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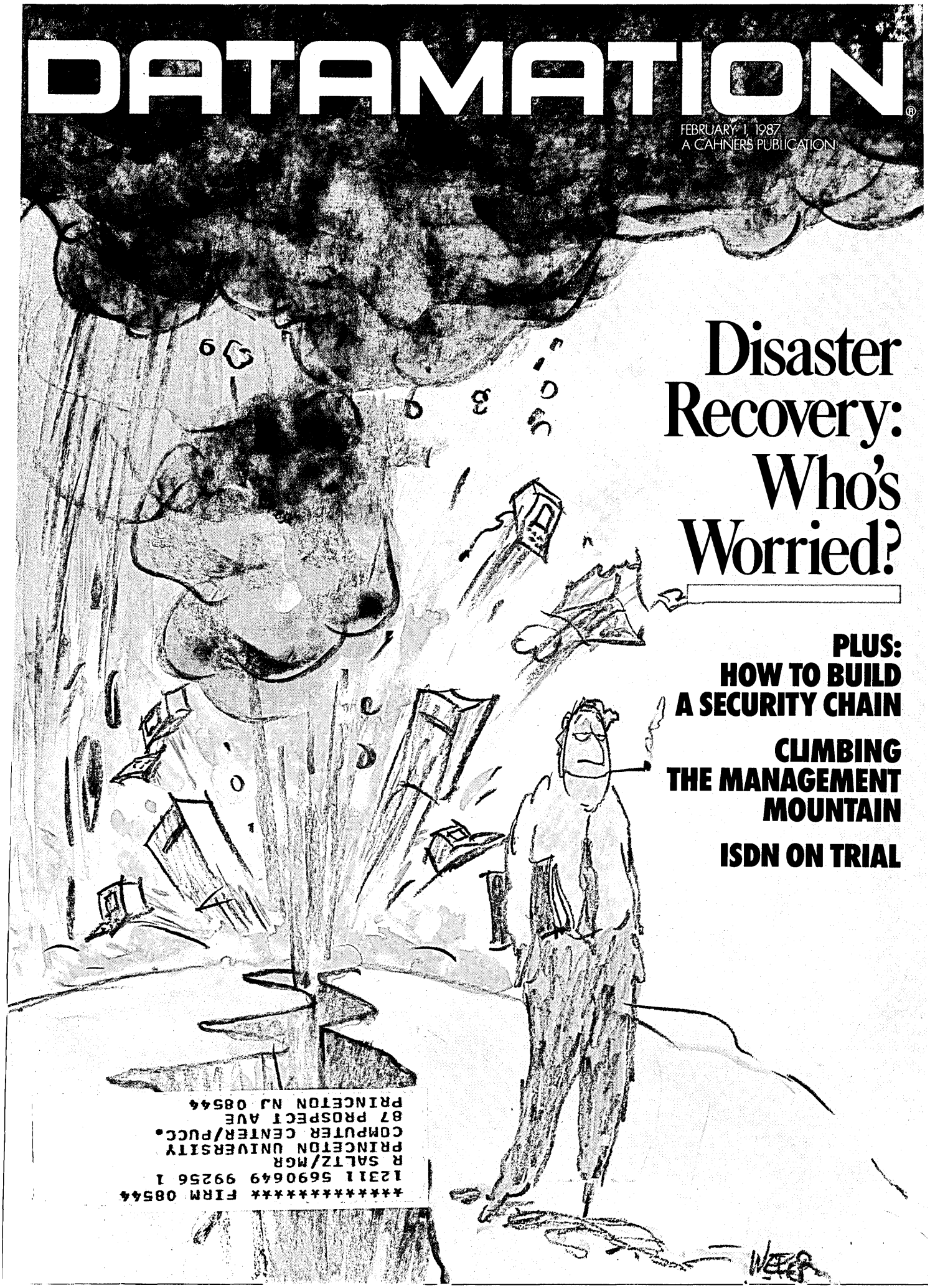

# Disaster Recovery: Who's Worried?

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**ISDN ON TRIAL**

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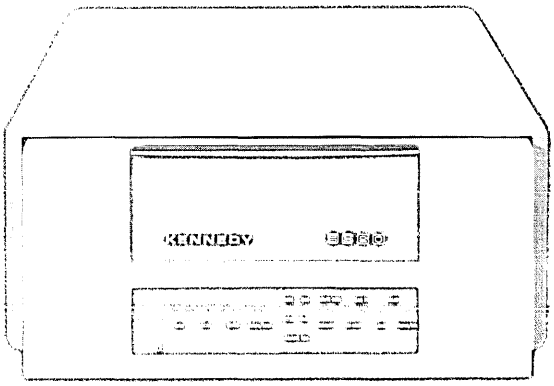


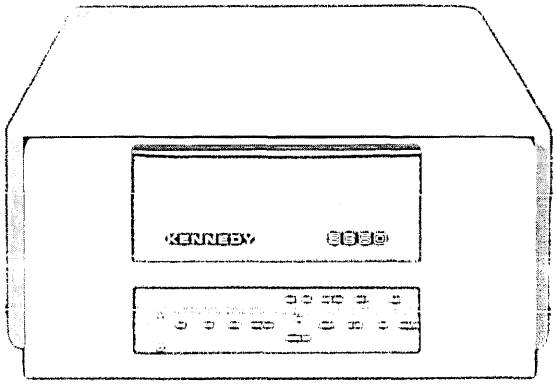


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- 50 MS reposition time in same direction at 100 ips
- 200 MS reposition time in opposite direction at 100 ips
- 12 MS ramp time at 100 ips

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- Resident tester and exerciser
- Rack mount or cabinet
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- 12 MS ramp time at 100 ips

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## NEWS


9 **Look Ahead**
Stratus Computer is expected to unveil new members of its XA computer family.

17 **Storage**
StorageTek, reports Jeff Moad, is "Pinning Hopes On a Vision of Storage."

19 **Communications**
Is satellite telecom just "Pie in the Sky?" Susan Kerr reports on new technologies.

22 The CGE-ITT deal may be "A Switch in Time" for the European telecom market. James Etheridge and Sarah Underwood report.

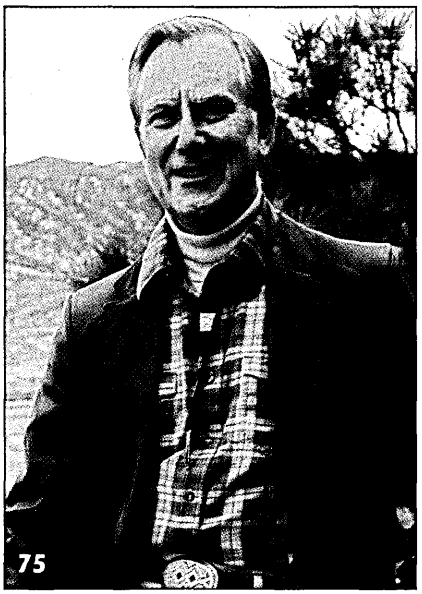
28 **Terminals**
IBM's new, cheap terminal is forcing competitors to learn "New Rules for an Old Game." Bob Crutchfield reports.

32 **Languages**
Ada's nonacceptance outside of the military/industrial world, reports Edith D. Myers, is "What the Countess Didn't Count On."

36 **Benchmarks**
Bolt Beranek & Newman acquires Delta Graphics Inc., developer of computer image generation systems, in a $16.5 million stock deal.

41 **Behind the News**
In "Distributed DBMSs: In Search of Wonder Glue," Edith D. Myers reports that true distributed relational databases are still just a promise.


## FEATURES





52 **ISDN on Trial**
BY SARAH UNDERWOOD
The Integrated Services Digital Network promises to change the nature of the telephone and to speed up the movement of information around the world. User trials demonstrate its potential, but also raise issues that must be resolved before commercial services start.

60 **Disaster Recovery: Who's Worried?**
BY DAVID STAMPS
Real, workable contingency plans that enable a company to survive a major dp outage still seem to be the exception, not the rule. One reason is the cold, hard fact that development of a disaster recovery plan is a very big job.

69 **How to Build a Security Chain**
BY FRANK SWEET
In the on-line environment, the chain that will keep out unwanted users has four major links—accountability, prevention, detection, and enforcement. Both MIS and users must agree on how to enforce security and what to do with trespassers once they're caught.

75 **Climbing the Management Mountain**
BY JAMES F. COLLINS JR.
An MIS veteran says that running a successful worldwide information services operation is done by old-fashioned good management practices and hard work. The successful manager is a generalist who has a whole spectrum of skills.

# ION

## DEPARTMENTS


83 **Hardware**
Data General's newest family of superminicomputers features price/performance aimed at IBM and DEC.

89 **Software**
Harris's Computer Science Division unveils the first compiler product based on its proprietary common code generator.

94 **Books**
Jay Tuck's *High-Tech Espionage* is reviewed by David Hebditch.

94 **Calendar**
Expositions and conferences for March and April include ANSI's Public Conference and Milan's Great April Fair.

101 **Advertisers' Index**

101 **The Marketplace**

104 **People**
Romauld Slimak, ADAPSO's first chairman, finds that the more things change, the more they stay the same.

112 **Letters**
A potato magnate is in the chips, and Rice is also very nice.

112 **Readers' Forum**
How does one "do" security? It's a group effort, insists Robert D. Hargrove in "Security and Reality."


## INTERNATIONAL 56-1


- 4 **The Shifting Sands of the PTTs**
BY PETER PURTON
Liberalization may be the most important trend to hit the telecom industry since World War II.

-11 **Tariffs Get Tougher**
BY CHRIS BUCKLEY
The complexity of tariff structures has made it harder for users to reap the benefits of European telecom network cost reductions.


COVER ILLUSTRATION BY ROBERT WEBER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# Editorial

## The Short Side of Short-Term Focus

Downsize. Maximize near-term results. Together these form the foundation of the new American business credo. The new thinking is making Wall Street happy, stockholders wealthy, and helping to keep corporate raiders at bay. It has also cost thousands of Americans their jobs and, if it continues unchecked in the information processing business, it may well cripple this industry's long-term future.

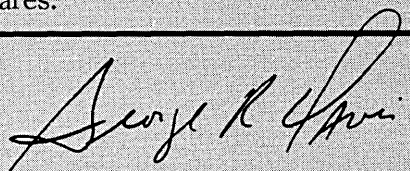
In themselves, downsizing and the pushing of quarterly profits are not dangerous or even wrong. For many companies in the industry, the credo makes a good deal of sense. The computer boom of the late 1970s and early 1980s and its heady sales often left even the smartest executives with bloated organizations and obsolete product lines.

The targets of downsizing, though, are too often research and development and new product engineering. These are the very elements that when nurtured ensure a future beyond the next quarterly statement. They are also, unfortunately, among the easiest budgets to cut and provide the fastest jump in short-term profits.

That understanding hasn't escaped even the biggest corporations in the business. AT&T's recently announced plan to cut nearly 28,000 workers and write off $3.2 billion against earnings directly targets development positions in its Communications and Information Systems Group and reductions, through attrition, of research positions at the company's Bell Laboratories—an organization that could be called America's national treasure for research.

IBM's early retirement program, affecting 10,000 and aimed at saving $1 billion a year, includes its own highly renowned chief scientist, Lewis Branscomb. AT&T and IBM aren't alone. Virtually every company in the business has adopted a downsizing strategy, and too many are attacking their scientific underpinnings to pull it off.

Cost-cutting is necessary, but attacking the scientific and engineering cornerstone of the industry must cease before its short-term dreams turn into long-term nightmares.



