

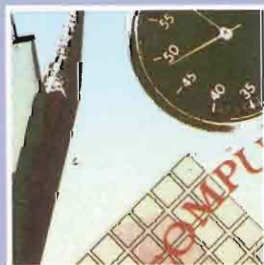
A Professional Press Publication

HP Professional

AN INDEPENDENT PUBLICATION FOR USERS OF HP COMPUTERS ■ VOL. 2 ■ NO. 7 ■ \$4.00

JULY 1988

- HP's DeskJet
- Lotus *Manuscript*
- Desktop Publishing With Color



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Missing Peace

LaserJet escape sequences can be puzzling. All those l's, 1's, O's, o's and 0's can get to look alike after a while, and the LaserJet still won't do quite what you'd like it to. Then, just when you think you've got it, somebody turns the printer off and you're back to square one.

That's why we came up with the Laser Toolkit. With a few simple menus, you create a print specification: fonts, page size, line spacing, duplexing, orientation, or other page characteristics. Then activate your creation any time you need it just by using an HP3000 file equation. What could be simpler?

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CASE:

First in a three-part series exploring HP's place in the computer-aided software engineering market (p. 66).

On The Cover:

This month's cover illustration is the work of Michael Schroeder, Reading, PA.

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OSF

There's an adage that says if you have lots of medium-sized problems and just can't get them cleared up, get yourself a really big problem and stand back.

I believe that the recent shotgun marriage of IBM, DEC and HP is a perfect example. They all had mid-sized problems. Specifically, they were all engaged in guerilla warfare upon each others' mid-range turf, but the possibility of losing UNIX to AT&T and Sun was so awful that they banded together to defend their turf. The Open Systems Foundation was born.

UNIX is critical to survival in the '90s. In the high-end PC world, it is the hedge against the failure of OS/2. In the workstation space, it is the operating system of record. It offers the possibility of interoperability — a holy grail for the user, but a terror to the platform vendor. In this new world of multiplying MIPS, just add a few to each inefficiency and stir.

Many in the press have noted that HP probably was the most genuinely interested party of the three. The other two could benefit from the fear, uncertainty and doubt that is being generated. HP probably is in the consortium to save UNIX. Make no mistake about it. The money now committed to "saving" UNIX is quite enough to save it from anything.

By the way, DEC (the world's biggest UNIX vendor) is currently making the largest software investment in its corporate history to incorporate the X Window System in every piece of software it makes. Note that an X-compliant VMS (version 5.2 to be released sometime in the next several months) will interoperate with all your UNIX machines that have X11. The combination of X and the OSI networking standard will change the face of computing.

So, the UNIX wars continue. Sleep well, however, in the knowledge that the big money has spoken. It reminds me of the old saying that the lion will lie down with the lamb, but the lamb will not get much sleep.

A handwritten signature in black ink, appearing to be 'R. D. M.', with a long, sweeping underline that extends to the right.

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CIRCLE 136 ON READER CARD

LETTERS

Compatibility

Don Person has become so cynical towards Hewlett-Packard that he has lost his objectivity. In "Compatibility" (April 1988), he proclaims his intolerance of any feature of an HP PC that doesn't exactly duplicate other PC clones. He further alleges that HP's only motive for providing PCs with unique features is to captivate the market for support. These are absurd comments.

To demonstrate his point, Mr. Person uses the example of a defective power supply. An IBM PC/AT replacement power supply, he says, can be purchased for \$100 or less and changed in half an hour. By contrast, HP's power supply is unique and more expensive. So shame on HP!

What Mr. Person fails to mention is that the HP power supply has at least three advantages over conventional PC power supplies. First, the design of the power supply allows the power switch to be mounted on the front panel instead of on the side or back panel. Do you know of anyone who sits at the back of his PC? Why, then, should HP copy such a poor ergonomic design? Second, the HP power supply connects to the motherboard through just one cable. This feature helps with servicing not only the power supply, but also the motherboard. Last, the power supply is held in place with two screws and two tongue-in-grooves. To change the power supply, simply remove three screws for the top cover, and two more identical screws for the power supply. It's at most a two-minute job.

Mr. Person himself singled out the virtues of the HP power supply in his article, "The New Vectra E Series" (January 1988). "Then there's the power supply," he writes. "Heavy duty doesn't begin to cover it." Later, he says, "The

Address letters to the editor to the *HP PROFESSIONAL* magazine, P.O. Box 445, Spring House, PA 19477-0445. Letters should include the writer's full name, address and daytime telephone number. Letters may be edited for purposes of clarity or space.

AC switch goes click, but there's a noticeable delay before the power supply drops out. This thing has a tremendous energy storage capability; almost a second goes by before the system drops out."

These features may or may not justify a higher price. At least the factors driving HP's design decisions did not include captivating the tiny after-market Vectra power supply business. Such a notion is ridiculous.

Mr. Person is correct in claiming that the original Vectra had some compatibility problems, particularly with the mouse and the keyboard. Developing a more compatible design was a preeminent goal of the Vectra ES and ES/12. The success of this effort is verified by considering how many software programs or plug-in accessory cards fail to perform properly in a Vectra ES. To borrow a line from Mr. Person, the answer is believed to be in the region bounded by zero and none.

Mr. Person also objects to the "service contract numbers game." He claims that HP has avoided making fully compatible clones in order to keep customers from defecting to third-party

vendors for service. He says that HP has instead opted to offer expensive HP-supplied insurance.

In fact, HP is one of the few PC vendors who directly can service their customer's equipment, either at the customer's site or at an HP sales and service office. More important, many HP dealers also service HP equipment. While most of them offer walk-in repairs, several also offer service contracts that compare with HP's. Customers have a choice and are not "an easy mark when the (HP) sales force circles," as Mr. Person suggests.

Achieving full PC compatibility while offering enriched products is difficult. HP is as about as close as possible with the ES series. Mr. Person's attack on what he describes as "the creeping feature creature syndrome that the in-house BIOS playboys can't seem to shake," indicates that he feels that no innovation by HP can be tolerated. The advances in technology that HP customers have enjoyed for the past 50 years suggest otherwise.

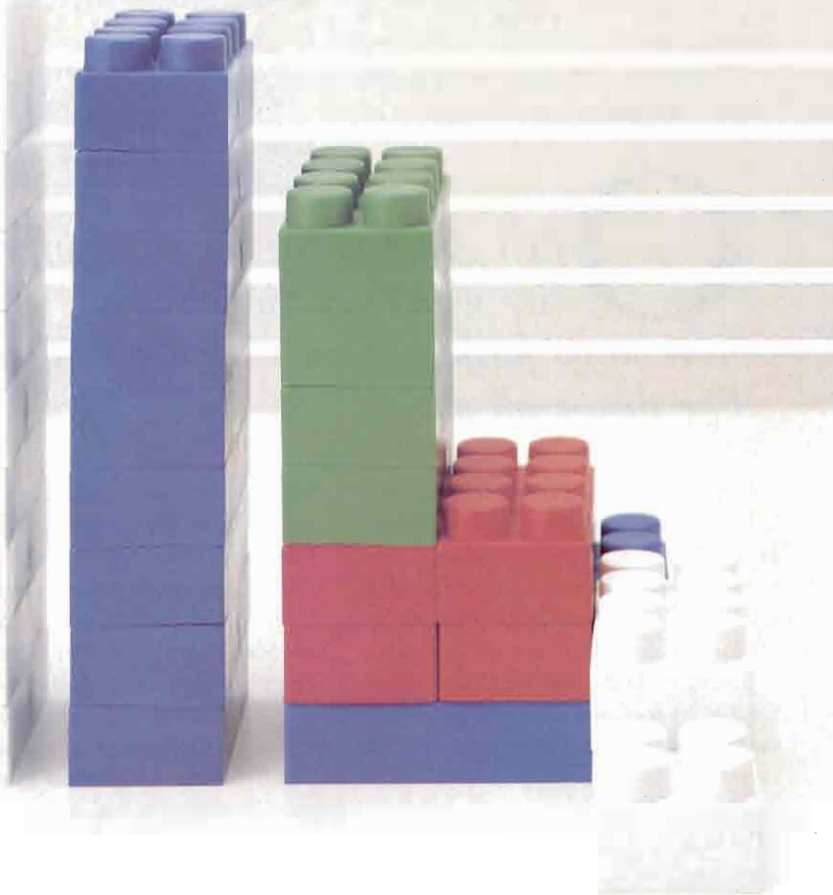
Glen W. Beattie
Fairport, NY

Don Person responds:

As Mr. Beattie and I both conclude, the Vectra ES offers software compatibility with the IBM-PC. That a mere seven years has elapsed since IBM introduced the original PC is hardly cause for celebration, however. PC compatibility is a target that HP has fired on again and again in vain, shooting only their moccasins until now. It only took five upgrades to the original Vectra to reach this happy state. The truth of Mr. Beattie's passionate arguments should be taken in the context of his employment by HP. We both also know that we are talking

Continued on page 96.

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INDUSTRY WATCH

Carl B. Marbach

Springtime In Sweden

GOTEBERG, SWEDEN, MAY 30 - JUNE 3, 1988.

The 1988 European Conference was held here amidst a heat wave where temperatures reached the upper 80s — unheard of for this part of the world in early June. Fortunately, the exhibit hall and meeting rooms remained comfortable throughout the week.

About 800 exhibitors and attendees gathered to discuss, listen, learn about and look at HP products and services including many offered by third parties and shown in the exhibition hall.

Many vendors from France, West Germany, England, the U.S. and Canada exhibited at the Goteberg show. For some of the U.S. and Canadian vendors, it was a chance to confer and work with their European distributors during the non-busy periods of the show.

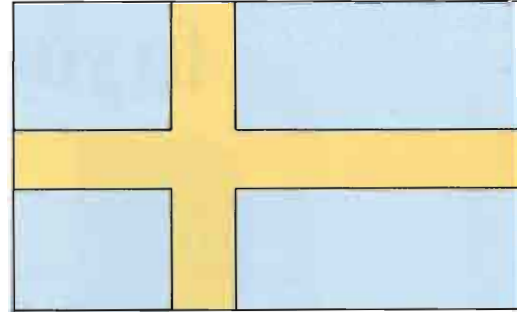
WE SPOKE WITH several European vendors who have successfully penetrated the European market and now are looking to expand into the U.S. The Goteberg show afforded them the opportunity to get feedback on “how to do it” from other European vendors who have experience selling in the U.S. market.

The European vendors seem to be taking two basic approaches here. Some send over staff from Europe to get set up and manage an office in the U.S. Others set up U.S. distributors to handle their products.

Unlike the DEC market, which draws tens of thousands of attendees to a show, the HP market draws relatively small numbers of attendees (perhaps 400

— 2,000) at a time. While the vendors clearly are there to find buyers of their products, the show also gives them the time to talk with other vendors and perhaps develop new marketing or sales partnerships.

Everyone did seem to grumble about the prices in Europe. The



Often going to the west end of your city won't get the job done; you'll have to go farther. That's what a conference like this is all about . . .

devalued U.S. dollar made it expensive for U.S. vendors to travel overseas. The non-regulation of inter-European airlines and the high cost of food and lodging in Scandinavia made it expensive for the European vendors as well. It was astounding to learn that an airline ticket from Paris to Goteberg costs about the same as an airline ticket from Boston to Goteberg.

AS MARKETING EXPENDITURES continue to escalate, it's clear it will be imperative for the vendors and user group board members to develop conference agenda that allow conference attendees more time to visit the exhibit areas.

While European and U.S. shows might run three or four days, most conference sessions are held simultaneously. This is frustrating for exhibitors and attendees who need to spend time together. The problem would be solved by changing the hours — not necessarily extending them — so that exhibits are open when sessions are on break.

Besides the meetings and exhibits,

Hewlett-Packard hosted a “surprise party” in an old castle on an island near Goteberg. Dinner was served in the traditional 1600 style (wine in rams' horns; meat, salad and potato served on a wooden board) with a group of vikings entertaining us with song and revelry.

While this isn't really the land of the midnight sun, after dinner at about 11:00 p.m. from the ramparts of the castle we could see the moon rising from the East and the sunset in the West. It was a memorable sight.

OFTEN GOING TO THE WEST end of your city won't get the job done; you'll have to go farther. That's what a conference like this is all about — it's an opportunity to get together and share information, techniques and tricks that we have all developed to get things done.

Make a point of attending the next Interex Conference (this year in Orlando, FL) or the next International Conference in Brussels, Belgium, in 1989. ■

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CIRCLE 140 ON READER CARD

Probe Software Sciences Slated To Market, Support SIP 3000

Provides Software Solution For Process Manufacturing

Probe Software Sciences (Montreal, Quebec) has established Probe U.S.A. to market and support its SIP 3000 software within the United States.

An HP software supplier since 1980, Probe manufactures an integrated-software solution specifically written for the process-manufacturing industry and HP 3000.

SIP 3000 integrates manufacturing, distribution and financial-accounting activities — a key requirement of formula-based companies with online “what-if” analysis.

Consisting of several interactive modules, SIP 3000 manages formula management, production, financial management, inventory control, purchasing, cost accounting, warehousing and distribution.

SIP 3000 tracks factors affecting product costs and yields, such as varying formulas and the availability, price and quality of raw materials. By tracking lots from their raw-material stage to customer shipment, SIP

3000 provides a history for online lot accountability.

Built around the HP IMAGE database, all SIP 3000 modules share basic data, which eliminates multiple copies of the same information.

SIP 3000 (\$45,000 — \$220,000) runs on all HP 3000s, including the HP Precision Architecture, RISC-based Series 900s that provide higher performance while maintaining compatibility with existing HP computers.

Interface Allows HP ScanJet To Run With IBM PS/2 Line

HP Remains Leading Vendor Of Desktop Scanners

Hewlett-Packard recently announced an interface kit that will allow the HP ScanJet desktop scanner to run with IBM PS/2 computers. HP is providing the kit in response to requests from dealers and customers as a part of its plans to remain the leading vendor of desktop scanners.

The HP ScanJet PS/2 interface kit (HP 88490A) allows the ScanJet to work with PS/2 Models 50, 60 and 80. The IBM PS/2 Model 30 is

supported by the PC interface kit (HP 88290A) in combination with the HP 88293A accessory kit.

With the HP ScanJet desktop scanner, users of desktop publishing systems may add photographs, illustrations, line art and graphics to the documents being published. The HP ScanJet scanner can be used with Aldus' PageMaker and Xerox's Ventura Publisher.

HP also offers ReadRight optical character-recognition (OCR) software (HP 88400A) for the HP ScanJet. OCR software allows users to enter text into a computer without the tedium and expense of retyping. The ReadRight OCR software comes with 5¼-inch and 3½-inch media, allowing customers to use it with IBM XT/AT PCs and compatibles as well as the new IBM PS/2 systems.

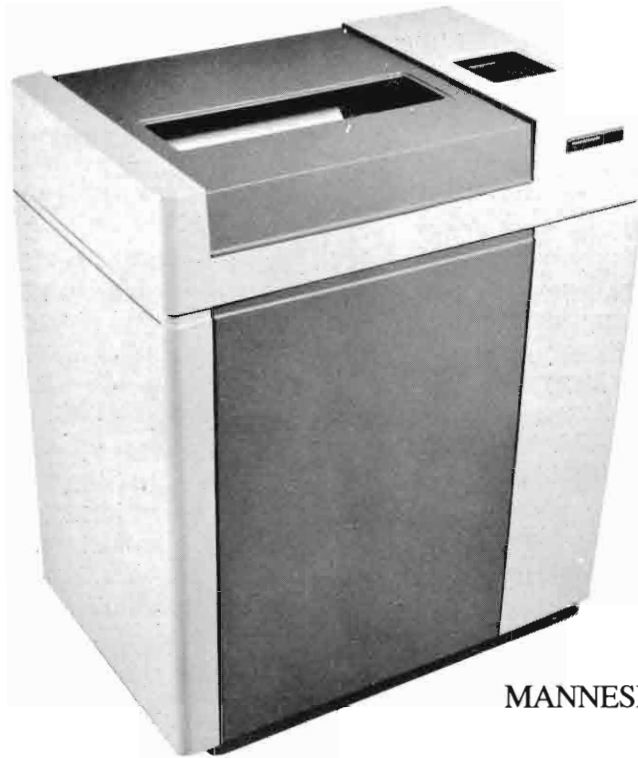
The HP ScanJet PS/2 interface kit includes a controller board, cable, HP Scanning Gallery software and user's guide.

Perpetual, Tres Associates Market MYREPORT

Uploads Report Designs To HP 3000

Tres Associates (Austin, TX) and Perpetual Software Consulting (Salt Lake City, UT) have entered into a joint marketing agreement where Tres will market and sell PSC's products.

Tres Associates is marketing MYREPORT, an end-user report writer for COBOL and Protos users. A PC-based product, it allows the user to design a report on the PC using fill-in-the-blanks menus. Once the design is complete it automatically uploads the report to the HP 3000 to be compiled, run and printed.



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CIRCLE 237 ON READER CARD

HP Signs OEM Agreement With FTP Software

Incorporates PC/TCP Into HP AdvanceNet

HP has signed an OEM agreement to incorporate FTP Software Inc.'s (Cambridge, MA) PC/TCP networking software into its HP AdvanceNet computer network offerings.

PC/TCP is a high-performance IBM DOS implementation of the de facto standard TCP/IP networking protocols. It allows PC users to transfer files, transmit electronic mail, access mini-

computers and mainframes and perform remote tasks on multivendor computer systems.

PC/TCP is compatible with most IEEE 802.3/Ethernet, Token Ring and StarLAN interface boards, including those from 3Com, BICC, Excelan, IBM, MICOM-Interlan, National Semiconductor, Novell, Proteon, Ungermann-Bass and Western Digital.

New HP-UX Software Catalog Features Over 400 Packages

Geared Toward Value-Added Businesses

A new software catalog of value-added-business (VAB) and HP proprietary-software solutions running on HP-UX is now available from HP.

The 200-page catalog (publication 5951-6794) lists HP-UX software for HP 9000 workstations and servers and includes more than 400 technical and commercial packages. Featured are product descriptions, pricing in-

formation, vendor data, support services and configuration requirements. Among several indexes is a new Market Keyword Index, which allows you to look for products within certain application areas.

Technical-application areas range from aerospace simulators to water-utilities operation. A full range of business applications also is available, including financial management, sales analysis and a broad selection of accounting packages.

HP Ships StarLAN 10

Standard Telephone Wiring Simplifies Connectivity

Hewlett-Packard recently announced that it has begun volume shipments of its HP StarLAN 10 local area networking (LAN), which includes a new integrated PC card, making it easier and more cost-effective for users to connect multivendor PCs and minicomputers using standard telephone wiring.

In addition, the company said it will support HP StarLAN 10 in multivendor-engineering, business-office and computing environments. With HP StarLAN 10, engineers with high-performance PCs and UNIX workstations now can use twisted-pair telephone wire to share large engineering files and documents.

HP StarLAN 10 implements the basic technology outlined in the AUI (attachment unit interface) proposal originally developed by HP and accepted by the IEEE 802.3 standards committee as the basis for a 10-Mbps twisted-pair-wire network standard now being drafted.

The new HP StarLAN 10 integrated card allows HP Vectra PC and IBM PC/XT/AT computer users to realize substantial cost savings by integrating onboard the medium-attachment unit (MAU), an external device now required to connect PCs to the twisted-pair telephone wire in a StarLAN network.

The new integrated PC card provides a direct connection to the twisted-pair wire via an eight-pin modular jack used for telephone connections.

HP StarLAN 10 can be used to connect as many as 1,024 PCs or devices. A 12-port HP StarLAN 10 Hub provides communications beyond a standalone network to a network of HP and multivendor systems in other facilities via an IEEE 802.3/Ethernet LAN backbone. PCs can be located 100 meters (325 feet) from the HP StarLAN 10 Hub, or even further using repeaters and bridges.

HP StarLAN 10 easily can be integrated into existing 1-Mbps StarLAN networks as the communication needs of a company grow.

The product runs HP OfficeShare network software and is compatible with MS-NET software, supporting applications packages such as HP's Personal Productivity Center software, Lotus 1-2-3 and MultiMate.

Raet Secures U.S. Distributors

Offer Extended Sales

Distribution rights have been secured for Raet Software Products' ARTESSA/3000, an application builder for the HP 3000, by Information Systems Professionals (Anaheim, CA) and O'Brien Downs Systems (Cincinnati, OH).

Geoff Davies, general manager of Raet Software Products (Arnhem, The Netherlands), said, "Both of these companies impressed us with their professionalism, and their grasp of the key issues in development productivity. We expect that our customers in Southern California and the Midwest will be very satisfied with the level of support these two new partners will bring."

MD-CONNECTION

- The Link to Lasers

The IBM
Mainframe
world.

Until now, it has been a problem to connect non-IBM graphics peripheral devices to IBM mainframes.

MD-CONNECTION from MÆRSK DATA has solved this problem.

The MD-CONNECTION concept consists of a series of mainframe software products, which offer you high quality graphics and text output from your IBM mainframe.

- MD-LASER allows you to make high quality graphics on your laser printer.
- MD-GRAFTÉXT gives you the benefit of mixing graphics and text on laser printed output.

With MD-CONNECTION your in-house publishing options are as unlimited as your creativity.



MÆRSK DATA

USA: Maersk Data Inc., Giralda Farms, P.O. Box 883, Madison, NJ 07940, Tel.: 201 514 5000
Europe: Mærsk Data A/S, 11 Titangade, DK-2200 Copenhagen N, Phone 01 83 82 11, Telex 16411

ASK Purchases OCS/LIBRARIAN

Plans To Automate Software Development At Corporate Headquarters

ASK Computer Systems has purchased OCS/LIBRARIAN to automate the software development cycle at ASK's corporate headquarters (Mountain View, CA).

OCS' R & D staff added several features needed for ASK's rigorous development cycle. One of these new features is an interface between OCS/LIBRARIAN and OCS/EXPRESS that provides an automated release to production facility. This facility polls the development area on a nightly basis, searching

for all files that should be released to production. These files can be any that have been approved and tested or simply modified that day. Polling also can be requested on an all-or-nothing basis.

The new release of OCS/LIBRARIAN is designed to provide production integrity within ASK's networked development environment. The system makes files available for approved changes and, at the same time, secures files from unauthorized access.

RunningMate, HP Sign Contract

Corporate License Granted For Internal Distribution Of I/O Mate

RunningMate has signed a two-year agreement granting HP a corporate license for RunningMate's Performance Partner, I/O Mate.

This agreement grants HP a corporate license that provides for the distribution of RunningMate's I/O Mate within all of HP's divisions.

RunningMate expects this contract to add significantly to the existing installed base of HP's internal users.

I/O Mate is a universal disc I/O accelerator that installs without making any source code changes and requires only that the object

code be available to convert with RunningMate's installation program. This process takes approximately 10 seconds to complete. The converted programs or report writers then can take advantage of RunningMate's disc I/O procedures, which net as much as 10 times faster runtime for disc I/O-intensive tasks.

I/O Mate commonly runs with BRW, Inform, Query, Easy Reporter, Quiz, HP Access, Data Express, Ask, Fastran and programs or reports written in any of the current languages running on the HP 3000 computer family. I/O Mate also is used to speed standard system utilities like FCOPY.

HP's FRD Gets New Home

180 Employees Relocated

The Finance and Remarketing Division (FRD) of HP has moved to 331 E. Evelyn Ave. (Mountain View, CA), its first permanent home.

About 180 FRD employees relocated to the 55,000-square-foot building from the company's PC manufacturing site (Sunnyvale, CA). In addition to administrative offices, the leased building houses a remanufacturing area, shipping department and warehouse with an inventory of 10,000 parts. The area headquarters and sales office for the Neely (Western) Sales Region offices are on the same site.

FRD, formed in 1983, is responsible for HP's leasing/rental business and the remanufacture and resale of the company's equipment.

FRD also has remanufacturing operations in Boeblingen, West Germany, and in Melbourne, Australia.

Thorn EMI Becomes HP Software Supplier

Offers FCS For Use On HP 3000

Hewlett-Packard has announced that Thorn EMI Computer Software will supply FCS, a financial-modeling tool for the HP 3000.

Based on business English, FCS helps non-data processing professionals such as business planners and analysts create and maintain applications for financial and strategic planning, forecasting, budgeting and comparative and competitive analysis. By eliminating the need to understand a programming language, financial models can be created by those who will actually use them.

FCS' interactive routines are stored centrally on the HP 3000, giving users in a large organization access to the same decision-support system and information.

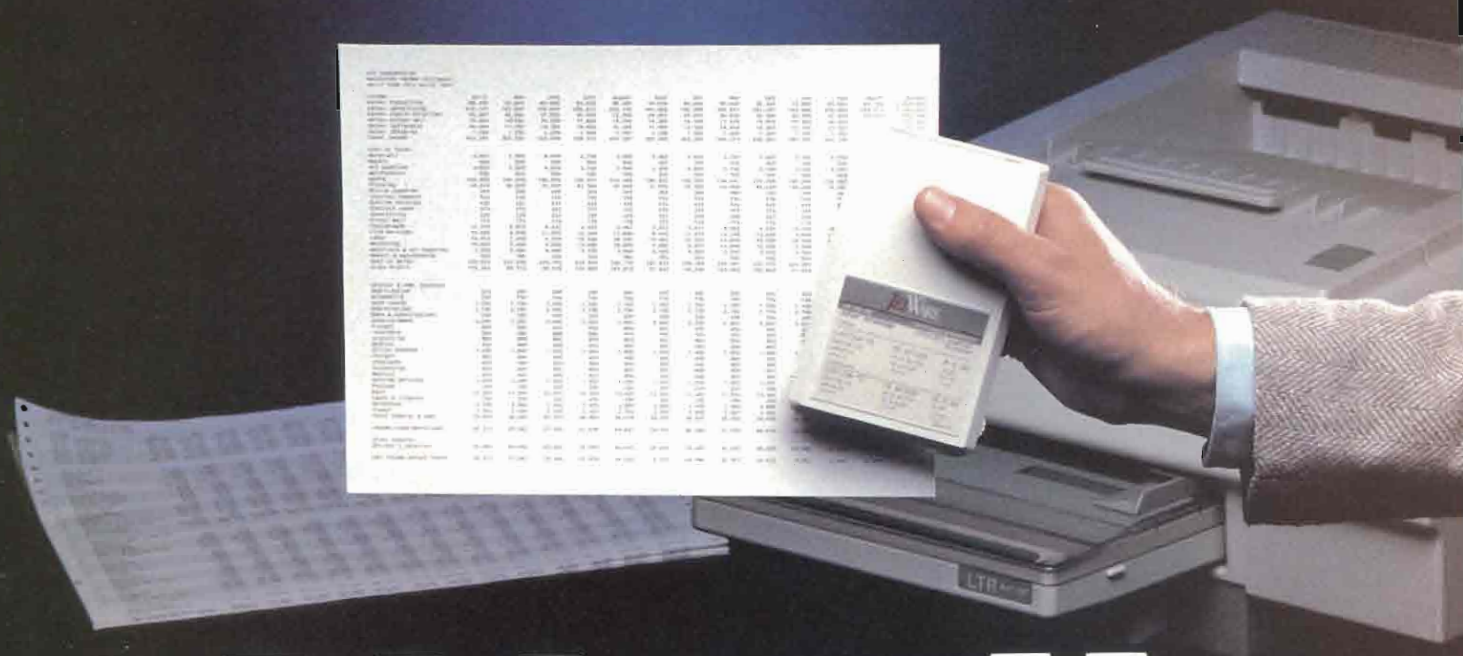
A world leader in laser

technology, Spectra-Physics recently selected FCS to help provide timely and accurate financial planning and detailed market-forecast information. Installed on the company's existing HP 3000, FCS' flexibility and ease-of-access have enabled Spectra-Physics to meet the diverse needs of its 10 divisions.

A subset of FCS, MicroFCS, is available on the HP Vectra. MicroFCS can be used either as a standalone product or in a distributed environment consisting of an HP 3000 and HP Vectra PCs.

Ease-of-use features include simple editing commands for reading and modifying models, and many built-in functions such as a report writer for specifying reports, pre-written routines for statistical analysis and forecasting, and syntax checking of all input.

1-2-3 8 1/2 x 11



At last!

JetFont 123 has just made greenbar paper obsolete.

JetFont 123 produces remarkably clean laser output from Lotus 1-2-3, dBase III and other popular database/spreadsheet programs. On 8 1/2" x 11" paper. With four font sizes, as dense as 30 characters per inch!

JetWare's proprietary Lotica font was designed for exceptional readability, making it perfect for extra-wide spreadsheets and database tables. Horizontal or vertical, up to 240 columns wide. With outstanding visual clarity, even after it goes through the copy machine.

Manufactured by Computer Peripherals, Inc., a leader in IBM XT/AT enhancement products since 1982, the JetWare line includes a

full range of font cartridges and memory expansion boards for HP LaserJet.

Jim Seymour of PC Week has called JetFont 123 "the answer to our prayers." You'll call it indispensable.

JETWARE™

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667 Rancho Conejo Blvd.
Newbury Park, CA 91320
Toll Free: 800-854-7600
In CA: 805-499-5751
FAX: 805-498-8848

CIRCLE 210 ON READER CARD

AdvancePrint Offers Shared Printing/Plotting For PC Users

PCs and 3000s Form Serial Connection

Hewlett-Packard has introduced HP AdvancePrint, a software program that offers low-priced, shared printing and plotting for PCs connected to an HP 3000 business computer through serial connections.

HP AdvancePrint, with advanced features, is a cost-effective alternative to a LAN-based solution for HP Vectra PCs, HP 150 PCs and IBM PC XT/ATs and PS/2s. PC users can print to shared plotters and printers with the same level of functionality — including full graphics support — that they would have if these devices were connected directly to their PCs.

A PC user can configure HP AdvancePrint to connect automatically up to three printers when the PC is turned on. Easy printer and setup-string selection simplify configuration changes. All necessary programs for the HP 3000 are loaded quickly from flexible diskette rather than tape.

HP AdvancePrint (\$170 per PC license; \$125 with AdvanceLink) replaces HP Print Central. It offers features not found in HP Print Central such as easy software installation, increased performance and advanced features for 30 to 40 percent less than HP Print Central's price.

Data compression helps boost performance over HP Print Central. With HP AdvancePrint, the user's PC is made available 30 to 60 percent sooner and documents

are printed 20 to 40 percent faster.

Other advanced features, normally not available in low-cost shared-printing solutions, include printer selection from a menu, printer-access security and document-status checking. In addition, connection files automate the process of typing into the HP 3000, which eliminates the need for manual input of complex connection information.

HP AdvancePrint and HP AdvanceLink provide advanced shared printing, terminal emulation, file transfer, PC backup and data communications using existing RS-232C/422 basic serial connections.

HP Announces Five MAP 3.0 Products, VLSI Technology

Address Communications Requirements For Multivendor Systems On The Factory Floor

Hewlett-Packard recently has announced five new manufacturing-networking products that conform to the MAP 3.0 specification for factory communications and a high-performance VLSI technology that supports the seven layers of the Open Systems Interconnection (OSI) standard for multivendor networks.

The new MAP 3.0 capabilities address the most critical requirements for multivendor communications among computers and devices on the factory floor.

