

COMPUTER DECISIONS

MARCH 12, 1985

THE MANAGEMENT MAGAZINE OF COMPUTING

A HAYDEN PUBLICATION

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JOB HOPPERS:
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The NCR Tower

The Tower XP

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CD

ONE THING VT200 IMITATORS CAN'T BEGIN TO IMITATE.

In a world full of imitators, it's an easy mistake to assume that any terminal that looks like a VT200™ will perform like a VT200. After all it's no major task to imitate the most superficial features of a video display terminal.

But there's one test of a video terminal that simply can't be judged in a 15 minute demonstration.

The toughest test of all. The test of time.

While other display terminals were designed to impress you in the showroom, Digital's VT200 series was designed to make a more lasting impression. To keep

you comfortably productive years down the road.

That's what inevitably separates an industry standard from the rest.

And why so many professionals return time and time again to products with the Digital logo.

THE DIGITAL LOGO MEANS LONG TERM PRODUCTIVITY.

It's no coincidence that the VT200 family was designed by engineers who, like end users, sit in front of display terminals day in

and day out. They've discovered the shortcomings, the idiosyncrasies and all the subtle little problems that can end up robbing you of productivity.

As a result, some of the VT200's best features are ergonomic. The angle of the screen. The sculpture of each key. The design of the keypad.

These are the things that become most apparent after hours of prolonged use. And often spell the difference between a terminal that's a genuine productivity tool and one that's – quite literally – a pain in the neck.

The fact is, the VT200's ergonomic design and the resulting

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THE DIGITAL LOGO MEANS LONG TERM COMPATIBILITY.

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We built the host. As well as the other peripherals you'll be using.



So it only makes sense that our video terminals are substantially more compatible up and down the Digital family line. Each new generation, for example, brings with it all the important elements from previous generations. Which is why you'll find some of our customers using 10 year-old VT52™ terminals with brand new VAX systems. The simple fact is, Digital has always been committed to protecting your investment with every move you make.

In addition, our breadth of product line means Digital can provide you with a total solution. Hardware, software and peripherals. And while single sourcing is not an end in itself, it certainly provides an extraordinary measure of convenience, compatibility and reliability. Particularly when the single source is Digital.

THE DIGITAL LOGO MEANS LONG TERM RELIABILITY AND SUPPORT.

When asked to single out the strongest feature of Digital's video terminals, many users point to the most visible asset of all. Durability.

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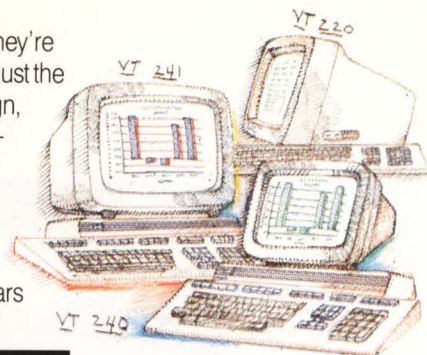
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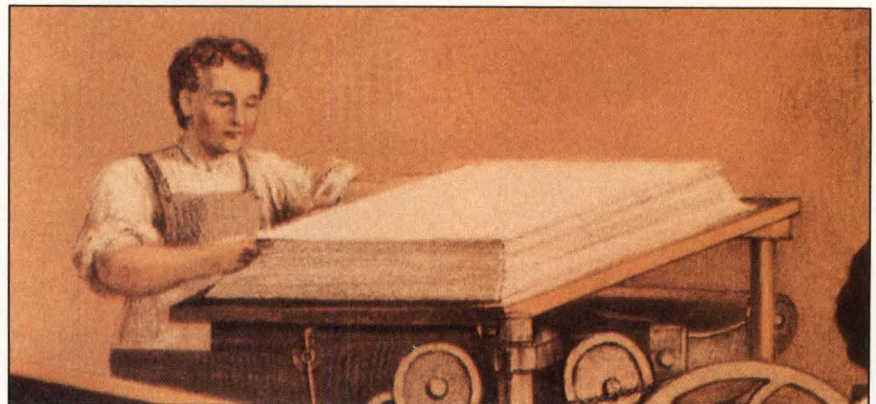
igital



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COVER PHOTO: Ted Hardin

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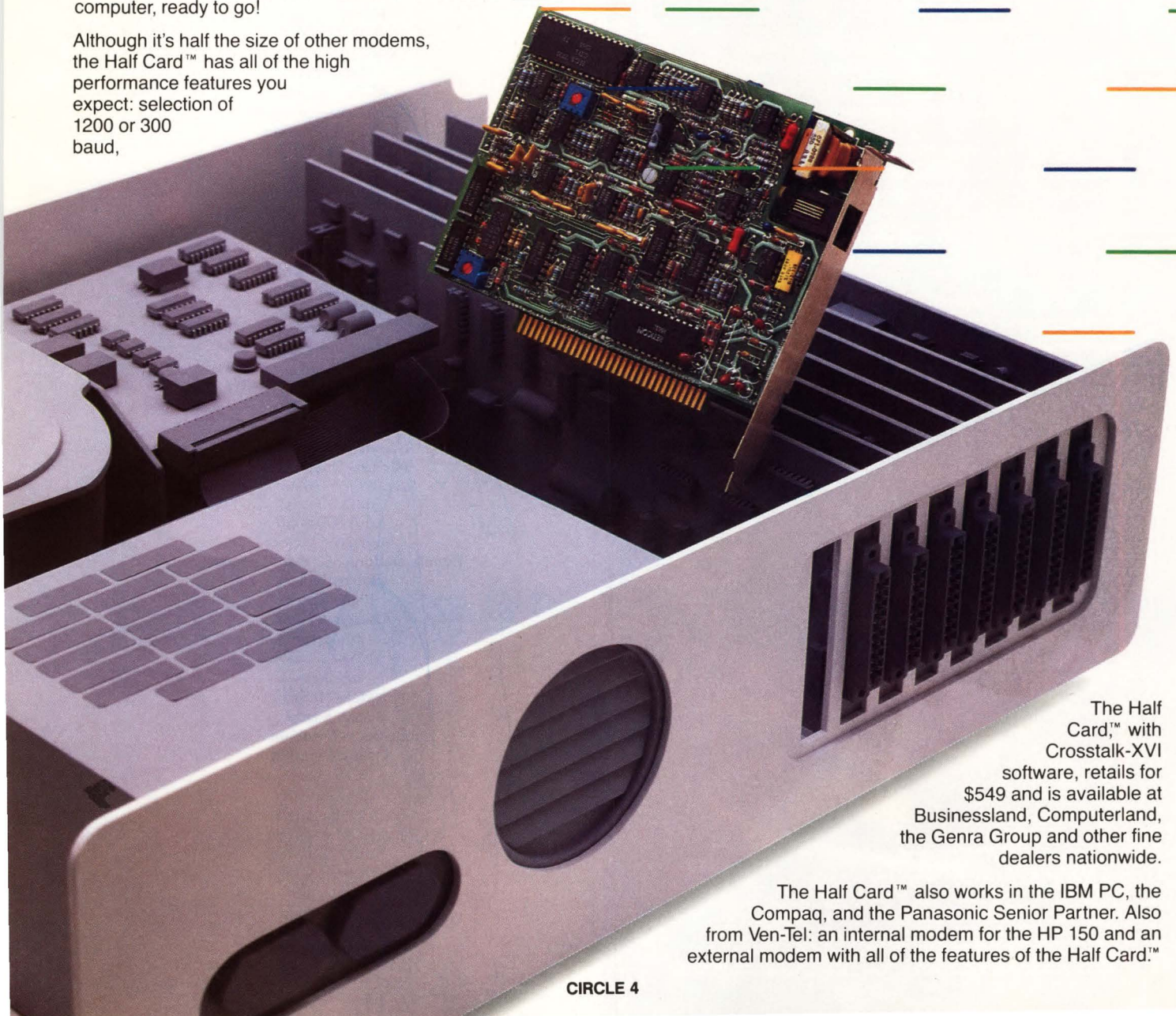
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Headquarters Office

10 Mulholland Dr., Hasbrouck Hts., NJ 07604,
(201) 393-6000

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Managing Editor

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Senior Editor

David Whieldon

Software Editor

David Kull

Assignments Editor

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New England Editor

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Office-automation Editor

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Southwestern Editor

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Data-Comm Editor

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Regional News Editors

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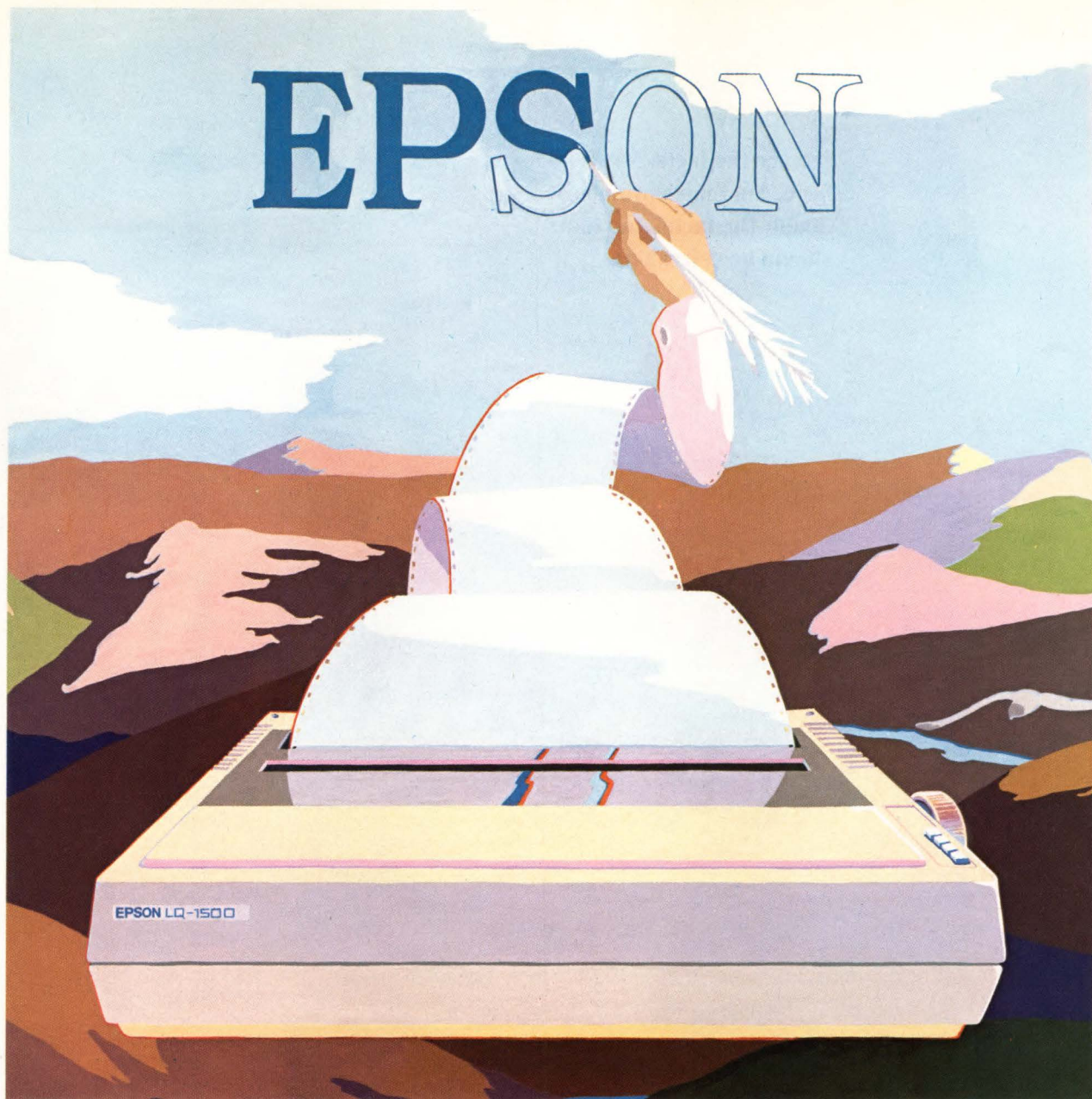
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CIRCLE 6

A large, stylized, grey letter 'H' logo, composed of two vertical bars and a horizontal crossbar, positioned at the top left of the page.

ere are the facts. Not vendor
hype. Not empty promises.
Simply the facts. And that
should be refreshing.

A large, light blue graphic that resembles a torn piece of paper, angled diagonally across the page. It contains the main headline text in a bold, black, serif font. The word 'Users' is circled in a darker blue. A thin black line runs horizontally across the lower part of the blue graphic.

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LETTERS

SORRY, DATA DECISIONS



I was extremely disturbed to find that Data Decisions didn't receive credit for the article "Users to mainframes: You must do better!" [December]. Elinor Gebremedhin, a senior editor/analyst at Data Decisions, prepared the article from information in *Computer Systems*, a three-volume, monthly updated reference service that covers mainframes, minis, the most widely used business-oriented micros, vendor-supplied systems, applications software, terminals, and peripherals. *Computer Decisions* readers who need more information on any of these products can arrange for a trial review of *Computer Systems* by writing to Data Decisions, 20 Brace Rd., Cherry Hill, NJ 08034, or calling (609) 429-7100.

Janet Levy
Director of Marketing
Data Decisions
Cherry Hill, NJ

MICROMAN REVEALED

Thank you for including a discussion of Microman Project Control System in your excellent article on project management, "Avoiding pitfalls and costly detours" [December]. Unfortunately, you left Microman out of the accompanying vendor list. Microman is for personal computers or small multi-user

systems and is functionally equivalent to most project-management packages for mainframes. It is a full-function system designed to support information-services management and can run on the IBM PC XT and compatibles under MS-DOS, CP/M, Xenix, or Unix operating systems, as well as on any system that runs R-M Cobol. Microman is priced at \$3,000 to \$5,000.

POC-IT Management Services Inc.
Santa Monica, CA

ON DATA AND DYNAMICS

I wonder if Dean Jerrold H. Zar, in protesting the use of "data" in the singular ["Letters," January 15], is not simply protesting the dynamic nature of the English language. Usage eventually prevails, even when it is barbaric. Resistance to barbarisms, such as the use of "access" or "parent" as verbs, is a laudable endeavor, although probably a losing one.

Computer Decisions has shown both accommodation to change and resistance to barbarisms in much of its content. While no one in the computer disciplines has used "datum" since perhaps 1958, "data" in the plural continues to be in graceful usage.

The dean has a point, though, about "media." There is meaning to be preserved here. To refer to the media in the singular is to assert that the whole collection—newspapers, TV, radio, magazines, and the rest—is a monolith, and it is not. The media are many and varied. "Media" in the singular is a barbarism I hope you will continue to resist.

Ross H. Snyder
Hewlett-Packard Co.
Information Systems Group
Cupertino, CA

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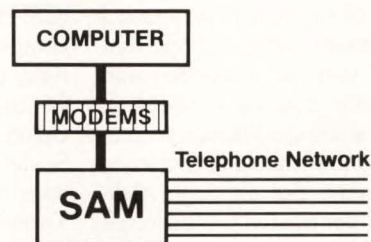
Cindy Stump

What's the only Perfect Crime?

IT'S WHEN NO ONE KNOWS THERE'S BEEN ONE.

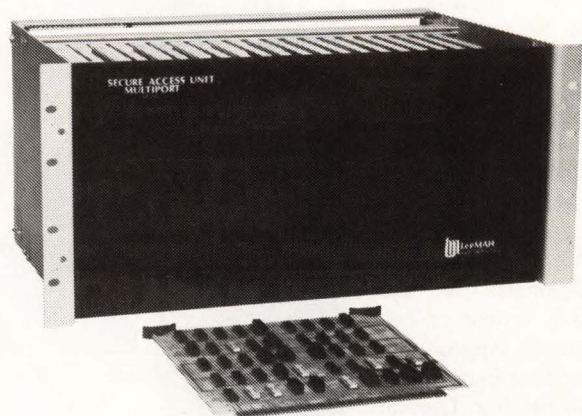
Computer crime is 10 times more profitable than robbing a bank. That's a fact. But, this statistic is only available on KNOWN computer crime...it's impossible to know how much monetary and informational theft goes undetected; some of it, perhaps, from your own system. The ability to access computers via dial-up ports is beneficial, but it creates a potential exposure akin to leaving the vault door unlocked. Disgruntled employees, strikers, malicious hackers and dishonest competitors can obtain information, vandalize the system, even misappropriate inventory...all from a push-button phone.

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OBSTACLES TO DETENTE

In my last column I reported on the visit of a leading Soviet computer scientist, Viktor Aleksandrov, to the United States and to the offices of *Computer Decisions*. I ended with an expression of hope that exchanges of visits by American and Soviet computer experts continue in the interest of sharing advances in computer science and technology and as an inroad to detente. But although Aleksandrov and other trusted professionals may visit the U.S., they may not remain here for long. The denial of permanent exit visas to Soviet computer professionals is the foremost violation of their human rights.

It seems that being a computer professional in the Soviet Union is tantamount to a life sentence of living in the U.S.S.R. for what appears to the Soviets to be obvious reasons of security. Another common punishment for "dissident" computer professionals in the U.S.S.R. is loss of employment. Apparently, so much computer work behind the Iron Curtain is related to the military that computerniks of allegedly questionable loyalty are excluded.

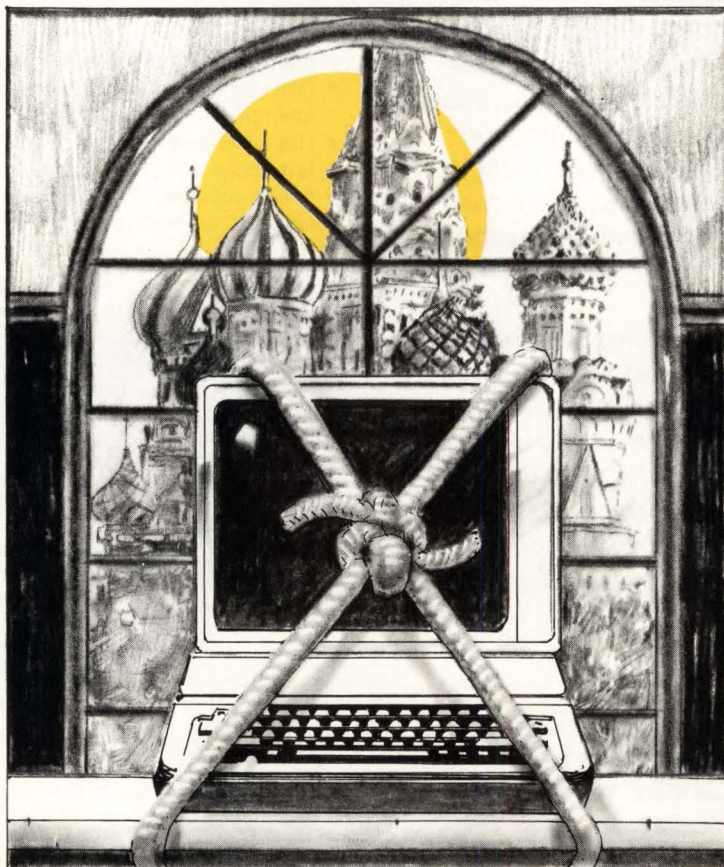
The January 1985 issue of *Communi-*

cations of the Association for Computing Machinery published the third annual report of the ACM Committee on Scientific Freedom and Human Rights (CSFHR). The report listed 195 computer professionals whose human rights are known to have been violated. Of the 195, 134 are in the Soviet Union. Of the remaining 61, 47 are in Soviet satellites. The other 14 violations reported occurred in Argentina, Turkey, Pakistan, and Uruguay.

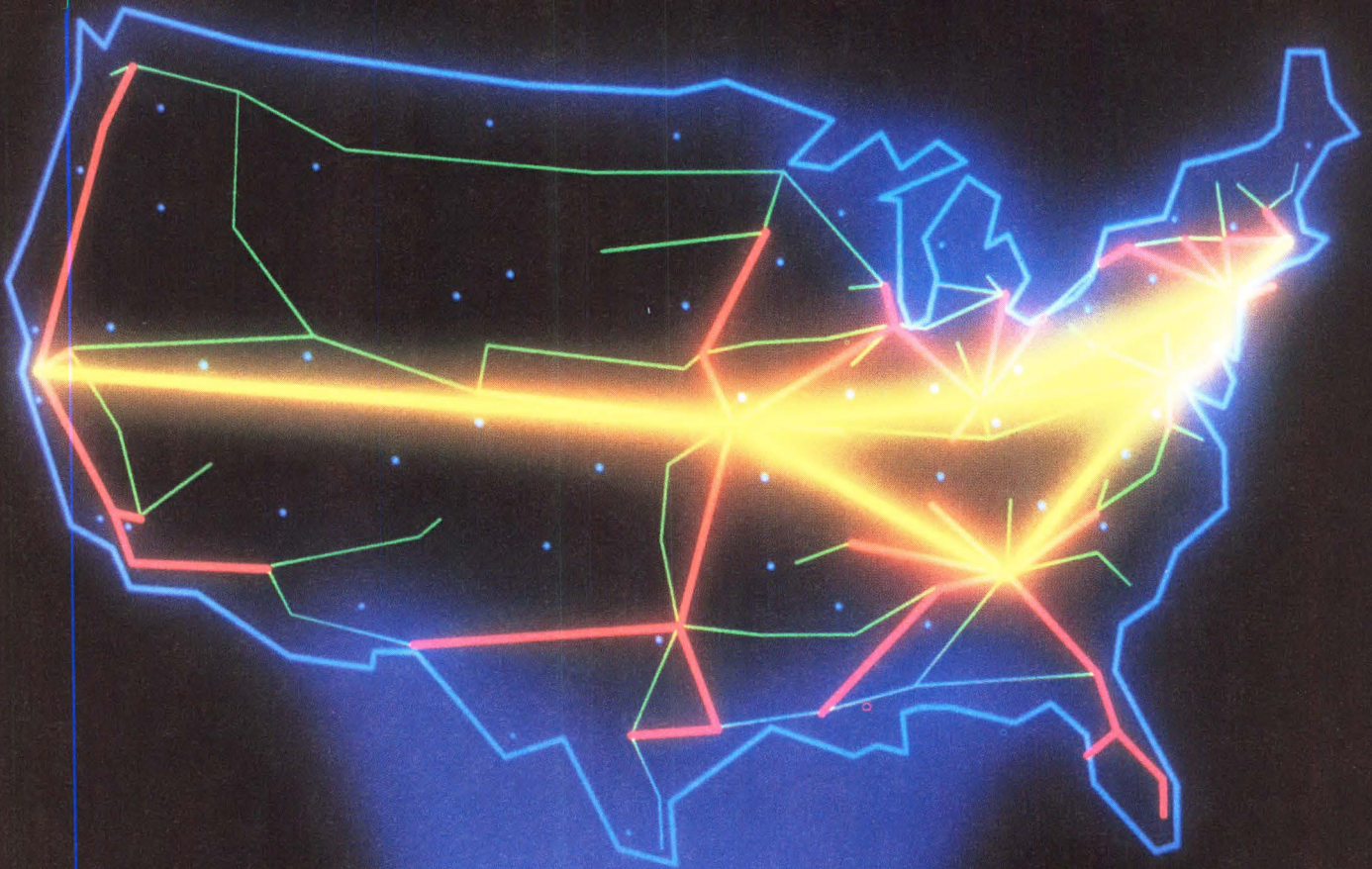
Requesting permission to emigrate, a basic right under the Helsinki Human Rights Accords—to which the Soviet Union is a signator—has been distorted by Soviet reasoning into a threat against the state. Yuri Balovenkov, a Soviet computer specialist, has been denied an exit visa to the U.S. on the grounds that he knows state secrets. Few Soviet computer specialists are arrested, but those who are may be exiled to Siberia to slowly waste away.

Some voluntarily waste away, such as the famous dissident, Anatoly Shcharansky, who went on a hunger strike for his human rights.

The CSFHR has been active in writing to repressive foreign governments demanding basic rights or better treatment for "dissident" computer professionals. What can you do to help? The CSFHR has established a program under which ACM chapters "adopt" repressed individual computerniks overseas and write to them only on professional matters. These supportive letters are morale builders. To learn more about this worthwhile program, contact Helen Takacs, P.O. Drawer CS, Mississippi State, MS 39762. □



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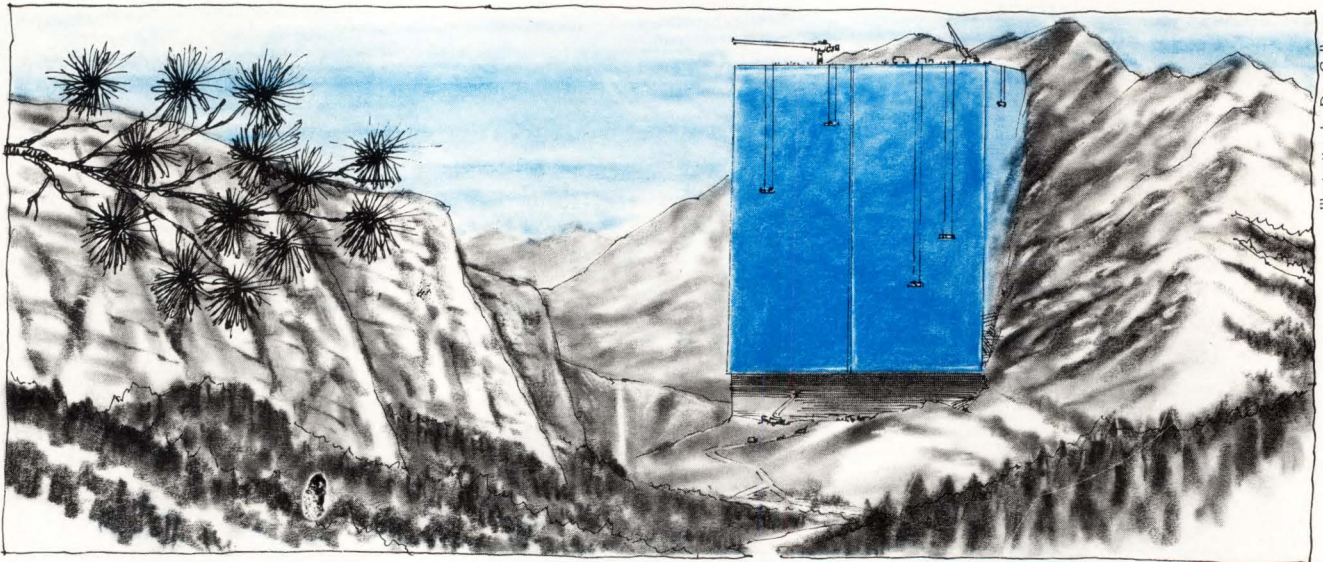


COMPUTER ASSOCIATES

Software Leadership Through Excellence

Edited by Joseph Braue, News Editor

SIERRA: MORE MIPS IN 1987



The spring of 1987: Ronald Reagan will have just turned 76. Six NASA space-shuttle missions will be launched. And the 50-MIPS "Sierra" mainframe will finally be available from IBM.

The two and a quarter year wait for the loaded Sierra—called the 3090/400—dwarfs the relatively modest one-year shipping delay that accompanied the first model of IBM's previous state-of-the-art mainframes, the 308X series, in 1981, notes Phoenix, AZ-based analyst Bob Djurdjevic, who publishes the *Annex Computer Report*.

Why the wait? According to one analyst, IBM says it is still testing the 3090/400. The delay may allow plug-compatible makers to steal IBM's thunder if they can come out with machines in 1986 that exceed the 28 million

instructions per seconds (MIPS) the introductory Sierra offers.

What do MIPS-hungry MIS/dp executives do while they wait for the fully loaded Sierra? Buy the introductory Sierra—the 3090/200—says IBM. Although the 3090/200 is rated at about the same MIPS level as IBM's current top-of-the-line performing main-

frame—the 3084QX—the 3090/200 costs at least \$1 million less. Internal storage on the 3090/200 can be increased to a maximum of 192 million bytes; the 3084QX is only available with 128 Mbytes of main storage. Furthermore, IBM says the 50-MIPS Sierra will be available only as a \$4.3 million upgrade to its smaller sibling. Customers will have to buy the introductory Sierra to get the fully loaded model, Big Blue claims. Current 308X models cannot be upgraded to the Sierra models.

IBM will most likely not force a customer ready to spend \$10 million on a 3090/400 to first buy the smaller model, IBM watcher Robert Fertig predicts. Many experts also predict that the top price for the 3090/400 will be chopped—by as much as 20 percent

(Continued on page 25)

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- MIS/dp employment contracts lack appeal 28

THE FUTURE OF
DATA COMMUNICATIONS
HAS NO LIMITS.



BUT IT DOES
HAVE A NAME.

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FUTURE-PROOF



DATA COMMUNICATIONS



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And it illustrates the most important fact about CASE product design.

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This kind of philosophy is a welcome relief to every business that relies on getting information from here to there. Even if "there" is *way out there*.

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Thanks to future-proof products. Only from CASE.

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There's a world of difference between CASE's perspective on data communications, and everybody else's.

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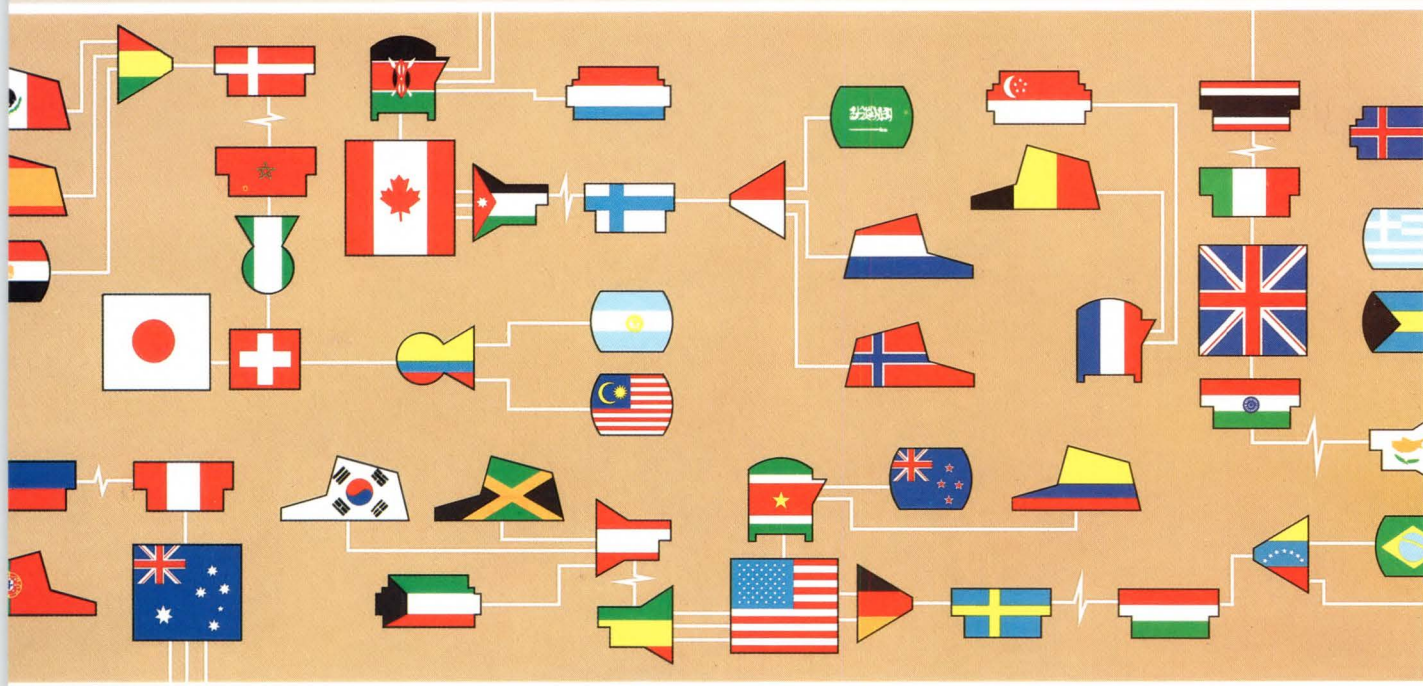
We're Number One in Europe. And now, after joining forces with RIXON, we're stronger than ever in the United States.

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CASE's future-proof systems are breaking barriers in time and geography all over the globe, right now.

So whatever direction your business grows, CASE

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FROM A DOWN-TO-EARTH COMPANY

Data communications problems are really pretty simple: you need to move information from one place to another.

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hands with computers of every size, from micro to mainframe.

They're so diplomatic that they handle virtually any protocol: from asynch to bisynch to X.25 to SNA and beyond.

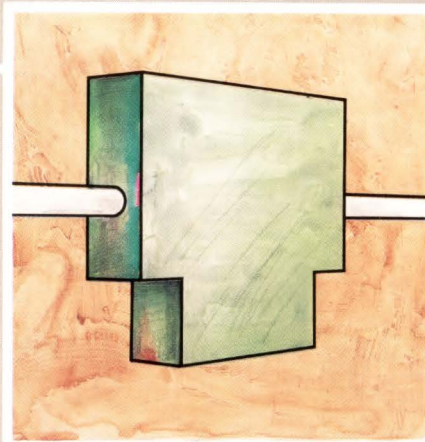
CASE devices are so reliable that they hardly ever need service. But in those rare moments when customers need extra help, CASE is ready with the most highly trained customer service organization in the world.



MODEMS

CASE modems are the strongest links in modern data communications. There are dozens of models in the CASE asynchronous and synchronous modem lines, ready to handle speeds from 300 to 19.2 kbps

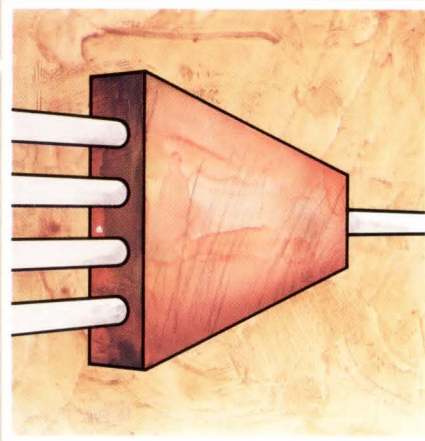
and beyond. Together, the CASE modem family sets industry standards for compact, reliable and highly sophisticated operation.



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CASE multiplexers open the future of your network to more opportunities than any other multiplexers in the world. The completely compatible line of CASE multiplexers provides point-to-point multiplexing, multiple composite links, T-1 links, networking and switching, all with error-free transmission. And plug-in CASE

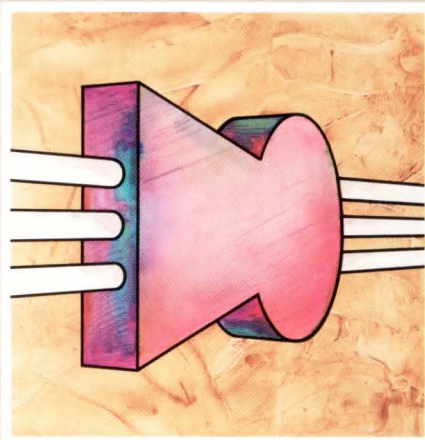
gateways open paths between asynchronous terminals and other environments – like IBM's SNA and the X.25 packet switching networks.



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Now network management capabilities are built into a new generation of CASE future-proof products. With Sigma diagnostic modems, and CASE's Network Management System, a network operator can monitor and control an entire network *from a single site*. He can perform multiple diagnostic

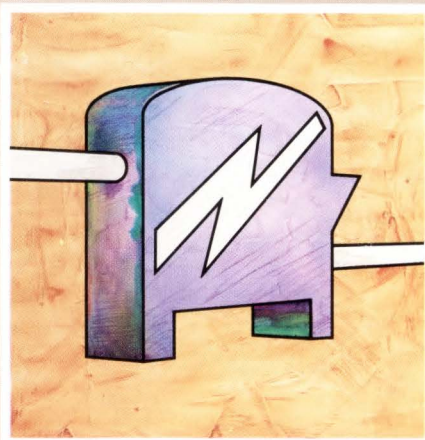
functions, review management records, restore modems and correct other network faults. In other words, he can *manage* more than ever before.



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With CASE systems like BEELINE, any terminal or workstation can communicate personal messages through a network that employs every kind of link: leased lines, switched lines, telex networks, telegraph lines and packet-switching services. With CASE

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Network Management System

Sigma is a family of high-speed synchronous diagnostic modems that sets new standards for ease of use and sophisticated network control.



Each Sigma modem talks to you in plain English — through a 14-character LCD readout that lets you scroll through menus in four directions.

You can configure, monitor, test and control any modem, or set of modems, on your network, from a single Sigma modem — or from CASE's Network Control Center.

And with integral TDM multiplexer capabilities, you can further enhance your Sigma network architecture.



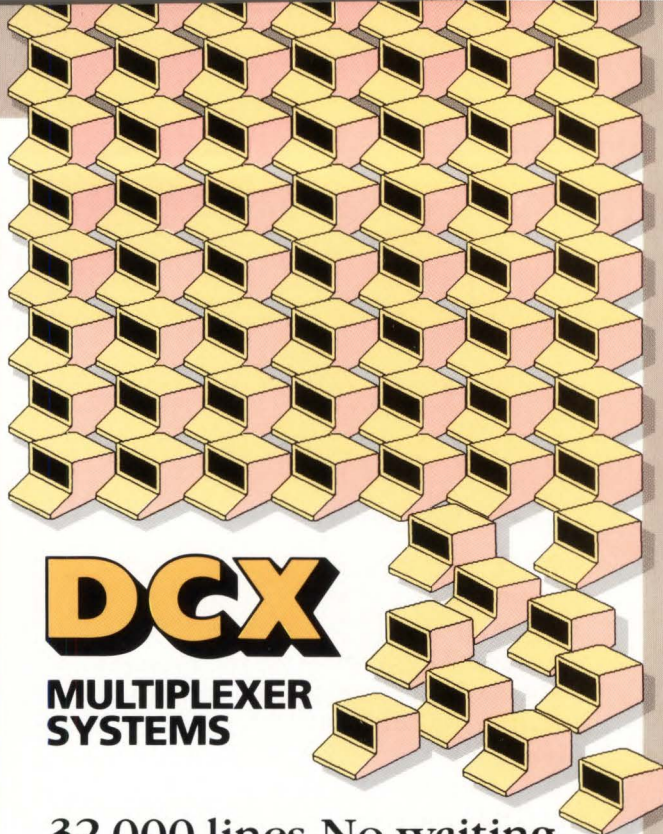
The Strongest Links

Nobody makes modems that match the RIXON line from CASE.

Popular dial-up models like the autodial R212A Intelligent express the highest industry standards.

And no other modem beats the *12 millisecond* polling turnaround time featured by the synchronous RIXON R96FP.

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32,000 lines. No waiting.



The best networks are the ones that don't give their users anything to complain about.

Like time delays. Or transmission errors. Or any of the other problems that CASE DCX Multiplexers work to prevent.

The DCX system is the highest expression of the CASE future-proof data communications philosophy.

DCX Multiplexers are at the heart of every CASE network. They provide high speed error-free communication, switching to various hosts, and data concentration, all in one highly modular multiplexing system.

Even if you start at the bottom of the DCX line, there's no limit to growth or upward compatibility.

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Like Openline — a communications processor that changes its identity as easily as you change a tape cassette in a stereo.

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Want a combination of capabilities? Automatic re-routing on line failure? Load sharing? Or network resilience? Hook several together.

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- Multipoint Multiplexer
- Switching Multiplexer
- Asynch-to-Bisynch Protocol Converter
- X.25 PAD



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Beeline is a data network that turns all kinds of devices into mailboxes for messages from all kinds of other devices.

Like a digital post office, Beeline routes messages from any source to any destination, anywhere in the world.

Beeline works equally well with personal computers, standalone word processors, printers, telex machines and dumb terminals.

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This means it doesn't restrict your hardware choices, while it makes better use of the hardware you already have.

Whether you're in the Fortune 500, the Inc. 500 or the local yellow pages.

Whether you need to move data between offices, buildings, zip codes, time zones or continents.

CASE is ready to help solve your data communications problems, right now. And keep solving them, far into the future.

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NEWS & COMMENT

(Continued from page 16)

according to Fertig—before the machines are actually available, depending on market conditions.

Large mainframe sites that will need a tremendous increase in capacity will look immediately to the 3090 series. "The 3090 processors were developed to meet the needs of customers with very high growth requirements," says Carl J. Conti, president of IBM's Data Systems Division.

But several analysts caution 308X users to carefully consider their options before deciding to buy. One analyst disappointed with the Sierra announcement, Charles Greco of International Data Corp. (Framingham, MA), suggests that 308X users should consider postponing their mainframe purchase until IBM comes out with the next generation of mainframes, codenamed "Summit." Greco is predicting a Summit announcement in 1988. IBM has pushed the technology of its thermal-conduction units as far as it can go, he says. Summit will incorporate an as yet undisclosed technology. In the meantime, 308X users will be able to take advantage of bargains on the used mainframe market. He suggests that potential buyers check for the price per MIPS of the used 308X machines and compare it with the 3090/200.

Bob Djurdjevic suggests that customers looking to increase their mainframe's capacity from 30 percent to 40 percent should consider buying used 308Xs. Used 308X models are being resold at between 65 percent and 78 percent of their original selling prices, according to the *Computer Price Guide*. In addition, IBM has slashed prices for the 308X line by 5 percent and minimum monthly maintenance charges by 10.2 percent to 12.5 percent. However, Djurdjevic notes that IBM has been giving customers substantially higher discounts.

Owners of the 3081KX dual processor should look to the 3090/200 when in need of an upgrade, notes Robert Fertig. For the 3084QX user with no option to expand performance beyond

"SIERRA" VS. 3084			
	3084QX	3090/200	3090/400
Price	\$6 million	\$5 million	\$9.3 million
MIPS	27*	28*	50*
Cost per MIPS	\$220,000*	\$180,000*	\$186,000*
Availability	Now	November	2nd quarter of 1987
Storage capacity	32, 48, 64, 96, or 128 Mbytes (non-expandable)	64 to 192 Mbytes	128 to 384 Mbytes
Maximum channels	48	48	96
Channel data rate	3 Mbytes per second	3 Mbytes per second	3 Mbytes per second

**Estimate by analysts
("MIPS" is a very general benchmark. Specific performance levels depend on other factors.)*

the approximate 28-MIPS limit that will be offered by IBM before 1987, the alternative will be to "dogsled," or use multiple 3084QXs and/or 3090/200s, Greco says.

Owners of less-powerful 308X models may soon be able to choose a third Sierra, perhaps with as little as 15 MIPS, says Fertig, who runs Enterprise Information Systems Inc. in Greenwich, CT. He expects a 3090/100 to be announced before the year is out.

The new 3090s share a common architecture with the 308X series. The difference is in the chips used in the two lines' respective thermal-conduction units. The 3090s use new emitter-coupled-logic chips, which run at higher speeds than the transistor-to-transistor chips in the 308X line. Fertig describes the new chips as "not a very big leap in technology" for IBM, which with the Sierra announcement maintained the continuity between its mainframe generations. Also, the 3090 processors are the first IBM machines to use Big Blue's largest memory chip, holding 288,000 bits of information. The 3090/200 is dyadic, coupling two processors, and the 3090/400 has four coupled processors. This coupling arrangement is not new; the 3081KX model is dyadic, and the 3084QX has four processors strung together.