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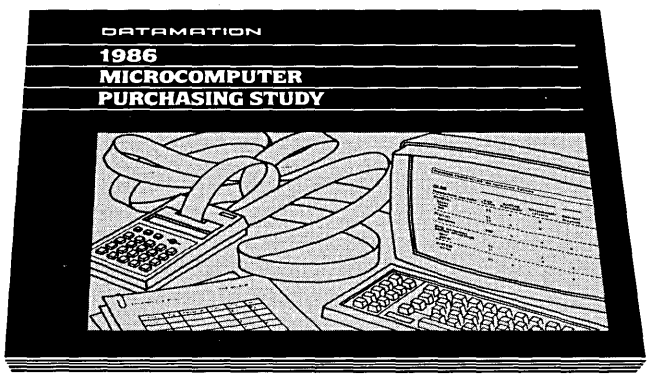


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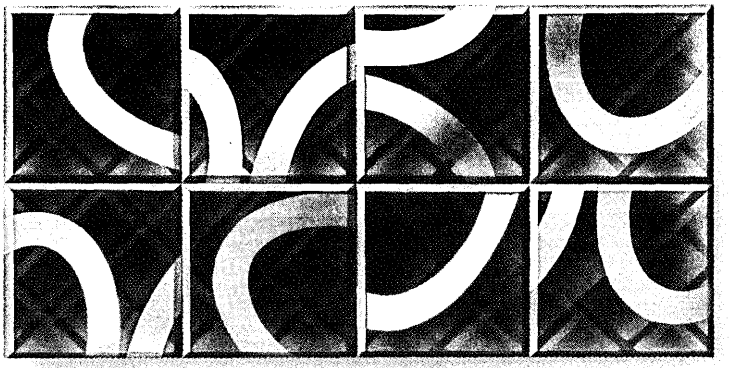

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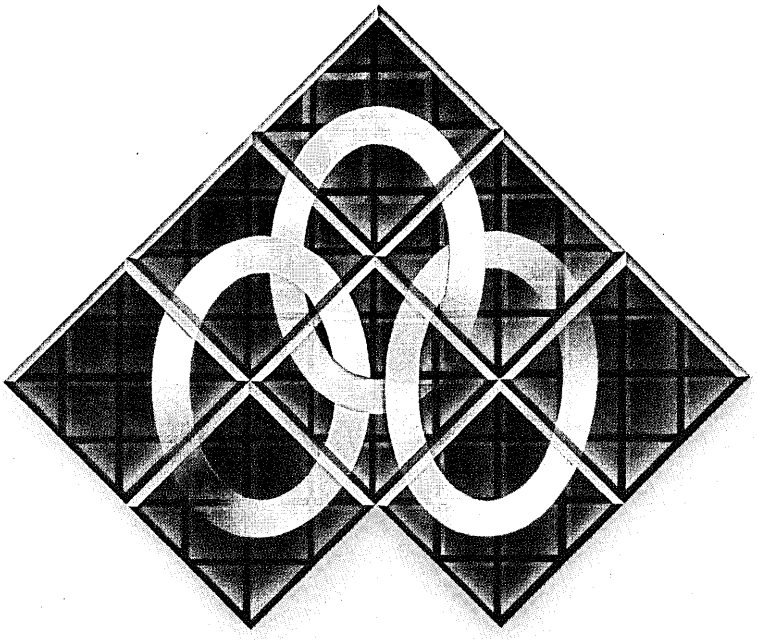

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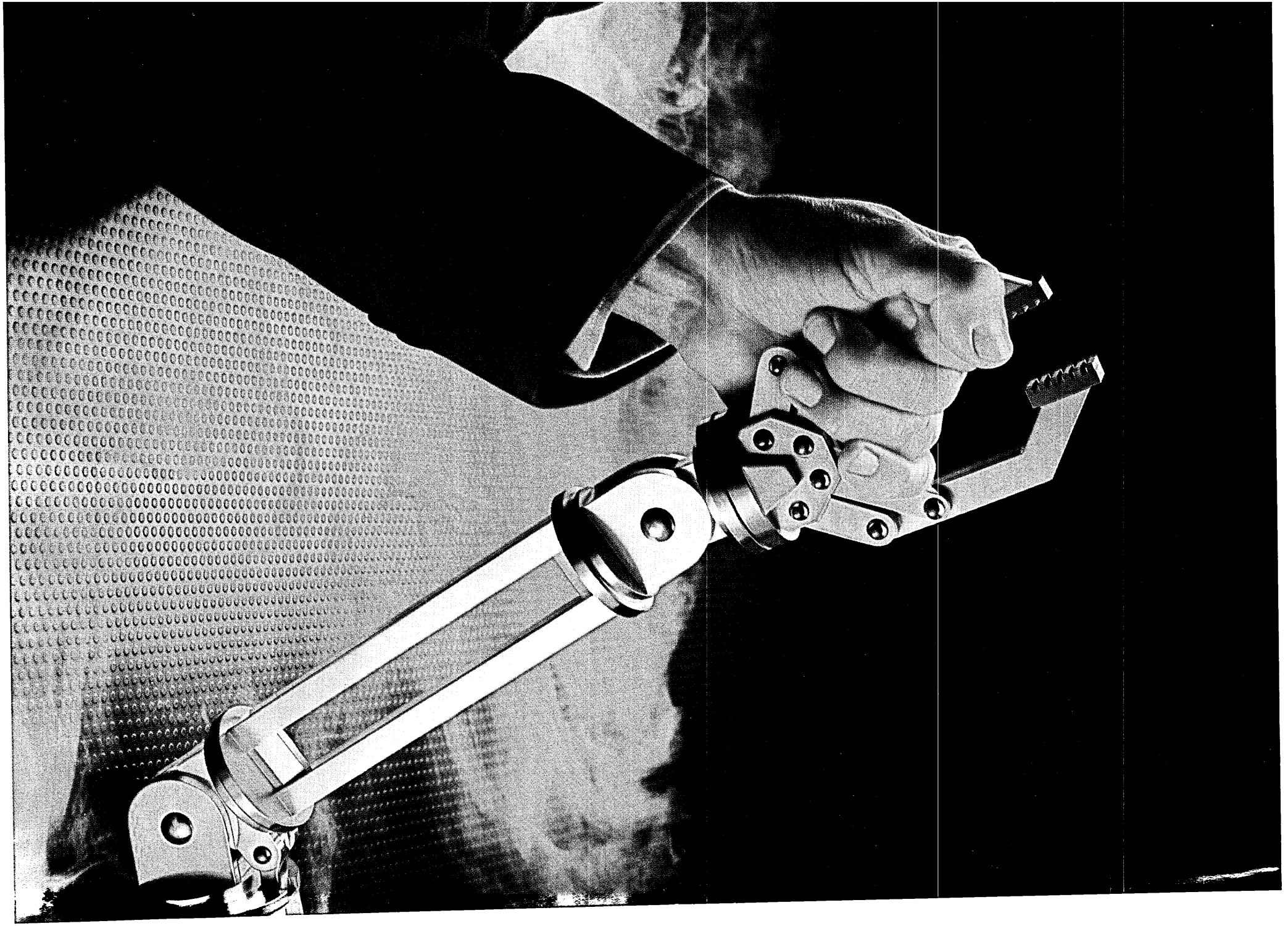

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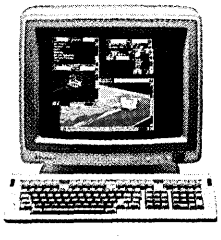

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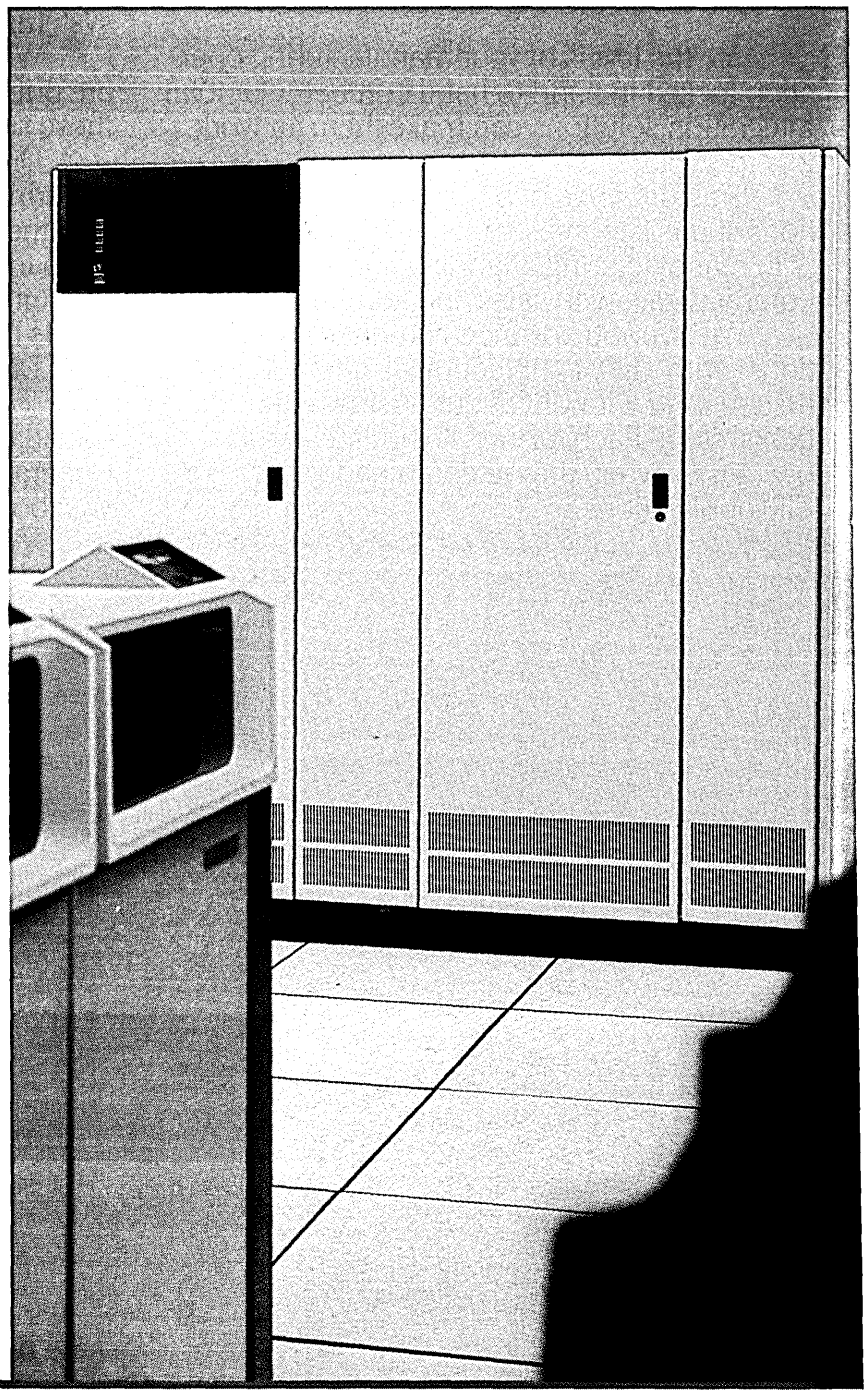

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# Look Ahead

**STRATUS READIES XA SYSTEMS**

MARLBORO, MASS. -- Stratus Computer is expected to debut its third generation of continuous processing systems this week with five new members of its XA computer series. ET-1 benchmark results indicate the new top-of-the-line XA provides more than 50 transactions per second, over three times the current top-end XA 600. The fault tolerant systems incorporate one to four tightly coupled 68020 MPUs at fully configured prices ranging from $270,000 to $750,000. Targeting Tandem's VLX computers, the new series is Stratus's first that enables processors to be added to a system without interrupting existing applications.

**ICL TESTING UNIX ON A MAINFRAME**

LONDON -- ICL, whose chairman, Geoff Morris, is also chairman of X/Open, makes no bones about its commitment to open systems--so much so that now comes word that ICL is testing Unix on its mainframe line. Details are still scant about the Unix trial and when it might be completed, but well-placed sources at ICL indicate that the Unix commitment is strong. "Open systems are the way to go for ICL on the mainframe side," says the source. Meanwhile, X/Open is planning to set up Unix portability centers. The first will be set up near Heathrow Airport outside of London. X/Open has awarded a design and planning contract for the center to Sphinx, a U.K.-based Unix systems house. Proposals are due next month.

**NIXDORF EYES CENTER FOR CIM**

STUTTGART, WEST GERMANY -- Nixdorf Computer AG will make its first strategic move to enter the computer integrated manufacturing (CIM) market on Feb. 12 when it opens a dedicated CIM center here. Previously, Nixdorf has simply sold its 8870-processor line with modules of its Comet software, such as the Feros production-control package. The new center will provide consultancy to both the company's customers and its sales force, and is expected to undertake some custom software development.

**AI VENTURE MOVES AHEAD**

FORT LAUDERDALE, FLA. -- The closely watched joint effort by AI vendor Inference Corp. and American Express to augment AmEx's on-line credit card verification operation with an automated knowledge-based system has taken an important step forward. A limited pilot implementation of the system has gone on-line and is working as advertised, drawing credit data from up to 12 different IMS databases and applying rules to approve or reject credit charges. AmEx is still working on software to allow its TPF operating system and its IMS databases to interface under a Symbolics worksta-

tion. Actual mapping of the knowledge base into the AmEx database has been completed and is working, however. AmEx hopes to have the full system working by this April. Meanwhile, Inference is developing a similar knowledge-based credit system for Ford.