The new MAP 3.0 MMS (manufacturing-messages specification) software provides an international,

standards-based command language for programming MAP-compatible devices on the factory floor.

The new MAP 3.0 FTAM (file transfer, access and management) software provides the ability to remotely transfer and access files across multiple computer systems.

The new HP OSI Express MAP 3.0 product is a high-performance interface that connects HP computers directly to the network via either broadband or carrier-band cabling. HP OSI Express implements the MAP portion of the seven-layer OSI protocol stack on a high-performance VLSI integrated card.

To preserve user investments in existing factory equipment, a new HP device-interface system connects HP computers to any non-MAP, RS-232C device on the factory floor or non-MAP device subnetwork. Combined with the MAP 3.0 MMS software, the HP device-interface system permits users to create automated processing functions among MAP 3.0 and non-MAP devices.

HP MAP 3.0 protocol analyzer decodes the seven-layer MAP protocol stack. It monitors IEEE-802.4 traffic, allowing users to view connection activities for debugging their MAP implementation, thus speeding up interoperability. ■



Canadian Firm Invests \$4 Million In HP Equipment

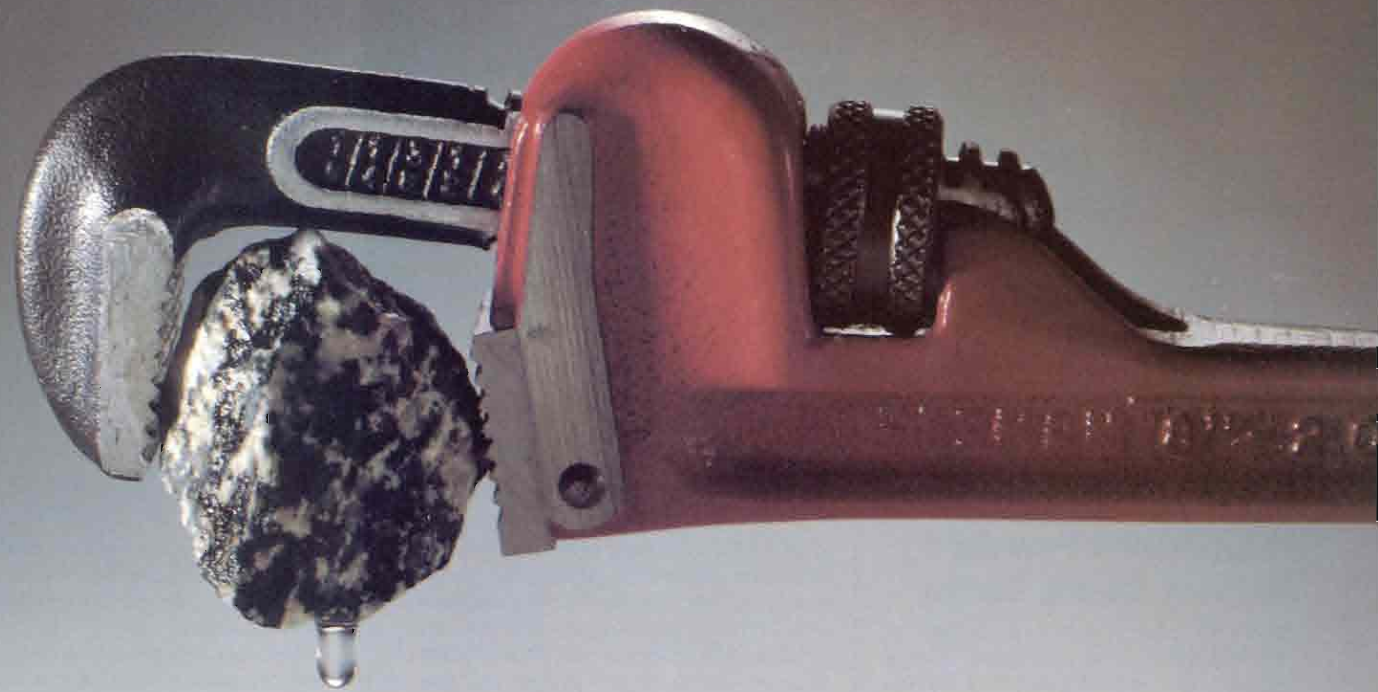
Helps Standardize Distribution Operations

EML Distribution, one of the largest plumbing-distribution firms in Canada, has purchased \$4 million in HP business computers to help standardize distribution operations in its 150 companies.

The systems purchased include 22 HP Micro 3000XEs, three HP 3000 Series 52s and three HP 3000 Series 70s. At the same time, EML also bought a multi-warehouse inventory-control software package for hardgoods distributors.

Six HP computers have been operating for a year at Western Supplies Ltd., a subsidiary of EML. Currently, EML is installing inventory-control software and HP computers throughout its Western, Central and Eastern Canadian branches at the rate of three computers every two months.

Before purchasing HP computers, EML Distribution used a Honeywell mainframe that ran in-house applications.



MAESTRO Squeezes Every Drop of Throughput From Your Batch Job Processing

Getting the most out of your batch processing while continuing to do it manually can be like squeezing water from a stone. But with MAESTRO's automated approach you'll increase your batch job throughput by an average of 35-50%.

MAESTRO allows you to realize your full production potential because it reacts instantly to a job completion, reply to a prompt, job termination, or any other significant event. This split-second response is impossible for even the most diligent operators, because they're often busy with other things like loading paper. MAESTRO's attention to detail also minimizes costly errors.

MAESTRO automatically manages a variety of tasks which are usually performed manually, such as integrating user job requests, scheduling production, preparing job streams, and documenting job status. In fact, MAESTRO is

so efficient it gives you the potential to run production completely unattended. Even if you have multiple CPU's.

We could go on and on. About saving computer time. Ease of use. Cutting personnel costs. And much more.

But all it takes is one look at MAESTRO in action. Call us today at (415) 968-7511 for a 30-day demonstration or to find out more.

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CIRCLE 200 ON READER CARD

See us at Interex Booths 317, 319, 416, 418

HIBACK/3000 Provides Network Backup Facility

HI-COMP has released a version of HIBACK/3000, the high-speed backup product, that provides network backup capabilities.

The introduction of the Network Backup facility gives HP 3000 users who have multiple systems connected via a LAN using the DS3000 or NS3000 subsystems unparalleled flexibility in implementing a backup strategy that meets their unique backup needs.

HIBACK/3000 (\$3,000) supports backup to tape, cartridge, serial disc, private volumes and the available freespace of standard disc. The Network Backup facility extends these to local or remote devices. It supports all of the standard features of HIBACK/3000.

HIBACK/3000 provides high-density data compression, which is a user-selectable option (even on a file by file basis). Whether storing on tape, cartridge or disc, media savings of over 70 percent are possible. In the case of a Network Backup, the data compression is performed on the local system prior to the network transfer, keeping the actual data transferred to a minimum.

Contact HI-COMP America, (800) 323-8863. In Europe, contact HI-COMP Hinrichs GmbH, Hamburg, W. Germany (49) (40) 630 40 11.

Circle 372 on reader card

WR & Q Releases PostHaste

Walker Richer & Quinn Inc., developers of the Reflection Series of terminal emulation software for PCs, has announced PostHaste, an integrated electronic mail system for the HP 3000.

PostHaste (starting at \$5,000) is engineered to minimize the I/O operations required to post a message, resulting in speed and high performance. In addition, PostHaste

gives the PC user access to the HP 3000 environment without sacrificing the use of familiar PC software. It completely integrates with Reflection terminal emulation software to allow HP terminals and PCs running Reflection to exchange messages and correspondence via the HP 3000.

PostHaste takes advantage of Reflection's proprietary file transfer and multitasking capability to monitor new messages and send local files to other PostHaste users. Other features include status monitoring of both incoming and outgoing mail, support for local and host printers, message organization and archival, bulletin board capability, access and message security, distribution lists and folders.

PostHaste runs on any HP 3000 under MPE. Users of Reflection Series HP terminal emulation software can take advantage of the integration of PostHaste and Reflection if they're using Reflection 1, 1 PLUS, 7, 7 PLUS, or Reflection 1 or 3 for the Macintosh.

Contact Walker Richer & Quinn Inc., 2825 Eastlake Ave. E., Seattle, WA 98102; (206) 324-0350. Stop by booths 911, 913, 1010 and 1012 at the Interex Business Conference and booth 110 at the Technical Conference.

Circle 386 on reader card

MCBA Releases MRP For HP 3000s

MCBA Inc. has released its Material Requirements Planning (MRP) software package for the HP 3000.

The package forms part of MCBA's integrated Manufacturing Resource Planning (MRP II) system designed for job shops and repetitive manufacturers. MRP is used to compute when, and in what quantities, component parts and raw materials are required to meet a manufacturer's production schedule. The package can be used to support a "just-in-time" production plan.

The MRP package (\$8,000 — \$12,000 depending on hardware) is written in

COBOL II and uses the IMAGE database. It integrates with, and requires, MCBA's Inventory Management and Bill of Material Processor packages.

MRP presents formatted screens on any HP character-mode terminal, accesses items by number or partial description, permits frequent, up-to-date material plans to be regenerated due to an extremely fast regeneration algorithm, offers a "bucketless" system so results can be analyzed in a variety of time periods, frees the terminal for other tasks by running interactively selected reports in background and more.

Contact MCBA Inc., 425 W. Broadway, Glendale, CA 91204-1269; (818) 242-9600; Telex: 194188. Stop by booths 617 and 619 at the Interex Business Conference.

Circle 398 on reader card

Session Family Supports MAC-9000 File Transfer

Tymlabs Corporation has announced that its Session family of HP terminal emulators for the Apple Macintosh will provide intelligent, full-featured file transfer between the Macintosh and any HP 9000 running HP-UX.

Session currently supports intelligent file transfer with the HP 3000, as well as standard XMODEM and MacBinary protocols for transfer with other systems, online services and public networks. Session Version 3.1, which includes the HP 9000 file transfer facility, now is available.

In order to transfer files between the Macintosh and a particular HP 9000, users must first upload, to their HP host computer, a companion program called TYMLINK 9000. Supplied free of charge with all Session products, TYMLINK 9000 handles the transfer operation on the HP 9000.

Session Version 3.1 is available free of charge to current users of Version 3.0. Users of Mac2624, Tymlabs' former HP terminal emulator, should call Tymlabs for information on upgrading to the Session family of products. The family includes Business Ses-

sion, an HP 2392 CRT emulator; Graphic Session, an HP 2393 graphics terminal emulator and Color Session, an HP 2397 color terminal emulator.

Contact Tymlabs Corp., 811 Barton Springs Rd., Austin, TX 78704; (512) 478-0611. Stop by booths 105, 107, 109, 111, 202, 204, 206, 208 at the Interex Business Conference.

Circle 399 on reader card

New Reflection Emulates HP 2393A Terminal

Walker Richer & Quinn Inc. has announced the release of Reflection 3, a terminal emulation/data communications package that lets the Macintosh act like an HP 2393A graphics terminal. The product works with any monochrome graphics program for HP 1000, 3000 or 9000 hosts that can be accessed by a 2393A terminal, including DSG/3000, HPEasyChart and HPDraw.

Reflection 3 (\$349) for the Macintosh has the ability to use the Cut and Paste functions of the Mac. Users can "cut" portions of graphics pictures generated by the 3000 host and then "paste" them into word processing, desktop publishing, or any application running on the Macintosh that supports the Clipboard function. It also contains the comprehensive command language present in all Reflection products. It offers high-performance proprietary file transfer and Kermit and XMODEM file transfer support.

Reflection 3 presents these features according to Apple standards, including support for MultiFinder, resizable windows, pull-down menus and dialog boxes. Contact Walker Richer & Quinn Inc., 2825 Eastlake Ave. E., Seattle, WA 98102; (206) 324-0350. Stop by booths 911, 913, 1010 and 1012 at the Interex Business Conference and booth 110 at the Technical Conference.

Circle 400 on reader card

EMC Introduces FALCON XP

EMC Corporation recently announced FALCON XP, a new addition to its Falcon Series of disc subsystems.

FALCON XP has 64K of write cache in addition to the 4 MB of read cache contained on previous Falcon models. The addition of write cache gives the Falcon the ability to cache any size read or write to the disc drive. This new feature improves per-

formance between seven and 20 percent over previous models of the subsystem.

The FALCON XP (\$17,450) is available in a 625-MB model to HP 3000 users. All the standard features of previous Falcon models also are available, including EMC's proprietary caching algorithm, which gives users the ability to adjust cache domain sizes to fit their applications for maximum performance.

Contact EMC Corp., Hopkinton, MA 01748-9103; (800) 222-EMC2, in MA (617) 435-1000. Stop by booths 119, 121, 216 and 218 at the Interex Business Conference.

Circle 382 on reader card

HP Expands Line Of CAD/CAE Output Devices

Hewlett-Packard has introduced the HP 7600 Series, Models 240D and 240E electrostatic plotters.

These low-priced, high-throughput plotters produce typical architectural/engineering/construction (A/E/C) and mechanical-engineering drawings in less than one minute. They offer four times the resolution of current

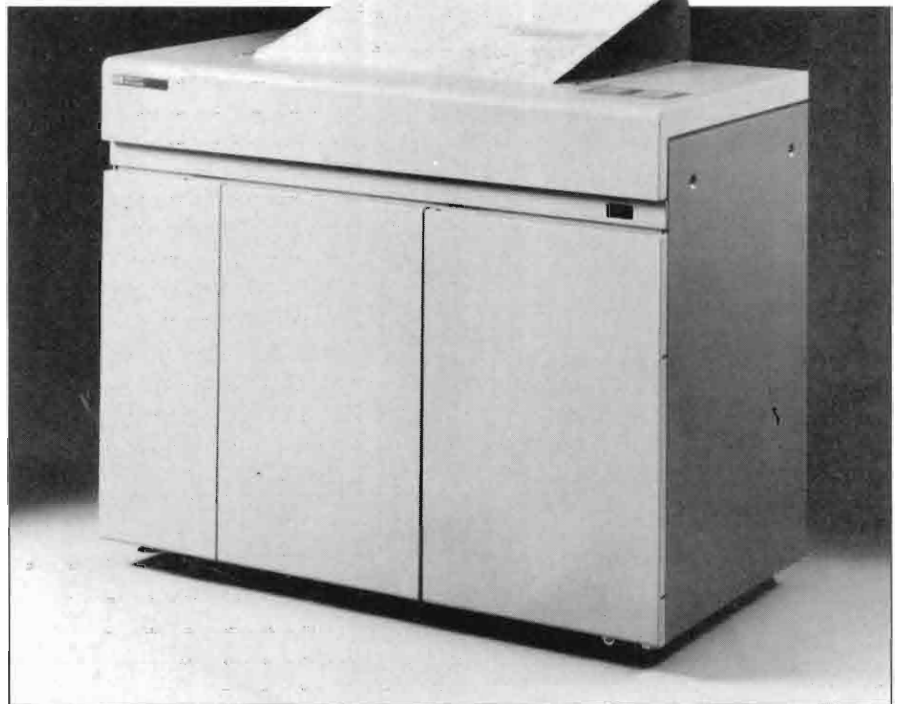
low-priced electrostatic offerings and have pen-plotter quality.

Model 240D is believed to be the only electrostatic plotter under \$23,000 to feature 406-dpi line resolution, the standard for quality in electrostatic technology. It creates plots on "D" size media. For "E" size output, the HP 7600 Series, Model 240E, is available under \$28,000.

The HP 7600 Series features built-in HP-GL, making it fully compatible with many existing software packages. The new electrostatic plotters also include HP-GL/2, which will offer greater overall performance for the future. Leading software vendors will support HP-GL/2. The two plotters join an existing line of HP hardcopy devices for engineers and architects such as HP DraftMaster and HP DraftPro plotters, HP PaintJet color-graphics printer, HP 7475, HP 7550 and the HP SketchPro graphics tablet.

The plotter connects to a wide range of computer platforms through industry-standard RS-232C, HP-IB (IEEE-488) and Centronics-parallel interfaces.

A built-in vector-to-raster converter (VRC) with 40



The new HP 7600 series electrostatic plotters offer four times the resolution of current low-priced electrostatic plotters.

MB of storage holds up to three million vectors and off-loads the host CPU. It also provides long-axis plotting capability for aerospace and automotive applications that require actual-size plots.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory. Stop by the HP booth at the Interex Conferences.

Circle 396 on reader card

Network Systems Announces HYPERchannel-DX Series

Network Systems Corporation has announced its HYPERchannel-DX Series, a new generation of computer networking products.

HYPERchannel-DX products (\$30,000 — \$100,000) make possible networks of networks that incorporate industry standards

and accommodate different vendors' equipment, different transmission media and protocols.

The initial HYPERchannel-DX products include units for minicomputers from Hewlett-Packard, Digital Equipment Corp. and Data General; supercomputers from Cray Research Inc.; and large IBM and plug-compatible mainframes.

The HYPERchannel-DX architecture yields products with flexibility in three important areas: performance, media and protocol.

For transmission media, HYPERchannel-DX products support traffic on coaxial cable, fiber-optic cable, twisted-pair wire, high-speed telephone lines and global communication links.

In communication protocols, the HYPERchannel-DX architecture supports de facto industry standards such as Ethernet,

TCP/IP, HYPERchannel, FDDI and OSI. Contact Network Systems Corp., 7600 Boone Ave., Minneapolis, MN 55428; (612) 424-4888.

Circle 387 on reader card

ProjectALERT Provides Spectrum Support

CRI Inc. has released Version 2.0 of the ProjectALERT project management system. In addition to Spectrum support, it features streamlined cost and labor tracking, expanded modeling or "what-if" capability and additional terminal support.

ProjectALERT is available on the 3000 Series and now supports HP's 900 Series (Spectrum) computers. It also supports non-block mode and block mode terminals, thereby extending ProjectALERT support to non-HP terminals.

ProjectALERT Version 2.0 features an improved cost and labor tracking module, which has been redesigned to improve data efficiency. It also takes advantage of the improvements made to the network library module.

Enhancements to the network library module include expanded modeling and editing facilities. Users now can store multiple versions of a single project or reproduce a model project network, allowing specific networks to be used as templates for other projects.

ProjectALERT 2.0 has been repackaged to include color graphics, project management reports, micro-scheduling and optional precedence notation (activity-on-node) or activity-on-arrow scheduling. Cost and labor tracking and resource leveling remain optional modules.

ProjectALERT (\$7,500 — \$37,500 depending on the hardware and options selected) can be used independently or integrated with RELATE/3000, CRI's relational database management system, to generate customized reports or interfaces to existing databases or systems.

Contact CRI, 5333 Betsy Ross Dr., Santa Clara, CA 95054; (408) 980-9898. Stop by booths 210 and 212 at the Interex Business Conference.

Circle 397 on reader card

FANTASIA Combines DTP With HP 3000

Proactive Systems has announced the release of FANTASIA, which combines desktop publishing (DTP) technology with HP 3000 software and applications so users can

Continued on page 98.



HYPERchannel-DX from Network Systems makes "networks of networks" possible.

DOES NIGHTLY BACKUP GET YOUR SYSTEMS DOWN?



**ANOTHER FIRST
FROM HI-COMP**

*In 1983, HI-COMP brought you the first high-speed DBSTORE replacement;
In 1986 HI-COMP brought you the highest density STORE facility;
In 1987, we brought you the first totally unattended backup capability;
Earlier this year, we brought you the first backup alternative operating under both MPE and MPE-XL;*

And now...

HI-COMP is pleased to bring you the first (and only) Network Backup Facility available only for the Hewlett-Packard environment.

HIBACK/3000's Network Backup Facility, lets you perform store and restore functions over DS/NS/LAN networks and it does it in ways never available before:

- **HI-SPEED REMOTE STORE/RESTORE SUPPORT FOR: TAPE, CARTRIDGE, SERIAL DISC, PRIVATE VOLUME AND DISC**
- **HI-DENSITY DATA COMPRESSION PRIOR TO NETWORK DATA TRANSFER**
- **HI-EFFICIENCY UNATTENDED OPERATION ON ALL SYSTEMS**

Even if you don't have several hundred systems, like some HIBACK/3000 users, you can take advantage of HIBACK/3000's hi-performance features:

- Hi-density data compression for backup and network transfers can save you over 70% in media and line transmission costs.
- Uninterrupted shared database access during store lets you backup databases while nightly reports are running or users are still online inquiring.
- Unattended backup to standard disc drives lets your systems keep working while your staff is resting, by using available freespace as a temporary or permanent backup media.
- Hi-speed combined database and file backup replaces DBSTORE and MPE STORE with a single high-speed facility.
- Full compatibility with all HP storage devices extends the useful life-span of what you've got installed today and lets you take advantage of what comes out tomorrow.
- Direct-selection restore lets you retrieve the individual file you need directly from the reel it's on.

- Local restore option allows you to restore files across accounts without concern whether the creator exists or not.
- Extended INCLUDE/EXCLUDE facility allows multiple includes and excludes in an indirect file.
- Job Control facility allows you to automate recovery and warning procedures during backup.
- Extended error recovery allows you to skip bad sections of tape and to restore all files which are physically readable; and will insure that all files stored prior to a physical write error or power failure are saved.
- Extended tape validation allows you to check store tapes and to list which files are on each reel, in case you loose your store listing.
- Parallel Store/Restore with simultaneous use of multiple units and mixed device types, can drastically reduce backup and reload time.
- HIBACK/3000 files may be restored to any HP 3000 through our remote restore module.

So whether you have 1 HP 3000 or 100, call today and let HIBACK/3000 start saving your organization time and money!!!

CIRCLE 135 ON READER CARD

See us at Interex Booths 1101 & 1102

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Telefax: 040/6 31 60 04
Teletex: 26 27-40 39 60

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For all other countries contact HI-COMP for the supplier nearest you.

UNIX[®] Applications You Need Most

One software package brings more to UNIX environments than empty promises. The SAS System.

The SAS System is the #1 choice for data analysis. The SAS System is the all-purpose answer for researchers, statisticians, students, business analysts, and applications developers. The SAS System is backed by an industry leader.

Now we've teamed with Hewlett-Packard to bring you the SAS System under HP-UX. That means you'll get software that's powerful, productive, and proven for the applications you need most. On everything from single-user workstations to multi-user systems.

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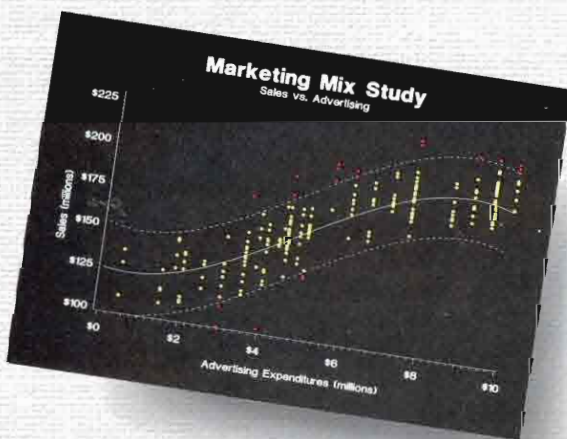
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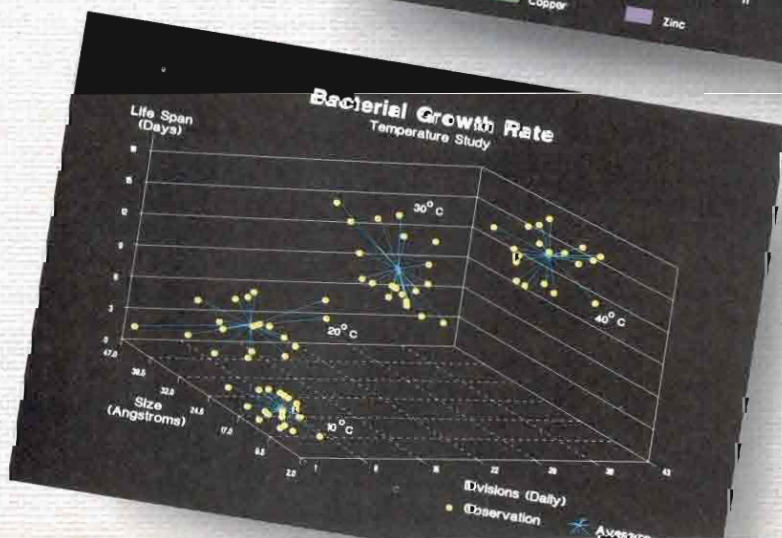
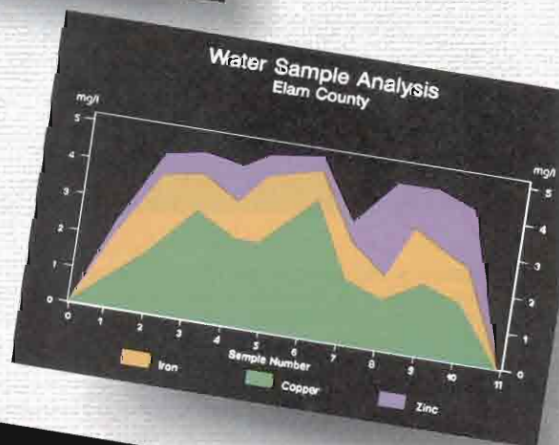
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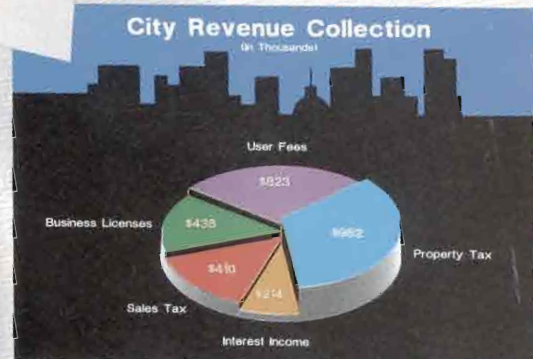


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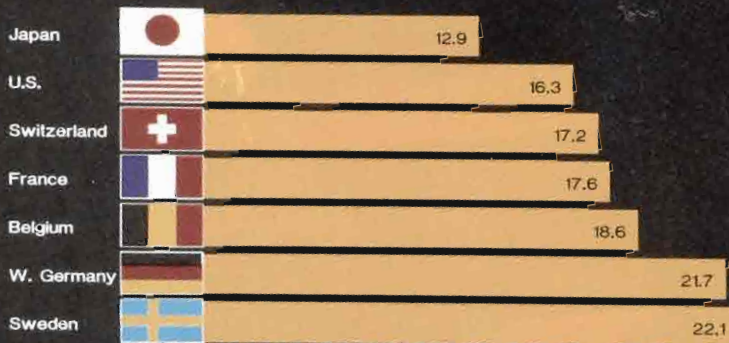
Revenue Collection Comparison
1986 vs. 1987
(In Thousands)

SOURCE	1986		1987	
	Value	%	Value	%
Business Licenses	\$420	15%	\$438	15%
User Fees	\$792	28%	\$823	28%
Property Tax	\$847	34%	\$982	34%
Interest Income	\$207	7%	\$214	7%
Sales Tax	\$397	14%	\$410	14%
Total	\$2,763	100%	\$2,867	100%



International Demographics Study

(% of Population Over Age 60)



Select Variables

Position the cursor and press ENTER to select char. variables.

After selecting, use END to close window.

Comments ----

By selecting the VAR option on the primary menu, your output will look similar to that appearing below:

CHAR variables:

Comments ----

Data set:

Name	Type	Len	Label
INVOICE	NUM	4	
DATE	CHAR	7	
DEPT	CHAR	25	
EXT	NUM	4	
ITEMPRD	CHAR	25	PRODUCT
PRICE	NUM	8	
ORDERBT	CHAR	25	
SATOLS	CHAR	7	DELIVERY
CHAL	NUM	8	
QUANTITY	NUM	4	

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The HP DeskJet printer is aimed at users of low-impact dot-matrix printers who would like to upgrade to laser-quality text and graphics for typical office applications.

The DeskJet Takes Off

Sounds Of Silence

[By Don Person]

I've really grown to hate the racket of dot matrix printers buzzing and whining along in the background of my life. It's a sound that's become so pervasive that no complete studio or motion picture sound effects library can be without it. I hate hearing it on the phone, and I hate making it in the background on my end of a conversation.

So okay, you say, switch to a nice silent LaserJet. Though I like the LaserJet, I only want to use it where there is adequate ventilation. One Jet exhaust in a small space is bad enough, but several is too much. I'm told you can miss it if you smoke or wear perfume. I do neither and the ozone, fuser and who knows what else just plain smell bad.

In any event, the space where I do most of my personal printing always has been big enough to afford, but too small for my comfort. Lasers are okay in the office where we have air conditioning, air exchange and space, but not so fine in the small enclosed space where I try to live with a half-dozen different printers already. So I reconciled myself to living with the din of dot matrix and the irritation of impact printers for years. HP's first low-cost inkjet printer, while acceptable, needed special paper for longer than it took me to fall in love. By then I'd forgotten about it.

Then the DeskJet landed and my old doubts turned to amazement. I'd seen the press kit. It's got a "you be the judge" quiz — four pages of the same sample letter from the "Bearing International Company" with graphs imbedded. In the HP printer comparison test, you pick which pair of pages were output on the LaserJet and which

two were done on the DeskJet. The big difference? The DeskJet squirts ink instead of light. With decent paper and a 20-point typeface, you need to look carefully to tell the difference.

What a surprise! The older ThinkJet hadn't prepared me for the dramatic improvement HP has made in personal inkjet technology. Admittedly, the samples were tailored carefully to show optimum sharpness for the DeskJet, but even the abused cartridge in my unit came darned close to the test samples. I'd say the print quality is easily 85 percent or better than that of the LaserJet.

With this introduction, HP finally has cleared a major hurdle that was critical to the success of a new generation of inkjet printers. The big problem all along was how to ensure high cartridge reliability while preserving a quality image using plain paper. Special paper had a definite effect on the short life and rapid demise of thermal print technology. This was the only real shortcoming of the original ThinkJet.

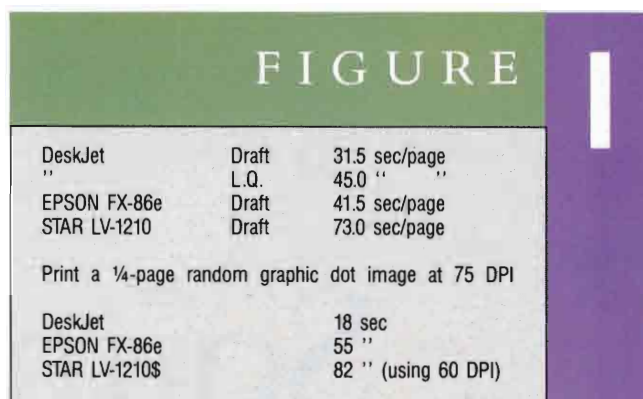
Thinkjet and Quietjet cartridges have been improved, too, so if you were troubled by marginal quality before, these older products could merit a fresh look.

My first experience with the new cartridge and plain copier paper was overwhelmingly positive. It's true that you can smudge the paper if you don't give the page a minute or two to dry fully, but if you're patient, the wait will be worth it.