One potential problem with the 3090/400 model is in the rate at which

it channels data to input/output devices. The 3090/400 has the same channel data rate (3 Mbytes per second) as the 3084QX and the 3090/200. This speed is adequate for the lower-capacity models, but would create a bottleneck between the 3090/400 and attached input/output devices, Djurdjevic says. But Djurdjevic adds that he fully expects IBM to upgrade the 3090/400's channel speed before it becomes available.

The 3090/400 will come with 128 Mbytes of internal storage, expandable to 384 Mbytes, or three times more than the maximum main storage currently available on the 3084QX.

As for the software requirements of the new 3090s, users will need to get upgrades from present MVS, MVS/XA, and VM operating systems, IBM says. But these upgrades will be made available at the same monthly fee as previous releases of those operating systems, according to IBM. Apparently, users will only have to load new tapes on their mainframes.

The new 3090s, however, do put a premium on converting from the MVS operating system to the MVS/XA operating system, which is two to three times more expensive. MVS/XA is IBM's "operating system of the 80s." Conversion estimates for shops presently using MVS/XA go from 12 per-

(Continued on page 26)

cent to 30 percent of mainframe installations, according to analysts. "If you don't move to MVS/XA, you can't exploit the technology on the 3090s," Robert Fertig says. MVS users cannot fully take advantage of the expanded storage capacities of the 3090s.

The 3090s have a unique option called "expanded storage." For the first time, IBM mainframe owners can expand main storage instead of being limited by the amount of storage that originally came with the machine, says an IBM spokesman. Expanded storage is available at the relatively cheap cost of \$475,000 for a 64-Mbyte increment, analysts say. However, expanded storage is separate from and performs at a lower speed than the main storage that comes standard with the machines.

Buried among a slew of new software enhancements that were announced in addition to the 3090s was a new program running under the VM operating system that for the first time allows users to run Unix System V applications on IBM 4300 and 308X mainframes. The new program is called Interactive Executive for System/370 (IX/370). Two possible reasons IBM is championing this particular version of Unix—which is being promoted by AT&T—are that as much as 80 percent of IBM's customer base wants it, and 67 percent of all government proposals for computer systems now require Unix V capabilities.

Also announced was a new 3044 fiberoptic channel extender that will allow printers and other low-to-medium-speed peripherals to run almost as fast as if they were locally connected to a mainframe. The 3044 allows the peripherals to be placed as far as 1.4 miles away from the host. Standard local-channel connections are

typically 200 feet in length. You need two 3044s, priced at \$8,500 each, to complete a fiberoptic link between host and remote peripherals. The 3044 will be available this July, IBM claims.

IBM also announced a new 3820

laser printer that prints up to 20 pages per minute and can be attached to hosts via telephone lines. An entry-level 3820 will be priced at \$29,900 and will be available in the fall, according to the vendor. □

NEW IBM DEVICES STORE MORE

IBM has introduced two new single-capacity and two new double-capacity Model 3380 disk devices that vastly increase storage capacity and slightly increase performance over previous models of the devices.

The new extended-capability storage devices can perform up to 15 percent better than standard 3380 models if users have IBM's extended architecture (XA) software. Users of regular System 370 software will only realize a 5 percent performance increase. The new double-capacity models (Models AE4 and BE4) can store up to 5.04 billion characters of information, double the storage capacity of standard 3380 drives. The single-capacity models (Models AD4 and BD4) have the same storage capacity as the previous disk-device models. The jump in storage capacity is made possible by advances in disk technology and design improvements in the recording heads that write and retrieve information on the disks, IBM claims.

The double-capacity models cost \$134,740 (AE4) and \$110,400 (BE4) and will be available near the end of this year, says IBM. The single-capacity models cost \$88,780 (AD4) and \$64,440 (BD4)—the same prices as the standard 3380 models—and are scheduled to be available this month. Other than price, the difference between the A and B models is that A models have four actuators—disk-access mechanisms—and perform slightly better than the B models, which have only two actuators, an IBM spokesperson says.

The new single-capacity models will

be upgradable to double-capacity models, but only if the units are purchased and IBM keeps the parts removed in the upgrade process. Standard 3380 drives cannot be upgraded to the new extended-capability models.

Since the new extended-capability models have the same relative arrangement of tracks and cylinders as standard 3380 drives, customers can use both new and old models together. Information can be transferred from the old to new models without additional hardware or software, according to Big Blue. The new models are designed to share control units with the standard 3380 devices, but users must line up new and old drives in separate strings.

IBM has also announced that it has increased the size of the cache memory on its new Model 21 and 23 storage-control units to 48 and 64 million characters, an increase from the previous maximum of 32 million characters. Cache memory, which serves as a temporary storage area, increases the effective rate at which data are transferred between the storage system (the controllers and disk devices) and the computer's internal memory. The 48-megabyte cache-memory controller costs \$349,975, and the 64-megabyte unit costs \$429,975. Both are scheduled to be available sometime during the first quarter of this year.

Big Blue has also brought out four new software packages for mainframes (lease price \$200 to \$900 per month) that help the new disk drives and control units perform better. The software is not needed to install the new disk drives and control units. □

The 3090s have a unique option called "expanded storage."

MICRO ROOM SERVICE

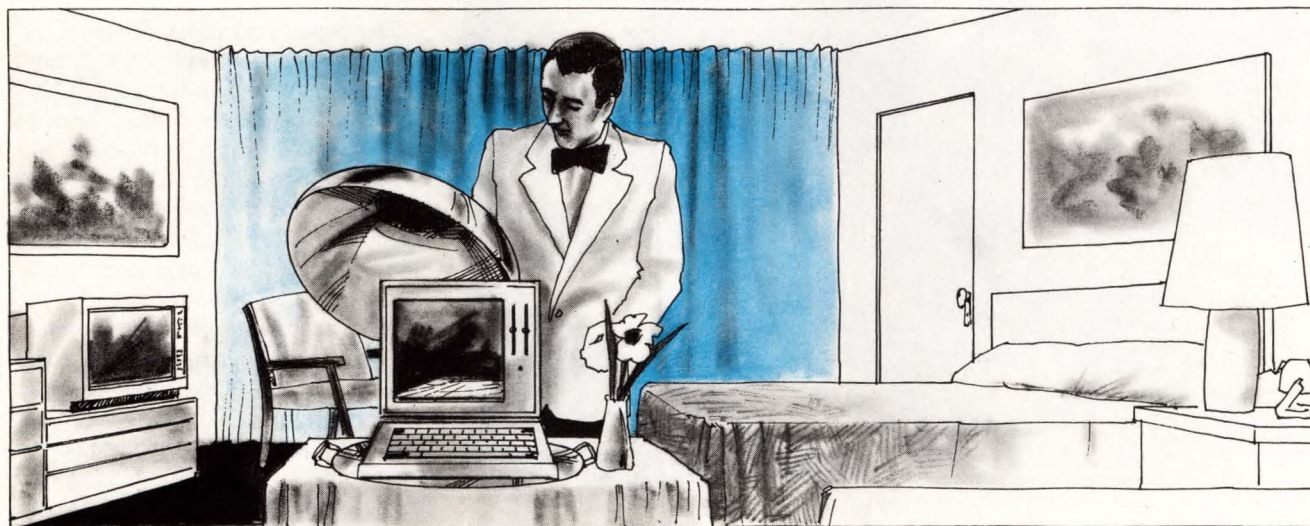


Illustration by Dan Culhane

One way Western business people lag behind their counterparts from the Orient is in their use—or nonuse—of computers while on business trips.

Many exclusive hotels in the Far East offer business travelers the use of personal computers as part of full-service “business centers” the hotels operate for their customers. The centers may also include audio-visual materials, word processors, typewriters, Telex facilities, photocopiers, libraries—even multi-lingual secretaries.

Some major airports and hotels in the United States are making personal computers available to business travelers, but this accessibility is rare, and applications generally are limited to airline schedules, stock-market and financial information, news reports, weather reports, and entertainment guides. Business travelers looking for personal computers to communicate and manipulate information in an airport or hotel setting are likely to come up empty.

A few vendors have tried to provide computer services to travelers, but they’ve had little or no success. One experimental project that didn’t fly was attempted by BIS Communications Corp., Scottsdale, AZ, which opened “Comprehensive Business Centers” at

New York’s La Guardia Airport and Atlanta’s Hartsfield International Airport in February 1984. BIS signed an exclusive agreement with Digital Equipment Corp. (DEC), Maynard, MA, to install equipment in the centers. The business centers came equipped with DEC Rainbow and Professional 300 Series personal computers, along with DEC VT240 terminals and DECmate II word processors. In addition to accessing stock-market data, news reports, airline schedules, and fare information, business travelers could send messages electronically.

After about nine months of operation, the business centers and BIS folded. “It wasn’t that the business centers didn’t receive a lot of traffic, because they did,” explains Adam Couture of DEC’s personal-computer marketing group. “It’s just that BIS could not make money on it.”

In another test project that never went anywhere, a vendor recruited independent hotel operators to equip their hotels with personal computers. According to Larry Chervenak of Chervenak and Keane Co., a New York-based consultancy that publishes *Hotel Technology Newsletter*, the vendor persuaded several hoteliers to

sign up for the service, but “for some reason the vendor folded up its tent.”

The reason for the lack of micros in hotels and airports is lack of demand, says Chervenak. “Hotels in the United States are not finding personal computers in high demand by the business traveler,” says Chervenak. “The average length of stay in a commercial hotel is about two days,” he explains. “A business traveler who stays a short time just wants to sit down and watch a movie or visit the lounge after a hard day.” Also, business travelers are more likely to bring their own micros with them than use micros that they may not be familiar with.

Despite past failures in setting up computing facilities for travelers, efforts continue to get business travelers computing in the United States. Westin Hotels, the big chain headquartered in Seattle, plans to open a full-service business center in its Century Plaza Hotel in Los Angeles. Westin already operates such centers in its hotels in Hong Kong, Manila, and Tokyo.

The Sheraton Grand Hotel on Capitol Hill in Washington offers its guests the use of an IBM PC XT for \$60 to \$75 per day, which includes software and a printer. If a business traveler re-

NEWS & COMMENT



The ill-fated BIS center at Atlanta's Hartsfield Airport shut down after failing to post a profit.

quires another type of computer, like one from Apple Computer Inc., Cupertino, CA, or DEC, the hotel has an agreement with an outside service and rents from them. The information about the availability of the computers is listed in every room.

Because the hotel only began offering the use of personal computers this past January, it's hard to pinpoint who is using them and for what reasons. However, a spokesperson at the hotel says, "I imagine it's not the one-night visitors who are attracted to the computers, but people who are working here in Washington for a week or more."

Two Holiday Inns, The Crowne Plaza Hotel in San Francisco and The Crown Plaza in Los Angeles, also offer computing services to guests. The hotels have installed 30 AT&T Personal Computers, some located in the guest rooms, and others in lounge areas. Business applications include word processing, financial planning, and spreadsheet analysis.

IBM is also getting into the act. An IBM spokesperson says Big Blue has been displaying the IBM PC XT in several airports in major cities across the country, including New York, Boston, New Orleans, Seattle, Detroit, and Or-

lando, FL. The PC XTs are displayed in showcases; the box part of the computer and the screen are enclosed in an acrylic cover, but the keyboard sits out

in the open. Travelers can use the keyboard to access programs for free, including a Dow Jones news service, a how-to tutorial, and a dealer guide.

The obvious purpose of these showcases is to sell the IBM PC XT. "I can't say how many people bought a PC XT as a result of this showcase," says an IBM spokesperson, "but there are counters built into the software so that every time somebody uses the system, it registers in the computer. We're very satisfied with the amount of traffic these showcases have received."

Will these latest efforts spur business travelers to use microcomputers away from the home office? Although the pilot programs in hotels and airports have only recently begun, promoters are optimistic. Business people today are becoming increasingly familiar with computers; and many business people will find computers to be indispensable, especially when they take their business on the road. —Theresa Conlon

MIS/DP SHUNS CONTRACTS



Photo by Howard Goldstein

Recruiter Herbert Halbrecht calls employment contracts "a one-way deal."

Like pre-nuptial agreements, employment contracts focus on all the things that can go wrong, for example, bankruptcy or irreconcilable disenchantment. But that's not why they

haven't caught on with MIS/dp professionals and executives. "This is too hot an industry to tie people up," says Max Sabrin, general manager of Data Executives Limited of New York, an ex-



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Use the mouse to design page layouts, which you can automatically repeat within the same document or store for use in another document. The system automatically sets rules and multiple columns and wraps text around graphics, giving you professional-looking pages in minutes.

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The system gives you 25 typestyles in 66 sizes each—that's 1,650 fonts on line. And they're genuine Compugraphic type fonts—not dressed-up typewriter or word processor typestyles.

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Fully automatic hyphenation, justification, kerning, and letterspacing mean high-quality typography like no other office system can offer.

Powerful graphics capabilities

Produce charts such as bar, pie, scatter, and line charts automatically. Or select from the over 300 pre-drawn graphics. You can even create freehand drawings on the Compugraphic Personal Composition System.

Easily merges text and graphics

Unlike any other system on the market, this Compugraphic system merges text and graphics into complete pages. No more cut and paste.

Plain-paper output

The quiet, convenient laser printer gives you documents on demand, on plain paper or overhead transparencies. Multiple sets of a document are automatically collated.

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ecutive-search outfit that places 75 to 100 MIS/dp professionals each year.

Pros are in great demand, and some fear their knowledge—and thus their marketability—will grow stale if they stay with one employer too long. The result is high turnover and instability in MIS/dp departments. Still, corporations are reluctant to use employment contracts to stem the tide of MIS/dp turnover.

"It's a one-way deal," remarks headhunter Herbert Halbrecht of Halbrecht Associates, Stamford, CT. An employee can always sue a company that doesn't hold up its end of a written agreement, but "the employer can't make an employee work or guarantee the quality of that work," he says. It's a situation analogous to that of managing a baseball star who somehow bats below his expected average.

The employment contract's supposed mutual pledge of protection and stability leaves both job candidates and potential employers underwhelmed. Headhunters don't advise their candidates to request contracts. And MIS/dp recruiters at Data General Corp. (Westboro, MA), Paul Revere Life Insurance Co. (Worcester, MA), and Bethlehem Steel Corp. (Bethlehem, PA), among others, don't believe contracts are productive.

When pressed, New York-based headhunter Robert Half came up with one possible advantage for the hiring company: "If an employer has a contract, it will spell out the reasons for termination." Thus, an employer may sidestep litigation by an angry ex-employee who feels he or she was capriciously fired.

But Half sees this as a severely limited advantage for an employer. He suggests stock options, brief separation agreements, and up-front bonuses for prize catches as incentives that are preferable to employment contracts. In his recent book, *Robert Half on Hiring* (Crown Publishers Inc., \$15.95), he advises employers: "Make no commitments that will come back to haunt you."

—Anita Micossi

CORPORATE HIT PARADE

TOP 20 PROGRAMS

Rank	Product	Vendor
1	1-2-3	Lotus Development
2	Multimate	Multimate Int'l.
3	Sideways	Funk Software
4	Symphony	Lotus Development
5	dBase III	Ashton-Tate
6	Dataease	Software Solutions
7	Crosstalk XVI	Microstuf
8	Microsoft Fortran	Microsoft
9	TK! Solver	Software Arts
10	Chart-Master	Decision Resources
11	Harvard Project Mgr.	Harvard Software
12	Powerbase	Powerbase Syst.
13	Sign-Master	Decision Resources
14	Project 6	Softcorp
15	pfs:write	Software Publishing
16	Norton Utilities	Peter Norton
17	dBase II	Ashton-Tate
18	R;base 4000	Microrim
19	Multiplan	Microsoft
20	Graphwriter	Graphic Communications

Corporate Software Inc., the Wal-
tham, MA, software distributor, has released a list of the 20 most popular packages among its corporate clients in 1984. (The distributor describes its corporate clients as those organizations with about 20 micros or more.)

Although the top-selling package—1-2-3 from Lotus Development Corp., Cambridge, MA—comes as no surprise, the list has a few interesting names, including third-ranked Sideways, a program from Funk Software Inc., Cambridge, MA. Sideways rotates a printout of a spreadsheet 90 degrees so that it is read down the page instead

of across it. Corporate Software's Richard Loftin says his clients usually order a Sideways package whenever they order 1-2-3.

As with any best-seller list, Corporate Software's list must be analyzed for what it's worth. The distributor claims to have sold about \$1 million worth of micro software to corporations last year, which represents only a minuscule amount of the micro software bought by medium-to-large businesses last year. Furthermore, many of its clients are industrials, which accounts for the popularity of packages featuring Fortran, charts, and formulas. □

MICRO-TO-MICRO "BROADCASTING"

U sing standard television signals, microcomputers can now broadcast data to an unlimited number of receiving points via orbiting satellite.

Alpha Microsystems of Irvine, CA, claims that micro-broadcasting is less

expensive than using modems and leased lines to transmit data. Although not used by any businesses yet, anyone with the necessary equipment can broadcast data via micros, says the company. "The cost savings of micro-

broadcasting as opposed to using modems and leased lines is enormous," says Richard Oliva, vice president of marketing at Alpha Microsystems. "Data sent by telephone lines and modems is transmitted from point to point. When you broadcast data, one computer can reach thousands—or hundreds of thousands—of computers at the same time."

To broadcast, a user needs an Alpha Microsystems Series 1000 microcomputer with video controller (costing about \$8,500), a standard video-cassette recorder (VCR) (about \$500), a satellite dish, and rented time on a satellite, which, says Oliva, may cost as little as \$2,000 to \$3,000 per hour, depending upon the time at which users choose to transmit.

User don't have to use an Alpha Microsystems' micro for transmissions. This year, the company plans to introduce a video-controller circuit board that will fit into an expansion slot in the IBM Personal Computer and cost less than \$500.

Micro-broadcasting technology stems from Alpha Microsystems' existing VCR backup capability, which has been available for about four years. Instead of backing up data on floppy disks or streaming-tape drives—methods the company deems cumbersome or too expensive—data are backed up onto any standard VCR. The new discovery is that once data are on a video recorder, they become video signals and can be transmitted just like a TV program.

By using Alpha Microsystems' video controller (a circuit board that slides into any Alpha Micro Series 1000 microcomputer), the disk's digital signals are converted into the VCR tape's analog signals—the same signals television stations use to bounce transmissions off satellites.

"There's a huge satellite network throughout the United States waiting to be used by micro users," says Oliva. "All a user needs to do is call up a satellite service and rent time." However, it may be difficult for users to rent satel-

lite time for short periods. For example, Satellite Business Systems, McLean, VA, offers satellite time in 30-day-minimum contracts.

The approximate rate of data transmission with a micro-broadcasting system is about 10 megabytes per half

hour. In addition, data broadcasting permits two-way communication of information, if both ends of the link have compatible computers and a satellite receiving dish.

For further information, call (714) 957-8500.
—Theresa Conlon

AT&T FOSTERS ULTRA UNIX

Although there are as many as 27 different versions of the Unix operating system available, AT&T is determined to make Bell Labs' latest edition, Unix System V, the definitive, standard Unix. To this end, AT&T has allied itself with several hardware and software vendors.

Intel Corp. and National Semiconductor Corp., both in Santa Clara, CA, have agreed to implement Unix System V on some of their chips and to allow AT&T to certify the implementation. In addition, Motorola Inc., Phoenix, AZ, will port its entire line of 68000 microprocessors for Unix System V.

On the software side, Amdahl Corp., Sunnyvale, CA, has an agreement to work with AT&T to ensure compatibility between Amdahl's UTS mainframe edition of Unix and Unix System V. Microsoft Corp., the Bellevue, WA-based micro-software vendor, plans to release a Unix-based Xenix operating system compatible with Unix System V.

And Unisoft Systems, Berkeley, CA, has developed System V Interface Definition, a set of specifications for software vendors that will make Unix applications truly compatible with Unix System V.
—Michael Dobberstein

PBX/LAN UPGRADE DUE

Users who've been waiting a long time for private branch exchanges (PBXs) that can handle data as fast as local-area networks (LANs) may not have to wait much longer. Northern Telecom Inc., Richardson, TX, has announced a series of enhancements to its PBX line that it says will offer LAN speeds for the transmission of voice, data, text, and graphics through existing twisted-pair telephone lines. Northern Telecom is promising limited deliveries of the PBX enhancements in the third quarter of this year, with full production slated to begin in 1986.

Called the Meridian SL-1 and SL-100 integrated-services networks, the new enhancements upgrade the SL-1 and SL-100 digital switches, which Northern Telecom claims represent a

total of about 4 million digital lines, the largest installed base of digital lines in the world. The LAN enhancements can only be used with Northern Telecom's PBXs.

Prices for the new enhancements range from \$80,000 to \$1.2 million, according to the vendor. The Meridian SL-1 PBX serves up to 5,000 users; the Meridian SL-100 serves up to 30,000 users. The existing SL-1 system can be upgraded to the Meridian system, and a similar field upgrade is planned for the SL-100.

The major feature of the new Meridian enhancements is a 2.56-million-bit-per-second LAN called Lanstar. The data speed of Northern Telecom's PBX is now 56,000 bits per second, a data speed generally considered too

slow for efficient transfer of data between a large number of nodes on a network. By using proprietary large-scale integration chips, Northern Telecom has been able to boost the data speed through the twisted-pair wires by about 45 times, a spokesperson for the vendor says.

To enable fast transfer of information between terminals and micros connected to the telephone wire, the enhancements include packet-switched transmission of information on a high-speed bus that resides in a cabinet that users will attach to the PBX. This bus allows voice, data, text, and graphics to be transferred at 40 million bits per second.

Office-automation software for the new PBX/LAN will reside on disk servers. Northern Telecom plans a full line of business applications for the system, including word processing and spreadsheets. IBM Personal Computers will be able to be hooked up to the PBX/LAN via plug-in cards. Northern Tele-

com will also offer a special terminal, the Model 4020 integrated voice and data terminal. The terminal can be "supercharged" by accessing microcomputer cards that plug into slots in the cabinet that also contains the packet-switching apparatus.

Model 4020 terminals will work faster and be more versatile than IBM PCs, Northern Telecom says. The vendor also says the enhancements will let users work in multiple media. For example, written or spoken messages can be part of forms, files, or other messages. The system will allow two users to communicate simultaneously in different media with information appearing instantly on both terminals. Users will also have access to a corporate directory in which specific items such as files, telephone numbers, and forms can be accessed with the flick of a key. In addition, terminal and micro users will have shared access to modems and protocol converters so that outside databases can be used. □

CENTREX USERS DON'T SWITCH

Centrex—the central-switching service provided by local telephone companies—is alive and well and popular in the branch offices of large corporations, reports Northern Business Information, a New York-based telecommunications market-research firm.

After a decline in 1982, Centrex use increased slightly in 1983. The regional Bell operating companies had five million Centrex lines—accounting for about 20 percent of corporate switching. William Rich, an analyst for Northern Business, predicts Centrex lines will increase to six million by 1988.

According to Rich, enhancements to Centrex service and the reluctance of corporate users to make the huge initial investment needed for private branch exchanges (PBXs) have kept the central service attractive. "A lot of

corporations do not want to get involved in the telephone business," Rich says. "The costs are too high."

Centrex fits the bill for high-volume corporate users that want a redundant switching service that can be installed and removed quickly and has 24-hour maintenance, says Rich. In addition, he says, AT&T is providing new software for Centrex that will allow customers to control station architecture and transmit data at 9,600 bits per second.

In addition, the regional Bell operating companies, such as Ameritech and Bell Atlantic, have devised discount-pricing schemes that afford corporate Centrex users breaks on access tariffs, notes Rich. He adds that access charges are being kept in line so that corporate users don't dump Centrex for their own PBXs. □

THEY SERVE NETWORKS

Now that IBM and Apple Computer Inc., Cupertino, CA, are ready to sell local-area networks (LANs) for personal computers, the need for network servers for LANs is becoming more apparent. Without a central electronic file cabinet from which users can share software, files, and peripherals, the real promise of micro LANs can't be realized.

Network servers offer micro users a cheaper, more flexible way of getting greater use from their micros because they provide speedy access to data and allow more efficient access to resources such as disk drives and printers, according to Will Zachmann, analyst with International Data Corp., the Framingham, MA-based market-research outfit.

The central files for an LAN are usually stored on a hard disk. Vendors of network servers have cooked up software that can control access to the disk, create a buffer for requests to use a printer, control access to a modem, and offer electronic-mail functions and micro-to-mainframe connections.

The term "network server" is being used by vendors to cover both disk servers and file servers. A disk server accesses the disk on which files are stored in a way that takes slightly more time to access the information than a file server does. A disk server accesses information on the disk blocks at a time—ablock being a specified amount of bytes. A file server accesses complete files at a time.

There are about 20,000 personal computer LANs, more than enough of a market for network-server vendors. Several vendors, including CYB Systems (Austin, TX), 3Com Corp. (Mountain View, CA), and Banyan Systems Inc. (Westboro, MA), have come out with network servers for LANs from Corvus Systems Inc. (San Jose, CA) and Datapoint Corp. (San Antonio, TX), among others.

(Continued on page 34)

NOMAD2 + SQL/DS:

Made For Each Other

NOMAD2, the premier 4-GL/DBMS, and SQL/DS, IBM's wave-of-the-future database system, have been combined to form the single most powerful information management resource available. And those who have seen this dynamic combination in action agree that the two systems were made for each other.

The NOMAD2-SQL/DS combination is much more than just an interface. It is the blending of the best 4-GL with the best DBMS available that comprises an entity greater than the sum of its parts. More specifically, the broad spectrum of capabilities that comprises SQL/DS can be accessed and controlled by dealing solely with NOMAD2.

NOMAD2's single-command environment, unmatched report writer, statistical and interactive decision support capabilities and, most importantly, its richness of language have made it the hallmark 4-GL against which all others are measured. And it is through these attributes that the sheer power of SQL/DS can be fully realized.

The NOMAD2-SQL/DS interface represents the latest innovation from D&B Computing Services. In making NOMAD2 available for use on in-house mainframes, we have continued the evolutionary process we began in 1975 when NOMAD was first introduced. And it is this evolutionary process that has catapulted NOMAD2 to the leadership position it holds in the marketplace.

If you are currently using SQL/DS in your VM environment, or even if you're just considering it, take a look at NOMAD2 now. Most people who try NOMAD2 buy it. You owe it to yourself to find out why.

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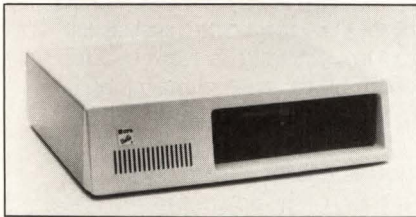
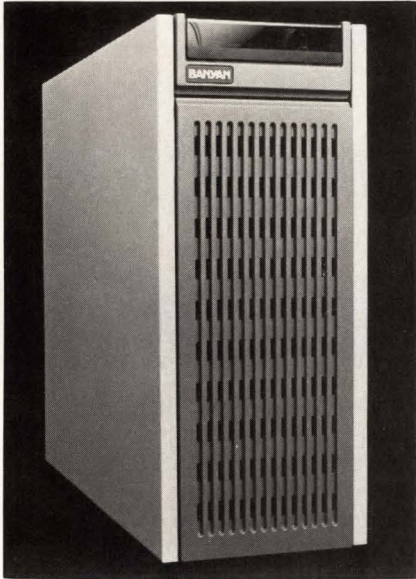
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NEWS & COMMENT

(News continued from page 32)



Some new network servers from Banyan Systems (top), CYB Systems (middle), and 3Com.

The network server from CYB Systems is a super-microcomputer equipped with Bell Labs' Unix System V operating system and Unix applications software. IBM Personal Computers and compatibles on CYB's Unite network server can use popular MS-DOS software, or they can be used as terminals to access the supermicro's Unix software, CYB claims. Unite offers gateway communications that support transmission of data to and from the network and a host mainframe

from IBM or Digital Equipment Corp. (DEC), Maynard, MA. The Unite network server also handles print spooling, offers file and record locking, and can support up to 32 users. CYB claims that add-on options can expand disk storage to more than one gigabyte. Prices start at \$9,000 and range to over \$35,000. For more information, call (512) 458-3224.

3Com's 3Server won't allow users to access Unix applications, but when combined with 3Com's Etherseries network, the network server supports a wider variety of micros than CYB's network does. In addition to IBM PCs and compatibles, the system supports personal computers from AT&T, Hewlett-Packard Co. (Palo Alto, CA), Zenith Data Systems (Glenview, IL), and Texas Instruments Inc. (Dallas), among others. Each 3Server can accommodate up to 50 users. The server offers file and record locking and supplies di-

rect communication between the network and an IBM or DEC mainframe host, the vendor says. The 3Server retails for \$7,495. An add-on 36-megabyte (Mbyte) disk drive and 60-Mbyte backup tape drive bring the cost of the system to \$14,500. Optional software includes programs to provide shared disk capabilities, print spooling, and electronic mail. For more information, call (415) 961-9602.

Like CYB Systems, Banyan Systems offers a network server based on Unix System V. However, micros on the network can't be turned into terminals to use Unix applications. Banyan's server, with 512 kilobytes of memory, 43 Mbytes of disk storage, and a 60-Mbyte tape drive, costs \$16,900. The Unix software, including electronic mail, and file- and print-serving programs, is bundled with the base system. For more information, call (617) 366-6681.

—Michael Dobberstein

EBB & FLOW AT&T AND EDS ALLIED

AT&T Information Systems, Morristown, NJ, and General Motors Electronic Data Systems Corp. (EDS), Dallas, have agreed to form a unit to offer integrated data-processing and telecommunications systems to large corporate customers who have requests for proposals (RFPs) of \$25 million or more. AT&T will supply 100 technicians and EDS 150 technicians to evaluate user RFPs to decide if the two corporations can deliver solutions. Systems will include various hardware, software, and communications devices for transferring voice, data, text, and video.

Other vendors' equipment, including IBM's, will be sold as part of the systems, says Lester M. Alberthal, senior vice president of EDS. Robert J. Casale, vice president of AT&T Information Systems, says he expects his group to provide 70 percent of the equipment, EDS to provide 20 percent, and other vendors 10 percent.

Leading Edge Products Inc., Canton, MA, says it's still taking orders for personal computers and is shipping fully loaded micros to customers despite legal squabbling with Mitsubishi Ltd., the Japanese manufacturer that supplies the computer to Leading Edge.

Dick Zinner of the Boston law firm Friedman & Atherton, attorneys for Leading Edge, says Leading Edge and Mitsubishi had an understanding that pricing for Mitsubishi's computers was negotiable according to the market tide. A Leading Edge spokesperson claims Mitsubishi refused to lower its price to Leading Edge when IBM cut its prices. Leading Edge took matters into its own hands and made a payment to Mitsubishi lower than the amount on the billing invoice. Although Leading Edge subsequently made up the difference, Zinner says, Mitsubishi stopped shipping personal computers to Leading Edge.

Leading Edge petitioned the federal

Test Your Microcomputer IQ*

1. Name a totally integrated software package that was rated #1 by *Software Digest*. _____
2. Where can you buy an IBM PC XT or AT, AND have it installed, AND get on-site warranty for it? _____
3. Who will educate IC personnel or end-users at their site or yours? _____
4. What provides virtually any type of PC communications capability — from simple TTY to 3278/79 emulation? _____
5. What provides a micro software facility that allows you to customize a system to your specific requirements? _____
6. Who are the premier micro consultants to the *Fortune* 1350 companies? _____
7. Who has made the word hot-line obsolete, by staffing a full-service support center with computer professionals? _____
8. What is the easiest way for an IC manger to satisfy the many end-user needs in the organization? _____
9. What company's evolutionary approach to software and service (also demonstrated by NOMAD, now NOMAD2, the premier 4GL/DBMS) ensures that they'll be a major force in the micro marketplace for years to come? _____
10. Name the companies that can provide all of the above? _____

*(Turn Page Upside Down for Answers)

1. DunsPlus Software 2. From DunsPlus 3. The DunsPlus Education Staff
4. DunsPlus's Communications Utilities 5. The DunsPlus Tool Kit 6. DunsPlus's Professional Consulting Staff 7. The DunsPlus Support Center 8. Call DunsPlus at 800-DNB-PLUS 9. Dun & Bradstreet, the parent company of DunsPlus 10. DunsPlus

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NEWS & COMMENT

(Continued from page 34)

courts for two temporary restraining orders, according to Bill Sellers, vice president of market research: one to get Mitsubishi to resume shipment, and one to get the price corrected. On Dec. 10, 1984, the court ordered the Japanese manufacturer to ship computers to Leading Edge. Mitsubishi sent micros, but the micros it shipped did not contain memory-expansion boards or monochrome controllers. As a result, the Japanese vendor was slapped with a contempt citation by a Federal District Court judge in Boston on January 10.

Although the legal battle still rages, Sellers says Leading Edge is taking orders for the personal computers and is shipping fully loaded micros to customers.

Lee Data Corp., Minneapolis, a maker of IBM-compatible terminals, has ended a preliminary agreement to acquire Visual Technology Inc. of Tewksbury, MA, in a stock swap valued at \$16.5 million. Visual Technology has laid off 16 percent (65 employees) of its workforce in the wake of Lee Data's pullout. Lee Data says it is still

discussing buying computers from Visual Technology and re-marketing them under its own name.

Micom Systems, Chatsworth, CA, will acquire Interlan Inc., a privately owned supplier of Ethernet local-area network products based in Westford, MA. Price of the acquisition is 1,750,000 shares of Micom common stock. According to a Micom spokesperson, Micom will become one of the largest vendors of local-area network products as a result of the acquisition.

QMS, the Mobile, AL, developer of non-impact computer printer systems, has acquired Concept Technologies, a Portland, OR-based vendor of products that integrate text and graphics on IBM Personal Computers.

The Basic Four division of Management Assistance Inc. (MAI), Tustin, CA, has been bought by Bennett LeBow, a private investor. LeBow has named his acquisition MAI Basic Four. The manufacturer of small systems will continue to be headquartered in Tustin. MAI has also sold its Sorbus service division to Bell Atlantic, the regional telephone operating company. Sorbus Inc., headquartered in Frazer, PA, will continue

to service computer systems manufactured by Basic Four and other vendors.

Datapoint Corp., San Antonio, TX, will lay off 650 employees from its San Antonio plant. The latest cut follows a previous layoff of 240 employees, which the local-area-network manufacturer announced when it closed its Fort Worth, TX, plant last month.

Microdata Corp., the Irvine, CA-based developer of relational database business-computer systems and a pioneer in natural languages, is changing its name to McDonnell Douglas Computer Systems Co. Microdata is a subsidiary of McDonnell Douglas Corp., St. Louis.

Corporate Software Inc., Waltham, MA, has bought the fledgling Micro Distribution Division (MDD) of Management Science America Inc. (MSA), Atlanta. Like Corporate Software, MDD specializes in selling personal-computer software to large corporations. The financial terms of the acquisition were not disclosed by MSA, but a spokesperson for the vendor indicated that MDD, formed early in 1984, was a start-up operation. □

TONGUE IN CHECK

Managers responsible for data-processing and information systems may frequently find the verbal lines blurring between the employees in their charge and the machines and tools they use. In any office, managers may find "word processors," "database managers," "records managers," "program editors," and "report writers." Some of these are people, some are machines, and some are software packages. Who's who and what's what?

By yielding to the American penchant for catch phrases and abbreviations, we have dropped key identifiers, words such as "system" (word-processing system), "package" (database-management package), and "software" (report-writing software). When added, these identifiers handily

distinguish the people from the things. For example, a *word processor* is an employee; a *word-processing system* is the machine he or she operates; and a *word-processing package* is the software the operator uses to run the system.

It's important for managers to differentiate between their employees and the machines and tools they use for two reasons. First, it provides clarity. It's confusing to read or listen to a business report in which terms referring to people and things are muddled. It can also be misleading. If you submit a request for a "project manager," it could be a rude shock to find a new employee at your office door instead of the software package your department needs.

But there's a more important reason that has greater implications for manag-

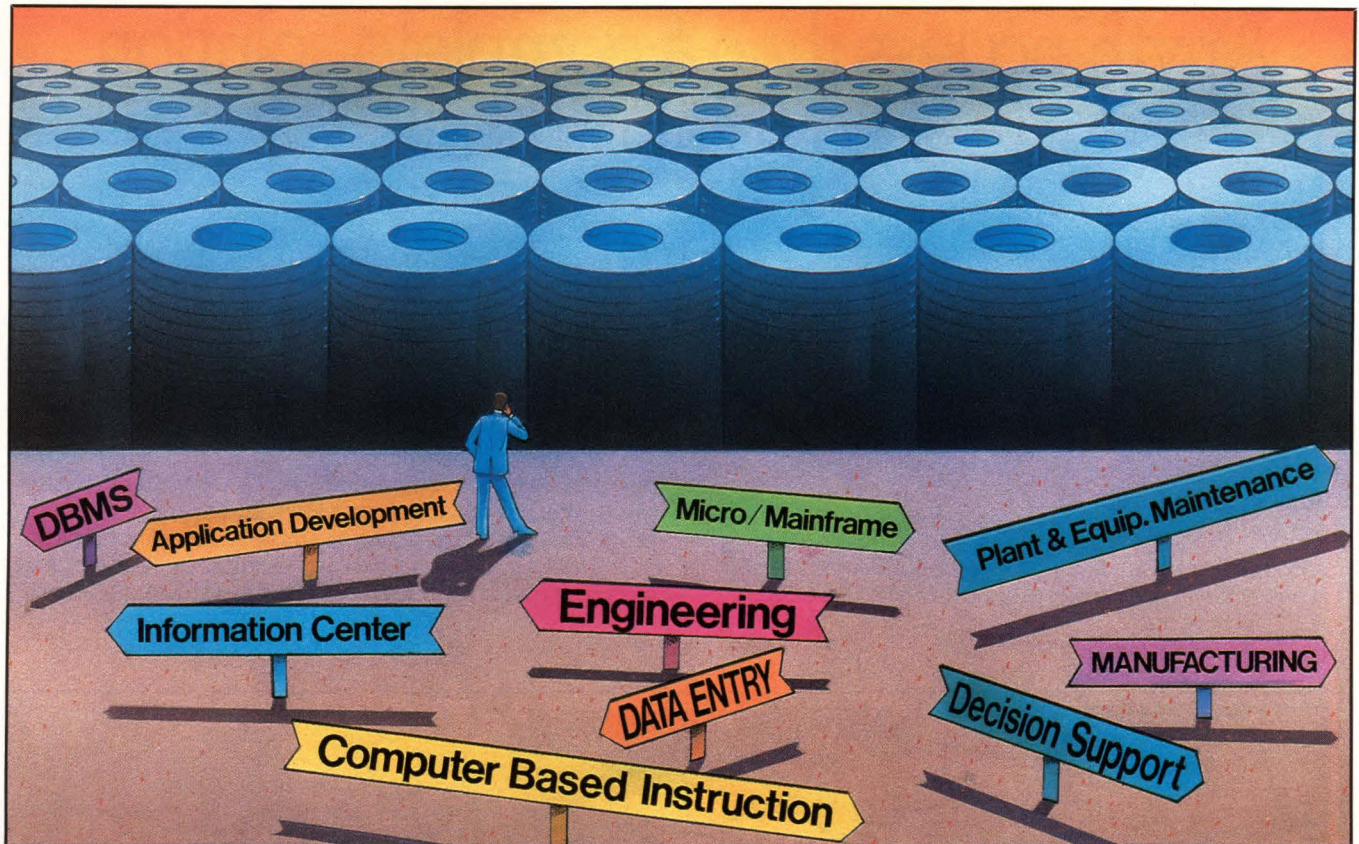
ers. In high-technology fields, it's all too easy to forget that despite the multitude of features sophisticated software and machinery offer, employees and their brainwork are needed to get results.

Since managers' foremost responsibility is to manage people—not things—they should consciously make these distinctions, and choose their words accordingly. To do otherwise—to refer to employees by the terms that properly apply to their tools—is dehumanizing and demoralizing. And the next time your superior compliments the "manager" for completing an important project on time, it will be infinitely more satisfying if the boss is crediting not your latest software acquisition, but you.

—Barbara Francett

(News continued on page 40)

Try to find software that solves your problem.

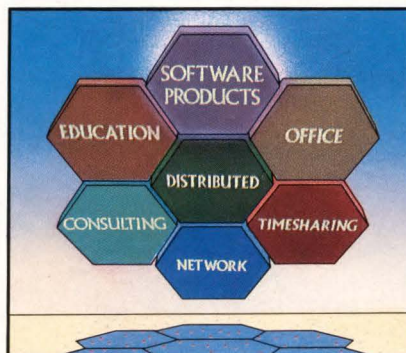


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Acquiring mainframe and micro software that best fits your needs isn't easy. Today's software landscape seems unending. So to obtain software that actually achieves your specific objectives, you need programs with proven problem-solving capabilities. Like software from Boeing.

Every software package from Boeing Computer Services is backed by Boeing expertise and experience. That's why both users and data processing professionals appreciate our solutions to a myriad of computing needs. Executives in many industries depend on our financial modeling and decision support software for accurate, up-to-the-minute pictures of business activity and for reliable forecasts. Production managers turn to Boeing for on-line manufacturing software that can keep track of all elements in the production cycle . . .

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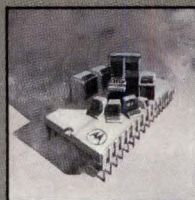
For information about Boeing's other integrated information services—including enhanced remote computing, distributed processing, network services, office automation, consulting, and education and training—call toll free 1-800-447-4700. Or write BOEING COMPUTER SERVICES, M/SCV-26-18Z, 7980 Gallows Court, Vienna, VA 22180.

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NEWS BRIEFS

(News continued from page 36)

DEC FACTORY DEMOS

Digital Equipment Corp. (DEC), Maynard, MA, is opening up several centers designed to build and test computer-integrated manufacturing systems. The centers will serve as functioning demonstration sites for prospective customers. The Cimlab demonstration center in Shrewsbury, MA, contains CAD/CAM computers connected via the Ethernet local-area network to milling machines, punch presses, sheet-metal cutters, and other metal-working equipment. A spokesperson for DEC, which claims to be the world's largest supplier of computers for factory-floor systems, predicts that computer-integrated manufacturing technology will initially be most attractive to discrete-parts manufacturers who will have the option of retrofitting standing machinery.

DON'T BET ON BLUE UNIX

IBM will not announce its own version of Bell Labs' Unix operating system in 1985 because such an offering would not be in IBM's best interests, believes analyst Aaron Goldberg of International Data Corp., the Framingham, MA-based market-research outfit. The announcement of an IBM Unix would allow the splintered Unix market to solidify on the version that IBM endorses, Goldberg says. As long as this doesn't happen, users will continue to stick with the stability of IBM's software offerings, he adds.