**ON THE WATCH FOR A RELEASE OF VTAM**

BOSTON -- Customer sources are divided on the announcement date of IBM's next VTAM (SNA's Virtual Telecommunications Access Method) release, with some expecting the first half of the year and some the second. Not only will the new release support LU 6.2, sources claim, but it will help support a standard form of LU 6.2. Currently, there are four different versions of LU 6.2 or Advanced Peer-to-Peer Communications (APPC). In addition, IBM's software developers at Raleigh, N.C., are said to be intent on cleaning up VTAM, which has a multitude of interfaces. VTAM/LU 6.2 is a big step in that direction and may be a vital foundation for the distributed DBMS software (which some refer to as DB2/Star) that will emerge in the 1990s.

**LIBRARIES BECOMING POPULAR**

SANTA CLARA -- It looks as if Storage Technology Corp. isn't the only pcm vendor throwing its weight behind an automated cartridge tape library product. Memorex is also working on one and hopes to begin shipping it in early 1988, about the same time StorageTek's will become generally available. Memorex is also said to be in the final stages of finding an oem supplier of 3480-class cartridge tape drives, and plans to unveil its product in February or March.

**GEC MAY SIGN MORE IN U.S.**

LONDON -- U.K. company GEC Software is expected to announce more U.S. customers next month for its Genos integrated project-support environment (IPSE), following its first major U.S. deal for the product with Hewlett-Packard. By the end of March, GEC will also open its first U.S. sales support office on the East Coast. The HP deal requires the U.K. firm to convert its software engineering suite to the HP9000 series 300 running the HP-UX version of Unix. It also has to monitor five test sites at HP facilities in the U.S. The test period is planned to end in May.

**THE PHONE IS FINALLY RINGING**

MOUNTAIN VIEW, CALIF. -- Pcmer National Advanced Systems has been waiting by the phone since October, ready to ship its V60 and V80 vector processing facilities, which attach to its AS/XL 3090-class line of mainframes. There's been just one problem--no orders. But sources say the company recently corrected that situation, signing the University of Zurich in Swit-

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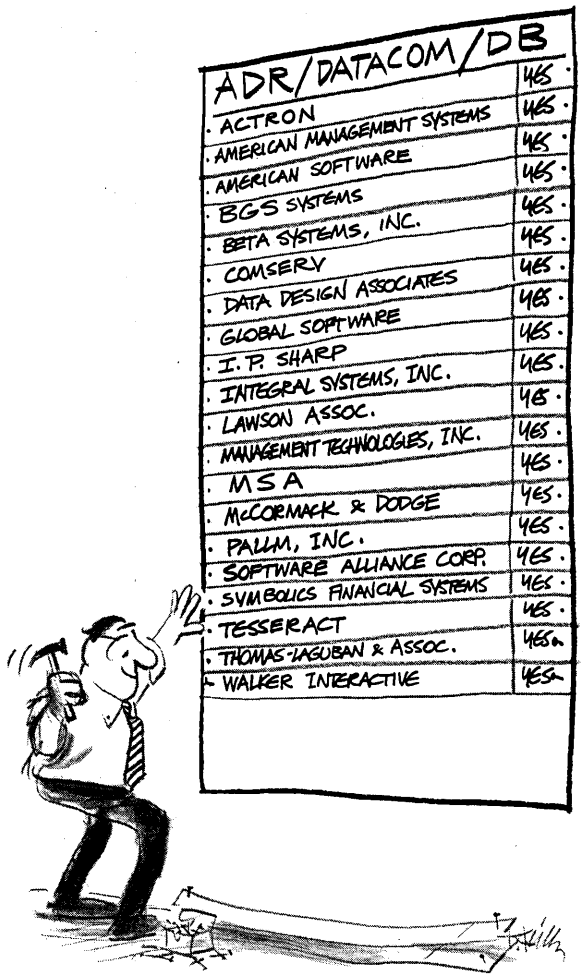


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CIRCLE 9 ON READER CARD

zerland as its first V60 customer. Although NAS claims to have strong demand for its AS/XL system among technical and scientific users, the company, like Amdahl Corp. and IBM, has been hampered by a lack of vector-intensive applications for IBM-compatible systems.

**UNIONS SET AGENDA ON IBM**

LONDON -- The world's labor unions have Big Blue in their sights. Last month's meeting of three major international labor federations in London (see Look Ahead, Jan. 1, p. 10) agreed to act as a clearinghouse for information on IBM; publish a twice-yearly newspaper on the company and distribute it to IBM employees; and help provide IBM staff with a better picture of the company's global operations. The unions also decided to identify target groups within IBM for possible organization and to collect, where possible, details of employees' pay and conditions.

**THREE TEAM UP TO RESEARCH SUPERS**

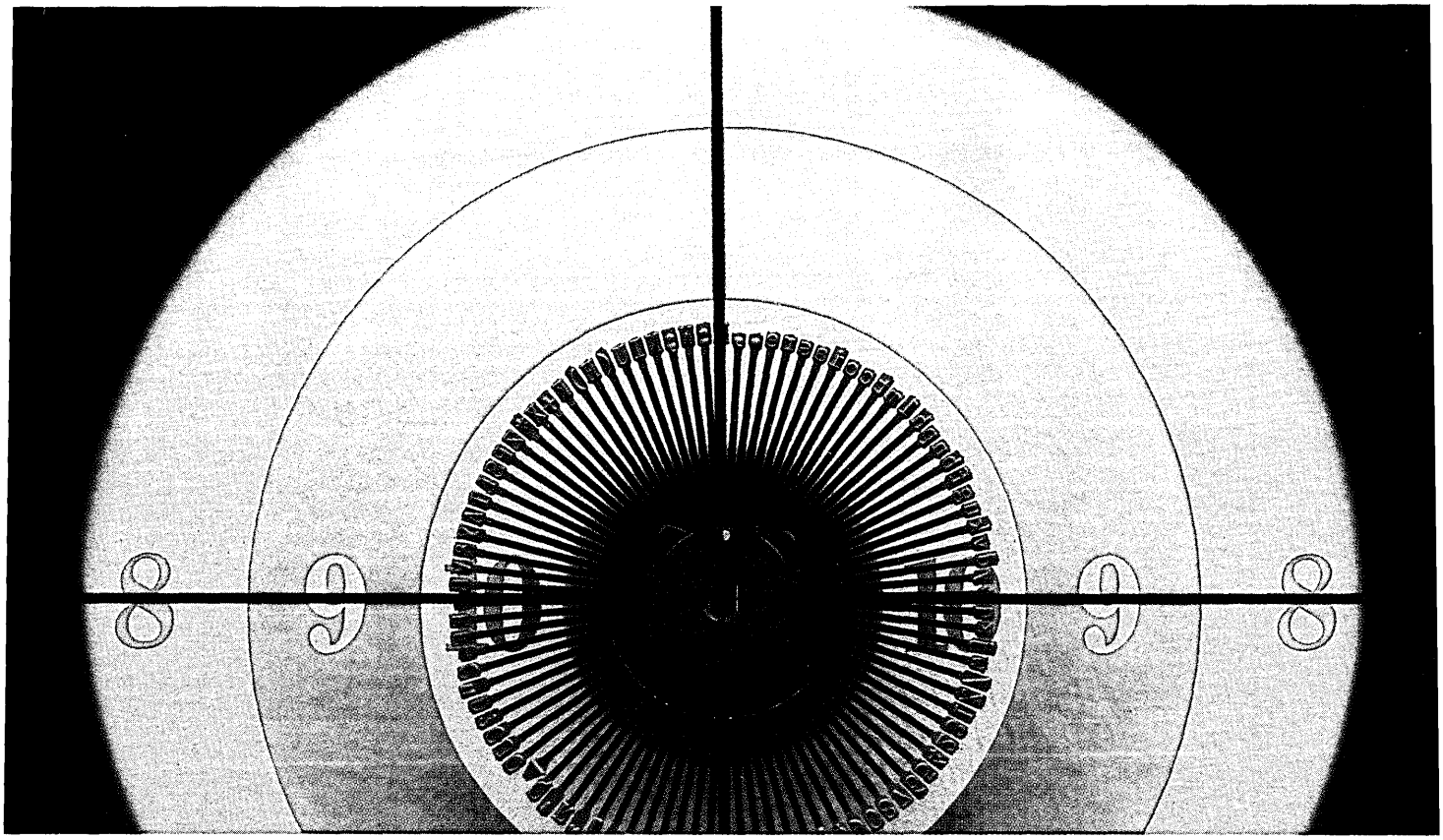
MINNEAPOLIS -- A new venture to research supercomputers -- the technology, markets, types of machines and their relationship to mainframes, to name some of the key areas -- has been formed by the Minnesota Supercomputer Institute of the University of Minnesota, the Palo Alto Management Group Inc., and the Info-research Institute Inc. Called the Consortium for Supercomputer Research, the venture is now in the process of raising funding for the study, which is expected to take six to eight months to complete.

**A DOUBLE-SIDED PREFERENCE**

TOKYO -- Japan may be in danger of going its own way on CD-ROM standards if one of its semigovernmental groups has its way. The CD-ROM working group of the Japan Industrial Standard (JIS) multimedia standardization committee has rejected the standard submitted to ANSI by the High Sierra group last July. The Japanese group feels that double-sided recording is preferable to the usual single-sided format, and also complains that the High Sierra standard is too closely tied to a single operating system, MS/DOS.

**RUMORS AND RAW RANDOM DATA**

Sybase Inc., Berkeley, Calif., producer of SQL-based relational database management systems, last month made its first product shipments to 20 sites, which will use it on workstations from Sun Microsystems, Mountain View, Calif., and is some three weeks away from announcing DEC versions of its RDBMS. . . . The Australian cabinet must decide this month whether to approve the country's largest dp deal. The Australian Taxation Office needs $135 million for new systems to upgrade its dated technology.



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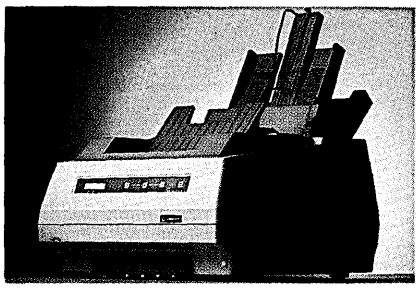

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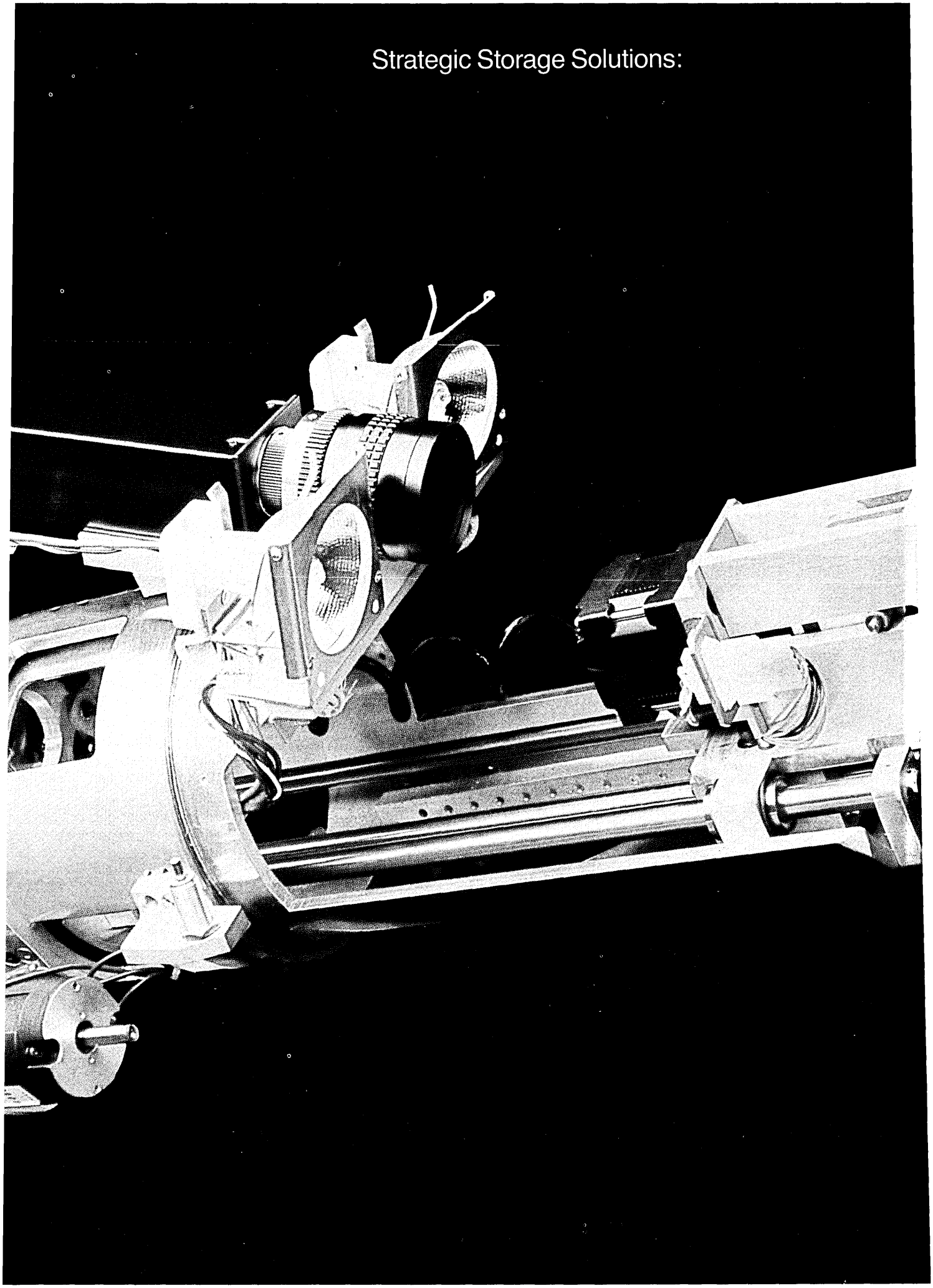