HOW ABOUT PRINT QUALITY? Until you look closely or use a magnifying glass, the biggest difference between LaserJet and DeskJet printing is speed. You'll be happiest with fonts in the 10- to 12-point range or larger. If you want to use the really microscopic four-, five- or six-point fonts, you better have mighty good paper. The slight amount of bleed along the grain that you get tends to show with the very small typefaces. The five- and six-point Times Roman and Helvetica proportionally spaced typefaces are unacceptably fuzzy on ordinary copier paper for this reason. They rise to an almost okay rating when using a more expensive light clay-coated stock.

As with earlier inkjet technology, you may need some experimenting with paper suppliers to achieve peak performance. Nonetheless, the DeskJet is plainly better by far than what I saw from the first-generation ThinkJet.

Speaking of speed, the unit is rated at 240 CPS in draft with a letter-quality rating exactly half that. I did notice some odd starts and stops in the process, apparently as the unit prepared the dot image for the next group of lines on the page, but no pause was excessive.



I compared the time it took to print several documents and listings I had. For the test, I used an Epson FX-86e rated at 240 CPS and a Star LV-1210 rated at 120 CPS for the obvious reason that these were machines with ratings similar to or the same as the DeskJet's. I used the default Courier typeface in the DeskJet to print the same 12-page, 4,000-character-per-page documents on all three

printers. I timed the DeskJet for draft, letter-quality and dot graphics. I ran each test three times and compared the results.

IN ADDITION TO memory that's used to build output, there's a 16-KB input buffer (the same as the FX-86e's) that's bigger than it seems because this block is reused as fast as information is transformed and moved to the bit-image output buffer. An oddity I noticed seemed to be that the unit will pause during output to receive fresh data on its Centronics input port. At the start of a "dump," a long steady burst of input tends to delay the start of printing: quirky, but in line with what I think is a busy, single Z-80-style microprocessor inside.

I should note that the peculiar little pauses and paper load/unload time on the DeskJet significantly detract from overall performance. If we also could factor out DeskJet threading times, we'd gain almost four more seconds per page. There seems to be another time penalty for included graphics, but it's slight. There was no significant difference in timing between any of the runs on a given machine. The results are shown in Figure 1.

You won't want to use the DeskJet for high-volume production, but for a single copy of a letter or short document, you hardly can tell the difference in printed quality — and all this while letter-quality printing proceeds nearly as fast as the best dot matrix draft. This applies to reproduction of the IBM-PC extended graphics character set, too.

I was startled to find that letter-quality printing was nearly as fast as draft. When comparing the DeskJet to an Epson printer with the same rating in CPS, the DeskJet is 25 percent faster, without factoring in the extra time needed for page loading. Pretty spiffy.

YOU CAN CONTROL horizontal pitch as allowed by individual fonts. Vertical lines per inch (LPI) can be set over a wide range of integer values and therefore change the alpha image. I appreciate several of the little details, too, like being able to specify just about any value for LPI, or the way you simply can step through font cartridge features



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from the front panel while viewing what's happening with a neat little multiLED control panel display. You'll know they had letters in mind when you see how easy it is to slip an envelope into the production stream. It's as quick and easy as the LaserJet.

UNLESS YOUR IDEA OF PORTS is the place where you tie up the yacht, harbor no fear about docking the Jet on your desk. It features standard RS-232 and Centronics Parallel inputs. To choose which is active, set dip switches through twin openings in the front of the machine. Top speed for the serial input is 19200 baud, while the slowest rating is 1200 baud. The diagram for the two switch banks is quite clear, once you find it. The copy in the device lid is by far more convenient. In fact, if you can switch off the signal lines to the ports, you can leave two computers connected at once. These are a few of the nice touches.

I shouldn't have to talk about construction quality, but I can't resist taking new equipment apart. Under the covers, we have a design engineered for light weight and fast assembly, yet constructed quite robustly with easy access. Given the several subassemblies that make it up, I think I could assemble one in about five minutes.

All the components are quality parts, and there's no doubt who made it. Inside it's like ASIC heaven, with all of the half-dozen chips bearing HP custom part numbers. The main board is dominated by a huge HP ASIC, with some more support from others of the same tribe. A four-MHz crystal points to a master clock of either two or four MHz, and one suspicious Zilog part makes me think that we have a Z-8000 or something similar in charge of operations.

The power supply board is made by Yokogawa and seems a bit cheesy when viewed next to the top-notch glass epoxy boards that HP built. The power transformer is a big hulk of iron bigger than a wall duplex outlet with low-voltage AC brought into the DeskJet's cabinet from underneath.

This job was done right from start to end. Not everyone in our micro world has standardized on HP-PCL. However, most of the community usually does expect compatibility with EPSON or IBM ProPrinter escape sequences for dot-matrix work and Diablo/Xerox commands for daisy-wheel printers. Recognizing this, HP provides us with an Epson emulation cartridge that's done well enough to permit dumb-dumb software with built-in expectations of the Epson command set to be right at home. This is no lame pretense either. I bor-

rowed a cartridge from a dealer and found that even graphic dumps proceeded flawlessly with this option.

There's a little dodging in one specification area. Nowhere could I find reference to print cartridge life expectancy. Having emptied out a pair of them, I can put a handle on it for you: Expect about 800 pages in full letter quality and probably double that if all you do is draft. A replacement cost of about \$15 per cartridge stacks up extremely well against the \$90 you pay for 2,000 or so LaserJet copies.

And now for the weird features. Let's talk about skip-over-perforation. This printer is a sheet-fed device, so I was puzzled by the inclusion of such a control on a dip switch. I'm still not sure why it's there. When "skip" is off, continuous printing comes out as you'd expect with a zero top margin. When this is on, the DeskJet fails to correct the number of lines per page in continuous printing, so you get little joke pages after each full page, starting with a two-line page and adding two lines for each full page you print. It's a dumb waste of paper and, while I'm sure there's a program manager who will claim otherwise, this is a foolish oversight that should've been predicted and corrected.

ANOTHER MYSTERY IS COLUMN overlap. If overflowing the page starts a new page, then what does overflowing the right margin do? On many other printers, the line overflows to the next printable row. Not on the DeskJet. I set a left margin of 16 and a right margin of 32. When I sent 96 character lines, the first 16 characters printed and all the rest of each line went to never-never land. This looks like a subtle goof to me.

A minor annoyance involves the owner's manual. The new style books put out by HP bug me. Somebody over at Mom's Place keeps confusing what belongs in the appendix with what constitutes general information of interest to everyone. For instance, the book correctly starts off with a fine pictorial section on physical setup and cartridge installation. It's very clear and complete as far as it goes, although the summary inside the lid is just as simple. Then they fall off the deep end with 146 pages of product- and hardware-specific "appendix stuffer" material that precedes more important details like the meaning of individual DIP program switches, the level of HP-PCL supported and font-specific information. This rightfully belongs in the main body of the text as Chapter 2, but ends up in the appendix instead. The HP-PCL summary and the all-important switch descriptions, by the way, aren't found until you get to the last 40 pages of the book.

My tip to HP: Improve the book. Start by renumbering the huge Sections 2 & 3 and call it Section 8. Then Section 4 will assume its rightful place as the second chapter. Then move the original Section 8 forward to Chapter 3. Refer people to the index in the back only for installation tips on specific hardware and software. Sections 2 and 3 feel like a boring plug for software that not everyone may care enough about to see in

the front of the book anyway. It only gets in the way when you have DeskJet-specific questions later on.

Nowhere are you told in the book nor in the plug-in font instructions that proportionally spaced fonts can't be switched out of proportional mode, HP-PCL command set information to the contrary.

Information about paper jams and ink cartridge care is in a section called HELP. HELP is buried in the middle of the chubby little tome. This would be a better book if it had a more complete help section located in a higher visibility spot. It looks like it was jammed in at the last minute without benefit of edge numbers. That aside, the manual is complete, but organized poorly with an even worse index. Fix the order and expand the index, and I'll be happy.

Gripes aside, lets summarize what the DeskJet is really good for:

- Quiet, odor-free printing with moderate speed.
- Low acquisition and operating costs, meaning less office sharing.
- Improved print quality compared to dot matrix buzz-blasters.
- High compatibility with the installed base of LaserJets due to common support of HP-PCL.
- All the design hallmarks of HP reliability.

The DeskJet is a product that deserves recognition on a number of counts. It gets rid of noise and odor pollution. In the process, it makes affordable quality printing available to

more people than the LaserJet does. Keep in mind that at half the initial cost and a fraction of the operating expense, and resting on a small footprint, many more good folks in the office environment can fit one into their budgets. Though tagged with a \$995 list price, one local outfit is already willing to sell it for \$599. This is within striking range of noisy dot buzzers now! It makes sense for any job that a LaserJet can do, but where high volume isn't required.

The DeskJet represents some of the very best in HP corporate cultural achievements. Unlike the heart of the LaserJet, which simply builds on core Japanese manufacturing, the Vancouver Division has managed to pump the blood, excuse me, the ink using technology and hardware all developed, improved and now perfected on our side of the Pacific.

Cheap to buy, good looking, whisper quiet on the job and cheap to run: In so many ways it is the ideal office correspondence tool. A first-hand look probably will make up your mind on that score, but most of all, the DeskJet gives your ears and nose a break. That little service is priceless to me. I highly recommend this product. —Don Person is an independent consultant based in Albany, NY.

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Making The Switch to ELECTRONIC FORMS

Hughes Communications And The Community
Redevelopment Agency of Los Angeles Search For A
Simple Forms Management Environment

Information processing — the rapid transmission and absorption of vital data — is the make or break ability of competitive companies in the information age. Fourth-generation languages have added to the users' ability to extract needed data from databases; however, after the data reaches the proper desk, the recipient still must analyze it and extract its meaning.

Businesses have used many methods to organize and emphasize complex data. Forms have long been a useful way to present data, but until recently, businesses that wanted to use custom-designed forms were forced to spend thousands of dollars designing, producing and storing them.

In the last few years, many companies have discovered that computer-generated, electronic forms confer all of the advantages of custom-designed forms with the ease of the computer database.

Electronic Vs. Pre-Printed Forms

FORMS ARE DYNAMIC action documents that grant authority, specify contracts and itemize tasks. A streamlined form quickly can highlight important information that

otherwise would drown in the "sea of numbers" of the monthly report. Trends are more easily spotted, and the bottom line stands out sharply. In addition, a well-designed form can function as a document standard, simplifying the creation of complex, corporate and legal papers, and ensuring their adherence to a uniform language.

Historically, most companies have used preprinted forms designed either by themselves or purchased from a vendor. In addition to the overt cost of buying, keeping inventory of and storing these forms, there are three hidden costs:

- *Obsolescence.* Whenever a form is redesigned, the company must scrap and replicate its entire inventory of the old form. Murphy's Law suggests this always will occur just after the company has laid in a year's supply. Electronic forms are printed only as needed; replacing the old purchase order form with the new one can be done in moments.

- *Variation.* Any change in the production cycle requires the tremendous job of changing all of the paperwork. With an electronic form, the moment the change becomes effective, the new form is the only one available.

- *Inefficiency.* Often, the inefficiencies of a new form only become apparent after it has been put in use. Then it is too costly in time and materials to refine or replace it. With an electronic form,

[By Dafydd ab Hugh]

changes can be made easily, and without damaging or deleting the underlying data.

Very simply, an electronic form is a set of instructions stored in a file in the host computer that tells a laser printer how to print an image of the form. Data from a database file is merged with the printer instructions and the completed form is printed at the laser printer (see *Figure 1*).

Electronic forms also offer ease of data entry (without worry as to alignment of text as with a typewriter or word processor) and allow the user to arrange data in logical formats before it is printed.

Two examples of businesses making the switch to electronic forms are Hughes Communications, a division of the giant Hughes Aircraft Company, and the Community Redevelopment Agency of Los Angeles, a small government agency charged with commercial revitalization of depressed neighborhoods.

Both Hughes and CRALA use forms to generate and update contracts and purchase orders (see *Figure 2*). Each uses an integrated forms-management environment, consisting of a central HP 3000 computer, individual HP LaserJet II printers and an electronic forms-design package, all controlled by a fourth-generation language.

Both Hughes and CRALA previously had tried the more

Very simply, an electronic form is a set of instructions stored in a file in the host computer . . .

traditional, large-sized forms-design package produced by Hewlett-Packard: IDS Forms with the *Interactive Formatting System (IFS)*. *IFS* was developed to run on the high-cost, high-volume laser printer, such as Hewlett-Packard's Series 2680; however, with the advent of smaller, less expensive laser printers and the decentralization of in-house printing, the restrictions imposed by such a large system became unsatisfactory for both companies. They sought a

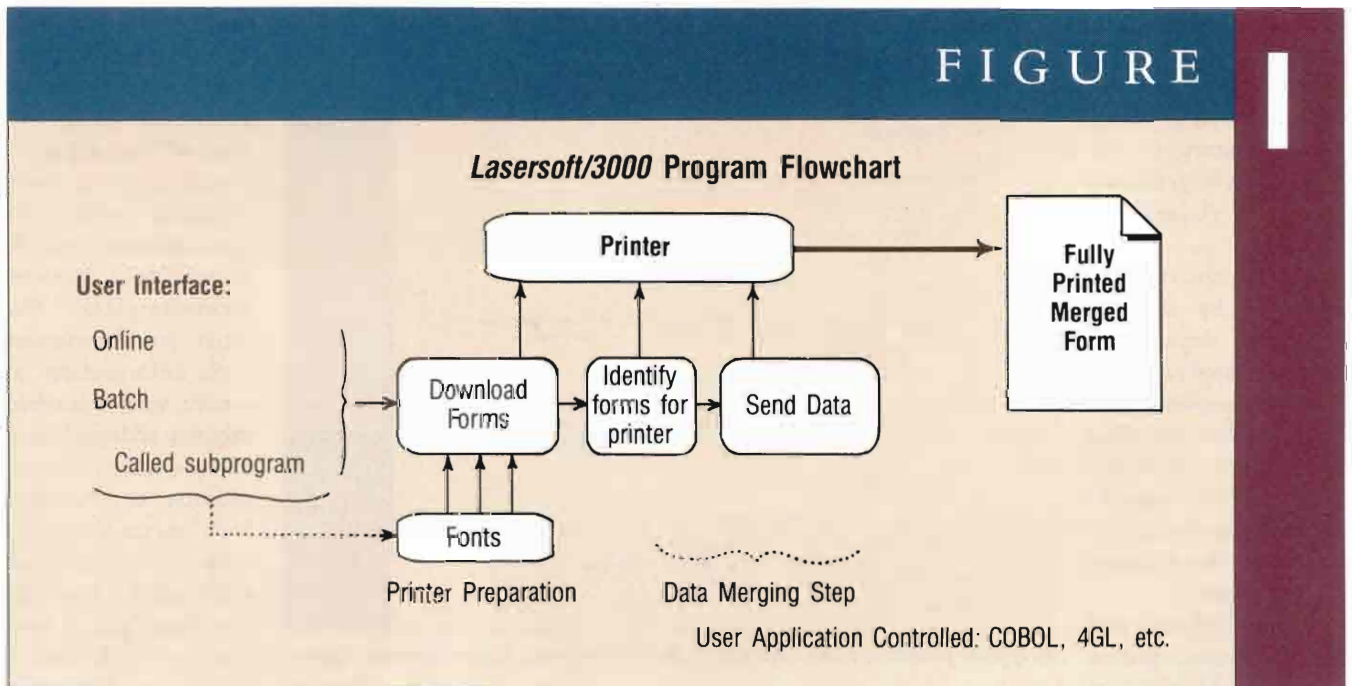
simpler and more versatile solution.

"It [*IFS*] isn't a bad package," said Carla Gersh, CRALA systems development manager, "but it's very much limited to large laser printers."

"You're probably not going to get a \$90,000 printer for every department," added John Scoville, systems analyst at CRALA. Hughes and CRALA have achieved systems integration through the use of a fourth-generation language. A 4GL is not a programming language; it is an entire applications environment. The user can query to a database, rewrite a report, enter data, calculate a spreadsheet and print out a condensed history of the project all from the same program.

The 4GL coordinates between applications programs, data files, terminals and printers. The advantage of a fourth generation language is that the user communicates to the 4GL in a natural, English-like language, and the 4GL itself generates the

FIGURE



proper operational commands.

Although they have chosen different 4GLs (Hughes uses *PowerHouse* from Cognos and CRALA uses Infocentre's *Speedware*), both groups have selected the same electronic forms package: *Lasersoft/3000* from Business Systems International (BSI), which is designed for use with the smaller, personal printers of HP's LaserJet series.

Hughes communications is a vendor-oriented company, and much of its daily business is handled through complicated, multipage forms. Hughes must be able to generate many different forms from the same basic data, including contracts, billing notices, purchase orders and interdepartmental reports. A 4GL environment was found to be ideal for this sort of complexity.

A secretary or data-entry operator inputs the data using a standardized form on the CRT screen. The data resides in a project file on an HP 3000 where it is available to the managers of every involved department. They can extract it and display it, filtered through alternative forms, highlighting the particular aspect of the information currently needed.

The data can be combined with spreadsheet calculations from *PowerPlan* and diagrams from *PowerGraphics*, both a part of *PowerHouse*. The forms-management is controlled by *Lasersoft*, which is used to design the underlying forms, and a history of the project can be generated using *PowerHouse Architect*.

After the action is approved by the appropriate department heads, *Lasersoft* can combine the completed form with the data and print it on the department's LaserJet II to be sent to a vendor, customer, or another department within Hughes.

Sam DeLeese and Barbara Austin, systems analysts at Hughes, in-

tend to fully automate the process so that every department throughout Hughes Communications can enter data through a standardized format, route it to the approval authority to attach the signature logo, print out the form and send it as a completed document to procurement.

A prime benefit of a 4GL electronic-forms environment is that it centralizes control of data entry and storage. Since these procedures are standardized throughout the company, departments can interface more cleanly and with less secretarial time spent "translating" information from one format to another.

IN CONTRAST TO HUGHES' data-routing forms, the folks at CRALA also use *Lasersoft* to design and print out two types of purchase orders: complex, flexible vendor purchase order contracts and line-item purchase orders.

CRALA uses a library of standard paragraphs that can be called through *Speedware*. The same library can include special

data, such as names or dollar amounts, which *Speedware* will incorporate into the paragraph at runtime.

This text-contractual purchase order form is created from the same data file as the line-item PO form they also use. This demonstrates the desirability and feasibility of filtering the same data through different forms.

Their POs are assembled from two types of "logical pages," a term used by many electronic forms packages, including *Lasersoft*, to refer to a specified form-template. The "first page" contains such information as vendor, vendor number, shipping address, billing address, and so forth, in addition to the data. Each "succeeding page" includes the purchase order number from the first page and a continuation of the data.

To an electronic

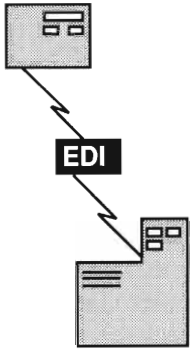
FIGURE 2

COMMUNITY REDEVELOPMENT AGENCY/ LOS ANGELES 354 SOUTH SPRING STREET SUITE 500 LOS ANGELES, CALIFORNIA 90013 (213) 977-1600		PURCHASE ORDER CONTRACT	
Vendor Copy VENDOR: Purchase Order Production Run 354 S. Spring St. Los Angeles, CA 90013 ATTN: Purchasing		Note: The Purchase Order Number must appear on all packages and correspondence regarding this order. Page 1 of 8 Number 88-0395 Date Ordered 08/20/87 Placed With Purchasing (213) 977-1838 Account Number 33-7151	
SHIP TO: The Community Redevelopment Agency 354 South Spring Street, Suite 300 Los Angeles, CA 90013		F.O.B. N/A Payment Terms ... Net 30 Vendor Number 1101 Contact Mighty House	
BILL TO: CRA/LA 354 South Spring Street Suite 500, Los Angeles, CA 90013		Delivery Date N/A Purchasing Manager Peter Pan Cost Center Purchasing Requisition Number 99-88-001	
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This order, including the terms and conditions contains the complete agreement between CRALA and Vendor for the goods and/or services specified by this order. This order may be accepted only upon the terms and conditions specified on the attached exhibit unless otherwise stated on this order.		Sub Total: ----- Tax: ----- Freight: -----	
I have read and fully accept without reservation this Purchase Order Vendor Signature _____ Date _____		Total: ----- XX/XX	
Not Applicable			

A typical purchase order contract of the Community Redevelopment Agency of Los Angeles.

EDI ?

THE COMPLETE SOLUTION FROM PERWILL

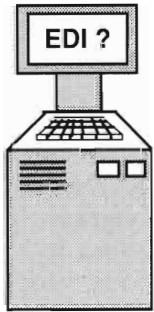


WHAT IS EDI ?

Electronic Data Interchange is the computer - to - computer exchange of intercompany business documents and information

* Perwill has the knowledge and experience to assist in understanding EDI concepts through:

- Education and Training
- Consultancy
- Standards advice

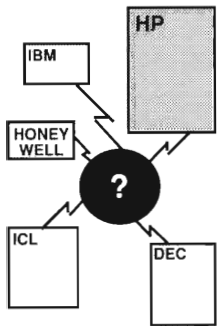


HOW DOES EDI AFFECT EXISTING SYSTEMS ?

Current applications require a batch interface to link into EDI translators

* Perwill offers experience in modifying existing or creating new batch interfaces

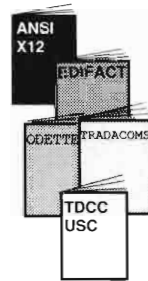
* EDIFORM/3000 from Perwill maps batch interfaces to EDI translators



WHAT COMMUNICATION CONSIDERATIONS ARE THERE ?

If business partners use the same hardware then standard communication protocols are available. Third Party Network suppliers support links between different machines

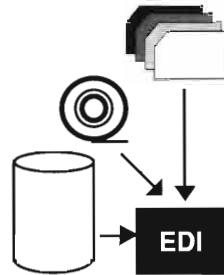
* EDILINK/3000 provides complete communications management to trading partners or Network suppliers



WHAT STANDARD SHOULD BE USED ?

Many standards have evolved from businesses in similar industries or trading groups

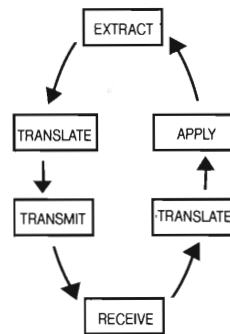
* Perwill is familiar with these standards and can advise on the best standard to be adopted



HOW CAN CURRENT DATA BE USED FOR EDI TRANSACTIONS ?

Data must be converted into the chosen EDI standard format prior to transmission. Each standard specifies strict formats for its transactions

* EDIPARSE/3000 is Perwill's multiple standards translator to convert data to and from these specific formats



HOW IS THE MOVEMENT OF DATA CONTROLLED ?

The complete EDI cycle consists of multiple stages:

- Extraction from application
- Translation into EDI format
- Transmission
- Receipt
- Translation from EDI format
- Distribution to application

* EDIMGR/3000 provides complete control and audit of the whole process

If you are considering entering into an EDI business relationship or would like to know more about EDI and how it can enhance your company's business then please contact one of our offices.

See us at Interex, Booths 1110, 1111, 1112, 1113

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CIRCLE 228 ON READER CARD

forms program, the first and each succeeding page are entirely different forms that happen to use the same data file. They are connected together by being defined as a "form group."

It took Scoville some time to learn how to group the four CRALA purchase order forms together as a package and download them. "I think that's the only place I ran into any difficulty. I wish the documentation had been a little more complete in that section. I had to call BSI to get clarification; but the person I spoke with immediately knew what to do. His assistance was right there to back us up."

Since most companies need to send multiple copies of the same form to different departments (shipping, accounting, etc.), some method has to be found to distinguish among these different copies.

One method is to store multiple copies of each form (recall that the form is the template without the data) as different files, each modified slightly to include a line at the bottom such as "Purchasing Department" or "Accounts Receivable." The whole can be included in the form group, in combination with the different types of pages, as above; the different copies and multiple pages all are properly collocated at runtime.

However, this technique involves storing many simple variants of the same basic form; and even though an HP LaserJet II can store as many as 32 forms using *Lasersoft* (the LaserJet 2000 can store up to 32,768), six copies of a few different forms with a couple of logical pages each quickly can eat up the printer's memory.



John Scoville develops a form using Lasersoft.



At Hughes Aircraft, Barbara Austin builds a form and prints it on a LaserJet II.

CRALA had this exact problem: Two types of PO (text-contractual and line-item), with two logical pages each (first page and succeeding page), times six copies yielded a potential 24 forms for the purchase order alone. Clearly this monster was unwieldy and CRALA was forced to develop a more creative solution.

Rather than print slightly different forms on the same paper, they chose to print the same exact form on different-colored pages. They buy the paper precollocated from a supplier, and simply load it into the LaserJet. "We were looking at having individual forms in different bins, but that turned out to be too costly . . . [Multicolored paper] was an inexpensive solution that avoided the multiple bin problem," explained Scoville.

CRALA's major requirement was to print locally, on the smaller, "personal" printers; this is why they finally decided to scrap the *IFS* system and go with *Lasersoft*. "At first, I said let's stay with what we've got; but that approach wasted a lot of time," admitted Gersh.

For a while, CRALA tried to interface between *IFS* and the LaserJets through *PSP+* (*Printer Support Package*) from OPT. However, *IFS* stores forms as bit maps (graphic images), and proved too memory-intensive for the 512-KB LaserJet. *Lasersoft* uses the Printer Control Language (PCL) of the LaserJet to store the form as a macro (instruction set), rather than as a graphic image. This is far less memory-intensive, and allows a large number of forms to be stored simultaneously in a relatively small-memory printer.

IFS also lacked the ability to compile variable data, which the people at CRALA needed to insert into their standard library paragraphs. They had to use a fourth product, *Text Document Processor (TDP)*, in addition to *Speedware*, *IFS* and *PSP+* in order to print their purchase orders on the LaserJet. The 4GL *Speedware* generated the data file and a *TDP* command file,

... the LaserJet Plus broke open the floodgates on electronic forms. Its more powerful processor, operating under PCL/4, was made to order ...

inserted the data through *TDP*, filtered it all through the *IFS* form file, and finally they reduced it from DCS to PCL with *PSP+*. According to Scoville, it took two months just to figure out how to coordinate between all four packages. The best they could ever get was a semiworking system that still could not print all the forms they needed.

The Theory: *Lasersoft* Develops

LASERSOFT, THE COMMON SOFTWARE at Hughes and CRALA, initially was developed as a tool to help the secretaries and nontechnical staff use the laser printer. "We needed the capability in-house," explains Richard Armitage, vice president of BSI. *Lasersoft* was designed to simplify development of user manuals for the company's software products and custom applications and print them on the laser printer.

Initial requirements for *Lasersoft* were defined by technical writers who were using the laser printer. As programmers and analysts were added to the team, they realized the potential for an electronic forms package. In March 1984, BSI released the first version of *Lasersoft*, intended for use on an HP 3000 with a Xerox 2700 printer. A version for the original HP LaserJet quickly followed.

"It was *Lasersoft*, but we were doing through software on the host computer what should have been done in the printer," said Bill Tuminaro, BSI product development manager. The problem was that PCL/3, the printer control language of the original LaserJet, simply was not powerful enough.

However, the LaserJet Plus broke open the floodgates on electronic forms. Its more powerful processor, operating under

PCL/4, was made to order for a program-environment like *Lasersoft* — literally. While the LaserJet Plus was still under development, BSI was visited by Roger Archibald, then the LaserJet Plus project manager at Hewlett-Packard. He and his team described the new printer and solicited input about desirable capabilities.

The new forms package, *Lasersoft/3000*, is designed to run on all three PCL/4 printers: the LaserJet Plus, the LaserJet Series II, and the giant LaserJet 2000.

The Practice: Using An Electronic Form

THERE ARE TWO BASIC strategies for using an electronic forms package such as *Lasersoft*. They can be called the User-Controlled Mode and the Applications-Controlled Mode. In the first mode, the user/operator calls up *Lasersoft* himself and downloads all of the forms and fonts that will be used in printing; he can do this either by a batch file or by typing the commands online at the terminal. This mode is primarily used when the same forms and fonts will be used repeatedly throughout the day. They can be loaded into the printer in the morning, which saves download time whenever a form is to be printed.

In the Applications-Control Mode, *Lasersoft* functions as a subprogram, which the applications program (generally the 4GL, but potentially a programming language such as COBOL) calls to download forms and fonts as needed. This approach is useful when the particular application is to be used once or twice per day; it saves space in the printer's memory.

In either mode, the fonts may be called specifically, or they may be called by a form when the form is activated. The step of downloading the forms and fonts, whichever way it is done, is called the "printer-*prep*" stage. The next series of steps is referred to as the "data merging" stage.

Lasersoft sends the applications program the printer escape sequence that will select the proper form and ready the printer to merge form and data. The escape sequence can be sent either as a parameter-file or hard-coded to the printer itself.

Finally, the applications program sends the data to the printer, preceded by the escape sequence. There, it is merged with the form and printed using the correct fonts.

Advantages

USING THE LASERJET'S PCL rather than a bit-map, in addition to using less printer memory, means *Lasersoft* can use any terminal for design — unlike *IFS*, which only works with the HP-150 graphics terminal. A slight down side to this is that *Lasersoft* is unable to actually display the form on the terminal, which may make it hard to visualize

a finished form in the design stage. However, as Armitage explained, "For most forms, the graphic image on the terminal is not sufficiently precise to adequately display the detail of the form."

Lasersoft/3000 turns this into an advantage by being able

Both the Hughes and CRALA users seem far more satisfied with *Lasersoft/3000* than they were with *IFS*.

to print draft versions of a form (with or without data) overlaid over a measuring grid.

"The grid mode supports 10-pitch, 12-pitch, or 16.6; six or eight lines per inch; portrait or landscape mode," said Tuminaro. This mode makes it relatively easy to design a form by hand on a blank grid and then determine the desired line and column for very box or block of text by simply counting. It also is possible to situate items between grid lines.

Both the Hughes and CRALA users seem far more satisfied with *Lasersoft/3000* than they were with *IFS*.

"The purchase order form we designed with *IDS* and *IFS* took months to create, not counting merging the data," declared DeLeese of Hughes. "I started creating the PO form with *Lasersoft* and was finished and merging it with data in a few days."

John Scoville of CRALA agreed. "I found it a lot easier to change the form [using *Lasersoft*] than with the *IFS* product. In HP's package, you'd have to literally get in and delete the old box and add a new one to change it at all." Within a single week, Scoville had designed all of their purchase order forms and completed the interface between *Lasersoft* and *Speedware*; *TDP* was no longer needed.

Added Barbara Austin of Hughes, "Once you create a form [with the HP system], you don't want to change it in any way. With *Lasersoft*, I feel freer to change it and I can use any terminal. It's just an easier product to work with."

An amusing incident at Hughes pointed out the need to develop a forms-management consciousness. As more departments and individuals access the data, forms and printers, more attention must be paid to routing and precedence; otherwise, data collisions can occur.

As a case in point, DeLeese and Austin both tried to download forms to the same laser printer from different departments, each unaware of the other. Because they had each referenced the form as "form 1," DeLeese's form was overwritten by Austin's. When DeLeese printed his data, it appeared on Austin's form. They reloaded and the same thing

happened in reverse. This mix-up continued several more times before they caught on.