KEYBOARD YES, VOICE NO

Users of micros and terminals are turning thumbs down to integrated voice and data features, according to a report titled "Management Workstations: Markets and Strategy," by Advanced Resources Development, a Medfield,

MA, market researcher. Workstations with telephones, voice-input devices, and voice-storage devices are being rejected either because they are too new or because users prefer to use keyboards, according to the study. Call (617) 359-8090 for more information about the report, which costs \$1,695.

ENGINEERING MIPS

In the next 10 years, the processing power of engineering workstations will increase from about one million instructions per second (MIPS) to 10 MIPS, according to Strategic Inc., a Cupertino, CA-based market-research outfit. Strategic predicts workstations will have up to 16 Mbytes of internal memory and storage capacities of up to 400 Mbytes. Either optical disks or smaller 5¼-inch Winchester disks that can hold vastly increased amounts of information will be used for local storage, according to the market researcher. Strategic's forecast appears in "Technology Trends in High-Performance Workstations," a report that profiles workstation technologies and vendors. The report is available from Strategic for \$1,950. For more information, call (408) 446-4500.

MIS/DP EXECS WANT RESPECT

Are vendors' policies opportunistic and shortsighted? That's the sentiment a number of MIS/dp executives expressed at a recent round of talks to determine seminar topics for the PC Expo show, to be held June 17-19 at the New York Coliseum.

According to PC Expo managers, MIS/dp executives resent the "casual" way they are treated by vendors. "Personal-computer vendors give buyers the impression that they ought to be glad to get their equipment under whatever conditions vendors dictate," complained one systems supervisor who

participated in the discussion.

Another MIS/dp manager complained that software vendors—particularly the manufacturers of popular integrated packages—believe that a sellers' market will always exist for their products, according to PC Expo managers.

But the sellers' market is more fact than attitude, say several discussion participants. "Corporations shouldn't have to buy a hundred copies of a software package or keep a key disk in the system," says one MIS manager. "But they are forced to because of suppliers' copy-protection policies."

DELIVERY? DO IT YOURSELF

MIS/dp professionals must work closely with hardware and software vendors to develop new delivery systems or be left behind in their own industries, according to Eduardo Stecher, vice president of advanced systems technology for Software Research Corp. (SRC), Natick, MA.

Stecher, who made his comments to a group of MIS/dp managers and other executives in the banking industry at a recently held SRC seminar at Babson College in Wellesley, MA, cited the installation by American Airlines Inc., Dallas, of Sabre reservation terminals in travel agencies as a prime example of tailoring a delivery system to meet corporate needs. Originally, American Airlines installed Sabre terminals to generate more business from travel agents but found that Sabre could also make money on transactions with other airlines as well as auto, hotel, rail, and shipping bookings. The delivery system itself became a revenue producer.

Stecher warned that there will be no off-the-shelf delivery systems in the near future and that MIS professionals will have to build their own. These systems, he claimed, will be the key to the expansion of new services and profit centers and will change the way the businesses are run. □

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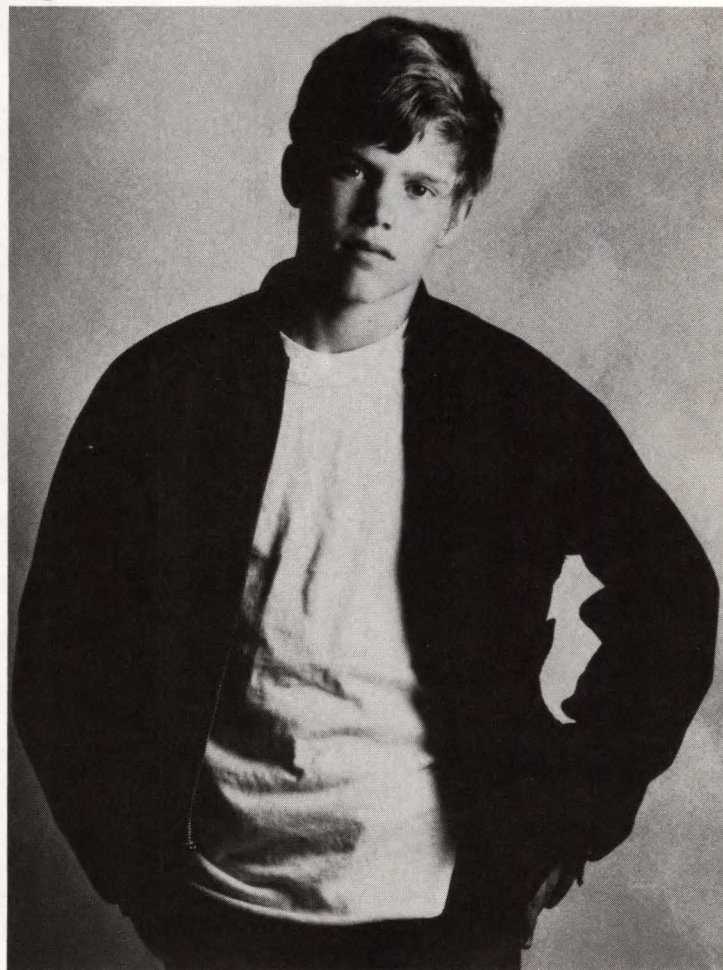
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PERSONAL COMPUTING

by Robert A. Moskowitz, Guest Columnist



Illustration by Paul Leibow

UNLOCKING MICRO SECRETS

Boosting the productivity of your personal-computer users can be as easy as making a few minor additions to their software arsenals. The additions are inexpensive—some of them are free—but they can make personal computers simpler and faster to use.

The first place to look for such productivity boosters is the computer's operating system. MS-DOS, the most widely used microcomputer operating system in business, contains several hidden gems that can make a personal computer more efficient. MS-DOS users who create a file named "Autoexec.bat" can insert a series of commands into the file, which the computer will automatically execute in sequence every time it starts up. For example, if an "Autoexec.bat" file contains the lines "dir a*.bat" and "diskcopy a: b:," the computer will automatically list a directory of all files ending in ".bat" and then execute the diskcopy program. An "Autoexec.bat"

file can hold dozens of commands and file names, allowing users to customize operating conditions every time the computer starts up, without having to key in every command and file name.

Here are just a few of the commands that can be included in an "Autoexec.bat" file:

- "Fastdisk" calls a utility that increases the speed of reading and writing data on floppy disks.
- "Clock" calls a program that reads the hardware clock and transfers the information to the computer's system clock.
- "Verify On" commands the computer to verify the accuracy of every file it copies.
- "Dosedit" calls a utility that recalls previous MS-DOS commands with one keystroke. It also allows editing on a command line.

Another user-created MS-DOS file that can make a computer easier to use is "Config.sys." With "Config.sys," users can automatically invoke hard-

ware and software modifications required by certain programs. For instance, a "Config.sys" file can direct the computer to use enhanced screen features or to create a RAM disk—a section of the computer's random-access memory (RAM) that acts like a disk drive but is much speedier.

Utility programs are other productivity boosters readily available to personal-computer users. A utility program modifies a specific feature of the computer's operating system to make that feature more useful—a kind of tool kit for the operating system. One major utility function is modifying the format of a disk directory to make it easier to read.

Many utility programs are in the public domain and are available for free. Electronic bulletin boards are good sources for free utilities. More sophisticated utilities can be found in commercially available packages like Peter Norton Computing's Norton Utili-

(Continued on page 44)

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CIRCLE 520

(Continued from page 42)

ties. Norton Utilities contains programs to perform functions such as changing data directly on disks, reclaiming files that have been erased, and checking for lost data within a file.

A third type of productivity booster is the "companion" program. Companion programs provide features and power that should have been included in the computer's operating system but were somehow left out. A companion program loads into RAM like a normal applications program, but it can be run concurrently with an application.

IBM's File Command improves on MS-DOS by allowing the copying and erasing of many files with a single command. File Command's ability to move many files between separate floppy disks or subdirectories is a tremendous time-saver. Borland International Inc.'s Sidekick provides built-in amenities like a notepad, a telephone directory and dialer, a calendar with appointment book, and a calculator with memory. Bellesoft Inc.'s Pop Up Software offers a menu of MS-DOS functions and an alarm clock that "rings" at a preset time.

Some companion programs go beyond changing the operating system and modify applications packages.

With Writing Consultants' Proportional Star, Micropro International Corp.'s (San Raphael, CA) Wordstar can produce output that has the look of professional typesetting. One companion package, Warner Software Inc.'s Desk Organizer, provides spreadsheet users with a word-processing application, a formula evaluator, timers, and appointment calendars.

Keyboard programmers like Rose Soft Inc.'s Prokey and Rickerdata's Keyswap are another kind of companion software that can make computers easier to use. A keyboard programmer, or "macro" system, lets users program a sequence of keystrokes and assign the sequence to a single key, creating a "macro." Any repetitive task, such as typing a name 20 times in a word-processing document or replacing data in the records of a database file, can be as easy as pressing one or two keys once the repetitive keystrokes are defined in a macro.

Keyboard programmers can also make applications like Wordstar much easier to use. With help from a keyboard programmer, the most difficult sequences in Wordstar, such as blocking a paragraph or saving a text file and then resuming with the cursor in the same position, can be reduced from six

or more keystrokes to as few as two.

One of the best features of MS-DOS is that it allows several utility and companion programs to be used concurrently with the main applications program. But this versatility is not without a few problems. Features of different programs may conflict, causing the computer to lock up. For example, a computer malfunction is likely to occur if more than one program running concurrently uses an internal clock. Similarly, if more than one program uses the computer's "ALT" key as part of its command sequence, there may be a tendency for the system to lock up. Sometimes, but not always, the problem can be solved by loading utility and companion programs in a different sequence. In any event, users must test all combinations of utility, companion, and applications programs thoroughly to guard against lockup.

Customizing your users' personal computers with the right combination of MS-DOS features, utilities, and companion programs takes a bit of work, but the rewards—increased efficiency and productivity—are worth it. □

Robert A. Moskowitz is a free-lance writer and management consultant based in Woodland Hills, CA.

UTILITY AND COMPANION PROGRAMS*

Vendor	Product	Requirements	Price	Circle
Bellesoft (206) 828-7282	Pop Up Software	64 Kbytes RAM, 1 disk drive	\$20 to \$80 per module	471
Borland Int'l. (408) 438-8400	Sidekick	20 Kbytes RAM, 1 disk drive	\$50	472
Bourbaki (208) 342-5849	1DIR	128 Kbytes RAM, 1 disk drive	\$95	473
IBM (Contact local sales office)	File Command	64 Kbytes RAM, 1 disk drive	\$35	474
Peter Norton Computing (213) 399-3948	Norton Utilities	64 Kbytes RAM, 1 disk drive	\$80	475
Rickerdata (617) 662-0856	Keyswap	48 Kbytes RAM, 1 disk drive	\$119	476
Rose Soft (206) 524-2350	Prokey	64 Kbytes RAM, 1 disk drive	\$130	477
Warner Software (212) 484-3070	Desk Organizer	128 Kbytes RAM, 2 disk drives	\$295	478
Writing Consultants (716) 377-0130	Proportional Star	64 Kbytes RAM, 1 disk drive	\$75	479

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STRICTLY SOFTWARE

by David Kull, Software Editor

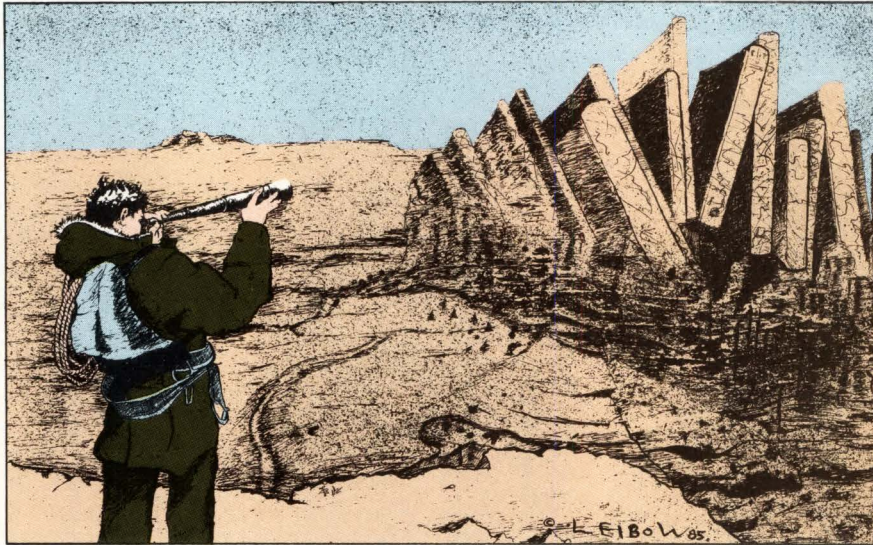


Illustration by Paul Leibow

ELECTRONIC SPEED READING

Written words aren't worth the paper they're printed on if you can't find the ones you need when you need them. Success in finding needed information that's buried in piles of books and documents often depends on the judgment of indexers, the skills of researchers, and the amount of time available for the search. The more written material there is to search through, the more likely it is that potentially useful information will remain out of sight.

Using a computer to scan hundreds of thousands of words in seconds can eliminate most of the problems associated with manually sifting through text for important information. The chances of locating useful references hidden in stacks of books or finding appropriate documents in a file can approach 100 percent when the text or documents are electronically stored. Text-management programs rapidly locate individual words or word combinations in tomes or large collections of unrelated

documents, providing comprehensive indexing and cross-referencing. The speed and accuracy of such electronic research allow organizations to extract value from sources that may have been impossible to tap manually.

Text-management programs work best with free-form written material (published articles, legal depositions, policy manuals, and the like) and dissimilar documents that need to be housed in a common database (such as letters, memos, and reports). Because text-management programs need considerable computing power, usually requiring either timesharing on a mainframe or a dedicated minicomputer, they generally focus on their one task. Although text-management packages store and retrieve numerical data as well as words, most are programmed to perform only the simplest computational and word-processing functions. The initial input of text and major updates often must be done in batches, with only minor revisions done online.

Because of their narrowly focused features and relatively heavy machine requirements, text-management programs aren't the best application for some types of printed matter. Highly formatted material that can be filed and accessed according to record name or by entries on a form, such as purchase orders, is better handled by a database management system (DBMS) that allows searches according to predetermined criteria. Specific application programs or more general DBMSs are more effective for handling information that changes frequently or that requires computation.

But all this doesn't mean that the only use for text-management programs is to provide their users with archival services. General DBMSs and statistical programs can be used with text managers to analyze and manipulate data stored in text.

Although installing a text-management package and tying it to other systems requires help from data pro-

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MICRO MANAGEMENT

Not all text-management problems require a large machine. FYI 3000, a text-management package for personal computers from FYI Inc., provides the same text-searching functions for filing systems as the mainframe packages do. FYI 3000 stores up to 65,000 entries of up to 500 words each and runs on microcomputers operating under PC-DOS, MS-DOS, or CP/M operating systems. It handles text created by any word-processing program that saves standard ASCII files, which means it can be used with most word processors.

FYI offers both full-text indexing, in which all words in an entry are indexed, and keyword indexing, in which only certain words are specified as keywords for each entry. It allows text searches with up to 128 keywords in combinations including

the "and," "or," and "not" constructions. (For instance, a researcher can ask for all entries referring to *mortgage* or *loan* and *commercial*, but not those that also refer to *residential*.) After a search, the program tells how many entries it has found. The researcher can elect to see or print out each entry retrieved or to scan each first sentence or line.

FYI 3000 is not easy to use with a floppy-disk system—conceivably, a user could be required more than 250 disks to operate the program. A hard-disk system allows users to avoid a lot of disk shuffling. FYI's operating characteristics make it suitable for many individual and departmental filing applications. Its \$395 price tag makes it feasible as a means of experimenting with text-management techniques before committing to a larger system.

cessing, end users—including clerical and professional personnel—should be able to operate and maintain a text-management system with minimal technical support. Text-management programs are relatively straightforward to use. Users can create an index by specifying key words that the program automatically indexes as it encounters them in the text. For a more comprehensive index, users can identify words that they don't want indexed, such as prepositions, conjunctions, and frequently occurring general terms; the system automatically indexes everything else. A researcher can then search for single words or combinations of words that are within the same sentence, paragraph, or page. For example, a researcher with a pharmaceutical house could explore research documentation for evidence of a drug's suspected side effects by asking the program to locate each instance in which the problem—dizziness, perhaps—is mentioned in the same sentence or paragraph as the product.

Most packages allow for the use of a number of key words in a given search combination. They also let users narrow searches by excluding records ac-

cording to specified key words. For instance, the pharmaceutical house may be interested in finding documentation related to the drug's effect on women only. The researcher could ask the program to withhold records that meet the other search criteria but that also include the key word *male*.

Most text-management packages include electronic thesauri, sometimes as optional modules. Creating thesauri takes considerable effort and expertise, but they can be of tremendous value to researchers dealing with specialized textual databases, such as medical or engineering databases. The user enters synonyms into the thesaurus, which is actually a database that interacts with the textual database. When the user later asks the system to locate all references to a given word, the program automatically scans for the word and its synonyms. With an electronic thesaurus, the pharmaceutical researcher who asked for references to *dizziness* would also be directed to all mentions of *vertigo*.

The thesaurus might also help a researcher by suggesting words with broader or narrower meanings than the word originally used. For instance, if a

search for *Chevrolet* uncovers an unmanageable number of citations, the thesaurus might suggest that the researcher look for *Malibu*, *Monte Carlo*, or *Impala*.

Niagara Mohawk Power Corp. of Syracuse, NY, uses the Docu/master text manager from TSI International to manage a 50,000-page safety report on one of its plants, a report required by the Nuclear Regulatory Commission. According to Gerry Bradley, the assistant senior analyst who administers the text-management system, it took two clericals only two months to put the final report together; without Docu/master, the project would have tied up eight employees for twice as long.

Besides saving time and labor for the safety-report project, Docu/master gives Niagara Mohawk a way to verify that the document is complete and correct, something that is even more important to the utility than economy, according to Bradley. "We can be sure that everything that should be included has been included," Bradley says. He adds that plant personnel can also gain access to the safety report via terminals for rapid response to problems.

Docu/master's use at Niagara Mohawk is not limited to the safety report. The utility also uses the text-management program for all its technical manuals and for its legal library. Many corporate legal departments use text-management systems to analyze depositions, court transcripts, and the like. Boise Cascade Corp., the Boise, ID-based supplier of wood products, uses Battelle Inc.'s Basis text-management package to support its legal department. Boise Cascade began using Basis to aid its legal department in preparing a defense against an antitrust suit. More than 50 depositions of over 200 pages each, 10,000 pages of trial transcripts, and 75,000 sales invoices have been loaded into a Basis database, which runs on the corporation's IBM 3081 mainframe. Boise Cascade's attorneys use the Basis text manager to search and analyze the information in a variety of ways.

According to Doug Davis, lead systems analyst in the legal department, 86 employees, including attorneys,

legal assistants, and records-management staff, can now access Basis via IBM's MVS timesharing option. Up to 10 legal-department employees can simultaneously search Basis databases; in the meantime, any number of the 400-plus other timesharing terminals throughout the corporation can be used. According to Davis, response time ranges from 1 to 1.5 seconds, a quite tolerable level. "Users can't tell from the response time whether they've searched 7,000 or 70,000 records," Davis says.

According to Davis, Basis has been particularly valuable in digging out pricing information for the antitrust-case defense. Employees use Basis to find each mention of a given product and its associated price from invoices stored in a database. The pricing information is then loaded into SAS, the statistical-analyses package from SAS Institute in Cary, NC. The corporation is using the analyses done with SAS to support its claim of fair pricing. "There was no other way of defending ourselves," says Davis, who notes that the case has not yet been decided.

Sifting through tens of thousands of pages of text and invoices manually would have been nearly impossible. But getting all the data into the database system was a major undertaking. Seventy-five contract data-entry clerks spent three weeks inputting what Davis describes as a truckload of information.

Data entry is a concern even for smaller projects if all printed material has to be keyed in from scratch. Organizations that handle text electronically to begin with can use text-management packages without rekeying the information. For example, publishers can load text-management databases with the electronic output of their typesetting computers through interfaces that are already available for the major systems, allowing the creation of databases of printed publications with no extra keying. Newspapers and magazines can use the approach as an improvement over morgues of clipped articles or as a way of marketing their information via a public-access database. For example, the full text of *The New York Times* from June 1980 to

Data entry is a concern if all textual material has to be keyed in from scratch.

present is available online from Mead Data Central in Dayton, OH.

Using a text-management system as a bibliography is another way to apply its flexible retrieval capabilities to large bodies of text without the need for massive data entry. Creating a bibliography also cuts down on the system's processing power and storage requirements. The World Bank in Washington uses Minisis from Systemhouse Business Systems to store abstracts and other bibliographical information about loan applications and reports on the applicant countries. The actual text is stored in full on microfiche. According to Mary Sandefur, who maintains the database, Minisis is easy to load and revise and its thesaurus allows for comprehensive searches.

Boise Cascade has developed several approaches to minimize the data-entry requirements for its ongoing Basis applications, such as the legal department's research database, according to Doug Davis. Secretaries and research assistants enter much of the information to be stored in the database via terminals through the Basis data-entry module. The attorneys tell the clerical personnel in advance how they would like materials to be entered into the system. They might direct the clericals to merely index a document or article, giving its name and physical location. Or they may direct clericals to type in an abstract, enter sections that have been highlighted on the hard copy, type the full text, or enhance the full text by adding more complete information—an individual's full name when only the surname appears, for example.

Davis has also written a program that converts electronic-code protocols from the IBM word processors used by the attorneys and their secretaries into a format that can be read by Basis. This

allows them to load briefs and other documents they create on the word processors directly into the database. Transcripts from a court reporter's tape can also be automatically entered through this conversion program. "We do everything we can to avoid keystrokes," Davis says.

The ability of a text-management system to interact with word processors also allows for efficient preparation of material for entry into the database, easier revisions of stored material than is generally provided by the main program, and enhanced extraction and distribution capabilities. At Niagara Mohawk, Docu/master runs on the corporate IBM 3081 mainframe under a CICS teleprocessing monitor. While nuclear engineers search the databases via terminals, the clerical personnel who maintain them work on Wang word processors.

According to Gerry Bradley of Niagara Mohawk, word processors provide flexibility in the extraction and revision of documents. The basic Docu/master package allows only minor revisions to the stored text, Bradley says. When changes are made in the database, the original version is wiped out. When a copy is pulled into a word processor, however, many copies can be created, with each carrying a unique postscript or a different address. Soft-Switch, a text-management program from Soft-switch Inc. in King of Prussia, PA, runs on the IBM 3081 and translates the protocol codes between the Wang word processors and the mainframe, Bradley says.

Linking word processors to text-management systems is a step toward tying text managers into the automated office. Integration of word processing and electronic mail with text management could allow for convenient storage, retrieval, and analysis of the array of written material produced in an office. Memos, letters, and reports can be tied together neatly in a single database.

The initial problem in integrating a text-management package into the automated office is providing for a range of disparate machines to communicate. The Docu/master Office Automation

(Continued on page 52)

Scouting For Management Talent?

Computer Decisions Launches A New Recruitment Advertising Section In July

If you've been looking for an exciting and responsive new market for recruiting MIS/dp managers, engineering managers, and computer-involved general and corporate managers, your search is over. Starting with the July issue, *Computer Decisions* gives you the opportunity to draw from a pool of 160,000 highly qualified executives you can't reach with any other publication. Managers who are prime prospects for the positions you have to offer.

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STRICTLY SOFTWARE

(Continued from page 49)

Option from TSI provides protocol conversions to allow its text-management database to be used with the most popular word processors. It also provides other office-automation facilities, such

as electronic mail and computer conferencing. IBM's Distributed Office Support System (DISOSS), which controls a variety of office-automation functions via mainframes, also allows different IBM word-processor models

to transfer documents between each other and to access IBM's Stairs text-management database.

Several software houses, including Software Research Corp. in Natick, MA, and Network Applications Inc. in

TEXT-MANAGEMENT SOFTWARE

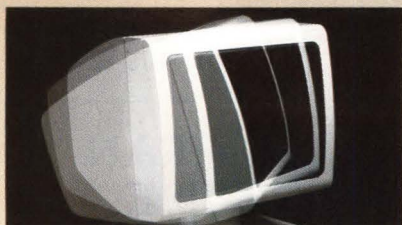
Vendor	Package	Requirements	Price	Circle
Applied Data Research (201) 874-9000	ADR/ETC	IBM mainframes and PCMs	\$27,300/OS \$20,000/DOS \$15,100 for small mainframes	536
Battelle Software Products Center (614) 424-5785	Basis	Wide range of mainframes and minis	\$15,200 and up	537
BRS (518) 783-1161	BRS Search	Unix-based systems	\$5,000 to \$30,000	538
Cosmic (404) 542-3265	ASRES (ASRDI Safety Document Retrieval and Reporting System) LIRS (Library Information Retrieval System)	IBM 360 series IBM System/370	\$1,050 \$1,050	539
FYI (512) 346-0133	FYI 3000	IBM PC and micros under CP/M	\$395	540
Henco Software (617) 890-8670	INFO-Text	Prime 150-9950, 2250 under PRIMOS; DEC VAX; Harris machines under VOS	\$9,200 to \$14,300	541
IBM (Contact local sales office)	Stairs	IBM System/370 under OS/VS or DOS/VS with CICS, or IMS/VS	\$892/mo./DOS \$1,090/mo./OS	542
Infodata Syst. (703) 578-3430	Inquire	IBM mainframes under OS, VS1, MVS/TSO, or VM/CMS	\$55,000 and up	543
Mackinney Syst. (417) 833-9553	Text Retrieval System—On-Line	IBM mainframes under DOS, OS, or MVS with CICS	\$5,000	544
QL Syst. (613) 238-3499	QL/Search	IBM System/370 under DOS, DOS/VS(E), VS1, MVS	\$75,000	545
Quadrix (408) 370-4301	Lamis	IBM 3033 and up with CICS	\$50,000 and up	546
Software Consulting Svcs. (215) 861-7920	Teqlib	IBM PC, PC XT; Apple II; TRS-80 Model II; DEC PDP-11/23, DEC VAX	\$1,500 to \$30,000	547
Software House (617) 661-9440	Systems 1022 DBMS	DEC System 20	\$32,500	554
Sperry Information Syst. Grp. (215) 542-4011	Unidas 800 Unis 1100	Sperry 1100 Series under OS 1100 Same system	\$660/mo. \$1,500/mo.	548
SDC Information Svcs. (213) 453-5184	Orbit	IBM 30XX, 43XX, and PCMs under VS1 or MVS	\$80,000 to \$350,000	549
Systemhouse Business Syst. (613) 526-0670	Minisis	Hewlett-Packard 3000 series under MPE	\$25,000 to \$50,000	550
Tera (301) 654-8960	SAR-UP	IBM Series I	\$60,000 and up	551
Top Down Syst. (301) 251-9400	Aspensearch V	IBM mainframes and PCMs under MVS or VS1	\$18,125	552
TSI Int'l. (203) 853-2884	Documaster Documaster OA Option	IBM mainframes Same systems	\$32,200 to \$45,000 \$38,000/DOS \$51,000/OS	553

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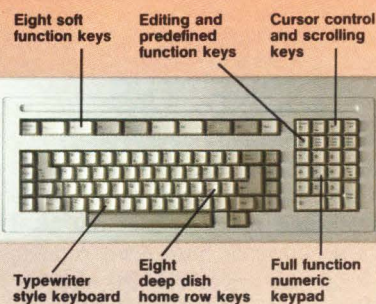
Compatible with most computers in the industry. The E-32 is fully ANSI 3.64 compatible and communication compatible with DEC VT 52*, VT 100* and VT 132* terminals. Uniquely, it can memorize over 50 set-up parameters for each of three different computers, to be recalled at the touch of a key.

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Austin, TX, offer packages that reside on IBM mainframes and allow a variety of word processors to join a DISOSS network. Softswitch is also working on a DISOSS interface. A spokesperson for Battelle says that the vendor is working toward integration of Basis and office-automation facilities. As the links with office automation evolve, text-management systems may become the versatile electronic filing systems of the long-awaited paperless office. □

COBOL COMPATIBILITY

Large organizations that use microcomputers and mainframes can develop Cobol applications for both using a new compiler from Microsoft Corp. According to the Bellevue, WA, vendor, Version 2.0 of Microsoft Cobol, which runs on personal computers under the MS-DOS operating system, allows programmers to develop mainframe programs on microcomputers. It also allows existing mainframe applications to be moved down to micros. The suggested price for the package is \$700. For more information, call Microsoft at (206) 828-8080.

VIRTUAL DISKETTES

The micro-to-mainframe link offered by Phaser Systems Inc. (San Francisco) gives personal-computer users pieces of mainframe memory that act as if they are floppy or hard disks running on a local disk drive. VDAM—for Virtual Disk Access Method—gives personal computers running under PC-DOS or MS-DOS up to four virtual drives that reside on an IBM mainframe host. Each virtual drive can store up to 10 million bytes of information. Organizations can store files and personal-computer programs on the virtual disks to be shared by designated users. Individual microcomputer users can use the virtual disks for their large files and applications or as a backup for work done on their floppy disks. For more information, call (415) 434-3990.

SUPER NATURAL

Software AG has announced the release of Super Natural, an end-user extension of Natural, its fourth-generation language. The option, which resides on a mainframe with Adabas, Software AG's database management system, allows managers and professionals to develop Natural applications from menus. According to a spokesperson for the software house, untrained end users can use the facility to use personal computers or terminals to develop programs that they previously would have had to request from Natural programmers. The product also gives authorized end users access to corporate files, but it allows MIS/dp to maintain control over the integrity and security of the data. Super Natural costs from \$15,000 to \$25,000, depending on the computer's operating system. For more information, call (703) 860-5050.

SOFTWARE FUTURES

If executive workstations are to meet the needs of high-level managers and professionals, they will have to run more customized software, claims International Resource Development (IRD), a Norwalk, CT-based market-research firm.

Why isn't packaged software the answer? According to "The Executive Workstation," an IRD report, generic programs have not existed long enough to prove their efficiency. To compound the problem of design, "executive work"—a not-easily-definable concept—is not the same for all executives in all organizations. As a result, either vendors or in-house software designers will have to provide programs that address the needs of a specific audience. MIS/dp departments are unlikely candidates for this work, according to the report, because they must deal with mainframe-applications backlogs.

However, the IRD report suggests that MIS/dp departments will have to create mainframe software to let executives perform the applications they re-

quire at their workstations. Executive-workstation vendors should line up MIS/dp support before selling equipment, the report says.

Is there truth to the argument that high-level executives will avoid using workstations because either they are not skilled typists or consider this kind of work demeaning? According to Ken Bosomworth, president of IRD, "It won't matter whether executives want to use a keyboard. Executive-workstation interfaces increase the choices, such as voice, icon, mouse pointers, touch screen, and menu-driven applications."

IRD—bullish on executive workstations—predicts that up to 85 percent of the approximately 600,000 prospective corporate users will have executive workstations by 1995. For information about the report, which costs \$1,650, call (203) 866-7800.

MICROS BEAT TERMINALS

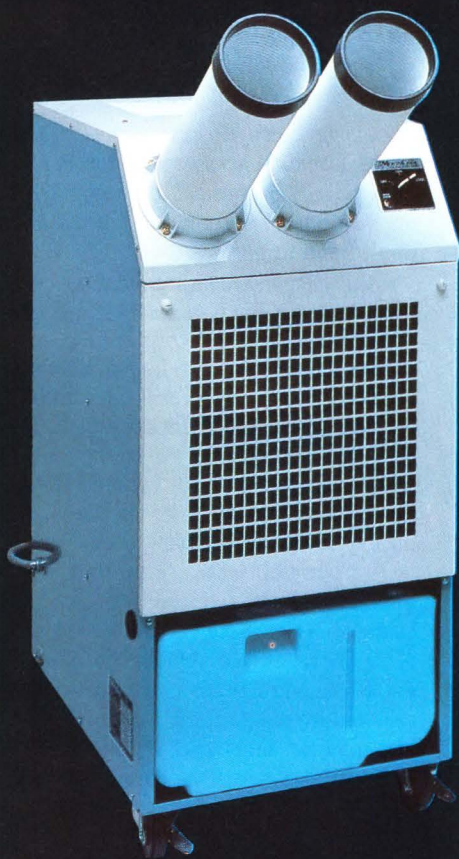
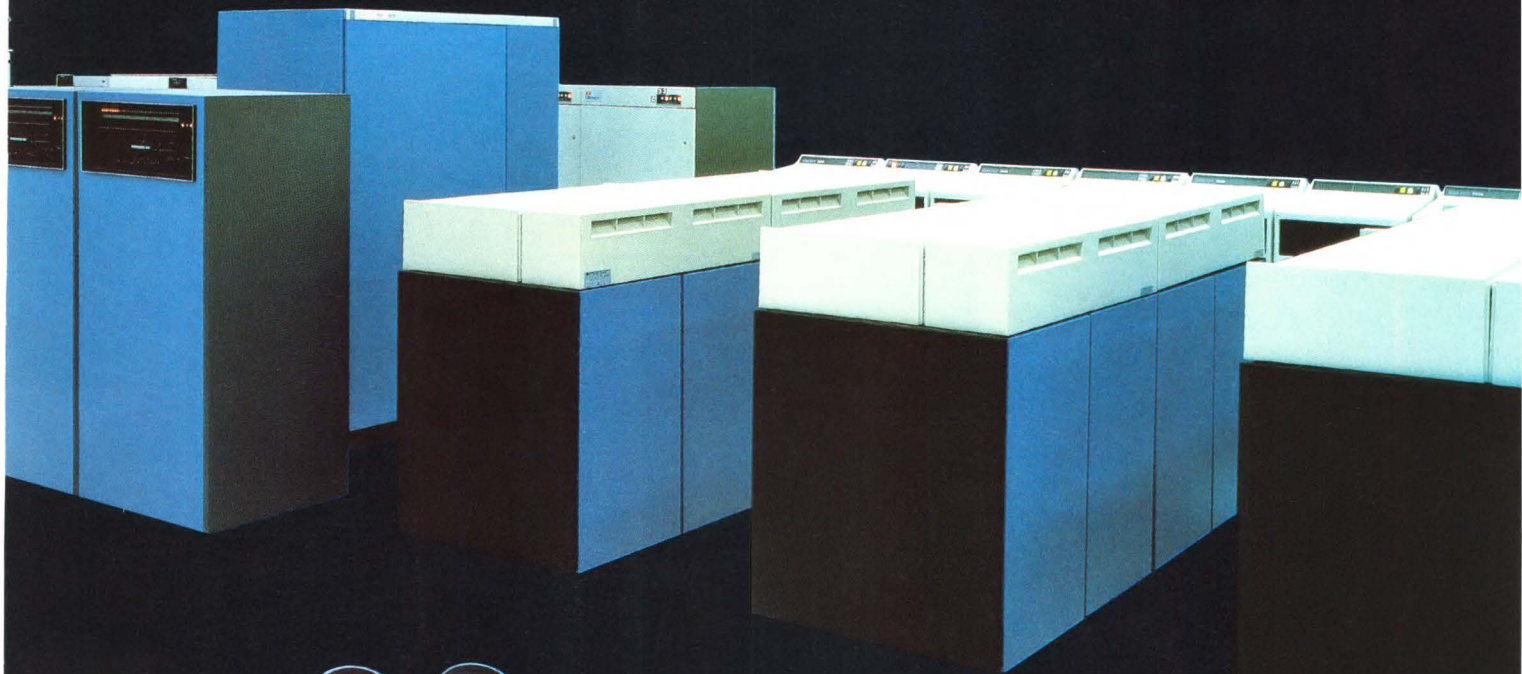
A recent study of 425 medium-sized to large corporations by Market Information Center Inc. (Framingham, MA) finds that more organizations plan to create new applications on personal computers than on terminals connected to hosts. About 45 percent of the respondents in the survey say they plan to create applications on micros, 30 percent indicate they would do the same on terminals, and about 25 percent report they plan to create applications using both micros and terminals. For information on the survey, which costs \$525, call (617) 879-2273.

FORTRAN GUIDE

A guide that provides uniform documentation for programming in Fortran is being offered by Associated Technology Co. (Estill Springs, TN). The guide, which costs \$22, covers early versions of Fortran and identifies a methodology for creating structured, testable, and easy-to-maintain programs, according to the vendor. Call (615) 967-9159 for more information.

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by J.B. Miles, Washington Editor

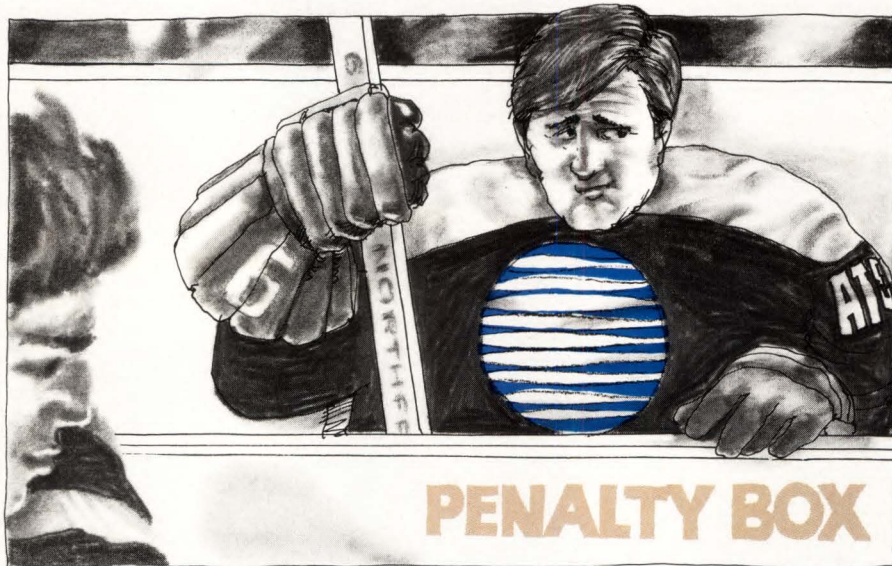


Illustration by Dan Culhane

AT&T LOOKS FOR RELIEF

Mention the words Computer Inquiry II to an AT&T executive, and you're likely to get a dirty look, at the least. To the communications giant, Computer Inquiry II (CI-II for short) is the hangnail that won't heal, the faucet that won't stop dripping, the proverbial thorn in the paw.

As part of its post-divestiture strategy, AT&T has targeted the 1980 Federal Communications Commission (FCC) ruling for an all-out assault. AT&T says CI-II unfairly singles out AT&T and its subsidiaries for unfavorable regulatory treatment, and it wants the FCC to rescind the ruling.

CI-II was the FCC's attempt to restructure the domestic telecommunications industry to reflect the merging of communications and computer technologies. The 1980 ruling allowed then-monopoly AT&T to enter previously forbidden "enhanced" and unregulated services markets, such as data-processing equipment. But the new

freedom came at a price. Competitors in the computer-hardware business (most notably IBM) pushed for protective language in CI-II that required AT&T to develop a separate subsidiary for the unregulated markets it entered. Both large and small competitors called for—and got—tough accounting and monitoring measures to prevent AT&T from subsidizing its unregulated activities with revenues from its regulated telephone services, a practice that could allow it to sell its unregulated equipment and services below cost.

In 1980, the restrictive measures in CI-II were nothing more than a minor nuisance to AT&T, which was too delighted to enter the new marketing arena to object to the regulations. But divestiture transformed the measures from minor nuisance to major difficulty, according to AT&T. Strict structural separation under CI-II may have been the rule for AT&T, but it did not apply to AT&T's competitors.

"CI-II was a decision for a world that,

since divestiture, no longer exists," says Craig Lowder, spokesman for AT&T Information Systems. "It's a constraint on our business that our competitors don't have to endure."

Fritz Ringling, communications vice president for the Gartner Group, the Stamford, CT-based consultancy, says the arm's-length relationship between various entities of AT&T has outlived its usefulness since divestiture. "The new AT&T is now on equal footing with its competition and should not be penalized because of its previous monopoly position," Ringling says.

A potential AT&T customer faces difficulties when trying to set up systems—like a teleconferencing system, for example. Under CI-II rules, AT&T Communications can set up the teleconference rooms and provide transmission lines and inside facilities. For signal-conversion equipment, the customer has to deal with AT&T Information Systems. Although it may seem

(Continued on page 58)

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CIRCLE 27

(Continued from page 56)

as though the customer is dealing with two divisions of one corporation—AT&T—CI-II mandates that AT&T Communications and AT&T Information Systems operate as separate entities, with each having its own accounting system, order-entry system, and so on. Furthermore, under CI-II, AT&T Communications cannot give information to AT&T Information Systems unless it gives the same information to all of AT&T Information Systems' competitors.

Ringling says this duality not only leads to confusion for the customer, but it also is a duplication of effort and energy that is unnecessarily expensive and that might just make one of AT&T's competitors more attractive to the customer. "In a competitive sales situation," Ringling says, "a vendor like IBM can sell an entire telecommunications package. AT&T Information Systems can sell you personal computers and local-area networks, but if you want transmission links you have to go to AT&T Communications. AT&T Communications might not look at your needs the same way Information Systems does." To further confuse the issue, Ringling says, a modification of CI-II allows AT&T Information Systems to lease and resell AT&T Communications lines to customers, but AT&T Communications can't sell conversion equipment or computers on behalf of its sister entity.

Craig Lowder estimates that CI-II has cost AT&T about \$1 billion in revenues. "The point is," he says, "if we're going to have competition—and that's what divestiture was all about—then let it be fair competition."

The now-independent Bell operating companies are having similar problems with CI-II. Despite an imaginative array of 1984 offerings through unregulated subsidiaries, the operating companies complain that CI-II prevents them from providing cheap and efficient data-transmission services to corporate customers. Jay Grossman, a spokesman for Bell Atlantic, says that New Jersey Bell, for example, could offer local-area data transmission "within a month" to business users, but CI-II defines the protocol conversion needed to provide

NATA SEEKS BELL CURBS

The North American Telecommunications Association (NATA), headquartered in Washington, has asked the FCC to ban unregulated equipment subsidiaries of two Bell regional holding companies from jointly selling regulated telephone-company services until independent equipment vendors are given equal sales opportunities.

NATA claims operating companies owned by Ameritech (Chicago) and Nynex (New York) have violated a July 1984 FCC ruling that allows them to use sales reps who normally sell unregulated equip-

ment to sell regulated telephone services *only* if non-Bell vendors are given an equal chance to sell the same services.

NATA contends that Ameritech and Nynex operating companies have delayed authorizing independent agents to sell regulated services, giving the operating companies a leg up on joint sales. NATA has asked the FCC to stop the operating companies in question from joint marketing until "a reasonable number of third-party vendors have been authorized and equipped" to sell network services.

local data-transmission service as an enhanced service. Therefore, Bell operating companies can provide local data transmission only through a subsidiary. Providing this service through a subsidiary makes it too costly to be competitive, Grossman asserts.