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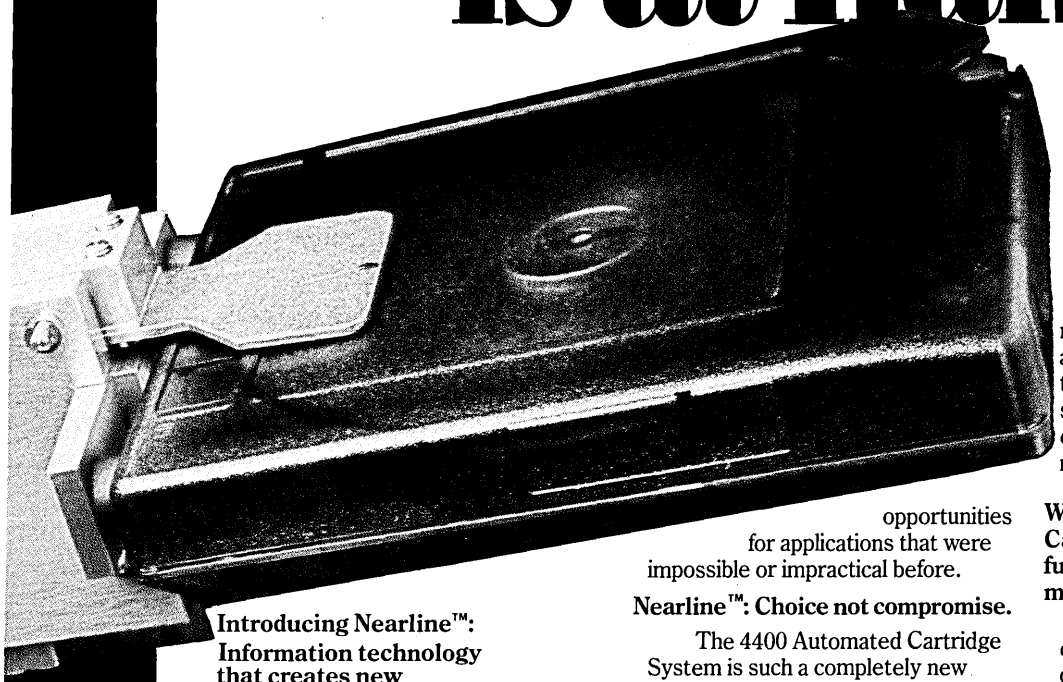

**Introducing Nearline™: Information technology that creates new information strategies.**

Until today, managers deciding how to store information were faced with uncomfortable compromise rather than effective choice.

Choices existed; but, for a great many applications, there wasn't the *right* choice. Online DASD storage was fast but relatively expensive. Offline tape storage was less expensive—but hindered in speed and consistency by such factors as how long it took to find and mount a reel of tape... or how long it took to get the mount itself scheduled.

Those, however, were the only choices: either performance or economy... online or offline... black or white.

Today there is a new choice—the first true choice—in storing data not only to meet the demands of current applications, but to create new opportunities for applications that were impossible or impractical before.

**Nearline™: Choice not compromise.**

The 4400 Automated Cartridge System is such a completely new approach to information storage and retrieval that it even requires a new definition for the way it stores data: not online... not offline... but **Nearline.™** It gives you quick and consistent access to your data with an economy that surpasses manual tape itself.

The 4400 Automated Cartridge System is a fully-automated, cartridge-based, information storage and retrieval system. The system is made up of cartridge drives (and control units), library storage modules, library management units and a host software component residing in every mainframe that has access to the library. The control units and transports read and write industry-standard 18-track cartridges; the library performs automated mounts and demounts in response to commands from the host software component. In effect, data is brought online robotically.

How fast does the 4400 Automated Cartridge System make data available? The average initial service time is 11 seconds for data within a single library storage module... compared with minutes or hours for manual tape.

**What does the 4400 Automated Cartridge System mean to the future of information management?**

It means you can automate your current manual tape operations and dramatically improve performance, costs and floorspace efficiency.

It means you can move data from expensive online devices and achieve an unprecedented cost breakthrough of less than $.50 (U.S.) per megabyte purchased—or as little as one fortieth the cost of disk.

It means that a strategic architecture is finally available for controlling the growth of DASD.

It means that huge, data-intensive applications (such as CAD/CAM, and complete history files) requiring cost efficiencies not possible online... and fast, consistent performance not possible offline... will now find an active place in serving and supporting user needs.

Nearline™: the 4400 Automated Cartridge Subsystem. It means freedom of choice for information management... and a strategic storage solution that puts the future in hand.

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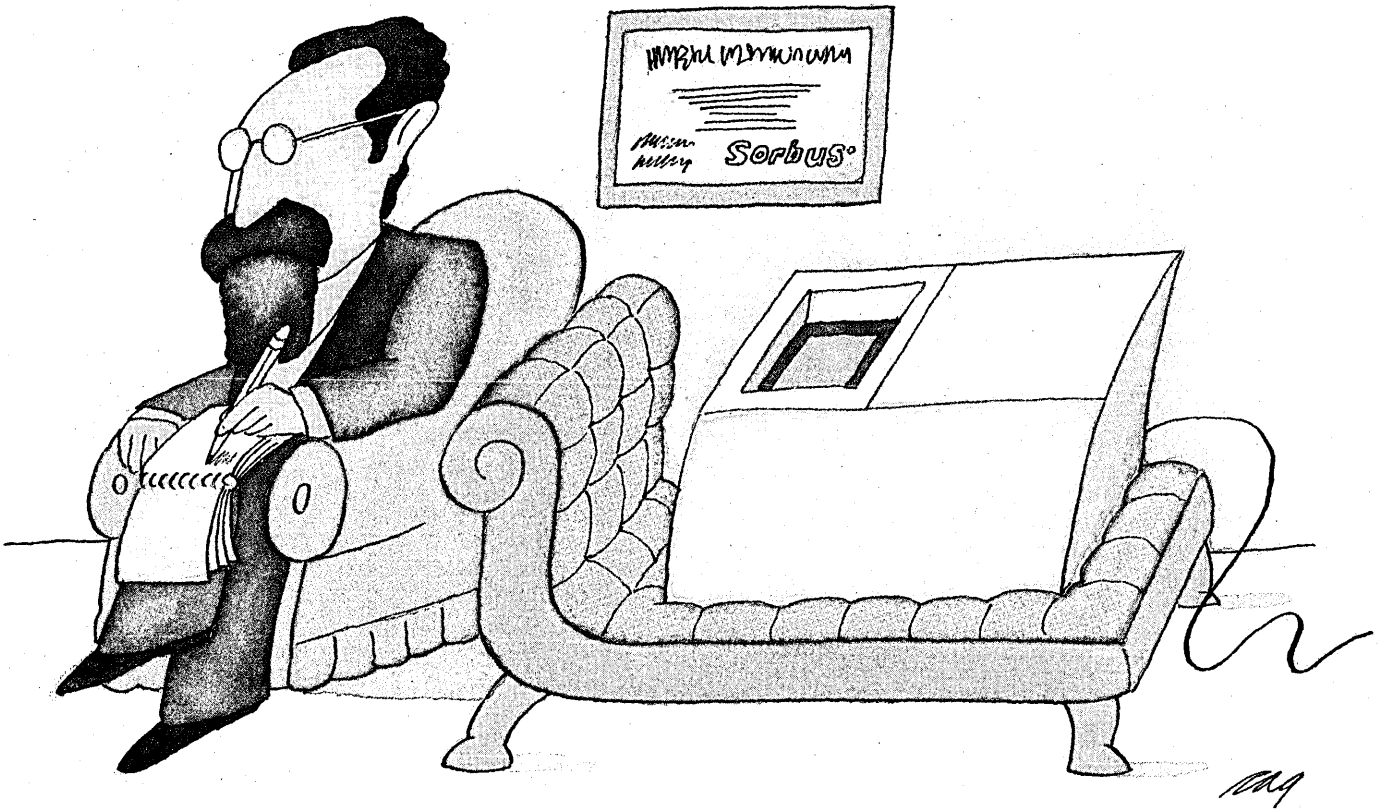


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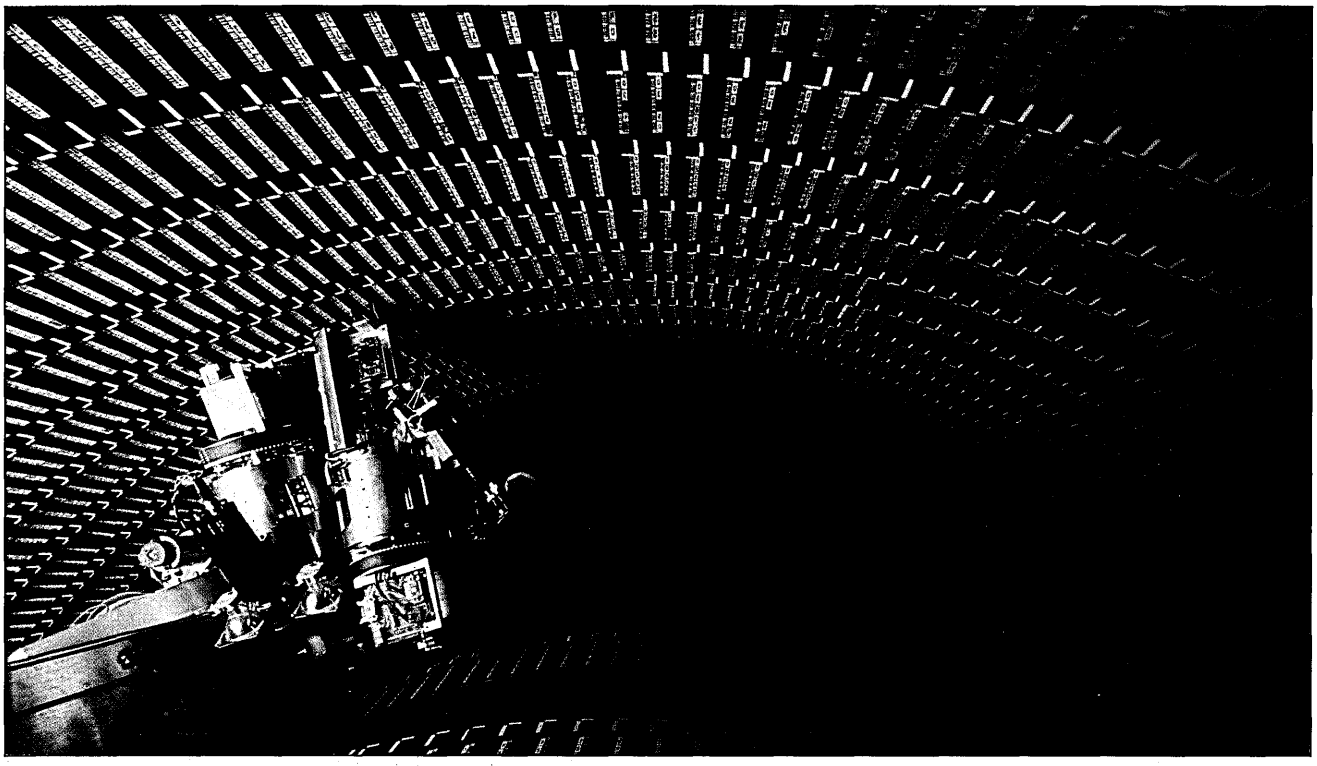


**INSIDE VIEW: A robot searches for a requested cartridge tape in Storage Technology's new 4400 Automated Cartridge System.**

Photographs Courtesy of StorageTek

# Pinning Hopes On A Vision of Storage

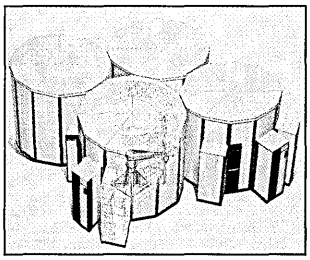
## StorageTek is betting that a new automated tape library will enable it to regain its past glory.