Hughes eventually devised a forms-management scheme wherein employees who will be sending forms to the printer are assigned certain form numbers, enough to cover the forms they will be using. When they download a form to the printer, they must use one of their own numbers in order to avoid colliding with anyone else who may be printing simultaneously.

At Hughes, the primary use of custom-designed forms is still to route data to the customer, to vendors, and in-house. According to DeLeese, his department does not have the luxury at this time of developing exotic, new uses for custom-designed forms. "All we're doing is automating forms generation that we used to do before by hand . . . taking the tedium out, all that manual stuff we used to do. We're trying to bring ourselves out of the Stone Age.

"But the more our user systems become aware that we have this ability, that we can create forms and merge data, the more requests we'll get," he added.

John Scoville agreed with DeLeese's assessment. He is currently developing a form for a "blanket release project contract," a long-term contract with a vendor whereby a certain amount of money is set aside to be released over a year or more as services are performed. He also is composing a personnel evaluation form that will be sent to supervisors and managers to fill out about their employees. This is expected to greatly speed the performance evaluation process.

"As more departments get LaserJet IIs, more and more of our applications will be done and designed through the *Lasersoft* system," affirmed Scoville. "When we finish a project, there's always another project to move into." He smiled whimsically as he recounted a recent use of electronic forms design that BSI had probably not considered.

"One of the guys who was learning both *Speedware* and *Lasersoft* manages a little league soccer team. He used the system to print up a soccer field with the starting line-up of all the players on it. It's been a tremendous software experience for us," he concluded. —*Dafydd ab Hugh is a free-lance writer based in Los Angeles.*

IFS

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PowerHouse

Cognos Inc.
2 Corporate Pl.
Peabody, MA 01960
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Lasersoft/3000

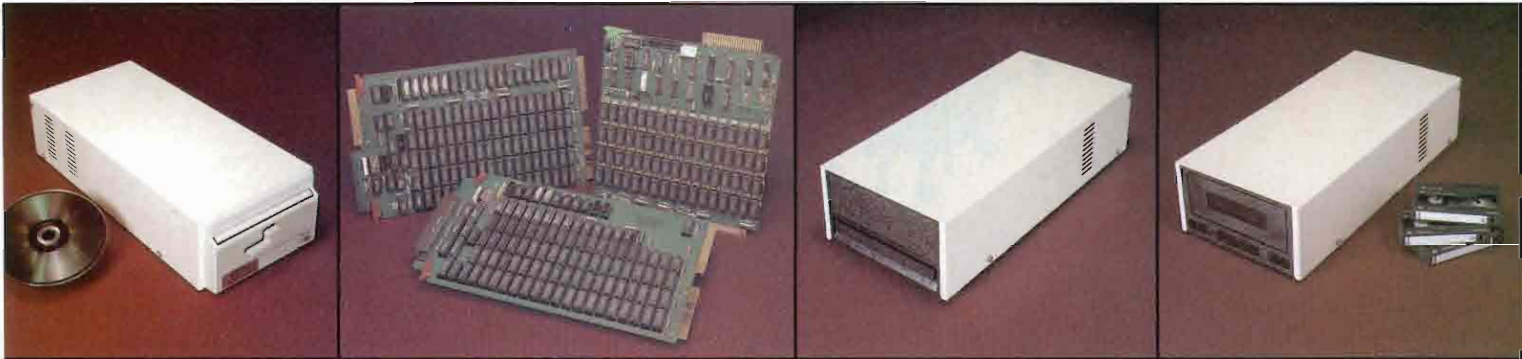
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CIRCLE 234 ON READER CARD



Where Is The Technology Going?

COLOR ON YOUR DESKTOP

[BY REBECCA HANSEN]

Desktop publishing has made typesetting — once an esoteric craft belonging to specialists — available to just about everyone: writers, engineers, product managers, financial analysts and support staffs. In fact, typography and page layout are quickly becoming simply another set of tools, as convenient and easy-to-use as word processing, spreadsheet or database tools.

Can you imagine also having everyday access to tools for working with color? You won't have to imagine it for long because color — esoterica for most of us today — is following the trajectory of type, and it's going to land squarely on your desktop.

First Came Typography For Everyone

LOOKING AT TYPE as a forerunner, we can see just how much and how fast things are changing in print communications. It was only five years ago that you had very little choice in regard to type. In fact, you had two choices. You could print your document on a dot matrix printer using a monospaced type font, or you could send it out to be typeset by a vendor or an in-house service center. For most documents, you chose not to typeset because the cost — not only in dollars, but in time and the complications of the process — outweighed the benefits.

Desktop publishing has shifted that balance. It has reduced the cost of typesetting. You no longer have to pay a specialist to do your typesetting for you. Nor do you have to deal

with the complications of traditional typesetting systems and processes (markup, coding, pasteup). You can set type yourself using inexpensive hardware and easy-to-use software.

Why not produce manuals, reports, lists of specifications and overheads with attractive, proportionally spaced typefaces, provided we can do it without much expense or fuss? Why not gain the benefits of compactness, readability and communication impact?

These benefits are increasing, since desktop composition and pagination — as crude as it was initially — is rapidly im-

proving. Using the better desktop publishing packages available today, you not only have access to proportionally spaced fonts, but access to the finer aspects of page composition (how the type is set), including good hyphenation and justification and control of intercharacter and word spacing. Today's better systems, in fact, are beginning to close the gap between desktop publishing and expensive commercial systems.

Thus the benefits are growing and the cost of these benefits is decreasing. As the balance shifts, an ever wider

[HALFTONES]

Four-color process is basically a multiplication of the halftone method used to print black-and-white photographs. Printers and offset printing presses basically print solid colors — the ink is either there or it's not. Thus, they cannot reproduce the infinite range of gray tones in a black-and-white photograph by varying black ink density, nor can they print a sufficient number of gray color inks, because even the largest offset printing presses print only 12 to 16 colors at each pass through the press.

To reproduce continuous-tone originals, therefore, we have to resort to a process called halftoning. A halftone fools the eye into seeing grays by printing the image as an intricate pattern of dots of various sizes. An area where large dots are printed appears darker, an area with smaller dots appears lighter, and an area where dots are so large they overlap appears solid black.

In the same way, because printers and offset printing presses cannot actually print the almost infinite range of colors that appear in a continuous-tone color photograph, we have to fool the eye into seeing all of these colors. We do it by printing four halftone screens (at a different angle so they overlap slightly) in each of the subtractive primary colors as well as in black (black compensates for the imperfect reflective qualities of inks and papers and adds sharpness and definition).

On-Screen Color Vs. On-Paper Color

Color on a monitor is created and perceived differently than color from a desktop printer or offset printing press.

The color you see on your monitor is additive and transmitted. Colors are created by mixing different amounts of red, green and blue — the additive primary colors that together make up white light. Inside the CRT (cathode ray tube) in your monitor, phosphorescent red, green and blue dots (screen pixels) are stimulated by a light source. If all dots are stimulated to the same intensity, all the pixels are equally bright and the light that is transmitted to you on the other side of the screen is perceived as white.

By varying the brightness of certain pixels, however, the eye can be fooled into seeing a wide range of colors. If red and blue dots are very bright and green dots are at low intensity, for example, you perceive a purple color.

Printed color, on the other hand, is subtractive and reflective. It is made up of the subtractive primary colors yellow, magenta and cyan. The subtractive primaries are so-named because each results from the subtraction of either red, blue or green from white light. Eliminate red from white light, for example, and you perceive cyan (a green-blue). When printed, cyan ink acts as a filter, absorbing the red wavelengths and reflecting (allowing you to see) the blue and green part of the light spectrum.

Magenta is perceived when green is removed from white light. When printed, magenta ink absorbs green and reflects blue and red. Yellow is perceived when blue is removed from white light. Yellow ink when printed absorbs blue and reflects red and green.

In printing, different colors are created by varying the density of the subtractive primary color inks printed. When magenta and yellow are printed together, both blue and green light is absorbed and only red is reflected. By reducing the density of the magenta ink, however, more green is reflected, and you perceive orange tones. The less magenta ink is printed, the more green wavelengths are reflected and the more yellow the color appears (red plus green equals yellow).

Matching screen colors to printed colors is less of a problem with spot color, since the system can use a color matching system to calibrate the two. A color lookup table, for example, can be set up so that when you select PMS 235 you get a color on-screen that looks as close as possible to the PMS 235 in your PMS swatchbook. The actual color values may be quite different, however. With process color it becomes much more complicated because screening, dot gain and all kinds of other complications of the four-color process must be taken into account.

Vendors of expensive color prepress have done a lot of work in the area of calibration (particularly those working in the area of soft-proofing terminals). Desktop systems have a long way to catch up. With improvements in monitor technology and, more importantly, with the great number of people who will be working on the problem as the desktop market grows, we are bound to see very dramatic improvements. Transmitted color never will be exactly like reflected color. The goal is to make transmitted color accurately and repeatedly predict the end result.

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universe of users chooses to take advantage of the opportunity to typeset their documents — and the tools become a commonplace part of our daily work lives.

Until now you have had very few choices in regard to color. You could let outside specialists add color to your publications, or you could publish them in black and white.

The cost of color in comparison to its benefits has been too high, making it a luxury reserved for only certain types of publications. It's hard to justify paying for color separations (usually about \$200 apiece depending on size) and multicolor printing for publications that are going to have a short life or be printed in small quantities.

We also tend to save color for those publications where the focus is on communicating image, even though color greatly improves comprehension and retention of information and, thus, should be as important for our technical documents as for our sales brochures and annual reports.

For those large corporations and organizations that have been able to afford to bring their own color processing equipment in-house, the cost has remained high — not only high capital costs, but high staffing and training costs as well, necessitated by the complexity of the equipment.

All of this is changing right now. Today, rapid price/performance improvements in desktop computing (processing power, display technology, memory, input and output peripheral resolution) are beginning to shift the balance between benefits and cost. They're creating an environment of increasingly wide color publishing choices and, until everything settles down and we get a chance to get used to these changes, of increasing confusion as well.

In 1988, the first big year of color, we're hearing a lot about "desktop color prepress," "design stations," "retouching systems," "color separation software," and "color correction software." What's the difference between these new systems and the paint and vector-based illustration software you may have had on your desktop for years? Can this new equipment really turn out print-quality results? Does this mean you can, or should, take over all those complicated tasks we've been giving to our printers in the same way that we've taken over many of the tasks we used to rely on professional typographers to perform?

To find some answers to these questions, we'll try to sort out the different kinds of color desktop systems available today and take a look at where the technology seems to be going.

The first encounter you're likely to have with color is spot color on your desktop page composition program. An increasing number of software vendors are including spot color, including Aldus *Pagemaker* 3.0.

Spot color is an area printed with a single color of ink. It is usually line art — a red drop cap, for example, or a blue rule. In contrast, photographs and other complex color images are made up of an almost infinite range of colors and tones (light to dark). These "continuous-tone" images have to be

reproduced through four-color process printing.

You don't necessarily have to have a color monitor or a color printer to work with spot color. (If you do have a color monitor, you'll be able to get a sense of what the colors will be and how they'll affect other elements of the page; however, you don't always see on the screen an accurate representation of printed color.

In *Pagemaker*, for example, you can assign colors by clicking on the elements to be colored and then selecting a color by name from a menu. You also can mix them visually (if you have a color monitor) or, using a color matching system such as Pantone's, by percentages to arrive at a particular shade.

When you're ready to print you can tell *Pagemaker* to give you separate output pages for each color. You can take that to your offset printer and he'll make a separate negative and printing plate for each color. (The color you print with doesn't actually have to be the color you specified in *Pagemaker*, since the layered output you give the printer is all black and white and he can mix any color you request for each printing plate.)

Even though you aren't working interactively with color, you're taking over a part of the color job from the printer. By electronically separating the page elements that are to be printed with different color inks, you're saving the printer the job of having to separate them photographically during the making of film negatives and you're saving yourself that cost.

Spot color is a practical first step into color, easy to implement for manufacturers and easy for users to grasp. Within the next year, most publishing and word processing packages probably will have it or be working on it. Full color processing of photographs and other continuous-tone images is coming more slowly, but surely.

Process Color

FOUR-COLOR PROCESS PRINTING is a method of fooling the eye into seeing a wide range of colors by printing only four colors — the three subtractive primary colors plus black (black is added to compensate for the imperfect reflective qualities of inks, papers and printing processes). By printing these four colors in slightly overlapping halftone patterns (see below), you can fool the eye into seeing almost any color.

This technique can be used to simulate the look of solid-color inks. By printing a screen of yellow with a screen of magenta, a screen of cyan and a screen of black, you can create the illusion of a solid block of PMS color. Since process match colors are made up of screened tints rather than full-strength inks, they tend to be less saturated and vibrant. Registration is also tricky (you're printing four times instead of once); so it's a good idea to avoid doing things like reversing out type. Still, this is an economical way of printing a publication with many colors. Making multiple printing plates and multiple

runs through the press for an eight- or 12-color job, for example, is an expensive proposition. By using process colors and a variety of screens you can create the effect of many colors, but actually print and pay for only four.

This type of four-color process is a fairly simple extension of the spot color capability. A number of desktop publishing systems including *Pagemaker 3.0* offer not only the ability to assign colors to specific page elements, but also to assign a screen percentage and angle. You then output four separate pages, one each for yellow, magenta, cyan and black, on your typesetter or film recorder (registration with laser printers is iffy). When printed in correct alignment, the result appears to be a solid PMS color.

Four-color process is also the way we simulate the almost infinite range of colors and tones we see in a color photograph. This is a much more sophisticated and complex process since you can't separate a continuous-tone image into its four-color process layers visually by pointing to them and clicking on them. If you're working with a hardcopy image, such as a photograph, you need to have a means of digitizing that image and separating it into its red/green/blue color components. Then you need to convert that information into cyan/yellow/magenta. If you're working with video images or computer-generated art, these also are usually stored in red/green/blue and must be converted to four-color for printing.

In addition, to achieve good results, sophisticated adjustment to the separations is necessary. This is called "color correction" and is necessary to compensate for the imperfect reflective qualities of inks and papers, the physical drift of mechanical printing processes and the idiosyncrasies of specific press, paper and ink combinations. Basically, color correction involves changing the relative sizes of the halftone dots in each of the process layers in order to adjust the densities of the inks printed.

Traditionally, color separation and correction were accomplished photographically (by shooting original art three times using red, green and blue filters using contact film or camera-mounted masques to adjust the amount of exposure in each). Today, most color separation is accomplished electronically using expensive drum scanners. Color correction is also accomplished electronically, either at the scanner or, for more sophisticated adjustments, at a color prepress workstation.

The big news today is that these functions, which used to be exclusive to expensive commercial equipment, are now moving onto low-cost desktop scanners (as well as a new generation of print-resolution video cameras) and standard desktop workstations.

While the quality you can achieve with desktop equipment is currently far below that achievable with expensive professional systems, it's advancing quickly. As with desktop typography, the gap is narrowing.

Currently, none of the leading page composition software

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makers have added color image processing capabilities; however, you can buy color separation and correction software that will work with them. Truevision Inc., maker of Targa graphics boards, actually has made a color separation program available in the public domain. It generates four-color process files as well as *Encapsulated PostScript*. An additional utility converts Targa files to TIFF files (also in the public domain) for inclusion into a wide range of monochrome desktop publishing applications.

CyberChrome lets you convert Targa images into TIFF files for display in *Pagemaker* documents. When you're ready to output, a utility then replaces the TIFF files with *PostScript* process-color image files and generates a single *PostScript* page file for each four-color process layer.

What you're not getting with public domain color separation or with the current version of *CyberChrome* is that all-important color correction. You can get it with *SpectrePrint I* and *SpectreMatch* software. This layered software (originally marketed under the name *Heaven* by Pixel-Craft) performs both separation and correction.

Users indicate that all of this software is fairly rough around the edges to use. But progress is certainly underway and early product entrants soon will have a number of competitors. Among the companies working in this area (and specifically on producing *PostScript* color separations) are three New York-based companies: Knowledge Engineering, Media-Net and Technical Publishing Services. The original developer of *Heaven* reportedly has another color separation and correction product that is being evaluated by several leading desktop page composition manufacturers for possible incorporation into future product releases.

While the monochrome world makes its way step-by-step toward color, color vendors (from the video and business graphics worlds) also are making their way toward print. Geni-graphics, Dicomed, Autographix and Via Visuals (now the DuPont Design Center) all recently have made major moves in this direction. Paint systems, especially, have a natural application in image retouching. "True color" (i.e., 24-bit depth),

required for print applications, is becoming fairly common and desktop systems are actually a lot easier to use and faster than color prepress workstations at some art creation and retouching functions. Even when the vendors haven't packaged a "print system," intrepid users are finding ways to apply the technology.

ADCOM Communications, a New York-based system dealer, for example, feels that for many retouching applications, your best tool is a Targa board and a good paint application, such as *Lumena*. *Lumena* offers a BIGPIC function that allows you to scan and manipulate images at 2K x 2K. Images can be selected down to screen resolution and viewed at full size or zoomed to full-resolution windows for editing.

The system outputs at 2K to a film recorder (Time Arts provides image enhancement interpolation for output at 4K) or, for separations, to a color prepress system. In combination with *SpectrePrint* and *SpectreMatch* software, you also can output your own separations to a Linotronic 300.

Paint systems are a good component in conjunction with other software, but there also are systems specifically designed for print applications that are integrating these functions. Imapro Corporation (Canadian-based with a U.S. division in Suffern, NY), for example, makes an AT-based electronic retouching and image assembly system that is based on TIPS paint software, but is considerably enhanced. It not only performs art creation and retouching, but has graphic arts-oriented tools for combining images into page layouts as well as built-in color conversion capabilities from red/green/blue to four-color process and color correction (including under-color removal and gray-component replacement — sophisticated techniques that improve and image sharpness).

Imapro can output to a film recorder; however, at this time, for high-quality work, they still recommend passing the file to a Scitex color prepress system for final adjustments and output of separation films. Clearly, however, the system is working toward enabling users eventually to do most or all of the job on the desktop. With a base price of about \$60,000 (without scanner or output device) — a fraction of the cost

PostScript

Adobe Systems Inc.
1870 Embarcadero Rd.
Palo Alto, CA 94303
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Pagemaker 3.0

Aldus Corporation
411 First Ave. S., Suite 200
Seattle, WA 98104
CIRCLE 287 ON READER CARD

CyberChrome

Cyber Research
5 Science Park Center
P.O. Box 9565
New Haven, CT 06536
CIRCLE 286 ON READER CARD

SpectrePrint I, SpectraMatch

PrePress Technologies
543 Encinitas Blvd., Ste. 109B
Encinitas, CA 92024
CIRCLE 285 ON READER CARD

Lumena

Time Arts Inc.
3436 Mendocino Ave.
Santa Rosa, CA 95401
CIRCLE 284 ON READER CARD

Colorscan

Howtek Inc.
21 Park Ave.
Hudson, NH 03051
CIRCLE 283 ON READER CARD

Page Express/Image Express

Networked Picture Systems
3960 Freedom Cir.
Santa Clara, CA 95054
CIRCLE 282 ON READER CARD

ColorScript

QMS Inc.
One Magnum Pass
Mobile, AL 36618
CIRCLE 261 ON READER CARD



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of high-end systems — that's an attractive prospect.

Meanwhile, a new HP Vectra-based system from Howtek Inc. (Hudson, NH) is coming at color publishing from a different angle. *Colorscan* performs color separation and correction, and stripping (combining multiple images into a page layout, including trapping of adjacent or overlapping elements). While users can generate a wide variety of tint blocks, the system doesn't offer paint functions for retouching. Instead, Howtek expects to import image and art files from a wide range of desktop design and illustration stations. The base price of \$96,000 includes an 11-inch by 17-inch flatbed scanner and a 35mm slide scanner, a 1000-dpi film recorder and a 240-dpi color inkjet printer.

Both of these systems are focused on specific production tasks and are being marketed to commercial users as affordable adjuncts to expensive prepress equipment. Both, however, intend to market eventually to the broader corporate in-house market as it develops (monochrome electronic publishing made a similar transition in its early days).

Networked Picture Systems (Santa Clara, CA) is already marketing a more comprehensive system that seems to have all the elements required for corporate users. *Page Express/Image Express*, based on an 80386 platform, performs not only image scanning, retouching and color correction, but text composition as well. You can create original art or perform retouching and special effects on scanned or video images. You can compose and layout documents, color text and create runarounds. *Page Express* outputs complete page-color separations using color prepress workstations. It also can output to film recorders and color proof printers. The price is \$69,500 (without input and output devices).

The Problem Of Output

OUTPUT TECHNOLOGY IS ONE of the things that currently is slowing down the flow of this technology to the desktop.

Desktop color printing isn't really a viable alternative for most publications. While most of the new color systems can output to color thermal or inkjet printers, in most cases this is recommended primarily for proofing. Today's color printers currently don't provide anything close to the color quality achievable through offset printing. A major problem is also type resolution and quality, which is far below that of black-and-white laser printers.

The new *ColorScript 100* printer is an exception, offering good-quality color and *PostScript* fonts. At \$24,995 it's too expensive for most desktop publishers. Still, it's only the first color *PostScript* printer out of the gate and there are sure to be more. (A survey of 1,300 business computer users by CAP International found that 75 percent expected to purchase a color output device before 1990. There are going to be many

vendors scrambling for that market. Kodak, Pansophic and Canon are among the manufacturers working on printing technologies that can deliver both good-quality color and good-quality type. You can bet that the competition is going to create dramatic price/performance leaps.)

Today, however, for higher quality results, a better alternative is to output separations on a high-resolution typesetter or film recorder for offset printing. For small runs, you can output to a film recorder, create a high-resolution Cibachrome print and then copy that print onto one of the new color xerographic copiers.

The quality of color copies is increasing and it is an affordable alternative for some kinds of jobs. You also can take an eight-inch by 10-inch transparency from a film recorder, take it to a professional shop and have them scan it and make color separations for you (a user with a great deal of experience with leading-edge systems insists that this is still the best alternative from a cost and quality point of view).

Another option, as we've discussed, is to pass the files via online interface or magnetic tape to a high-end color prepress workstation. If you're working with software that doesn't have color separation and correction capabilities, you can pass RGB files and let the color prepress operator do final production and output. Even if you're doing your own separations and corrections, you may want to rely on professional systems and expertise for some steps. This also presents another opportunity for small-run publications, especially if you don't have access to a film recorder. Most color prepress systems now can output to some form of direct-digital printing device. No separation films are required and the output is usually high-resolution continuous-tone. While the prints often are used as proofs prior to making separation films, you can use them as originals for color copying.

Many printers and color shops are setting up service centers offering this kind of output, as well as color separation/correction services. They function similarly to the service centers that now commonly provide Linotronic output for monochrome desktop publishing.

Two leading service centers are ChromaSet (San Francisco) and Designer's Atelier (Manhattan). They not only provide separation/correction services, but also maintain access studios where users can do creative work on color design and illustration systems and then send their files to on-site color prepress systems, working with professional operators to perform final production tasks.

"Anyone Can Be A (Color) Publisher"

AS DESKTOP COLOR PROCESSING power increases and we begin to see the input/output devices we need, the parts of the job we do ourselves and the parts we hand over to professionals are going to be determined less by

systems capability and more by our own skills and preferences. In fact, there probably will be very little to distinguish the systems we use from the systems dedicated professionals use.

High-end systems are moving onto standard hardware platforms and are coming down in price. Desktop systems will take on more and more high-end functionality. Word processing, illustration, design, page composition and color processing all are merging gradually. A few years from now, they're likely to be simply buttons on the menu of our desktop workstations. The key differences will be in how we — engineers, marketing staff, support staff, designers, artists, production people — choose to use them.

Users are going to have to decide how much control and responsibility they want to take. Just as using a program like *Pagemaker* gives you the potential to be not only a writer, but a designer and typographer as well, using *PageExpress* gives you the potential to be writer, designer, typographer, color separator and page stripper. Do you want to be?

As with monochrome publishing, just having the equipment doesn't automatically make you capable of publishing a good document or of even publishing efficiently. Users come to the equipment with a wide range of skills, backgrounds and levels of ambition. They produce a wide range of results. Some users choose to do all of the job themselves. Many, however,

continue to use professional services for the majority of applications.

Of course, this brings up all kinds of issues about misuse of color, similar to those we heard about misuse of type when it first became clear that, yes, non-professionals were going to be using type every day. Certainly, some of the dire predictions of every possible typeface on a page have been realized. But, in general, the effect has been one of elevating the overall quality of our publications.

Many documents that were once laid out in rudimentary word processing formats and output in monospaced fonts are now produced — just as easily — with good quality typography and more sophisticated and efficient page layouts.

Similarly, we're likely to see a lot of awkward use of color, but above and beyond bad examples, we're likely to experience an improvement in the aesthetic and effective quality of our publications — and maybe even an elevation of the general level of visual literacy. —*Rebecca Hansen is a free-lance writer and corporate communications consultant for high-technology companies.*

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Manuscript

A Document Processor For Your Technical Environment

Lotus *Manuscript* is a document processor featuring a wealth of desktop publishing functions with special emphasis on preparation of large technical documents. Unlike some other desktop publishing products, it has strong editing features, so a separate text processor or editor isn't needed to prepare the bulk of the document before formatting. Version 2.0 provides a number of advantages over version 1.0, not the least of which is improved speed, an important consideration for a product that will handle 800-page documents.

Manuscript treats a document as a number of discrete parts, some of which (the body of the document, footnotes, etc.) are edited and created by the user and some of which (tables, the index, etc.) are created by the program when a document is printed.

At the lowest level, *Manuscript* documents are broken into blocks of logically related characters. Typically, a block represents a paragraph, but a block also may have multiple columns like a row in a table. Contiguous blocks may be sorted by the contents of any column.

A structured document groups blocks into sections and subsections to nine levels of nesting and allows sections to be sorted on their headlines. Structured documents may be col-

lapsed to an outline for an overview of the document structure or easy traversal of a large document. When a structured document is printed, the outline may be printed as a table of contents to a user-specified level (printing only major section headlines, for example).

A *Manuscript* page may have multiline headers and footers and up to nine winding columns of text. Graphics from a number of sources, worksheets, mathematical equations, screen images and keycaps also may be combined with the text. *Figure 1* shows the graphics formats supported. *Screen 1* is a sample screen image and keycaps as printed on an HP LaserJet II printer.

Markers

GRAPHICS, WORKSHEETS, EQUATIONS, etc. are merged into a document by way of markers that replace the backslash commands in *Manuscript* 1.0. Markers also are available to print the document's author, description, revision, filename and a number of other parameters. *Figure 2* lists all of *Manuscript*'s markers and their uses.

Several types of markers are of special interest.

[By Christopher Nelson]

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Comment markers are like footnotes, except they can be “signed” with the commenter’s initials and are printed at the end of the document sorted by commenter. This is useful for making notes to yourself as a document develops or for a group to mark up soft copies of documents for one another. **Comments** can be removed as they are resolved or their printing can be suppressed for final output.

Nine **counter** markers are available for sequentially numbering lists or series. Each **counter** may be individually formatted and reset. The available formats are Arabic numerals (1, 2, 3, etc.), lower- or uppercase Roman numerals (i, ii, iii... or I, II, III...), and lower- or uppercase letters (a, b, c... or A, B, C...). **Counter** formats also may include constant text for a series like Step 1, Step 2 and so on.

Three markers, **if**, **else** and **endif**, provide for conditional processing of parts of a document. For example, the printer name could be tested against “GENERIC” to see if equation graphics could be printed and substitute equivalent text. Another example would be an entire document bracketed in **if/else/endif** markers to provide for printing mail merge letters only for clients in one zip code.

The **include** marker is useful in managing large documents. Sections of the document can be broken out and edited separately, which is faster and facilitates group work, then recombined at print time by merging them in a main document via **include** markers.

Keep markers bracket regions of text that are not to be broken across pages such as rows in a table, or a figure and its caption. A **keep** can be either fixed (which causes a page or column break before the **keep** if necessary) or floating (which holds the **keep** until the top of the next page while processing subsequent text).

Keycap markers allow graphic representation of keyboard functions. These graphics can be very effective in allowing a user to scan a manual looking for the appropriate section.

Merge markers substitute variables from a merge file into

the document for processing mailing lists. **Merges** may be controlled by **if/else/endif** markers as mentioned above. Blanks and blank lines may be suppressed during the merge (e.g., for someone without a company line in his address).

Manuscript documents have revision numbers in the form 1.000. The revision code is incremented by .001, or may be manually set, each time a document is saved. This revision code can be included in the document (e.g., on the title page or in headers and footers) with the **revision** marker.

Screen markers include a graphic representation of a PC screen as captured with a *Manuscript* utility, SCR. By capturing screens from an emulator such as *Reflection* or *Advancelink*,

FIGURE 2

- Author** — Include Author field from New File panel.
- Column break** — Force a new column on a page with winding columns.
- Comment** — Include optional text.
- Counter** — Insert the value of one of nine counters. Used for numbered lists, etc.
- Cross-reference** — Include the number, headline or both from a referenced section elsewhere in the document.
- Date** — Insert the system date when the document is printed.
- Description** — Include Description field from New File panel.
- Else** — Begin alternative clause in conditional text placement.
- Endif** — Conclude conditional text placement.
- Equation** — Include a formatted equation.
- Escape Codes** — Insert printer-specific escape sequence (like setup string in *Lotus 1-2-3*).
- Figure** — Specify figure name for Table of Figures.
- Filedate** — Include date of last file update.
- Filename** — Include name of document file.
- Filetime** — Include time of last file update.
- Font** — Change font setting for subsequent text.
- If** — Begin conditional text placement.
- Include** — Merge another document when current document is printed.
- Index** — Create an index entry.
- Keep** — Mark region that is not to be broken across pages.
- Keycap** — Include graphic representation of a key.
- Line** — Insert a horizontal line.
- Markup** — Insert third-party developer code.
- Merge** — Insert a variable from a mailmerge file.
- Note** — Create footnote, levelnote or endnote.
- Orientation** — Change to portrait or landscape for subsequent printing.
- Page break** — Force a new page.
- Page number** — Insert page number when document is printed.
- Pathname** — Include pathname for current document.
- Picture** — Include a graphic.
- Printer** — Include the name of the printer used for printing.
- Screen** — Include a screen image.
- Section** — Insert section number and/or headline.
- Symbol** — Insert a printer-specific symbol.
- Tablem** — Specify table name for Table of Tables.
- Time** — Insert the system time when the document is printed.
- Whitespace** — Insert blank space.
- Worksheet** — Merge *1-2-3* or *Symphony* worksheet.

FIGURE

Directly importable
Lotus 1-2-3 .PIC files
Lotus Freelance Plus .GMF file
PostScript or *Encapsulated PostScript* .PS or .EPS files
AutoCAD or *AutoSketch* .DXF files

Importable after conversion with *Manuscript* utility
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 Microtek scanner files
 HP ScanJet or DEST .TIF files
 PC Paintbrush .PCX files
 MacPaint .MPT files

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Available markers.

