, so you don't need a working database for your prototype. SuperNova also uses an object-oriented data dictionary with interfaces to C-ISAM and ASCII flat file databases, as well as Oracle, Sybase, Informix, Ingres and Teradata RDBMSs. HP's Allbase/SQL also is supported.

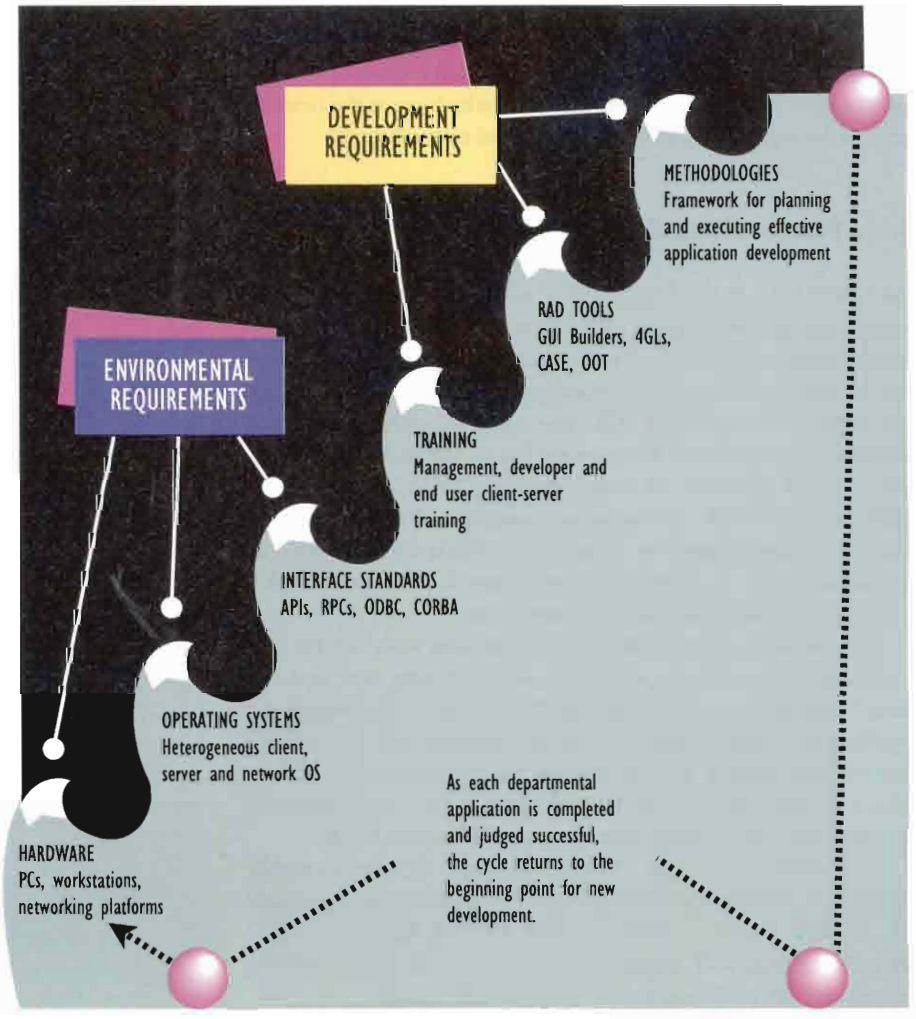
Uniface's 4GL is based on the ANSI/ISO three-schema architecture which separates an application's conceptual schema (a logical data model and the central application processing) from its external schema (end-user forms and reports) and its internal schema (a mapping of the data model to physical data storage). Uniface's 4GL also can trans-parently link HP's Allbase/SQL and IMAGE/SQL databases. Uniface applications automatically adopt the native "look and feel" of a variety of interfaces: Microsoft Windows, Motif, OpenLook Presentation Manager/Workplace Shell or character mode terminals.

A Culture Of Change

BUT WHILE BUILDING PC GUIs puts the rapid in RAD, and application partitioning provides scalability, it's iterative prototyping and OOT that makes for good and fast applications. In traditional non-RAD application development, end-user testing often gets trivialized at the last stage of the development life cycle just when programming teams are under the most pressure.

Sam Bayer, director of market development for Sapiens International Inc. (Cary, N.C.) feels strongly that ADE tools should promote "a culture for accepting changes throughout

Steps To Building Successful Client-Server Applications



Source: Summit Technologies Inc.

the entire development life cycle. If not, then you are forced to go back and lock in [end-user] requirements." In fact, according to Bayer, "it is our belief that you can never understand the requirements without the application being used."

According to Bayer, however, the prototypes should not be throw-away prototypes. "The end user should be able to get onto the prototype, and use it for their business. Getting the working model out to the end user as quickly as possible is the goal," says Bayer. When a developer can quickly code an entire application and instantly test it on-the-fly, end-users can participate early and often in several stages of application development.

Sapiens' new Ideo 4GL provides GUI templates and database interfaces that let developers assemble an application quickly. Ideo, formally announced by Sapiens in January 1994, was once known as Vision, a RAD tool created by SmartStar Corp. Sapiens acquired SmartStar in July 1993. Ideo runs on HP 9000/700, IBM AIX, SunOS and Solaris, DEC Ultrix, OpenVMS and OSF/1 platforms.

But Bayer warns that client-server developers, especially novices, should not be seduced by the ease and "sexiness" of building GUIs. In other words, when it comes to RAD, if you've seen one GUI, you've seen them all. "You can spin your wheels a long time working on the GUI without having a good robust server understanding." According to Bob Creegan, Sapiens' vice-president of marketing, Ideo also supports OOT via encapsulation, inheritance and polymorphism. Consequently, developers can concentrate on writing the business rules which are at the heart of process re-engineering and object-oriented methodologies.

Just Follow The Script

ALTHOUGH RAD LETS YOU work quickly and dynamically with the end-user requirements, "most of today's client-server tools have sacrificed performance for productivity," says Fred Rook, director of technology at Trinzic Technologies (Waltham, Mass.). Many 4GLs use a BASIC-derived scripting language, especially for the prototyping on client machines, explains Rook. So they are interpreted like BASIC, unlike COBOL and C which are compiled languages. Business objects, instead of containing your company's business rules encoded in methods, as they say in object-oriented speak, are instead implemented in BASIC-like scripting languages.

He points out that while the GUI building tools can be correctly classified as object-oriented because they they use "true objects" like menus, scroll bars and dialog boxes, the underlying application is represented by scripting languages and, therefore, is not object-oriented. It's an absolute critical distinction," stresses Rook. "I don't think I'll be hearing about a major bank gaining a competitive advantage because they can build better GUIs."

Consequently he says, "These languages are not powerful enough to support processing-intensive applications [necessary in mission-critical situations]. You run up against a wall." Breaching that wall requires the quickness of an interpreted mode and the performance of a compiled language.

Trinzic's ProApp is a new object-oriented client-server development tool that provides the requisite interpreted visual development environment but when you are ready to deploy run-time versions it generates C code, which then can be compiled. "Its language is not evolved from BASIC, it evolved from C++. It is a true object-oriented language," says Rook.

For now, like most of its competition, ProApp 1.0 is a Microsoft Windows-based product that allows you to work natively with Oracle and Sybase as well as with any ODBC-compliant databases. "We have plans to take it to UNIX platforms," says Rook, acknowledging the mission-critical limitations of Microsoft Windows.

Because the power of 4GL/RAD tools like ProApp have matured faster than the complementary modeling and analysis tools, look for ProApp to be integrated with object-oriented design and analysis methodologies. It's an important issue for IS managers to consider in the next several years, says Rook.

The biggest issue for RAD is striking the right balance between the use of the application development tools and the use of more modeling techniques. The time will come predicts Rook, when it will be necessary to map method constructs (used with object-oriented tools) to language constructs. For example, he observes that KnowledgeWare and Texas Instruments are now trying to figure out how their CASE products are going to support client-server and the RAD philosophy.

Because the need for using an organized approach is much more important, it's imperative for IS managers to know and

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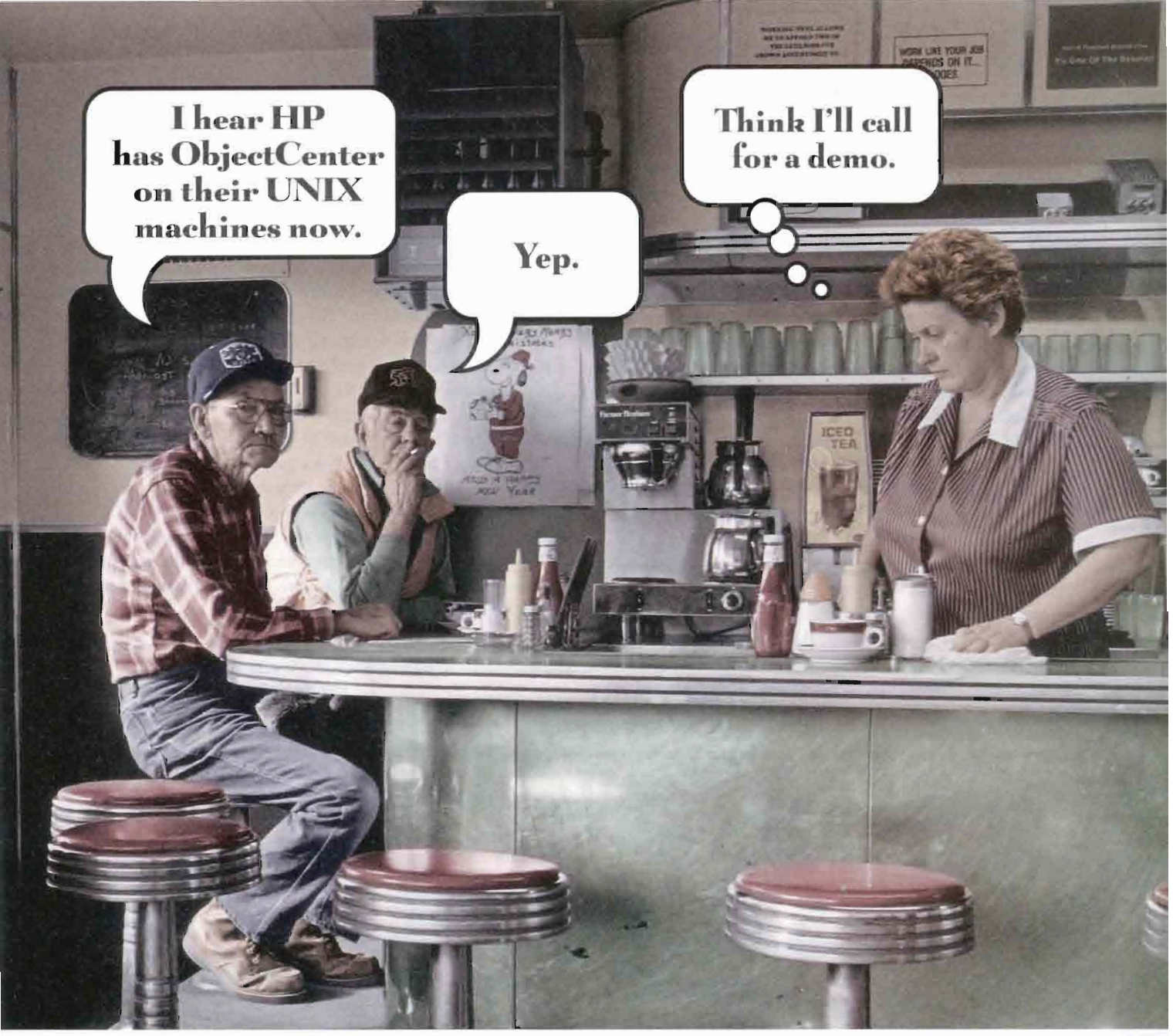

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understand the appropriate methodology they need to adopt for their project. "Because you can quickly create an application, you can also quickly create a mess," says David Butler, product director for ObjectTeam at Cadre Technologies (Providence, R.I.). "So if you're going to RAD, it's certainly desirable to do object-oriented modeling first," he says. Cadre's ObjectTeam products, targeted for software projects working within an object-oriented development paradigm, generates C++, Ada and SQL code.

But there's just not "a one-size-fits-all methodology" that's correct for any single project. Butler explains that for non-mission-critical applications where you just want to do a prototype, a 4GL/RAD tool will be sufficient. When you want to get into decision support and OLTP applications that are performance dependent, a 3GL like C++ or COBOL may be the solution. A distributed client-server application lends itself to an object-oriented approach like SmallTalk or C++.

ObjectTeam completely automates the two leading object-oriented methodologies — Rumbaugh and Shaler-Mellor methodologies. Rumbaugh is attractive to code-oriented developers. With little formal process control, Rumbaugh fits in well with 4GL/RAD, explains Steve Manson, Cadre's product director for ObjectTeam (Rumbaugh). The Shaler-Mellor is much more of a process-oriented approach which is attractive to companies working on large projects with several teams where more discipline and organization are necessary.