BY JEFF MOAD

In February 1985, when Ryal R. Poppa was hired to bring pcm storage equipment vendor Storage Technology Corp. out of bankruptcy, he took one look at the company's new-product development efforts and immediately asked himself, "What are we doing with all these adventures? We can't afford them."

So Poppa started canceling some of those engineering adventures as part of an effort to rescue StorageTek, which in 1984 had fallen victim to both IBM and its own misplaced ambitions—to the tune of $550 million in losses. He pulled the plug on development of an optical disk drive and turned thumbs down on an in-house tape cartridge design that varied from the IBM 3480 standard. At the same time, Poppa and newly named president Stephen G. Jerritts cut some $85 million out of StorageTek's annual operating budget, reducing the company's worldwide employee count to 8,500 from 15,000 and enforcing an upper management reorganization that cut the number of company vice presidents to nine from 34. The goal in those dark days was survival and the plan was to get back to the basics of StorageTek's business, namely, making highly reliable IBM-compatible disk and tape products.

Not all of StorageTek's more innovative development projects bit the dust, however. Poppa and Jerritts, to the dismay of StorageTek's creditors, decided to continue financing one effort, code named Cimmeron, an automated tape library designed to complement the emergence of 18-track, cartridge-based tape drives. Two years and $50 million in development costs later, StorageTek last week unveiled Cimmeron—now called the 4400 Automated Cartridge System (ACS)—and started promoting what it calls "nearline" storage. As it moves closer to emerging from Chapter 11 bankruptcy status sometime this summer, StorageTek is betting that ACS and its own version of the 3480 cartridge tape drive will help reestablish the company as a data storage industry leader. First, though, the Louisville, Colo.-based company must sell MIS users on the need for a new level of storage hierarchy.



**The 4400 ACS, including control units and four libraries.**

StorageTek's 4400 ACS consists of a silo, 7.7 feet high by 11 feet in diameter, containing up to 6,000 of the 3480-tape cartridges. Software, residing on up to 16 host mainframes that run MVS/XA Jes 2 or 3, controls a pair of robot arms inside the silo. They retrieve the requested cartridge and insert it into one of up to four Storage-

Tek 3480-equivalent tape drives attached to the outside of the silo. Up to 16 silos can be strung together, so a host system can have access to up to 96,000 of the 3480 cartridges on one ACS system.

The advantage of ACS, says StorageTek, is that it offers storage response time that is an order of magnitude faster than systems that rely on manual tape operators. While operators take at least 120 seconds to locate and load tape spools or cartridges, a single ACS can do the job in 11 seconds, StorageTek says. The ACS offers that quicker response time at 3480 tape storage costs of about 50 cents per MB, about one fortieth that of the 3380E.

### ACS an Alternative

The result, claims StorageTek, is a new layer of storage hierarchy—the nearline approach—between on-line and off-line that will enable MIS managers to cost-justify many new applications that were previously out of reach. At the same time, StorageTek hopes, ACS will offer an alternative to IBM's push to sell more expensive DASD for most data storage while recommending tape only for off-line backup. "IBM has been telling users to put all their datasets, even sequential datasets, on DASD and use 3480s for backup," says StorageTek senior vice president Richard R. Douglas.

"That's a good story for IBM because it sells more DASD, but for users that makes sense only if they have unlimited funds. ACS offers an alternative that is going to have an impact on IBM's storage strategy. IBM has many users increasing their DASD farms by 35% a year. We're going to cut into that."

StorageTek expects the ACS to enable users to write tape-based applications that use sequential data such as history files. Such applications will be in the areas of geophysical exploration, telemetry, auditing, and medical and other types of research, StorageTek hopes.

While the company started taking orders for the ACS only this week, officials say existing StorageTek customers already have expressed strong interest in the product. In fact, Poppa, in a recent interview with DATAMATION, says the company now expects to ship as many as 6,000 tape libraries over the next five years, more than double the number the company was planning on when it decided to introduce the 4400 ACS. At $243,500 list for each tape silo plus $134,000 for additional control units and software, the ACS could singlehandedly ensure a future for StorageTek.

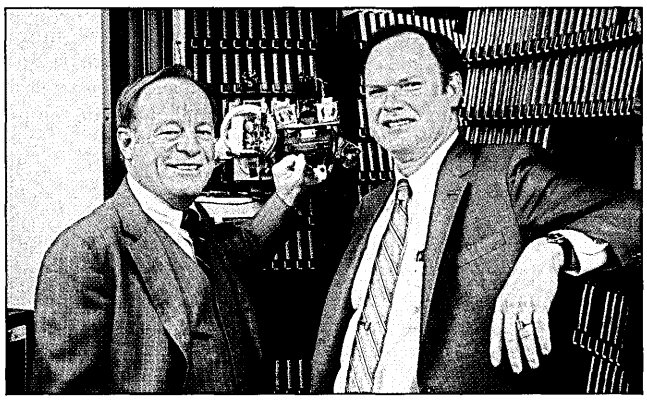
The company also hopes to leverage ACS sales with additional software products. StorageTek is negotiating with as yet unidentified software companies for joint development of a hierarchical storage manager product similar to IBM's DF/HSM. If the company's plans for ACS work out, says Poppa, "it could make the difference in StorageTek's being a great company or a so-so company."

Of course, users will be the judges of that, and some of them seem skeptical both of StorageTek as a viable pcm supplier and of the company's arguments for so-called nearline storage. One such user is the Metropolitan Life Insurance Co., New York, which was a large user of StorageTek disk and tape drives until the vendor ran into financial and product-quality problems. At that point, in late '84, says Daniel J. Cavanagh, senior vice president for electronic installations, Met Life suspended StorageTek as a vendor and became an IBM-only customer. Met Life hasn't gone back to StorageTek and won't until the company emerges from Chapter 11 and demonstrates that its DASD reliability is equal to that of IBM, says Cavanagh.

The tape library product itself won't bring Met Life back into the StorageTek fold. "It's an interesting idea, but we have our doubts about it," Cavanagh says. "We were an old IBM 3850 [mass storage] user, and that product never really fit in. This STC product looks a little like the 3850 in concept. We'd have to be shown that it would pay."

### The Specter of the Past

StorageTek's Poppa acknowledges that marketing of the 4400 ACS may suffer from association with both the 3850, which IBM finally withdrew from the market last fall, and other unsuccessful tape library products such as one marketed in the early 1980s by Milpitas, Calif.-based Braegen Corp. The 4400 ACS, StorageTek says, avoids the problems the earlier mass storage systems had. For one thing,



STEPHEN G. JERRITTS AND RYAL R. POPPA OF STORAGETEK: Hoping to make a great company instead of a so-so company.

**"IT'S AN INTERESTING IDEA, BUT WE HAVE OUR DOUBTS ABOUT IT."**

the 4400 ACS, unlike the 3850, uses a standard recording medium, the tape cartridge. Another difference is that the 4400 ACS is data-path transparent, appearing to the host system as a 3278 terminal attached to a 3274 controller.

StorageTek has convinced some large users that the 4400 ACS is a step beyond earlier automated mass storage efforts. One longtime StorageTek customer, Aetna Insurance, Hartford, Conn., has accepted StorageTek's arguments for nearline storage and may be an ACS early-support customer when the product starts shipping in the fourth quarter of this year. According to Aetna's assistant vice president for technology planning, Jeffrey A. Alperin, Aetna has been waiting for a product like the ACS to start migrating from 9-track to 18-track tape cartridges. "We've got 500,000 reels of 9-track tape that would cost us $8 million to transfer to cartridges. The last thing we want to do is spend that money to go from 500,000 round things to 500,000 square things. We have to get something more to show for it. The tape library is it because it's much less expensive than

disk and allows us to get away from having people on roller skates replacing reels of tape."

While some MIS users may focus on the ACS as a tool to replace their manual tape operator staffs, StorageTek downplays that potentially controversial aspect of the product. "This is not a labor replacement device," says senior vp Douglas. "Its cost-effectiveness could not be supported strictly on that basis. The ACS provides users with storage that is more cost-effective than DASD and just as effective."

If StorageTek is successful with the ACS, it could help breathe life into the lagging 3480 cartridge tape market and help StorageTek's own cartridge tape box, the 4480, catch up with IBM's 3480, which has been shipping since January 1985. According to an analyst at Dataquest Inc., San Jose, after strong initial demand for the 3480—despite some cartridge reliability problems—orders fell off in the second half of 1986 as some users, such as Aetna, balked at the cost of migrating to the cartridge-based system.

### IBM May Not Share in Demand

If the ACS does give some users a reason to migrate to 3480-class tape drives, IBM may not share in the increased demand. The 4400 ACS supports only the StorageTek cartridge tape drive. The StorageTek drives use a slightly offset cartridge mounting device to accommodate the round ACS silo to which they must attach. The StorageTek drives also are stacked vertically and maintenance is from the rear, unlike the IBM 3480.

StorageTek will also market, at about 95% of IBM list price, a standalone, manually operated version of its 4480 cartridge tape drive. While Poppa reports strong end-user and oem interest in the drive, the StorageTek device is likely to face added competition from Japanese manufacturers Hitachi and Fujitsu by the time it comes to market. "We've got to focus more now on unique offerings and added value," says Jerritts. "The pcm business is changing. Selling a product cheaper than IBM doesn't work anymore."

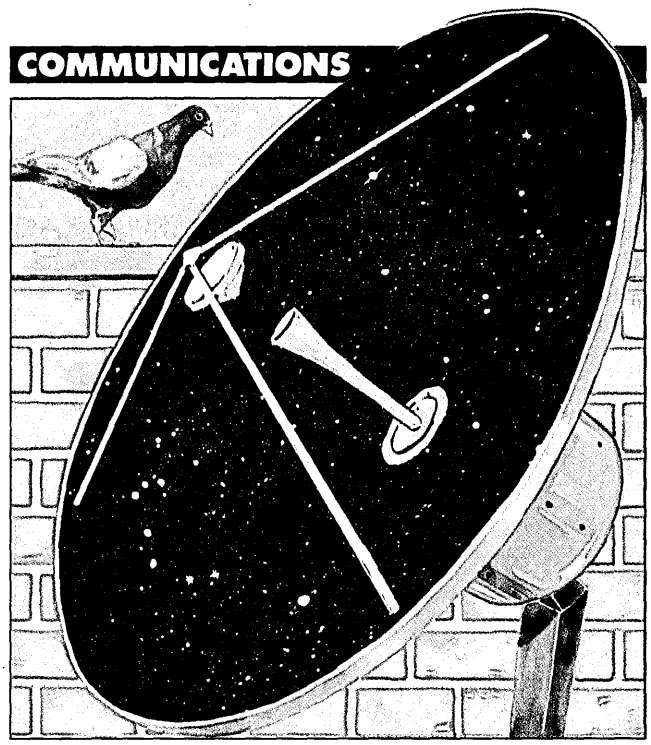
Even if StorageTek is able to do what IBM and others could not—successfully market an automated mass storage device—it will not see the financial rewards until 1988. The ACS product starts shipping in volume in the first quarter of 1988, after the 4480 drive starts shipping in the third quarter of this year. To date, no beta versions of the ACS have been shipped. While there are working ACS systems inside StorageTek, engineers are still completing development of the host software component that will operate as a secondary subsystem to MVS.

That means StorageTek will have to rely on its existing 3380E disk and its nonimpact and line printer businesses for profitability in 1987. With added new-product marketing costs ahead, StorageTek has said 1987 earnings will not match 1986 figures. "In 1986 we were able to operate profitably by using our creditors' cash," says Jerritts, "but once we emerge from Chapter 11 we're going to have to earn it through revenue growth and better margins."

Meanwhile, StorageTek officials are counting on continued user support to carry them through 1987 and to help make their ACS and cartridge tape strategies fly. "The basic reason we are still here today is because customers want us to succeed," says Jerritts. "They want an alternative to IBM, and they don't necessarily want it to be a Japanese alternative." ■

Illustration by Doris Ettlinger

COMMUNICATIONS



# Pie in the Sky?

## Can new dish technologies finally put satellite communication into orbit? A few users are betting on it.

BY SUSAN KERR

The use of satellites for corporate networks may finally get a big boost this year once installation of a relatively new and cheap breed of satellite system takes hold at several big-name customers. But even if results outshine expectations—and not everyone's convinced that will be the case—few industry participants are willing to bet their last dollar that satellites will ever become more than a highly specialized communications tool.