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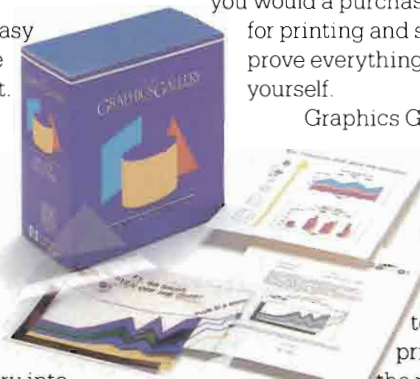
Find out for yourself how easy Graphics Gallery is to use. Take a look at the high quality output. Discover how quickly it turns ordinary worksheet files from Lotus® 1-2-3® into extraordinary charts and graphs. And see how effortlessly it works with all the most popular desktop publishing programs to enhance your results.

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The Graphics Gallery demonstration copy runs on IBM PC/ATs and XT's, Venra PCs, and most compatibles with an EGA or monochrome monitor with Hercules™ graphics card. Lotus® 1-2-3® is a registered U.S. trademark of Lotus Development Corp. Hercules™ is a trademark of Hercules Computers.

step-by-step documentation of host applications with strong examples can be created.

The **symbol** marker includes printer-specific symbols into a document. If a symbol such as a copyright © or a bullet, isn't available on the output printer, a "fallback" character is printed.

Worksheet markers allow inclusion of a worksheet or named worksheet range either when the marker is created or when the document is printed.

Macros

A MANUSCRIPT MACRO is a series of keystrokes that may be invoked with a single Alt+letter combination. The keystrokes that make up a macro may be entered in an edit window or saved with a Learn facility as you perform an operation for the first time. The macro definition panel provides for a brief description. Longer comments, which are ignored during macro processing, may be included in the second column or block of the macro.

Groups of macros can be saved in named sets so that, for example, one set of macros is loaded for letter writing and another for manual preparation. Macros also may be used recursively. A typical use of this would be to find a word or phrase, create an index entry for it, then repeat the process for each occurrence of the word or phrase.

With *Manuscript* macros, what might have been a one-hour process for a large document is reduced to a few-keystrokes setup, one macro invocation and a brief wait.

Lotus wisely chose not to reinvent the wheel for its spelling checker and thesaurus functions. The 110,000-word spell-

DATACOMM CONFIGURATION

Datacomm port	COM1	Enq/Ack pacing	YES
Baud rate	9600	Xmit indicator (*)	OFF
Parity	NONE	CTS required	NO
Check parity	NO	DSR required	NO
Receive pacing	NONE	Stop bits	1
Transmit pacing	NONE	Session# (LAN)	0

NEXT PREVIOUS DEFAULT ACTIVE ACTIVATE SAVE config
 CHOICE CHOICE VALUES VALUES CONFIG TO DISC keys

The {Enter} key is variously labeled —, Enter, and Return.

Screen 1: Sample screen image and keycaps.

ing dictionary was provided by Soft Art and the thesaurus, keyed by 15,000 words, is Microlytics' popular *Word Finder*. Both are fast and accessible at several levels.

While editing a document, Ctrl-C checks the spelling of the word at or before the cursor. A block, section, or the entire document also may be checked. While spell-checking, two user-specific dictionaries may be referenced in addition to the system dictionary. If a word isn't found, it may be corrected from a list of suggested words or included in either dictionary.

Placing the cursor over a word and pressing Ctrl-T in-

MENU-FILE

Save Retrieve New Delete Import Export

Save the current document on the disk [Ctrl-S]

A 'structured' document groups blocks into sections and subsections to nine levels of nesting and allows sections to be sorted on their headlines. Structured documents may be collapsed to an outline for an overview of the document structure or easy traversal of a large document. When a structured document is printed, the outline may be printed as a table of contents to a user-specified level (printing only major section headlines, for example). ◀

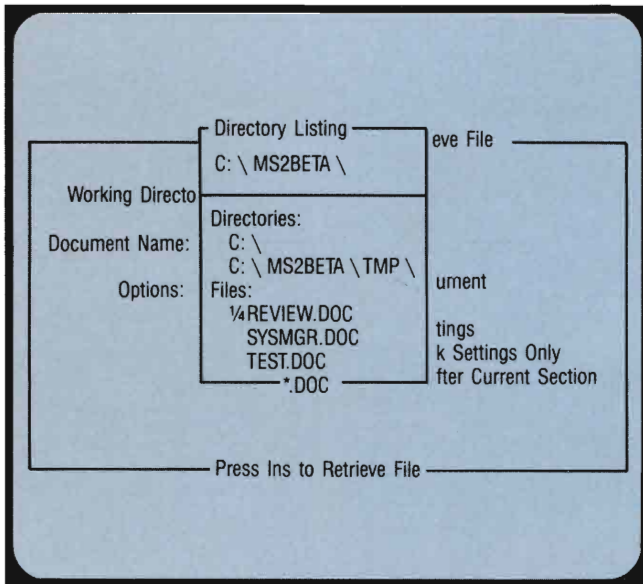
A Manuscript page may have multiline headers and footers and up to nine 'winding' columns of text. Graphics from a number of sources, worksheets, mathematical equations, screen images and keycaps also may be combined with the text. Figure [C 1] shows the graphics formats supported. Figure [C 1] is a sample screen image and keycaps as printed on a Hewlett-Packard LaserJet II printer. ◀

FEATURES ◀

Markers ◀

Graphics, worksheets, equations, etc. are merged into a document by way of markers which replace the backslash commands in Manuscript 1.0. Markers are also available to print the document's author, description, revision, filename and a number of other parameters. Figure [C 1] lists all of Manuscript's markers and their uses. Several types of markers are of special interest. ◀

Screen 2: File retrieval menu.



Screen 3: File retrieval panel and checklist.

Evokes the thesaurus keying on the word at or before the cursor. In the synonym window, an alternative may be selected to replace the original key in the document or to key another search for more alternatives.

Previewing

THE MANUSCRIPT EDITOR is character-based and doesn't provide a WYSIWYG display. Text attributes (such as bold, underlining, etc.) and borders (boxes) are displayed to the limit of your monitor's capabilities.

Manuscript uses various conventions and symbols to convey information about complex formats and document structures. Blocks are separated by a single horizontal bar and sections are delimited by double horizontal bars. A "+" before a headline in a collapsed outline indicates that text blocks or subsections exist. Markers may be displayed in several forms showing their existence (as a diamond), a short or long form of their type (page break, screen, etc.), or their type and parameters (such as the name of the picture file to be merged).

A number of previewing options are available with a graphics display. When graphic markers like screens and equations are created, you have the option of previewing the graphic before proceeding with the editor.

A block, section or document also can be previewed a page at a time to display column balance, figure placement, etc. While previewing, a full page may be viewed in conjunction with a zoomed window of the text, or the page can be blown up to see its content more clearly.

The readability of these previewing options depends on your display. An EGA shows readable text on a full-page view.

On a CGA, greeking (reducing words to line segments) may be less distracting. A reverse-video option shows the page contrast as it will appear on paper and makes some graphics such as scanned photos easier to see.

Printing

MANUSCRIPT SUPPORTS more than 40 printers including various models from Apple Computer, Citizen, Epson, Hewlett-Packard, IBM, Okidata, QMS and Toshiba. Different drivers support the particular features of the HP LaserJet, LaserJet+, LaserJet 500 and Series II printers.

A downloadable font manager simplifies using HP Soft-fonts or Bitstream Fontware. A *PostScript* device-driver allows communication with a wide range of *PostScript*-compatible printers and devices like Linotype typesetting machines.

Printers are supported on several interfaces: PRN (the default print device), COM1 through COM4 and LPT1 through LPT3. Two printers, a primary and a secondary, may be configured with separately defined interfaces making it easy to connect a draft- and final-quality printer.

Formatting

MANY DESKTOP PUBLISHING PRODUCTS concentrate on the appearance of pages in a short document such as a newsletter. In *Manuscript*, the emphasis is on the format of the document at various levels.

Global Format options include headline and text fonts, attributes (bold, italic, etc.), justification, indentation, spacing and number of columns. Spacing can be controlled between headlines and text, lines of text, blocks, subsections, sections and columns. All of these options can be set globally for the nine levels of sectioning.

Local formats can override the **Global Format** for text attributes or formatting of a block, column or section. Local section formatting is much improved over *Manuscript* 1.0; it allows a new Section Tag format and starting value for each section. This is very useful in labeling appendices and other addenda.

Another improvement over version 1.0 is the addition of **Named Block Formats** and **Libraries**. A local block format has 16 separate parameters. A particular set of parameters, for example, for a table or figure, can be assigned a name and invoked by typing the name on the block format panel. This is much simpler and less prone to error. **Libraries** allow storage of named boiler-plate text for quick pasting into documents.

Manuscript can access files on a network server through NetBIOS. Though file locking isn't implemented at this release,



Screen 4: This tiger, from the Scanning Gallery User's Guide was printed by Manuscript on a LaserJet II.

Manuscript will ask permission to overwrite a file whose timestamp isn't the same as when it was loaded. Better network support, including file locking and other features to enhance workgroup activities, is planned for a future release.

A number of other features deserve to be mentioned. A **Math** function provides evaluation of arithmetic expressions in the text of the document. Addition, subtraction, multiplication, division, percents, exponentiation and scientific notation all are supported. The result of a **Math** operation is displayed and then left in the clipboard for pasting into the document.

The **DOS** function on the main menu provides a brief trip

to the operating system. This is handy for purging extraneous files or formatting a floppy when the document you're working on grows too big to save.

Several options help prevent loss of your data. *Manuscript* can be configured to keep backups of your work and to save your document periodically. The number of minutes between automatic saves and whether *Manuscript* asks permission to save the document are configured on the **Global Options** panel.

For preliminary drafts, legal and other governmental work, *Manuscript* will print line numbers on output. Group review of a draft becomes much easier when you can say "page

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4, line 200'' to refer to a particular piece of text.

Manuscript provides for importing, exporting and exchanging documents in several forms. ASCII files can be imported or exported in 7-bit ASCII (excluding control codes), IBM extended ASCII and several foreign-language variations in ASCII. During an ASCII import, *Manuscript* can be told to preserve line endings (for listing files or other preformatted text) or remove line endings (to import MemoMaker or other documents with hard carriage returns). Similarly, an exported ASCII document may have line endings (carriage returns) put in at the end of each screen line or only at the end of each block.

Using a file conversion utility from the document manager menu, revisable DCA documents can be imported and exported, Thinktank outlines may be imported and a version 2.0 document can be downgraded to the version 1.0 format.

Working With Version 2.0

FOR ALL OF ITS POWER, it's easy to get started in *Manuscript*. The user interface is based heavily on other Lotus products such as *1-2-3* and *Symphony*. While in the editor, pressing F1 brings up a context-sensitive help screen and F10 displays the main edit menu with a line of options at the top and the submenu of the highlighted option on the second line.

Menu choices generally lead to panels where options and formatting parameters are entered. A panel is like a dialog box in Microsoft *Windows*, but is character-based rather than bit-mapped. Panel fields that have a limited range of values such as font selection open into checklists. In a checklist, the cursor may be moved up and down to the desired item, which is selected by pressing the space bar. In some cases, such as text attributes, multiple items can be checked. In others, such as loading a file, only one check is allowed. The top of *Screen 2* shows the menu leading to the Retrieve File panel. *Screen 3* shows the Retrieve File panel with a file selection checklist open over it.

Basic editing keys, though used differently in other editors, are used consistently throughout the product. Advanced features are readily available through the fairly logical tree of menus. Most common functions, such as Save, have accelerator keys. These accelerators are Ctrl + letter combinations with high mnemonic values such as Ctrl-S for Save and Ctrl-B to start using bold text attribute. Note the accelerator key for save (Ctrl-S) shown on the second line of the menu in *Screen 2*.

Complex formats or repetitive operations are easily made into macros using the **Learn** feature. Pressing Ctrl-F1 begins a macro definition. A panel appears with fields for the key used to invoke the macro, its description and whether to include it in the macro set when saved. Everything that's typed

up to the next Ctrl-F1 is recorded into a text block, which can be invoked with the Alt + letter combination, edited, saved to a macro set file or deleted from memory.

Manuscript manages text blocks in a structured, nonlinear fashion that affords fast movement between distant pieces of the document. Speed is further improved by keeping the document in memory while various programs such as the editor, spell-checker and preview-formatter are swapped in and out. In version 1.0, the opposite was true and previewing, printing or spell-checking a long document was a slow process. An added benefit of this scheme is the ability to preview a document without saving it.

Graphics images in the form of ScanJet .TIF files, *AutoCAD* .DXF files, and *Freelance Plus* GMF files all imported flawlessly. *Screen 4* shows the tiger photo from the *Scanning Gallery User's Guide* as printed by *Manuscript* on an HP LaserJet II printer. The *Freelance* files lost their color and some other attributes, but were otherwise printed faster and at higher resolution than with *Freelance*.

There are several problems with *Manuscript*. First, and of prime interest to a user with scarce PC resources, *Manuscript* is huge. As installed with the installation program, it takes 4 MB of disc. Careful deletion of samples and unneeded print and display drivers got the base product down to just over 3 MB. Furthermore, *Manuscript* requires 512K of RAM and Lotus recommends 640K. Despite version 2.0's improved speed, a user who maintains large documents will want a RAM-based swap and scratch area, either in EMS memory or a RAM disc.

Tables and figures cannot be named sequentially or cross referenced. For example, it's impossible to have *Manuscript* maintain the phrase "See Table 4.3 for details" with counters and named entries in the Table of Tables. According to Lotus, this feature is planned for a future release.

Conspicuous by its absence is a "listing marker" that would allow easy incorporation of source code into application or system documentation prepared with *Manuscript*. Currently, source code listings must be maintained manually with File Import.

The macro language, though fine for partially automating complex, local tasks, lacks the control structures and I/O capability to make it fully functional.

Documentation

LOTUS DID ITS USUAL slick job in documenting *Manuscript*. This is made more impressive by the fact that most of the *Manuscript* documentation was prepared using *Manuscript*.

The *Getting Started* manual is a fine overview of the product for beginners and the *Quick Start* manual will allow an experienced user of word processing programs to use *Manuscript* almost right out of the box.

The *Getting Productive* tutorial is excellent and illustrates the new features well.

The *Reference Manual* is well laid out and easily accessible from the index or table of contents. The *Quick Reference Guide* contains a map of the menu tree and a synopsis of the editing keys. After a few hours with *Manuscript*, the online help is usually sufficient for all but the most complicated functions.

MANUSCRIPT 2.0 OFFERS SEVERAL significant improvements over version 1.0 and is well worth the cost of an upgrade. It is both more and less than products like Aldus *Pagemaker* and Xerox *Ventura Publisher*. While it isn't the ideal tool for preparation of a short newsletter, it handles large structured documents like user manuals well with powerful, easily accessible editing and formatting features.

The lack of dependence on a graphical environment like Windows or GEM, which in turn requires a high-resolution graphics monitor, improves performance and makes *Manuscript* suitable for some portable computer environments like the Vectra CS. However, disc space and memory requirements remain a concern.

Lotus Manuscript 2.0

Lotus Development Corporation
55 Cambridge Pkwy.
Cambridge, MA 02142
(617) 577-8500

System Requirements:

IBM PC or compatible with a hard disc (*Manuscript* takes 4 MB)
5 ¼-inch or 3½-inch floppy disc drive
Graphics monitor (required only for document review)
MS-DOS version 2.0 or higher
512K RAM (640K recommended)

Price: *Manuscript* 2.0 — \$495; Upgrade from 1.0 — \$75

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Overall, *Manuscript* is an excellent choice for a word or document processor in a technical environment. New features in version 2.0 put it in a league with many desktop publishing programs, while its familiar, 1-2-3-like user interface makes it usable by new users without being frustrating for more experienced users. —*Christopher Nelson is a senior systems analyst at General Foods USA, White Plains, NY.*

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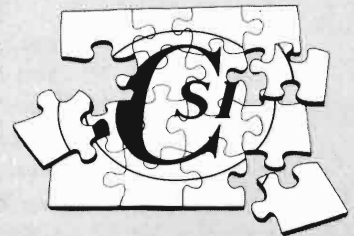
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CIRCLE 219 ON READER CARD

SUNSHINE AND INTEREX

A Guide To The North American Conference Of Hewlett- Packard Business And Technical Computer Users

Interex, the International Association of Hewlett-Packard computer users, and the Florida Regional Users Group will sponsor the North American HP Business and Technical Users Group Conferences, August 7-12, in Orlando, FL.

The HP Business Users Group Conference will be held at Marriott's Orlando World Center. The Technical Users Group Conference will be held at the Hyatt Orlando. Registrants of either conference will be granted admission to both. Both Conferences include vendor exhibits totalling over 100 exhibitors. We've included a list of exhibitors and their booth numbers here for your convenience.

Marriott's Orlando World Center is Florida's largest hotel and includes park-like grounds, an 18-hole championship golf course and 12 lighted tennis courts.

The Hyatt Orlando includes tennis courts, swimming pools, whirlpools and a 1.3-mile jogging trail and exercise course. Walt Disney World and EPCOT Center are five minutes away.

While attending the conferences, we hope you have some free time to visit sunny Florida. You might find the following guide helpful when you make your plans to tour the sites in and around Orlando. Besides Walt Disney World's Magic Kingdom and EPCOT Center, Sea World of Florida and Cypress Gardens, Central Florida offers plenty to do and see. Dress for warm weather; the average high temperature in August is 92 degrees, the average low is 73 degrees. See you there!

WINTER PARK, PARK AVENUE originally was established as a winter resort at the turn of the century. Often called "The City of Gracious Living," its Park Avenue is a unique street filled with European-style shops, hidden gardens,

exclusive stores, antiques, art galleries and a variety of restaurants. Contact The Winter Park Chamber of Commerce, P.O. Box 280, Winter Park, FL 32790; (305) 644-8281.

THE BOK SINGING TOWER GARDENS has attracted some 20 million visitors since 1928. It is a beautiful sanctuary located in the scenic highlands of Central Florida. Thousands of azaleas, camellias and magnolias fill the sanctuary; squirrels, quail and wood ducks roam the grounds freely.

The Singing Tower, in the center of the sanctuary among reflecting pools and winding pathways, is a 255-foot stone and marble structure with 53 bronze bells. It rings out music every half-hour. A 45-minute recital is presented at 3:00 p.m. daily. It is open daily from 8:00 a.m. to 5:30 p.m. Admission is \$2.00 for adults and free for children under 12. It is located south of Orlando in Lake Wales. Contact Bok Tower Gardens, P.O. Drawer 3810, Lake Wales, FL 33853; (813) 676-1408.

FLEA WORLD, nicknamed "America's Largest Flea Market," hosts more than 1,000 dealers every weekend to sell their goods — garage sale items, discount merchandise, antiques, etc. The market covers more than 104 acres.

It also provides free entertainment such as live country/western bands. It is located on Highway 17-92 just 15 minutes north of Orlando. Admission is free. The market is open every Friday, Saturday and Sunday from 8:00 a.m. to 5:00 p.m. Phone (305) 646-1792 or (305) 321-1792.

JOHN YOUNG PLANETARIUM, named for the Orlando-born astronaut who commanded Apollo 16 and the very first space shuttle, is part of the Orlando Science Center located in



CONFERENCE

HP PRO Staff



Orlando, FL, will host this summer's Interex North American Conference of HP Business and Technical Computer Users.

Loch Haven Park. Daily presentations on astronomy feature multimedia space shows presented on a 40-foot domed screen.

The Science Center also features a public observatory where visitors can view the night sky through a 12½-inch telescope and a variety of other telescopes. The observatory is open for "Sky Watch" Fridays at 9:00 p.m. in clear weather. Admission is \$4.00 for adults, \$3.00 for children and seniors and \$10.00 for families. The Science Center is located at 810 East Rollins St., Loch Haven Park, Orlando, FL 32803. Phone (305) 896-7151.

LEU GARDENS is a 55-acre botanical garden that includes camellias, azaleas, roses, dogwood, orchids, annuals and a popular "floral clock." You'll also find sculptures, fountains, archways of oaks, an avenue of camphor trees and the Memorial Garden.

Leu Gardens is open daily 9:00 a.m. to 5:00 p.m. Admission is \$3.00 for adults and \$1.00 for children 6-16. It is located

at 1730 North Forest Ave., Orlando, FL 32803. Phone (305) 849-2620.

THE MORSE MUSEUM OF ART contains the largest collection of Tiffany Art Nouveau directly from the estate of Louis Tiffany. On display are priceless paintings, stained glass windows, jewelry, lamps and other objects. Many of the works were rescued from the ruins of Tiffany's Art Nouveau Mansion on Long Island.

Exhibits often include works of other Art Nouveau-style artists such as Emile Galle, John LaFarge, Frank Lloyd Wright and others. Admission is \$2.50 for adults, \$1.00 for children over six. It is located in Winter Park just off Park Ave. at 113 Wellbourne Ave., Winter Park, FL 32789. Phone (305) 644-3686.

PLACES OF LEARNING is a perfect place to visit for the young and young-at-heart. It includes an outdoor one-acre map of the United States, a 50-state flag display, a lifesize chess set and unique classic books that have been constructed on giant concrete slabs.

Everyone will enjoy The Parent's Store which features 3,800 titles of classics, current novels, special interest books and educational material. Places of Learning is located at 6825 Academic Dr., Orlando, FL 38221. Phone (305) 351-5544.

TUPPERWARE WORLD HEADQUARTERS welcomes visitors to take part in a narrated and pictorial tour that describes the design, production, packaging and distribution of Tupperware products. Included in the tour is a visit to the museum gallery which houses a collection of historic food containers from Egyptian times to the present, the oldest item dating back to 4000 BC.

Tupperware World Headquarters is open Monday through Friday 9:00 a.m. to 4:00 p.m. Admission is free. Groups of 20 or more should phone in advance for special arrangements. It is located on U.S. 441, Kissimmee, FL 32742. Phone (305) 847-3111.

List of exhibitors on page 64.

HP INTEREX Conference Orlando, Florida August 7-12, 1988

BUSINESS CONFERENCE EXHIBITS

Exhibitor	Booth Number(s)	Exhibitor	Booth Number(s)
1. AICS Research	1118	63. O'Pin Systems	1130, 1131
2. Adager	503, 505, 507, 509, 602, 604, 606, 608	64. ORBIT Software USA	1107
3. ALDON Computer Group	308	65. Orion Sys. Tech. Inc.	125
4. APPIC	123	66. Operations Control Systems	803, 805, 807, 809
5. Bering Industries Inc.	1120	67. Performance Software Group	1100
6. Bradford Business Sys. Inc.	403, 504	68. Personalized Software	1117
7. Bradmark Computer Systems	203, 205, 207	69. Proactive Systems	1110, 1111, 1112, 1113
8. Brant Computer Services Ltd.	1013	70. Productive Softw. Sys.	400, 401
9. Business Systems Int'l. Inc.	219	71. Protos Software Co.	303, 306, 307, 309, 402, 404, 406, 408
10. CRI Inc.	210, 212	72. Provident Recovery Sys.	807
11. CSU Industries Inc.	1126	73. RAET Software Products	1015, 1017
12. Carolian Sys. Int'l. Inc.	811, 813, 910, 912	74. Robelle Consulting Ltd.	718
13. Chestnut Data Systems	306	75. RunningMate	320, 321
14. Cognos Inc.	703, 705, 707, 709, 002, 801, 806, 808	76. S.E.C. Int'l. Corp.	1122
15. Collier-Jackson Inc.	311, 313, 410, 412	77. STR Software Co.	1007
16. Commslynx USA	217	78. Smith, Dennis & Gaylord	708
17. Comprehensive Systems Inc.	521	79. Softsmith	801
18. Computech Systems Corp.	500	80. Softw. Research NW Inc.	300, 301
19. Computer Solutions Inc.	1121	81. Softw. Sys. Technology	1101, 1102
20. Comshare Inc.	714	82. Strategic Sys. Inc.	821, 920
21. ConAm Corp.	906, 908	83. SuperGroup Association	702
22. Corporate Computer Systems	700, 701, 800	84. Systems Express	1103
23. Cumulus Technology Corp.	101, 103	85. TEI	1122
24. Data Comm For Business	501	86. Telamon Inc.	409, 510
25. Data Group Corp., The	921, 1020	87. TeleMar Inc.	900
26. Design/3000 Inc.	1005	88. Teleray	716
27. Diamond Optimum Sys. Inc.	621	89. Tymlabs Corp.	105, 107, 109, 111, 202, 204, 206, 208
28. Distinctive DP Consult. Inc.	1127	90. US Holland House	1104, 1105, 1106
29. DISC	711, 713, 715, 717, 719	91. Unison Software	317, 319, 416, 418
30. EMC Corp.	119, 121, 216, 218	92. VRS Consulting	810
31. Encore Industries	1109	93. Vesoft Inc.	615
32. Forest Computer Inc.	502	94. Vitalsoft/Datasoft/Cogelog	603, 605, 607, 609
33. Fransen/King Ltd.	1114, 1115	95. Walker Richer & Quinn	911, 913, 1010, 1012
34. GFK Hamburg	817, 819, 916, 918	96. Westchase Computer Co.	1129
35. GTS Computer Sys. Inc.	1108	97. Weyerhaeuser Info. Sys.	1119
36. Gateway Sys. Corp.	420, 421, 522, 524	98. Wilco-Where Ends Meet Inc.	407
37. Gentry Inc.	302	99. Wilson Publications Inc.	209
38. Great Business Solutions	1011	100. Wordware	600
39. HP PROFESSIONAL	220, 221	101. Zentec Corp.	316, 318
40. Hewlett-Packard	20		
41. Higher Education Sys. Svcs.	1128		
42. High Line Data Sys. Inc.	704, 706		
43. HyPoint Technology	200, 201		
44. Ideal Computer Svcs. Inc.	113		
45. IMACS Systems Corp.	611, 613, 710, 712		
46. Imperial Technology Inc.	620		
47. Infocentre Corp.	903, 905, 907, 909, 1002, 1004, 1006, 1008		
48. InfoCraft Inc.	304		
49. Innovative Software Sol.	601		
50. JMA Technology Inc.	405		
51. KLA & Associates Inc.	1125		
52. Kelly Computer Systems	901, 1000, 1001, 1003		
53. Link Electronics Inc.	1124		
54. M.B. Foster Assoc. Ltd.	816, 818		
55. MCBA Inc.	617, 619		
56. Microtek Int'l. Inc.	720, 721, 820		
57. Mighty Keys	1116		
58. MiniSoft Office Systems	812, 814		
59. Mitchell Humphrey & Co.	506, 508		
60. NET, ComDesign Data Comm.	902, 904		
61. NSD Inc.	917, 919, 1016, 1018		
62. OPT	211, 213, 310, 312		

TECHNICAL CONFERENCE EXHIBITS	
Exhibitor	Booth Number(s)
1. Bradley Ward Inc.	208, 307
2. C & L Systems	207
3. Corporate Computer Systems	402, 404
4. Digital Automation	103, 105
5. Graphicus	302, 304
6. Herstal Automation Ltd.	107
7. Hewlett-Packard	102, 104, 106, 201, 202, 203, 204, 205, 206, 301, 303, 305
8. IDE Inc.	109
9. ICM Inc.	300
10. Industrial Computer Corp.	406, 408
11. Industrial Systems Inc.	410
12. Interactive Computer Technology	101
13. MiniSoft Inc.	108
14. Storage Data Sources	306
15. Walker Richer & Quinn Inc.	110

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1986 Annual Report**

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CIRCLE 105 ON READER CARD

WHAT IS CASE?

Where Is The Computer-Aided Software Engineering Market Going And What Is HP's Place In It? Part I

Editor's Note: This article is first in a three-part series. The next article in the series will examine Hewlett-Packard's corporate strategy for CASE and look at CASE tools that HP has developed or enhanced. The final article will be a report on CASE vendors who have products that run on HP workstations.

Computer-aided software engineering (CASE) means different things to different people. To an MIS manager, CASE may mean purchasing a COBOL code generator in an attempt to reduce a three-year coding backlog. To members of a large software project, CASE tools like version control, configuration management and project management can help team members keep track of the changes their coworkers have made to the software and documentation.

To a software project manager heading a design team for a CIM project, rapid prototyping will allow the customer to see a factory floor layout and make changes to requirements even after the specification and design phases are well under way.

Reverse engineering tools can reconstruct design diagrams from the source code of existing programs so that maintenance programmers are better able to upgrade or repair the code. Engineers working with embedded systems use histograms generated by performance analyzers to determine how to optimize code for speed.

Albert Case, in an article that appeared in the first issue of *C/A/S/E Outlook* (July 1987), defined computer-aided software engineering as "a system to build systems." The forerunners of CASE are formal methods of system design. These include requirements definitions, design specifications, data flow diagrams, process specifications and data structure diagrams used in the structured analysis and design

methodologies that were formulated in the mid 1970s and early 1980s. (See the bibliography for a list of books describing various methodologies.)

The software industry, which automated the work of circuit designers and mechanical engineers, has begun to automate its own methodologies. The development of CASE tools is analogous to the development of CAE workstations for circuit designers. IC designers use engineering workstations running CAE software to check design rules, simulate the circuitry of a chip, manipulate graphical symbols of hardware and to store information about the circuitry in a central repository.

Similarly, software engineers with a workstation or a PC use CASE tools to check the cohesion and coupling of a module of code, do rapid prototyping for simulation, use graphic methods such as data flow diagrams to design system software, and communicate through a project repository that manages the objects of their system. Hence CASE, like CAE, is a subset of computer-aided design.

THE CASE INDUSTRY began in the early 1980s when small software companies such as Cadre Technologies, Index Technology and Interactive Design Environments first introduced programs that used graphical input devices to do structured analysis and design in accordance with the rules of a software methodology. Now there are about a dozen different structured design methodologies that have been automated including Yourden-DeMarco, Gane-Sarson, Hatley, Constantine and Warnier-Orr.