However, in large projects where the complexity of an application increases, development tends to slow down. "Anytime you get more complex, you need tools that will give you a consistent view of the code," says Jay Mellman, director of marketing for Lucid Inc. (Menlo Park, Calif.). Lucid's Energizer product is an integrated ADE that provides a complete picture of the code as well as incremental compilation. Energizer, currently available for SPARC platforms will be integrated with HP's C++/SoftBench platform later this year.

RAD can be a goldmine of good and fast applications or a mine field of hidden quick-fix gaps. The tools are a beck and call away and your end-users are waiting and waiting. But your competitors are not. Armed with object-oriented/4GL weapons, RAD-icals will win this war, but it's going to be accomplished with intelligent design and analysis, the appropriately chosen object-oriented/4GL tools and a collaborative relationship between developers and users.

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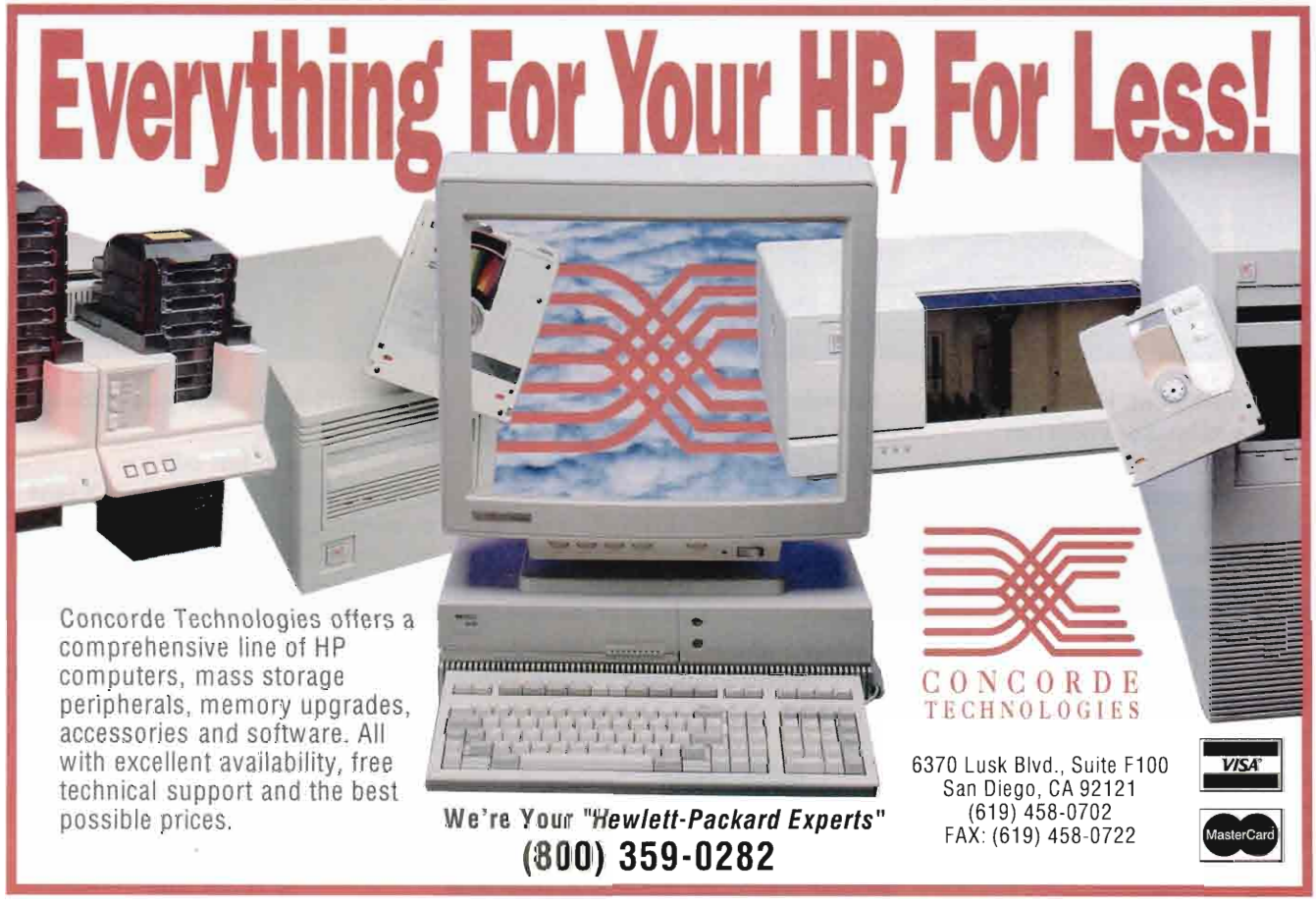

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From Soup to Nuts

Management Commitment And User Support Are Key Ingredients In A Successful Re-Engineering Recipe

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In their book *Reengineering the Corporation: A Manifesto for Business Revolution*, authors Michael Hammer and James Champy define re-engineering as "the fundamental re-thinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed."

While Hammer and Champy are talking specifically about business process re-engineering, the same can be said for systems re-engineering. But that's not as easy as it used to be. With GUIs, you can put a pretty new face on the same old code, get old systems to behave as though they were

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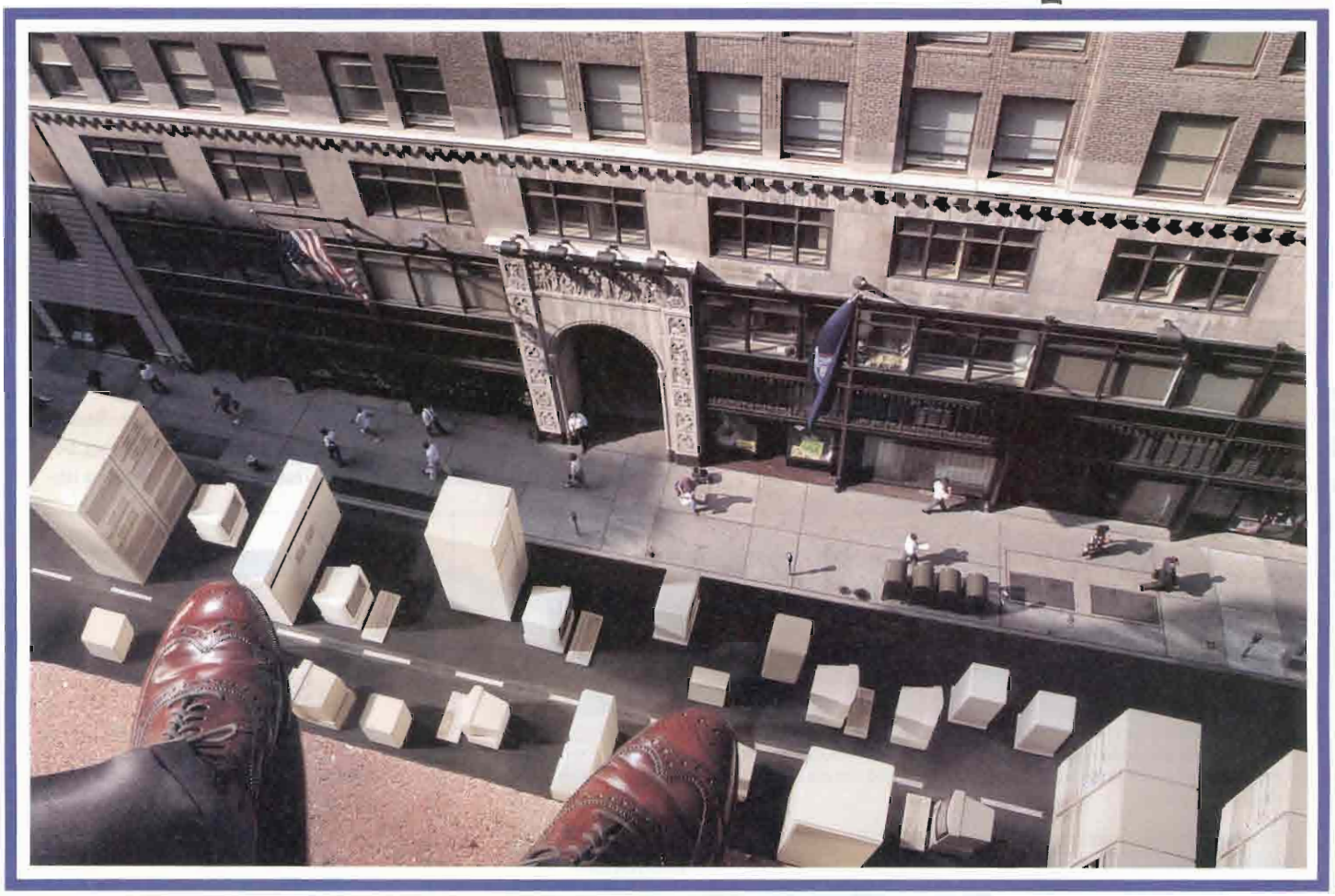

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meant to be networked or downsize. But face it, those are renovations. They can't really be called re-engineering. And worse, the cost probably can't be justified.

A project budget of a zillion dollars for almost anything that computerizes something are long gone. Paybacks from any systems re-engineering effort, however, will not amount to much unless you can really change the underlying business processes which those systems support. So, if you want to re-engineer, it's imperative to get the end users to foot the bill and fight the justification battle. If you can't bring yourself to listen and share your IS projects with mere mortals, then forget about re-engineering. They may need a new system, but despite any dupery on your part, if they don't want to change, you can't make them. Process changes aren't driven with new computer systems.

Let There Be Change

SOMETIMES, THE ONLY WAY that re-engineering can work is if it's perceived as a mission from God. That means that top management has to inspire the congregation and insist that the faithful start worshipping. It's a powerful incentive, but it still won't eliminate turf wars or user reticence.

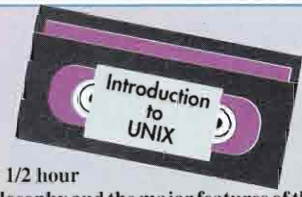
For example, one of the biggest fiascoes I was ever involved in was the implementation of an MRP II manufacturing system at a Fortune 500 automotive supplier. What started out as two divisions trying to upgrade old boxes turned into a major re-engineering effort, but no one recognized it as such.

Even though top management thought common systems were a great idea and pushed hard for it, nobody told the users what they would be in for, and they were insufficiently involved in planning. Four years and $20 million later, the project still wasn't done. A big MIS problem, management commitment not withstanding.

Technology planning is a good place to start a partnership with user organizations. Because of the high stakes and short lead-times involved in re-engineering, you can't afford to be very far behind the technological curve. If you don't use the technological weapons in your arsenal, your company's competitors will. At the same time, you can't waste a minute chasing technologies that offer only marginal returns. Successful planning means knowing the difference.

While you may not need to live right on the edge, it's necessary to anticipate technological change in order to include it in your process planning soon enough. An imparity exists because MIS has tended to keep long-range technology plans un-

Introduction to UNIX Video



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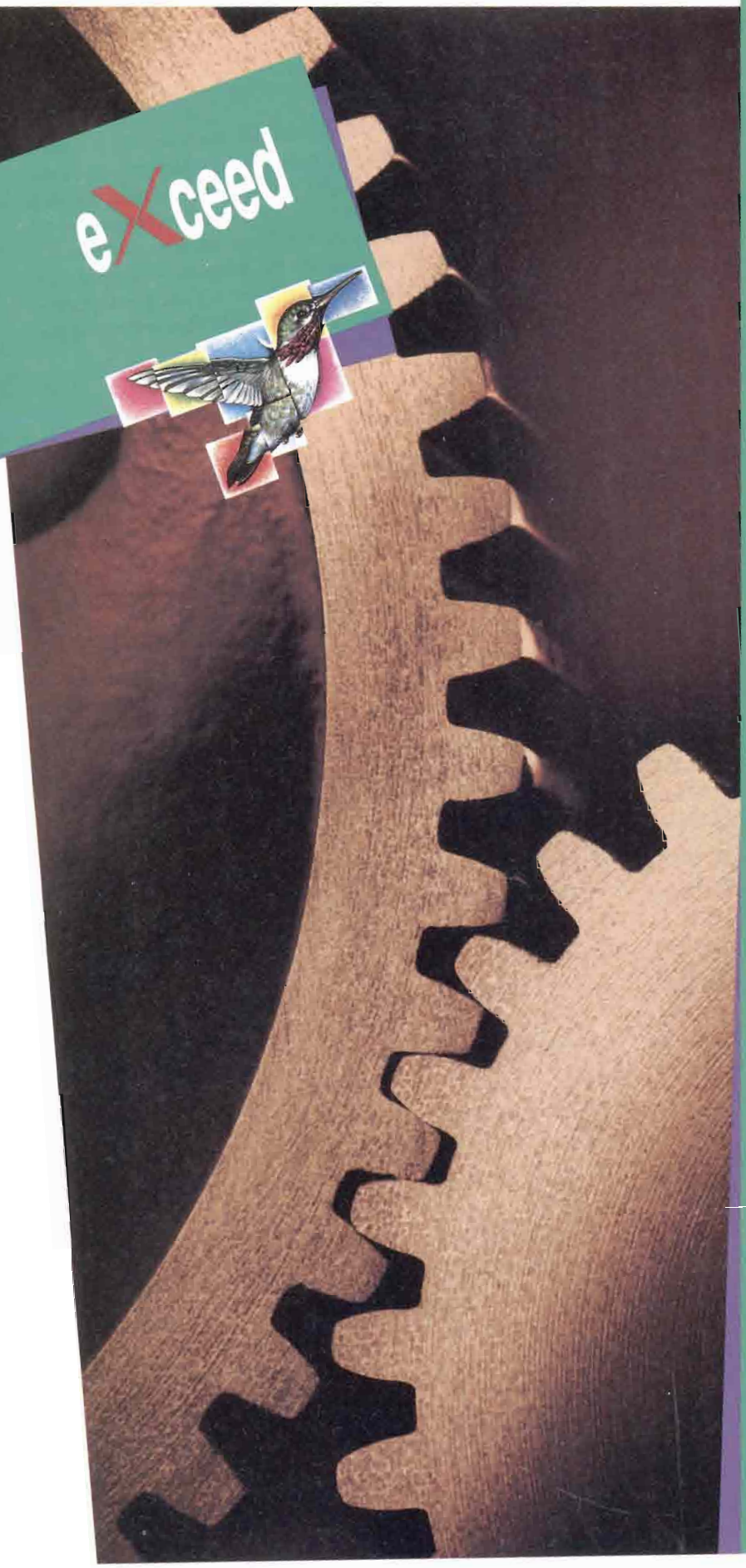

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Re-engineering isn't about small improvements. It's a fresh start. A renunciation of everything you know.

der wraps until they are ready to launch a project, while users tend to wait until products are actually available before they start thinking about how to use them.