Of course, the competition doesn't view CI-II quite the same way AT&T and the Bell operating companies do. Kenneth A. Cos, vice president of Washington-based MCI Communications and a former FCC commissioner, worries that a relaxation of CI-II rules would result in AT&T's "heading toward becoming a big old happy vertical monopoly once again." Cos contends that AT&T could easily parlay its enormous buying power and strong position in the interexchange business into monopolistic control of the telecommunications business.

Robert Ellis, president of the Aries Group, a Rockville, MD, telecommunications consultancy, says that while divestiture has pretty well erased the FCC's original concerns about subsidization, keeping AT&T divided into separate subsidiaries might continue to be in the best interests of only large-

volume customers. Ellis says some relaxation of CI-II rules is called for. "There's no reason that AT&T Information Systems and AT&T Communications shouldn't cooperate by at least communicating with each other about a customer problem," he says. But Ellis adds that it's frequently useful for customers to have the benefit of at least two different design strategies, an option currently available because of the enforced separation of the AT&T subsidiaries.

The FCC has given no indication if or when it will change or rescind the rules set forth in CI-II. AT&T applied for relief from CI-II rules last April. Several Bell operating companies have petitioned the FCC to waive the CI-II rule that requires then to provide enhanced services only through subsidiaries. Meanwhile, several of AT&T's competitors have filed briefs with the FCC arguing that relaxing or rescinding CI-II rules will give the new AT&T an unfair competitive edge.

Many experts believe that what happens to CI-II won't make or break AT&T, but it could have a great impact on its competitors. AT&T will set the pace in both regulated and unregulated voice and data transmission for years to come, with or without CI-II, they say, and lifting or relaxing the CI-II rules will allow AT&T to accelerate its pace, ultimately leaving less fit competitors by the wayside. □

**To AT&T, CI-II is
the proverbial thorn
in the paw.**

Charles P. Pisciotta
Director, Marketing & Sales

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FOLLOWING THE LEADERS

by Michael D. Milliken



Despite a recent setback, CEO Edson D. de Castro says Data General will continue its upward flight.

DATA GENERAL: BORN AGAIN?

Data General Corp., the Westboro, MA, vendor on many analysts' casualty lists a few years ago, has come back. Its rebirth is due to success in a market segment in which other vendors are struggling—business-automation equipment. Business automation, says J. David Lyons, vice president and general manager of Data General's Information Systems Division, isn't the same as office automation. Lyons defines OA as a resource that provides productivity tools for secretaries and clericals. Business automation is the integration of OA tools with systems tailored for managerial and professional end users, and a distributed data-processing system base.

In 1982, Data General entered the business-automation arena with Comprehensive Electronic Office (CEO) software. Today, there are more than 60,000 CEO users worldwide. In 1984, business-automation sales accounted for 60 percent of Data General's rev-

enues—revenues that shot up a whopping 40 percent to break the \$1 billion threshold. Subsumed within that revenue increase is a 191 percent net earnings increase over 1983's total. To achieve this, Data General restructured its organization and strategy.

Data General had originally built its success with a line of low-cost, no-frills minicomputers (the Nova family) it sold to original equipment manufacturers (OEMs). But by the end of the 1970s, which brought a boom in personal-computer use, Data General found itself constrained by a narrow product line, a centralized management style better suited to a smaller company, and a weakness in support and maintenance. Personal-computer users demanded support and maintenance, functions in which Data General was weak because OEM customers didn't need support. So Data General turned a new leaf and, in 1984, service revenues accounted for around 23 percent of Data General's total income.

"Any company goes through phases," reflects Edson D. de Castro, president and CEO of Data General. "We went through a period when it was necessary to bring in people from the outside." De Castro snagged 15 experienced executives from other vendors, including six from IBM and, in 1981, began maneuvering to change his company's course. First, he divided Data General into three business divisions: Technical Products, Information Systems, and Small Business Systems.

The company then stopped developing products for small market niches and aimed its new product-development efforts in three general directions: total systems solutions in business automation, industrial automation, and personal computing. Data General continues to sell its wares to OEMs or value-added resellers. "The broad-based companies are the ones that win," de Castro says. "Our long-term strategy is to broaden our product line as fast as we can."

(Continued)



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(Continued from page 60)

For example, CEO runs on Data General's Desktop Generation personal-computer line and has hooks for pulling in third-party applications. "We are a leader in integrating with third-party applications where it makes sense," Lyons says. "The real world is a multi-vendor world. We'll take the customer's application and merge it with the process." Data General integrated a stock-quote-retrieval system with an OA system—a move designed to enhance the performance of account executives for E.F. Hutton & Co. Inc., the New York-based securities-brokerage. Data General did the custom programming that provided the interface for Hutton's business-automation system. However, Data General encourages independent software vendors to integrate their applications with CEO as another approach to providing total systems solutions.

In 1984, Data General also introduced Comprehensive Financial Operations (CFO), the merging of five financial applications—general ledger, accounts payable, purchase order, materials management, and accounts receivable—with CEO software. But Data General is not relying on the demand for its software to boost hardware sales; it is striving for better pricing,

either by pushing down cost—as with the MV/400SC mini—or by increasing performance without corresponding price increases.

Data General is also working closely with five private branch exchange vendors—Northern Telecom Inc. (Richardson, TX), Rolm Corp. (Santa Clara, CA), Intecom Inc. (Allen, TX), United Technologies Communications Co. (St. Louis), and AT&T (Morristown, NJ)—to forge links between its systems. Data General is also negotiating joint-marketing agreements with Nynex and Pacific Telesis to link CEO to an integrated communication system. Data General's communications strategy does not provide for sophisticated voice-generation technology, like Digital Equipment Corp.'s (Maynard, MA) DECTalk.

Industrial automation, although not the star that business-automation is, has a solid base in the minicomputer market. It remains a key strategic market for Data General, having the same basic characteristics of the business-automation market—very high, long-term growth rates.

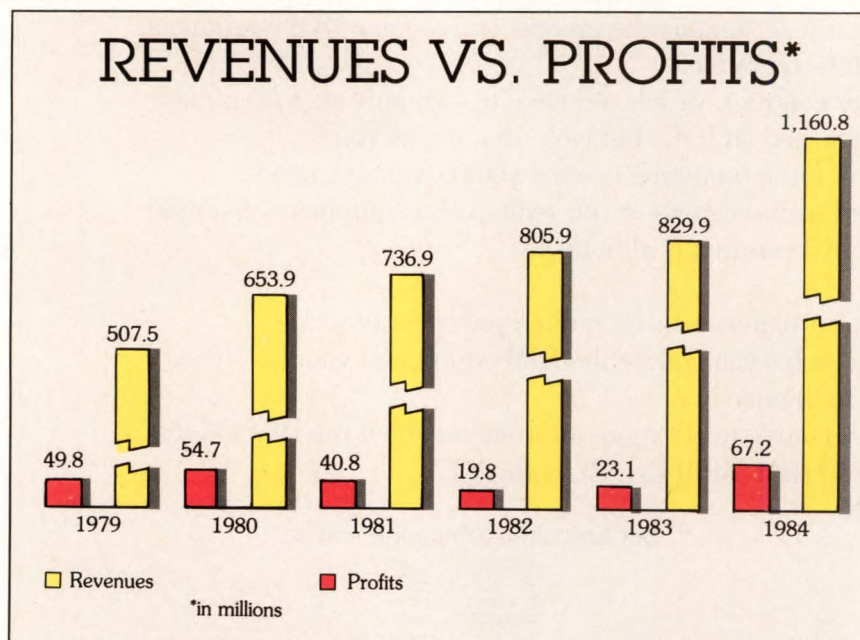
Data General's product strategy extends to personal computing as well. An early attempt at breaking into the personal-computer market—the Enterprise 1000—flopped miserably. The

device lacked software support and suffered from halfhearted marketing efforts. In 1982, Data General pulled this lackluster product from its line. Data General's current Desktop Generation line is a group of dual-processor micros using the same Intel 8088 microprocessor that runs the IBM Personal Computer as well as an Eclipse microprocessor for running CEO software. Data General's portable Data General/One extends the range of the CEO umbrella even further. Although the Data General/One can't run CEO applications, it can download printer-ready files. And the CEO Connection program can upload files from certain programs running under the MS-DOS operating system to a CEO host, where a code-conversion utility will turn those files into full-fledged CEO documents.

Data General recognizes the importance of linking to the MS-DOS world and its myriad applications packages, but the Desktop Generation micros are intended to be part of the CEO system. "Our overall strategy is to sell personal computers as part of a business-, industrial-, or personal-automation system," Lyons says.

De Castro is optimistic about Data General's future as a "born again" systems purveyor. However, the jury is still out on the long-term success of Data General's new approach to the market. Profits rebounded last year after two dismal years, but recently, de Castro touched off a rout of Data General's stock price by announcing that second-quarter earnings will be flat.

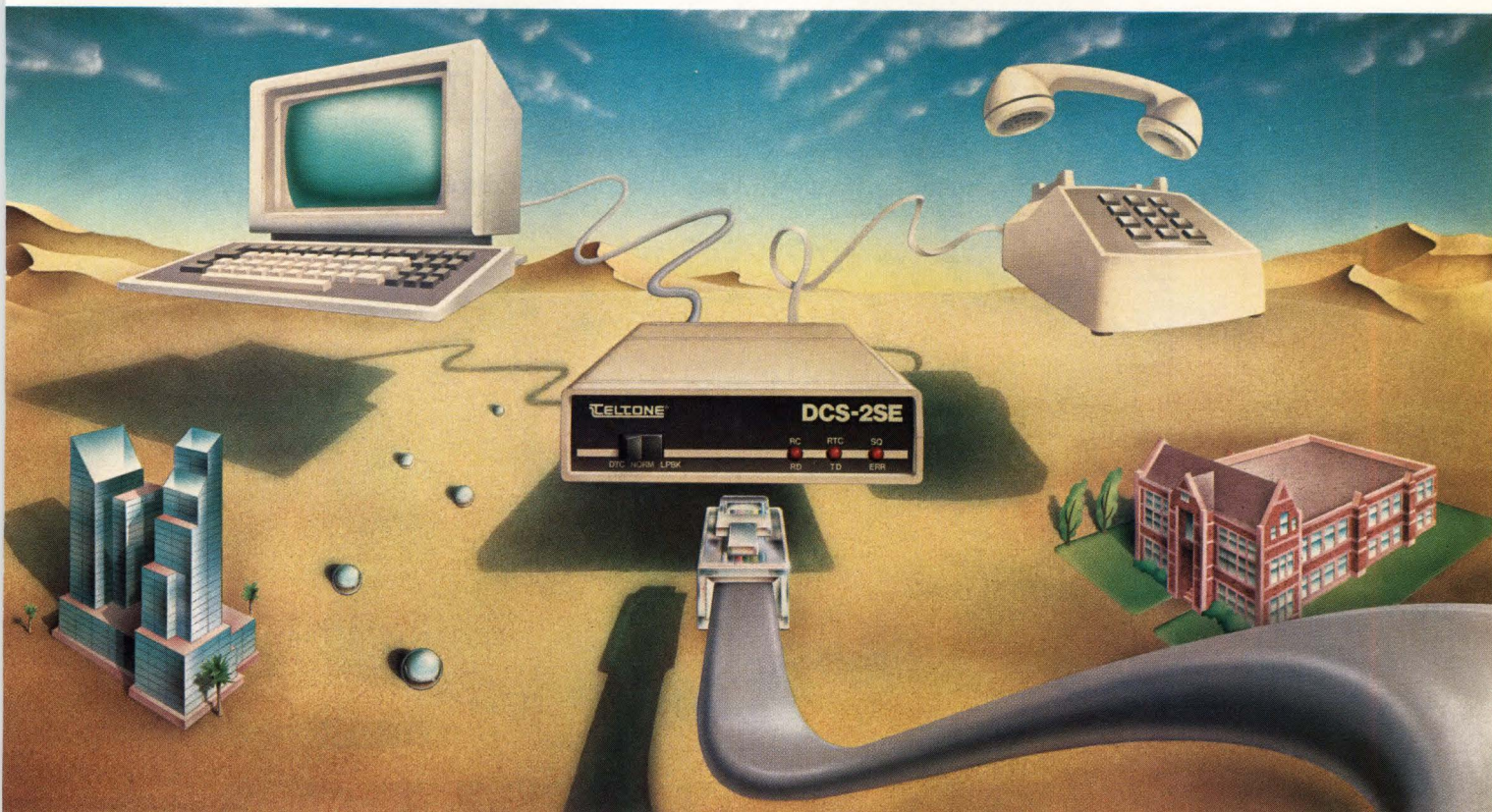
De Castro attributed the flat performance to overall market conditions. In the long run, Data General's products will enable it to compete effectively against minicomputer rivals DEC, Prime Computer Inc. (Natick, MA), and Hewlett-Packard Co. (Palo Alto, CA), he insists. A potentially more nettlesome problem than market dips may be Data General's identity problem. "We've got to make sure potential purchasers hear of us, know of what we do, and know we do it damn well," says de Castro. □



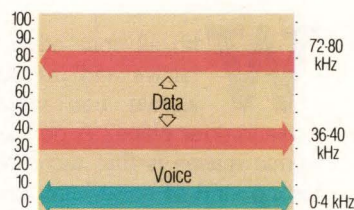
Data General's dramatic turnaround began in 1982, when it became a provider of total system solutions as well as a vendor of workhorse minis.

Michael D. Milliken is a consultant for the Seybold organization in Boston.

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OFFICE AUTOMATION

by Jennifer E. Beaver, Office Automation Editor

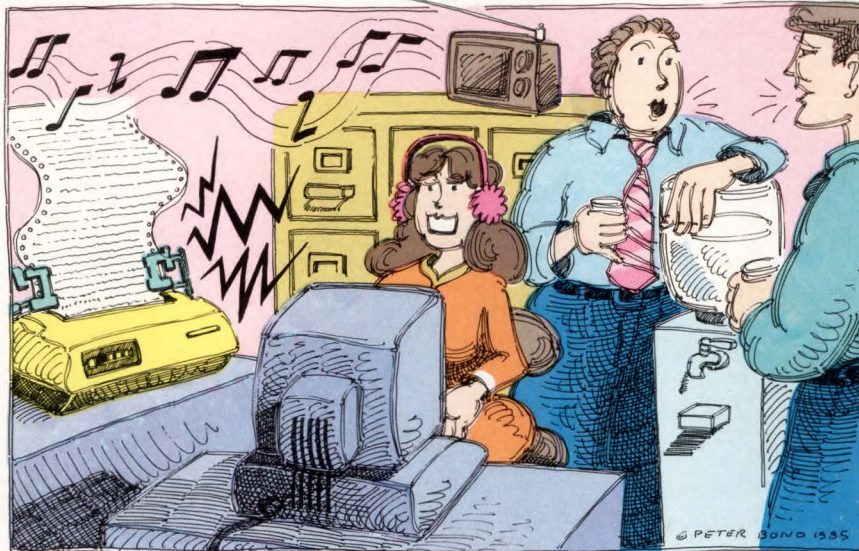


Illustration by Peter Bono

SOUND ADVICE FOR THE OFFICE

With all your other responsibilities and pressures, why should you worry about noise in your office? A persuasive economic reason is that too much or the wrong kind of noise hampers job performance. Workers in a noisy office require almost 20 percent more time to complete tasks than those working in a quiet place, according to Mary M. Ruprecht and Kathleen P. Wagoner in their book, *Managing Office Automation: A Complete Guide* (John Wiley & Sons, 1984).

The noise level in an average office is 50 decibels, according to Ruprecht and Wagoner. "A noisy office ranges from 60 to 80 decibels—equivalent to the average factory. In a room full of word-processing equipment, the sound level could climb as high as 100 decibels if there are no acoustical modifications," they write. When sound levels reach 70 decibels, speech communication—which normally occupies the range between 50 and 60 decibels—

becomes difficult. Employees in an office with a high level of background noise must speak more loudly to be understood. This escalating battle of decibels is called "the cocktail party effect."

In the past, little or no attention was accorded to office design, and office personnel were expected to perform their duties despite such distractions as clacking typewriters, humming fans, and babbling voices. But, executives' hearing seems to be more acute. These latest inheritors of office technology's blessings and curses do not hesitate to complain when noise disrupts the decision-making process. And new evidence increasingly points to high noise levels as the source of complaints about interruptions and health problems.

"Management, Not Machines, Source of VDT-Related Problems," a survey sponsored by the Data Entry Management Association (DEMA), based in Stamford, CT, identified several health complaints that may be

caused, at least in part, by disturbing sound levels. In the survey of 352 DEMA members, 39.9 percent of computer operators and 26.2 percent of clerical workers reported feeling generally irritable in loud offices. Twenty-seven percent of the computer operators and 19.1 percent of the clerical workers reported feeling nervous; 11.7 percent of the computer operators and 9.2 percent of the clerical workers complained of stomach pain.

Attributing these complaints solely to high noise levels would be a manipulative interpretation of the survey's findings. But the cumulative negative effects of environmental factors—high noise levels among them—on productivity are carrying increasing weight in the office-productivity equation. Although health problems directly related to high noise levels, such as hearing impairment, are rare among office workers, subconsciously avoiding an area due to unpleasantly high sound levels is not. Employees who are dissatisfied



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OFFICE AUTOMATION

with conditions in their offices tend to leave their desks more frequently than those who are comfortable.

Noise is a major problem in open-plan offices. How do you integrate computer equipment, a bevy of employees, and a wide-open space into a reasonably quiet office? Modular furniture systems are one of the most effective approaches to minimizing the din in open-plan offices. The components—partitions, desks, files, cabinets, overhead storage units, and shelves—are engineered to absorb sound, keeping it from sweeping across the office landscape like a tornado across Kansas.

Voices are perhaps the single biggest source of office noise. The Lillian Vernon Communications Center, the mail-order merchandiser's telephone-sales hub in New Rochelle, NY, proves that a plethora of vocal workers doesn't necessarily add up to a cacophony of sound. Two hundred workers, surrounded by acoustically paneled partitions and ceilings, take customers' orders for merchandise in Vernon's quarterly catalogs. The workers have enjoyed quieter quarters with fewer distractions since John Saladino, a New York-based architect, redesigned the communications center. Also, productivity—measured by the number of phone orders taken—has increased substantially.

Equipment noise is also a problem—and one that increases every time a computer, terminal, or printer is brought into an office. Equipment man-

ufacturers have already started troubleshooting potential noise increases. "Computer manufacturers are offering quieter equipment," says Robert W. Bailey, president of Computer Psychology, an office-automation consultancy based in Mendham, NJ. "Customers won't buy products without these modifications. Even five years ago, office managers weren't aware of how inhibiting a noisy environment can be. Now, managers are more aware of ergonomic considerations and their positive impact on productivity."

Bailey cites laser printers as an example of an ergonomically sound technology. These printers rapidly print text and graphics transmitted from networks of terminals and personal computers with a minimum of noise. For example, the Hewlett-Packard (Palo Alto, CA) Laser Jet is rated at 50 decibels and prints eight 60-line pages per minute. Its price is \$3,495. Other quiet laser printers are the LN03 from Digital Equipment Corp. (Maynard, MA), at \$4,195; the Laser Printer from Corona Data Systems (Thousand Oaks, CA), at \$3,395; and the Daisy Laser from Personal Computer Products (San Diego), at \$3,495.

Achieving an optimal sound level doesn't require that you hire an architect to redesign your office. Carpeting, drapes, acoustically paneled partitions and ceilings, and sound-shielding printer covers are all inexpensive ways to hold down the volume. The average printer enclosure from Viking Acousti-

cal Corp. (Lakeville, MN) costs \$350.

Printer enclosures can reduce the noise made by printers by as much as 75 percent. Even printers with a low decibel rating may require covers if there are a lot of them. One flute may sound pleasing by itself, but too many can be disturbing. In Europe, where the proper blend of ergonomic considerations and technology is required by law, sound tests in offices are standard operating procedure. When a sound test shows that a cover is needed for one printer, the entire work area is shut down until all printers in that office are covered and the desired sound level is reached.

Sometimes a disruptive printer can be sequestered behind a partition or placed in a closet to cloak the noise, but that isn't always feasible, especially with online printers. "Employees want to see what's being printed. Forcing them to run back and forth between their desks and a closet doesn't help them get their work done," says Marilyn Hackett, president of Word Algebra!, a Chicago-based consultancy specializing in matching technology to the needs of the workplace.

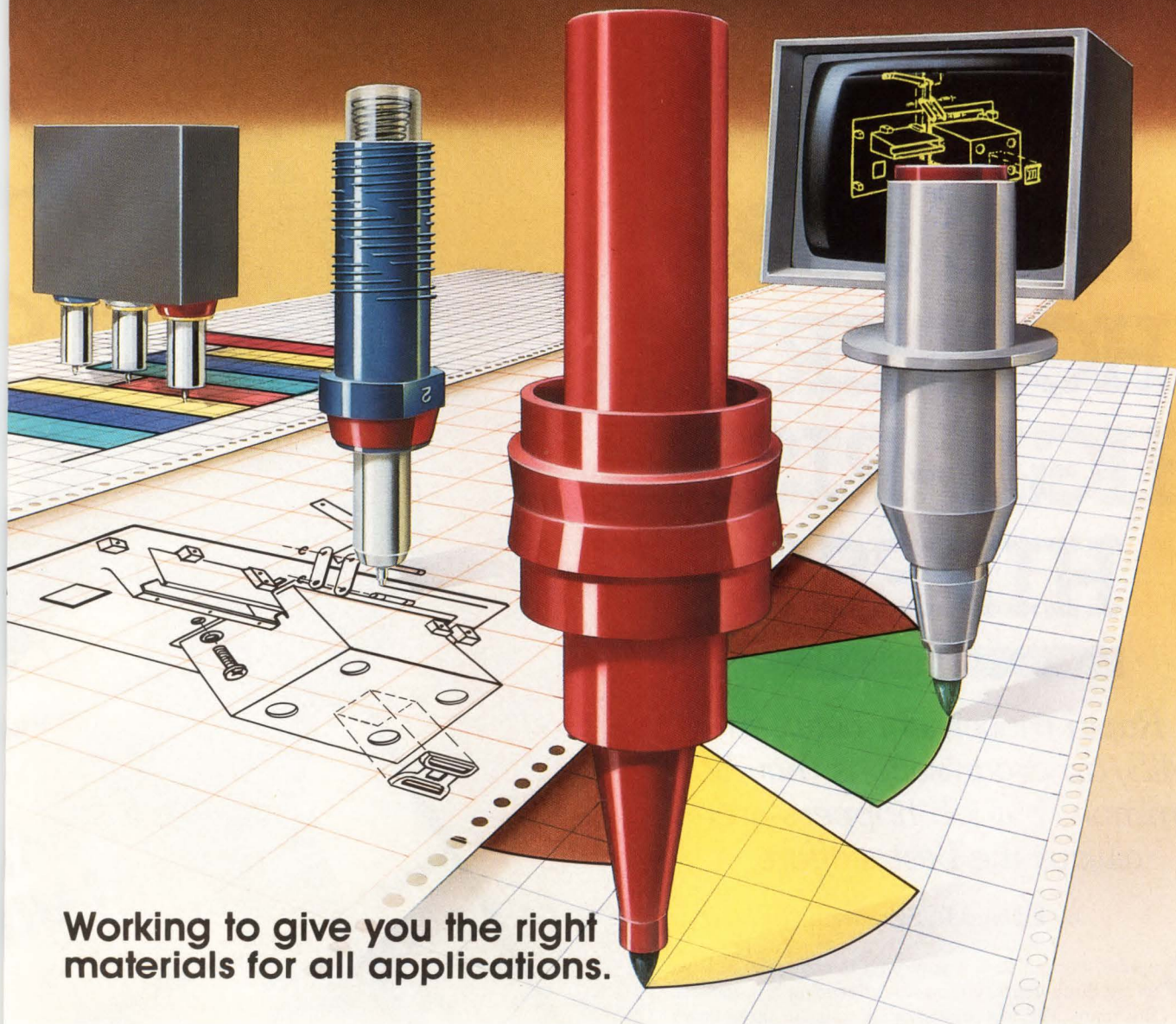
On the other side of the coin, a complete absence of background noise can also be distracting to workers. "A stale work environment can be enlivened by low-level noise, which helps workers tune out distractions and better concentrate on their work," says Bailey at Computer Psychology. An electronic sound generator can be tuned to provide low-level background noise, muffle irritating sounds, and enhance the ability to converse. Mike Webster, an office-environment consultant at Steelcase Inc. (Grand Rapids, MI), considers such sound-masking systems to be among the most cost-effective ways to induce productivity gains by manipulating the office environment. The price for such systems, including design, hardware, and installation, is from \$1 to \$1.50 per square foot.

Aural gratification alone won't supercharge office personnel, but it will help. Since about 90 percent of an average corporation's operational costs are people-related, shouldn't the environment be tailored to maximize that investment? □



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ARE JOB HOPPERS HIGH-RISK HIRES?

Rapid movement between MIS/dp organizations may be common, but job hopppers aren't always the best staffers.

by Edward P. Stevenson

Popular wisdom says if you don't change jobs at least every three years, you're not advancing fast enough. But many MIS/dp professionals consider three years an eternity. To get ahead, they believe, you have to move on just after the honeymoon at a new job ends. Just how much of this should you tolerate?

Some MIS/dp managers believe there is no tolerable excuse for job hopping. The top information officer at a big Wall Street investment bank won't touch a job hopper. This longtime MIS/dp executive, who asked not to be identified, believes they are poor risks and that "once a job hopper, always a job hopper."

Many organizations share this view, says Herbert Halbrecht, a Stamford, CT-based recruiter. "Too many pros think that just because they can get a new job whenever they want, that's what they should do. Frankly, these people are foolish. As far as I'm concerned, too many jobs means

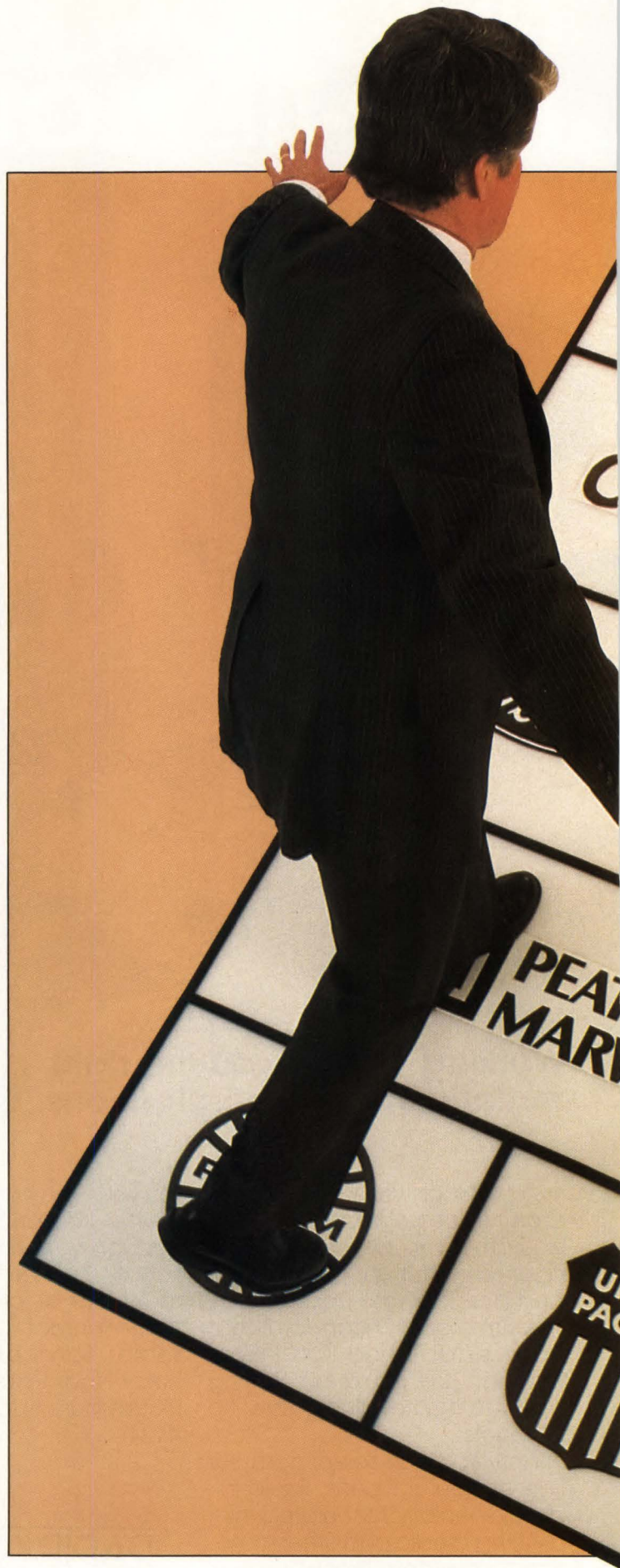
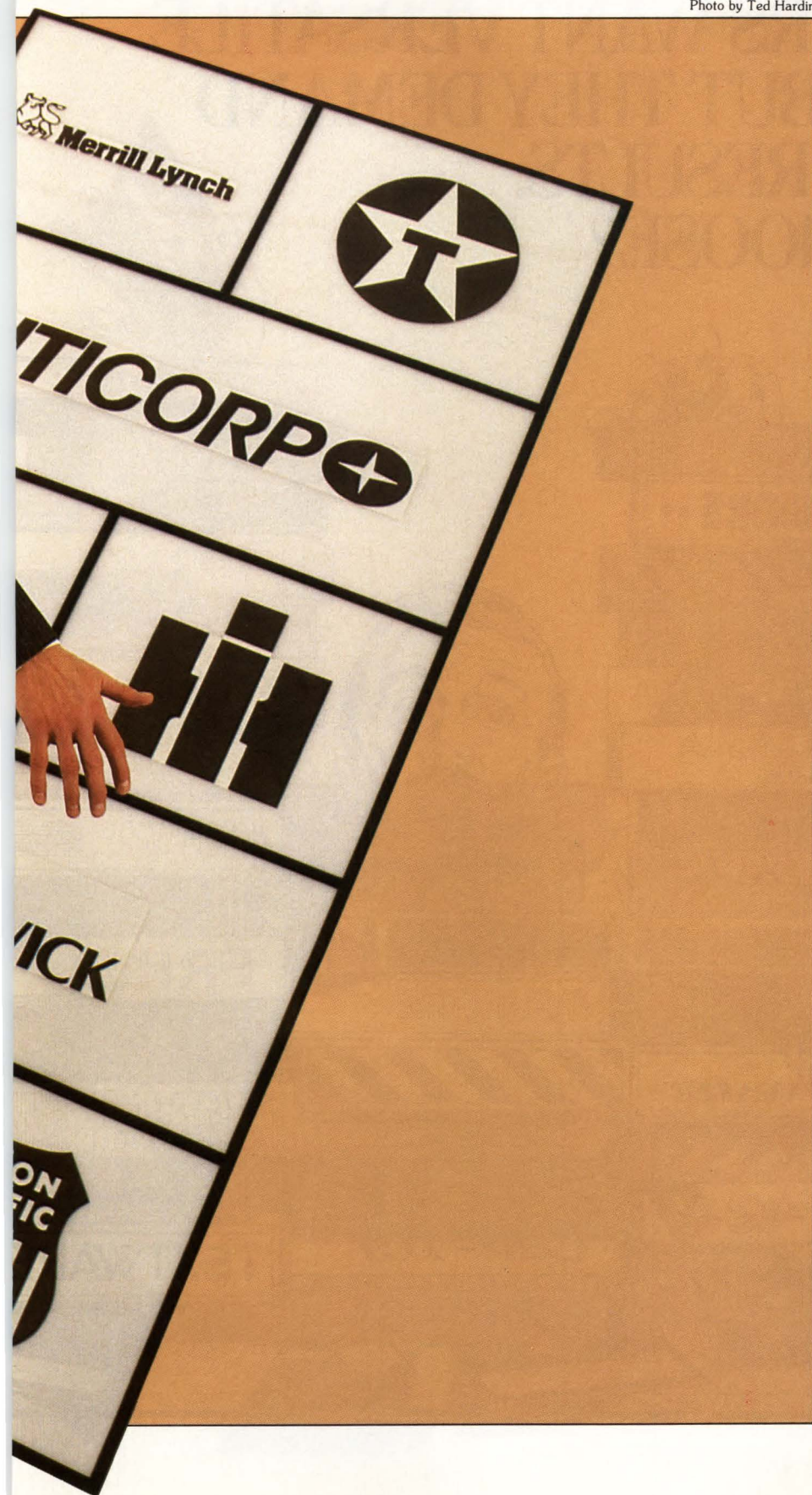


Photo by Ted Hardin



the person's application goes into the wastebasket," he says.

In contrast, another experienced MIS/dp manager has a more forgiving attitude. Ken Panzarella, executive director of information at Avco Corp., the Greenwich, CT-based financial-services conglomerate, is willing to take a chance on certain job hoppers. In filling a middle-level MIS/dp management position, Panzarella "would probably be more interested in an applicant who had held three or four jobs in the same or different industries, than in an applicant who's only been with one company—provided that the former has shown good job progression, that each move has been a major step up, and the track record is good. The professional who has moved about has a wider, more diverse background."

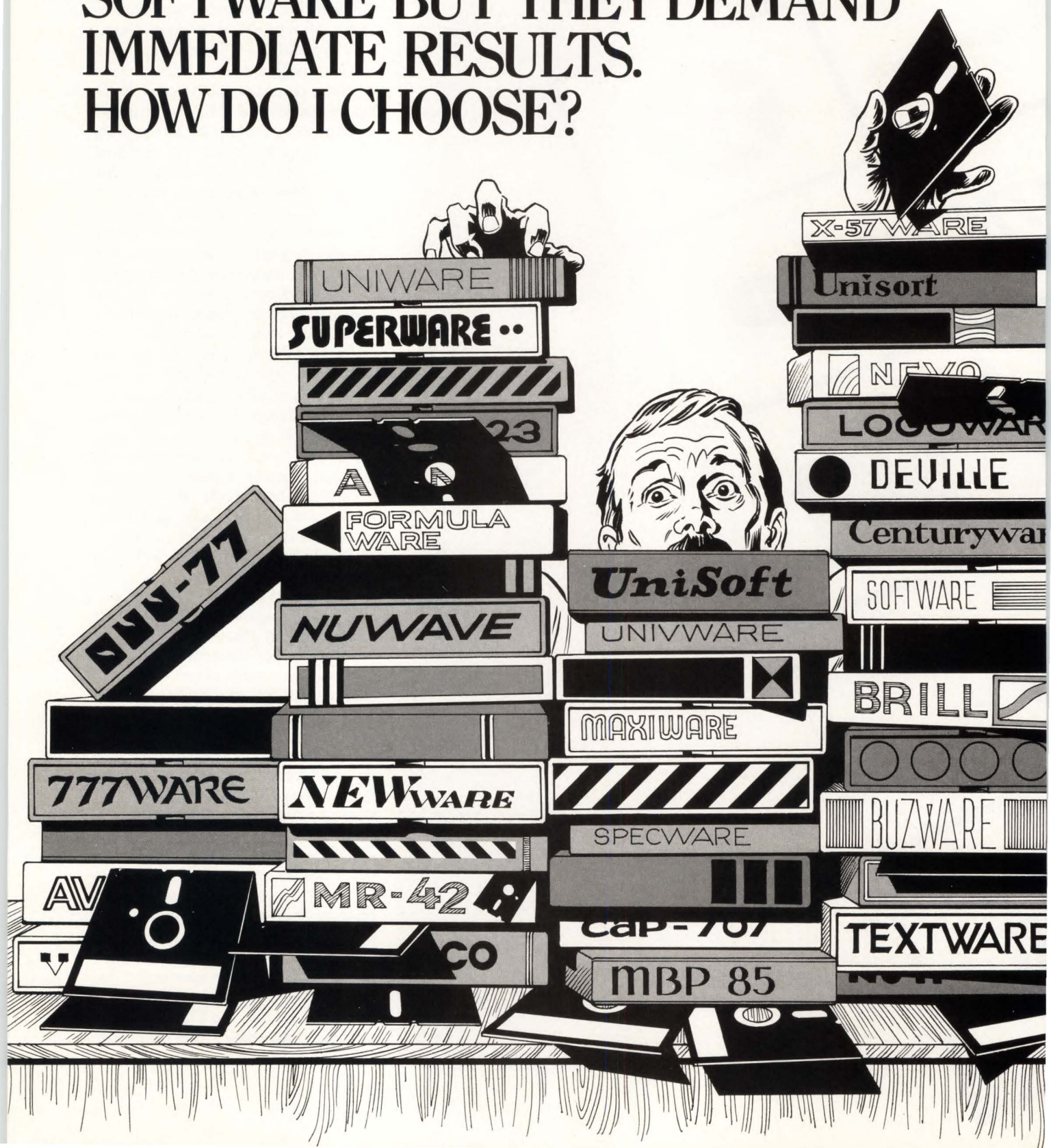
As an MIS/dp manager, you will most likely have to deal with job hoppers merely to fill key slots in your organizational chart. Sometimes, the only well-qualified applicants are job hoppers. Let's face it, the scarcity of top talent and corporate pressure to create big systems have made job hopping a lucrative way of life among MIS/dp professionals and project leaders—especially in the major metropolitan areas.

And there is even statistical evidence that job hopping may pay off—at least in the short run. Okemos, MI-based executive recruiter Kenneth S. Glickman cites a 15-year study of two executives coming out of the same business school. One stayed with the same employer; the other moved twice. At the end of the 15 years, the executive who had held three jobs for approximately five years each had about a 35 percent salary advantage.

Two executives provide a rather slim sample. Sully Blotnick, a psychologist, has monitored the progress of 5,000 1958 college graduates through most of their business careers. Each participant (2,900 men and 2,100 women) has been contacted twice yearly for a total of about a quarter of a million interviews. The results are detailed in Blotnick's book, *The Corporate Steeplechase: Predictable Crises in a Busi-*

(Continued on page 72)

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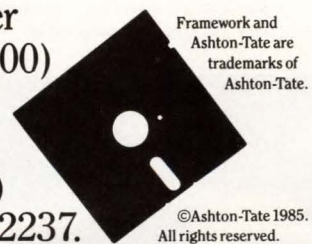
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J O B H O P P E R S

(Continued from page 69)

ness Career (Facts on File, 1984).

"The jack rabbits may indeed end up getting high pay although they frequently delude themselves on this score, but it's the MIS/dp professionals

who have stayed with a company 10 to 20 years who move into senior management," says Blotnick.

Nobody approves of job hoppers, although individual definitions differ. "Five jobs in five years is a red flag,"

says Glickman. Although a three-to-five-year job tenure is compatible with successful advancement, the five-year end of the range is preferable, he says. However, stability may also have its price. Many managers are suspicious of pros who remain with one employer too long. Panzarella, who is leery of MIS/dp establishments with a high degree of job stability and low turnover, advocates hiring job hoppers as a way of infusing new blood into a stultified organization. Others, including Jan Magdasy, who hires MIS/dp personnel for New York-based Manufacturer's Hanover Trust, a conservative organization that likes to promote from within, and Bob Malinaro, head of Citicorp Credit Services, New York, a more progressive financial institution, agree.

The views of executives who either place or hire MIS/dp pros yield a sort of composite *Good Housekeeping*-approved MIS/dp career profile. It goes something like this: The young person just out of college gets a job and stays a year or maybe 18 months. Over the next four or five years, this pro holds two or three jobs. The next stage involves longer stays—two, three, maybe four years each. Once he or she has been in the business 10 to 12 years, moves more frequent than the three-to-five-year average will attract the suspicion of employers. This is not to say that such a record automatically disqualifies a candidate for a responsible position, but the candidate in question should be prepared to furnish acceptable explanations.

To find qualified candidates for top positions in big companies, Halbrecht points out that you have to "look for a job history of assuming greater and greater responsibility, organizing and managing change, and so on. But if an applicant has been hopping around, then there's nothing to look at."

When you look over resumes, realize that there are reasons other than pay increases for which MIS/dp professionals change jobs. At least one expert urges that a "promote-from-within" rule be tempered with charity. Paul Marinelli of Datacom Recruiters in New York claims that most of the executive-level MIS/dp personnel looking for work these days have been squeezed



Photo by Cathy Ottarson

"Five jobs in five years is a red flag," says Kenneth S. Glickman, executive recruiter. He believes a three-to-five-year job tenure is preferable.

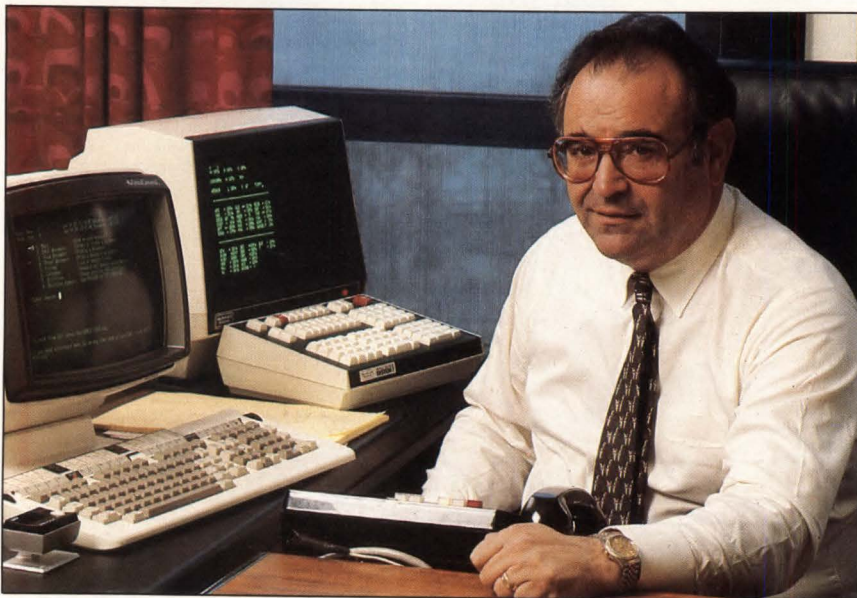


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Norman Epstein, executive vice president of E.F. Hutton & Co., believes jumping ship is legitimate if an employer can't offer a pro additional opportunities for growth.

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JOB HOPPERS

out of their positions by one of several circumstances over which they had no control. These include "corporate massacres" after a new boss takes over a department and brings in loyalists; a change of corporate strategy or direction; decentralization; or, above all, a merger or acquisition.

Neither isolated nor uncommon, these incidents seem to be taking place with increasing frequency. Last year, one of the nation's largest financial-services corporations consolidated its MIS/dp operations following the completion of a major corporate project by simply firing more than 120 people—the entire special-projects group. The group's expertise with Prime Computer Corp. (Natick, MA) equipment was no longer necessary. Another example: One of the world's telecommunications giants recently closed a major division that was involved in programming, research, and development. The initial body count was about 800.

Norman Epstein, executive vice president of E.F. Hutton & Co., believes that jumping ship is legitimate if an employer can't offer a pro additional, definite opportunities for growth.

"We try not to 'Huttonize' employees, but we do try to provide them with general management skills," continues Epstein. "I advise subordinates to look back. If they're not worth more today—in terms of what they are offering Hutton—than they were a year ago, they should consider leaving. Of course, I try to provide new responsibilities and opportunities to make them worth more outside so we can justify paying them more inside our firm."