For years, satellites have been long on promise but short on delivery. Few companies have used satellite services for data transfer and that lack of interest was reflected in the financial problems of such vendors as Vitalink Communications Corp. and Equatorial Communications Co., both in Mountain View, Calif.

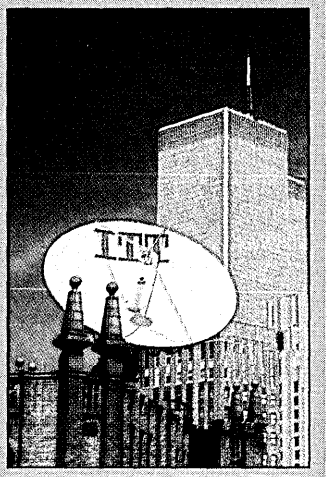
Yet, a few developments are breathing new life into that market. The rising cost of leased private communications lines (by as much as 60% in the past two years, some say) and the coming of age of KU-band satellite technology, primarily the newer very small aperture terminals (VSATs), has made some users take a second look. VSATs are small satellite dishes. Among those that have signed up recently are K Mart Corp., the American Farm Bureau (AFB), and the U.S. Geological Survey. Others, such as Montgomery Ward, are in the process of deciding.

"The number one reason we looked at it was to reduce the cost of dedicated LAN lines," says S. Kim Wells, general manager of American Agricultural Communications

## And a New Dish on Earth

One of the latest entrants into the satellite service market is ITT World Communications Inc., Secaucus, N.J., which recently installed earth stations in New York, Washington, D.C., and San Francisco for two-way digital overseas transmission of voice, data, and video.

The service, called ITT Worldsat or Intelsat Business Satellite (IBS), enables customers to communicate with IBS destinations in Europe, South America, and the Pacific. The service features redundant systems and the capability to customize circuits and interconnected sites, according to the company. Customers can integrate a number of applications on the same circuit, including low-speed and high-speed data, facsimile, videoconferencing, telephony, and packet switching.



ITT's nine-meter dish atop the company's control center near Wall Street in Manhattan.

While companies in the U.S. and abroad have a number of options for international communications at their disposal, including fiber optics, some say that for high-speed communications, satellite is the only choice. "I don't like satellite, but what else is there?" asks one satellite user in the U.K. "I couldn't get 64Kbps on a submarine cable." Submarine cable is more desirable, according to the user, because there are fewer delays in transmissions.

Meanwhile, several companies have signed up to use the ITT service, including Willis Faber PLC, an international insurance broker headquartered in London. The company uses a 64K circuit from its London office to link offices in New York.

ITT says a typical 256Kb circuit linking New York and London would be priced at $10,850 per month under a two-year contract.

BY KAREN GULLO

Systems Inc. "There was just no control over the spiraling inflation." Wells spearheaded the AFB's decision to install VSATs initially in 500 of its 2,900 county farm bureau sites.

The AFB plans to replace leased lines, which cost up to $580 a month per county office, with satellite services that Wells estimates will cost roughly $300 a month per station. Unlike leased line service, this satellite service and equipment price is guaranteed under contract by AFB suppliers AT&T and Harris Corp. not to change for at least the next five years.

### On-line Features a Plus

Price was an issue, but added functionality helped K Mart decide to adopt a GTE satellite network for interactive data exchange, says Walter Bzdok, K Mart senior director of corporate communications and systems reliability. K Mart, headquartered in Troy, Mich., plans to replace a number of different networks by 1989, including phone lines in use for batch transmission. After 2,100 sites are equipped with earth stations, K Mart hopes to have gained on-line credit card and check authorization, plus one-way video capability.

"Ours is an X.25 packet-based VSAT network," explains Bzdok. "We also looked at terrestrial X.25 packet networks but the price of that far exceeded satellites. This system is a winner. Eventually, on a nightly basis, we'll send through every item sold in a K Mart, plus we'll have credit authorization."

KU-band satellite technology first became commercially available in the early 1980s. Because KU band broadcasts at a higher frequency (12GHz to 14GHz) than the older C band (4GHz to 6GHz), its signals can be picked up by smaller antennas. Unlike C band, the KU band is not a frequency common to terrestrial communications, so Federal Communications Commission licenses are easier to get. The result has been that earth stations can be both cheaper and smaller than ever before.

Cheaper doesn't necessarily mean dirt cheap. Pat Aussem, district manager for satellite marketing at AT&T, Bedminster, N.J., points out that hub earth stations placed at a customer's centralized data processing site cost more than a million dollars each. AT&T VSATs, placed in remote sites such as a branch office or retail store, cost between $10,000 and $15,000. On top of that, space segments are sold in 64Kb increments at $2,100 each, per month.

While in the end it may be cheaper than some leased lines, that's a big capital investment, says Vitalink product manager Guy van Buskirk. What satellite services vendors have to overcome is that customers "are more likely to spend $20,000 a month on the phone company. A computer center manager can sign off on a phone bill a lot more easily than on a few million dollars' capital investment. Early on, people thought the market would take off if we could prove a break-even point in two years. It takes more than that; other things affect buying habits."

### Performance and Buying

One thing is performance. KU-band interactive data rates can start as low as 2.4Kbps, but generally are in the 56Kbps range. Speeds at T1 rates are possible for broadcast applications. Another measurement is response time. Satellites are 23,000 miles up, so a half-second automatic round-trip delay is unavoidable, says Robert Hendee, marketing vice president of Harris's Communications Sector, Melbourne, Fla. A good response time is considered to be about three seconds, though most average between four and five seconds.

Thus, if speed is of the essence or if the application is highly interactive, then KU-band satellite services aren't a good choice. In the typical cluster controller environment, however, users are accustomed to slower rates, vendors say.

An ideal application, says Hendee, is found where a corporation with multiple facilities communicates to one database. In general, large retail outlets are the number one candidates for the service. To expect to break even on the service, customers should have 150 or more sites in which to place VSATs.

For companies with a smaller number of sites, some vendors allow the shared use of hub earth stations by groups of customers. How

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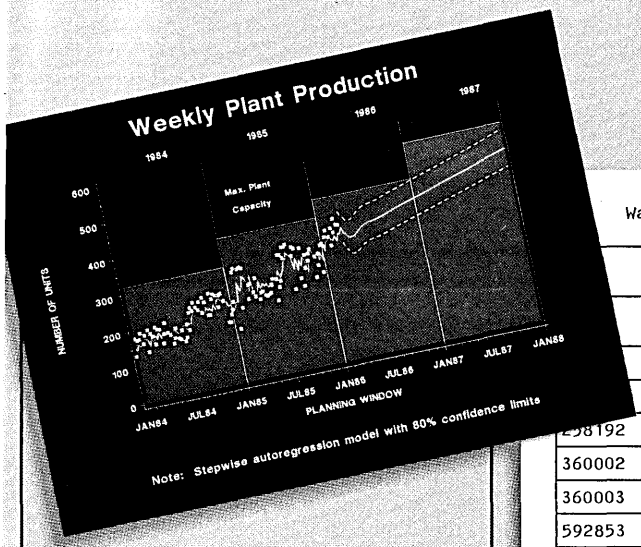


Warehouse Inventory Report - 16JAN87

| | Quantity on Hand | Quantity on Order | Projected Reorder Date |
|---|---|---|---|
| | | | |
| | 123980 | 10000 | THU, FEB 12, 87 |
| | 89450 | 5000 | FRI, FEB 20, 87 |
| 258192 | 20110 | 1000 | MON, MAR 30, 87 |
| 360002 | 8585 | 0 | TUE, FEB 10, 87 |
| 360003 | 15985 | 500 | TUE, FEB 10, 87 |
| 592853 | 469120 | 20000 | WED, FEB 18, 87 |

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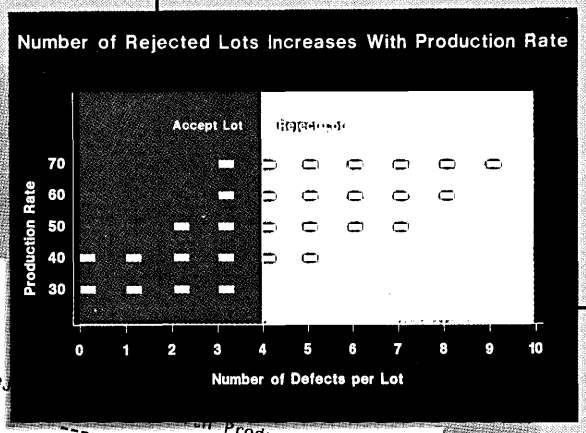


Lots Rej... Production Rate

| Rate | Lots Tested | Rejected Lot Statistics | | | |
|---|---|---|---|---|---|
| | | Lowest | Highest | Mean | Percent |
| 30 | 4 | 1 | 4 | 2.5 | 0 |
| 40 | 6 | 1 | 6 | 3.5 | 33 |
| 50 | 6 | 3 | 8 | 5.5 | 66 |
| 60 | 6 | 4 | 9 | 6.5 | 83 |
| 70 | 7 | 4 | 10 | 7.0 | 85 |

* Computer Intelligence, January 1986.

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many companies will actually jump on the bandwagon is questionable.

AT&T for its part expects a fair number to sign up. "We have our first shared hub site in New York City and I expect we'll add others in 1987," says AT&T's Aussem. "Many customers lease buildings and don't want to put their own earth stations up, so this is attractive. Also, it allows smaller networks."

On the flip side, one vendor may be reevaluating its role in the market. McDonnell Douglas's Tymnet subsidiary is "reassessing where we're going," says a spokesman in regard to its year-old Tymstar satellite network. Tymnet has a public hub in Los Angeles and has a "few" beta tests ongoing. By the third quarter this year its fate will be decided, says the spokesman. Other than that, he declines to comment on the service.

Thus, the common wisdom on satellites is that the new crop of customers must be satisfied with their systems before widespread growth will occur. And a lot of people are holding their breath. Meanwhile, some of these users may encounter rather unusual difficulties.

Satellites offer a unique brand of problems. KU-band systems are more sensitive to bad weather conditions than C band despite attempts at improvement. Aussem says AT&T quotes network availability of 99.8% on KU band as opposed to 99.99% on C band. Likewise, how many other communications media are affected by the equinox? Periodically during the equinox, outages can occur for a few minutes, claims van Buskirk.

In addition, accurately diagnosing problems within the network may be a challenge. Antennas at remote sites can be mispointed; discovering that problem from the hub is easier said than done, says one vendor.

Tallman warns that to guarantee capacity, a way must be found within the next two years to solve the satellite launch vehicle problem caused by the space shuttle disaster. Vendors acknowledge the concern, yet say alternatives exist, including allowing foreign companies to handle launch programs.

### Fiber Optics Is a Competitor

The other is that of a potentially competitive transmission medium: fiber optics. As more and more fiber is laid, fiber optics should become aggressively priced, and pricing is currently satellites' big edge.

"We argued that a good deal amongst ourselves," concurs K Mart's Bzdok. "But we decided that 80% of the cost of a terrestrial network is in the local loop and fiber won't affect that local loop."

Satellite services vendors agree. Fiber-optic cables will continue to be laid, at least for the forseeable future, near metropolitan centers. That won't help companies like K Mart, which has many stores in outlying areas. Fiber optics will be good for network backbones, with satellites continuing to handle remote locations, they say hopefully.

Still, it's another fly in the ointment. "Some people say this market will be $1 billion by 1990," says Harris's Hendee in regard to the VSAT arena. "I don't really believe those numbers." Hendee says predictions for the market's value made in the past have not been met.

"I'm going to wait and see how successfully the trials go this year," he adds. "Nothing really should go wrong, but users are funny beasts. No one can predict if this service will do everything they want. Until they say, 'This meets all my expectations,' it'll go slow." ■

COMMUNICATIONS

# A Switch in Time

## The CGE-ITT deal has created a new telecom force, but its impact on the U.S. market is still undecided.

BY JAMES ETHERIDGE & SARAH UNDERWOOD

The summer of 1986 will be remembered by Europe's telecom suppliers as a period of dramatic upheaval. It was the season when France's major telecom firm, Compagnie Générale d'Electricité (CGE), finally agreed to buy ITT's European business—giving it an extra 20% of the European market for central office switches.