For good planning, you need a three- to five-year strategic horizon. Technology that will be important in five years is already under development, so you need to anticipate it. Three years out, things start to firm up, and you can zero in on specific technologies as products move into the market. At this point, the organization can begin redesigning processes to take advantage of those tools.

Operational plans need to be conceived one to two years in advance. By this time, products will be available, then you can start working with specific products to implement new systems. The problem? We can plan only for that which seems possible.

Leading-edge technologies are often an answer to questions that haven't been asked yet. So if we don't recognize and understand their potential, we won't use them successfully. On the other hand, if we can't see the problems that these technologies can solve, we'll miss the boat. It's our job as planners to come up with those questions, because they will reveal possibilities that we didn't think existed.

Users And IS Are IT

INFORMATION SYSTEMS IS not and should not be in control of process re-engineering. Re-engineering requires that we bring user and IS planners together to share information and develop plans jointly. The goal is to make re-engineering a process issue, and not a systems problem. With the tight integration of IS and business planning that re-engineering requires, the goal of IS is changing from that of a controlling function to an enabling one.

You have to minimize the differences between organizations that are re-engineering and emphasize their commonality. Never

Hammering Home A Point

Re-engineering your business process is important. Industry analysts say so. The vendors say so. The trade press says so. And of course, Michael Hammer and James Champy already said so. But talk is cheap. Re-engineering your business process is easier said than done. If you've tried it, you probably didn't like it. If you did like it, then you probably didn't do it right. That's why HP's Professional Services Organization (PSO) introduced the HP 1st PASS (Process Advancement Skills) program.

Introduced in March 1994, the 1st PASS program helps re-engineers get on the right track. "Although Hammer's book created a lot of enthusiasm," says Barbara Bishop, manager of HP's business improvement program, "he doesn't talk about how [process re-engineering] is done." Clearly, she says, consulting services are necessary.

The HP 1st PASS program, designed to provide a common re-engineering vocabulary and approach, "educates management and staff from the top down, giving them an idea of what basic skills and knowledge are needed for a re-engineering effort," explains Bishop.

According to Bishop, the program originated and was applied internally at HP's United Kingdom organization for three or four years before "permeating over to the U.S." Citibank, the University of Michigan and the Institute of Advanced Manufacturing Sciences are a few of the 30 to 40 organizations that Bishop says have taken advantage of the program so far.

An important component of HP 1st PASS is a hands-on project simulation using the plan, do, check, act (PDCA) cycle of W. Edward's Deming's TQM principles. "It was clear that HP had applied TQM techniques internally," says John Woodard, president of the Institute of Advanced Manufacturing Sciences (AMS). "Because HP PSO consultants openly shared their experiences, the course was much more effective."

AMS has been involved with HP's 1st PASS program for a year. Art Davies, director of marketing for AMS says, "Going in, we learned not to accept any paradigms or rules." Like many companies in today's competitive business environment, AMS has got more to do than people to do it. But, according to Davies, one of the benefits of the 1st PASS program was that people now "functioned much better as a team than in the past."

But not every organization gets a passing grade. Ironically, when it came to business re-engineering, Stanford University had to learn their process ABCs. "They couldn't characterize their major business processes and they couldn't measure the value of what they were providing to their customers," says Bishop. "So we started them with an education." Such a "process immaturity" she says is common across educational and government institutions alike.

HP has delivered 1st PASS workshops across a broad range of industries including manufacturing, service, finance, education, transportation, and state and local government. "Companies need to approach the task of business process re-engineering as a journey, not a destination," says Rodney Smith, manager of HP's business process advancement consulting national practice. "By understanding the basics of process improvement techniques — the vocabulary, the tools and the methodologies — managers can maximize the value of their re-engineering efforts."

— George A. Thompson, Technical Editor

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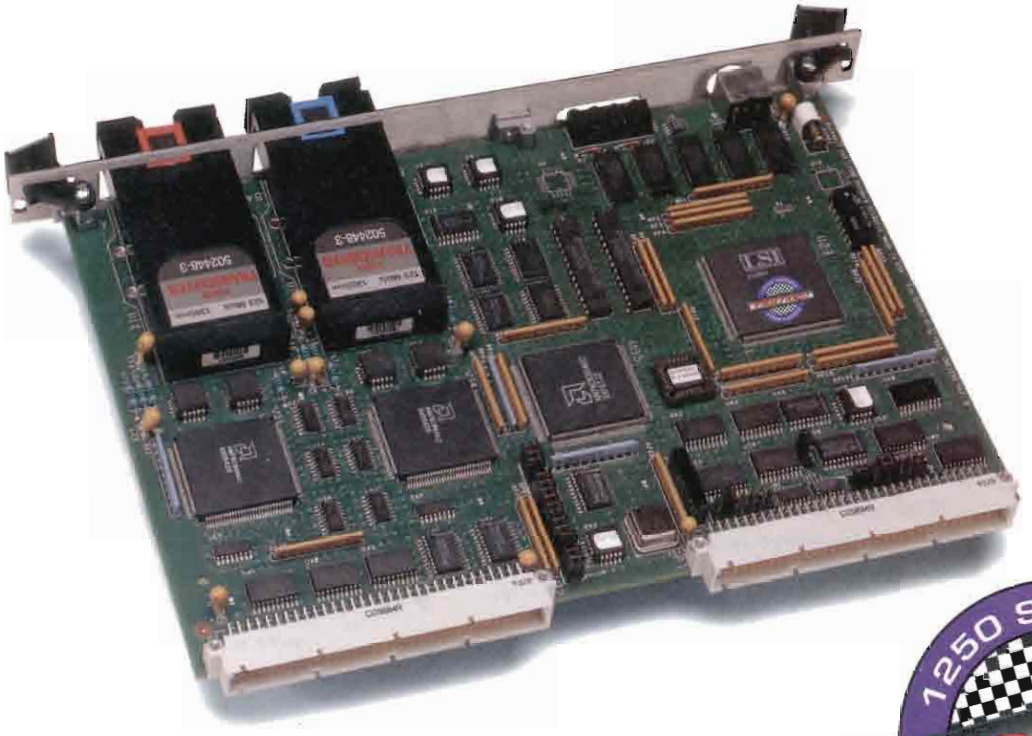

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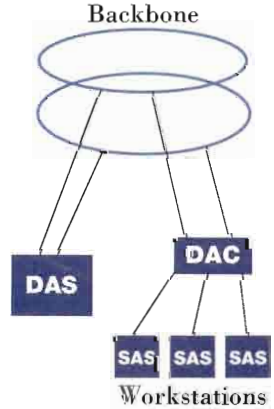

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lose sight of the fact that you are trying to optimize a common process, and not satisfy any one department's unique requirements.

It's quite understandable to strive for a smooth migration and avoid incompatibilities from legacy systems, but enough is enough. Do you really need to specify the purchase of the exact brand of PC? Or can you settle on a CPU architecture? Does every LAN have to use the same network operating system? Or are higher-level standards adequate? Standards are needed to avoid total anarchy in systems development, but like government, you can have too much.

There's no such thing as a strategic standard. You can't hit a standard mark accurately five years out, and your odds aren't much better for three years. So you'll constantly be getting squeezed trying to formulate standards at the same time as you're putting products to the test. You probably can't count on a standard much more than a year or so in the future.

Client-server systems, open systems, GUIs and a slew of new development tools are available. The new tools have made application development quick, but not anywhere near easier. When you start developing custom software, you run the risk of being asked to deliver the perfect system. As an alternative, consider packaged software. But everyone involved should understand that to get an optimized process they may have to deal with some local inconvenience.

Remember the days when you could talk to a user for five minutes, go away for six months, and come back with the system you thought they needed. Forget about it! You now have to partner with end-users to re-engineer their processes. Now "empowered" users feel they're in control of their own destiny. Give them a spreadsheet and they take over the accounting department.

Clearly, re-engineering isn't about making small, incremental improvements. Recall the adjectives from the Hammer and Champy bible: Fundamental. Radical. Critical. Dramatic. Re-engineering is a fresh start. A renunciation of everything you know.

Despite all the talk of user power and their desire to impose their empowered will on MIS, they really don't know what they're doing when it comes to systems. Patience. You can either stand there and throw stones at each other, or you can get together and make a contribution to your career and your company's future.

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You Might Be Surprised By What Some Financial Management Software Vendors Mean By Client/Server Architecture.

Before you invest in accounting software that promises client/server functionality, you better be sure it isn't based on a makeshift architecture.

While most software vendors claim they have "true" client/server systems, you may be surprised to find many who simply patch front-end gadgets onto their existing accounting software and label them "client/server." The fact is that these imitation client/server systems were not designed with the flexibility to meet the diverse needs of your users or to access real-time financial information without being hindered by performance issues.

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Think Twice, Code ONCE

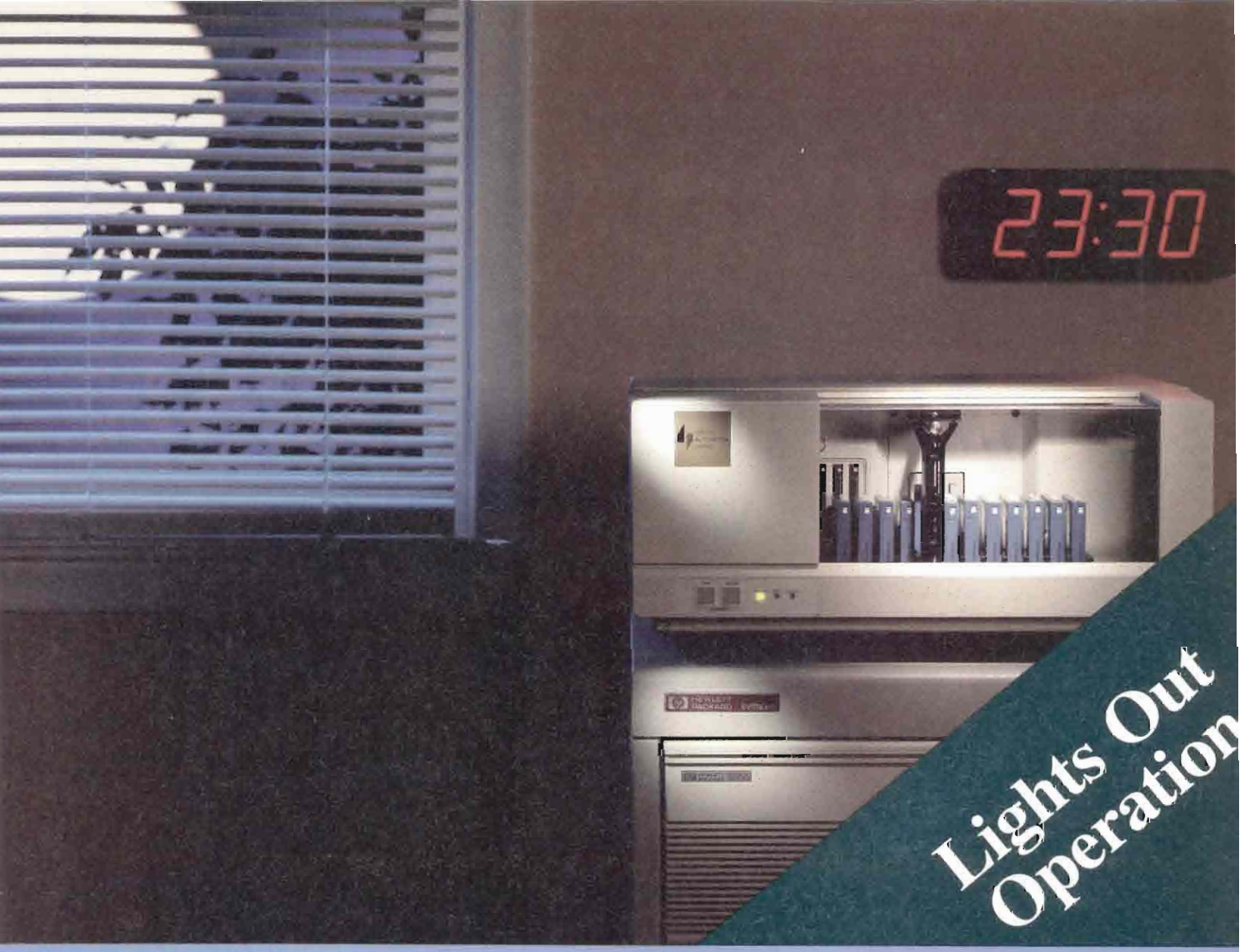
When Choosing Your Productivity Strategy, Know The Short And Long Of Your Decision

WITHOUT A DOUBT, the serious software executive must seek improved productivity over the life cycle of the software and not just its development. This may seem obvious enough, but many companies base their productivity levels on short-term measurements like the number of lines of code generated during development.