That approach has given Epstein a low turnover rate over the years. "Out of the nine or 10 employees who report directly to me," Epstein reports, "I've lost only one in the last 15 years. At the next level down, I would estimate that the average tenure has been 12 to 14 years."

The key to this stability, Epstein believes, is mobility within the company—both lateral and vertical. "We try to motivate and train employees. We allow them to move," he observes. "It's successful, not entirely because our programs are so terrific, but because over the past 25 years E.F.

Hutton has enjoyed significant growth. And significant opportunities come with significant growth."

John Johnson, president of Lamalie Associates, an executive-search firm in Cleveland, makes a compelling point in regard to promoting from within. "Quite a few companies keep a very

low profile in the hiring market—corporations like GE, Ford, and Xerox that like to grow their own." These corporations, by and large, don't hire from the outside in the middle layers of management. "If you want to be a middle-level MIS/dp manager at Ford," Johnson concludes, "you start out at

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J O B H O P P E R S

Ford—at the bottom—and gradually work your way up.”

It's important to note that some MIS/dp managers believe that it's advantageous to their organizations to hire job hoppers. The senior technical executive at a major conglomerate, who asked not to be identified, says

that he is not put off by “a star, the kind of expert who either brings along or attracts other lesser stars. As long as the other stars remain behind after the star leaves.”

Glickman suggests that movement through a number of jobs enhances qualifications. “Each company has a

distinct personality. If your employee has worked with three or four good, reputable firms, he or she will bring you a wealth of experience—much more than if the person had stayed with one company for a long period.”

Most managers agree that some job hopping is desirable or at least tolerable. But the degree of mobility has to be matched against the corporate culture—or at least the climate created by the current CEO. The younger job hopper is more welcome in fast-moving, fast-growing organizations, but is looked on with suspicion in organizations that are dedicated—perhaps to their own detriment—to promoting from within. However, this collective wisdom does not hold up when one observes the upheaval created by General Motors' acquisition of Electronic Data Systems, the Dallas-based computer-services vendor. The thousands of MIS/dp managers and professionals who were transferred from GM to EDS found that corporate loyalty was not the touchstone.

It all boils down to a “golden mean,” the idea that job hopping is neither intrinsically good nor bad, it just is. Moving too quickly between jobs in the MIS/dp job market is almost universally taken to be an indication of a lack of stability, i.e. a character defect, whereas moving too slowly is also widely taken as an indication of some negative trait, such as a lack of ambition. Clearly, to fit neatly into the approved scheme, the ambitious MIS/dp pro must find a golden mean between changing jobs too soon or too slowly.

At the same time, there are plenty of corporate street fighters out there for whom the safe and measured path simply does not hold much attraction. Those who are adroit, talented, and fortunate may plan to move every three years or so and still be able to look forward to exciting—and rewarding—careers in the MIS/dp field for the foreseeable future. It's clear that there are going to be abundant opportunities for smart, knowledgeable MIS/dp pros to move around for many years to come. ☐

Edward P. Stevenson is a free-lance writer based in Jersey City, NJ.

BY LIEBERT

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MANAGING PERSONNEL THE MICRO WAY

Powerful on micros, human-resources software also augments a mainframe system's repertoire.

by Lee Keough, Industry Editor

Human - resource - information systems for microcomputers give personnel directors the kind of power to manipulate information previously enjoyed only by their peers in the largest corporations. With human-resources software, a personnel director can easily manage key aspects of employee information—such as name, address, age, sex, race, salary, performance review, and education—on floppy disks. Later, these data may be accessed and analyzed in myriad ways.

When Dennis Johnson, the personnel director of George J. Ball Inc., a seed and horticultural distributor in West Chicago, first considered whether he could include the families of Ball's

350 employees at the firm's Christmas party, he turned to his human-resources software. "We wanted to know how many munchkins to expect," explains Johnson. By using Comshare's Profiles/PC on an IBM PC XT, Johnson calculated about 150 small children could be expected to attend the party—an ideal group to visit with Santa in the company cafeteria.

Rosemary Yelland, the personnel director at the Great American Life Insurance Co. in Los Angeles, wanted to devise a car-pooling system, and she too found her personal computer held the key. Using Personnel Auto/Ministrator from Information Breakthroughs, she asked her IBM PC XT for a list of employees by zip code. Yelland

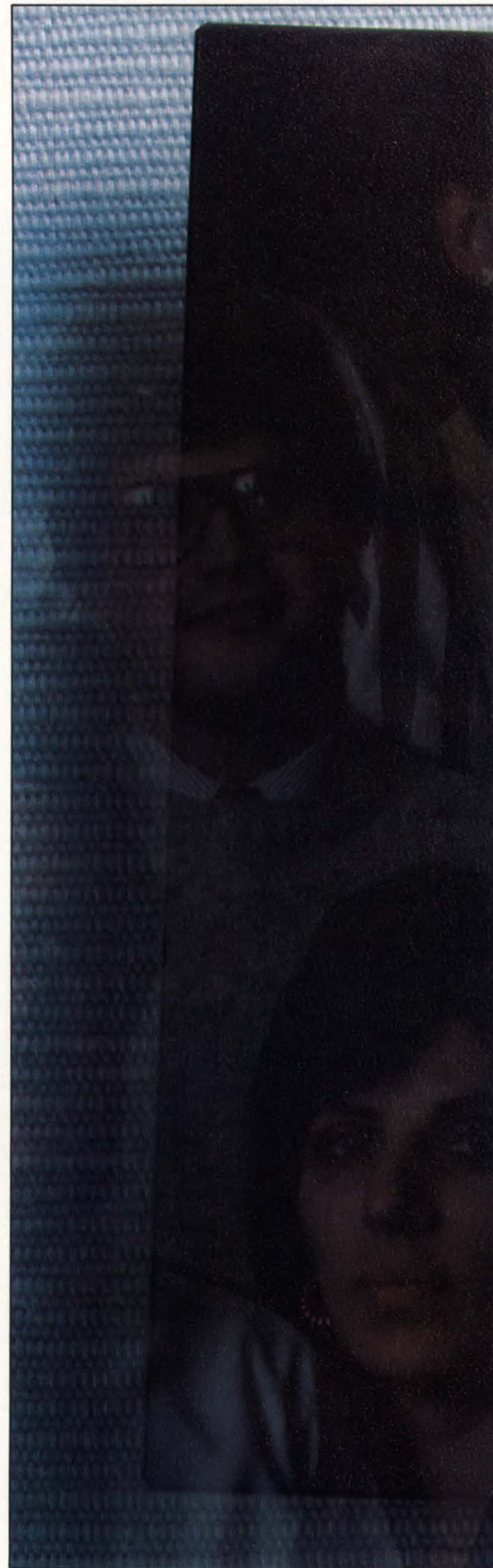


Photo by Bill Oliwa



PEOPLE PROGRAMS

circulated the list to the 200 employees at Great American, who then contacted other employees in their areas.

Want to find out which employees are due for a review this month? With human-resources software, you can call up the information on your terminal. What about the salary range of manag-

ers in a particular department? Do you need to schedule employees to floating shifts, taking into consideration seniority and other union rules? Human-resources systems place the data at your fingertips.

And it's not just internal reporting that's made easier with human-

resources software. Most commercially prepared packages can present information in standard government-report formats. With human-resources software, Equal Employment Opportunity Act reports, Affirmative Action plans, Employees Retirement Income Security Act reports, and others become a

MICRO HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Banker's Information Syst. and Svcs. (713) 988-1272	Employee Contribution Accounting & Reporting System	IBM PC and micros under CP/M or MS-DOS	\$595	401
Compumax Assoc. (415) 854-6700	Micropers	IBM PC; TRS-80 (most models); Apple III; and micros under CP/M or MP/M	\$140	402
Comshare (313) 994-4800	Profiles/PC	IBM PC and PC XT	\$5,995	403
CWay Software (215) 265-4060	CWay People	IBM PC, PC XT, PC AT; and Altos models Multi-user versions of same systems under Xenix	\$395 \$495	404
	CWay Strategy	Same systems	\$395 and \$495	
Datatrak (504) 835-1686	Search	Z80/CDOS- and CP/M-based micros; Data Star; Micropro with Basic or C	\$795	405
Digital Mktg. (415) 938-2880	Milestone	IBM PC; Apple II; HP 87; and Northstar; micros under CP/M, CP/M 2.2, CP/M-86, or MS-DOS	\$250	406
EBG & Assoc. (312) 580-2256	Pensionmaker	IBM PC, PC XT, and PC AT	\$4,950	407
Escoco (303) 484-8200	Esccomate Payroll Labor Package and Accounting/Job Cost	IBM PC, PC XT, PC AT; TRS-80 models II, 12, and 16, Tandy 2000 under TRS-DOS; and micros under MS-DOS	\$6,700	
Executive Solution Syst. (714) 581-4034	Peris	IBM PC and PC XT, and micros under MS-DOS	\$5,400	409
	Peris I	Same systems	\$995 (includes customization)	
GAI Syst. (314) 831-6464	Chris	IBM PC and PC AT IBM PC XT IBM PC with PC/Focus	\$400 \$1,200 \$6,000	410
Human Resource Micro-Syst. (415) 362-8400	Human Resource Micro-System	Micros under MS-DOS, CP/M, or CP/M-86	\$3,000	411
Humanic Design (201) 529-1358	MPS	IBM PC, PC XT, and PC AT	\$12,500 to \$21,500	412
Information Breakthroughs (201) 891-8405	Personnel Auto/Ministrator	IBM PC and PC XT; Altos-10, and micros under CP/M	\$8,000	413
Interactive Computer Syst. (603) 893-8520	ICS Employee Receivables and Travel Expenses System	IBM PC	\$225 and up/mo.	414
Kopp (312) 355-5933	The Human Resources Management Software System	IBM PC, PC XT, and PC AT	\$995 to \$3,200	415
Lawson Assoc. (612) 379-2633	Personnel	Burroughs B20	\$2,995	416

PEOPLE PROGRAMS

snap. The micro collates and retrieves the necessary data with the entry of a command.

"These packages can keep you out of trouble with the law," says Vince Ceriello, president of VRC Consulting Group Inc., Los Altos, CA. Ceriello, who specializes in human-resources-software consulting for both mainframe and microcomputer systems, notes that many states have job-discrimination or environmental-protection requirements exceeding those of the federal government. Without easy computerized access to information for these stan-

dard reports, personnel workers can spend a great deal of time digging through files.

But human-resources software packages will not magically solve all of the problems facing a personnel director. These packages were developed only recently, and they still have limitations. One major limitation is the small memory capacities of most micros. An MIS/dp executive should determine the needs of his or her employer's human-resources department before purchasing a system. Beware of vendors that claim their software has capacities for

up to 2,000 employees. First of all, only limited information about that many employees would fit in a micro; and second, it would be a time-consuming chore to manage it all without a multi-user system.

Richard Tolson, a consultant with the Hunter Group Inc., Baltimore, is not enthusiastic about human-resources software for large corporations. "There's no practical way a micro-based, human-resources package can satisfy an organization's needs unless it has only a few hundred employees," he asserts. (Continued on page 80)

MICRO HUMAN-RESOURCES SOFTWARE

Vendor	Package	Requirements	Price	Circle
Mainframe Micros (415) 777-0160	HR-1	IBM PC, PC XT, and PC AT	\$9,950	417
Metafile Information Syst. (507) 289-8967	Metafile	IBM PC	\$995	418
Micro Alternatives (416) 935-9138	Micropersonnel Management System	IBM PC and PC XT; micros under MS-DOS	\$5,000	419
Microanalytic Syst. (416) 224-2294	Personnel Accounting and Development Decision Support System	IBM PC and PC XT; micros under MS-DOS	\$6,500	420
Nat'l. Computer Syst. (612) 830-7679	Employ-Ease	IBM PC XT	\$12,000 to \$33,000	421
North Bay Syst. (415) 331-3664	Pro/Search	IBM PC, PC XT, and PC AT; micros under MS-DOS Multi-user version	\$1,995 \$2,995 plus \$100 per terminal	422
Occupational Computing (818) 991-5077	Union Reporting	IBM PC, PC XT, and PC AT; micros under MS-DOS 1.1 or 2.0; TRS-80 Model II under TRS-DOS	\$500	423
Path Syst. (408) 438-7284	Personnel Path	IBM PC XT, and micros under MS-DOS or CP/M	\$1,900	424
Pacesetter Software (609) 737-8351	Organization Map	IBM PC	\$6,500	425
Personnel Consulting (814) 452-3497	MicroHRIS	IBM PC XT	\$4,950	426
Personnel Data Syst. (215) 828-4294	PC Personnel	IBM PC and PC XT, AT, and micros under MS-DOS	\$9,000	427
Personnel Tech. & Productivity (707) 823-5500	Skills Bank	IBM PC and PC XT; Victor 9000; Durango Poppy	\$1,995	428
	Job Classification	Same systems	\$1,995	
Sales Productivity Syst. (914) 682-0333	The Personnel System	IBM PC and PC XT; micros under CP/M, MP/M, Unix, or Xenix	\$10,000 to \$12,500	429
Skopos (415) 962-8590	Personnel Data Manager 1	IBM PC and PC XT	\$495	430
	Personnel Data Manager 2	IBM PC and PC XT	\$5,000 and \$6,500	
Software Tech. (402) 466-7871	STI Trust Accounting System	IBM PC, and micros under CP/M-80, MP/M-80, or MS-DOS	\$400	431
Syst. Research Svcs. (703) 827-9587	Climate PC	IBM PC	\$495	432



Photo by Christopher Morris

"With the Profiles/PC software, we can monitor the salaries of 573 employees," says David Lloyd of New York's Hotel Parker Meridien.

(Continued from page 79)

For example, sorting records on a micro is slow and difficult. And most microsystems can't process the weekly payroll. According to Tolson: "If a system can't handle payroll, it can't handle the spectrum of human-resources needs." But Ceriello argues that the personal computer's inability to handle all a corporation's personnel data doesn't erode the benefits of micro-based software. He believes these systems are even more valuable when used in with a mainframe system.

Tolson agrees personal computers can become valuable human-resource systems when linked with a mainframe. "They handle subsets of information quite well," he says. Downloading information from a mainframe and using a micro to do calculations is a common use for human-resources software. "In other words, the system can be used as an intelligent terminal," he explains.

Don Helt, president of Human Resource Micro-Systems, says its human-resource package provides features a mainframe can't. "It's virtually impossible to tailor a mainframe system to respond the way a micro can; it's too expensive and difficult to support. For high volume," he adds, "a mainframe makes sense. For problem-solving and manipulating data, a micro makes sense."

Another disadvantage of main-

frames for human-resources management is that they serve as little more than list processors, points out Vince Ceriello. "When you give a manager pages of numbers, he or she just throws them in the garbage," he says. Micros equipped with spreadsheet and graphics software can present data in easily read and more meaningful graphs.

The management of Pillsbury Inc., the giant food processor headquartered in Minneapolis, reached the same conclusion, and has begun to install micro-based, human-resources software at its satellite facilities. "Our facilities have different needs than do our corporate headquarters, and they track different information," says Ruth Ladner, manager of human-resources software at the 12,000-employee conglomerate.

Marlene Parmerly, the human-resources manager at Pillsbury's Murfreesboro, TN, plant, found it cumbersome to access human-resources in-

formation from the headquarters' Honeywell DPS8/70 mainframe. "The mainframe system is designed around payroll," she explains. "It doesn't contain any information on people." For example, data on training and education or emergency telephone numbers, which are not needed at corporate headquarters, are not stored on the mainframe. But at an assembly-line plant like the Murfreesboro facility, such data are important, and a micro keeps the information on hand.

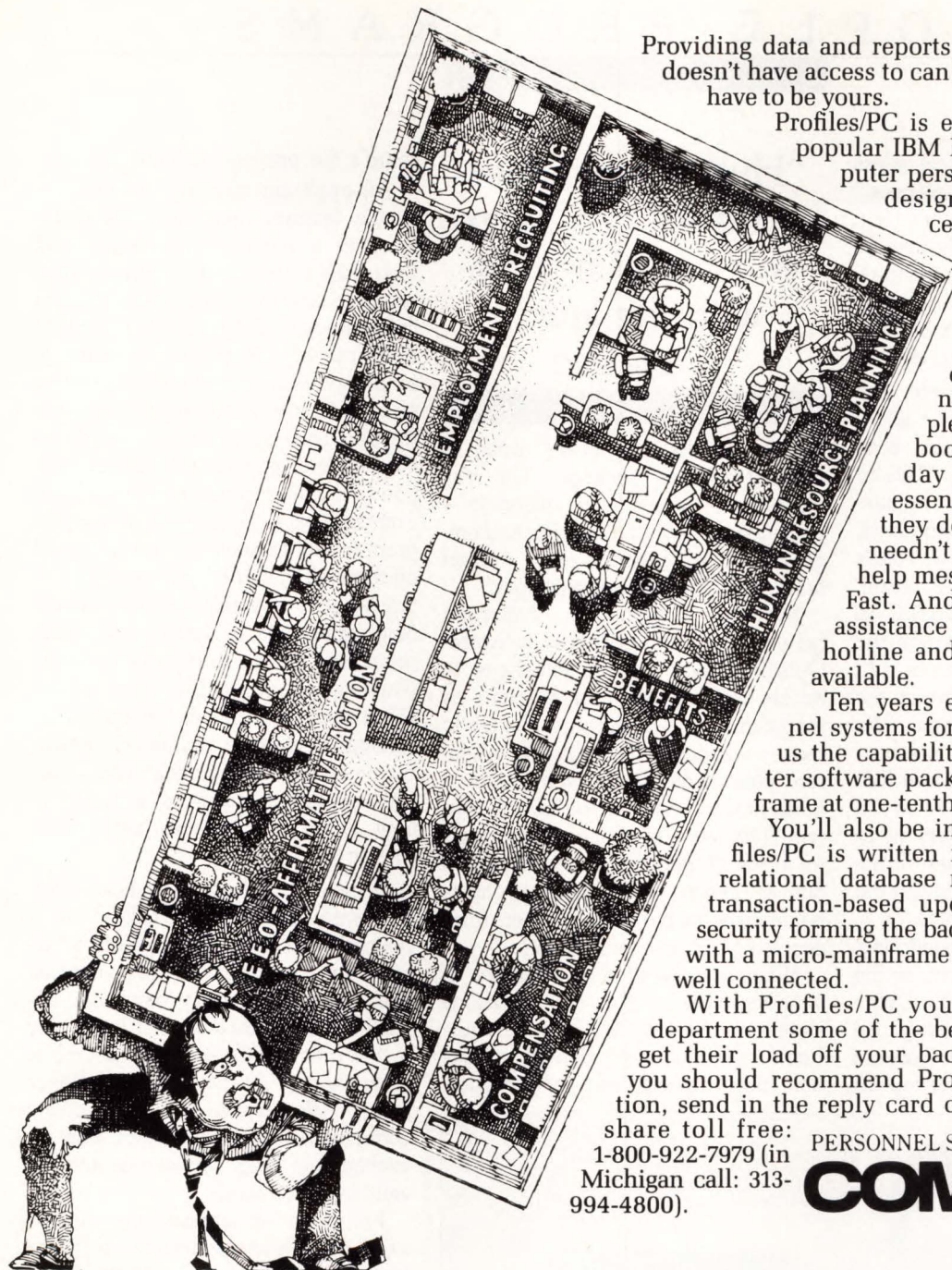
Parmerly chose a custom-designed package from Metafile for use on an IBM PC XT after searching without success for a package that would fit her needs perfectly. Absentee tracking, federal Occupational Safety and Health Administration (OSHA) compliance, and safety-report capabilities were the key functions Parmerly was looking for. "Before using the Metafile package," she says, "reporting percentages of absences a month was time consuming. Corporate headquarters couldn't possibly keep the necessary data up-to-date on the mainframe. So it would take us four to six hours to write the report manually. Now that same report takes us 10 minutes."

The Metafile package has also made it easier for managers at the Murfreesboro plant to prepare safety reports. OSHA requires all plant accidents to be tracked on a log, but Pillsbury wants to pay them closer attention. Pillsbury uses the package to classify accidents by type—back strains, cuts, bruises—and loads them onto a micro. "Now it's easier to spot a trend," says Parmerly.

But Vince Ceriello says it's usually not necessary to have your software customized. He also advises against having MIS/dp tailor a system, unless a corporation's needs are unique or it wants personnel data shrouded in se-

"For high-volume work, a mainframe human-resources system makes sense. For high variety, a micro-based package makes sense."

Helt, Human Resource Microsystems



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PERSONNEL SOFTWARE AND SERVICES

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crecy. "Don't reinvent the wheel unless there are mitigating circumstances," says Ceriello. "It's usually easier to find software that fits your needs than to custom-design it. Most human-resources-software vendors have already done the necessary research and development. Why duplicate that effort?"

Most packages, for example, are programmed to monitor salary ranges—a universal need for both small and large companies. "We're wholly dependent on our human-resources software," says David Lloyd, director of personnel for New York's Hotel Parker Meridien. Like Johnson, Lloyd uses Comshare's Profiles/PC on an IBM PC XT. Lloyd considers the ability to monitor the salaries of 573 employees a valuable feature of the Comshare Profiles/PC package. "We have some departments that are non-union and we want to keep them that way. So we're very careful when we give raises. Profiles/PC enables us to measure performance with pay. It answers the question: 'Are we paying the right money to the right people?'"

Along with salary monitoring, human-resources packages can be the perfect tools for tracking performance reviews and succession planning. An organization with 5,000 employees may find it simple to track the top 10

"Human-resources software can keep you out of trouble with the law."

Ceriello, VRC

percent of its employees using a human-resources package. The elements of succession planning—performance reviews, salaries, and employees' educations—are typical features of micro-based packages.

Security is another important feature of human-resources software. Outsiders can't use the telephone to access information from a micro as they can from a mainframe. Access to most packages is controlled by operator passwords, and many use a horizontal-and-vertical password system. This lets a human-resource director block all departments but his own out of certain fields, and prohibits nonmanagerial personnel workers from accessing sensitive information.

When narrowing down the list of vendors, cost of the basic package should not be your first consideration. Look for hidden costs. Besides installation, user training, and maintenance,

there's the price of optional features.

Job-applicant tracking, another desirable feature, may also cost extra. Keeping a record of applicants and their skills is important to many human-resource directors, particularly those in industries with a high turnover. Richard B. Frantzreb, a Roseville, CA, editor of a human-resources newsletter focusing on micros, advises personnel directors to purchase spreadsheet, word-processing, and graphics software in addition to human-resources software. But, Frantzreb says, "The ability of one program to talk to another is not a typical off-the-shelf feature." For example, if you want to maintain detailed records of job applicants, as well as use a word-processing system to respond to them, you may or may not be able to purchase these features as separate constituents in a single integrated system. So, another consideration when purchasing human-resources software is how easily it interfaces with other software.

A final consideration is how easily the software can be linked to a mainframe. Larry Baker, personnel director of Carterfone Communications, Dallas, has been using Mainframe Micros' HR-1 package on an IBM PC for a few months. Carterfone's payroll is done by an outside firm, and Baker says, "We want to have online communication, or at the very least an exchange of disks between us and the vendor once a week."

For such an application, Ceriello says, most human-resources software offers only one-way linkage to a mainframe. Two-way linkage, ideal for a large corporation, has been slow to arrive, although the Comshare and Mainframe Micro packages now offer them. Experts anticipate this will be an element of growth in human-resources-software development.

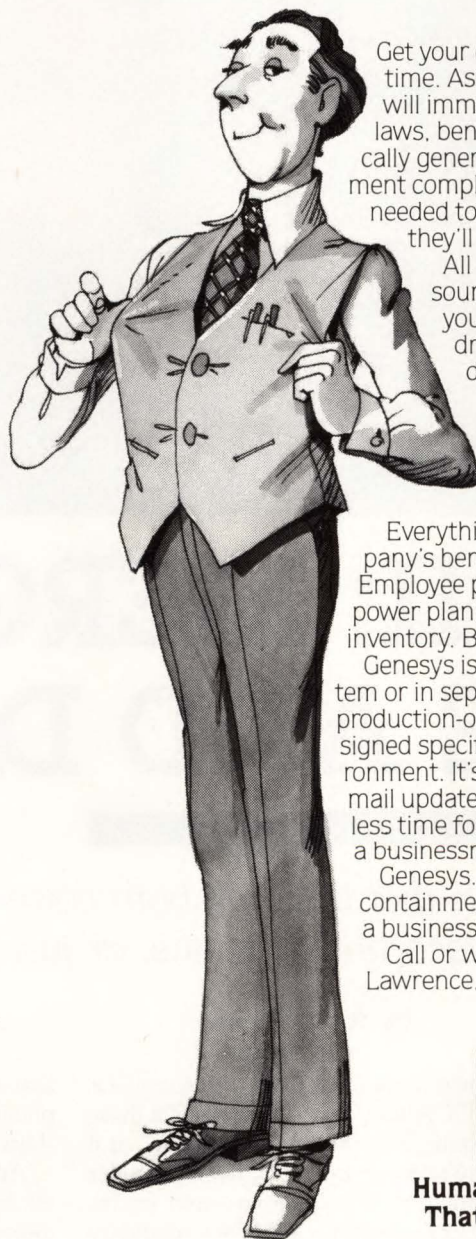
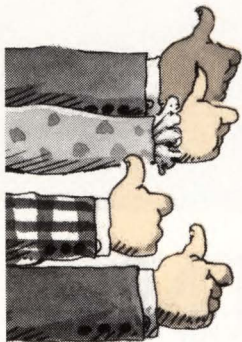
Once the software is installed, don't be surprised if it doesn't save you money immediately. Primarily, human-resources software is not designed to save money; it's a tool to raise productivity. And given the software's range of functions and the versatility of micros, don't look to it to alleviate your workload, because you'll probably find dozens of new applications. □



Photo by Gerald Holly

"We used to spend six hours preparing an absentee report. With our Metafile package, the same report takes 10 minutes," says Marlene Parmerly, human-resources manager at Pillsbury Inc.'s Murfreesboro, TN, plant.

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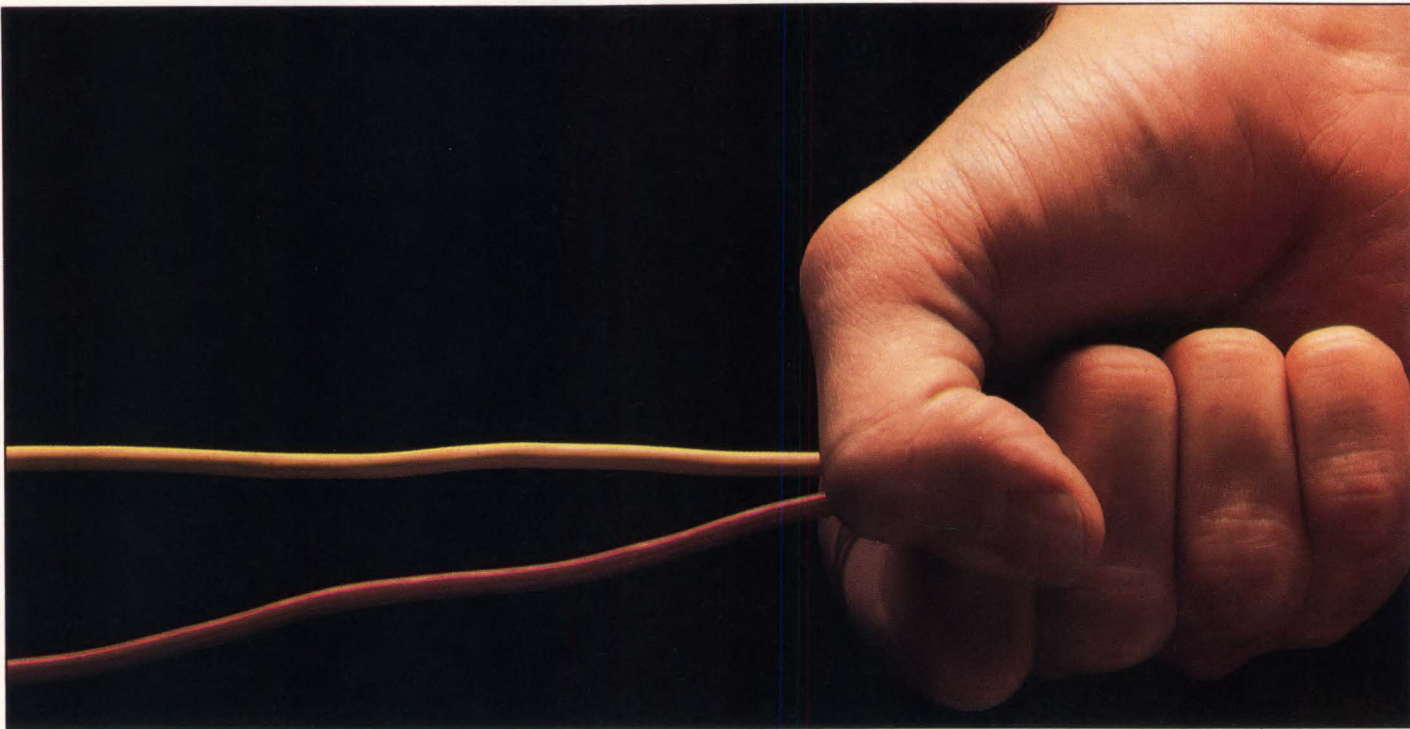
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PART III: MERGING VOICE AND DATA

Are new terminals that transmit both voice and data a new wave in telecommunications, or just a ripple?

by John O. Green

You've probably seen them: those sexy little ergonomic workstations with the built-in telephones. Called integrated voice/data terminals (IVDTs), they're hybrids whose very appearance suggests all sorts of wonderful new powers, features, and space-age tricks. They're touted as the harbingers of advanced communications, the centerpieces of the office of the future, and gateways to

a new world of global communications.

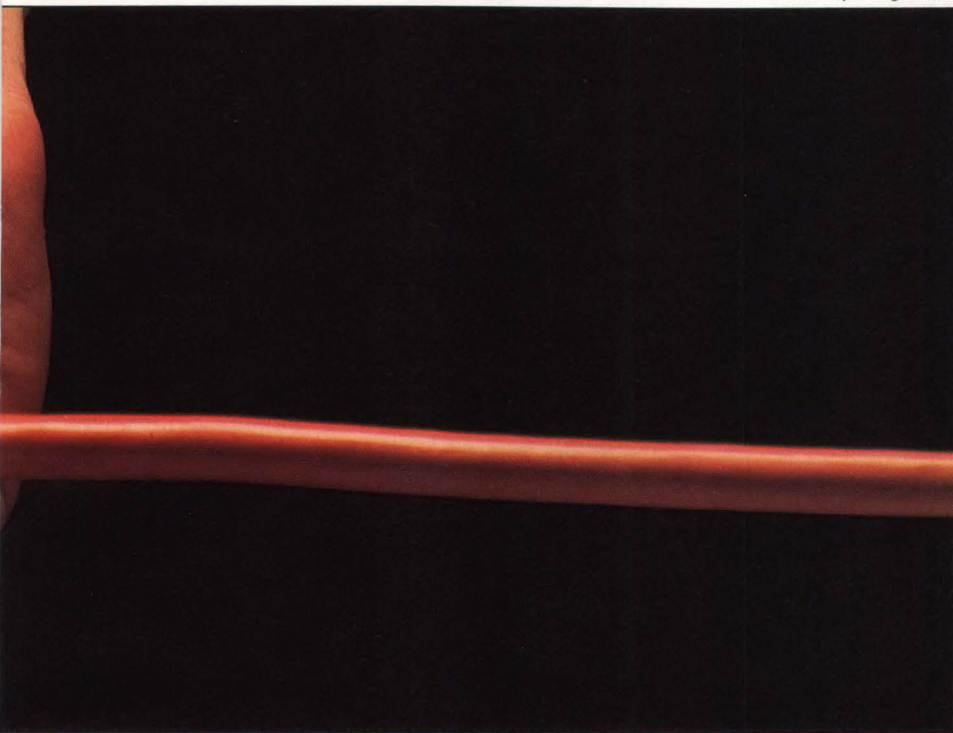
Of course, you may wonder if these hybrids are really something new, or if they're some marketing team's ploy for putting more expensive—and probably unnecessary—electronic gadgetry onto your desk. Says Michael Hammer, a consultant in Cambridge, MA: "You might as well put a coffee pot on your personal computer. When you start asking what managers have to do

that really requires a computer and a phone to be combined, the list is very short."

Applications for IVDTs may be limited, but if they can solve two or three major office-communications problems, such as telephone tag, they may eventually win a favored spot on executives' desks. Ken Zita, an analyst with Northern Business Information of New York, predicts it won't be long before "virtual-

INTEGRATION

Photo by George Mattei



ly every desktop has an integrated voice and data product," so convinced is he of their potential.

IVDTs have actually been on the market for a couple of years. Northern Telecom shipped its Displayphone in 1982. But only recently have they been kicking up a fuss, as IBM/Rolm, AT&T (Morristown, NJ), Wang Labs (Lowell, MA), and other big leaguers announce their intentions to enter the field.

What do these machines offer beyond a prestigious desk dressing? A close look at IVDTs reveals their main attraction is not that they possess revolutionary new features, but that they combine many useful ones in a single unit.

Generally, an IVDT serves both as a telephone and a data terminal, and offers a variety of built-in productivity tools to help reduce clutter and paperwork. Most include an internal modem, a keyboard with special function keys, a monochrome screen, a built-in handset, and varying amounts of internal memory and programmability. The devices can usually hook up to existing twisted-pair phone wires, and use ei-

ther one or two lines, depending on whether they require a proprietary private branch exchange (PBX).

On the voice/telephone side, most IVDTs are packed with features: speaker phone, hands-free dialing, personal phone directory with capacities ranging from 50 to thousands of entries, conference calling, simultaneous voice-and-data calls (by which you might send a spreadsheet excerpt to someone and speak with them about it while you both view it on your screens), automatic redialing of a busy number, and single-key dialing of your most frequently called numbers.

Most computer phones also offer some version of electronic mail. This can help eliminate telephone tag by enabling you to send messages to an unoccupied terminal. Some have a "certified" feature, whereby your terminal receives a signal when a message you've sent has been read. An elapsed-time indicator displays the running time on your phone conversations and stores the length of the call along with the party's name and number—information you might need for ac-

counting purposes, or for billing a client. Mnemonic dialing allows you to place a call from your directory by typing a name or abbreviation. Some IVDTs offer a mail-distribution feature, which lets you automatically send the same message to several people. If you don't need to send the message immediately, some terminals can be programmed to distribute it in the middle of the night, during off-rate hours.

Many of the machines incorporate a clock, calendar, and alarm that will alert you to meetings, calls to be made, deadlines, and other items in your weekly schedule. You can authorize your secretary and others to access your calendar to check your schedule, and make modifications as needed. Some machines also feature a calculator, scratch pad, and limited word processing.

Many IVDTs are multi-tasking—that is, they allow you to access a number of features at once. With a machine like Ambi Corp.'s Ambiset, you can speak on the phone and examine a remote database and, without interrupting either task, check your calendar, use your calculator, or make a note on your electronic scratchpad—or all three.

On the data side, many IVDTs support ASCII transmission, and emulate popular terminals like the IBM 3270 and Digital Equipment Corp.'s (Maynard, MA) VT100 to allow you to access the company mainframe. You can also go outside your local-area network to connect with a service such as The Source. One feature most users rave about is the programmable-function, or smart, keys. Many of the workstations have a row of eight or 10 such keys beneath the crt. Labels for the keys appear at the bottom of the screen. You can program a single key to perform such tasks as logging onto the company database, connecting with an outside service, or speed dialing a frequently called number. Forever after, one button does it all. You may be able to reserve one key for reassigning the screen labels, thereby doubling the smart keys available. *(Continued)*

VOICE / DATA INTEGRATION

(Continued from page 85)

The "second-generation" IVDTs such as the Zaisan ES.3 and the Rolm Cedar incorporate disk drives and the processing power of an IBM PC-compatible computer to allow you to run your favorite productivity software. Other manufacturers such as Davox and Sydis, whose systems depend on a central controller computer, enable users to run applications software from that processor.

Current vendors provide IVDTs for a range of office situations and budgets. At the low end (under \$1,000) are the "kits" like Natural Microsystems' Watson, which consists of a circuit board and software that turn an IBM Personal Computer, PC XT, or PC AT into a computer phone with some of the features described earlier. The kit approach might serve a firm with a large numbers of IBM PCs.

Next come the manufacturers like Sydis, Davox, and Sensory Inc., which

sell big-ticket workstation systems controlled by a central computer and, in some cases, a proprietary PBX. The vendors describe these systems with buzzwords like "highly integrated system" serving the "full-spectrum" needs of the office "workgroup." The idea here is to combine the power of a local-area network with the communications features and ease-of-use of IVDTs. Those workers who need applications software like spreadsheets, database, and word processing can access them from the central computer. These vendors want to get a workstation on every desktop in the office—from the department manager down to the receptionist. Their systems, then, provide total automation in virtually every task and communications need in the office.

An example of a high-end system, costing about \$7,000, is the Sydis Voicestation, which is networked with a Sydis' central computer controller with built-in proprietary switching capa-

bility. The Sydis system is for high-level executives and managers, and comes with a number of sophisticated features not offered by other vendors. With its digitized voice capability, the Sydis system enables you to record voice messages. In addition, you can view a bar graph of the message's length and delete or insert material at any point in the recording; it's a kind of text editor for voice. You can also insert voice commentary within a written document and then transmit the document and comments to colleagues or a secretary.

Middle-range IVDTs, priced between \$1,000 and \$2,000, consist of what one vendor describes as "workhorses." These products, like Matra's Scanset 415, Zaisan's ES.1, the Ambiset, and Liberty's Freedom 212, are stand-alone terminals that incorporate a full selection of voice/telephone and data features as well as the full range of office-productivity tools.

VOICE-DATA TERMINALS

Vendor	Package	Description	Price	Circle
Ambi (203) 328-9811	Ambiset Model 300	Stand-alone workstation; Intel 8088-based; sophisticated phone features	\$1,195	452
Basic Telecommunications (303) 226-4688	Data Voice Model 20	Stand-alone workstation; integral cassette recorder for dictation and answering-machine functions	\$1,995	453
Code-A-Phone (503) 655-8940	Tel-A-Modem	Two-line phone set; integral Bell 212A-compatible modem; RS-232C interface	\$596	454
Crystal Tech. (914) 592-1390	Phonewriter	Workstation for secretaries; multi-function typewriter and telephone	\$2,000	455
Cygnat Tech. (408) 734-9946	Co-System	Computerphone; attaches to IBM PC, PC XT, and PC AT via RS-232C serial link; full voice-and data-transmission features	\$1,845	456
Davox (617) 667-4455	Davoxnet Series 1921	Individual workstations that can be clustered in an IBM 3270 environment	\$2,495	457
GTE Business Communication Syst. (703) 435-7400	XT 300 Action Station	Multi-line terminal with integral modem and phone features	\$1,295	458
Intermatrix (818) 509-0474	Macphone	Software and phone for attachment to Apple Macintosh; phone features; no data transmission	\$199	459
Liberty Electronics (415) 543-7000	Freedom 212	Data terminal with integral modem; built-in phone features; external phone set	\$1,295	460
Matra Communication (408) 446-6701	Scanset 415HS and XLHS	Stand-alone workstation; full phone features and modem; XLHS has built-in phone	\$1,095 and \$1,395	461

VOICE / DATA INTEGRATION

George Fisher, director of online systems for Morgan Stanley Investment Bankers in New York, faced an extreme version of the kind of time/productivity problem managers face when they buy data and communications equipment. He had to purchase and install a system on the floor of the New York Stock Exchange—the highest pressure work environment in America—for Morgan Stanley's traders. Fisher describes his problem:

"Traders have to make deals that involve tens of millions of dollars, and they typically have less than a half an hour to do it. The information that's available on the floor is not good. People are yelling at them, and talking to them on the phone. They watch the Dow Jones news tickers and the prices of all the securities. So they don't have the time to really analyze deals."

Morgan Stanley wanted to provide traders with the ability to quickly make a variety of analyses from a large data-

base that contains a complete trading history of each stock. The trader or salesperson could then input the details of the deal and have the computer provide information about it.

"But," says Fisher, "traders can't possibly be bothered with using computers. They're on the verge of suicide as it is. Expecting them to log on and get into this menu and that option, or even just remember what the option is for the 500 or so applications available—and then wait for the computer to get around to them—is an intolerable burden. They just won't do it."

To devise a system that the traders would use, Fisher kept in mind the simplest input device he could think of—namely a McDonald's cash register.

"Instead of labeling the buttons 'Big Mac' or 'fries,' I wanted to label them 'yield to maturity' and 'quote sheet.' And when the trader pushed that button, I wanted him or her to be able to get to precisely the point in the applica-

tion where he or she needs to be. If in mid-flight he or she wants to switch to somewhere else, he or she just pushes another button," Fisher explains.

Fisher spent a lot of time seeing "all kinds of sales reps with all kinds of hi-tech gear" until he finally ran across Davox, makers of Davoxnet Series 1921. Davox sold a voice/data terminal that would interface with Morgan Stanley's IBM 3270 network. "The feature that broke it open for us was the Davox smart keys," Fisher says. "We can program them to take care of the very dialog with the computer we want to relieve the trader of."

The ability to custom program individual keys is, of course, possible on many general-purpose computers, but Davox and other IVDT makers have emphasized this feature on their units to make it particularly convenient.

To date, Morgan Stanley has more than 500 of the terminals installed on the floor, in the MIS/dp department,

VOICE-DATA TERMINALS

Vendor	Package	Description	Price	Circle
Mitel (305) 994-8500	Kontakt Series	Stand-alone workstation with personal-computing and sophisticated phone features	\$3,500	462
Natural Microsyst. (617) 655-0700	Watson	Circuit board, system, and application software to turn IBM PCs, PC XT's, and PC AT's into voice-data terminals	\$849 to \$998	463
Northern Telecom (214) 234-5300	Displayphone	Compact terminal with phone features and pullout keyboard	\$1,295	464
Rolm (408) 986-1000	Cypress	Terminal with full phone features; pullout keyboard	\$1,950	465
	Cedar	Combines IBM PC compatible with digital telephone (with Rolm CBX only)	\$4,245 (quantities of 100)	
	Juniper	Rolmphone, adapter board, and communications software for connection with IBM PC or PC XT	\$1,360 (quantities of 100)	
Sensory (408) 986-1680	Sensory 2000 Workstation	Networked by Sensory 5000 Controller; offers full range of advanced voice-data features	\$5,000	466
Sydis (408) 945-1100	Voicestation System	Workstation with advanced voice-data features; part of Sydis' supermini system	\$7,000	467
Televideo Syst. (800) 538-8725	Personal Terminal	Terminal with add-on phone and modem	\$727 (with phone and modem)	468
Wilcom (404) 993-4590	Asher	Circuit board, software, and phone for attachment to IBM PC	\$795	469
Zaisan (713) 580-6191	ES.1	Integrated terminal with full phone features	\$995	470
	ES.3	ES.1 with IBM PC compatibles	\$2,595	

and in the back office. Even after 18 months of experience with the IVDTs, Fisher finds that acceptance is slow when he's working his way into a new department. "There's such a big risk in justifying the expense that a lot of guys want to see it working for somebody else for six months before they'll relent

and use an IVDT on a trial basis. When they find out that they're more efficient with the workstations and can make better and trickier deals, they're generally converted for good," Fisher says.