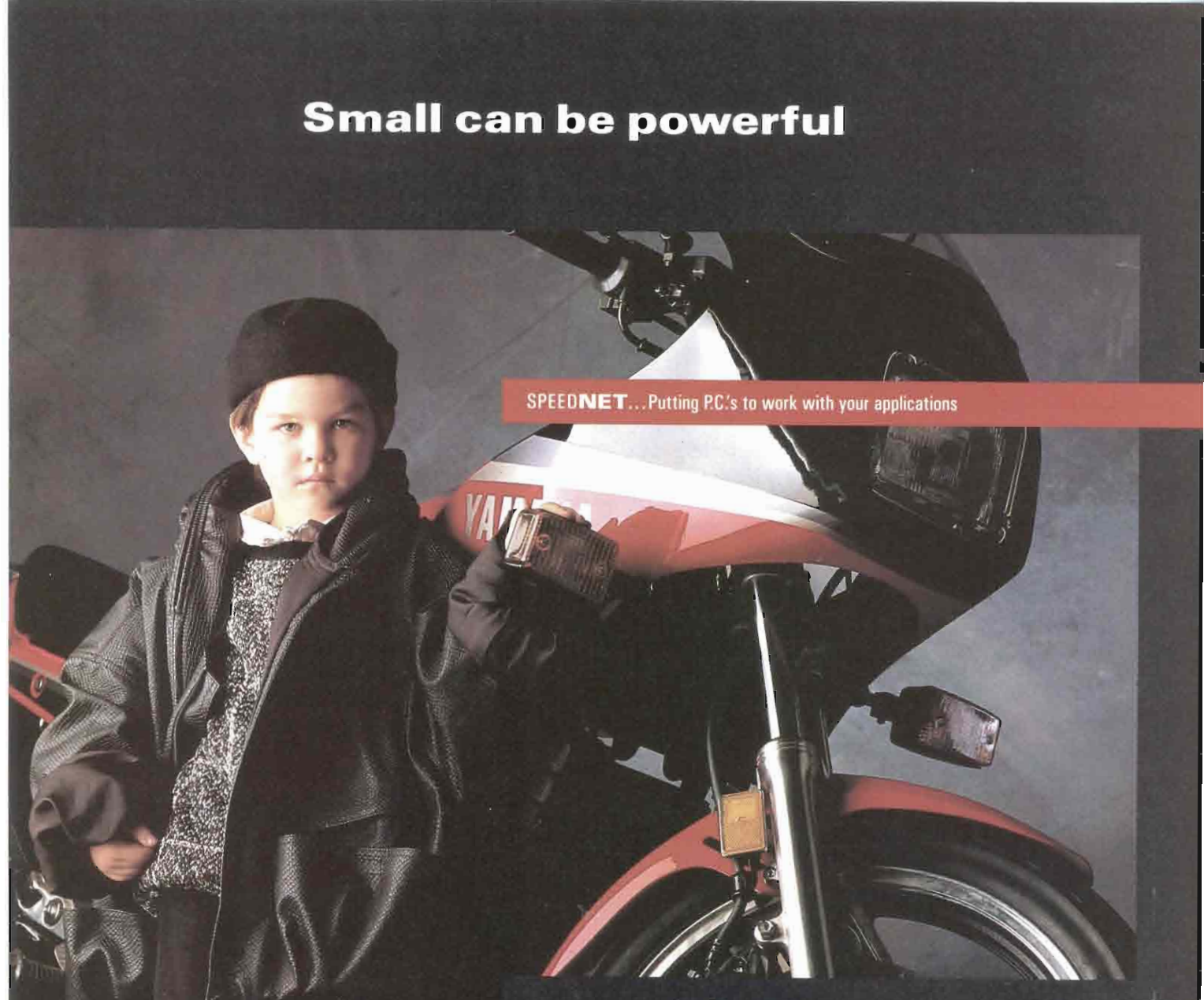
Tools for automating the analysis and design stages of the software lifecycle are referred to as front-end or upper CASE. Back-end or lower CASE covers the later stages of



CASE

Peggy King

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Hewlett-Packard is formulating a corporate strategy for CASE and negotiating agreements with CASE vendors who have products running on HP platforms.

the lifecycle, coding, testing, implementation, debugging and maintenance. These tools include code generators, cross compilers and reverse engineering.

Although some front-end CASE products were marketed as early as 1984 and defense and aerospace companies developed internal tools even earlier, 1987 marked the emergence of CASE as a market. Digital Consulting Group (Andover, MA) offered its first CASE symposium in Atlanta that February and "Windows on Wall Street" provided televised coverage that aired in March. In April, the CASE Consulting Group

was formed in Portland, OR, and the first issue of *C/A/S/E Outlook* appeared in July.

Before 1987, Digital Consulting Group offered public classes through an Application Development Curriculum that included instruction in Application Prototyping and Application Generation, but these classes did not become popular until after the first symposium.

Since that well-attended CASE symposium and subsequent symposiums in other U.S. and European cities, Digital Consulting has added "CASE Benchmarks," "Analyzing User Re-

quirements" (an alternative to Information Engineering), a "Software Measurement and Estimation" course taught by Capers Jones, and a "Making Software Engineering Happen" seminar (taught by Roger Pressman, author of a book by the same name) to its curriculum. CASE Consulting Group offers one-day on-site seminars called "CASE Briefs."

In 1988, CASE has evolved from an emerging technology to a fast-growing segment of the CAD marketplace. The industry's major market information groups have assigned analysts to cover the CASE market. Hewlett-Packard is formulating a corporate strategy for CASE and negotiating agreements with CASE vendors who have products running on HP platforms.

This year is also the one for integrating front-end and back-end tools and some analysts are predicting that at least one CASE vendor may introduce

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products that will fill the gaps between front-end and back-end products. The use of a CASE framework (known in Europe as an Integrated Project Support Environment) provides a consistent user interface and a portability platform that allows independent access to CASE tools that can share information through a central project repository. This new development has the potential of allowing customers to put together an integrated solution with products from different vendors.

The CASE market is very segmented because its customers and potential customers are writing very different kinds of software. Although the traditional split in market focus is between the DP/MIS customers developing software for mainframes and using CASE tools that run on different systems, and the engineering marketplace

where the development workstation doubles as a CASE workstation, the engineering marketplace could be further subdivided. Military and aerospace customers need CASE tools to integrate large projects, developers working with embedded systems need real-time CASE tools and the ability to port applications to a target platform, and developers of complex systems have special needs for documentation support that can keep up with frequent changes to requirements and design.

According to Beth Krasnoff, Industry Analyst at Dataquest's Software Industry Service (San Jose, CA), 80 percent of current CASE users are working on engineering applications and 20 percent are in the DP/MIS field, but this current market represents an inverse of the true potential market.

Krasnoff feels there is a virtually untapped lucrative market in developing CASE tools to help MIS departments

eliminate enormous backlogs and develop high-quality software at lower development costs. "In terms of market potential, 80 percent of it is in CASE for DP/MIS users and only 20 percent in engineering applications."

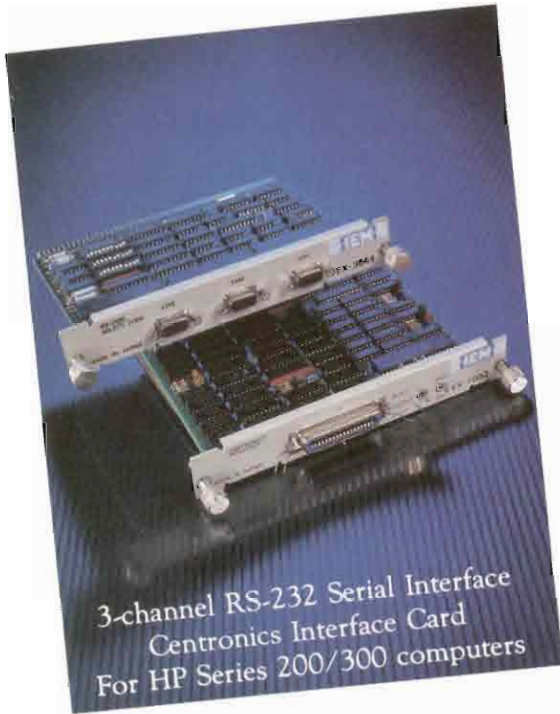
CASE has the potential of becoming a multibillion-dollar market during the 1990s. Numerous technological advances bode well for the development and enhancement of CASE tools:

- *Low-cost, high-resolution workstations with fast processors are capable of handling interactive graphics.*
- *Object-oriented engineering databases make it possible to store unrelated objects so that CASE tools from different phases of the software lifecycle can work together.*
- *Progress in developing standards such as X Windows makes it possible for a set of front-end and back-end CASE tools to be integrated with a standard framework and consistent user interface.*
- *Electronic Design Interchange Format (EDIF) used by hardware designers is becoming a standard for exchanging software design data as well. A standard format allows diagrams and database objects to be shared between workstations.*
- *Documentation support is becoming available through document generators and document production interfaces that connect to desktop publishing systems.*
- *AI vendors are developing expert systems for software engineering.*
- *Advances in LAN technology will facilitate sharing CASE tools running on different machines but used for the same project.*
- *Network protocols are becoming standardized.*

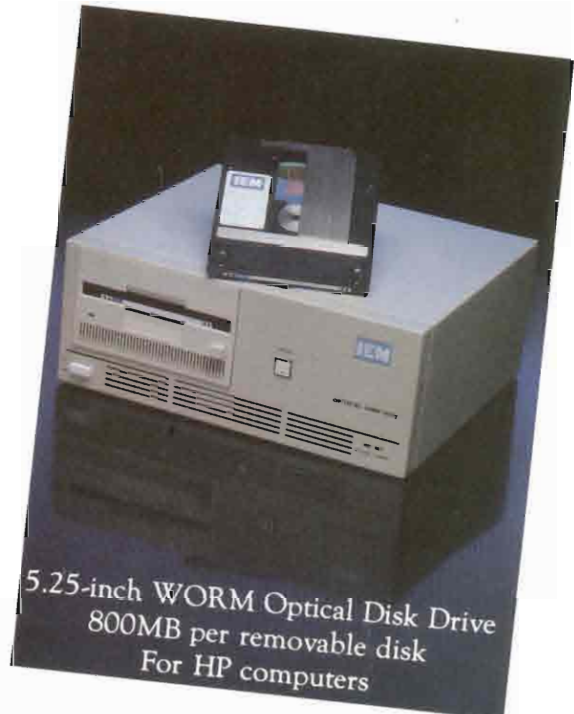
In light of all these advances, the years to come will bring even more CASE products, enhanced versions of existing tools and greater integration of products to automate all phases of the software lifecycle. —Peggy King is an independent consultant and free-lance writer based in San Jose, CA.

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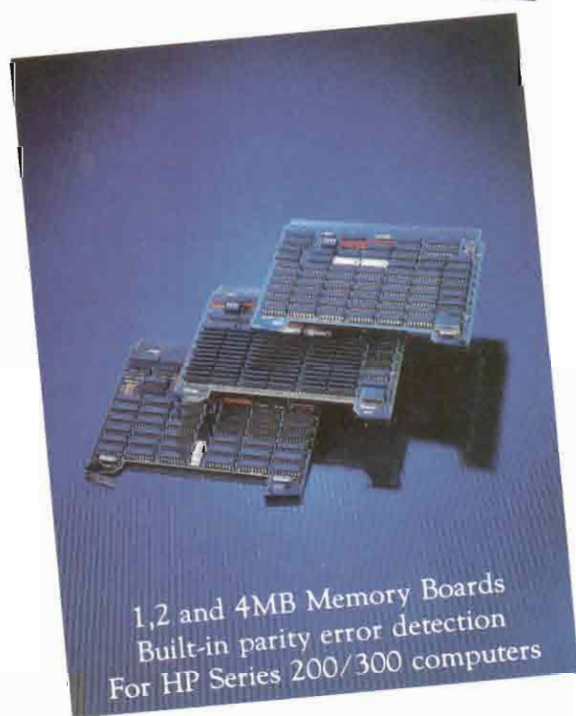
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As long time users of the HP 3000 *PowerHouse* products, we were excited to see *PowerHouse PC* introduced as Cognos' most recent product. *PowerHouse PC* provides the application developer with an exact functional equivalent to the *PowerHouse* product that has been in use within the minicomputer environment (HP 3000, DEC VAX and DG) for several years now.

It appears that Cognos is targeting *PowerHouse PC* to be sold to the existing customer base of *PowerHouse* minicomputer users as opposed to being distributed through the more conventional PC marketing channels.

This product will yield added fourth-generation language productivity by virtue of its portability of code and overall performance on a PC workstation. This portability will benefit the development and execution of applications across both mini and PC hardware environments.

The product consists of three major sets of components: an Application Dictionary, which includes all the tools needed to define and maintain the database (files) for an application; the *PowerHouse* programming language components used to develop the application; and a terminal emulation and file transfer facility.

The Application Dictionary includes QDD, the compiler for the data dictionary; QSHOW, a facility to report on the contents of your Application Dictionary; and QUTIL, which provides a collection of file utilities to create and maintain your application files. The *PowerHouse* development components include QDESIGN, which enables you to design and build data entry/inquiry screens; QUICK, the program that executes the screens created with QDESIGN; QUIZ, a report writer; and QTP, a

facility that handles bulk transactions and volume updates to your application files.

For our review we configured an HP Vectra PC Model ES/12 with the required 640K of conventional memory (RAM) and DOS version 3.2 as stated in the Vectra's installation guide. Our system consisted of a 40-MB hard disc and an HP color monitor. We also installed an AST-286 memory board with 2 MB of additional memory. We allocated 1 MB of additional memory for RAM disc and 1 MB for use as Expanded Memory (EMS 4.0). The Expanded Memory is recommended in the installation guide "for increased performance."

Our system also included an Ungermann-Bass NIU-PC (Network Interface Unit) board to communicate with our Ethernet LAN (Local Area Network). We did not, however, install an 80387 coprocessor to speed up calculations.

THE ACTUAL SOFTWARE installation was very straightforward. Cognos provides an INSTALL batch file that automatically creates the appropriate directories and then loads the software. The INSTALL procedure automatically incorporates the required changes to your AUTO-EXEC.BAT and CONFIG.SYS file, if requested, or you manually can make the noted changes.

In addition, you must upload the *PCLINK* data communication program to the HP 3000. Once you've transferred the *PCLINK* software to the HP 3000, you must upload the *PHPSUTIL* program used to convert HP 3000 subfiles to portable subfiles.

You then are instructed to modify a special PHED batch file to incorporate your favorite PC editor for easy access from within the *PowerHouse* products (via the REVISE command).

In addition, you also can modify the PHCOMM batch file to include an alternate



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terminal emulation/data communications software package of your choice. It should be noted, however, that Cognos has chosen to incorporate the *Reflection 1 Plus* software package by Walker Richer & Quinn (Seattle, WA) within Cognos' *PowerHouse PC* product. This program provides terminal emulation and data communication (file transfer facility) to a variety of hardware including both PCs and minis.

The *Plus* version also enables the BACKUP and RESTORE of PC files to the HP 3000. The *Reflection* software is extremely powerful and easy to use. This was an excellent choice by Cognos for incorporation within its product.

To load the communication software on the HP 3000, it's necessary to connect the PC to the HP 3000. We thought we would be able to utilize our UB (Ungermann-Bass) Ethernet Network since we currently utilize the network version of *Reflection* on our network. Our network approach for connectivity had to be replaced with a "hardwired" cable to connect our PC with our HP 3000. This was due to the minimum conventional memory required for *PowerHouse PC* to function.

It seems that *PowerHouse PC* re-

quires an excess of 570K to operate, which didn't leave adequate memory for our LAN software or our additional 3½-inch disc driver software. We hope Cognos will be able to free up more conventional memory in the future so that we might be able to utilize our network and not have to resort to older (pre-Network) and less versatile connectivity approaches.

To test *PowerHouse PC* for both performance and portability, we decided to move several *PowerHouse* programs (QUICK, QUIZ, and QTP) from existing applications on the HP 3000 to the PC.

The QUICK modules came from Cognos' financial software *Multiview*. The QUIZ and QTP modules previously had been written in-house to supplement our manufacturing system. The HP 3000 applications are all IMAGE-based.

The QUICK modules included a menu, batch header entry, batch header inquiry, accounting source code inquiry and transaction entry screens. The accounting source code inquiry was a new screen written to test the "pop up" sub-screen feature of *PowerHouse PC*. These modules required eight reference files and two transaction files from two dif-

ferent financial databases on the HP 3000.

The QUIZ programs were part of a multipass report that defines how our products are built and sold. The QTP programs are part of a multi-request process that enables us to copy our product definitions. These modules required that we emulate 11 files on the PC consisting of both IMAGE datasets and standard MPE files from our manufacturing system.

Next, we created the data dictionaries necessary to run the applications. In both cases we created data dictionaries that were subsets of the entire application including only those components necessary to conduct the tests.

In creating the financial data dictionary, we manually converted the dictionary to be compatible with the PC. In creating the manufacturing data dictionary, we moved the HP 3000 data dictionary to the PC and used the "unsupported" XDD program to convert the data dictionary programmatically. This program generates the conditional compilation code necessary to make the dictionary portable between the PC and the HP 3000.

Although the XDD program can't resolve all portability issues, it certainly gives you a leg up on doing it manually. We sincerely hope the XDD conversion utility will continue to be a part of the *PowerHouse PC* product as a "supported" utility in the future.

Next, we reviewed the source code for syntax not portable to the PC.

The *PowerHouse PC* portability guide was very useful in identifying general differences within the two environments and the specific differences within each of the component programs. We decided that the most substantive differences were in the QUICK modules; the QUIZ and QTP modules could be moved "as is" and any problems noted would be resolved at compile time.

We spent several hours examining and revising the screens to include the conditional compilation code necessary to make the screens portable. As part of a large IMAGE-based application, these

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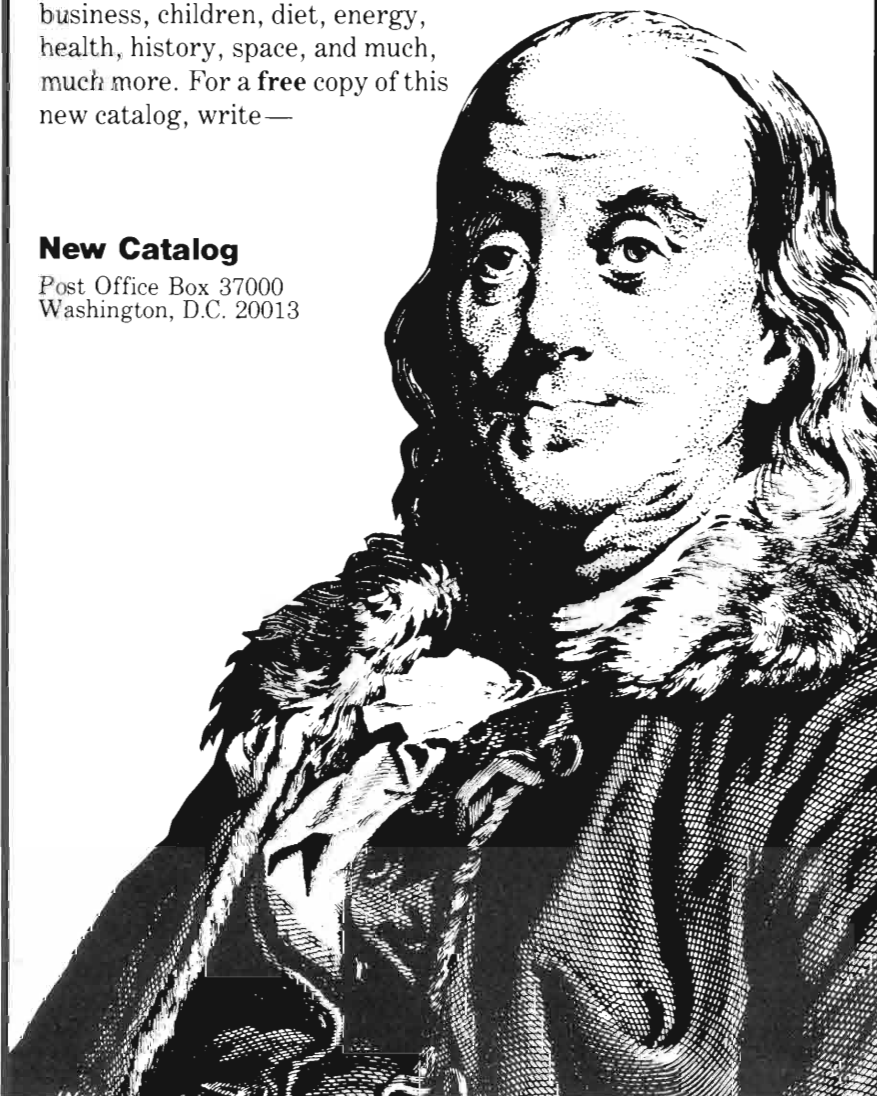
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screens were very complex and included a significant amount of procedural code, which further complicated our task. Aspects such as WINDOW options on screen statements, CLOSE options on file statements, LOCK verbs, STARTLOG/

... this system is a multiuser one that included functional security . . .

STOPLOG verbs and calls to EXTERNAL procedures are all examples of code that had to be branched around to make the screens portable.

IN ADDITION, this system is a multiuser one that included functional security based upon the user class concepts built into the HP 3000 data dictionary. This code also had to be circumvented within the single-user PC environment. These items seem to limit the ability to test completely, in the PC environment, a series of application screens ultimately written for use on the HP 3000 using IMAGE. Once these screens were converted, we were ready to move the source, including the dictionary, and data to the PC.

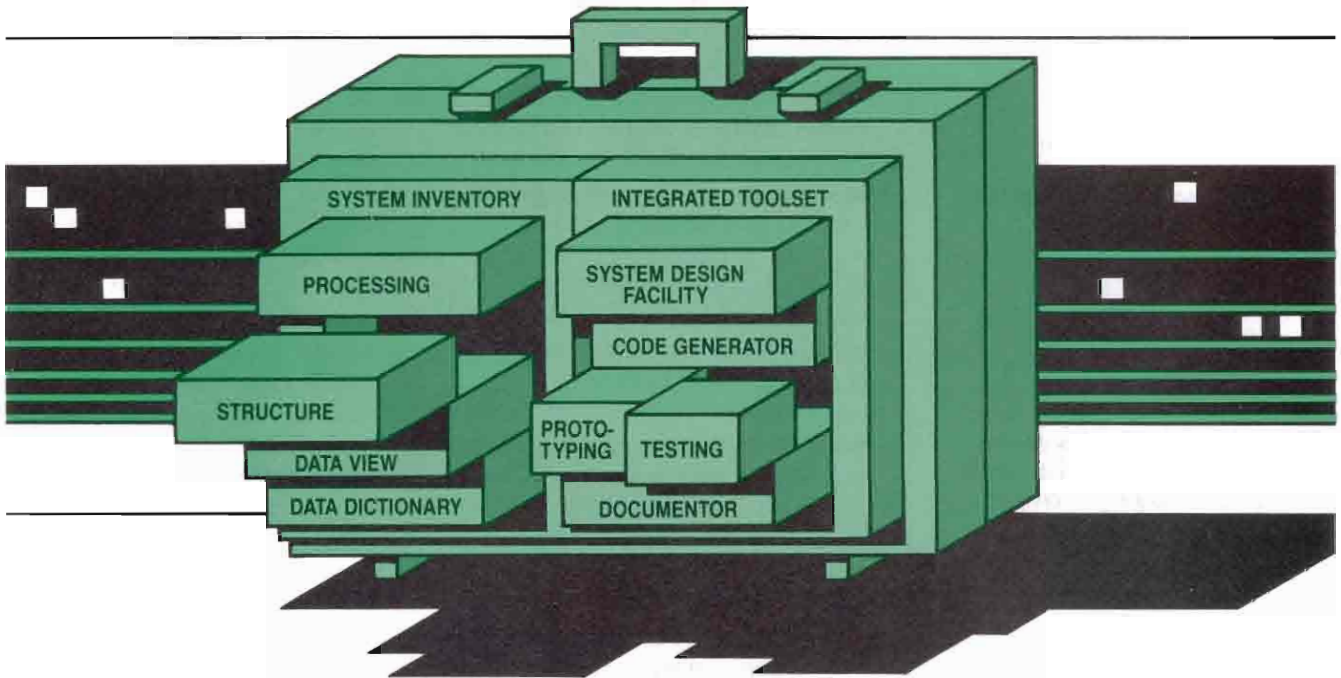
Moving The Source Files

To move the source files, we used *Reflection's* MENU.CMD script file. This script allows you to transfer all types of source files and data files (as subfiles) to and from the PC. You can enter filenames using wildcards when transferring files within *Reflection*. When receiving files from the HP 3000, wildcards aren't allowed in the group and account. When transferring files to the HP 3000, you must log into the group and account where you want the files to reside. Likewise, when transferring files to the PC, you must be in the directory where

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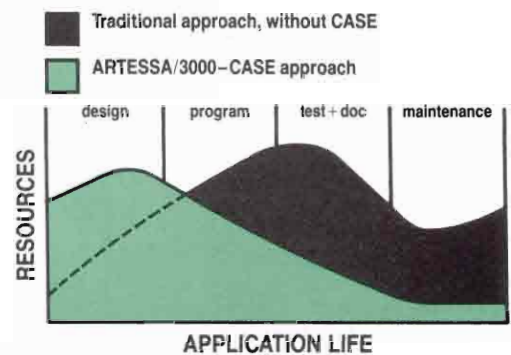
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the files are to reside.

The only problem encountered was that our files were stored on the HP 3000 in QEDIT format. There's no provision to send or receive files in that format without revising the standard script.

Overall, the script proved very helpful. This was especially true when receiving files from the HP 3000 because the script automatically puts the appropriate file extensions on the file-names when they're transferred to the PC.

We used the QUTIL program on the PC to generate the files we needed from our dictionary. This process was faster on the PC than on the HP 3000.

QUTIL also has been enhanced to have more functions related to file management. For example, there's a COMPRESS command to remove deleted records from indexed or relative files to recover the disc space. This operation also checks and repairs internal inconsistencies found in the file. There's also a CONVERT command that lets you convert non-*PowerHouse PC* files including *Lotus*, *dBASE*, *DIF* and *ASCII* (delimited and fixed-length) formats into readable *PowerHouse PC* subfiles.

In addition, there is a feature that lets you record your keystrokes from a QUICK session into a file (QKECHO) that you subsequently can edit and transform via the QKIN command into a QUICK input file for automatic playback.

To get our data from the HP 3000 to the PC, we used the GETDATA batch file that executes the GETDATA.CMD script file for *Reflection*. There's a corresponding PUTDATA batch file that also allows you to upload data to the HP 3000. The GETDATA script file allows you to specify the logical dictionary name of the file containing the data you want to download. The script then uses QTP to:

- *unload all the data in the specified file on the HP 3000 to a subfile,*
- *run the PHPSUTIL program that resides on the HP 3000 to convert the local subfile to a portable subfile format,*
- *download the portable subfile to the PC,*
- *convert that file via QUTIL to a PC subfile and run QTP to add the records to the corresponding file on the PC.*

The script simplifies the tedious process of manual file transfer. However, it is very simplistic in that it "dumps" the specified file in its entirety. There still remains the difficulty in setting up a test or development environment with a logically consistent subset of related files for an entire application.

At this point, we were ready to compile and run our programs within the PC environment. The compilation process was for the most part the same as on the HP 3000. We set up a series of USE files to compile all our modules within the various program components. The only difference here is that each USE file must be qualified by the appropriate extension for that program component. For example, to compile all our QUICK screens we created a file called COMPQKS.QKS that included the USE statements for each of the modules to be compiled.

In the QDESIGN program, we then issued a USE COMPQKS command to do the compiles in a batch mode. The program components automatically look for files with the appropriate extension for that *PowerHouse PC* component.

The conditional compilation flag "PC" automatically is invoked when compiling programs on the PC. The documentation stated that in the future the flag "HPMPE" will be invoked automatically when compiling programs on the HP 3000.

A very nice feature is the new REVISE command available in all but the QUICK component. This command allows you to edit the commands that have been processed within that specific *PowerHouse* component without exiting the specific program module. For example, if you've tried to compile a QUIZ program that has a syntax error, you can type in REVise at the ">" prompt and optionally specify the original filename.

The editor you have defined for use on your PC is invoked and a copy of the file you specified, or a temporary file, if you didn't specify a filename, is available for editing. You can decide to keep the copy as the original, assign it

PowerHouse PC

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(800) 4-COGNOS
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a new filename or keep it as the temporary copy. In any case, when you exit your editor it will return you to QUIZ and execute the file with your changes.

We began our testing with what we thought would be the easiest of tests, a QUIZ program. This turned out to be the most difficult of all tests. This report is generated in a series of steps. The first step involves creating an empty subfile with all the fields necessary to write the report. Subsequent passes retrieve data from various files and append the data to the subfile created in the first pass.

In some passes the subfile is read and the data changed and a new subfile record written with the changed data. In all passes there is a sort field defined. Its value is determined by that pass and positionally reported in the field defined in the first pass as "sortchar". On the HP 3000, we wrote all the passes in QUIZ and added new records to the subfile in append mode. This technique, however, proved to be our undoing on the PC.

When we tried to run this report on the PC, we got some very different results. The "sortchar" field is a good example of the problem. As records were appended to the subfile, the subfile mini-dictionary was rewritten and the name of the item that was being reported in the "report" statement became the item name that would have to be addressed in subsequent passes.

On the HP 3000, this doesn't happen. This enabled us to report differently named items positionally in the record as long as they had the same length as the original subfile item. The item name in the file's mini-dictionary remained the same.

As a result, our report couldn't be

run as it was originally written. We then rewrote some of the passes in QTP, writing records to the subfile with an "output" statement in add mode. This way we could alter the value of items without causing them to be renamed in the mini-dictionary. The resulting report was a better overall design that could be run in either environment.

The final report was composed of three QUIZ modules and four QTP modules. We ran all of the modules compiled. The entire process selected, sorted and reported 476 records in 14 minutes and 35 seconds producing a 61-page report.

Our QTP example was made up of 10 requests. It created a copy of selected product definitions from our manufacturing system. It was required to read through all of the files we brought over to the PC and add new records to them with the new product information. We ran this module compiled. It read a total of 1,114 records, processed 563 transactions and processed 951 records (730 added, 32 updated and 189 unchanged) in 11 minutes and 44 seconds. This module ran "as is" from the HP 3000 with no changes.

To test our QUICK screens, we used the QKECHO/QKIN feature to set up a script of transactions and inquiries so that the overall process could be timed. The script included:

1. Select a function from the main menu.
2. Enter a batch header.
3. Invoke the "pop-up" inquiry from the accounting source codes screen and select the appropriate code.
4. Invoke the transaction entry screen.
5. Add two transaction line items.
6. Update the records.
7. Return to the header screen.
8. Delete and update the previously added record.
9. Enter FIND mode.
10. Invoke the batch header inquiry and make a batch selection.
11. Exit the QUICK process.

In the entry of the batch headers and transaction details, there are many complex validations being performed to maintain data integrity. We looped

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SUPRTOOL

Best of
FCOPY,
QUERY,
and SORT



Time This Simple Test

Compare FCOPY and SUPRTOOL:

```
:run fcopy.pub.sys  
>from=catalog.pub.sys;to=tempc;new  
>exit
```

FCOPY will copy from 100 records per second (Series 37) to 400 per second (Series 68). Now try SUPRTOOL.

```
:run suprtool.pub.robelle  
>input catalog.pub.sys;output tempc;xeq  
>exit
```

SUPRTOOL will copy 2500 to 6500 records per second (37 to 68): 16-25 times faster.

Powerful Selection Criteria

FCOPY allows only one test criterion; QUERY doesn't work on files, and both are slow. SUPRTOOL reads files or IMAGE datasets remarkably fast, and can select on any valid type, combining numerous tests with AND and OR. You can check for patterns, tables of values, bit values, and even for today's date.

```
>table tab1,a,file,in.data  
>if $lookup(tab1,a)
```

New for 1987

SUPRTOOL is even faster than before at executing complex IF commands. SUPRTOOL can now remove duplicate records from the output file. Use IF date=\$today to check a date field for today's date. Sort according to Native Language Support using SET NLS.

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through this script five times for each test. The first test we ran didn't use the RAM disc and took 11 minutes and 26 seconds. The second test we ran used the RAM disc we had set up on our machine. The test took seven minutes and 59 seconds, a 30 percent improvement. It was very clear that the RAM disc provided a performance benefit.

Throughout our testing, we attempted to utilize the expanded memory option; however, we encountered numerous memory management problems within all the *PowerHouse PC* product components. Therefore, we SET PHEMS = DISABLE to disable the Expanded Memory Subsystem, which allowed us to use the product components without any further problems. Folks at Cognos informed us that they were aware of the memory management problems and they would be resolved in the next product release.