One increasingly popular solution for major corporations such as Sears, IBM and other corporate behemoths is to send software development to Bangalore, Singapore or the People's Republic of China. And the recent expanding and renewed economic relations with several countries offers even more off-shore destinations for development projects.

As it becomes more modular, small pieces of software can be distributed worldwide and assembled at a single location for full integration testing. So, despite the potential for long-term disaster, software exportation remains an attractive short-term approach to productivity. However, this is only the beginning. A cheap birth does not mean an

RICHARD RIEHLE



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inexpensive life. Software executives need to be aware of the tools and methods available to them in order to keep the project at home.

The Cost Of COTS

ONE SUCH TECHNOLOGY solution is Commercial Off-The-Shelf software, or COTS, a term coined by the U.S. Department of Defense. Although COTS will be considered an important component of many organizations' effort to improve software productivity, there is still some question about what exactly constitutes a COTS solution. COTS might include 4GL products, reusable objects and components, spreadsheets and a variety of other shrink-wrapped products.

But you should avoid letting a single COTS product become a programming product on its own. For example, many database products are excellent COTS solutions at the screen prompt, but become exceptionally complex when your personnel learn how to write the proprietary programming language associated with that product. Some spreadsheets include a macro language that becomes just another programming language. Don't be surprised to find your accounting department tied down with managing gigantic applications built around such macros.

Reusing COTS components is a hot topic. It could possibly be a contributor to your productivity efforts. But, it's a complicated issue because of differing definitions of reuse from one environment to another. One of the fundamental criteria for reuse is the ability to use the same set of algorithms again and again for many different types of data without altering any code.

True software reuse requires the ability to incorporate an existing software component into a new software design with no modifications to that component. Some programming criteria insist that no code changes are permitted in a reusable component. That can only be partially achieved in most languages, but some programming languages support a template capability making it possible to satisfy such a rigorous standard.

Some programming languages such as C++, Ada and Eiffel support reusable COTS because they do provide a template capability. C, COBOL and FORTRAN are less accommodating. However, the impending object-oriented COBOL standard comes closer to satisfying the criteria. Also, the updated Ada (Ada 94) standard will carry the notion of reusable components beyond anything available in other mainstream languages. Languages with a smaller following, such as Sather, Oberon and

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Modula-3 also have good models for reuse. And the new FORTRAN-90 standard has made good progress toward support for reusable components.

There are companies who specialize in the manufacture of reusable COTS components. Some specialize in only one language, while others are multilingual. The most commonly available reusable components are those which support software "containers" such as data and file structures. If you are using a language which supports reusable templates, you should research the opportunities in this area. One report from NASA maintains a reuse savings of up to 20 percent on original coding. Although the savings in software maintenance have yet to be reported with enough data, the early experience is encouraging.

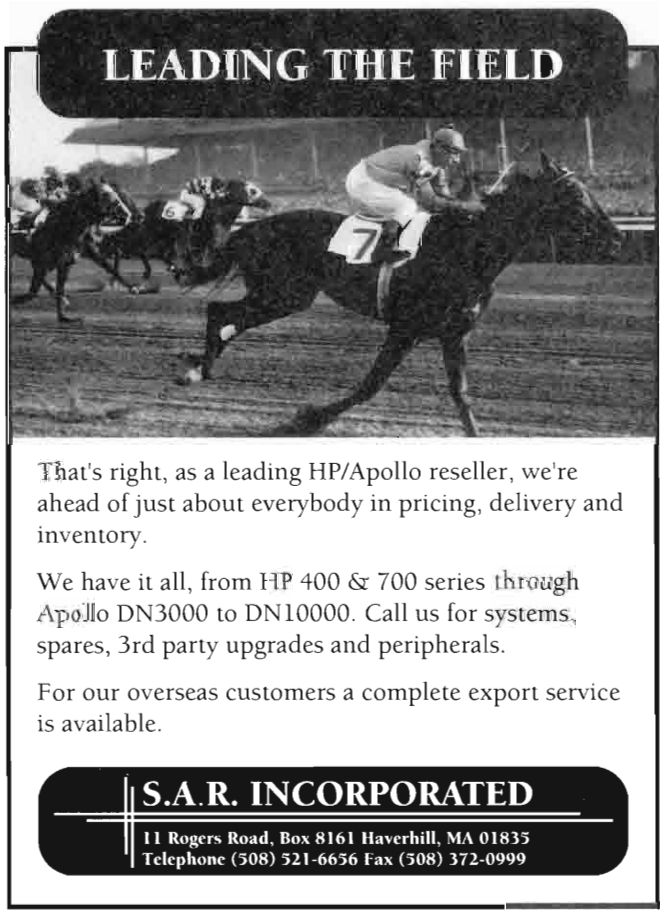
Don't Reach For The Tools

INSTEAD OF PUTTING your programming staff on the beach, and sending your next development project to Kuala Lumpur, examine the alternatives possible through the use of new tools and methods. Much of the emphasis in software productivity improvement has been directed at tools. But before grabbing that shiny new CASE tool, consider how the tools fit into the hierarchy of software engineering issues.

Susan Ball, a vice-president at Interactive Development Environments (IDE; San Francisco, Calif.) has a special interest in the success of CASE tools — her company sells a CASE product. She insists that "BASE precedes CASE." By this she means that "brain-assisted software engineering" is required before effective computer-assisted software engineering is implemented. The one frequently encountered problem with CASE is the focus on the "computer-assisted" part of the acronym, assuming that the software engineering part will naturally follow.

Improving productivity means paying attention to the new ideas in computer science and the emerging discipline of software engineering. If we list the hierarchy of software engineering topics as languages, tools, methods, principles and goals, it becomes clear that we often start our thinking at the wrong end of that hierarchy — languages. Instead we should start with well defined goals, and move toward lower-level issues. Life cycle productivity issues are directly influenced by managing this hierarchy backwards.

A typical programmer's education begins by learning a programming language such as COBOL, Pascal or C. Management then expects the programmer to learn everything else on the job. It is the rare software engineering manager, data process-



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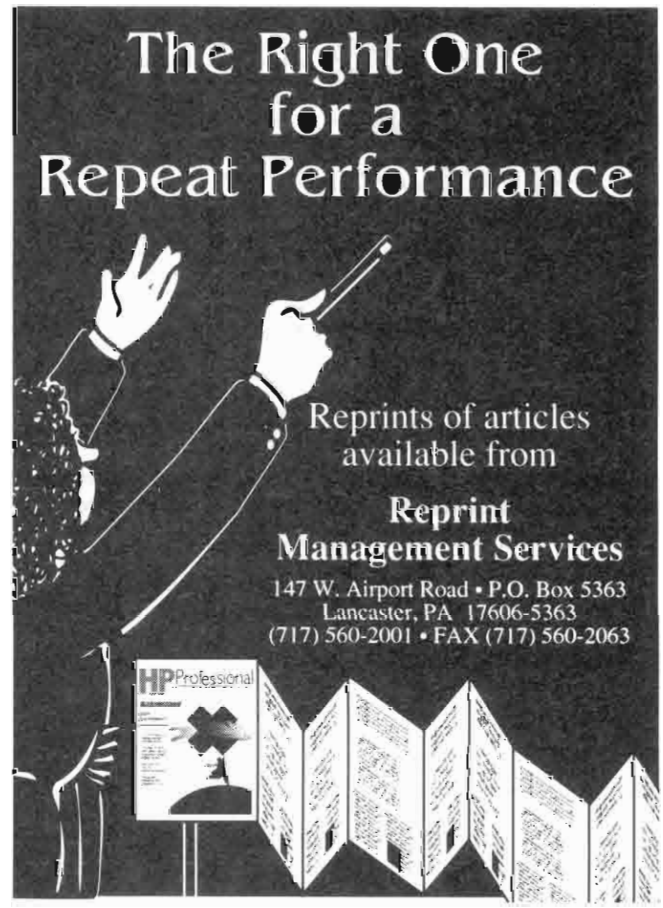

ing director or chief information officer who can explain the relationship of goals, principles, methods, tools and languages to the novice in software. Yet these are very fundamental notions for process improvement and productivity enhancement.

It is important to know how goals such as reliability, understandability, maintainability, efficiency and measurability will influence productivity decisions. For example, how important for your environment are the goals of portability and maximum reusability? Also, how well do you, as a software manager, understand the commonly accepted principles of abstraction, information hiding, modularity, localization, consistency, confirmability, traceability and uniformity?

When examining tools it is important to distinguish between methods and the tools. Methods versus tools is where opportunities for software productivity break down early in the project. Before deciding on productivity tools, management must know what method of development and life cycle management is appropriate for a project.

Data-flow methods such as structured analysis and structured design are still useful for information systems projects. Data-

Measure For Measure

Productivity has become one of those buzzwords that some managers use to justify decisions. In the world of industrial engineering, productivity involves measuring against a standard. An Industrial Engineer (IE) measures effort and results. Sometimes an IE measures the ratio of effort to result against some standard. In economics, productivity is a metric based on the ratio of cost of resources expended to the value of resulting product.

The problem of measuring and achieving productivity runs deep in software engineering. Following the lead of economics, we need a "metric," including some calibration standard for measuring the ratio of effort to result. Unlike other disciplines, software development includes no agreed upon standards against which to calibrate effort or result. Consequently, reports of software productivity are often a misleading mishmash of numerical nonsense. Yet there is no way to discuss productivity in any field without addressing the notion of metrics. And there is no way to discuss software metrics without including the issue of software quality.

A good place to start is by measuring productivity for both software development and software maintenance. A common metric may seem imperceptible, but it is essential that the life cycle be tallied if you are to get a handle on the issue of productivity within your organization.

The difficulty with tools that measure program complexity is the additional education required to make use of the information. Statistical relationships such as standard deviation, analysis of variance and relative frequency distribution are difficult to comprehend, so real analysis often goes ignored. And managers continue to rely on lines of source code to measure productivity when deciding how and where to develop software.

In development environments, software productivity is sometimes defined as the rate at which source code can be produced per unit of programming time. The unit of programming hour is often PH (Person Hour, formerly Man Hour). Barry Boehm, inventor of the COCOMO model for software economics calls this DSI/PH (Delivered Source Instructions). DSI/PH implies that if programmer A can produce more DSI/PH than programmer B, programmer A is more productive.

Surprisingly, within the software community, DSI/PH is still the most widely used metric, even though it is probably the worst measure of productivity. For example, college students were given the following problem: "Write a short program in the programming language of your choice to print the sum of all the numbers from 1 to 100."

The following pseudocode by programmer A, represents the solution presented by most students:

```
for I = 1 to 100
loop
A = A + I
end loop
print(A)
```

Some versions are a little longer. Others a little shorter. Almost all use some version of a loop. Rarely, programmer B submits the following solution:

```
print((100 * 101)/2)
```

Here is a difference between five lines of code versus one line. And the one-line program will execute faster than the five-line program. Programmer B had to think about the solution before coding it. Programmer A and programmer B both took the same length of time to produce a result. Which programmer was more productive? As programs grow and involve programming teams and multiple modules, the answer becomes less obvious.

The problem with measuring productivity as DSI/PH is that the exceptional programmer is penalized for being intelligent. Look at high-rise buildings under construction in your neighborhood and ask yourself whether you can determine the productivity of any contractor by counting the number of windows installed per construction hour.

Software executives are learning that the major cost of a software product will be in its upkeep and maintenance. The gap is often as large as 20 percent development to 80 percent maintenance. Therefore, any assessment of software productivity must include the resources for both maintenance and development.