Faced with a different problem, Judy Fowler and her team of engineering, marketing, and finance pros in the

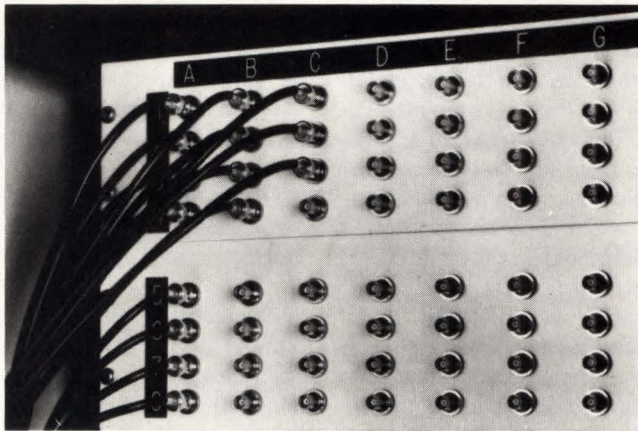
glass and metallurgical products department of General Electric came up with a different solution. The group was charged with the task of finding new uses for a superconducting wire developed at GE. However, there was a communications problem; workers of the group were spread out between their Cleveland headquarters, a separate manufacturing site, and a third facility in Goldsboro, NC. "We needed a system that would link us all together to send messages and computer files easily and quickly," says Fowler, who is marketing manager for the group.

They wanted a system that would let the group's numerous IBM PCs communicate with one another, connect with the mainframe, and provide electronic mail—without a disruptive and time-consuming installation and training period.

Because of its large installed base of IBM PCs, the group settled on Cygnet Technology's Co-System, an intelligent phone set/keyboard that connects to the IBM PC's RS-232C port and works in tandem with the PC to provide the voice/data capabilities the group needed. The Co-System provides many of the typical IVDT features, such as a 400-name directory, automatic redialing, speaker phone, calendar, and three-way conference calling.

The system also performs tasks concurrently, often an important feature in an IVDT. Explains Fowler: "I might be working on a spreadsheet when a question comes up. I can interrupt my work and, with a single keystroke, mark my stopping place. Then I can access the mainframe for more data, go into my directory for a number, make a call using my speed dialing, or send a message by electronic mail. Then, with a single keystroke, I can get back into my spreadsheet at the point where I left off."

The Co-System offers more features than some of the low-end conversion kits like Natural Microsystems' Watson, and is perhaps more convenient because it requires no diskettes. However, it's also three times as expensive. And that raises the all-important question: How do you choose among the different makes of IVDTs? Roy Dudley, director of com-



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CIRCLE 40





munication for Ambi Corp., makers of the Ambiset, says now that dp managers are beginning to recognize that IVDTs are here to stay, "the exercise becomes how to tell a good one from a bad one."

But the question is even more complex than Dudley suggests. Many users are asking why they should purchase an IVDT when they can add the requisite boards and diskettes to their personal computer to achieve the same results. The answer is "Yes."

However, manufacturers argue that most executives, managers, and many other office workers don't need or want a general-purpose computer on their desks. What they *do* need, say the vendors, is a small-profile terminal with the software or firmware built in that serves their communications and occasional data needs—and only those needs. By offering a dedicated IVDT, the vendors of mid-range terminals also argue that they're providing a machine that is far easier to use and less expen-

sive than a personal computer upgraded to a voice/data terminal.

The distinctions between an upgraded micro and a dedicated IVDT blur considerably in products like Zaisan's ES.3 and Rolm's Cedar, which incorporate disk drives and an IBM PC-compatible computer with an integrated voice/data terminal. With their hideaway keyboards and small footprints, these machines are more compact than a personal computer, and somewhat easier to use for voice/telephone and data transmission.

If you *are* contemplating new equipment, do your homework thoroughly. "It's not apparent," cautions Ambi's Roy Dudley, "which product to buy by looking at the glossy brochures." You'll want to make a detailed assessment of your users' needs. Are they more oriented to data or voice/telephone? Does the device have all the features you want? Does it have more features than you want? Are you going to be leaving money on the desktop? Do the

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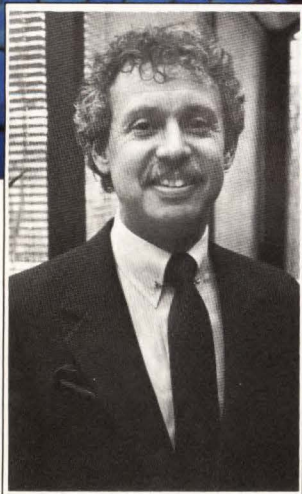
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machines integrate with your PBX and other equipment? Can your PBX handle the increased data traffic? Can you upgrade? What kind of support can you expect from the vendor?

George Fisher, who eschews consultants, offers this advice from his own experience: "I knew what I wanted,

had a few design constraints, and I just went like hell. I read every trade journal there was. I talked to every salesman who forced his way into my office. I went to every damn trade show. I combed *The Wall Street Journal*, *The New York Times*, *Forbes*, and *Fortune* looking for good leads. And it paid

off. Finally, I found one."

When you think you've settled on the best machine or machines for your users, you still may want to proceed cautiously. Many companies follow the evaluation gambit, bringing in 10 or 20 machines for a shakedown cruise, and placing them with the most receptive executives. This gives the skeptics in your firm time to cast a wary and eventually covetous eye on the new workstations.

Says Dave Levin, project manager for a new telephone installation at Procter & Gamble in Cincinnati: "We see it as a seeding process. We've put a few in different locations throughout the company, in the telecommunications, sales, and engineering departments. And we've targeted the light data users, middle to upper managers who might use it an hour or two a week to look at mail or to dial up a database." If you do go the evaluation route, remember that the full in-house communications benefits may not become apparent until you've developed a larger installed base of IVDTs in your company.

Given the volatility of the field and the fact that many of the vendors will be introducing new systems throughout this year, it may be advisable to take the wait-and-see approach before installing IVDTs at your corporation. Many analysts are predicting a shakeout, and expect the prices of the workstations to drop dramatically. However, there may be some advantages to making your move now. For one thing, many users report that the vendors are bending over backward to help get the new systems installed. This kind of eagerness may also enable you to get the machines specially customized to your operations—particularly if vendors perceive your company as a potential major customer.

Dave Levin at Procter & Gamble has been evaluating one major vendor's IVDTs in the telecommunications department at P&G. When he ran into manufacturing problems with the first batch of terminals, the vendor quickly replaced and upgraded the machines. Levin also reports that he's working closely with the manufacturer to integrate the IVDTs with P&G's

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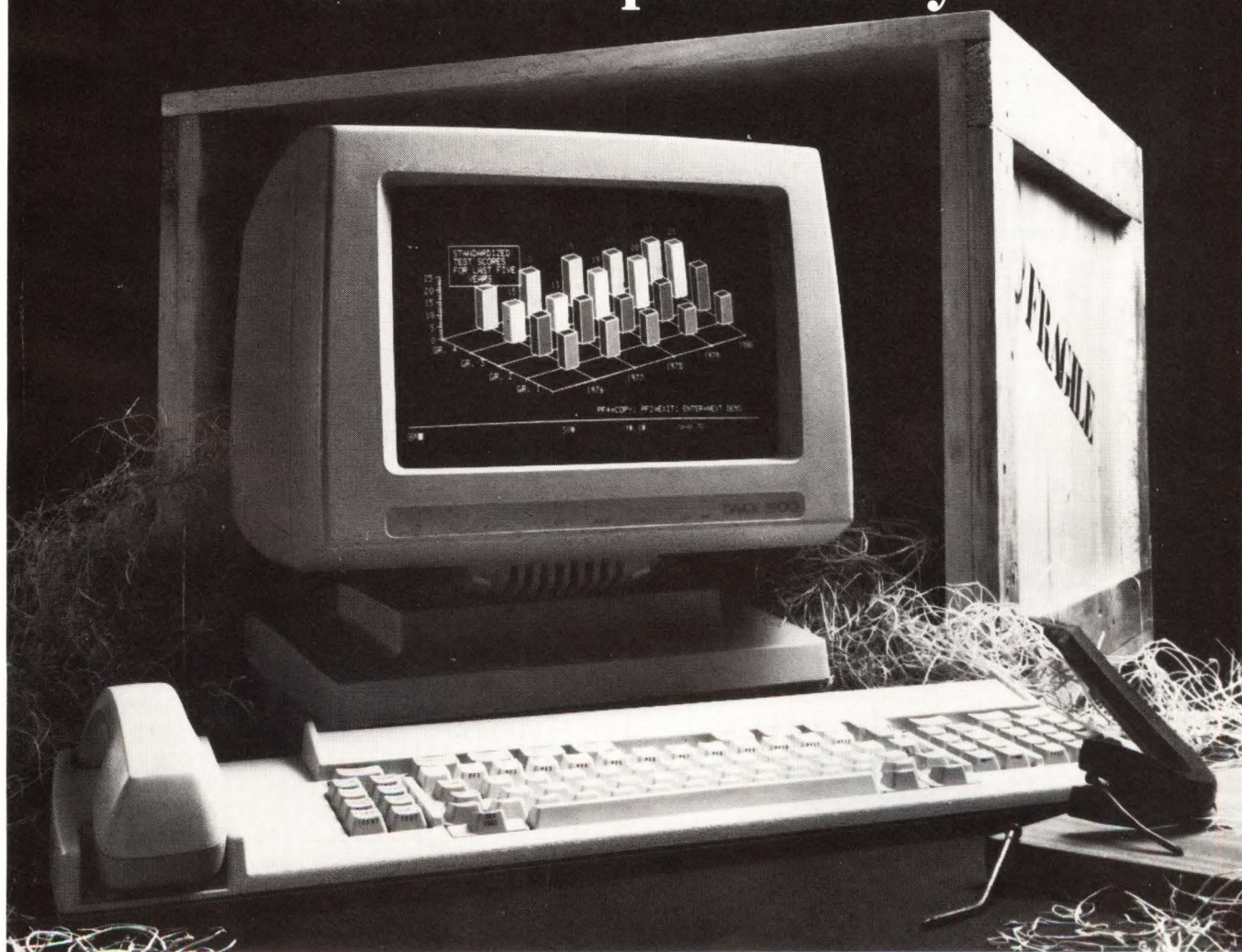
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new PBX system.

Some corporations are waiting to install voice/data terminals until PBXs with more-integrated switches appear on the market. Sherry Geddes, analyst at Strategic Inc., Cupertino, CA, says "Because even a very low percentage of data calls can absolutely clobber

PBX transmissions, there won't be a big market for IVDTs until there are more-integrated switches."

Geddes sees IBM's acquisition of Rolm—perhaps the most dramatic example of a computer-terminal maker joining forces with a PBX vendor—as a herald for a vast expansion of the mar-

ket for powerful, integrated switches coupled with IVDTs. "That's why you see Intecom in league with Wang, Digital Equipment with Northern Telecom, AT&T with Olivetti, Hewlett-Packard with Santa Barbara Labs, and so on." According to Geddes, new PBXs like Rolm's CBX II have been designed in anticipation of a balancing out of the current ratio of voice and data traffic (93 percent voice to 7 percent data).

Finally, if there is a shakeout, as many analysts predict, a vendor like Rolm might come out on top, and perhaps set an industry standard. With its line of "forest products," the Cypress, Cedar, and Juniper, Rolm has created a potential competitor for almost all of the current IVDT models. The Cypress offers standard terminal features. The Cedar, like Zaisan's ES.3, incorporates disk drives and IBM PC compatibility. The Juniper converts a PC into an IVDT using a Rolmphone.

Right now these products run only in conjunction with Rolm's proprietary switch, the CBX. But according to Ken Rowe, Rolm's director of marketing, "Rolm has 17,000 such switches out there, the world's largest installed base." When asked what IBM and Rolm are cooking up next, Rowe said, "We don't divulge products in the works. But you probably wouldn't be surprised if something appeared that could dance with the PC AT."

Whether or not there is a shakeout, there will no doubt continue to be new products and technologies that the major players will be coy with until they've begun to prove themselves. For instance, just picture the following item. Take one IVDT. Add a color video monitor. Add one compact video camera pointing at you, the user. Add some new electronics to the terminal and a few orders of magnitude of transmission capacity to the phone lines.

Place one of these IVDTs (integrated voice/data/video terminals) on every desk in corporate America, and what have you got? The long-awaited video phone. Maybe this is the real promise of the IVDT. We'll see. □

John O. Green is a free-lance writer based in Menlo Park, CA.

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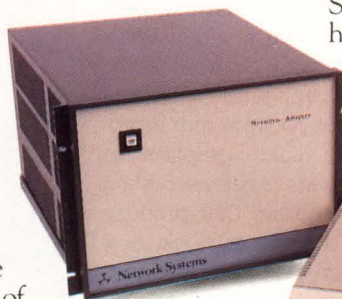
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THE RISE OF IN-HOUSE PUBLISHING

Doing your typesetting in-house can cost three to four times less than sending material to an outside vendor.

by Miriam Lacob

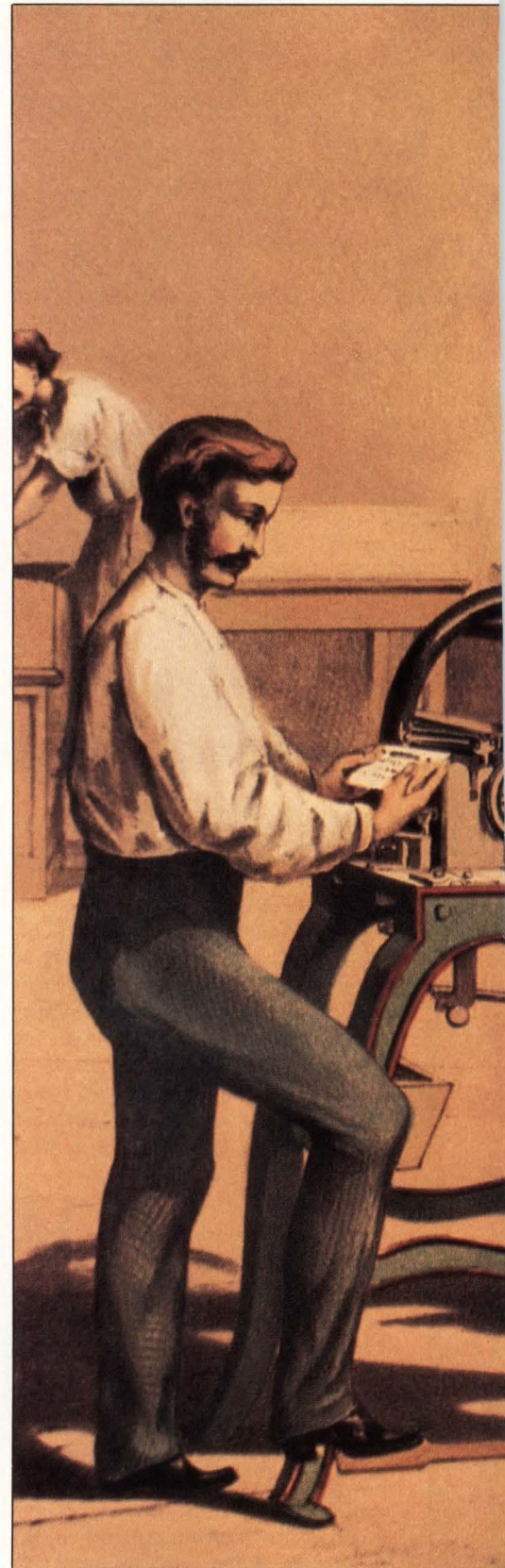
The paperless office notwithstanding, virtually all corporations are engaged in publishing. Analysts estimate that the volume of corporate publications will be more than four-trillion pages per year by 1989. But because materials like brochures, user manuals, newsletters, and advertising copy are ancillary to the products of most corporations, their cost often is obscured in general overhead expenses.

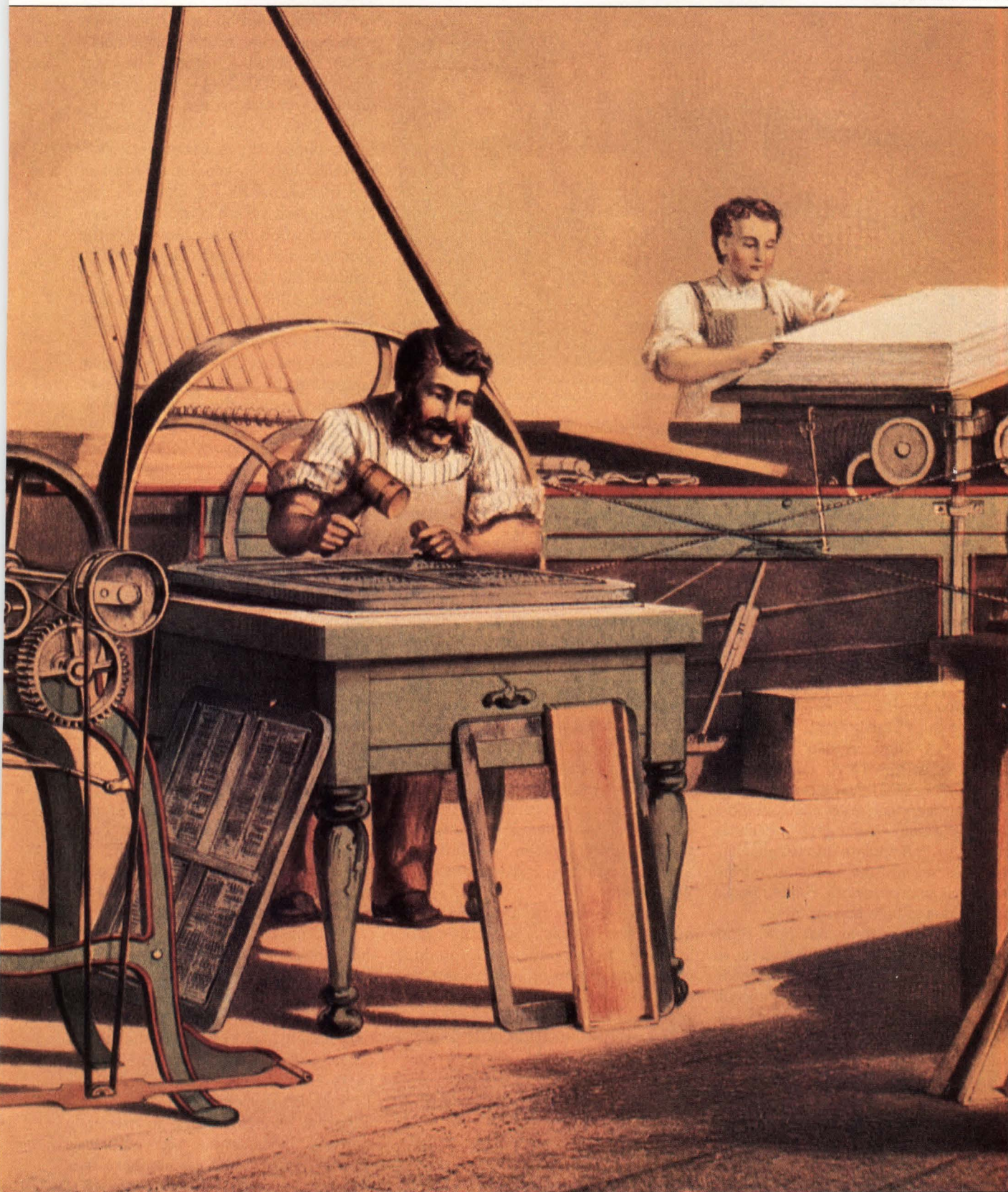
However, as the cost of outside typesetting and printing rises, so does its visibility; at the same time, in-house publishing systems are becoming less expensive. Thus, installing computer-aided publishing (CAP) systems in-house is fast becoming a high priority for many corporations. This is particularly true in industries that have a high paper output, such as insurance carriers and manufacturers of products that require technical documentation com-

plete with essential graphic elements.

With CAP systems, corporations can produce professional-quality documents for everything from memos to full-length books without relying on outside vendors. The potential savings are persuasive. Moreover, corporate-publications managers say that CAP systems give them documents much faster, and allow better control over the final product.

Corporations seeking in-house publishing capabilities have a wide variety of hardware and software from which to choose. These range from million-dollar systems that produce and reproduce high-quality color graphics to micro-based software systems costing several thousand dollars that produce documents with a "typeset" look. Systems that let users edit copy and manipulate graphics and provide on-screen display of these elements much as they will appear in page form have





TYPE CASTING



The Interleaf TPS-2000 Technical Publishing System features an image scanner (left) and a high-resolution laser printer (right). Interfaces to phototypesetters are also available.

been dubbed "what you see is what you get"—or WYSIWYG (pronounced Whizziwig)—systems. Some of these systems also permit users to manipulate the copy and page layout on the screen; they are called editable-WYSIWYG systems.

The fastest and most versatile of these systems use extremely complex software and operate on 32-bit micros with hard-disk storage. Their capabilities are impressive. Interleaf, for example, has developed an editable system that runs on the 32-bit workstations from Sun Microsystems, Mountain View, CA, and Apollo Computer Corp., Chelmsford, MA. The software, called OPS 2000, can quickly generate graphs. Users can also mix typefaces within the same document and either create or manipulate black-and-white graphics fed into the workstation from add-on scanning devices. Printed pages are produced by a laser printer.

Many CAP systems integrate typographic instructions in the software, so users don't need to learn complex commands. These instructions are executed from a menu accessed by keyboard, or by moving a cursor around windows and icons using a mouse. Most of these systems can be networked with micros and will accept information from word processors, line scanners, and computer-aided-design systems. Because many major corporations already use word processors and automated-design

systems, they already have in place the basic components to support the new electronic-publishing technologies.

CAP-system technology represents a major departure from professional computerized-typesetting systems, which developed along a different path in coding and protocols than conventional computers. Until now, lack of compatibility prevented users from integrating in-house printing systems with other data-processing equipment. Another obstacle to in-house type production has been the prohibitive price of phototypesetters, which used to be the only way to produce hard copy from typesetting terminals. Now, users producing first drafts or final copies can use laser printers to print both type and graphics. (Laser printers are preferable to daisy-wheel printers because they are not limited to a single typeface and point size.)

Laser printers produce documents quickly and cheaply. This is particularly important to corporations that produce voluminous technical manuals that are often required only in limited editions.

"Installing a CAP system is becoming a high priority for many corporations."

Instead of producing typeset pages with phototypesetters, these manuals can be produced by laser printers on plain bond paper at the rate of about six to 12 pages a minute. The laser printout, at 300-dots-per-inch density, simulates typeset material.

It's possible for a corporation to begin publishing its documents electronically with an initial investment of less than \$25,000. For example, Studio Software sells a micro-driven system for \$3,000. At the other end of the spectrum are systems developed by vendors like Interleaf, Xyvision, and Viewtech that can cost more than \$200,000, depending upon the number of workstations to be served.

Developers of CAP systems have attempted to incorporate many typesetting functions into their software. However, some corporations that use outside typesetting vendors have expressed doubts about the typographic quality of a CAP system's output. For instance, most CAP systems don't allow the user to control the spacing between words and letters—attributes of dedicated typographic terminals.

Managers at corporations with high-volume print-production schedules also say that because the WYSIWYG systems generally require an operator to review a document page by page, they are too slow. In addition, some managers object to the multiple-tasking abilities of these workstations. "There's too much to do on one machine, so whom do you hire to do it?" says Lynn Swigart, manager of Caterpillar Tractor Co.'s publications division in East Peoria, IL. "You need a jack-of-all-trades, otherwise you're either going to get a document that is poorly written or that has poor art."

Nevertheless, corporations that don't need to publish thousands of pages monthly find the editable-WYSIWYG Interleaf system—at about \$53,000 per workstation—suitable. For example, at SRI International, a consultancy in Menlo Park, CA, engineers at the Advanced Information Technical Applications Center are using the Interleaf system to prepare manuals, documents, and graphics presentations. The 39-member research group is served by four work-

stations networked to a single file server. Pages are produced by a Canon Imagen laser printer, which can also produce transparencies for overhead projectors.

Before SRI installed the Interleaf system, says Glen Hastie, task leader, consultants had to go through the institute's already overloaded graphics and publications departments. That route, says Hastie, was both tedious and time-consuming. "It took at least a week to get a few overhead-projector slides. And if they needed editing, it would take a few days more. Using Interleaf, we can generate a concept immediately," he says. In addition to saving time, the system was easy to learn. In Hastie's first try with it, he was able to produce 10 overhead-projector slides in a few hours. SRI plans to equip the consultants' four secretaries with Sun workstations and Interleaf software.

The Interleaf System is being used for a specific task at Wyeth Laboratories, a pharmaceuticals manufacturer in Philadelphia. There, says David Halem, manager of biomedical-data systems, two Interleaf workstations are being used to generate the 15-to-20-page forms Wyeth uses to collect data from the clinical trials of new drugs. Operators design these forms based on the variable controls of each clinical trial, and the system's editing functions speed this process. The completed forms are then output on a Canon laser printer. Previously, operators composed the forms manually. Once a form design was approved, it was sent out to a typesetter—a cycle that resulted in a lengthy production process. Halem says the introduction of the Interleaf system, which enables the department to absorb typesetting into the form-design phase, cuts development time by half.

Users seeking systems that offer more typographical finesse and complexity have turned to vendors like Xyvision of Woburn, MA, a supplier of typographic equipment to professional print shops. Xyvision's CAP systems cost about \$150,000. General Data Comm, a manufacturer of data-communications equipment in Middlebury, CT, is using a Xyvision system to meet its heavy requirements for user

"For less than \$25,000, a corporation can publish its own documents."

manuals. The system accepts text from Lanier word processors by modem, although Bill Egbert, information-services manager, plans to replace these with smart terminals connected to a Hewlett-Packard 3000/37 minicomputer for more flexibility and better translations. Graphics are created on Compugraphics' Advantage terminals and input to the Xyview terminals. Text and graphics are output to a Canon Imagen laser printer for proof-reading, or to a Compugraphic 8600I typesetter for the finished product.

Egbert is impressed with the typographic potential and power of the Xyvision system. In particular, he says, the automatic-pagination feature makes revisions easy. Among his department's first products on the system was a 120-page manual with many illustrations. "The job came in on Monday, and it was out, after three editing passes, by the next Friday," he says. Within one year, Egbert says, the sys-

tem doubled his page output to 2,200 pages a month, and he expects to see that increased by 50 percent within another year.

Although many manufacturers consider editable-WYSIWYG capabilities a high priority, many users are happy with a system that simply lets them view a page before it's produced. The Hartford (CT) Insurance Group uses Sprinter composition equipment and software from Computer Language Research in Carrollton, TX. The Sprinter software resides in an IBM mainframe, and more than 4,000 forms have been composed on an IBM Personal Computer.

Because of its voluminous output of policies and promotional literature, the insurance industry was one of the first to turn to in-house CAP systems. For the past two years, the Prudential Insurance Co., based in Newark, NJ, has been using the Series 6300 and TPE high-volume composition systems developed by Datalogics, Chicago. Prudential publishes an average of 1,000 pages of policy documents monthly with a staff of 22. Donald Killinger, Prudential's composition consultant, says the potential cost savings and the opportunity for tighter control over material persuaded him to invest in a CAP system. Killinger selected the Datalogics systems because they offer tabular, headlining, and automatic-pagination features that can handle the complex requirements of policies.

With batch pagination, Killinger can decide on page designs and leave the system to automatically compose the documents; he has had the system do 600 files overnight. Prudential's 12 Datalogics terminals are connected to a PDP 11/44 minicomputer from Digital Equipment Corp., Maynard, MA, with storage provided on two 300-megabyte disk drives, two 160-megabyte Winchester drives, and a tape drive. The system outputs to 33 Xerox 9700 laser printers, as well as a small Xerox 6380 laser printer.

A typographer by training, Killinger says he first considered the CAP system cumbersome, but has since found it increasingly simple to use. If he needs help, Datalogics' staff makes any necessary adjustments over the phone. By



Text's Live Image Publishing System is an editable-WYSIWYG system that permits manipulation of page design. Finished documents print out just as they appear on-screen.

TYPE CASTING

using the Datalogics system, Prudential has realized considerable cost savings, Killinger says. He had estimated that the \$200,000 system would pay for itself within three years, but it has paid back in half that time.

Like insurance carriers, manufacturers fulfilling government contracts face mounds of paperwork requirements that have to be produced according to

strict specifications. "We deal with a government that really loves its paper," comments Russ Hall, head of communications services for GTE's Strategic Systems Division in Westboro, MA. GTE first went into in-house CAP in 1980, when it was awarded the command-control-and-communications contract for the MX intercontinental ballistic-missile system. Hall estimates

that GTE produces two-million pages of documentation each month. For that reason, he sought a system that could easily handle batch pagination, and chose Datalogics software resident on DEC PDP 11/70s. The system drives Imtex laser printers that produce proofs for editing and an Autologic APS 5 phototypesetter. GTE uses a rugged Davis Perfecta printing press

IN-HOUSE CAP SYSTEMS

Vendor	Product	Price	Notes	Circle
Alphatype (312) 965-8800	Berthold Magic System	\$50,000 and up	Integrates text, graphics, and black-and-white image processing Minicomputer system with terminals Digital phototypesetter Digital phototypesetter	513
	Multiset	\$65,000		
	CRS 8900	\$30,000 and up		
	CRS 9900	\$60,000 and up		
American Printing Tech. (213) 617-9021	Pagewright	\$70,000	Turnkey configuration including interactive workstation and laser printer. Additional workstations approx. \$45,000 each.	514
Autologic (805) 498 9611	APS Microcomposer System	\$87,500 and up	Microcomposers with hard disk storage. Drive APS-Micro 5	515
Baber (603) 673-9277	Multidisk Reader 8261	\$7,495 and up	Accepts data from most word processors and transmits data directly to a typesetter without rekeyboarding	516
Burroughs (313) 972-7269	Prograph 2000	\$70,000 and up	Publication-quality graphics in an office environment	517
Bestinfo (215) 521-0757	Type Processor One	\$4,995	Runs on IBM PC; uses Hercules Graphics; can edit while in WYSIWYG	518
Camex (617) 944-6555	Super Setter System	\$60,000 and up	Editable WYSIWYG	519
Compugraphic (617) 658-5600	Personal Composition System	\$13,995 (includes typesetter interface) \$24,995 (includes laser printer)	Runs on Apple Lisa, drives Compugraphic typesetters Runs on Apple Lisa	520
Computer Composition Int'l. (818) 701-6033	Techpage CCI 400; CX 1000	\$50,000 to \$200,000	Data General and Motorola 6800-based system. Conventional typesetting system. Techpage products enable use of PCs for input and editing.	521
Computer Language Research (214) 250-7000	Sprinter Central Forms Automation System Sprinter Distributed Forms Automation Systems	\$60,000 plus license fees \$8,800 to \$17,500	Three systems for forms viewing, management, and laser printing	522
Concept Tech. (503) 684-3314	Concept 100	\$2,195	System includes Graphcard 100, a multipurpose Virtual Device graphics controller for the IBM PC XT.	523
	Laser 8	\$7,995	Intelligent graphics laser printer	

TYPE CASTING

for high-volume work and does its low-volume printing on Xerox 9500 and 9200 laser printers.

Some corporations produce such a high volume of publications that they are effectively the largest publishers in their areas. The publications division at Caterpillar is the largest private publisher in its home state. In 1984, Caterpillar's 160-member publications staff produced more than 150,000 pages of product-support literature and distributed millions of copies to dealers and customers.

In-house publishing has been evolving at Caterpillar for more than 15 years, says Lynn Swigart. The publications division uses an Atex typesetting system that ties into dedicated text terminals from Atex, two Autologic Micro 5 typesetters, an Autotrol system for drafting technical drawings, and "a growing number of IBM PCs." Swigart plans to take advantage of the versatility of personal computers and phase out the Atex terminals. Swigart's ultimate plan is to integrate his department's PCs with Caterpillar's IBM

308X mainframes, which will provide cheap data storage.

Corporate executives are rapidly beginning to realize the importance of quality documentation in all of their activities, as well as the potential cost savings of in-house publishing. As a result, the status of publication-systems managers is rising, and CAP systems are moving to the top of many corporate priorities lists. □

Miriam Lacob is a free-lance writer based in New York City.

IN-HOUSE CAP SYSTEMS

Vendor	Product	Price	Notes	Circle
Datalogics (312) 266-4444	Series 6300 and TPE	\$125,000 and up	Automatic pagination; generic coding data management graphics capability; runs on VAX and DEC PDP-11; use PCs for editing stations	524
G.O. Graphics (617) 229-8900	Interfaces	\$1,500 to \$4,000	Low-cost integrators of word-processing and typesetting systems	525
Interleaf (617) 497-5570	OPS 2000	\$52,500 and up	Editable WYSIWYG; combined graphics and text; number-driven graphics	526
Penta Syst. Int'l. (301) 244-0050	Penta Editorial System	\$150,000 and up	Extensive editing facilities. Data General's Comprehensive Electronic Office runs on Penta Editorial Terminal Production system (editing and production software runs on same terminal)	527
	Penta Pal	\$65,000 and up		
Qubix Graphic Syst. (408) 370-9229	Model I, II, and IV CAP Systems	\$70,000 to \$200,000		528
Royce Data Syst. (617) 436-9351	Image Composer System	\$110,000 to \$700,000	Custom-designed systems, geared to integrate with existing corporate resources	529
Scenic Computer Composition Syst. (206) 885-5500	Scenic Writer	\$995	Text composition system. Supports HP Laserjet Printer	530
Studio Software (714) 957-0458	Do-It	\$3,000	Runs on IBM PC and Compaq. Typesetting-commands access by icon and mouse	531
Texet (617) 641-2900	Live Image Publishing System	\$70,000 to \$300,000	Complete menu-based composition system. Integrated text and graphics in interactive WYSIWYG system	532
Varityper (201) 887-8000	EPICS	\$23,500 and up	Composition system with digital previewer option	533
Viewtech (408) 946-8484	Viewtech	\$200,000 (six-workstation system approx.; additional workstations: \$15,000 to \$25,000)		534
Xyvision (617) 938-8095	Electronic Publishing System	\$90,000 and up	Editable WYSIWYG merges text and graphics. Automatic pagination	535



Satish Jumeja, Twin County Grocers.



John A. Rade, Cap Gemini DASD.

HARDWARE/SOFTWARE UPGRADES SMOOTHING CONVERSIONS

Count on Murphy's Law and enlist management support when you plan conversions.

by David Whieldon, Senior Editor

Conversion raises many problems for organizations, two of them certainly being a disruption of operations and a commitment of valuable resources. MIS/dp managers sometimes have little choice as to whether or how to convert systems. What's more, conversions may alter

the way MIS/dp and user departments operate, complicate relations with vendors, and hurt employee morale.

Of course, conversions are undertaken to raise the productivity of dp and user departments. Often, an upgrade is a long-overdue remedy for costly maintenance on poorly designed,

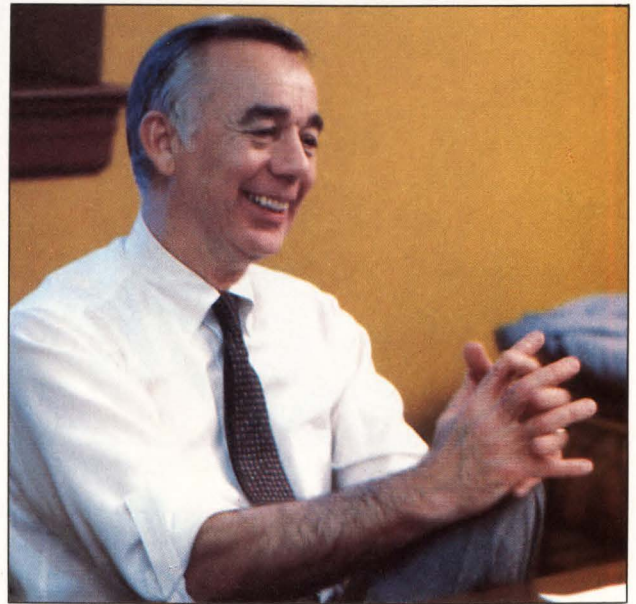
heavily patched systems. Conversions also improve the skills of personnel through retraining.

Computer Decisions recently gathered a panel of experts to discuss how to minimize problems during conversions. The panel began by outlining what can go wrong.

ROUNDTABLE SERIES



Bruce K. Anderson, Uniroyal.



Kenneth Reside, Savin Corp.

Bruce K. Anderson: Management often questions the expense, saying, "We're supposed to spend this money for a conversion, but when we're done, the system will do exactly what it was doing before. Why spend it?"

James B. Webber: The users may say, "I like what I'm getting. I don't want you technical guys telling me how to improve the system. It ain't broke so don't fix it!"

John A. Rade: On the other hand, users can force a software or system conversion, as when the marketing department says it needs online data entry, and your box can't support the online approach.

Webber: Or your operations personnel may say they can run the shop more efficiently if a conversion is made.

Kenneth Reside: You may be faced with a genuine morale problem when you must maintain an existing system while you implement a new one. A conversion changes the environment: All the information resources—systems, operations, users, and so on—go

through an evolution. It's not easy. **Raymond F. Barrett:** Even if a vendor announcing a software upgrade says it's not going to withdraw support, it may in effect do so if no one can answer your questions anymore. You're penalized, too, if you slip a few releases behind, because the manufacturer may write conversion routines that go from one release to another, but only in sequence. The alternative is to write something on your own.

sion, pointing out the motivation for this difficult and time-consuming procedure. **Jumeja:** Several factors came into play when we made our decision. The first was the status of our original supplier in the marketplace. That vendor has only a few accounts left in our home state, according to what we learned from a survey, so it will be difficult to obtain service and support in the future.

Another consideration was availability of software. Software for the old vendor's hardware was limited, especially in applications software for our business. Still another was availability of personnel familiar with the old system. Because very few other customers were located nearby,

few experienced personnel were available to us. We were training from the basic-skill level upward.

Then there was return on investment. Even though the new vendor is more expensive, we had to weigh the costs of turnover, training, and software maintenance with the old vendor. We projected costs for both alterna-

Conversions may alter the way MIS/dp and user departments operate and hurt employee morale.

Satish Jumeja: At Twin County Grocers, we're making the most significant conversion of all: from one hardware vendor to another. We were faced with a lack of service and support, software, and personnel familiar with the old hardware and systems.

Satish Jumeja elaborated on his employer's hardware-to-hardware conver-

CONVERSIONS



James B. Webber, Omicron, The Center for Systems Humanics.



Howard D. Rothman, Omicron, The Center for Systems Humanics.

tives for 10 years into the future.

Finally, we measured our old system a year ago, finding it utilized at 100 percent, and we projected growth at 40 to 50 percent a year for the following three years. So we would have been forced to make a conversion anyhow if we'd stayed with the old vendor. Despite our fear of failing to convert on time and within budget, we made a decision to go with the new vendor.

Reside: I went through the same kind of conversion when I was at General Electric. Interestingly, turnover at GE has increased because personnel trained on IBM equipment are in greater demand and therefore move on more quickly.

Jumeja: That's correct. I've added funds for turnover-related expenses to our budget projections. But there's a benefit, too: Turnover brings in personnel with new skills and ideas. But I have yet to lay off a single person in the conversion process. I'm retraining everybody, and the cost of retraining is less than or equal to the cost of hiring a new person.

A big cost in staff time and actual dollars is the software side of conversion.

Anderson (to Jumeja): Are you writing new software or buying packaged software and converting the data?

Jumeja: Applications written in-house during the past 15 years are being converted without modification. We have all the source code for our packaged applications, and we've asked third

parties to supply us with compatible versions. We've bought only one new application package.

Another big issue is educating—sometimes placating—users. As Kenneth Reside said, "Conversion is a tough sell if users see no benefit."

Jumeja: It depends on the corporate culture. MIS/dp managers now show a desire to educate users, and that becomes a driving force for change. I was formerly head of a user department and the dp director at that time believed that talking to users was unnecessary. Today there's interaction between users and central MIS/dp.

Reside: I like to bring users into my department and expose my staff to their problems. Take even a young person who distributes reports: If he or she understands how sending one to the wrong department affects users, the problem is less likely to occur again.

Jumeja: Education of users depends on a company's procedures. I have three applications managers, with a few systems analysts and programmers under each. I estimate that the managers spend 30 percent to 40 percent of their time with users—largely with managers of user departments.

Computer-literate users can help with conversions. I got users involved with our plans for the next two years. I sat down, planned with them, and told them I'd deliver. The users replied by getting me the budget. As a result, I got

a 20 percent budget increase.

Reside: Educated, active users are good allies in the conversion process. You may have some battles with active users, but if they're willing to invest the resources, you'll come up with better results. You'll avoid the infighting that's associated with conversion failures.

Barrett: If your users are involved, it makes a difference. For instance, if some programmer is working at a terminal and the power goes down, he or she may lose a lot of work. Users ordinarily don't understand such a mishap, but if they are educated, they may.

Jumeja: In my case, users couldn't have contributed much toward making a financial or strategic decision on a hardware conversion. But you can't improve departmental efficiency without strong user input.

Rade: A conversion should be driven by users. Let's say your company requires 72 hours to dispatch products to customers, and your competitor does it in 24 hours. Your users have a strong interest in improving the company's performance, so a team of users can be put together quickly when needed. But if technology changes force a conversion—your hardware vendor goes out of business or your software vendor withdraws support—then the conversion should be as transparent to users as possible. Many MIS/dp departments I've worked with have gone wrong by mixing the business and tech-



Raymond F. Barrett, PepsiCo Inc. (foreground), John Rade, and Satish Jumeja.

nological objectives.

If users influence the success of conversion, management has an even greater impact on the process, starting with the essential step of approving expenditures. What's the best way for MIS/dp managers to sell their proposals to top executives?

Jumeja: First, draw up a departmental plan for the benefit of your superiors. Then solicit the aid of user-department managers, determining if they're willing to contribute to development costs. Finally, go back to the superiors holding the purse strings to prepare a budget. Developing the budget for our conversion took about three months.

Reside: Don't wait to develop working relationships with user managers until you have a conversion to sell. Share your problems with them and listen to the problems they deal with. Go to lunch with them. MIS/dp managers must become team players.

Jumeja: Influencing others is a many-faceted activity. I spend 10 percent of my time educating superiors and 40 percent educating users.

Reside: Selective education is the correct approach. Just as you needn't know everything that goes on in user departments, management needn't be familiar with all the technical details of MIS/dp and conversions. We've set up an informal procedure for officers of the company: We sit down with them and discuss common problems. Some

of the dialogue is productive, and some I'm not so sure about. But I'm convinced that we must take the time to understand the problems others have.