Another system bug that caused us some problems involved IF/THEN/ELSE syntax where the ELSE clause wasn't present in our code. The code either did not compile or gave unpredictable results during execution. In our QUIZ code, the SELECT FILE syntax also caused the system to hang. However, by changing it to a SELECT IF construct, the problem was eliminated. Cognos is aware of these system bugs and plans to resolve them by the next product release.

During the course of a system problem, we were unable to recover some of our data files because the system "hung" and it was necessary to reboot. Had this been a production system it would've been necessary to restore our data from the previous day's backup and re-key all the transactions entered since the backup. We suggest that a transaction logging function, similar to IMAGE Logging on the HP 3000, be considered for incorporation into the QDESIGN/QUICK product components. This logging function would log all transactions to the PC's floppy drive. The logging of transactions would not only prove valuable for data recovery, but also could be used for "batch" capture and transmission of daily transactions to a central office for end-of-day processing.

PowerHouse PC can be used to develop applications for execution on the HP 3000 as well as the PC. In addition, applications can be written on the HP 3000 for later execution on the PC. However, given the level of effort required to create a parallel set of IMAGE look-a-like files (datasets) on the PC and the added complexity of writing portable code, we feel that *PowerHouse PC* is better utilized for the development of PC production applications, rather than as a development workstation for HP 3000 applications. The PC workstation approach would be very effective in situations that require remote data entry and validation with subsequent "transmission" of daily transactions, via modem, to a mini facility for centralized "batch" processing and update.

PowerHouse PC comes professionally packaged with a set of five installation diskettes, an installation guide, four documentation manuals and a notebook with blank pages provided for your application development notes.

The documentation consists of an introductory *Getting Started*, a *Portability Guide for Hewlett-Packard*, a *Host Connection for Hewlett-Packard* and a *Technical Reference* guide. The manuals are well-organized, clearly written and use examples where appropriate to illustrate the concepts. These manuals are bound in a conventional paperback fashion as opposed to the more popular three-ring binder method.

Overall, *PowerHouse PC* is virtually the *PowerHouse* product that we all know from the HP 3000 environment. The portability of code provides significant added flexibility for both the design and development of applications. *PowerHouse PC* also allows for the development of applications with a staff of programmer/analysts who are skilled in the use of a single fourth-generation language across various hardware environments. The portability, functionality and ease of use make *PowerHouse PC* a logical extension of the *PowerHouse* family of products. —*Sheldon Green is MIS Director and Peter Troy is applications manager at Toll Brothers Inc., Horsham, PA.*



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WORKSTATIONS

Bob Youngquist

Technical Desktop Publishing

Desktop publishing is a real contender for buzzword of

the year. Even old standbys like UNIX, networking and connectivity may have to take a back seat to the D-word for the present. If you're thinking this is just another conspiracy to sell you expensive and otherwise useless hardware, you're wrong. Yes, you'll spend for the hardware, but desktop publishing is, at least from my experience, probably the best software investment available today.

The marketeers tout the gains in productivity and the beauty of the finished product, but they miss or purposefully gloss over the real benefits of DTP. The real value is not in the effect on the finished product, but the way in which it alters the process.

It's now possible to store an entire document including illustrations on a hard disc or floppy. If you don't already grasp the significance of this advance, you will as soon as you set out to publish an updated version of your 50-page manual. The freedom to modify, reorganize and enhance, along with the centralization of control over all aspects of document production, is what makes desktop publishing worth having.

Rather than attempt an exhaustive survey of the field, this article represents a modest and informal case study of how my company, Insight Instrument, uses DTP in the production of technical documentation.

The Task At Hand

Insight Instrument produces a line of microprocessor-based instruments for engine monitoring in general aviation

aircraft. Although the instruments themselves are quite simple to use, the subject of aircraft engines is more complex than you might surmise.

We discovered that many of our customers didn't understand the significance of engine monitoring and that the original seven-page booklet describing the use of the instrument had to be replaced with more extensive reference work on the subject of aircraft engine operation. This is when we decided to get into desktop publishing.

Aldus' *PageMaker* was the first DTP program for micros. Originally, it only ran on Apple's Macintosh and, at the time of my purchasing decision, was only promised for the IBM PC. The new kid on the block was *Ventura Publisher*; it only ran on the PC and was immediately available. *Ventura* became the winner by default since our company already possessed all of the necessary hardware: a PC-compatible hard disc computer equipped with a graphics card and laser printer.

My first purchasing decision in the DTP field proved to be fortunate. Fifteen months later, the consensus in the market is that *Ventura* is the new leader in the field, particularly when speed and large-document handling are considerations.

Ventura also has proven to be particularly adept at utilizing our HP hardware like the LaserJet II and interfacing with the HP software we use on our workstations. However, the field is expanding rapidly and old competitors like *PageMaker* have brought out new enhanced versions, which may yet give *Ventura* a run for its money in the large-document arena.

Ventura Publisher is surprisingly undemanding when it comes to computing horsepower. Any garden variety

80286 AT-compatible will drive this program at an acceptable clip.

The basic program comes on 11 360K discs and takes up about 3 MB of disc space when the screen and printer fonts are expanded and installed. Bear in mind that this is a minimal setup. It's conceivable that a system with a good choice of fonts could monopolize a 40-MB hard drive.

The industry standard LaserJet II printer does a fine job of handling output, and if throughput is the only consideration, it's vastly superior to the more expensive *PostScript* laser printers. The original LaserJet, however, is crippled by its inability to accept downloaded fonts.

The best performance is obtained from laser printers with a parallel interface. The serial interface found on the original LaserJet and LaserJet+ is an annoying bottleneck when the fonts *Ventura* uses must be downloaded to the printer. At 9600 baud, this seems to take forever when all you want is a quick, single page.

Ventura is rather demanding when it comes to video displays. The large-screen, high-resolution displays that HP workstation users take for granted are harder to come by in the PC world. The ultimate DTP display shows an entire 8½ x 11-inch page (or even two facing pages) with good contrast, brightness and a size that makes eight-point typefaces readable without the aid of a magnifier. The EGA standard with a resolution of 640 x 350 is a pale shadow of what a DTP display should be. Hardly a week passed before I began an earnest search for a DTP display.

My first choice did little, other than reinforce the old adage about getting

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Wyse-700 Graphics Subsystem

Wyse Technology
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what you pay for. The Wyse 700, at the bottom of the price range, looked great in the ads due to a modest piece of ad-man legerdemain, but when you get it in the office you discover that in spite of all its pixels (1280 x 800), it really isn't a full-page monitor. It's more like a 4/5-page monitor. Those great looking full pages in the ads weren't really full after all.

My brief experience with the Wyse proved that a 4/5-page monitor is really no better than a half-page monitor; you

still have to scroll up and down to examine every page. Refreshing all those pixels gets annoying after the first thousand times or so.

The other serious deficiency with the Wyse is its lack of brightness and contrast. For a week I squinted at my Wyse-700 in a funeral setting of dimmed overhead lighting and drawn curtains before chucking it.

The Xerox Full Page monitor was definite progress. It had fewer pixels than the Wyse, but they were placed in a portrait orientation: Like a sheet of typewriter paper, the monitor is taller than it is wide with clarity, contrast, brightness and refresh rate all quite acceptable.

Compatibility is another issue. The display wouldn't work with my 386 clone; so much for 16-MHz DTPing. A 10-MHz AT clone was purchased just to satisfy this monitor. It proved to be a cheaper solution than purchasing another monitor system.

Like most big-screen portrait monitors, the Xerox Full Page Display emulates, albeit imperfectly, one of the PC video standards (CGA in this case); however, it does so using little more than a third of the screen. This tiny display was ill-suited for general duty and, by necessity, the dedicated DTP workstation was born.

The Learning Curve

Ventura Publisher has a graphics-oriented Macintosh-like interface. At first glance, it's the very epitome of simplicity. After three days you'll wonder how something so simple could be so difficult. Like most powerful programs, doing the simple thing is easy while the not-so-simple seems, at first, quite baffling. As with any program, the internal logic must be mastered, but so must many typesetting concepts and an unfamiliar approach to document handling. For someone who grew up on a programmer's editor, *Ventura* is a big step.

A couple of key *Ventura* concepts need illustration in order for the uninitiated to understand the power and potential of this program.

The first is style sheets. A style

sheet isn't really a sheet at all, but a collection of tags (paragraph attributes) and frame settings (page attributes) that describe a document. The blocks of text commonly referred to as paragraphs take on a new significance in *Ventura*. Many attributes of the printed word such as the font (the size and style of typeface), the alignment (ragged, centered or left- or right-justified) and the leading (vertical spacing between the lines) are tied to the paragraph by means of a tag.

To tag a paragraph is to assign a certain style to it. The style is derived from settings in a series of menus and Mac-style dialog boxes. In a *Ventura* document, every paragraph is assigned a tag. Any changes to a tag, such as changing the size or weight of a font, for example, apply to every paragraph to which that tag is applied. Thus, it's very easy to change the overall look of a document by making a single change to one or more tags with a few clicks of the mouse.

Although style sheets are associated with a document, they are files and entities unto themselves. A single style sheet can be applied to many documents. Style sheets are powerful tools for enforcing a consistent look for documents. A well-designed style sheet can be applied to a totally unformatted document in a matter of minutes, and the end result will be very close to the final desired result.

Indirectly, style sheets can influence not just the visual style of a document, but the editorial style as well. Typically, a style sheet will define a separate style for the various headings and subheadings. A list of the defined tags defines the hierarchy of headings and can serve as a stylistic guide to the author of the document.

A second basic concept in *Ventura Publisher* is the frame. A frame can hold both text and graphics. In *Ventura*, frames are laid on top of the underlying page. In their most basic application they define the limits for the words or graphics they contain. They can be sized and moved freely on the page. Margins

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and multiple columns are controlled by frame settings. Like the tags, frames are stored in the style sheet. Sophisticated, multiple-column layouts, once defined, are easily applied to any document.

Frames are particularly powerful tools for integrating graphics with text. You can place a frame on a page and force the existing text to wrap around it, or you can overlay the text. Once a frame has been laid on the page, a drawing or scanned image can be placed in the frame. By grabbing a corner of the frame with the mouse cursor, you can reposition or resize the frame and the graphic image it contains will be repositioned and rescaled to fit the new frame; the text that shares the page will be reformatted around it. *Ventura* does this with amazing speed.

Style sheets also contain definitions that apply to pages. Running headers and footers need only be defined once and are applied to each page automatically. Page definitions automatically can number chapters, pages or even supply multileveled numbered headings in several different styles with accurate numbers reflected in generated tables of contents and indexes.

Putting It All Together

Ventura Publisher has proven to be particularly adept at integrating various elements of our technical publications in our predominantly HP environment.

The basic text for our technical publications often is written by one of our engineers on one of our HP 9000 workstations using *MultiView*. *MultiView* is a programmer's editor that runs under the PASCAL system; its output is an unformatted HP LIF file that's written to a 3½-inch HP format floppy disc. This file is translated to an MS-DOS format with a file conversion program. We use *PCLIF* from Innovative Software Systems.

Ventura is flexible enough to use this basic ASCII file, but more frequently, additional editing and spell-checking is done using a DOS word processor. *Ventura* is a rudimentary editor at best, and it's more productive to bring a text file close to its final editorial form before importation.

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One of *Ventura's* chief strengths is the way it handles the text files, which are the core of any document. It directly can import the non-standard formats of all of the most popular DOS word processors, but, more important, it can write the edited files back to their native format. Even a fully formatted file can be edited with the word processor that created it. Formatting that has been applied to a document appears in the document as easily interpreted text. For example, you may have defined a tag for a subheading called `HEADING_2`. It appears in the text like this:

`HEADING_2= Putting It All Together`

The obvious implication of this approach is that sophisticated styles can be applied to a document even as it is being composed. In fact, a document could appear almost fully formatted the first time it is imported into *Ventura*.

Another important benefit of this technique is the ability to make wholesale changes to a document using the find-and-replace facility of a word processor. Since the tags are ordinary text strings incorporated into the document, they can be altered easily with a word processor.

Most important, making editorial changes to a fully formatted document doesn't necessitate reformatting from scratch. Text, which is included in existing paragraphs, will assume the characteristics of the rest of the paragraph automatically and new paragraphs can be given the appropriate style by preceding them with the appropriate tag.

Version 1.1 of *Ventura* contained an enhancement of considerable value to CAD users: the ability to import HPGL plot files. HPGL is the plotter control language common to all HP plotters. Since these plotters are a de facto industry standard, any serious CAD

system has the capability to generate these files. We use HP's Engineering Graphics System, which runs under the PASCAL system. Graphics files must undergo the same file conversion steps as text files, but the results are more than worth the effort; even relatively complicated schematics are reproducible at 300 dpi.

The drawings you create on your CAD system can be incorporated easily into a *Ventura* document. *Ventura* actually creates a separate GEM Draw format file based on the HPGL file. As with text files, the original file remains as a separate entity. Future revisions to illustrations or drawings can be incorporated by merely updating the HPGL file. When the document is reprinted, the changes will be represented in the new version of the document.

The utility of any document is greatly enhanced by a good table of contents and index. To generate a table of contents, you merely need to specify the tags and their hierarchy. A special routine in *Ventura* generates a table of contents text file, which can be incorporated into the document.

Creating an index is somewhat more involved. Any word that will appear in the index must be preceded by a special text string. Usually, I create a list of unique words found in a document using a DOS utility called `UNIQUE` as a starting point for index generation. I eliminate unnecessary words and then use a word processor to tag words as index entries. A routine in *Ventura* generates a multileveled index file that's incorporated into the document and can be formatted as desired.

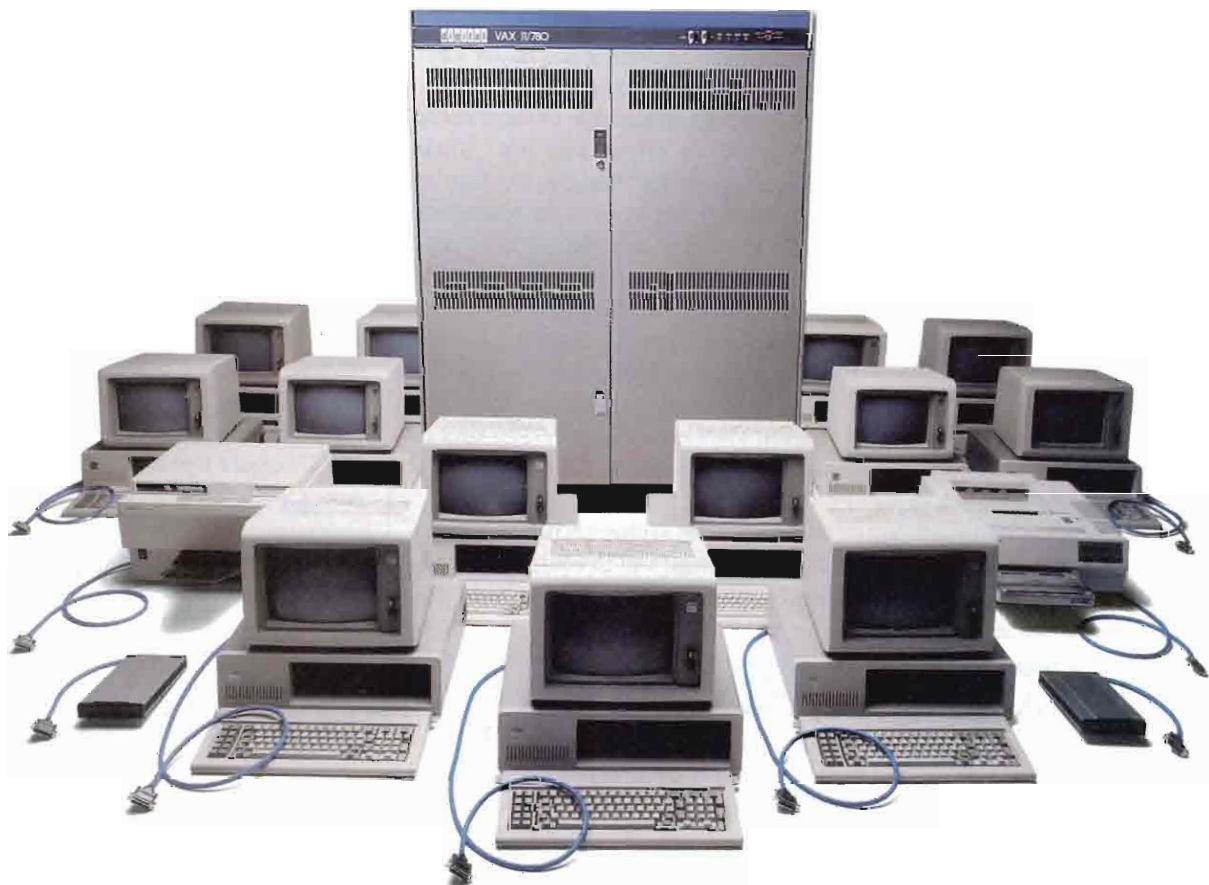
Bells And Whistles

If *Ventura* has a glaring weakness, it is in its editing capabilities. It doesn't even have a simple search command. Fortunately, with the aid of some additional software, this shortcoming can be overcome.

Typically, we run *Ventura* under the multitasking DOS environment `DESQview`. `DESQview` allows you to run *Ventura* simultaneous with other pro-

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grams. A typical DESQview DTP session will have *Ventura* running in one window with another window devoted to the word processor and a third for general file utility duties. With this arrangement, you have all the capabilities of a full-featured word processor as well as the special abilities of *Ventura*. If, in the course of formatting a document, you decide upon major changes in formatting or textual content, you can switch to the word processor instantly and make the changes using the sophisticated tools it supplies. When you re-enter *Ventura*, you reload the edited text file and carry on with the formatting session.

Ventura supplies a limited selection of fonts with the program.

Aesthetically minded DTPers will want more. Fortunately, third-party vendors offer a variety of font outlines. Font outlines are really definitions of the character shapes. These definitions must

be converted into bit-mapped format that can be downloaded to the LaserJet. Unfortunately, bit-mapped representations of characters aren't space-efficient; the larger the characters, the greater the disc space requirement. A good selection of fonts including the larger sizes could occupy 30 MB or more.

The biggest supplier of fonts in the DTP field is Bitstream Inc. Their outlines are quality designs, but they're expensive. Each type style retails for about \$200. However, once you've purchased the outlines, you can generate normal, bold, italic and bold italic fonts in sizes from three to 120 points using a program like SoftCraft's *Fontware Installation Program*. A menu selection from within *Ventura* provides the last step in integrating third-party fonts.

DESKTOP PUBLISHING REQUIRES a considerable investment in equipment, software and, most of all, time, but the

benefits are enormous. The value of desktop publishing is not in producing beautified versions of computer-generated documents; its real value lies in the control it affords the user over the key aspects of document production.

Will DTP save you time or money? Perhaps not. But it will improve the quality of your documentation. In our case, DTP significantly has enhanced the value of our products. Undoubtedly, many companies, particularly in technical fields, are seeing similar results.

Furthermore, there's something particularly satisfying about being able to reduce all the elements of a complicated document to a simple, neat software solution, and in the world of pre-print production, neatness counts. — *Bob Youngquist is president of Insight Instrument Corp., Fort Erie, Ontario.*

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OPINION

Don Person

Making The Next Step

Is desktop publishing limited by software, hardware or both? Has it lived up to the promises echoed repeatedly over the past three years? Will it ever? It seems like we've been promised a room with a view, but all I see is a view of the room!

Virtually, most desktop publishers often wonder if they'll ever fully attain the elusive rewards claimed for what was supposed to be a fast growth area, not to mention a great productivity booster. All but the most easily amused computer novices can agree on one thing: Although the industry's marketing people continue hawking the promised land, the potential of desktop publishing is yet to be realized.

Vendors claim that, with consolidation to just a few major page-layout languages, the golden age has arrived. If it's the hardware part of the equation we're looking at, then HP has a lot to be proud of. With the LaserJet, ScanJet, SketchPro and now the DeskJet, HP is playing with a full-house hand. But, given this powerful stable of hardware, how much does the sophistication of today's software put it into harness?

Talking with people about desktop publishing reminds me of the parable of the three blind men and the elephant: What you see is more a reflection of your needs and expectations than it is the true picture of an industry segment in perpetual infancy. If your small-scale publishing needs extend no further than your office or organizational newsletter, this is merely a joke. There are many happy and productive people who "publish" with no more than a flexible word processor and either an old-

fashioned (fully amortized) daisywheel printer or a LaserJet. Watch for the DeskJet to add more converts to this crowd, and rightfully so. This particular peripheral has a lot to offer "informal desktop publishers."

The largest group involved really is using what I call informal desktop publishing (IDTP). To this middle group, a combination of software and hardware meets a universal need for a cheaper and faster alternative to phototypesetting services. IDTP still relies on proven techniques for including pictures and organizing the final composition of the printed page.

Finally, we have the high-level integrated desktop publishers who spend a lot of money to do it all quickly and in-house. And, of course, they're trying to do it just like the advertising claimed. Often, they're the worst served, unless timeliness is the sole basis for perceived value in desktop publishing.

It seems that the more you spend on desktop publishing, the less you get. Full-scale, graphics-integrated desktop publishing has been overstated and grossly oversold.

Pagemaker output, whether done on the Vectra or the Mac, has certain hallmarks that serious publishers simply find laughable. It's true that fast charting and graphics already have found their market niche. You can see samples gracing the pages of *USA TODAY*, scores of local newspapers and more than a few magazines. Still, no publisher of sound mind will commit the "look" of an entire publication to a style this primitive. Knowledgeable people will use this sparingly where time is of the essence, but not for an entire publication. You don't need integrated desktop publishing programs just to perform line graphics.

The more you use hybrid IDTP, the more you have to gain, mostly because IDTP doesn't sacrifice the look of the final product.

Here's the IDTP *modus operandi*: You don't need to buy into the current crop of desktop publishing software. I recommend *XYWrite III Plus* because it has a superb hyphenation and justification routine that's the best in existence for any kind of computer. All you do is make a single copy of the printed masterpiece with whatever level of sophistication you may happen to have. Generally hyphenated and fully justified columnar text is output in "strips" on your LaserJet (or DeskJet) printer. If photos are needed, you can merge conventional halftone screens with the text during pasteup. The composite boards go to the offset shop or are photocopied or processed for whatever means will produce the ultimate printed page.

Laser toner and the expense of maintenance tends to be monetarily wasteful for all but the most timely material, which means only one or two copies pop out of the LaserJet, not dozens. Everyone looks at cost factors now. As the DeskJet is further refined, it could be the most cost-effective tool in the current low-cost desktop publishing arsenal.

HP AND OTHER MANUFACTURERS in the business share a false optimism that merging computer graphics with text is a stimulating breakthrough that is unappreciated. In other words, three years later, the market is almost ready to take off. We're stuck on the runway with enough power to taxi, but not enough "oomph" to clear the ground.

The warm glow of impending success is mere wishful thinking primarily based on what people say when they're already locked into the high-priced, peripheral end of the show. In truth, it speaks more of the failure of market research to show anything meaningful about the scant progress made through years of selling. Suppliers instead should be looking in the direction of the people who ignore desktop publishing in favor of IDTP for guidance.

When you ask people with awareness of the traditional printing business about the impact of desktop publishing on their lives, the answer is likely to be a resounding "huh?" or, "you must be kidding!" If I, for one, never see another cute but jagged graphic printed with "one-zero" contrast, it will be too soon. Without higher resolution and a decent gray scale for reproduction, no one with an eye for graphics can do more than hide their disgust with current packages.

The level of graphic support available in even the best packages is the kind of stuff that only a 13-year old computer buff can appreciate. In addition, 16-level "grayscale" technology, although an improvement, doesn't make it either. Eight-bit (256-level) is the minimum generally accepted standard for video or true publication quality. There are plenty of others who can't even agree that eight bits is enough.

Either way, I'd be happy to receive feedback on this, so if anyone would forward me real live "desktop" publications with pictures that look like pictures rather than something run through a photocopier, I'll happily promote the hardware and software that makes it possible.

Desktop publishing meets all the criteria for the, "gee, look what the computer can do" level of performance that so many of us dislike. It's just not ready for prime time. Real publishing programs simply don't try to integrate pictures with text, beyond reserving space in the finished page for pastep using fill-around and open block commands. Page-layout languages aren't standardized. Each software supplier

needs individual drivers to support laser or photo-optical typesetters.

By the way, don't expect *PostScript* to be the Holy Grail either. The royalty problems imposed by its owners probably will prevent the adoption of any single standard in printer command language for at least the immediate future. Whether or not full-page composition is the object, pictures still are

pasted in for the final plate.

My point is that desktop publishing still asks us to accept graphics that are inferior in every way to the standards we expect from other publication production software. Newspaper editorial production software (EPS) has features that are narrower in application than desktop publishing, yet EPS lights the way to what can be done.

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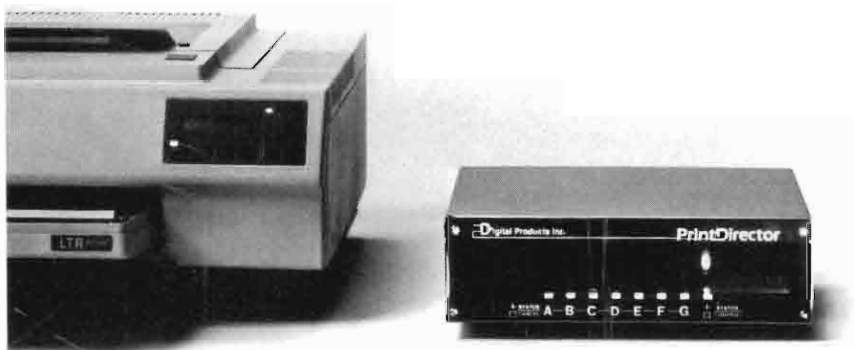
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Don't assume that the magic is in the mini. Desktop publishing's weakness is in equal measure a reflection of problems inherent in this generation of small-computer architecture. The most ambitious projects in this field can't compare with the full-featured publishing packages used by magazines and newspapers. I've never met anyone with some knowledge of both systems daring enough to claim otherwise.

It might be wise to think about how desktop publishing stacks up with the body of publishing programs in use on minicomputers for 10 years or more. If we compare desktop features to the packages that real publishers use to prepare words and pictures, you can appreciate my personal contempt for the current disappointing crop of desktop publishing tools.

The genuine success stories can be uncovered in areas where people mimic EPS by combining conventional and

desktop publishing technology, albeit frequently with a mix of hardware and software. The final pasteup sequence is the same as it ever was, but more often than not, the finished appearance of the printed document is as good as any typesetting shop can provide. It usually exceeds what you can do with desktop publishing software alone and is limited only by the fonts at your disposal.

This would be funny if it weren't for the battle looming over the licensing of page description languages. Perhaps the commotion will retard the whole business long enough for new and hopefully better ideas to take root and grow.

This is a time and place where HP can be a force for positive change. Sure, HP supports *PostScript* now, but its Printer Command Language (PCL), though a little clunky, isn't so bad either. Extending it further and encouraging other vendors to offer support would've

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CIRCLE 298 ON READER CARD

XYWrite, XYWrite III Plus

XYQuest Inc.
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been a smart move. Doing so without restrictive licensing would be even smarter. Establishing innovative standards would be the best idea. Unfortunately, the rush to get products to

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market has been the worst influence in the business because it's largely what has gotten us where we are today.

ADVANCING BEYOND today's software means some difficult things have to be done. Without open standards, new hardware and very difficult programming, there's little more that can be done to make desktop publishing more attractive.

While we wait, here's what can be done to make desktop publishing live up to its potential:

■ *Avoid the embarrassment of the "computer" graphics look.* Most people barely use pictures. None of today's programs do much when you want to create, manipulate or print high-quality images. So, first and foremost, we need eight-bit, gray-scale digitizers and adjunct graphics terminals to support and modify pictorial data, an often overlooked area ripe for further development. In all probability, it may be beyond the scope and power of today's personal computers.

■ *Improve hyphenation and justification, the cornerstone of good looks and clean columnar appearance.* Features such as headfit calculation are touched upon. In part, this can be blamed on limited numbers of fonts and font-scaling effectiveness. Though hyphenation and justification, in one form or another, exists in desktop publishing, only *XYWrite III Plus* (a non-desktop publishing package) offers the possibility of switching between standard phonetic and etymological rules of hyphenation. It's no surprise that, in newspapers, where conversion to PC-based publishing software can save big dollars, *XYWrite* has become quite popular.

■ *Price the technology more attractively.* As long as it takes big-ticket hardware and overpriced software to barely approach the advertised features of this generation's packages, the buyer's inverse square law will apply. The DeskJet and other hardware innovations likely will do more to remedy this than all the price cuts for existing hardware.

The ultimate success of desktop

publishing won't be judged by sales figures or "manufacturer research" that any intelligent buyer automatically should question, but rather by the level of conversion found in smaller printing concerns and companies that need frequent small-volume printing. When the typographic service industry starts to feel the pinch, the truth will be obvious.

It should come as no surprise that small typesetting shops throughout the country now are experimenting with this kind of technology. —*Don Person is an independent consultant based in Albany, NY.*

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WHAT IN THE WORLD is an OPEN-ENDED PAYROLL SYSTEM?

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CIRCLE 145 ON READER CARD

Continued from page 10.

about a very recent model that accounts for less than 1/2 of one percent of the company's installed base. The other 995 of each 1,000 HP computers remain as incompatible and uncommunicative as ever.

So what of the "technical advances" that HP incorporated in its MS-DOS line for our benefit that make incompatibility so necessary that it's worth the problems it causes the end user? A wacked out BIOS, physically incompatible discs and customized versions of standard software only served to keep the unwary buyer a prisoner. Adding Touch had nothing at all to do with thwarting disc exchange and everything to do with controlling what software was made for the system and distributed by HP. It also kept the service business in the family. Foolish, stubborn and an ultimately costly decision, as time has so amply proved.

It is instructive to recall where HP's efforts were directed during the failed era of the Touch 150 and the 110 Portable. These "compatible" units ultimately were ridiculed, as major compatibility shortcomings quickly came to light. The "BIOS playboys" and management intentionally though inadvertently ruined four incarnations of the 150 and crippled the first two versions of the 110 Portable. Being slow learners, they then went on to screw up the first four releases of Vectra. There is nothing to take pride in here either. While HP fiddled around with interdivisional production rivalry, the market turned. Management was too slow, smug and self-assured to react in a timely or effective manner. The influence of locked-in profits through the service arm must bear part of this responsibility. Mr. Beattie overlooks an important point. I am not talking about a single power supply, but rather all the parts and all the labor for the entire HP line. HP makes sure by design that you can't get accurate service information or compatible second-source PARTS anywhere else.

I still remember a Mexican dinner I had in New York some years ago after

the HP Touch-Max introductions. One particularly nice SE explained that HP's service contract pricing was "competitive." How, I asked, did HP manage to persuade customers that service contracts were competitive when the company goes to such lengths to keep a service monopoly? The answer then as it is now: "We tell the typical off-contract repair expense."