The goal of measurement is to make decisions regarding development, so we can improve productivity with new methods of measurement and so on, infinitum. But be sure you know what you are counting or you may get the opposite result you wanted.

structure methods such as Warnier-Orr (DSSD) charts and Jackson System Development (JSD), work well for applications with a heavy emphasis on data management. Combinations of data-flow and control-flow methods, such as the Hatley-Pirbhai method are good for real-time systems specification. And more recent methods in object technology work well for modeling real-world environments such as graphic displays and human-oriented devices in the form of software.

There are many variations on these methods. If you only know about one of them, you are like the proverbial carpenter whose only tool is a hammer, so every problem looks like a nail. Picking the right method is critical to the productivity of your software project. And you need to know what method is appropriate before you purchase productivity tools.

Some productivity tools are integrated into complete development environments, sometimes called Integrated Project Support Environments (IPSE). Others are standalone products that can solve a unique set of problems. Users of HP (and now Sun) workstations may take advantage of HP's SoftBench which enables multiple independently-developed software products to work together as an integrated environment. This capability also exists in the Atherton "Backplane" technology on a variety of other workstations.

Finally, many productivity tool vendors have taken advantage of the SoftBench and Atherton capabilities to integrate their COTS products into a seamless environment.

Other Tools Of The Trade

ONE PRODUCTIVITY TOOL that does seem to work well across many applications is the Interleaf documentation facility. A good documentation tool can go a long way in enhancing productivity over the total software life cycle. Interleaf has been restricted to UNIX environments for a long time, but they now have a Microsoft Windows and Microsoft NT version with enhancements.

Selecting a CASE tool is much trickier. Some tools will allow you to draw pictures, generate code, modify the code and re-draw new pictures. In other words, you can re-engineer both ways, improving efficiency and maintainability as you go. Other tools generate no source code, but do an excellent job of assisting the design of a well-planned language-independent system architecture. If you can design a coherent, fault-free software architecture, programming language selection and coding may become smaller issues. So, don't be turned away from

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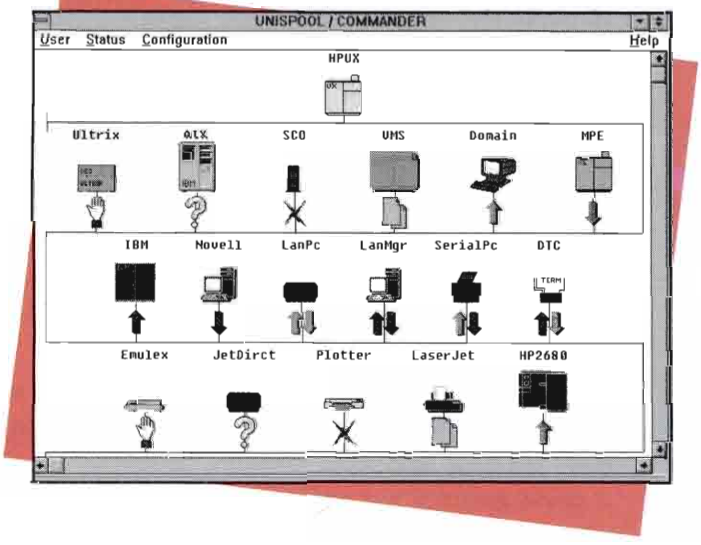

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a good CASE tool just because it does not include automatic code generation.

Several CASE tools are sold on automatic code development alone. However, take care in evaluating such products. In addition, exercise the code generator yourself to be sure it can handle the complexities associated with your special applications. Some code generators choke on complex applications. If the CASE product requires a lot of hand-tooling, know about that up-front.

Pay attention to the code portability issue. For example, if your CASE tool generates COBOL or C code, remember that COBOL and C are not guaranteed to be identical on all platforms. On the other hand, if it generates Ada code, it is probably portable because the Ada mandate prohibits any dialects or subsets of the language. Once you select a tool that automatically generates source code you may become dependent on that tool and all the proprietary issues that go with it.

Even a COBOL CASE tool can fool you. The ANSI-85 COBOL standard includes a set of enhancements such as reference modification, scope terminators, improved support of the software engineering principles of modularity and localization. ANSI-85 COBOL has the most powerful multiway selection statement available in any modern programming language. However, in general, developers of COBOL CASE tools seem to be stuck on the COBOL-74 standard.

One productivity tool that frequently gets passed over is Software Configuration Management (SCM). Even if your software is coded off-shore, you need this. The role of SCM should be one of the first items in your Software Development Plan (SDP). If you ignore SCM, entropy will eventually take over your software product, and your productivity will be wasted forcing you to re-engineer the entire application sooner than you expected.

An SCM plan should be in place the first day of your software project, even before you select your CASE tools and other support products. Some CASE tools include some SCM capability, which may or may not be enough.

This article covered products, philosophies and methodologies. However, these items alone can't guarantee productivity, it must be a carefully planned combination of goals, strategy, education and technology that will deliver a truly productive environment. — *Richard Riehle can be reached through the Internet at riehler@ajpo.sei.cmu.edu.*

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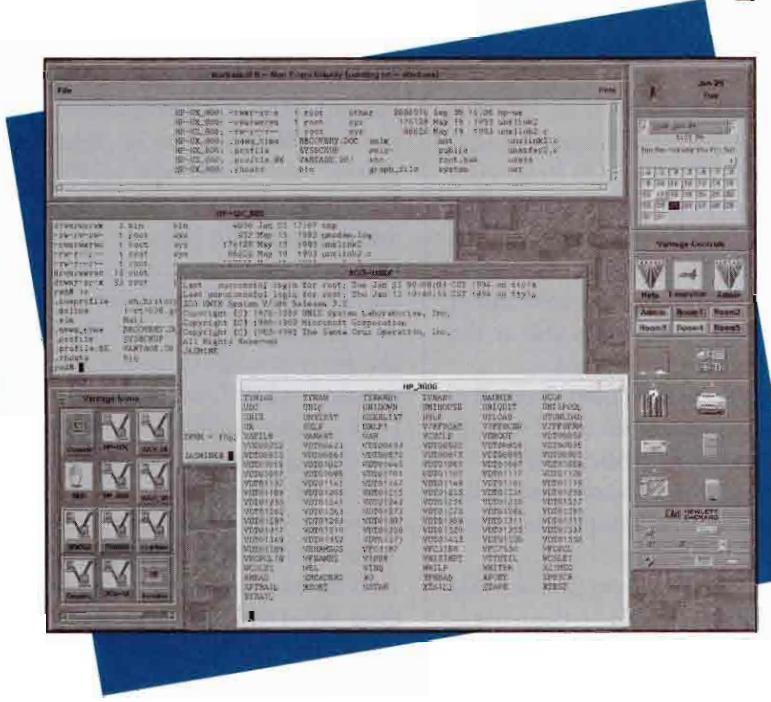

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Applications By Association

You probably know about using File Manager for file management operations like copying, renaming or deleting files. However, for some types of files, File Manager lets you start an application by simply double-clicking the document icon or lets you print a file by selecting the file icon and using the File | Print menu. The icon for these special document files is not the blank page icon of unrecognized file types, but an icon drawn to look like a page of text.

To use File Manager as an effective program shell, you need to create associations between the MS-DOS three-letter (or less) file extension and an application name. However, File Manager only can create associations between a file extension and an internal document identifier that is created and maintained in the Windows registration database.

Some applications register themselves in the registration database when they are installed. Virtually all of Microsoft's applications register automatically, and an increasing number of other applications are automatically registering as well.

However, if you want to associate a file extension with an application that is not in the registration database, you can register the application manually with one of the least known standard Windows utilities, **REGEDIT.EXE**. If you have never used this utility, chances are you will have to create a Program Manager icon for it; you'll find **REGEDIT** in your Windows home directory.

When you start **REGEDIT** it displays all of the registered applications by file type. In **REGEDIT**, this is not the same as the familiar MS-DOS file extension. It is a descriptive name for the type of file. For example, Windows Paintbrush documents are listed as Paintbrush Pictures, and Word for Windows documents are listed as Word Documents. This file-type field in **REGEDIT** is the application description that File Manager displays when you use the File | Associate command.

Locate the Paintbrush application entry labeled Paintbrush Picture, and double-click the entry name to browse the registration database entry for Paintbrush. You'll see that Paintbrush has an identifier of PBrush, and a file type of Paintbrush Picture. There is a command for each of the two actions File Manager can perform. One command is associated with opening the document, and the other command with printing the document. **REGEDIT** also lets you indicate that an application can support DDE messages, and, if so, the DDE message, application and topic that File Manager should use. You can even specify the DDE message to launch the application if it is not already running.

Note that **REGEDIT** application provides no way to associate a one- to three-letter MS-DOS file extension with an application. There is an advanced mode of **REGEDIT** which is even more obscure than standard mode, but using the advanced mode is a topic for another month.

For now, return to File Manager after you close **REGEDIT** to associate a file extension with an application identifier.

Let's assume that you want to create an association between C language source code and an MS-DOS text editor called **ED.EXE**. Let's also assume the **ED** will accept a command line parameter to automatically print a file.

Start **REGEDIT** and select Edit | Add File Type. Enter an application identifier CSRC, and a file description of C Source Code. Enter a Print command as:

```
C:\BIN\ED.EXE %1
```

and a Print command of:

```
C:\BIN\ED.EXE /PRINT %1
```

The **%1** is replaced by the document file name when File Manager starts the application, but the actual application commands will vary from application to application. Finally, because **ED** is not a Windows application and does not support DDE, do not check the Uses DDE check box. Exit REGEDIT. Changes are automatically saved.

To use File Manager, you need to create associations between MS-DOS file extensions and application names.

In File Manager, locate and select a file that uses the .C file extension. Choose the File | Associate menu, and select the C Source Code line, and choose OK. All files with the **.C** extension now display the document icon; double-click on one of these icons and the editor will start.

In earlier versions of Windows, a section in WIN.INI called [Extensions] defined the application associated with an MS-DOS file extension. For compatibility, Windows 3.x still supports entries in WIN.INI, but File Manager always checks the registration database first.

This registration database is yet another way that Microsoft is slowly but steadily incorporating into Windows the many features first seen on MS-DOS systems using HP's NewWave. In fact, rumor has it that in the next major release of Windows, namely Chicago, you will see icons associated with individual documents rather than application icons, much like NewWave has done for years. The more things change, the more they stay the same!

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CIRCLE 472 ON READER CARD

An OpenView Of The Future

With HP OpenView, you can pick the applications best suited for your needs and build an infrastructure whose components work together. And these applications are not just limited to monitoring or diagnosing networks and their problems.

HP OpenView applications also feature system management, software licensing management and application monitoring capabilities. It is now possible to monitor your network and network devices, configure and monitor application server platforms and distribute software from one centralized location.

HP OpenView runs under HP-UX-based systems, SunOS systems and Microsoft Windows PCs. Late in 1993, Data General Corp. (Westboro, Mass.) announced their intention to port HP OpenView to the AViiON platform and integrate it with their network management products. HP OpenView also provides the basis for the IBM NetView/6000 product.

Currently HP OpenView is sold to two market segments. The first is the large enterprise networks which consist of 1,000 or more network nodes. These are typically UNIX networks that use the TCP/IP protocol. Network administrators are concerned with keeping the network up, administrating software licenses and managing computer servers across a large geographic area. This segment is served by HP OpenView for UNIX.

The second segment is the network administrator with a large LAN under 1,000 nodes, usually PCs. They also need to keep the network functioning, but must deal with other protocols such as Novell's IPX or Apple's AppleTalk. Keeping track of the hardware and software configurations of each PC, as well as software licensing, is a concern. Networks in this category are more departmental in nature and usually a part of a much larger network. This segment is addressed with HP OpenView for Windows.

Recently a new segment of the market has been identified; it spans the gap between the two current markets. These customers need to monitor and control a small enterprise network, but won't pay the higher cost of the UNIX-based solution. But, they still need to manage PC LANs. It's frustrating, with the rising power of the PC, there is no in-between solution.

OPENVIEW FOR WINDOWS NT

The good news is that the solution will be the Windows NT release of OpenView. During the first half of 1994, HP will release a new version of HP OpenView for Windows which will not only add new functionality, but also provide a tighter integration between the UNIX and Windows versions.

The new Windows version will run under Windows NT as a 16-bit application. Later in 1994 it will become a true

32-bit application and feature many of the capabilities found in the UNIX product. HP and Microsoft also are committed to integrate OpenView network management with Hermes, Microsoft's PC management software. A Windows NT node will be manageable through an SNMP agent by the OpenView for Windows NT system.

Another new product is HP OpenView Node Manager for NetWare. This product lets HP OpenView for UNIX monitor and manage Novell NetWare-based clients and servers. One piece of software called OpenView Node Manager for NetWare Stations is used by client PCs to collect hardware and software information. It is not a terminate and stay resident program (TSR), so it does not use any system memory. The other application is OpenView Node Manager for NetWare Servers and is a network loadable module (NLM) which resides on the server. From the OpenView central console, you can configure and monitor any server running the OpenView NLM. HP has purchased the software from Peregrine Systems Inc. (Carlsbad, Calif.) and is working with Peregrine to further enhance it.