Education of management paves the way for justifying conversion projects throughout an organization. Mustering users is critical, too.

Rade: Although you must have a primary objective in a conversion, perhaps to satisfy a need forced on you, you can always set secondary objectives that improve the bottom line. For example, one objective would be to

chip away at the iceberg of maintenance. Two-thirds of the software effort today is devoted to maintenance because systems are so old and poorly designed. With a conversion, you can work at cleaning up and eliminating spaghetti code, better structuring programs, and redocumenting programs.

Anderson: Satish Jumeja obviously made a good business decision to change vendors, as opposed to just moving to the latest operating-system release because a sales representative pushed him. A business motivation is

PARTICIPANTS

Moderator: David Whieldon, senior editor, *Computer Decisions*.

Bruce K. Anderson, director of information systems, Uniroyal, Middlebury, CT.

Raymond F. Barrett, systems analyst, PepsiCo Inc., Purchase, NY.

Satish Jumeja, vice president of MIS, Twin County Grocers, Edison, NJ.

John A. Rade, vice president, eastern region, Cap Gemini DASD, New York.

Kenneth Reside, vice president of management-information systems, Savin Corp., Stamford, CT.

Howard D. Rothman, president, Omicron, The Center for Systems Humanics, Morris Plains, NJ.

James B. Webber, executive vice president, Omicron.

Computer Decisions thanks Omicron, The Center for Systems Humanics, for helping to organize this roundtable discussion. Omicron, which focuses on human problems created by technological advancement, sponsors discussions on a variety of issues and conducts surveys of member organizations. For information, contact the organization at 202 Johnson Rd., Morris Plains, NJ 07950, (201) 267-0024.

CONVERSIONS

something a senior executive can understand. The executive might say, "My counterpart in another corporation gets the kind of information you can't provide. To get that information—plus some enhancements—I'll spend the money."

Reside: The primary reason we migrated from Honeywell to IBM at my previous employer was that we couldn't buy software that permitted us to respond fast enough to changing business conditions. In many cases, we needed to obtain a software product, install it, and offer a function within 90 days.

Rade: I talk to executives in major corporations, and most of their companies

are in continuous transition. Sophisticated MIS/dp managers build change into their programs. They conduct software-improvement programs or conversions. That's where the big dollars are being spent today.

Reside: I've spent the last two years at Savin trying to figure out how to make a major conversion in incremental steps. I moved from General Electric, one of the most profitable businesses in the world, to Savin, which was then struggling to stay out of bankruptcy. Savin had a collection of systems designed 10 or 15 years ago when revenue doubled every six months or so and nobody worried about cost con-

trols. When the cash-flow crunch came, the company couldn't afford to develop efficient, responsive systems.

Webber: How many systems needed upgrading at Savin?

Reside: About 90 percent of them.

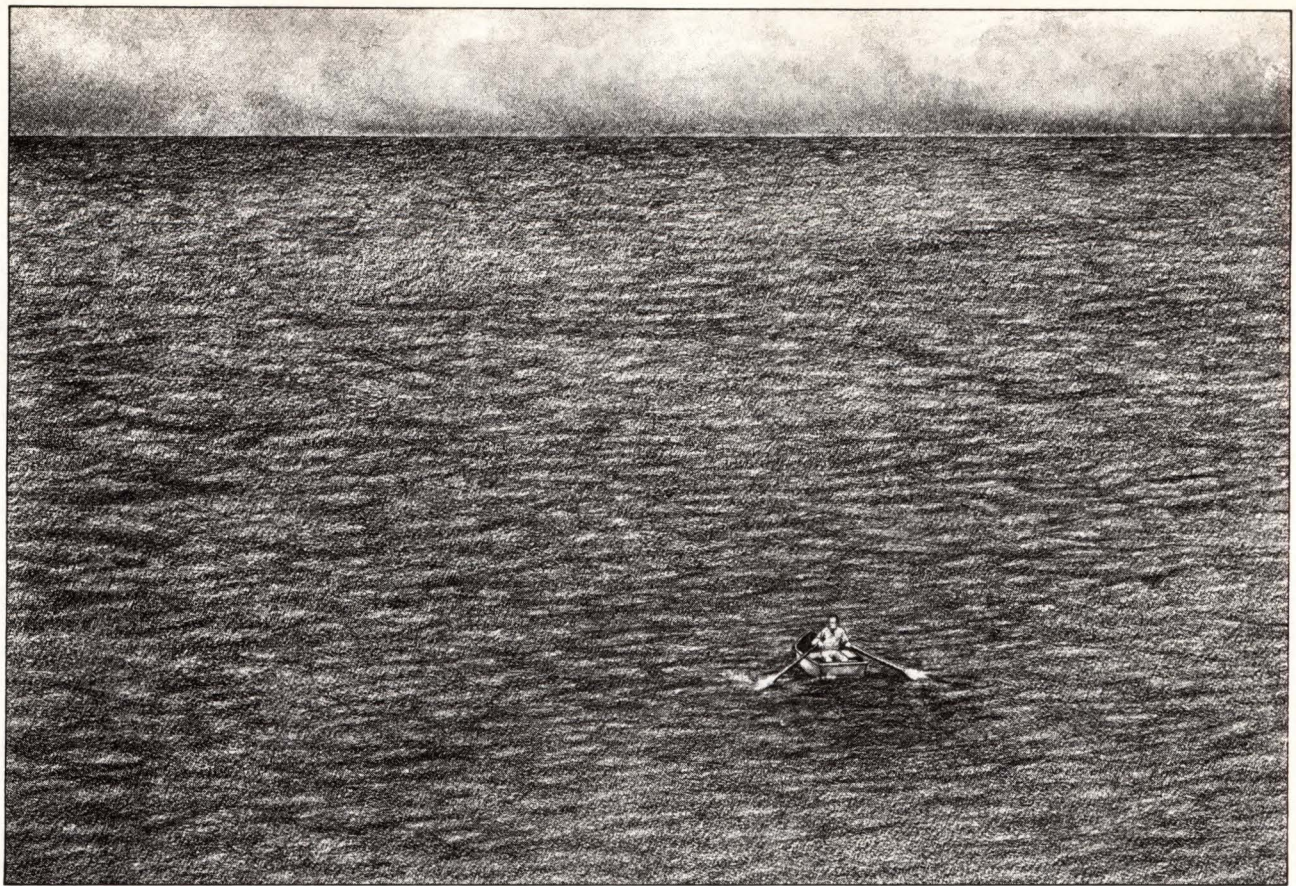
Webber: How did the corporation decide which ones to convert first?

Reside: By looking at where the biggest business improvements would come from. The MIS/dp department is made up of 100 or so employees; the rest of the organization has several thousand. So we tried to improve the organization's efficiency.

Rothman: Should MIS managers find operations that need improving—and

CONVERSION PACKAGES AND AIDS

Vendor	Package	Price	Circle
David R. Black & Assoc. (412) 787-5100	IBM Cobol to minis or superminis	\$7,500	433
California Software Products (714) 973-0440	IBM S/34 RPG II to IBM PC Interactive RPG II (IBM S/34 RPG II) to Honeywell Level 6	\$3,500 \$6,875 to \$12,500	434
Cap Gemini DASD (414) 355-3405	IBM DOS ALC to OS ALC Cobol to Cobol Cobol ISAM to Cobol VSAM Cobol to Cobol with VSAM DEC Dibil-II to ANSI Cobol Fortran to Fortran JCL to JCL Infonet GPS to IBM TSO NCR Neat/3 to ANSI Cobol RPG or RPG II to Cobol IBM S/3 RPG II CCP to CICS/VS Cobol Honeywell MAP/BAP to IBM ANSI Cobol Burroughs Algol to ANSI Fortran-77 Datafile (file translator) DUDT online DASDCMP (file utility) Cobol language formatter Fortran language formatter	\$11,500 \$5,800 to \$22,500 \$5,800 \$8,700 to \$25,400 \$12,500 \$19,800 \$4,400 \$7,200 \$17,400 \$19,800 \$24,800 \$14,800 \$79,800 \$9,800 \$39,800 to \$99,800 \$2,000 \$5,800 \$5,800	435
Comp Act Data Syst. (818) 992-4361	Cams (DOS to MVS)	\$35,000 and up	436
Computer Assoc. Int'l. (516) 333-6700	CA-Converter (DOS to OS)	\$16,900 to \$49,900	437
Conversions (919) 848-9801	Transit (Sperry, Burroughs, or Honeywell Cobol to IBM)	\$40,000 to \$60,000	438
C-S Computer Syst. (201) 526-9000	C-S-Tran (IBM object machine language) to Cobol	\$55,000	439
Dataware (716) 876-8722	Cobol to Cobol RPG or RPG II to Cobol RPG or RPG II to PL/1 Fortran to Fortran PL/1 to Cobol IBM Assembler to Cobol Autocoder/SPS to Cobol EasyCoder/Easytran to Cobol Fileconvert Filecomp	\$5,400 to \$10,800 \$19,400 \$20,600 \$17,600 \$20,600 \$20,600 \$20,600 \$20,600 \$20,600 \$10,000 \$1,200 to \$5,400	440



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CONVERSIONS

then point them out to management? Rade: Yes, that's the "proactive" approach, as distinguished from the reactive approach. But it's hard to generalize about what MIS/dp managers do. It depends on the business: Some companies spend half of one percent of their revenues on dp, while others, like banks, may spend up to 30 percent.

Jumeja: The nature of my company's business forced us into our hardware conversion. Our customers, who are food retailers, wanted support at the point of sale to be competitive. We had to choose between staying with our old hardware and developing our own support package or going to new hardware and picking from among three packages already on the market. One justification of the latter was that we could install and run in a very short time.

Conversion tools ought to be a blessing to organizations in the conversion

process. However, finding and evaluating them may not be so simple. Panelists discussed their experiences with homebrewed and vendor-supplied software.

Jumeja: Hardware vendors market conversion software. IBM, for example, can supply DOS-to-OS packages. But it's hard to make a selection if you go beyond the hardware vendors. You must do an analysis, say, of two different packages, and that's a chore in itself. It's sometimes easier and quicker to write your own translator—and your product may accomplish more than a package designed by someone else. If you don't have the time, you're better off buying a package; if you're willing to invest some time, you can modify a vendor's package.

Anderson: Why would you modify a conversion package?

Rade: Sometimes a conversion tool, say, a translator, may not do as much

as required. Our technicians might say to a customer, "The translator won't do just what you want. But if we use a certain post-processor behind it, you will get precisely what you want with very little effort." Otherwise, the client might be angry that the tool does only 80 percent or 90 percent of what's desired. It's a matter of matching the expectation level of the client with the capability of the tool.

Jumeja: Each conversion is unique. So it takes time and money on both sides to make a match.

Webber (to Rade): John, do Cap Gemini DASD clients ask you to benchmark your conversion products?

Rade: On any major conversion, we propose some sort of benchmarking. Though everyone in the conversion business has developed models for estimation, we like to run a representative sample of programs through software

CONVERSION PACKAGES AND AIDS

Vendor	Package	Price	Circle
The King's Co. (618) 234-6569	King/Tran (NCR Neat/3, Levels 1 and 2)	\$4,250	441
Lexeme (412) 281-5454	PL/1, Basic, Fortran, Cobol, and Bliss to C and Ada	2 cents to \$1 per line	442
Lincoln Land Software Syst. (217) 522-1747	DOS to OS assembler Simulator Operating System (1401 simulates program under OS/MVS or OS)	\$5,800 \$7,000	443
MHT Svcs. (201) 342-1321	MHTran-1 (DOS to MVS BAL) DOS to MVS conversion service	\$2,400 to \$9,900 Depends on job	444
Rand Information Syst. (415) 769-9000	Transit (Cobol-68 or -74 from Burroughs, Sperry, or Honeywell to IBM) ExitDOS (IBM DOS systems to IBM native-mode MVS) Conversion service Conversion-support tools	\$50,000; 75,000 with database module \$50,000 20 cents to \$1 per line \$200 to \$300 per month	445
SDI (415) 572-1200	Instant-FBA (disk simulation for IBM Series 370, 4300, and 3000) VM Magic (disk simulation for any device)	\$11,700 \$22,500	446
Softool (805) 964-0560	VAX-11 Fortran to Data General Fortran-77, HP-UX Fortran/9000, Apollo Fortran, Gould Fortran-77+, and Ustation Fortran; IBM Fortran IV to HP-UX Fortran/9000; Data General Fortran-5 to Fortran-77	\$4,000 to \$6,000	447
Software Dynamics (713) 552-1737	Changer II (IBM DOS to OS)	\$59,000	448
Sterling Software Mktg. (916) 635-5535	Comparex (data/text file-comparison utility for IBM mainframes)	\$5,000 (DOS) \$8,750 (OS) \$5,000 (VM/CMS)	449
Triangle Software (408) 554-8121	JCLcheck (validates JCL to eliminate errors)	\$15,500 plus \$1,750 for XA option	450
UCCEL (214) 353-7314	UCC-2 (DOS programs run without conversion under OS on IBM mainframes)	\$42,000	451

CONVERSIONS

aids. We determine what the level of automatic translation should be, which modifications can be made to the translator, and how translator productivity can be improved. We then feed into the model those parameters that represent the net manual input.

Rothman: Does that mean that you modify your software?

Rade: Sure, and so do most other conversion-software suppliers.

Jumeja: A customer may choose from parameters already built into the software or modify existing software with the agreement of the vendor.

Webber: Do conversion tools eliminate repetitious chores for staff personnel?

Rade: Various tasks are repetitious and unimaginative, and they're obvious candidates for tools. You can't just fill up a room with programmers and expect a complete conversion after so much time passes. Even if 80 percent to 95 percent of the task can be automated, that's the smallest and least dangerous part of the whole transition—the part handled by the tools. The real risk lies in the interrelationships of systems. You have to avoid re-converting several times.

In a conversion from one high-level language to another, a translator may do nine-tenths of the absolute conversion. But 30 percent to 40 percent of all the effort may be applied to testing. A comparison tool or file-extract tool that provides good test data can save a lot of time. Here's an example: A massive production file can take 13 or 14 hours to run. And that may be only one of 30 to 40 such runs needed for each program or system. If it's reduced to a small, high-coverage test file, it requires only few seconds or minutes.

Barrett: A continuing problem at Pepsico is converting from one software release to another and making the same changes on the new release that we made on the previous one. We need a tool that compares code. So we've used an option on Comparex from Sterling Software Marketing, which allows us to compare Cobol text.

It tells us the differences between one line or set of text and another. This option has been useful to us because we avoid reinventing the wheel. Nonetheless, the conversion routines supplied to us were flawed. That's why we perform maintenance upgrades.

With our payroll system, we have to compare master files on certain fields and records. You don't want W-2 Form information to be thrown out of whack, for instance. You must be sure that files are exact. With a tool like Comparex, you can say, "The data going into the master files are identical, so the differences must be in the software." I don't even know how employees could check such items. The master files on our McCormack & Dodge payroll system are in compressed form known only to the vendor. If you do a dump of them, they come out unreadable. So you need tools. Another complicating factor is the magnitude of the files. I just recently looked up the employee master file for payroll in 1979. It contained 250 bytes, compared to 2,280 bytes in the one we use now.

Rade: The more you can use an automated resource, the greater the chance that conversion results will be reliable. Like a development project, a functional conversion has a beginning and an end. By definition, the end is demonstrated by parallel results and 100 percent equivalence, as shown by a 100 percent file comparison.

Rade: Once in a while, when a conversion has produced functional equivalence for a client, the client says, "But that's wrong!" And we reply, "That's what the system produces—and has produced for 10 years." A bug persisted for all that time, and our translator delivered just what it was supposed to.

However valuable the conversion aids may prove to be when used appropriately, an MIS/dp manager must first find the tools that dovetail with his or her hardware and software. That's not always as easy as it appears.

Barrett: Project teams in our company give presentations to other groups in

MIS/dp, sharing their experiences.

Anderson: You can go to conferences and exchanges. You can read about packages. You can go to conversion software vendors, get customer lists, and then talk to their customers.

Jumeja: A hardware vendor doesn't usually talk about other vendors. Its representatives tell you about their products, which are not necessarily the best.

Rade: Most hardware vendors say, "Conversion is no problem. You can do it over a weekend."

Anderson: I've yet to see it done in a weekend. The amount of support you get is directly related to how much money you put in the vendors' pockets. If you're a big customer putting in even a small machine, you get a lot of support. If you're moving from a competitor's machine, you get a lot. But if you're a small customer buying a small machine, you get lip service.

Rade: Most hardware vendors don't say, "If you buy this, you're entitled to that." To a great extent, support depends on how aggressive the vendor's marketing representative is.

Webber: And how good the MIS/dp director is who's negotiating the deal.

Anderson: Definitely. Getting attention depends on the rank of your contact in the vendor organization.

Jumeja: I take the vendor's branch manager out to lunch once a month, so I have a direct line to him. Conversion planning should include surveying vendors and setting up benchmarks to find out which product performs best.

Good planning must be in the vanguard of successful conversion. Participants passed on valuable tips to managers confronting conversions.

Jumeja: You can't just say, "Now I'm ready to plan." Planning is one of the ongoing tasks of MIS/dp. You must continuously monitor system performance to determine future needs.

Rothman: Do you mean that as soon as a new system comes online, you start to think about conversions?

Jumeja: You should consider future requirements for up to five years ahead, depending on how well you can project.

Anderson: First off, in a conversion, you must find a conversion tool. Then you should lay out a Pert [program

During conversion, systems, operations, and users go through an evolution.

evaluation and review technique] chart. As for numbers, for a major system like payroll, you should look at about two hours per Cobol program if you're doing a straight conversion from one level of Cobol to another or from one operating system to another. As for the job-control language that goes with it—say, DOS to OS or DOS to MVS—it's about one hour per program. A small subsystem within payroll requires about 10 hours altogether.

At last you ask, "How much computer resource do I need?" We have no precise figures, and estimates always vary. But we query the more senior staffers who have been through more elaborate conversions.

Webber: It seems as if a major conversion is more difficult than installing a new system.

Anderson: You can always find someone who's just put in a new system that's similar to yours. But you won't find anyone who has an antiquated payroll system, written the way your personnel wrote it back in the 1960s.

Rade: That's a critical point. Because most MIS/dp departments do new development on an ongoing basis, they have a pool of knowledge and experience. At a certain level, though, conversions occur typically once in a lifetime. Let's say you take part in a conversion as a programmer or team leader. By the time you rise to the management level, you have no experience in making a conversion decision or creating a conversion plan.

Jumeja: Determining how many extra cycles will be required by your processor depends on many factors, such as how well designed your system is. Others are the time of day you process and the portion of the system processing at a given moment. You may wish to do the jobs that take the most cycles during off-peak hours.

Rade: Cap Gemini DASD has converted millions of lines of code for hundreds of clients. Moreover, we've developed techniques to facilitate planning. Still, we deal in averages for planning.

Most conversions fail because of poor management, not poor technology. The MIS/dp personnel don't generally understand everything that's going on: They focus on translation or source-

Education of management paves the way for conversion projects.

code conversion and neglect file conversion or data collection.

Barrett: You can minimize the risks, and one way is to get a commitment from the data center. At the end of 1983, our two IBM 3033s were truly choking. We had to wait several hours for jobs to be completed and plead for time because we had no special priority. But eventually we got our own operating-system initiator to speed up movement of job queues. Now we get priority access to the computers.

Another product we used to advantage, though it's not really a conversion aid, is called VMSchedule from VM Software Inc. [Vienna, VA]. It runs under VM and allows you to schedule jobs for execution from your CMS disk any time of the day or night. We used it because we were doing repeated conversions that required long hours of processor time. So if jobs clog the machine during the day, why not run conversions at 11 p.m.?

Planning naturally brings managers to perhaps the most important resource of all: people. Some panelists indicated that staff members ordinarily don't care for conversions, but they suggested steps to win over subordinates.

Reside: You may be faced with a morale problem when you must maintain a system while implementing a new one. That would be the case in a shop with unique software. Your staff starts to ask questions: "Where are we in all this? What's going to happen to us?"

Rade: Rotating pros is a good idea. You can set up kernel staffs and move employees in and out. Or you can use a mixed team, especially when you're switching hardware vendors. Mix specialists with experience with staffers who have only general training.

Barrett: It also helps if the conversion has an attractive feature in it. We're making conversions in our general-ledger system. Now it's a batch system, but

the plan is to go online, so we have something to look forward to.

Reside: You can set up challenges and negotiate special arrangements to provide incentives to staffers. Or there may be bonuses or rewards of some kind at the end of the project.

Rade: Employees should understand the game plan and their roles in it. In so many words, you're saying, "You're doing this today, but we're positioning you to do something else tomorrow."

Reside: They must get some training in the new system and believe you're preparing them to assume new roles when the old ones disappear.

Rothman: Isn't it true that there's generally less resistance to conversion on the part of professionals?

Rade: Certainly—and mainly because of automated tools. The professionals know that the computer and the software are doing the repetitious work. They know that they're getting some experience with databases, online operations, analysis, and planning.

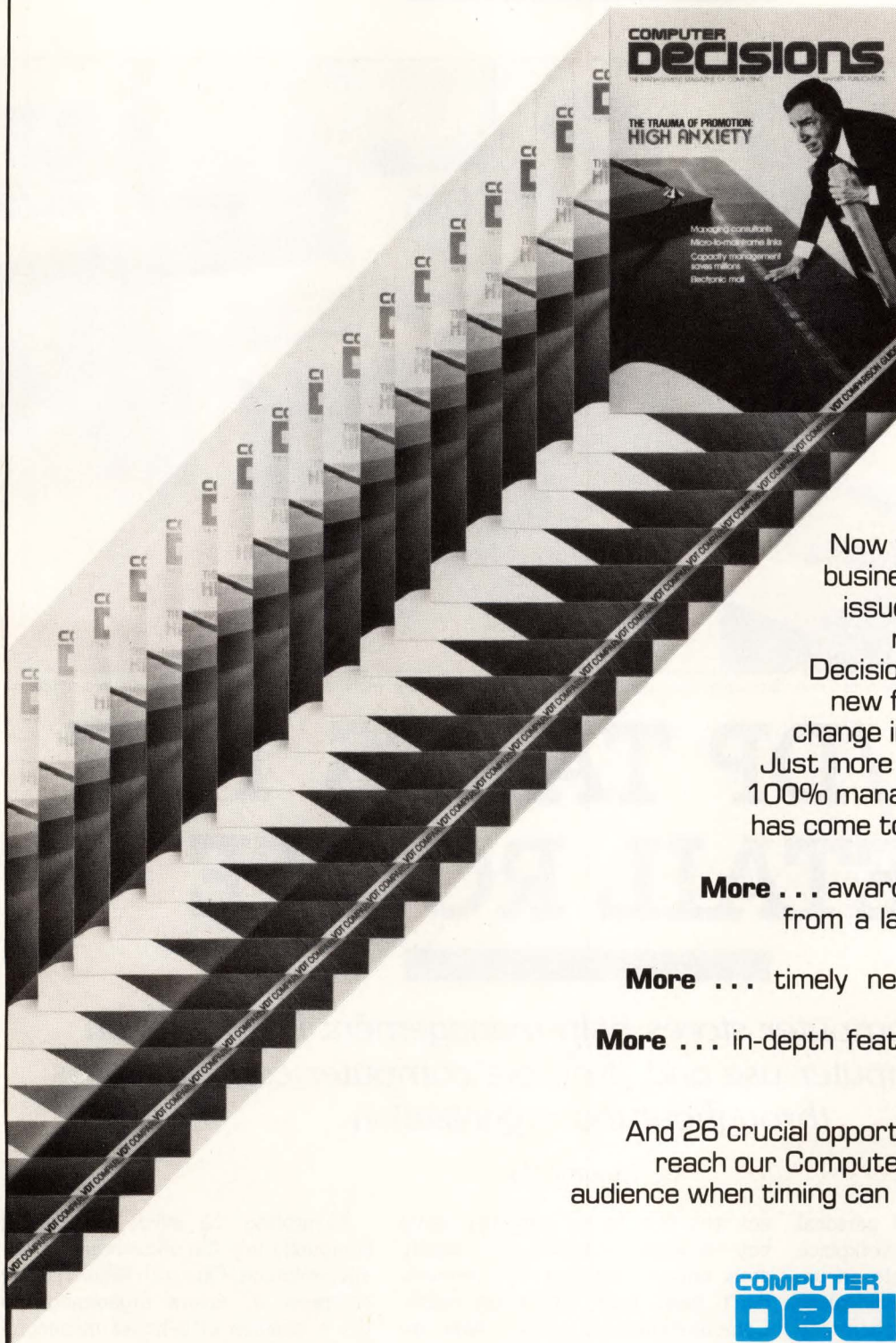
If the seeds of success are embedded in the conversion process, then many hands must nurture them. The roundtable panelists wound up with a few pointers on grand strategy.

Jumeja: Get a commitment from top management. Create a sound plan that includes procedures and controls. Establish a team to manage the conversion. We obtained a major commitment from our top management to suspend major development for two years.

Jumeja: You are dependent on long-tenure managers and executives. The biggest failures I've heard of were caused by turnover in upper management.

Rade: The most successful conversion strategies avoid the big-bang solution. Users like to see progress in increments. They say, "Give us initial operating capability in six months and then a little more in another three to six months, and so on." That's better than waiting two years for the whole package. Look at the data flows and interrelationships so you can come up with a set of modules that can be moved. Make sure that full capability goes with each system cut over. That way users don't have to freeze development for any longer than necessary. □

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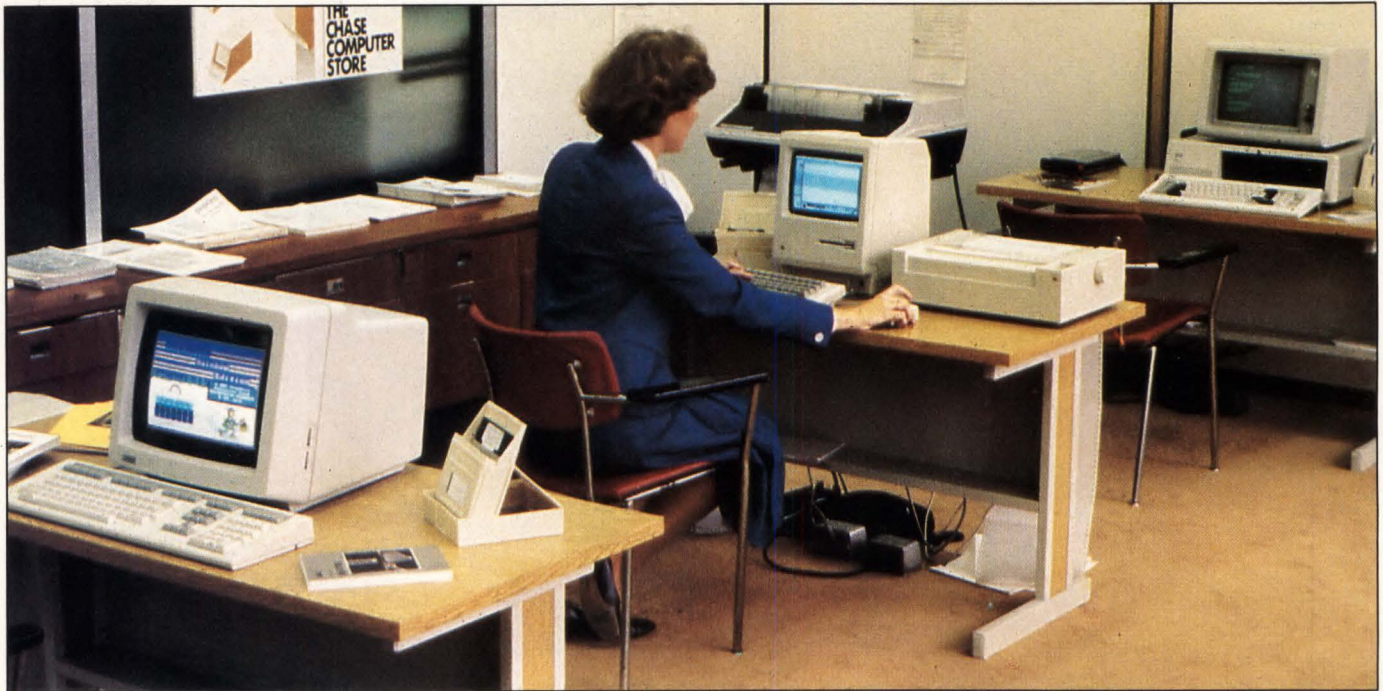
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In-house computer centers like the ones at Chase Manhattan Bank (left) and American Hoechst Corp. (right) provide personalized, hassle-free service to

MIS/DP TAKES THE RETAIL ROUTE

In-house computer stores help management keep tabs on personal-computer use and promote computer consciousness throughout the organization.

by Timothy Bay

The steady march of personal computers into the workplace often degenerates into an uncontrollable stampede. Well-laid plans of MIS/dp to instill computing harmony within an organization are thrown into chaos by departmental managers who purchase micros that are incompatible with the corporate standard. Employ-

ees with little or no computer savvy buy expensive software and peripherals only to discover the products don't meet their computing needs. Computer-innocent workers who are lucky enough to fall into the right combination of hardware and software can't get their machines to do what needs to be done.

Controlling the influx of personal computers into the office requires creative solutions. One such solution being embraced by several organizations is the installation of in-house microcomputer centers. Such centers serve as surrogate retail stores for corporate employees. Employees purchase personal-computer equipment through the

MARKETING MICROS

Photo by Dario Perla



employees in the market for an office micro, while ensuring that uses are in line with corporate goals.

centers, billing purchases to their departments.

The personal-computer center offers much more than one-stop shopping convenience for an employee in the market for an office micro. Novices can rely on the in-house center's resident experts to configure the right personal-computer system and to provide ongoing training and product support. Departments can reduce the costs of their computer purchases because in-house stores offer better prices than outside vendors. Most importantly, an in-house center provides management with a medium for coordinating the flow of micros into the office so that compatibility rather than chaos reigns.

"We view our store as a nice way to help initiate the uninitiated to the computer while promoting certain equipment in a friendly and nondictatorial way," says Ricci Anderson, vice president of technical strategies at Chase Manhattan Bank in New York City. Chase Manhattan has had an in-house micro store since January 1983.

Because standardization is such an

important goal for organizations, in-house stores invariably are placed in the hands of the department that best understands the organization's overall use of computers—the MIS/dp department. MIS/dp can use in-house stores to coordinate and help direct the use of micros in the office.

Thus, in-house stores often are attached to other MIS/dp-run facilities. The in-house computer store at American Hoechst Corp., the large chemical and pharmaceutical producer based in Somerville, NJ, is an extension of the corporation's information center. The store contains about a half dozen micro-equipped workstations and is run by a seven-member staff drawn from the MIS/dp department.

The American Hoechst computer store offers a variety of personal computers, including models from IBM, Hewlett-Packard Co. (Palo Alto, CA), Apple Computer Inc. (Cupertino, CA), and Compaq Computer Corp. (Houston). All offerings in the store have one thing in common—they can communicate with the corporate main-

frames. "The main criterion for a piece of equipment is its ability to communicate with the rest of the network," says Stephen F. Pook, divisional vice president of corporate information systems. "The point is to provide incentives for end users—make them feel that you want to help rather than control them." At American Hoechst, these incentives include a program that allows users to take equipment out of the center and bring it to their offices to solve a problem. "We let users try the micro out to see if they really need it," Pook says. "They then have the option to buy the equipment." Pook adds that almost 80 percent of those who borrow hardware end up buying it for their offices. Another incentive offered by the American Hoechst store is substantial discounts on purchases. The store will also soon offer the services of an in-house maintenance group.

Perhaps the most important incentive the American Hoechst store offers is free seminars at which employees learn to use specific micros and packages. Education is a major benefit of-

MARKETING MICROS

ferred by micro stores like the one at American Hoechst. The centers help demystify the micro for first-time users. Many centers offer a hot-line service to deal with immediate emergencies, and most feature a library, where users can keep abreast of computer technology. In many ways, micro centers carry on the work of the corporate information center.

Travelers Corp., the big Hartford, CT-based insurance carrier, is also using an in-house micro store to establish a beachhead for the office micro. Travelers has had its micro center since May 1982; it, too, grew out of the corporate information center.

The goal of the Travelers center is not specifically to promote micros to employees, but to provide the best possible dp functions for end users, says Johnston. "We don't say that if you come into the store, you'll leave with a personal computer and software," she explains, "but rather that through the store, you'll learn how to put together the best solution for your computer needs. The solution could be something you discover while working with the equipment at the store, but then again, it might be something else."

Originally, the store was set up to cater to end users outside the dp department. But many of the store's "customers" are dp professionals, Johnston

says. "Having dp professionals around is a big benefit to us. 'We can direct inexperienced users to more experienced ones who can offer help.'"

Johnston says the cooperation between dp pros and inexperienced users sometimes yields amazing results. "We have seen a lot of people without any experience really getting involved in computers," she says. "For example, we have seen nontechnical employees develop their own software, which in turn has been adopted elsewhere in the company. We have also seen an information network grow among end users; they have learned from each other and exchanged new ideas and applications." The Travelers micro center holds end-user classes twice a day for one week every month. The classes are structured so that those attending learn the business applications for a particular piece of software, Johnston explains.

Another major advantage offered by in-house computer centers, the simplification and streamlining of purchasing procedures, was key to the federal government's decision to set up its own network of computer stores. The prototype Office Technology Plus (OTP) center, located in the General Services Administration (GSA) building in Washington, has been operating since August 1983.

OTP is an in-house store with a twist. The stores are staffed and operated not by government employees, but by an outside retailer. Math Box Inc., a personal-computer retailer based in Rockville, MD, won the contract to operate OTP outlets, bidding against a half dozen other outfits.

Federal agencies that buy their micro equipment through OTP cut through red tape, according to Barry Petroff, OTP manager and the government's representative for the program. The store also guarantees delivery of equipment within 30 days. "Generally, a commercial buy might take much longer," Petroff explains, "since we are talking in many cases about completely integrated systems that require parts from a variety of sources." OTP can offer the convenience of fast delivery because it has a hefty inventory; the Washington OTP outlet has an estimated \$2 million worth of equipment on hand.

In addition to simplifying and streamlining equipment purchases, OTP provides support to users each step of the way. First, OTP provides an educational center for inexperienced users. OTP conducts seminars to introduce new users to applications like word processing, spreadsheets, electronic mail, and database management. Second, OTP gives inexperienced users assistance in selecting the appropriate system and getting it set up. Finally, OTP offers support after purchase.

A federal employee who comes to OTP looking for a personal computer gets a lot of attention. "We try to find out the employee's specific needs," explains Robert Guerra, senior vice president of government operations at Math Box. "Sometimes, we'll go out to the employee's workstation to make an evaluation. We might suggest two or three possible configurations and discuss each option in terms of features, drawbacks, advantages, price, and so on, so that the employee is well acquainted with the choices."

OTP is not the only shop in town for federal employees. Government regulations require federal employees to evaluate the marketplace before making an acquisition. Because of competition, OTP offers a wealth of what

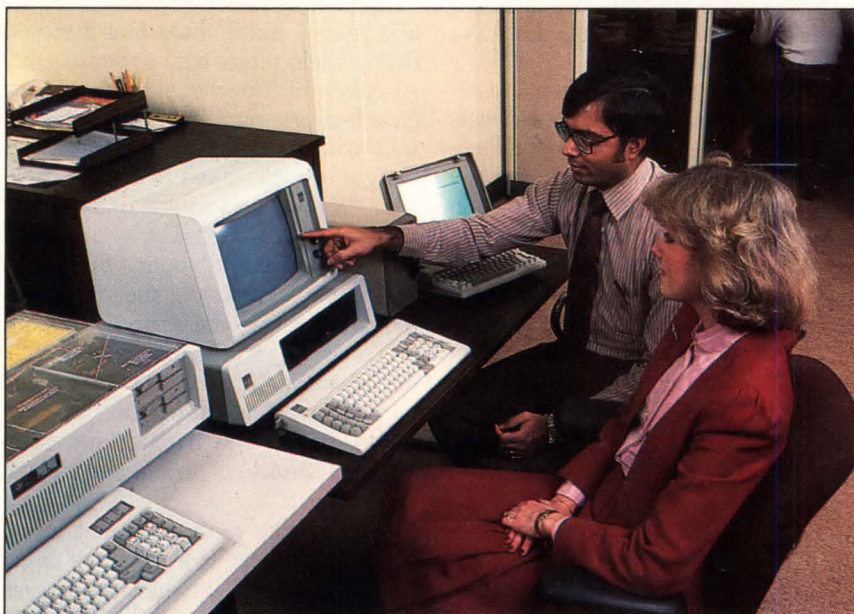


Photo by Dario Perla

At the American Hoechst in-house computer center, assistance offered by the store's technical staff helps nontechnical employees sort out their microcomputer options.

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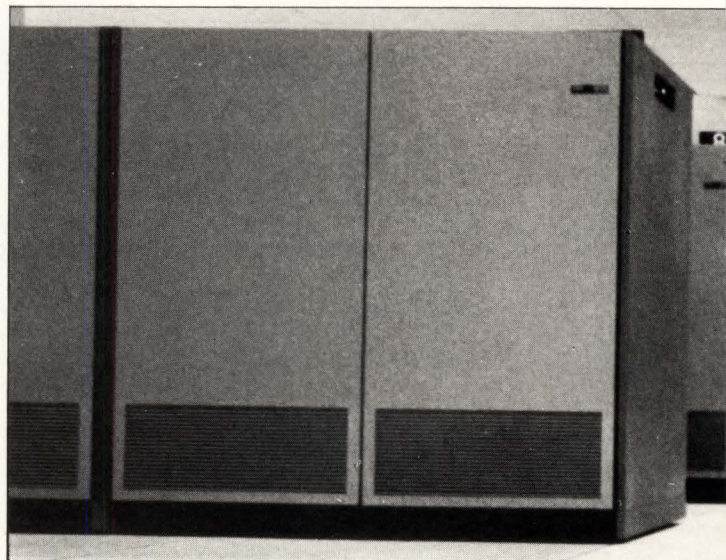
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Petroff calls "value-added factors" to attract business.

One value-added factor that OTP offers is a single warranty that covers all components an employee purchases, regardless of manufacturer. As Petroff explains, a system that includes equipment from a number of manufacturers

may not work as anticipated, but the user may not know what is specifically wrong or where to turn for repairs. "OTP warranties the total system so that if a user has problems, he or she doesn't have to worry about finding the source of the problem."

Discounts are another major incen-

tive offered by OTP. According to Petroff, the store offers a minimum discount of 16 percent off list price for micros and 23 percent off for software. OTP also offers training seminars conducted by outside services at reduced rates. "Outside trainers who sign contracts with OTP agree to offer a 50 percent discount from their usual commercial rate," says Petroff. The center also provides free introductory seminars to help employees become familiar with their equipment and its applications.

OTP demonstrates and sells a much broader range of products than the average retail outlet. "A typical computer store may have three or four major brand manufacturers, but OTP offers about a dozen," Petroff says. The store also sells more than 400 software packages, as well as a wide variety of modems, printers, peripherals, and other equipment.

Although OTP was originally set up to educate inexperienced end users, Petroff points out that many dp professionals come to the center with questions for the resident experts or to see the latest in microcomputer hardware. In-house computer centers provide end users with an inside track on what is newest and best in the technology. Joan Johnston of Travelers says that much of her staff's time is spent evaluating the latest personal-computer models and configurations, along with the latest entries in the business-software sweepstakes.

At present, there are fewer than a dozen of these in-house micro centers nationwide, but their success has not gone unrecognized. Joan Johnston of Travelers reports that she often receives calls from managers who are interested in setting up their own stores. For now, the most likely candidates for in-house stores are banks, insurance carriers, and similar organizations that generate flood tides of paperwork. But many industry observers feel that all types of major corporations may soon begin developing in-house computer centers to harness the power of the microcomputer in the office. □

Timothy Bay is a free-lance writer based in New York City.

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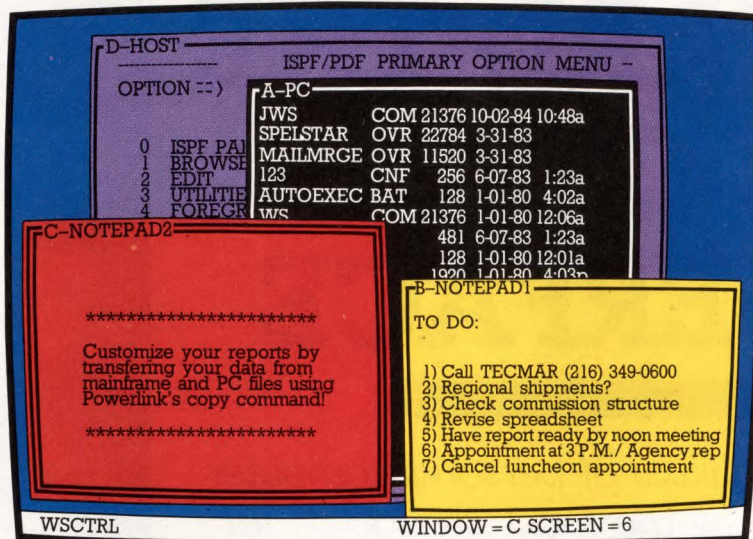
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CIRCLE 51

TOWARD THE PERFECT INTERFACE

Which of the galaxy of personal-computer interfaces will be the most productive for personal-computer users?

by Karen Gullo

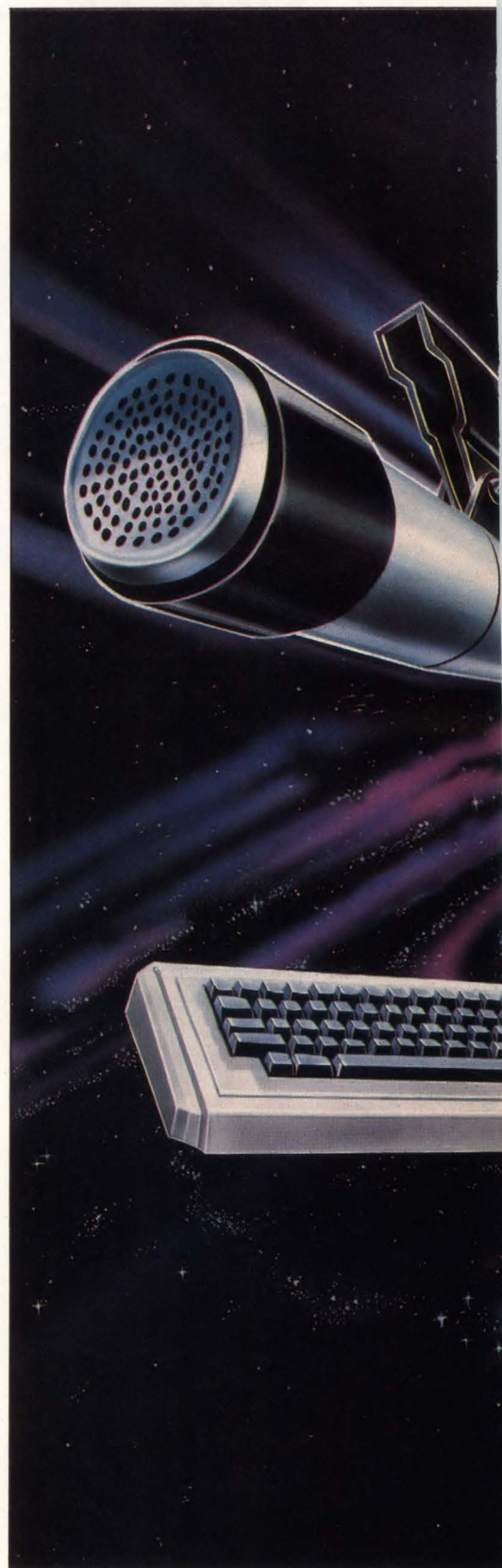
It's the year 2000. Professionals at a large corporation use spreadsheet, word-processing, and database programs without lifting a finger. The workers have a direct brain-to-computer link that allows them to execute commands by thinking.