That move sent shock waves through the European telecom industry. It was followed by months of frenetic corporate activity as suppliers jostled for position in the market and searched desperately for partners that might help them survive the next decade. The result is that many firms in Europe's public switching business will be almost unrecognizable when they come to bid for the next generation of broadband equipment in the 1990s.

At stake is a European market for public switches, which Edward Mier, director of the European telecommunications industry service in London for San Jose-based market analyst Dataquest Inc., predicts will be worth $2.4 billion in 1990, compared with a market of $2 billion in the U.S. This reflects the fragmented structure of the European market, where each country has its own telephone authority and its own indigenous suppliers.

In turn, this plethora of suppliers means a plethora of switches competing for market share. At last count, European suppliers offered six digital switches, vying for success against each other and three U.S. products that have been tailored to national networks.

"It is the reality of having so many digital systems in Europe, costing some $7 billion to develop so far, that has focused the minds of the manufacturers," contends Mier. In contrast to this substantial European R&D expenditure, the U.S. has spent only $3 bil-

**FIGURE 1 ITT Companies Joining CGE**

| COMPANY | COUNTRY | ITT STAKE |
|---|---|---|
| *Standard Elektrik Lorenz* | W. Germany | 85.9% |
| *ITT Telecom Products* | United States | 100.0% |
| *Bell Telephone Mfg.* | Belgium | 100.0% |
| *FACE Finanziaria* | Italy | 100.0% |
| *Standard Electrica* | Spain | 71.0% |
| *ITT Austria* | Austria | 100.0% |
| *ITT Netherlands* | Netherlands | 100.0% |
| *Standard Electric Kirk* | Denmark | 100.0% |
| *Standard Telefon* | Norway | 60.0% |
| *Standard Radio & Telefon* | Sweden | 100.0% |
| *Standard Telephone & Radio* | Switzerland | 100.0% |
| *Standard Telephone & Cable* | Australia | 100.0% |
| *Standard Electrica* | Portugal | 100.0% |

N/A = Not Available

Source: International Telephone and Telegraph

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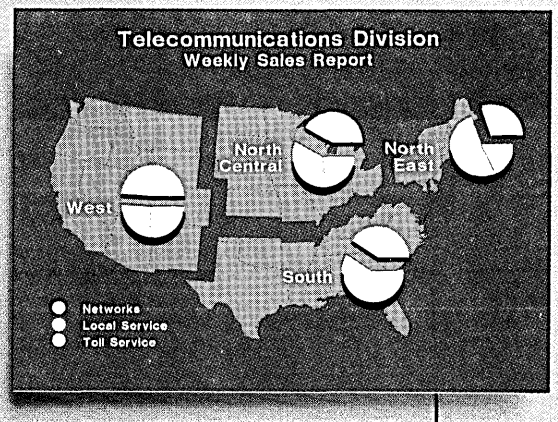


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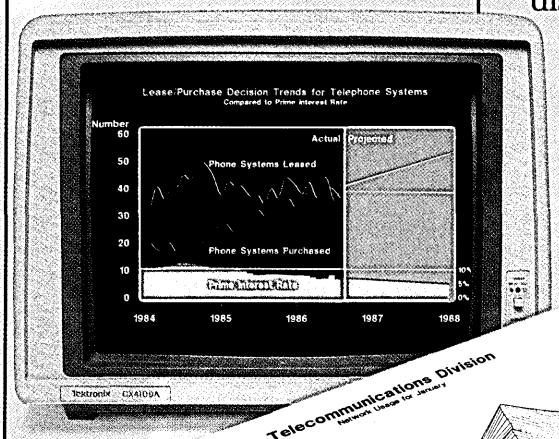


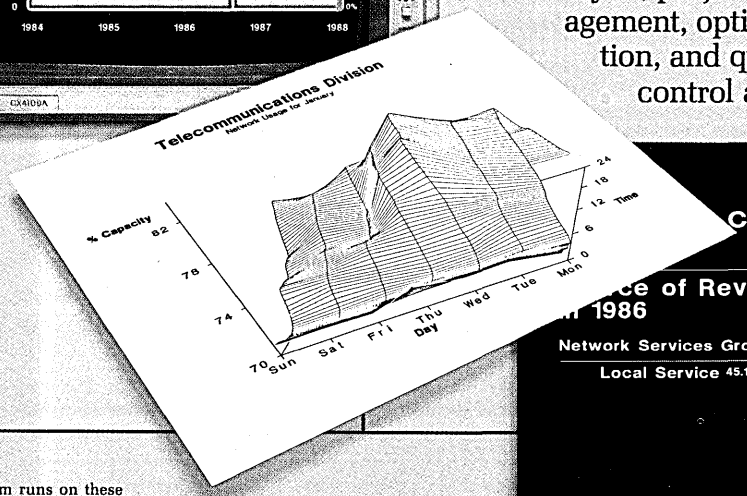


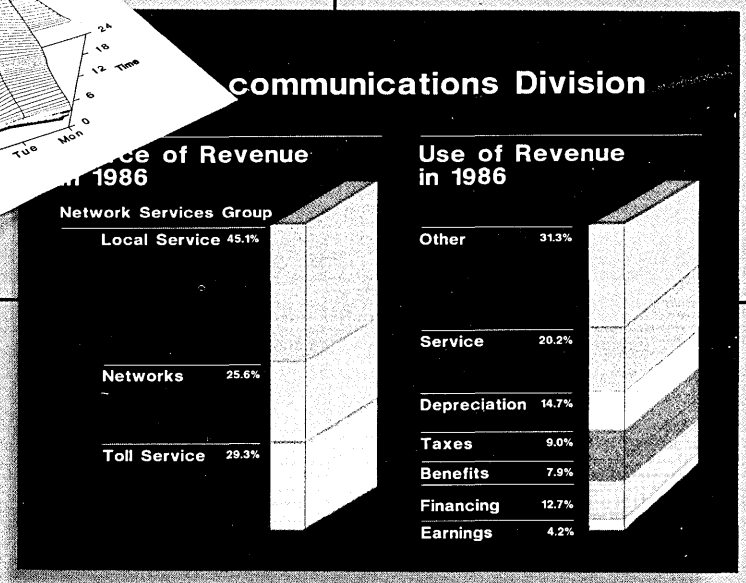


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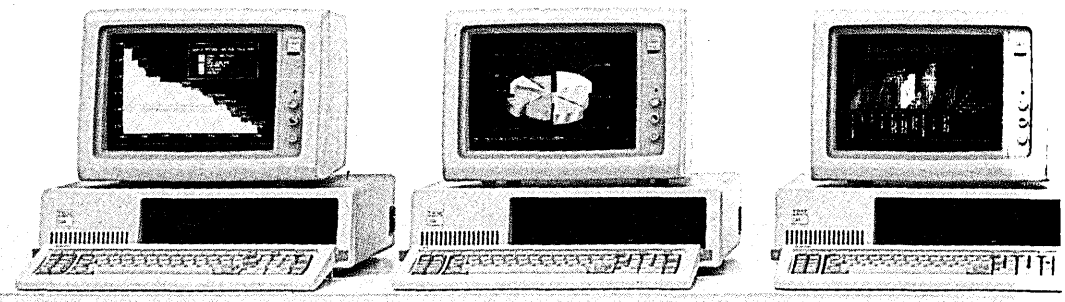

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lion on developing digital switching technologies and Japan only $2 billion.

Some of those European funds came from France, which is hoping that the CGE deal with ITT will help it cash in on this R&D investment and protect its annual $380 million trade surplus in telecommunications. Increased market share and market coverage will help. Apart from the extra 20% of European market share, CGE also gains ITT's Telecom Products Corp. and its stake in Australian Standard Telephone and Cable.

The cost to CGE is $2.3 billion, but the result is a new European company that is expected to be one of a handful of survivors that will supply digital switches for Europe's planned integrated services digital network (ISDN).

The CGE-ITT company was launched officially last month in Brussels. It is called Alcatel, after the CGE subsidiary, and is headquartered in Amsterdam, the Netherlands. CGE, which the French government has announced it will privatize within a year, has a 55.6% stake and ITT has 37%, with minority shareholders including Credit Lyonnais, a French bank, and Société Générale de Belgique, a large Belgian financial group.

The new chief executive is Pierre Suard, chairman of CGE, and the operational management head is Philippe Gluntz of CGE.

On the product side of the equation, however, CGE's deal with ITT effectively ended the French company's hopes of selling its E10 switch in large numbers in the U.S.—a market from which ITT has already withdrawn after massive losses with its System 12. An earlier attempt by CGE to move into the U.S. market through a pact with AT&T was stopped by the French authorities. It was feared that AT&T stood to gain more ground in the French market than CGE would gain in the U.S.

Despite CGE's failure to strike a U.S. marketing deal, the joint venture will be second only to AT&T in worldwide telecom market share. It will have annual sales of $10 billion, assets of $7 billion, and a staff of 145,000 in 75 countries. It will also hold 42.5% of the 1986 European public switch market, measured by shipment, according to Dataquest estimates. That beats the U.K's GEC and Plessey, which have a combined 27% share, and West Germany's Siemens with 8.6%.

But as Franz Arnold, a director of West German consultancy Scientific Control Systems (SCS) in Bonn, points out, "These developments in France cannot be regarded as being isolated from the rest of Europe. And the European public switch market can't be isolated from the U.S. There will be a concentration of European suppliers, and the big ones that survive will have a leg on either side of the Atlantic."

**THE JOINT VENTURE WILL BE SECOND ONLY TO AT&T.**

### U.K. Enters Telecom Drama

The U.K. companies joined the European telecom drama on Aug. 6 last year. That was when the U.K.'s Monopolies and Mergers Commission refused to permit GEC's proposed takeover of Plessey on the grounds that the merging of their defense businesses would put them in a monopolistic position. GEC's bid had been made in response to an earlier suggestion by Plessey that the two should join their telecommunications businesses. Now the tale has come full circle with the U.K. government urging the pair to streamline switching operations to become more cost competitive.

Meanwhile, in West Germany Siemens is hoping that it will have a large part to play in the unfolding European telecom saga. Until the CGE and ITT merger, it was Europe's largest indigenous telecommunications company and it has been looking for partners to maintain that position. Last summer it acquired GTE's U.S. and international transmission business along with its central office and private switching operations in Italy, Belgium, and Taiwan. The deal cost Siemens $420 million and not only provided new inroads to European markets, but also a way into the U.S.

The West German company's involvement does not end there. Following the CGE-ITT deal last summer it turned its attention to Compagnie Générale de Constructions Téléphoniques (CGCT), ITT's French subsidiary until it was nationalized by a Socialist French government in 1982. Siemens was not a lone suitor. It was joined by AT&T's European joint venture with Philips Telecommunications in the Netherlands, Sweden's Ericsson, Italy's Italtel, and the U.K.'s Plessey.

Although one of Europe's minor telecommunications equipment suppliers, CGCT has become pivotal in the battle for European market share. With CGE's Alcatel enjoying a hefty 84% of the French public switching market, CGCT is the French PTT's only other supplier. The Direction Générale des Télécommunications (DGT), France's telecommunications authority, decided that this was no real alternative since CGCT makes CGE-Alcatel systems under license. In order to transform CGCT into a genuine second supplier, the French government decided to privatize the company and look for a foreign telecommunications equipment manufacturer to take a stake and start producing its own systems in France.

The search for a partner for CGCT was protracted. One reason was the decision made by the government that foreign concerns would be limited to a maximum 20% stake in companies being privatized. This condition was made late last year, causing potential partners to reconsider both their financial offers and the amount of technology they would need to transfer for a relatively small stake in CGCT. AT&T/Philips, which was planning to buy a 60% holding, decided to continue negotiating for 20%, as did Siemens.

### Competition Turns Nasty

The competition between AT&T and Siemens for a slice of CGCT soon got nasty. A foreign deal with CGCT was considered so important by the telecom industry that the Siemens interest even drew the displeasure of the U.S. FCC.