Another step forward for OpenView is its availability through reseller channels. The OpenView for Windows products will be available through PC LAN resellers. The OpenView for UNIX products are available through a distributor authorized reseller program which began in the first quarter of 1994. Support is still available through HP.

In effect, it puts OpenView in the hands of eager salespeople. This should make it easier to try out new equipment at your site, and to purchase. It also enables the resellers, many who are in the PC LAN business, to provide an integrated network management solution for the networks they already have or are planning to install.

Managing your multivendor environment, especially one that is distributed, is a nearly inconceivable task. An initiative to help change that is another effort at HP —The HP OpenView OperationsCenter. The center is the first of many planned products to help manage all your systems from a central site. With OpenView OperationsCenter you monitor remote systems and quickly take corrective action if needed. Additional products, such as HP OpenView OpenSpool and HP OpenView OmniBack, let you control printers and backups throughout the network. Because of the emphasis placed on system management you can expect more applications as well as enhancements from HP and third-party vendors.

HP OpenView for Windows has new capabilities for monitoring PCs using Intel's LanDesk Manager software. Remedy Corp. (Mountain View, Calif.) intends to extend its product to OpenView for Windows. Remedy's Action Request System, a trouble ticket reporting system, currently runs under OpenView for UNIX. Notify! wireless messaging software from Ex Machina Inc. (New York, N.Y.) is supported under OpenView for Windows. This package allows the transmission of messages and alerts to alphanumeric pagers or portable computers with wireless data receivers. Having Notify! run under OpenView will allow you to more quickly respond to network problems.

Some obscure products may be of interest as well. For example, HP OpenView has applications that monitor and control devices in your SNA network and communicate with IBM's NETVIEW products. Boole & Babbage (Sunnyvale, Calif.), Cisco Systems (Menlo Park, Calif.) and SynOptics (Santa Clara, Calif.) intend to port their products to the OpenView environment. General Electric Co. (Schenectady, N.Y.) selected OpenView to be the vehicle in which they will manage their global multivendor network. Alcatel NV (Paris, France) and Siemens Public Communications Networks Group (Munich, Germany) are going to be using OpenView in their products to manage large telecommunications networks.

So if you are ready for a network management solution, take a look at HP OpenView. With all the HP and the third-party applications available, how can you go wrong?

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CIRCLE 155 ON READER CARD

 John P. Burke

Confessions Of A LANlubber

I've got a dirty little secret to share with you: Your LAN is not in my land (my apologies to Woody Guthrie). That's right, I still operate in a terminal/host environment — plain old serial connections. But before you dismiss me as a troglodyte, hear me out.

There are things you can do over a serial connection that you cannot do over a LAN and vice versa. For example, over a DTC (serial) connection (but not over a LAN connection) you have things like destructive backspace and other Workstation Configurator (TTUTIL) goodies, HP-supported spooling, multiple configured termtypes and HP-supported console access.

On the flip side, most client-server software operates only in a LAN environment. Also, LAN connections support "true" multiple sessions. OK, real wonks will point out that the DTC does support multisession on switched ports, but this requires PC network management such as OPENVIEW DTC Manager and a LAN environment. Multisession also can be achieved over a serial link by configuring a LOOP in NS3000. In both cases, however, only one session can be active at a time.

So, when a customer wanted to migrate from a Micro3000 to a new HP 3000/918LX (to run our software) connected to a Novell NetWare LAN, it was time for a LAN 101 class — ASAP. Luckily, HP scheduled the "Desktop Integration and Decision Support: Make it a Reality" video conference. And considering the initial registration (over 350) and the Q&A, this troglodyte is in good company.

Some thought was given to HP NetWare/iX, but for this particular customer, a separate NetWare PC server was preferable. User access to the HP 3000/918LX would be from NetWare PC clients. Thankfully, I discovered that our customer only needed HP ThinLAN 3000/iX software (with the appropriate user license) on the HP 3000/918LX (or any 9x7 or 9x8 for that matter.)

On the PC side, they needed something similar to Walker, Richer and Quinn's NS Connection and Reflection software products for each PC. As for connecting the HP 3000/918LX physically to the Novell NetWare LAN, all that was needed was to extend a piece of thin coax from either the DTC or system to a hub on their network. Simple, eh?

Of course, I knew there had to be more. Somehow HP managed to give a four-hour presentation on desktop integration — discussing topologies, hardware and software — without once mentioning the word "address." Nevertheless, it was a good start and certainly allayed many of my concerns. And, as it turned out, setting up access to the HP 3000 from the NetWare clients went quite well with only some minor problems.

Migration from the Classic HP 3000 to the 9xx variety has never been easier or less expensive then with the HP 3000/9x8 machines. HP is floating a number of

special deals to encourage small organizations or departments to trade up. The 9x7s, and now the 9x8s, were designed with these smaller groups in mind. The price/performance and availability gains are staggering.

Unless you have seen an HP 3000/9xx running your software, it is difficult to comprehend how much faster these systems are then their MPE/V ancestors. Consider this as some proof: The same customer has a process that they run interactively on a fairly regular basis. Before we took the Micro3000 down for the final time, I gathered everyone around a terminal and ran the process several times as the only activity on the system. It took about 90 seconds wall time to complete.

Several hours later, when the 918LX was ready to be put into production, I again gathered everyone around to watch the same process running on the new machine: 6 to 7 seconds. Smiles, smiles, smiles as I looked around. This, of course, was not a scientific test and not every task will show such a dramatic improvement.

But when a machine that takes up a quarter of the space of the Micro3000, has greater storage capacity, lower maintenance costs, higher reliability and an operating system with greater functionality AND costs less than a third AND is at the bottom of the performance curve — I think there is ample room to grow.

Unfortunately, HP's order fulfillment system still appears to be broken. Fortunately, the customer was spared the problems through the heroic efforts of HP and non-HP people along the way.

INFORMATION SUPERHIGHWAY PIT STOP

If you send and receive messages over the Internet, subscribe to the HP 3000 Systems Discussion list. This list is for discussion and questions about the HP 3000 in all its forms. Currently, about 250 people from a number of countries subscribe, including some well-known independent HP 3000 gurus and HP lab personnel.

If you do not have direct Internet access, America Online, CompuServe and Prodigy have gateways that allow you to send and receive messages on "the net." There also are services such as Delphi, that provide full Internet access for a fee. Whatever route you choose, be careful to know and understand any cost structures.

To subscribe, send a message to listserv@utcvm.utc.edu with the body of the message containing the single line: subscribe HP3000-L your_full_name. You will get a message back verifying your subscription and giving you information about the list and other listserv commands. To post a message to the list, send it to: HP3000-L@utcvm.utc.edu.

All postings to the HP3000-L list will be forwarded to you. The list was averaging over 20 postings per day during a recent period. One recent thread posed the question: Excluding the sign-on and sign-off commands, what are the 10 most important MPE commands for a "regular" user?

My Top 10: HELP, RUN, LINK, FILE, LISTFILE, PRINT, PURGE, STREAM, LISTSPF, SPOOLF. Add COPY and XEQ for an even dozen and SHOWJOB for a baker's dozen.

Now, tell me what you think.

Burke's Internet address: burke@cardinal.com

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July 12 (audio)
"HP 3000/HP 9000 Interoperability"
August 16 (video)
"Technology Close-Up: MPE/iX 5.0"

I highly recommend you attend as many of theses events as you can. After all, the price is right (free) and you will learn something. For updated information and to register, call 1-800-224-HP3K. Audio or video tapes are available for many past events.

CIRCLE 480 ON READER CARD

new Products

SOFTWARE

Wollongong Challenges Windows-Only TCP/IP

Wollongong announced PathWay Access 3.0 for Windows, an optimal TCP/IP solution designed for network environments which include Windows and DOS applications, client-server tools, network operating systems and database environments. PathWay Access 3.0 also features a user interface that sets a new standard for fully-integrated TCP/IP connectivity in Windows.

With Access 3.0, the core TCP/IP protocols are kept active and in memory, so the node does not lose its identity when the user transitions from a DOS to a Windows application. Because Access 3.0 combines compact TSRs with Windows integrated applications and Windows DLLs, redirected printing and network management agent functions always are available and active.

It includes an enhanced version of the PathWay Runtime for DOS and Windows version 2.0, which supports dial-up access to TCP/IP networks and to the Internet via high-performance SLIP or PPP dial-up connections. Runtime 2.0 also supports X.25, FDDI, Token Ring, Ethernet and Arcnet networks.

PathWay Access 3.0 costs $350 per single user license.

Contact The Wollongong Group Inc., 1129 San Antonio Rd., Palo Alto, CA 94303-4374; (415) 962-7100.

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KineticSystems Introduces Reality

KineticSystems Corp. (KSC) introduced Reality, a software package for data acquisition and control, which runs on UNIX-based workstations and supports large applications requiring distributed data collection.

Reality works with KSC's Silver Bullet line of VXIbus modules and KSC's CAMAC product line. It will also work with other third-party products including VME, VXI, CAMAC and PLCs.

Reality includes applications programs, run-time environments, I/O controller software, distributed databases, channel access and an alarm handler.

Contact KineticSystems Corp., 900 N. State St., Lockport, IL 60441; (815) 838-0005.

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Gradient Technologies Offers Visual-DCE

Gradient Technologies Inc. announced Visual-DCE Application Development Toolkit for Microsoft Visual Basic, a set of Visual Basic custom controls (VBX) enabling easy development of fully DCE-compliant Windows 3.1 applications with no knowledge of DCE program interfaces or C programming skills.

Visual-DCE automatically translates remote procedure arguments between C and Visual Basic and encapsulates the DCE layer through the use of a dynamic link library (DLL) to isolate the applications from the DCE RPC implementation. No direct calls to any DCE API are required.

Visual-DCE can be used with Microsoft C++, Powersoft's PowerBuilder and any other development environments that supports the VBX object model.

The Standard Edition Visual-DCE Toolkit costs $495.

Contact Gradient Technologies Inc., 5 Mt. Royal Ave., Marlboro, MA 01752; (508) 624-9600.

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Delrina And Gallium Forge Alliance

Delrina Corp. and Gallium Software Inc. announced a joint development and agreement to create a UNIX version (Motif-compatible) of FormFlow, an advanced electronic forms processing and routing software package.

The UNIX version will allow networked users to fill-in and electronically route forms created in Microsoft Windows. It will initially support HP-UX, Sun SPARCstations and Silicon Graphics. Additional support is planned for DG AViiON, IBM RS/6000, DEC and Intergraph workstations, as well as Intel-based platforms running the SCO ODT version of UNIX.

Delrina FormFlow enables organizations to automate and simplify the process of collecting, compiling and communicating structured information.

Contact Gallium Software Inc., 303 Moodie Dr., Ste. 4000, Nepean, ON K2H 9R4; (613) 721-0902.

Circle 397 on reader card

Documentum Creates Virtual Documents

Documentum Inc. announced its Enterprise Document Management System, a family of client-server software products that can be tailored to specific business-critical document applications. It enables capture, workflow, assembly and distribution of documents, enabling the creation and management of a "virtual document."

The Documentum system consists of Documentum Workspace clients, the Documentum Server and the Documentum Toolkit, a set of APIs for building custom solutions.

The Documentum System, version 1.1, is shipping on Windows, Macintosh and Motif clients, with server availability on HP-UX and Sun Microsystems Solaris. Price ranges from $50,000 to $80,000.

Contact Documentum Inc. 4683 Chabot Dr., Ste. 102, Pleasanton, CA 94588-2748; (510) 463-6800.

Circle 396 on reader card

Worldtalk Produces Worldtalk 400 Gateway

Worldtalk Corp. announced Worldtalk 400 Gateway for WordPerfect Office, which

works in conjunction with the Worldtalk 400 messaging integration systems to provide seamless connectivity between WordPerfect Office and other LAN- and host-based E-mail systems.

With this gateway, WordPerfect Office users can send and receive messages, documents and applications to and from users of other E-mail packages.

It connects disparate E-mail systems via the Worldtalk 400 server, the messaging server which runs on an HP 9000 or Intel platform.

The Worldtalk 400 Gateway for WordPerfect Office is priced at $2,500. It works in conjunction with the Worldtalk 400 Server, which is $19,950 for the HP platform and $7,450 for the Intel platform.

Contact Worldtalk Corp., 475 Alberto Way, Los Gatos, CA 95032; (408) 399-4000.

Circle 395 on reader card

WRQ's Reflection X Offers Remote Dial-In

Walker Richer & Quinn (WRQ) announced that Reflection X, a 32-bit Microsoft Windows-based PC X server, will include remote dial-in capabilities.

WRQ has licensed Serial Xpress from Tektronix Inc. and will incorporate it into Reflection X. Serial Xpress is a protocol that uses data compression to achieve high speeds over direct or phone-line connections. Reflection X users will have access to X applications from their home computers, laptops and notebooks.

The serial link in Reflection X will be available at no extra charge. Update pricing of Reflection X is $100. A standalone version of Reflection X is available for $469.

Contact WRQ, 1500 Dexter Avenue N., Seattle, WA 98109; (206) 217-7500.