Direct personal-computer-to brain interfacing is at least a couple of decades away, but many of today's alternative data-entry devices—such as the mouse, touch screen, light pen, and data tablet—are steps in the right direction. For many users, the keyboard just isn't convenient enough. Nevertheless, even though there's no shortage of alternative data-input devices for personal computers, the keyboard remains the most widely used way of inputting commands and data. No other single method is as familiar to as many users as the keyboard.

This is not to say that alternative

data-entry devices aren't useful tools. However, the alternatives seem to have a credibility problem. MIS/dp managers consider some to be gimmicks not apt to last long. "It's great to have a cute little device," says one manager in San Francisco. "But what can you really do with it? Will it make your job easier?" Managers who have watched the popular television program *Dallas* may have seen J.R. Ewing talk to his computer, which is equipped with speech recognition, but how many have installed similar systems for users? "Serious customers will soon tire of what they think are toys for the computer. A device must increase productivity to be accepted," says Roy Pursley, a speech-recognition-marketing specialist at Texas Instruments.

Nevertheless, alternatives to the keyboard are attractive for many applications. And they're catching on. Two





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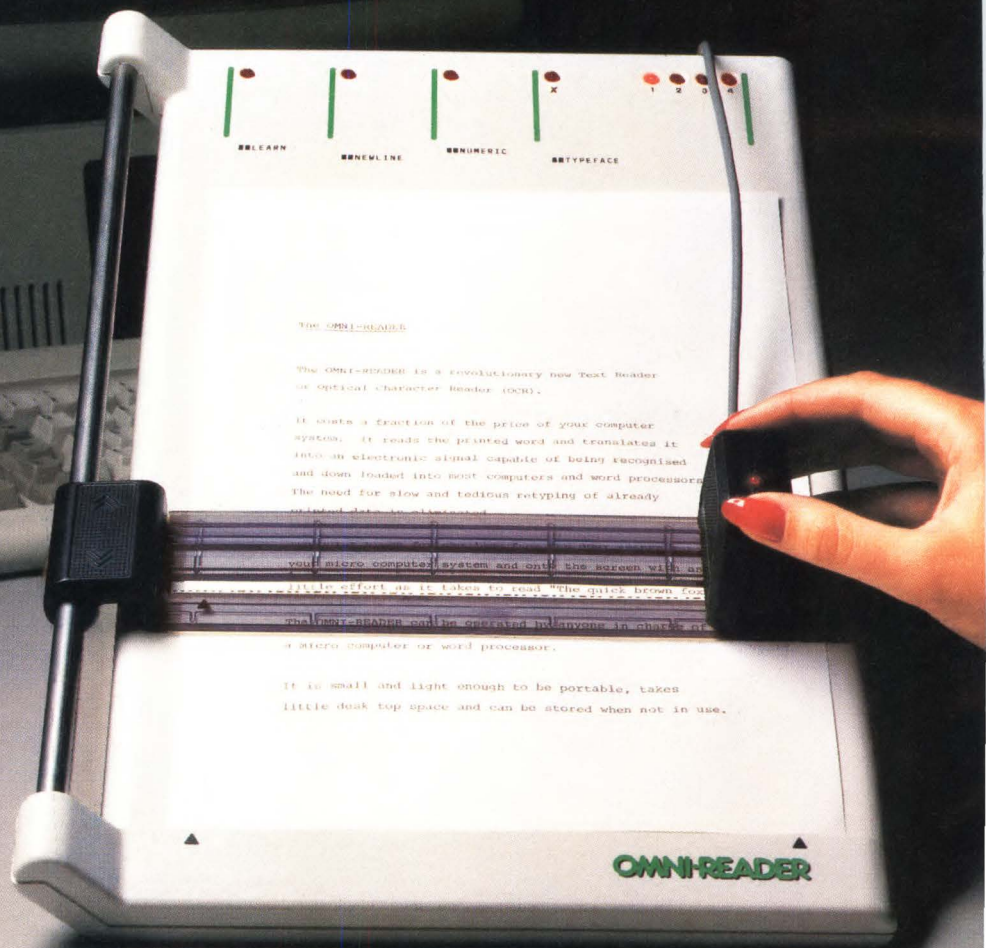
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BOOSTING MICROS

important factors are driving the demand for the alternatives: As many as half the users of personal computers are uncomfortable with the keyboard; and there's been a gradual shift from data entry at remote locations to data entry at the site where data are generated. Keyboards are not practical or fast enough for use on shop floors or at the cash register. Speech recognition is used in laboratories, factories, and design rooms. Optical-character readers (OCRs) have found a place in manufacturing and education, and barcode scanners are widely used by retailers.

Also, keyboards offer no flexibility in

drawing. Touch pads, light pens, digitizers, imaging systems, and the mouse figure most prominently in the production of graphics.

Many of the alternative input devices for micros are inexpensive adaptations of mainframe- or minicomputer-based devices. Large and expensive products that for years have been used with mainframes are being scaled down to interface with personal computers, placing them within reach of more users. OCRs and imaging systems are two examples. Developed almost 20 years ago, large-system OCR units cost between \$20,000 and \$100,000.

Today, Oberon International offers a \$495 unit that interfaces with personal computers made by Apple Computer Inc., Cupertino, CA, IBM, Hewlett-Packard Co., Palo Alto, CA, and other vendors.

Processing with imaging systems formerly required dedicated minicomputer systems. The high cost of these systems made price/productivity arguments weak. But a few manufacturers have since developed systems ranging from \$10,000 to \$15,000.

One of the most popular cursor-control devices is the mouse, introduced with the Star networked work-

KEYBOARD ALTERNATIVES

Barcode Scanners

Vendor	Product	Requirements	Price	Circle
Bar/Code (214) 231-2412	BC-101 barcode translator	Any micro with RS-232C port	\$795	480
	BC-102 barcode reader	Same systems	\$595	
	BC-103 Portable Barcode Data Collection Terminal	Same systems	\$945 and up	
	BC-Fox barcode wand	IBM PC	\$595	
	Microbar	IBM PC and micros under MS-DOS	\$395	
Caere (408) 395-7000	Model 212 Barcode Scanner	IBM PC, PC XT, PC AT	\$789	481
	Model 240 PC Scanner	Same systems	\$745	
	Printbar	Same systems	\$299	
Control Module (203) 745-2433	Model 1120 barcode module	IBM PC, PC XT	\$675	482
Intermec (206) 743-7036	Intermec 9320	Any micro with RS-232C or -422 port	\$625	556
New Wave Syst. (213) 475-8545	Model CYC-IB reader/decoder	Many popular micros	\$650	483
Skan-A-Matic (315) 689-3961	D5 Series	Any micro with RS-232C port	\$1,298	484
TPS Electronics (415) 856-6833	Model PC-300 barcode reader	IBM PC; Apple Macintosh; Wang PC; TI PC; other micros	\$795	485
	Model PC-3000 combination barcode and magnetic-stripe	Same systems	\$995	

Imaging Systems

Vendor	Product	Requirements	Price	Circle
Datacopy (415) 965-7900	Model 900 Integrated Imaging System	IBM PC, PC XT, PC AT with Hercules graphics card	\$11,945	486
	Model 700 Word/Image Processing System	IBM PC, PC XT, PC AT with Hercules graphics card	\$4,000	
Datacube (617) 535-6644	Video Acquisition and Display Board	IBM PC	\$2,995	487
General Parametrics (415) 524-3950	Video Show	IBM PC	\$3,499	488
	Pictur It	IBM PC	\$595	
Imaging Tech. (617) 938-8444	PC-Vision Frame Grabber	IBM PC	\$2,995	489
Koala Tech. (408) 986-8866	Macvision	Apple Macintosh	\$399	490

BOOSTING MICROS

station from Xerox Corp., Stamford, CT. But it didn't gain wide appeal until early 1982, when Apple offered a one-button mouse with its Lisa personal computer. By last year, some 200,000 micros had been equipped with mouse devices, estimates Mouse Systems Corp., a vendor.

Using a mouse in conjunction with, not in place of, the keyboard, a user can dispense with a string of typed commands with the push of a button. By moving the mouse on a table, users position the cursor over commands listed on the screen. A tap on the mouse button executes the command. In word-processing programs, users can more quickly define blocks of text, and add, move, or delete text in one step, with the aid of the mouse.

The acceptance of the mouse can, in part, be attributed to the extensive vendor support the device has received. Micropro International Corp.'s (San Raphael, CA) Wordstar program uses

a mouse, and Topview, IBM's new "windowing" software, is facilitated by a mouse. "As personal computers move toward graphics-based displays, more and more applications will use the mouse," claims Dave Woodruff, product marketing manager at Microsoft Corp., the Bellevue, WA-based software vendor. "It's much easier to point to a box on a screen than it is to type a command."

Several other devices mimic the mouse's pointing style, including graphics tablets, touch pads, and light pens. Penpad, from Pencept Inc. for the IBM Personal Computer, combines some features of a keyboard, mouse, touch pad, and graphics pad in one tool. The device is a pen and pad, and it reads hand-printed alphanumeric text, creates color images, and comes with special templates designed for different applications. By depressing a button on the pen, Penpad acts like a mouse. The device costs \$995. A software toolkit,

which costs extra, allows users to create their own commands. "Penpad requires simple hand-eye coordination," says Leo Shpiz, Pencept's president. "It behaves like an electronic blackboard, with color and English-like commands or icons."

A product with similar features is the Koalapid Touch Tablet, from Koala Technologies. The Koalapid is a video sketchpad that lets the user control computer input by moving a finger or stylus across its touch-sensitive surface. The tablet is compatible with the Apple II family, and the IBM PC.

Two programs from Koala—Speed Key and the Executive Presentation Kit—are designed for business applications. Speed Key combines the touch pad with software and a graphics overlay to substitute for command keys in spreadsheet and word-processing applications. The Executive Presentation Kit is a package for charts and presentation graphics.

KEYBOARD ALTERNATIVES

OCR Equipment

Vendor	Product	Requirements	Price	Circle
Chatsworth Data (818) 341-9200	OMR 1000	IBM PC, PC XT; Apple micros; Commodore 64	\$1,095	491
	2000 Series	Same systems	\$1,675	
Cognex (617) 449-6030	Dataman/Vision System	Micros with RS-232C port; micros with ASCII	\$30,000	492
	Checkpoint	Same with TTL	\$35,000	
Compuscan (201) 575-0500	Alphaword Series 80 Page Reader	Micros with RS-232C port	\$8,995 and up	493
	Alphaword III +	Same systems	\$29,500	
	Alphaword Forms Reader	Same systems	\$39,400	
Oberon Int'l. (214) 257-0097	Omni Reader	Micros with RS-232C port	\$499	494

Touch Tablets and Pads

Vendor	Product	Requirements	Price	Circle
Inforite (415) 571-8766	Hand Written Data Entry Device	Micros with RS-232C port	\$1,950	495
Koala Tech. (408) 986-8866	Koalapid	IBM PC; Apple micros; Commo- dore 64	\$99 to \$150	496
	Speed Key	IBM PC	\$199 with tablet	
Micro Control Syst. (203) 647-0220	Space Tablet with Advance Space Graphics	IBM PC under DOS 2.0 or 2.1 with graphics monitor	\$1,995	497
	Perceptor (electro- mechanical digitizer)	Micros with RS-232C port	\$9,500	
Pencept (617) 893-6390	Penpad Model 320 handwriting text-entry device	IBM PC, PC XT, PC AT	\$1,495 (includes software)	498
Versa Computing (805) 498-1956	Versawriter Drawing System	IBM PC, PC XT	\$299	499

BOOSTING MICROS

Users of spreadsheets and database management systems may find the Keyport 300 a useful tool in bypassing complicated command codes. Made for the IBM PC by Polytel Computer Products, Sunnyvale, CA, the Keyport features 300 programmable keys on an 8½-by-11-inch surface. The keys are labeled with words, pictures, or a combination of both. The Keyport 300 costs \$195. Software for word processing and spreadsheets is \$79 each.

Cursor movement can also be

speeded by touch-screen terminals. The technology seems to have found a home in directory use. In libraries, for instance, visitors can select a category of information from a list of subjects by touching the terminal screen. By continuing to touch the screen, the visitor can call up more pages of information. The technology is also used in shopping centers, exhibit halls, and libraries.

Hewlett-Packard offers a touch screen on its HP 150 personal computer. The touch screen is not

designed to type words or numbers; rather, it is an operations-management tool.

Lorraine Vallejo, who handles the classified ads for *Sierra* magazine, published by the Sierra Club, San Francisco, says the touch screen is useful for those who haven't had much exposure to computers, but points out a few problems she sees with the technology. "Sometimes the sensors on the screen don't work quickly enough," she says. "I found that I could get files faster by

KEYBOARD ALTERNATIVES

Voice-entry Systems

Vendor	Product	Requirements	Price	Circle
Covox (503) 342-1271	Voice Master	Apple IIe; Commodore 64	\$90	500
Dragon Syst. (617) 965-5200	Dragon Syst. speech recognition evaluation board	IBM PC	\$3,000	501
Key Tronic (509) 928-8000	Speech-Recognition Keyboard	IBM PC and PC XT	\$1,495	502
Mountain Computer (408) 438-6650	Supertalker II Supertalker SD-200	IBM PC Apple II and IIe	\$565 \$199	503
Scott Instruments (817) 387-9514	Shadow/VET voice-entry terminal	Apple II, IIe, II Plus	\$595	504
	VET-2 voice-entry terminal	Apple II, IIe, II Plus	\$795	
Speech Plus (415) 964-7023	Calltext 5000 telephone/voice-expansion board Calltext 5050 Calltext 5100 multi-channel programmable system	IBM PC	\$3,225	505
		Micros with RS-232C port	\$3,600	
		IBM PC	\$9,800	
Supersoft (217) 359-2112	Scratchpad with Voice-drive	IBM PC with Tecmar voice-recognition board	\$995	506
Texas Instruments (214) 995-2011	Speech Command System	TI PC	\$1,500	507
The Voice Connection (714) 261-2366	Introvoice I	Apple II, IIe, II Plus	\$695	508
	Introvoice II	Same systems	\$895	
	Introvoice III	IBM PC, PC XT, PC AT	\$1,495	
	Introvoice IV	Same systems	\$995	
Votan (415) 490-7600	VPC 200 Voice Card	IBM PC	\$2,450	509

Miscellaneous

Vendor	Product	Requirements	Price	Circle
Kraft Syst. (619) 724-7146	Kraft Joystick	IBM PC (with game port adapter); Apple micros; Commodore 64	\$50 IBM PC \$13 Commodore	510
	Executive Cursor	IBM PC, PC XT, PC AT, PCjr; Tandy 1000, 1200	\$70 (\$40 for software only)	
	Kraft Paddles	IBM PC (with game port adapter); Apple micros	\$40	
Mouse Syst. (408) 988-0211	PC Mouse	Any micro with RS-232C port	\$195	511
Wico (312) 647-7500	Analog Joystick	Apple II, II Plus, IIe, IIc	\$45	512
	IBM Analog Joystick	IBM PC	\$30	
	Grip-handle Joystick with Gate-lock control	Commodore 64	\$30	

using the keyboard." Other users complain that they tire of reaching up from the keyboard to use the touch screen, and some complain that their fingers are larger than the cursor.

The fascination with talking to computers has existed for years: Remember HAL, the computer that could recognize and synthesize speech in the 1968 film *2001: A Space Odyssey*? HAL's ability to understand conversational speech with an unlimited vocabulary is the ultimate, but as yet unreached, goal of speech technology.

Most of the speech-recognition systems available today are speaker-dependent: The computer will respond only to one user's voice. More than one person can't use speech-recognition on the same application. The user must speak the words—usually between 40 and 80—stored in the micro's memory using a microphone. Another disadvantage of speaker-dependent systems is interference from background noise, and changes in a user's voice due to

aging or illness, such as a cold.

In some applications, speech is used not to input data but to issue commands, change formats, and retrieve data. In engineering, manufacturing, and computer-aided manufacturing and design (CAD/CAM), speech systems are used to log in product and inventory information.

"Free-form dictation is years away," says Roy Pursely. "The components of speech recognition used today lack the sophistication to handle at a reasonable cost the large vocabularies for speaker-independent interaction."

Another device well-suited for manufacturing and inventory applications is the barcode scanner. The adoption of the Universal Product Code and subsequent code variations encouraged the spread of barcode scanners and portable data terminals in supermarket chains, warehouses, and other businesses handling large quantities of goods, boxes, and packages. Henry Smith, director of marketing support at

Bar/Code Inc., believes there's been an upsurge in user interest in barcode-micro interface devices. "Barcode readers are fast and accurate. They have a better accuracy rate than OCR or keyboard entry," says Smith. More manufacturers are putting micros in factories for data gathering and stock-control operations, he says. Bar/Code Inc. offers several devices, including the BC Fox keyboard interface for the IBM PC, Texas Instruments Professional, DEC Rainbow, and other micros with an RS-232C port. Prices range from \$600 to \$950 and up.

Although barcode scanners are useful for reading codes, they aren't appropriate for text entry. Typewritten information must be keyed into a computer, and that can take up to 70 percent of an operator's time, according to some estimates. The need for fast, accurate text entry is being met by desk-top OCR devices that read typed pages, change them into digital files, and transfer the converted files to a

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computer. Desk-top OCR units can automatically feed documents and can input a page of text in 25 seconds.

Oberon International offers a \$499 hand-operated OCR unit called the Omni Reader. The device uses a scanner mounted on a special ruler. A user slides the scanner across each line to be read. At a scanning rate of four seconds per line, the Omni Reader is twice as fast as an experienced typist, the vendor claims.

At Arco Oil and Gas Co., Dallas, an OCR unit from Dest Corp., San Jose, CA, is used to read documents up to 120 pages long. "Keying a 24-page document into our system for editing would take about two days," says Jim Pettigrew, senior systems analyst at Arco. "With our OCR, it takes seven minutes to do the same job. And an error rate of only one character per three pages is certainly tolerable." Pettigrew says original documents give the best performance. A photocopy of an original works fairly well, but third-

and fourth-generation copies don't transfer very well.

Imaging systems can capture, manipulate, store, and retrieve images. The technology is used in CAD/CAM, videotext, and robotics, but is also useful for presentation graphics. Datacopy Corp. offers an Integrated Imaging System that provides image processing and text integration on the IBM PC and PC XT. The vendor combines a digitizing camera with image-processing software. The product includes four scanning modes, 8-bit picture-element resolution, programmable scan times, and windows.

Imaging systems require considerable training and user sophistication. Getting back to basics, when it comes to text and numerical-data entry, some users actually prefer a keyboard because it's familiar. They may not like the conventional Qwerty keyboard, however, and for those users, alternative keyboards incorporating the Dvorak layout may be preferable.

Dvorak places the most-used characters in the home row of the keyboard, reducing the amount of movement required to type.

Keyboard alternatives are especially good for first-time users. "When I tried out my first computer, I was used to a word processor and a typewriter, so the keyboard on the micro felt very uncomfortable," says a New Hampshire doctor who installed a micro for patient billing. "It was back to hunt and peck, so I opted for a Dvorak layout, which was much faster for me."

This user found that a keyboard, though it was enhanced, best fits his data-entry needs. Just as important, a keyboard was what he felt most comfortable with. The same goes for all data-entry devices. A truly effective data-entry tool will make a user's job faster, easier, and more accurate without being intimidating or frustrating. □

Karen Gullo is a free-lance writer based in New York City.



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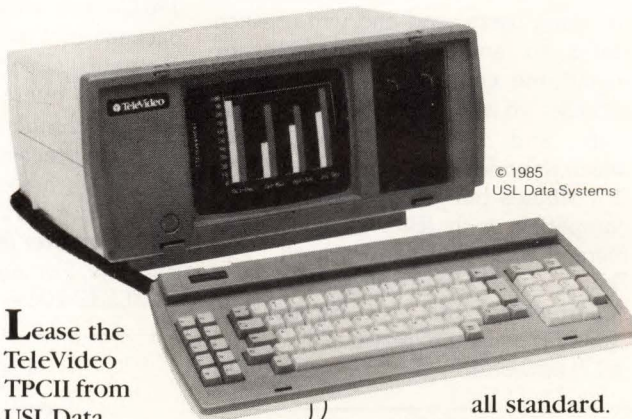
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PRODUCTS / MICROS PLUS

MICROPROPHIT UPDATE

Version 3.01 of Microprophit, a financial planning and modeling package, features English-oriented language, a model editor, a file-management facility, and a custom report writer. Price: \$695. A DIF-file interface allows users to exchange data between Microprophit and other software packages. Microprophit runs on IBM PCs and compatibles and comes with a corporate financial forecasting model.

Via Computer Inc., 7177 Construction Court, San Diego, CA 92121.
(619) 578-5356. **Circle 209**

TAPE SYSTEM

The Acknowledge Model AN-9000-PC nine-track magnetic-tape drive allows file transfers between mainframes and personal computers. Price: \$9,000. The model lets IBM PC or Wang users read and write 1/2-inch tapes to and from supermini or mainframe computers. The package includes an interface card, utility software, and a nine-track tape drive, which provides disk-to-tape transfer at 0.7 Mbytes per minute. The drive is compatible with IBM, Digital Equipment Corp., Hewlett-Packard, and Data General Corp. computers.

Acknowledge Inc., 100 Pennsylvania Ave., Framingham, MA 01701.
(617) 620-8843. **Circle 210**

DEC SYSTEM

The Professional 380 system, compatible with Professional Series software and hardware options, has full Decnet/Ethernet networking capabilities and distributed processing



with other PDP-11 and VAX systems. Price: \$9,000. The system, designed for technical and commercial users, features image rotation and bit-map graphics and includes a monochrome monitor, keyboard, and a 10-Mbyte hard disk.

Digital Equipment Corp., 146 Main St., Maynard, MA 01754.
(617) 897-5111. **Circle 211**

JOB TRACKING

Job Control, a job tracking/job costing package that runs on the IBM PC and compatibles under the MS-DOS or CP/M-86 operating systems, guides the user through the phases of a job, including processing bids, purchase orders, work orders, and daily labor reports. Price: \$100.

TM Computer Systems Inc., 3076 E. Burnside, Portland, OR 97214.
(503) 232-1084. **Circle 212**

DATA EDITOR

The Pik'r data editor allows users of IBM PCs and compatibles to choose the data they want to use from any report and reformat it for transfer between database-management software, spreadsheets, and word processors. Price: \$95. The package also allows ASCII files generated by

mainframe programs to be formatted for use by personal-computer applications.

Samkha Software Corp., P.O. Box 142, Petaluma, CA 94953.
(707) 763-2800. **Circle 213**

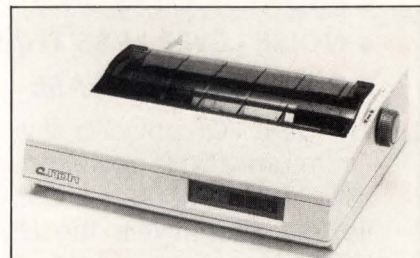
PERSONNEL SOFTWARE

A library of microcomputer-based software packages for human-resources managers automates many personnel functions. The Skopos Human Resource Management library consists of 12 software packages compatible with the IBM PC and PC XT. Prices of the packages range from \$400 to \$5,000. Price for the complete library is \$20,000.

Skopos Corp., 1800 E. Garry St., Santa Ana, CA 92705.
(714) 250-4523. **Circle 214**

DOT-MATRIX PRINTER

The Prowriter 7500 dot-matrix printer can be used with the IBM PC and compatibles and has a 105 character-per-second print speed. Price: \$400. The printer comes with either RS-



232C or Centronics-type parallel communications interfaces and has 2 Kbytes of buffer memory.

C. Itoh Digital Products Inc., 19750 S. Vermont Ave., Torrance, CA 90502.

(213) 306-6700. **Circle 215**

PRODUCTS / MICROS PLUS

COLOR MONITOR

The Model SC-100 crt composite color display monitor can display up to 1,000 characters onscreen. Price: \$330. The monitor weighs 30.8 pounds and has less than 2.5 vertical and horizontal picture distortion.

Sakata Corp., 651 Bonnie Lane, Elk Grove Village, IL 60007.
(312) 593-3211. **Circle 216**

VERSATILE MICRO

Cobra, compatible with the IBM PC and CP/M-80-based micros, includes six IBM-compatible expansion slots, and comes with Wordstar, Supercalc

3, Condor I, MS-DOS, C Term, and GW Basic. Price: \$5,000.

Seequa Computer Corp., 8305 Telegraph Rd., Odenton, MD 21113.
(301) 672-3600. **Circle 217**

TERMINAL EMULATOR

Version 1.19 of Forte PJ allows an IBM PC AT to emulate an IBM 3278 or 3279 terminal, providing communications with an IBM mainframe. Price: \$1,200. The package includes a plug-in board that fits into any of the expansion slots in the PC AT and a software diskette.

Forte Data Systems Inc., 2205 Fortune Dr., San Jose, CA 95131.
(408) 948-9111. **Circle 218**

COMMUNICATION PACKAGE

The MLink system allows micro-to-mainframe and micro-to-micro communications for the IBM PC, PC XT, PC AT, and compatibles. Price: \$250. The system incorporates three file-transfer protocols, built-in online help functions, auto-dialing for all popular modems, and automatic log-on. It can act as a terminal emulator, a data-transfer utility, a remote bulletin board, an electronic mail system, and control software for distributed processing. The included script language lets users create communications links for unique applications.

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Thesys Memory Products Corp.,
7345 E. Acoma Dr., Scottsdale, AZ 85260.

(602) 991-7356.

Circle 220

FILE TRANSFER

Decision Link/T software links IBM PCs to IBM S/34 and S/36 minicomputers. Price: \$895 for the single PC to single host version; \$1,195 for the multiple PC to single host version.

Decision Link, 1300 E. Normandy Place, Santa Ana, CA 92705.

(714) 835-9100.

Circle 221

PRINTER BUFFER

The Scooter Multi-Buffer allows one printer to accept data from up to three micros without manual switching. Price: \$390. It has 64 Kbytes of memory and is compatible with any parallel printer and most popular micros. Features include a memory indicator LED bar graph, pause switch, copy switch, and reset switch.

Ohm Electronics, 746 Vermont, Palatine, IL 60067.

(312) 359-6040.

Circle 223

WP/TELECOMM PROGRAM

Post Plus software combines word processing and telecommunications features. Price: \$160. With Post Plus, users can simultaneously retrieve, file, and print data as fast as the computer and modem can process it. The software is compatible with TRS-80 and

CP/M-80 systems and supports modems that conform to AT&T protocols 103, 212A, and others at rates of 110, 300, or 1,200 bps. An automatic data capture saves messages on disk so users can spend less time on the telephone.

MCTel, 3 Bala Plaza E., Bala Cynwyd, PA 19004.

(215) 668-0983.

Circle 225

EXPANSION BOARD

The PC-80 plug-in expansion board links the IBM PC to an IBM mainframe. Price: \$895. The board uses a standard coaxial connection and attaches an IBM PC or PC XT to an IBM 3274/3276 cluster controller or to an IBM 4331 display/printer adapter. Full IBM 3278/3279 keyboard support is provided, and users can redefine or reassign any of the IBM 3270 functions performed by the IBM PC keyboard.

Innovative Electronics Inc., 4714 N.W. 165th St., Miami, FL 33014.

(305) 624-1644.

Circle 226

TERMINAL EMULATION

The Bluelynx 5251 terminal emulation package has a new hot-key that allows IBM PC users to exit from the emulator session to work on IBM PC programs and then hot-key back to their original place in the 5251 session. Price: \$745. This package lets users run a single DOS session concurrently with a 5251 session, and copy information from the 5251 session to the PC session. It also allows users to do multi-partitioning and to specify the size of a window. The Bluelynx 5251 combines hardware and software to allow an IBM PC or PC XT to emulate a 5251 model 12 remote workstation and communicate with a System/34, /36, or /38.

Techland Systems, 25 Waterside Plaza, New York, NY 10010.

(212) 684-7788.

Circle 227

MOTHERBOARD FOR PC XT

The Bullet-286 motherboard uses the Intel 80286 microprocessor to give IBM PC XT users the performance of a PC AT. Price: \$2,000 to \$3,400. The board, which runs most programs and operating systems available for the PC XT, is available with 256 Kbytes to 1 Mbyte of RAM.

Wave Mate Inc., 14009 S. Crenshaw, Hawthorne, CA 90250.
(213) 978-8600. **Circle 228**

UNIX-BASED MICRO

The Model AM-1100E desk-top runs the AT&T-developed version of Unix System V. Price: \$15,585. It uses the Motorola 68010 microprocessor and memory-mapping unit and has 1 Mbyte of internal memory. Standard equipment includes a 30-Mbyte hard-

disk drive with 45 millisecond access time, three serial RS-232C ports, and a 40-Mbyte streaming-tape backup drive.

Alpha Microsystems, 17332 Von Karman Ave., Irvine, CA 92714.
(714) 957-8500. **Circle 229**

SOFTWARE ORGANIZER

Spotlight management software has a variety of accessories that run alone or in the background with most programs for the IBM PC and PC XT. Price: \$150. The program includes a DOS filer that gives users access to the operating system. It also includes an electronic appointment book, an alarm clock, on-screen calculator, phone book, index-card file, and notepad.

Software Arts Inc., 27 Mica Lane, Wellesley, MA 02181.
(617) 237-4000. **Circle 230**

PROGRAMMING INTERFACE

An Application Programming Interface (API) for the AdaptSNA 3270 communications emulator allows a program running on an IBM PC to directly access IBM 3270 applications running on a host mainframe. Price: \$325. Adding API to AdaptSNA permits PC-DOS applications to download or upload mainframe data for local processing.

Network Software Associates Inc., 19491 Sierra Soto, Irvine, CA 92715.
(714) 768-4013. **Circle 231**

Spelling checker: The Hayden: Speller from Hayden Software Inc. (Lowell, MA) is a spelling verification system for the Macintosh. Price: \$80. It checks documents against a dictionary containing 97 percent of the most frequently used words in the English language. **Circle 232**

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SOFTWARE

QUERY LANGUAGE

SQL+ is a relational query system running on DEC Tops 10 and Tops 20 operating systems, DEC VAX VMS, and Berkeley Unix 4.2. It's part of SIR/DBMS, a database software that runs on 25 different computers and operating systems. SQL+ lets SIR/DBMS users interrogate their databases using Structured Query Language. SIR/DBMS, which includes SQL+, costs \$25,000 to \$40,000, depending on hardware. An interactive display processor helps develop fully formatted reports without programming.

SIR Inc., 820 Davis St., Suite 400, Evanston, IL 60201.
(312) 475-2314.

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DOCUMENTATION AID

Promptdoc, an aid for creating software documentation, runs on the IBM PC. Price: \$650. A computer-assisted cut-and-paste operation gives the user nine chapter models for writing a software manual. Standard text for introductions and transitions to new subjects are provided, and an online assistance feature aids inexperienced users. Each document may contain up to 12 chapters.

Infotym, 20705 Valley Green Dr., Cupertino, CA 95014.
(408) 446-6738.

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MICRO-TO-HOST LINK

Mobius software allows users of MS-DOS, PC-DOS, and CP/M microcomputers to access DEC VAX, DECsystem-10, and DECsystem-20 host machines. Mobius offers direct access to host resources and features instant terminal emulation. Commu-

nication takes place through the asynchronous ASCII communication port of the microcomputer. Mobius for micros costs \$250 for each copy under 20. Mobius programs running on the host cost \$5,000 for 10 simultaneous users and \$8,000 for 20 simultaneous users.

FEL Computing, P.O. Box 200, East Dover, VT 05341-0200.
(802) 348-7171.

Circle 202

PC-TO-HOST LINK

A micro-to-mainframe software package, Pcmmainframe features additional emulator-board support. With Pcmmainframe, micro users can download and upload files in real time between personal computers and the host IBM mainframe. Price: \$9,000 for the DOS version, \$12,000 for the OS version, and \$300 for each additional personal computer. Pcmmainframe features emulator-board support for IBM's 3270 PC, Microplus Inc.'s Microplus MP01 3278/79 Emulator, and the PC-DOS Release 3.0 operating system. The package runs on the IBM PC and PC XT.

Oxford Software Corp., 174 Blvd., Hasbrouck Heights, NJ 07604.
(201) 288-1515.

Circle 203

DATABASE MANAGER

The Fusion/5 information manager for IBM Systems/34, /36, and /38 minicomputers allows nontechnical users to build and maintain databases. Price: \$2,500. The program validates data upon input to help maintain data integrity and features table lookup, range checking, and user-defined screens.

Fusion Products International, 900 Larkspur Landing Circle, Larkspur, CA 94939.

(415) 461-4760.

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PRODUCTS / SOFTWARE

VISUAL PROGRAMMING

Cortex Action Diagrammer, a visual programming aid for DEC VAX under VMS, automatically displays the logical flow of a program in an easy-to-understand manner. Price: \$15,000. CAD/CAM-like techniques allow the representation of high-level code.

Cortex Corp., 55 William St., Wellesley, MA 02181.

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SUCCESSION PLANNER

Executive Track, which runs on the IBM PC and compatibles, helps identify, develop, and track executive talent.

Priced at \$10,000, the system records and stores descriptive data on managers or high-potential employees; stores detailed information about key positions within a company; and uses this information to match candidates to open positions.

Control Data Business Advisors, 3601 W. 77th St., Facility Code MNB05A, Minneapolis, MN 55435.

(612) 921-4251.

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NOMAD2 DATA DICTIONARY

Nomad2 Data Dictionary, an interactive, menu-driven system for application development, is able to create schemas for use outside the system.

Priced at \$5,000, the package fea-

tures a report builder for ad hoc data analysis; descriptions of external files that interface with Nomad2, including ISAM, VSAM, QSAM, SQL, and IMS; and nested program-calling sequences for up to 64 levels. The Nomad2-IMS interface, priced at \$6,000, allows information in IMS databases to be accessed by TSO users through Nomad2.

D&B Computing Services, 187 Danbury Rd., Wilton, CT 06897.

(203) 762-2511.

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Projectalert enhancements: Projectalert, a menu-driven project-management system from CRI (Santa Clara, CA), now includes improved menu structure and enhanced graphics.

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YOUR CAREER

by Marilyn Machlowitz, Guest Columnist



Illustration by Dan Culhane

CAN YOU SPOT THE CAREER MYTHS?

When men and women complain about how their careers are progressing, well-meaning friends often voice hackneyed myths as advice. As a career counselor, I try to debunk many of the mistaken beliefs employees have about making career moves. Applicable to both men and women, these myths have been around for a long time and contain elements of truth. However, you can hurt your career if you follow them to the letter.

Myth 1: You must have a five-year plan. It's good to have goals, as long as they are flexible and you regularly update them. As one high-ranking executive told me, "Your goals may change. Business changes; the economy changes. It's limiting to adopt a single way to get where you want to be."

In careers, unlike in geometry, the shortest distance between two points is not always a straight line. Careers may take indirect routes, and what seems like a detour may turn out to be the

most advantageous path to a goal. One woman left a staff position to join another company where her specialty permitted her to assume a line job. She then joined a third organization in a high-level staff job that would not have been open to her had she skipped the intermediate line position.

Myth 2: You should stay in a job for at least two years. There is no magic number of years that you must stay in one job to make your resume look good. Much of the stigma associated with job hopping has disappeared; it may, in fact, be good for your career. If you land a new job only to find it's not right for you, start your new job search immediately. The best time to change jobs is before you have to do so. If you wait too long, your dissatisfaction will affect your performance, and when you don't feel proud of the work you are doing, it is hard to sell yourself to a prospective employer.

Some managers tend to stay in a place too long rather than jump

around. If, for instance, you started as a programmer/analyst but have moved up the ladder, you may fail to receive the recognition due you because your former bosses' perceptions have been slow to shift. You will probably find it easier to establish your authority elsewhere. If you haven't moved up the ladder, you may find that your 10 years of experience really boil down to one year's experience, repeated 10 times.

Myth 3: Wait until you have expanded your credentials before making a move. Before going back to school for post-graduate work, try to transfer the talents you already possess to a new job or to an expanded version of your current job. Ideally, a new job should permit you to draw on the skills you already have as well as allow you to develop new ones. Some managers procrastinate, saying that they just want to acquire more credentials—not new jobs. They choose to wait until they have five more presentations or

YOUR CAREER

an MBA under their belts before moving upward. Stalling often masks fears about assuming new responsibilities. Corporations wouldn't offer on-the-job training programs if they expected everyone to jump into new jobs equipped with all the requisite skills. Almost any Ph.D. can tell you that credentials alone won't guarantee a higher earning potential.

Myth 4: Staying at home for a few years will seriously compromise your career. This myth is feared mostly by women. Careers don't disappear, particularly if you've got solid experience. One department manager was afraid that a glaring gap on her resume would do her in when she applied for a prestigious job. Indeed, her fears seemed warranted when the corporation sent her a form letter asking her to account for the eight years she had been out of the workforce. Worriedly, she replied that she had been a homemaker and thought that she had no chance of getting the job. After the job was offered and firmly in hand, she inquired about the alarming form letter. It was, she learned, a routine request to find out if she had been hiding a prison term!

Don't drop out of sight if you happen to be homebound temporarily because of a back injury, child-care responsibilities, or another reason. "The longer you'll be away, the more you should contact your former employees, colleagues, or your boss on a routine basis. Regular phone calls or appearances condition your colleagues to keep you in mind," write Meg Wheatly and Marcie Schorr Hirsch in their book, *Managing Your Maternity Leave*, (Houghton Mifflin, 1983).

Informal contacts can be useful as well. One programmer attends his professional society's monthly meetings although he is not employed full time. A woman chooses volunteer activities that are relevant to her field, banking. Instead of baking for her church's cake sale, for example, she prepares the church budget. These careers will progress more slowly, but they won't be stalled.

Myth 5: It's not a fair tactic to play office politics. Using personal connections or playing office politics to achieve goals is hardly dishonest. Political maneuvering



Photo by Christopher Morris

Marilyn Machlowitz says that although her advice is aimed primarily at women managers, it applies to male managers as well.

can determine which managers get ahead and which ones stand still. Many businesses have after-work opportunities for their employees to socialize. You may be a terrible softball player, but when the call goes out for the company softball team, it's smart politics to volunteer. At the very least, you can be a scorekeeper; the contacts you will make may definitely help in your career. Try to see political awareness and maneuvering as a part of your career design, not as forbidding activities.

Myth 6: You must have a mentor. Few managers actually have mentors. In a recent study of 60 men and women who achieved success at an early age, only two reported the aid of a mentor. In *The Woman in Management* (ILR Press, 1983), Rosabeth Moss Kanter recommends seeking sponsors instead of mentors. Sponsors provide more specific and limited assistance than mentors. Your manager may function as a sponsor by introducing you to influential people and including you in meetings.

Myth 7: You must be willing to move when your employer asks you to. For a long time, it was assumed that upward-bound women managers were at a disadvantage because of the requirement to relocate. But the rise in the number of dual-career families, as well as soaring moving and mortgage costs, have helped change the policies of many employers. Some are making fewer transfers than they did in the past.

In the 1950s and 1960s, IBM was said to stand for "I've Been Moved." Today, relocations of IBM employees are much less frequent. "Our relocation rate in the 1980s has declined to 3 percent of the working population. We now say that it's not necessary to relocate to have a successful career, although, of course, relocation does enhance career opportunities," says an IBM spokesperson.

Myth 8: Your boss will look after your interests. A woman at a large financial institution tells the story of a boss who promised her a promotion and described it in such glowing terms that a bystander might have thought he was nominating her for a senior vice presidency. All he actually was offering her was the possibility of moving from salary level 13 to salary level 14. She wisely got him to give her a realistic job preview and then looked outside her company for a comparable position with a higher salary.

The power of many superiors to look out for their subordinates' interests is restricted by corporate salary ceilings, hiring freezes, and promotion slowdowns. Your advancement is still your own responsibility. Don't count on anyone else to take care of it for you!

Myth 9: It's easier to work with people than with machines. Working with people is hard. Senior executives frequently wish that they had paid more attention to "soft" subjects—such as organizational behavior—when they were in business school, instead of concentrating on "hard" specialties, such as operations research. Popular wisdom has it that there are no problem people, only people problems. Top executives are tempted to disagree.

If you believe the myths quoted above are true, perhaps you had better reconsider. You are in control of your career moves and you must not relinquish that control by following the dictums of a myth if you wish to move ahead. □

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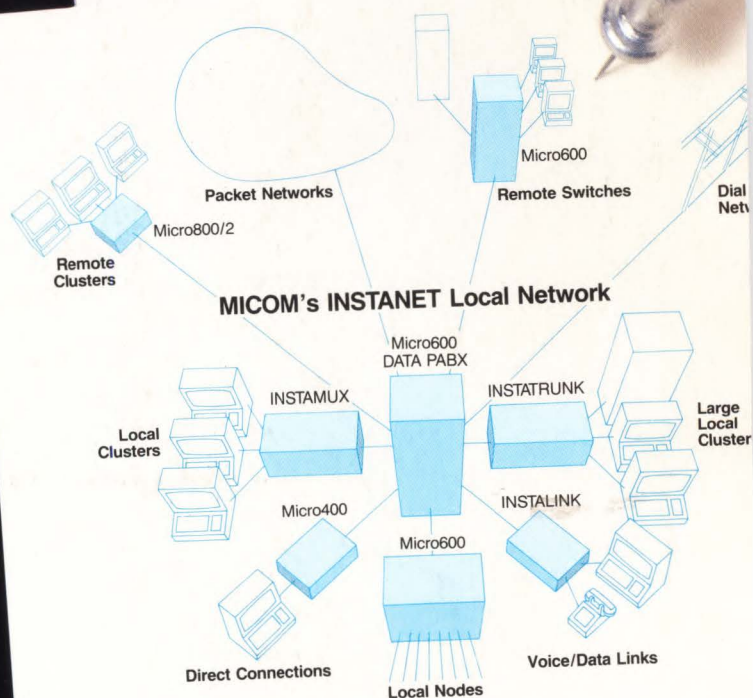
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