I don't know of a dealer who receives the information, let alone service training and special test fixtures needed to effect repairs on the 99 percent of the line that still provides prime pickings for the service salesmen. The bulk of HP's computer sales are not even handled through the retail channel in the first place. The contract game is played by HP under the same rules and with the same vjpor as DEC and other similar vendors. Service contracts continue to be a real profit center at HP, and it wouldn't surprise me a bit to find Mr. Beattie's management wishing that all this frank talk on the subject just would dry up. All too often, this tail wags the product planning dog. To quote Dan Rather: "If it walks like a duck, and it quacks like a duck, then it's a duck!"

There should be no mystery here. Service contract profits are ample incentive to make products that are both as proprietary *and* as reliable as possible. Buyers take a contract out of fear because the product is proprietary and non-contract repairs are expensive. On the other hand, units are so well built that few claims are later made against the "insurance" policy. This strategy continues to put cash in HP's pocket. If service manual sales to the public at reasonable prices and JEDEC standardized parts IDs became company policy tomorrow, I'd cancel my contracts next week. As it is, a typical shop manual goes for \$50 to \$100 or much more, and that's for the few models that can be had any price. I could go on for pages on the myriad tactics employed to maintain the artificial barriers HP erects to hold us captive and boost that all important after sale margin. ■



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CIRCLE 207 ON READER CARD

Continued from page 24.

automate the production of high-quality laser-printed material using the HP LaserJet connected to an HP 3000. By combining data from various sources on the 3000 with text from any editor or word processor, users can create management presentations, catalogs, newsletters and more.

FANTASIA previously was sold as the LARC Laser Printing software by LARC Computing and already has been purchased by many 3000 users.

Contact Randy Safier, Proactive Systems, P.O. Box 7102, Bloomfield Hills, MI 48302; (800) 356-7117, in Michigan (313) 333-7200. Stop by booths 1110, 1111, 1112 and 1113 at the Interex Business Conference.

Circle 395 on reader card

Data Compression Added To HP Tape Drive Family

Hewlett-Packard has added data compression to its family of 1/2-inch reel-to-reel tape drives.

HP believes the new HP 7980XC is the industry's first streaming-tape drive with data compression in the electronics. Data is compressed two to five times, allowing more information to be stored on a standard 1/2-inch tape reel.

HP's 1/2-inch tape drives provide computer-system backup storage and the ability to move data from one system to another.

The HP 7980XC (\$32,200) reads and writes data in industry-standard 1,600- and 6,250-cpi densities. It provides a high-end, expandable-backup solution for systems with 2 GB disc capacity or more. Both tape formats are IBM/ANSI-compatible, allowing data interchange between HP and non-HP systems. The non-standard compressed format only is available on 6,250-cpi density. Most 3000s, 1000s and 9000s will support the HP 7980XC.

The HP 7980XC uses an advanced data-compression algorithm in the electronics of the tape drive, producing compression ratios greater than were previously possible with software compression, without hurting performance of the host computer. As a result, fewer tapes need to be loaded and rewound.

Backup times for large systems can be reduced by pairing two or more of the HP 7980XC tape drives with the HP TurboSTORE backup-utility program available with the HP 3000. It gathers data from discs and writes it to one or more tape drives simultaneously.

The HP 7980XC is the newest member

of HP's family of compact autoloader tape drives, which includes the HP 7979A and 7980A drives. HP produced this tape drive using VLSI and surface-mount technologies, a simple tape path and gentle tape handling.

HP also adds the HP 88705A (\$11,000) upgrade kit, which makes it possible to convert the HP 7980A to an HP 7980XC. With this kit, the entire line of tape drives can be upgraded in the field.

Contact the Hewlett-Packard sales office listed in the white pages of your telephone directory. Stop by our booths at the Interex Conferences.

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Ventura Publisher Offers Windows Compatibility

Xerox Corporation recently announced that an update of its Ventura Publisher, which provides several new features including compatibility with Microsoft Windows, has been sent to all registered users.

The update allows Ventura Publisher to operate from the Microsoft Windows Executive program and use Microsoft Windows clipboard Metafiles. The update, which is provided on four diskettes, also contains subroutines that make the program run more efficiently.

Other new features include enhanced graphics conversions, the ability to store HP LaserJet fonts in any Ventura subdirectory, and the ability for the LaserJet to print closer to a page edge. Also, word processing characters not included in the 128-character ASCII set now can be converted.

This update includes features and software changes from the previous update and was shipped to all registered Ventura Publisher users during April.

Ventura Publisher is a desktop publishing software program that provides complete WYSIWYG (what-you-see-is-what-you-get) screen displays and allows users to merge text and graphics quickly to produce typeset-quality documents. The software is compatible with a large number of graphics and text software packages for MS-DOS-based PCs and supports many graphics scanners, printers and typesetters.

Contact the Xerox Customer Support Center, (800) 822-8221.

Circle 392 on reader card

Print Master II Offers Buffered Printer Sharing

Bay Technical Associates Inc., Data Communications Products Division, has introduced its newest device, the Print Master

II, Model 808E.

Print Master II (\$595) offers flexible, buffered printer sharing between computers, printers, plotters and modems, allowing computer-to-computer communications with most communications software packages.

The Model 808E features six RS-232C serial ports and two parallel ports. Print Master II's flexibility enables any port to be set as a computer port or printer port through BayTech's menu-driven configuration mode. Users also determine baud rate, time-out interval, handshaking, form feeds, etc., for each individual port.

All configuration changes are saved in non-volatile memory and later can be altered if applications change. Serial-to-parallel and parallel-to-serial conversions are completely automatic and transparent to users.

The standard 256K buffer is dynamically allocated and expandable. Data input and output are simultaneous on all ports. Output is buffered and sent to peripherals on a first-in, first-out basis.

Print Master II is compatible with virtually any computer, printer, plotter, modem or other peripheral.

Contact Bay Technical Associates, Data Communications Products Div., 200 N. Second St., Bay St. Louis, MS 39520; (800) 523-2702 or (601) 467-8231.

Circle 385 on reader card

Theta Systems Supports All HP Cartridge Fonts

To further promote precise accuracy of on-screen document previewing, Theta Systems Corporation has received authorization from Hewlett-Packard to use its cartridge font data in Theta's preview program, softJET.

softJET (\$120) is a software simulator of the HP LaserJet Plus printer. As a memory-resident utility program, softJET can be popped up within any well-behaved application (that supports the printer) to provide a graphic preview of a printed document. Unlike any other preview program, softJET is capable of showing absolutely true fonts on-screen. This arrangement with HP allows Theta Systems to expand the number of font cartridges supported by softJET and reinforces their commitment to accurate preview.

Currently, softJET supports all font cartridges in the full-page draft view, the B and F cartridges in the zoom view, plus all HP-compatible soft fonts.

Contact Theta Systems Corp., 307-2150 W. Broadway, Vancouver, BC; V6K 4L9 (604) 732-4323.

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OMNIVIEW Utilizes HP Databases

Dynamic Information Systems Corporation (DISC) has announced a new product for users of Lotus 1-2-3 that works with data that has been downloaded from an HP database. The product, called OMNIVIEW, uses the data retrieval capabilities of OMNIDEX to select specific record values from an HP database, sum them automatically and drop the total into a Lotus spreadsheet cell.

While there are similar products marketed for other database systems, OMNIVIEW represents the first product that accesses HP data directly from the Lotus program. OMNIDEX, the company's information management product, gives OMNIVIEW its data retrieval speed.

DISC also announced a new release to OMNIDEX that will provide native language support. The 2.03 release will allow users to execute keyword searching phonetically using Soundex.

In addition, the enhanced OMNIDEX will include an algorithm to allow searches for related words such as "Rich" or "Rick" when searching for the word "Richard." This new enhancement will be particularly useful for OMNIDEX's growing international customer base that operates in languages other than English.

In addition, the new release will support an expanded number of programming languages including RPG, PROLOG, BASIC and FORTRAN 77.

OMNIVIEW will be available in the third quarter 1988 and will be demonstrated at the Interex conference in Orlando. Other DISC products include OMNIDEX, OMNIQUIZ (an interface between OMNIDEX and Cognos' QUIZ), OMNIWINDOW (due to be released in third quarter 1988), IMSAM and DBMGR.

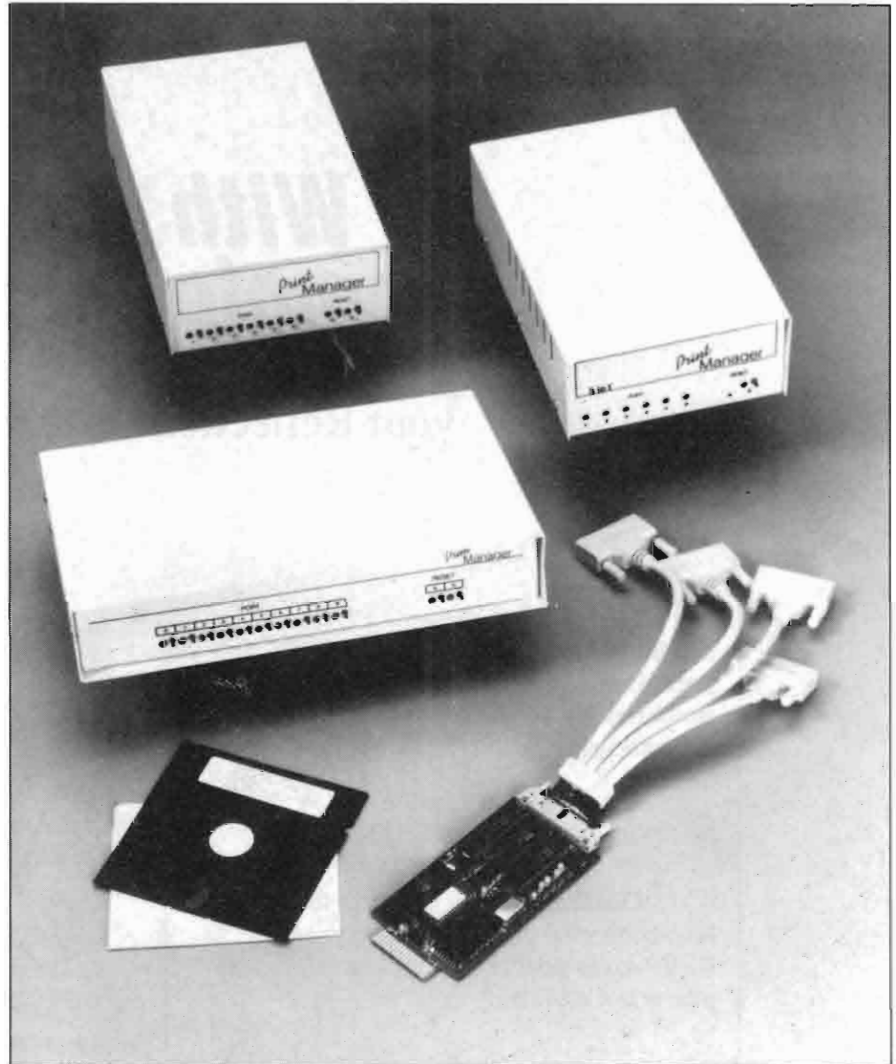
Contact DISC, 910 Fifteenth St., Suite 640, Denver, CO 80202; (303) 893-0335. Stop by booths 711, 713, 715, 717 and 719 at the Interex Business Conference.

Circle 393 on reader card

PrintManager Introduces Printer-Sharing Devices

PrintManager Inc. has announced a new line of printer-sharing devices for users with only three PCs sharing one printer, up to those with multiple printers and varied applications software requirements.

The PrintManager Product Line (\$395 — \$1,195) includes LaserSpool, which lets up to three PCs share one LaserJet Series II printer; the PM5tol, which lets five computers share one printer and handles all nor-



The new line of printer-sharing devices from PrintManager includes LaserSpool, PM5tol, and the PM-6 and PM-10.

mal print operations through users' WP software; and the PM-6 and PM-10 with six or 10 ports.

The PrintManager Product Line features concurrent I/O processing and pop-up menu-driven software for selecting resident printer fonts, copy and control functions. Contact Marilyn Peterson, PrintManager Inc., 108 Water St., Watertown, MA 02172; (800) 642-5019 or (617) 924-3952.

Circle 374 on reader card

Western Digital Enters Printer Controller Arena

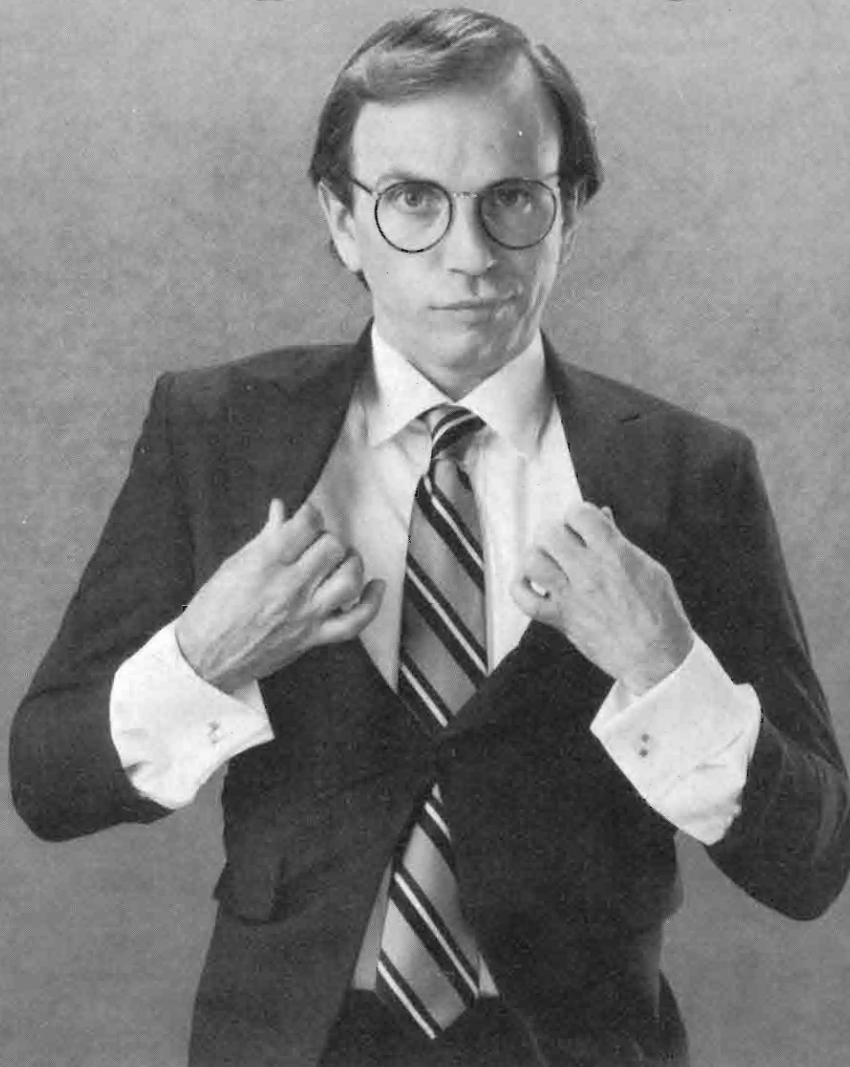
Western Digital Corporation recently marked its entry into the printer controller

arena with the introduction of the first two components of its product line, application-specific integrated circuits (ASICs) that dramatically simplify the design of laser and other page printer controllers.

The WD65C10 programmable Page Printer Interface Controller ASIC integrates the memory access, video data generation, printer synchronization and control handshaking functions of a typical printer controller onto one chip, thereby greatly reducing the controller's chip count.

The WD64C20 PC BUS Interface Controller ASIC provides a completely integrated PC BUS interface for new In-PC printer controller designs, including EMS memory access and asynchronous message handling

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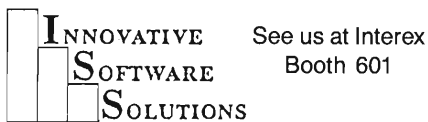
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for easier programming and improved throughput.

The WD65C10 handles all video data generation and engine synchronization while accessing up to 16 MB of standard DRAM for high-resolution bitmaps. The device allows either full-page mapping or band buffer printing to conserve expensive memory.

Designed to support 40-ppm, 300-dpi printers, the WD65C10 accommodates even higher resolution and provides program control of different page sizes, micro-justification of the print area and duplex printing. It also provides a standardized, bidirectional status and control interface to enable complete handshaking with most page printers on the market.

Performance evaluation and prototyping support of these devices is provided through the WD6500 Page Printer Controller, a PC XT bus-compatible card with HP LaserJet Series II emulation, a PC-resident "front panel" user interface and a Software Developer's Tool Kit. This controller has been designed with a dual internal bus architecture that's easily expanded to suit custom OEM requirements.

Contact Western Digital News, 2445 McCabe Way, Irvine, CA 92714; (714) 863-0102.

CIRCLE 391 ON READER CARD

ISChart/3000 Expanded

Interactive Solutions Corporation has announced the ISChart Basic Graphics System and a new release of ISChart/3000.

The ISChart Basic Graphics System (\$995) is an easy-to-use, entry-level prompt/response, memory-oriented graphics program designed for the infrequent or new graphics user. It provides capability similar to HP's EZCHART and the numerous PC-based business graphics packages currently available.

The system can be run from any terminal or PC emulating a terminal. Users share plotters, printers and other facilities of the HP 3000 and have easy access to host-resident data files.

Also released is ISChart/3000 V2.01, a family of completely integrated graphics and statistical analysis software for the HP 3000. This latest release enables users to select from a range of interfaces and features. Beginning with the Basic Graphics System, users can add ISChart's main program, which allows for almost unlimited flexibility in creating and displaying graphs, text charts and drawings, using a command, menu and/or ASCII file interface.

A statistical option is available for applications that require data analysis and calculation (mean, trend, variance, user-defined algorithms, etc.) and an option that allows ISChart to be programmatically interfaced to other programs.

Contact Interactive Solutions Corp., Route 1, Box 500, Eastsound, WA 98245; (206) 376-5085 or (800) 545-GRAF.

CIRCLE 380 ON READER CARD

C.Itoh Announces JET-SETTER Upgrade

C.Itoh Electronics Inc., a leading supplier of computer peripherals, recently introduced a five page-per-minute laser printer with HP LaserJet II emulation.

The new five-ppm JET-SETTER II (\$2,195) replaces the JET-SETTER, which offers HP LaserJet Plus emulation. Features include improved font handling and font manipulation that enhance the printer's ability to handle a wide range of in-house and desktop publishing applications. It comes standard with six resident fonts and is available with HP-compatible font cartridges, A through K & T, for a total font library of more than 100 fonts.

The JET-SETTER II is the first laser printer from the "new" C.Itoh Electronics formed last February with the consolidation of C.Itoh Electronics, CIE Terminals and C.Itoh Digital Products.

In addition, JET-SETTER II features 300 x 300-dpi resolution, 512 KB of standard memory expandable to 2.0 MB for integration of text and graphics at 300-dpi, operator-selectable face-up or face-down output and a control for changing output density.

Contact C.Itoh Electronics Inc., 2505 McCabe Way, Irvine, CA 92714; (714) 660-1421.

CIRCLE 390 ON READER CARD

Conographic Ships ConoDesk 6000

Congraphic Corporation, a leader in controllers and high-quality type for desktop publishing, has started shipping its high-speed PostScript-compatible printer controller.

The ConoDesk 6000 features output speeds 10 to 25 times faster than the Apple LaserWriter. The ConoDesk 6000 is a single-slot board for the IBM XT/AT, Compaq 386 and compatibles, and incorporates a proprietary 32-bit microprocessor and 2.5 MB of DRAM. The initial release supports the entire HP LaserJet printer family and the

Canon LBP-8II printer, and Canon CX and SX print engines.

ConoDesk provides two fast modes for PostScript compatibility:

1. *PersonalScript*, an innovative approach that optimizes print speeds when the printer is dedicated to a PC (as opposed to being shared over a network); and
2. *ConoScript*, a mode for fast printing of encoded or encapsulated PostScript files.

For those who don't want to use PostScript, high-speed drivers provide ultrafast printing directly from Ventura Publisher, PageMaker and Microsoft Windows applications.

ConoDesk 6000 combines PostScript compatibility with second-generation improvements in print speeds, hint-free font technology and a PostScript-compatible mode to optimize performance for dedicated printers.

Contact Conographic Corp., 16802 Aston, Irvine, CA 92714; (714) 474-1188; FAX: (714) 474-9125.

Circle 379 on reader card

Avatar Offers Options To 3270 Printer

Avatar Technologies Inc. has announced two key additions to its selection of 3270 printer emulation devices: Passport, for the HP LaserJet Series II, and PRO-Plus for use with 9-pin and 24-pin IBM Proprinter Series printers.

Both products provide users the freedom to use the printer of their choice while maintaining 3270 mainframe access. Passport and PRO-Plus also provide a cost savings of up to 75 percent over traditional 3287 system printer configurations.

Passport (\$895) is a plug-in card that allows HP LaserJet Series II printers to be used in standard IBM 3270 applications, as well as in traditional PC printing applications. It performs as a productivity tool by increasing mainframe system productivity.

PRO-Plus (\$795), a plug-in card providing 3287 printer emulation, supports the 9-pin IBM Proprinters, Proprinter 24 and 24XL. It translates IBM control and character codes to the ASCII format that can be used by the Proprinter Series.

The hex transparency feature, standard in Passport and PRO-Plus, also enables programmers to develop specialized applications as needed, such as custom fonts and computer graphics.

Passport and PRO-Plus allow these devices to exist transparently within IBM 3270 environments. They are compatible with any IBM 3174/3274/3276 control unit

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HPPRO8801

or 4300 Series Display Printer Adapter and are attached to the IBM system via standard Type A coaxial cable. They support both LU1 and LU3 modes of operation.

Contact Avatar Technologies Inc., 99 South St., Hopkinton, MA 01748; (617) 435-6872.

Circle 378 on reader card

Macro488 Provides Standalone Capabilities

IOtech has introduced a unique standalone IEEE-488 controller that allows tests to be conducted independently of a host computer. The Macro488 allows a host computer to perform other functions or tasks while the Macro488 controls IEEE devices.

The Macro488 (\$995) is the first product that allows instruments to be controlled and data to be stored in solid-state, non-volatile memory. It is able to control instruments, acquire and store data into its 32 KB of internal memory.

A series of instruction sets, or macros, can be loaded into the unit's memory from any computer having an RS-232 or RS-422



IOtech's new standalone IEEE 488 controller allows tests to be conducted independently of a host computer.

data port. The Macro488 can store up to 100 different macros in the unit's non-volatile memory.

A built-in, real-time clock allows data to be collected at precise times, or at regular or irregular intervals. Collected data can be

time-stamped when it's acquired, allowing tests to be conducted without an operator present.

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

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For more information contact:

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Product Manager, Indigo Software Ltd.
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Paris, France	May 23, 1989



JAYAR Systems Offers C-LIN For Engineers

JAYAR Systems has released C-LIN, a library of linear algebra subroutines for engineers and scientists who program in C.

C-LIN's functions specifically have been written to take advantage of the array manipulation characteristics of the C programming language. C programmers now have access to the same number-crunching capabilities as FORTRAN and PASCAL programmers.

The C-LIN library consists of 42 functions, 40 of which come in both single- and double-precision versions. The library is available in compiled and source code versions.

The compiled version (\$69) is available for Turbo C and Microsoft C on MS-DOS. The library disc contains a copy of the library compiled under the large and small memory models.

The source code version (\$140) is used by those who want to modify some of the functions or incorporate them into their own

programs. This library also should be chosen if the functions are to be ported to another computer or compiler, or if it's to be compiled with different compiler options. Developers may incorporate C-LIN functions into their own code without royalty as long as the C-LIN source isn't redistributed.

The C-LIN library functions work with vectors and rectangular, nonsymmetric matrices of real numbers.

Contact JAYAR Systems, 253 College St., Suite 263, Toronto, Ontario M5T 1R5; (416) 751-3284.

Circle 377 on reader card

WithStyle Manages Ventura Style Sheets

Pecan Software Systems Inc. has released WithStyle, a utility to manage and edit Xerox Ventura Publisher style sheets.

WithStyle permits the user to create new style sheets and view, print, copy, rename, delete and modify old style sheets.

Within a style sheet, the user selectively may examine, print and edit tag (paragraph

attributes and other style sheet information, as well as transplant tags from one style sheet to another. The ability to add, copy and delete tags from style sheets also is supported.

WithStyle (\$79.95) is a DOS application and runs on all IBM PC, PS/2 and compatibles. It was developed using the Power System program development environment, a new and enhanced version of UCSD PASCAL and Insight Window Designer, which supports Pecan's proprietary advanced user-interface technology.

Contact Eli Willner, Pecan Software Systems Inc., 1410 39th St., Brooklyn, NY 11218; (718) 851-3100.

Circle 376 on reader card

Tekbase Accesses Data From HP BASIC

Prottek has introduced Tekbase, a fully relational database that users of HP Series 200/300 workstations can use directly from BASIC.

Tekbase specifically has been written for engineers and scientists and is capable of handling vast quantities of data in the order of gigabytes.

The programmer has access to all functions via the Query Language, which has the ability to manipulate data using mathematical functions not normally available in languages such as SQL.

Tekbase (\$1,250) can retrieve faster than BASIC coding. For those who don't want to write their own programs, a version of Tekbase is available that provides a package with comprehensive 2-D and 3-D Graphics, Report Writer, Datcommunications tools, and more.

Contact Prottek, 10 Grosvenor Pl., London SW1X 7HH; Telephone 01 245 6844; FAX: 01-235 7349.

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CORRECTION

In the May issue, p. 60, we neglected to publish the current address of Indigo Software. The correct address is: Indigo Software Ltd., 560 Rochester St., Suite 400, Ottawa, Ontario K1S 5K2.

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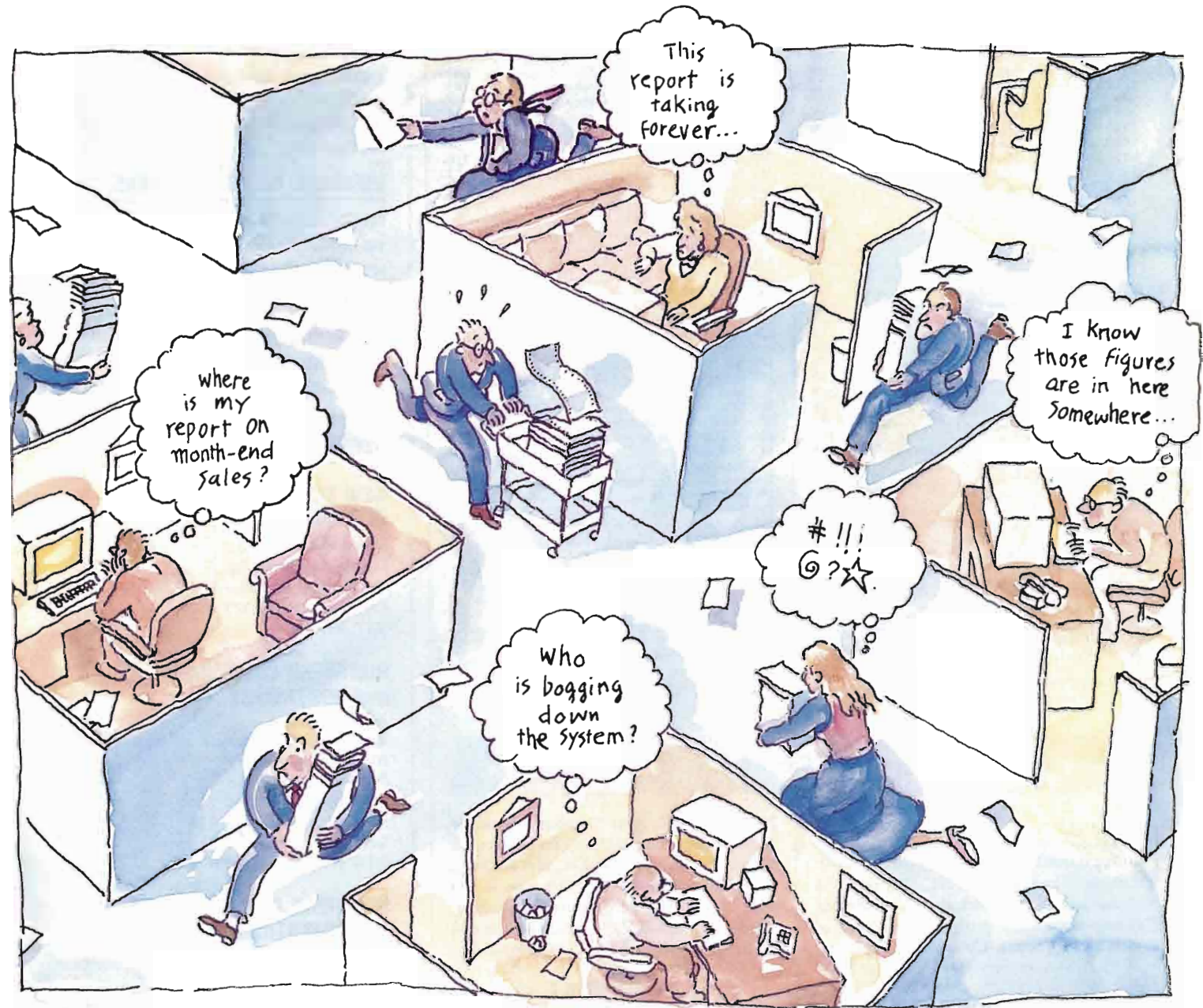
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[CALENDAR]

[JULY]

21-22: Middle Atlantic Regional Users Group (MARUG) Raleigh Conference, North Raleigh Hilton, Raleigh, NC. The theme is Operations Update. Sessions will be intended to help members improve the operations of their Data Centers. Contact Jay Epperson, (804) 225-2465, or Steve Day, (804) 569-4857.

[AUGUST]

4-6: International Conference On Handheld Computing, (LaSells Stewart Center) Oregon State University, Corvallis, OR. Contact Eric Gakstatter, (503) 752-5456.

7-12: Interex North American Business Conference (Marriott Center) and Technical Conference (Hyatt Orlando), Orlando, FL. Call (408) 738-4848.

18: Greater Houston Regional Users Group Inc. quarterly meeting, Hobby Hilton, 8:00 a.m. — 5:00 p.m. Contact Suzanne Spitzer, program chairman, (713) 977-3193.

20: Philadelphia Area Computer Society's Sixth Annual Ham & Chip Flea Market, La Salle University Parking Lot, 20th & Olney Ave., Philadelphia, PA 19141. 9:00 a.m. — 1:00 p.m. Featuring: Computer Software/Hardware, Ham Radio, Sound and General Electronic Equipment. Call (215) 951-1255.

[SEPTEMBER]

27-30: Hewlett-Packard's 1988 Technical Value-Added Business (VAB) Conference, Doubletree Inn and Monterey Conference Center, Monterey, CA. Sponsored by HP's Technical Systems Sector, the conference will include workshops, HP management presentations, special-interest group sessions and presentations by industry business consultants. September 27 will be devoted exclusively to HP value-added sales reps. Remaining days are for HP value-added businesses. Contact Doug Newlin, HP Technical Systems Sector, VAC Marcom, 3404 E. Harmony Rd., Fort Collins, CO 80525; (303) 229-4087.

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