Circle 394 on reader card

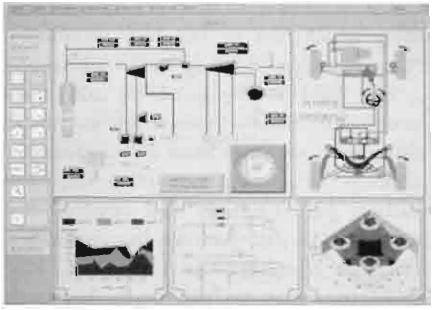
HP Enhances HP BASIC/UX

HP introduced two HP BASIC software products — enhanced versions of HP BASIC/UX for the HP 9000 Series 700 platform and HP BASIC Plus — that enable test-and-measurement professionals to upgrade to the latest PA-RISC technology and increase performance without sacrificing the familiar programming environment.

Besides allowing users to run HP BASIC on HP 9000/700 computers, the new version offers the following: full HP BASIC/UX functionality on the HP 9000/745i instrument controller, as well as on the HP 9000/715, 735 and 755 computers; LOAD compatibility for HP BASIC/WS and HP BASIC/UX HP 9000/300 programs; the ability to use compiled subroutines; and support for HP-IB and RS/232 interfaces.

HP BASIC Plus now includes a screen-builder application for interactive placement and sizing of widgets within a panel; a notepad application that serves as a simple text editor with cut, copy, paste and search-and-replace options; a clock application with analog or digital clock or timer functions; an application manager that allows the user to start applications by clicking on icons; and new widgets, including a bitmap widget and a number widget to build real, integer, binary, octal or hex numbers.

HP BASIC/UX for HP 9000 Series 700 workstations, Model E2046A, costs $1,600. HP BASIC Plus for HP 9000 Series 300 and 700, Model E2165A, costs $350.



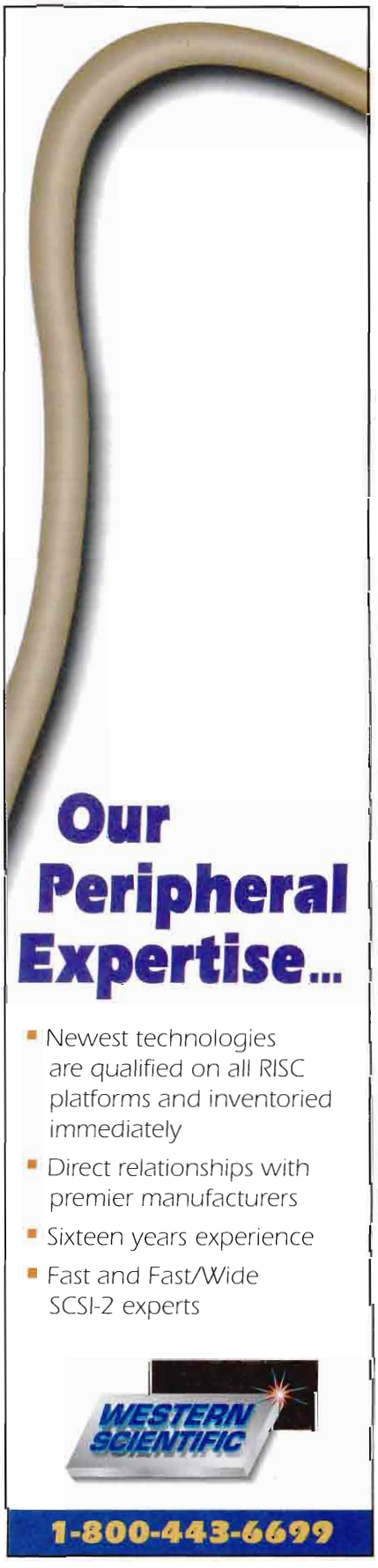
LOOX Version 2.0 gives UNIX-based programs a graphic look and feel.

LOOX Software Inc. Customizes Graphics

LOOX Software Inc. announced LOOX Version 2.0, an object-oriented software development tool for X Window users. Any UNIX program can be customized using the LOOX graphics development kit, creating a real-time, object-driven GUI.

LOOX is a graphics system that builds Graphical Interface Graphics (GIGs) using the GUI functionality already provided in Motif for X Windows. LOOXMaker makes it possible for anyone to create 2D or 3D graphic objects and charts. Then using calls to the LOOXLib vector-based C function library, objects can be associated with certain tasks, animated for applications such as manufacturing and assembly, or used to display real-time data.

LOOX will run on HP 9000 Series 300/400/700/800, Sun SPARC, IBM RS/6000, SGI, DEC or PC 386-486 workstation with 16 MB of memory. It is compatible with HP-UX 8.0, Sun OS 4.1 and Solaris 2.1, AIX 3.2,



CIRCLE 480 ON READER CARD

IRIX 4.0.1, OSF/1, SCO ODT and Solaris PC operating systems. It also requires Motif, X11R4 or X11R5.

Cost is $9,950.

Contact LOOX Software Inc., 151 S. Bernardo Ave., Ste. 45, Sunnyvale, CA 94086; (415) 903-0942.

Circle 393 on reader card

Logicraft Supports Banyan VINES

Logicraft announced Version 2.0 of LanCD, a CD-ROM networking software that allows network access to multiple CD-ROM drives. Version 2.0 will include native Banyan VINES support using the Interprocess Communication Protocol (IPC) and the Sequenced Packet Protocol (SPP).

Each Banyan client can have access to as many as 255 CD-ROM drives per LanCD server and up to 10 servers simultaneously. The LanCD server is a true multiprotocol server and can be accessed by other Network Operating Systems concurrently with Banyan, including Novell NetWare, LANtastic, DEC Pathworks and Microsoft LanManager. Each LanCD server supports up to four different protocols and network connections simultaneously. This allows for Ethernet, Token Ring and Arcnet to be connected to one server.

Also included is an upgrade to FastCD which allows all SCSI hard drives connected to the server to be viewed as one contiguous array. Each FastCD volume appears to an application exactly like the CD-ROM drive, but performs up to 100 times faster.

LanCD costs $1,995 for a 100-user version, and $695 for a 10-user version.

Contact Logicraft Inc., 22 Cotton Rd., Nashua, NH 03063; (603) 880-0300.

Circle 392 on reader card

MUST Ships NOMAD 3.4

MUST Software International announced NOMAD 3.4 for HP 9000 business servers and workstations running HP-UX.

NOMAD's 4GL includes a windowed user interface, non-procedural 4GL, procedural language, reporting and data management facilities, developer's workbench and a syntax-free reporting front end. Read/write interfaces to Sybase SQL Server and Oracle also are available.

NOMAD for HP-UX costs between $2,500 for single-user workstations, and $10,500 to $150,000 for multiuser systems.

Contact MUST Software International, 101 Merritt 7, Norwalk, CT 06856; (800) 441-MUST.

Circle 391 on reader card

Softool Announces CCC/Make For Windows

Softool Corp. announced CCC/Make for Windows. CCC/Make allows users to detect outdated components, rebuild software applications automatically and generate reports showing the impact or software changes, and dependency trees.

CCC/Make extends CCC/Manager's power over project builds by enhancing the functionality of the Make programs to directly access items controlled by CCC/Manager. It also allows reporting of code dependencies.

Contact Softool Corp., 340 S. Kellogg Ave., Goleta, CA 93117; (805) 683-5777.

Circle 390 on reader card

Pro Software Releases Pro_EDI For HP 9000/800s

Pro Software Inc. released Pro_EDI on HP 9000 Series 8xx computers. Pro_EDI is an EDI translation and document management utility which runs on HP 3000 computers, PCs, and under AT&T and SCO UNIX.

Pro_EDI is designed to add EDI functionality to any business application. It allows users to design their own application interface files, define transaction sets on a trading partner basis and control the movement of data between the application interface files and the EDI files. The translators may be run as background processes or even invoked from other existing programs. The document manager module tracks document flow through the translation and transmission processes.

Pro_EDI supports ANSI X.12, AIAG, TDCC, UCS, VICS, WINS and other North American public standards, and UN/EDIFACE.

Contact Pro Software Inc., Ste. 240, 725 Barclay Cir., Rochester Hills, MI 48307; (810) 299-0020.

Circle 389 on reader card

VCS-UX Operates On HP 3000s And 9000s

Diamond Optimum Systems announced release 2.00 of its Version Control System-UX (VCS-UX). VCS-UX operates in a client-server environment recording all changes made to application software, who made them and why. It provides in-depth access control and automatically notifies users who need to know when a specific action has been performed. It maintains a comprehensive documentation repository providing impact and configuration information online, enabling the developers to know the effect of a change at the start of the modification process.

Release 2.00 supports heterogeneous environments of either standalone or combined configuration of the HP-UX and MPE platforms.

Contact Diamond Optimum Systems Inc., 22801 Ventura Blvd., Ste. 105, Woodland Hills, CA 91364; (818) 224-2010.

Circle 388 on reader card

CEI Provides EnSight 5.1

Computational Engineering International Inc. (CEI) announced EnSight 5.1, its engineering postprocessing package for HP, Silicon Graphics, IBM, DEC and Sun workstations.

EnSight is used to analyze, interpret and display the results of computation engineering simulations for all finite element modeling applications. It supports several analysis packages including ANSYS, MSC/NASTRAN, LS-DYNA3D, FLUENT, FIDAP and STAR-CD. The systems provides complete postprocessing capability from initial model verification to video animation.

Data I/O and compute-intensive activities are performed by a server process. The server transmits graphical data to a client process running on a graphics workstation. The client handles all user interface interaction and graphic rendering.

Prices begin at $8,500.

Contact CEI Inc., P.O. Box 14306, Research Triangle Park, NC 27709; (919) 481-4301.

Circle 387 on reader card

XSoft Brings InConcert To HP 9000 Platform

XSoft announced that its InConcert workflow software provides support for HP 9000 workstations in client and server implementations.

The new version provides expanded support for Informix Online 5.0.x, Oracle7 and Sybase 10 relational database systems. Also, network support was expanded to include NetManage's NetChameleonNFS and Sun's PC-NFS implementation.

InConcert helps users model and coordinate all components of a work process. It accommodates most workflow designs, supporting from tens to thousands of users. It also allows organizations to integrate third-party software such as word processors, spreadsheets, image viewers and E-mail into the overall process management and status reporting features so managers can track job progress.

InConcert's base configuration, a UNIX server, two developer licenses and eight end-user licenses, costs $21,000. Additional developer licenses are priced at $3,000.

Additional end-user licenses cost $1,495 for UNIX, and $695 for Windows.

Contact XSoft, 3400 Hillview Ave., Palo Alto, CA 94303; (800) 428-2995.

Circle 385 on reader card

HARDWARE

E-Systems Provides Data Security Solution

E-Systems announced TeleSec Secure Wide Area Network system, a solution that combines Data Encryption Standard (DES) encryption, smartcards, authentication and authorization mechanisms.

The TeleSec Secure WAN System is an access control system that protects computer and communications resources that are remotely accessed through public or uncontrolled media including telephone modems and asynchronous data networks.

TeleSec combines positive user identification, managed privilege control and communications transport protection. The three hardware pieces are the Access Controller, Access Terminal and the AuthCard.

System administration is done through an Administrative Terminal using a Microsoft Windows-based application to create user privilege databases and access rule criteria.

Contact E-Systems, Feather Sound Corporate Center, Bldg. 1, Ste. 510, One Corporate Dr. N., Clearwater, FL 34622; (813) 573-0330.

Circle 384 on reader card

Tut Systems Releases Silver Streak

Tut Systems introduced its Silver Streak product line. Silver Streak is a 10 Mbps Ethernet (IEEE 802.3) implementation which uses ordinary flat telephone (silver satin) wire.

A user can create a Silver Streak Ethernet network by directly connecting a Silver Streak Connector to the AUI or AAUI port of a PC, Macintosh or workstation. Some systems may first require the installation of an Ethernet network interface card (NIC). The Connectors then can be daisy-chained together using telephone wire to build a network of up to 30 nodes over a distance of 185 meters.

It is compatible with all 802.3 CSMA/CD Ethernet systems such as 10Base2, 10Base5 and 10BaseT. Silver Streak is software-transparent and works with all network operating system software including Novell NetWare and Personal NetWare, Microsoft Windows for Workgroups, Artisoft LANtastic, Apple's AppleTalk and UNIX.

The Silver Streak AUI/AAUI Connects cost $99. The Silver Streak ISA/NuBus/LC Solutions cost between $199 and $249. The Silver Streak 10BaseT Converter costs $199. The Silver Streak Single UTP Converter costs $99.

Contact Tut Systems Inc., 2446 Estand Way, Pleasant Hill, CA 94523; (510) 682-6510.

Circle 383 on reader card

CMD Technology Announces CSA-6210

CMD Technology Inc. introduced its CSA-6210 VESA VL-Bus IDE Disk Controller. The CSA-6210 is a true 32-bit VESA VL-Bus disk controller designed to provide high performance and reliability with PC-compatible computers that provide a VESA VL-Bus slot. It includes an IDE Software Toolkit that enables users to tailor an exact configuration for their system.

The CSA-6210 supports up to four IDE disk drives and offers compatibility with Novell NetWare disk mirroring and Windows NT RAID 0, 1 and 5, as well as Microsoft Windows FastDisk and MS-DOS driver support.

The CSA-6210 is capable of sustained transfer rates up to 8.2 MB per second with peak transfer rates up to 8.33 MB per second.

Price is $69.

Contact CMD Technology Inc., 1 Vanderbilt, Irvine, CA 92718; (714) 454-0800.

Circle 382 on reader card

The Little Glass House provides a sealed enclosure to protect network electronics.

Liebert Introduces Little Glass House

Liebert Corp. introduced the Little Glass House, a sealed enclosure designed to protect network electronics. It is designed for LANs and WANs and protects PCs, servers, modems, routers, hubs and bridges.

The Little Glass House is an integrated solution to network support, combining

CIRCLE 480 ON READER CARD

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Contact Liebert Corp., 1050 Dearborn Dr., P.O. Box 29186, Columbus, OH 43229; (614) 888-0246.

Circle 381 on reader card

Unison Information Provides OPTI/MAX

Unison Information Systems Ltd. announces an expanded version of its OPTI/MAX Jukebox Series. This rewritable optical disk system works with the native drivers on any Sun server and has access times similar to those of standalone hard disks at 5.1 milliseconds.

In addition, it uses 1.3 GB per drive technology to reach potential capacities of 200 GB. Users with large storage needs (CAD/CAE, imaging, database applications) requiring online capability can use OPTI/MAX controller technology to turn an entire optical jukebox into one or more virtual disks.

The OPTI/MAX Jukebox Series incorporates Unison's proprietary SCSI-to-SCSI caching controller (SSCC). The four components that make up the controller include the target SCSI controller that communicates with the optical disk system, the processor and software that implement the SSCC, and the cache memory (RAM).

Pricing starts at $28,500 for a 20 GB capacity jukebox system with 8 MB of RAM cache and 127 MB of disk cache.

Contact Unison Information Systems Ltd., 21 Walsh Way, Framingham, MA 01701; (508) 879-3200.

Circle 380 on reader card

Tripac Expands Imaging Product Line

Tripac Systems Inc. expanded its line of document imaging products by signing an agreement with Document Imaging Systems Corp. to distribute its DocuStore 5 1/4 optical disk libraries.

DocuStore is a family of automated 5 1/4-inch optical disk libraries ranging in capacity from 150 to more than 1,050 cartridges in several models. DocuStore has drive flexibility, dual cartridge picker mechanisms and fast exchange times.

Contact Tripac Systems Inc., 5215 N. O'Connor, Ste. 200, Irving, TX 75039; (214) 432-3550.

Circle 377 on reader card

DCI Announces HP/5250 Twinax Controller

Development Concepts Inc. (DCI) announced its HP/5250 Twinax Controller, an internal adapter board which fits inside an HP 9000 Series 800 running HP-UX.

The HP/5250 allows attachment of up to 28 (four ports with seven addresses each) 5250 peripherals (terminals and printers) using standard ASCII emulation.

The HP/5250 device driver, interfacing with the HP-UX operating system, can support up to 16 adapter boards for a maximum of 448 devices. Terminals are configured as IBM 3151s with keyboard mapping. 5250 printers are configured as IBM Proprinters and have 5224/25 print features.

Contact DCI, 730-D Louis Dr., Warminster, PA 18974-2829; (215) 674-0607.

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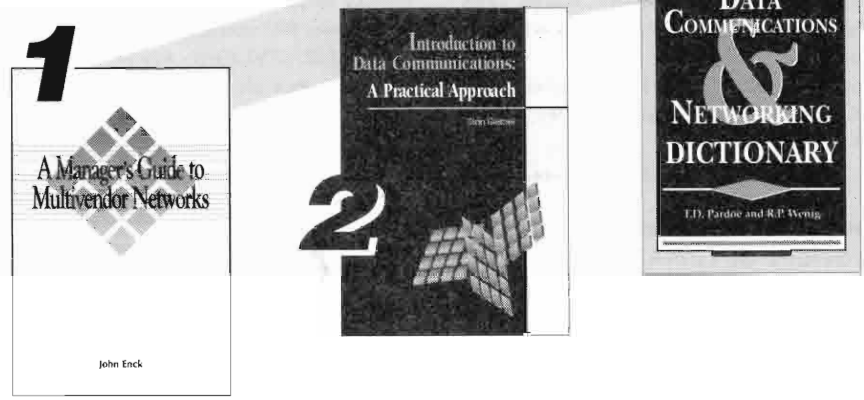

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GVC Technologies Ships FM144/144V(P) Fax Modem

GVC Technologies Inc. shipped its newly designed 14,400 bps V.32bis PCMCIA Fax Modem.

The credit card sized FM144/144V(P) inserts easily into any PCMCIA Type II, Type III or Type IV slot found in laptop, notebook and portable computers. It features an internal DAA module (telephone line interface) that is completely enclosed eliminating the possibility of breakage, line interference and electrical shock that may occur with some "exposed jack" designs. A six-foot RJ-11 cable is included, enabling the modem to be directly connected to any phone jack.

The FM144/144V(P) provides 14,400 bps data transmission and both Class 1 and Class 2 14,400 bps send/receive Group II Fax capabilities. V.42bis/MNP5 data compression and V.42 error control give these modems an error-free throughput up to 57,600 bps.

The FM144/144V(P) costs $299.

Contact GVC Technologies Inc., 376 Lafayette Rd., Sparta, NJ 07871; (201) 579-3630.

Circle 378 on reader card

Lantronix Offers LB2 Ethernet Bridge

Lantronix announced the LB2 Ethernet Bridge. It has a forwarding rate of 14,600 packets per second and a filtering rate of 28,000 per second. The filtering can be done based on packet addresses or a choice of 35 protocol filters.

It is compatible with Telnet and DECnet, has configuration utilities for use with AppleTalk and NetWare, and also is compatible with SNMP, SunNet Manager and HP OpenView. It has two AUI ports, as well as a serial port for an ASCII terminal acting as a local management console.

LB2 uses Flash ROMs, so no network host is required for loading it except when software upgrades are made.

Price for the LB2 Ethernet Bridge is $1,695, including the software utilities for AppleTalk and NetWare.

Contact Lantronix, 15353 Barranca Pkwy., Irvine, CA 92718; (714) 453-3990.

Circle 376 on reader card

Computer Upgrade Provides HSM Units

Computer Upgrade Corp. announced the availability of two automated tape library systems as part of its line of hierarchical storage and management solutions (HSM), the Model CU-TB482 and Model CU-TB602.

Model CU-TB482 contains two CU-251 high-capacity, half-inch helical scan tape units and is capable of storing up to 48 standard VHS tape cartridges for a storage capacity of 864 GB. Model CU-TB602 houses up to five tape drives and 600 cartridges for a total of 10.8 terabytes. Up to 18 GB can be stored on a single half-inch tape cartridges. A gigabyte of data can be backed up in 8.3 minutes. The system is capable of a data transfer burst rate of 4 MB per second and a sustained rate of 2 MB per second.

Both tape library systems support NFS, RFS, TCP/IP and other protocols.

Price is $180,00 for the Model CU-TB482, and from $445,00 to $580,00 for the Model CU-TB602.

Contact Computer Upgrade Corp., 1921 Sampson Ave., Corona, CA 91719; (909) 278-5626.

Circle 375 on reader card

HP Announces Vectra VL2 Series

HP introduced the HP Vectra VL2 PC series. The five HP VL2 models include accelerated local bus video, power management and plug-and-play features. Additionally, selected models include a local bus (Fast-IDE) controller and optional memory cache and are upgradeable to Intel Pentium OverDrive.

Some HP Vectra VL2 PC models include a video subsystem cable of displaying up to 1280 x 1024 resolution in 16 colors.

The power management, which users can enable from a PC setup menu, has a standby mode and a sleep mode that reduce average power consumption by 20 watts and 15 watts, respectively.

The HP Vectra VL2 4/33s PC features a 210 MB hard-disk drive and an MPC-2 compatible, audio/CD bundle with double-speed CD-ROM drive, 16-bit stereo sound card, stereo headphones and prebundled software, including Voyetra Multimedia Applications and Kodak Photo Edge.

Prices range from $879 to $2,249 depending on model.

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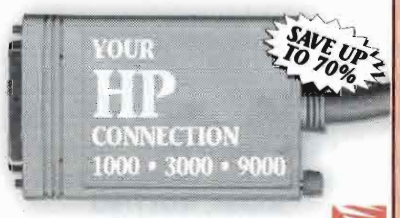

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Conform Or Be Cast Out

ISO 9000 Is Not Just For Manufacturers Anymore

By Gordon McLachlan

If you haven't heard of ISO 9000 your company is either a General store in the Ozarks or a paper route in the Himalayas, because that's about all who shouldn't be concerned about ISO certification. Already popular in Europe, and gaining steam on this side of the pond and Asia, the International Organization for Standardization's quality management guidelines are becoming de rigueur for manufacturers worldwide.

To become ISO-certified, a business must document how it manages its production processes, equipment maintenance and calibration, engineering specifications and drawings, worker training, as well as how it fixes defects and handles customer complaints. ISO 9000 isn't pushing a particular quality management methodology. In fact, it doesn't insist you do anything a certain way, certification just makes you prove you know what you're doing.

Forced by necessity to be very general and universally applicable, ISO 9000 is a framework for documenting fundamental business processes and communicating them to the world.

As a recognized standard, ISO 9000 has the advantage of being consistent, and somewhat enforceable through the process of certification. As you might expect, ISO 9000 certification isn't a trivial undertaking. It can take one and a half years time, and a few man-years of effort to get a single company site ready. The actual certification — performed by consultants called registrars — involves a review of all your process documentation, employee interviews and follow-up audits that can go on for three years or more. With consulting fees, you can run the cost into hundreds of thousands dollars.

Why would you go through all the time, trouble and expense of ISO certification? Because you have to. If your company is like most, it will get dragged into it by your biggest customers. Do you sell to the government? To big manufacturers? Overseas? If you do, it's just a matter of time before you're paying the consultants, too.

Think you can escape because you're not a manufacturer? Think again. I work for a firm that does nothing but provide computer services — training, contract programming, consulting and support — and guess what? We're getting certified.

Until last year, we were all blissfully ignorant of ISO 9000. But then we were bidding on a support contract and got asked if we were certified. We weren't. Then we were informed by our biggest customer that they would like us to participate in their in-house quality assurance program, which had previously been restricted to its manufacturing suppliers. When they asked us what our internal quality program was, we responded that we didn't have one. We were told politely to get one. Hello, ISO 9000.

The first order of business was to get a consultant to guide us through the steps to certification. It doesn't take 18 months and the family jewels to get certified, but that's what it takes to get ready for certification. The registrar comes later. The purpose of this consulting firm was to lay out the program for us, so we could get our house in order before company came.

So, just like ISO says, we started at the top with a statement of our quality policy — a short and sweet statement that affirms our belief in motherhood and doing the right thing. Second, we communicated that this was a mission from God through indoctrination sessions for all employees. That's the easy part, but it still took about six months to ramp up.

For the next six to nine months, we will be documenting the hell out of everything we do and doing reality checks with a team of internal auditors to make sure there isn't any fudging. Eventually we'll get certified, but the fun won't be over yet.

All this data gathering is going to give us something to think about. When we get done, we"ll know more about the way we do business than we ever wanted to, including some things we don't like.

I expect it to provide an excellent baseline for our process improvement efforts, and will no doubt show us many areas where there is room for change. Opportunity for this kind of top-to-bottom corporate introspection doesn't come along very often, and we have to seize it.

I'll keep you posted on the fun as it unfolds.

McLachlan's internet address:
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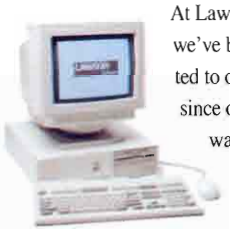

At Lawson Software, we've been committed to open systems since our company was founded in 1975. We've always believed that to be a valuable business partner, an applications provider must offer choices for business strategy development. So for us, client/server isn't a new phenomenon. Instead, it's the next logical step in our development. And it exists today – fully developed and fully functional – in the latest release of our enterprise-wide, cross-industry, world-class business application software.

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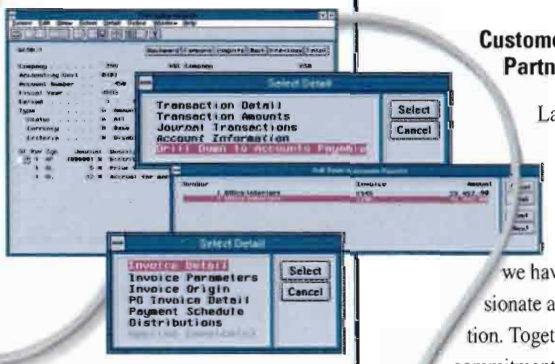

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