What happened is a prime example of how the restructuring of the European telecom industry is dragging governments into the fray. To help support its CGCT case, Siemens had enlisted the help of the West German government, on the grounds that CGE would gain a strong foothold in the West German market by securing control of ITT's subsidiary there, Standard Elektrik Lorenz. West German suppliers, however, would not have an opportunity to enter the French market unless they got a slice of CGCT. So, in a bid to throw a wrench in the CGE-ITT works

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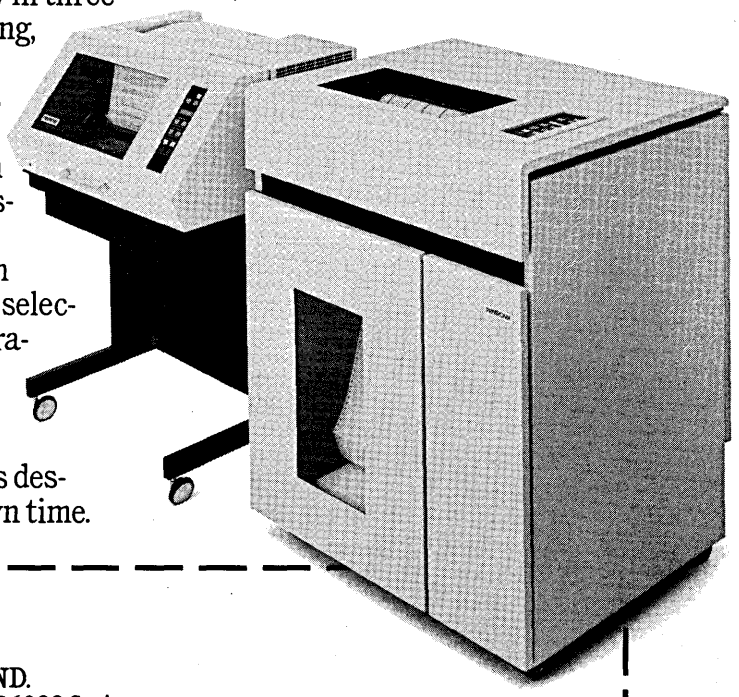

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and put pressure on French officials, the government in Bonn referred the proposed merger to the West German Federal Cartel Office for a review of the competition issues involved. Though the office has given a general go-ahead to the deal, it is still trying to work out the details.

Meanwhile, in support of AT&T, the FCC threatened to impede Siemens' progress in the U.S. switching market by imposing tighter restrictions on the award of public switching contracts to foreign suppliers.

### A Slice of the Market

Though CGCT's future may still be uncertain, the battle for control of a minority share of this small French supplier demonstrates the desperation of telecommunications companies to gain a firm foothold in Europe. The reason is simple—they all want a slice of Europe's growing telecom market.

Following the European Commission's recommendation that members build an ISDN between 1988 and 1993, tenders from many countries' PTTs are expected to go out over the next three years. This call for new technology will speed standardization among suppliers, but the real crunch will come in the mid-1990s, when PTTs expect to install a further generation of technology in the form of broadband switches.

SCS's Arnold believes that no existing companies will be strong enough to meet this demand. "Companies will then have to be joined together. U.S. competitors will be very threatening, but Europe has a good chance of holding onto its own markets if governments and suppliers fully understand the infrastructure of Europe's telecommunications and the meaning of liberalization."

Also facing this daunting challenge are a number of smaller European telecom companies—Italy's Italtel and the U.K.'s Plessey.

Like other European manufacturers, Italtel has little choice but to attach itself to a major supplier. For the Italian company, that is an invidious position since it was a founding member of the Big Four group with France's CGE/Alcatel and the U.K.'s Plessey and GEC. The group was set up in 1984 to promote the development of common switching technology and, later, cooperative marketing. It foundered when the CGE-ITT and Siemens-GTE accords were struck. CGE's acquisition unbalanced the venture and Siemens' accord with GTE rankled Italtel, whose Linear UT switch was originally based on GTE technology.

One option open to Italtel and its smaller colleagues is to join the CGE-ITT venture. Belgium's Société Générale de Belgique and the Spanish PTT company Telefonica are considering joining. Plessey, GEC, and Italtel's state holding company Stet each turned down an invitation to join, however, because they would not get an asset stake.

The trouble for these smaller suppliers is that if they don't make European pacts, they will be vulnerable to larger predatory suppliers. Sweden's Ericsson, for example, is taking a keen interest in Italtel. Canada's Northern Telecom, meanwhile, was rumored to have approached ITT about its European operations at one stage, and is still eager to forge new agreements in Europe.

But if Europe's telecom vendors are to be among the victors over the next decade they must choose partners carefully. "Get fit, rationalize [streamline], seek opportunities beyond your domestic market to remain profitable, and find partners to share your technology costs," counsels Dataquest's Mier. ■

**TERMINALS**

# New Rules for an Old Game

## As IBM ships a new and cheaper terminal, plug-compatible vendors face new opportunities and pitfalls.

BY ROBERT J. CRUTCHFIELD

If it didn't say "IBM" on the 3191 terminal, users might mistake Big Blue's latest offering for the plug-compatible competition. Unlike its predecessor, the 3178, the 3191 actually adopts some of the competition's features—it's smaller, has ergonomic features, and, most important, it has a sharp price.

As a low-cost display, the 3191, which was introduced last June and just began to be shipped in volume last month, is poised to compete against the lower-cost competition. The new terminal has a much smaller footprint than previous terminal offerings as well as an improved display and keyboard, and it has an optional three-year warranty.

"The significance of the 3191 is that it is designed to be inexpensive. It is built from the ground up in a fully automated facility," says Joe Wagner, an analyst for Dataquest, a research firm in San Jose. "The terminal gives IBM room to cut prices."

Sharper pricing, automated manufacturing, an optional three-year warranty, and more features have forced plug-compatible vendors to play the game by a new set of rules.

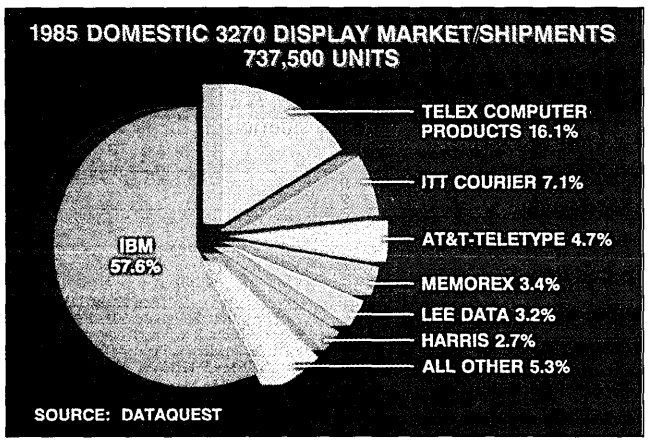
Offshore manufacturing isn't enough. To play the new game, plug-compatible vendors must match IBM's features and warranties while offering their products at a lower price—and still at a profit.

This is not an easy task in today's market. The 3191 lists for $1,200. An MIS executive for a large energy company, however, says he has been offered the product in large quantities for $600 each.

"We have heard reports that the 3191 is being discounted," says Irene Goldman, an analyst at International Data Corp., Framingham, Mass.

At press time, IBM was unavailable for comment on 3191 pricing.

Dataquest estimates that in 1985, IBM and the rest of the 3270 terminal vendors



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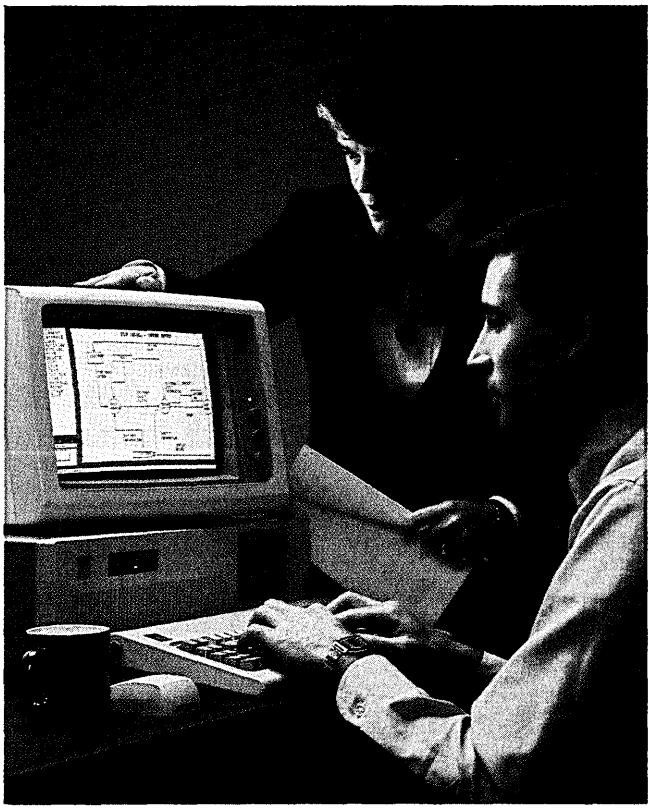
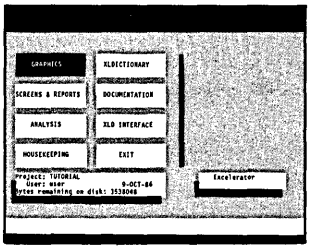
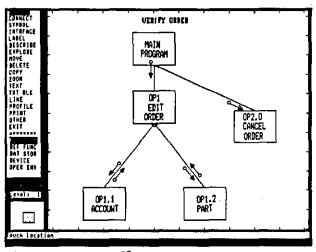
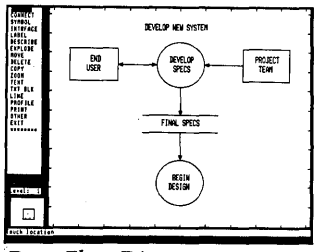




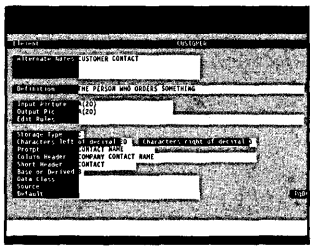

*Main Menu*




*Structure Chart*




*Data Flow Diagram*



*Data Dictionary*

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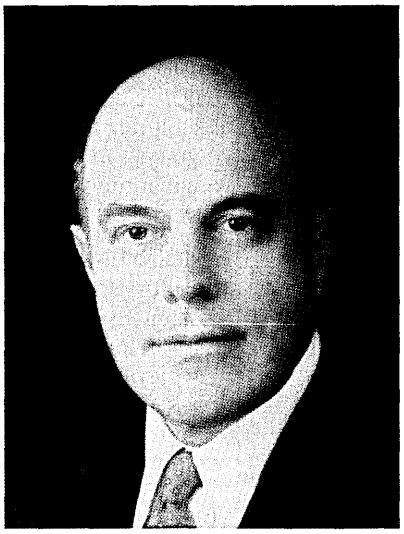
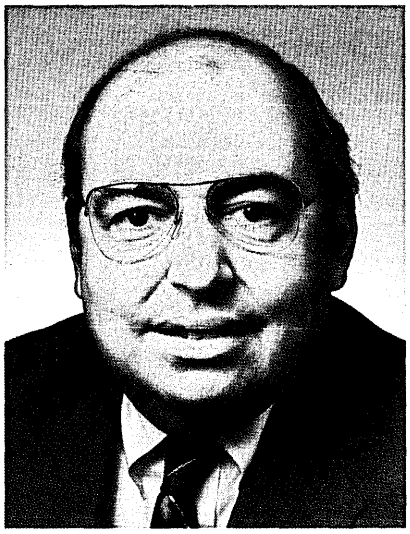


RAND McNALLY DID.

"The art of mapmaking has been practiced by our family for generations. But today Rand McNally is a multifaceted organization engaged in publishing, printing and providing information services. To insure our continued success, we've adopted an information management strategy based on Cullinet software. Cullinet's integrated software system solution enabled us to create a single, powerful corporate database. Now we can leverage information important to all our various businesses from a single data pool. I'm confident we're headed in the right direction."

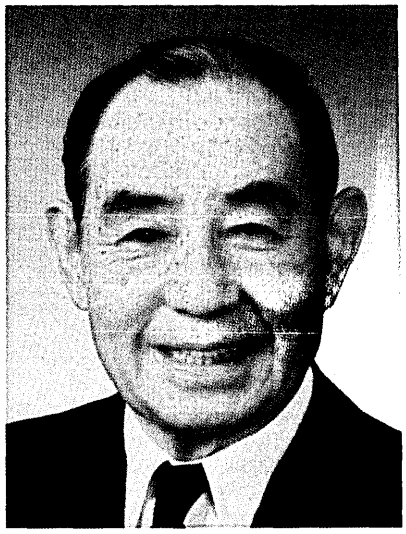
Andrew McNally, IV, *President & CEO*
*Rand McNally & Company*



CALIFORNIA ALMOND GROWERS DID.

"To survive a 40 percent drop in U.S. prices three years ago, we had to sharpen our marketing focus. To sharpen our marketing focus we had to automate our sales tracking and reporting capabilities. To do that we had to have a high-performance, integrated, database management system with versatile application development tools. In a nutshell...we had to have Cullinet."

Roger J. Baccigaluppi, *President & CEO*
*California Almond Growers Exchange*

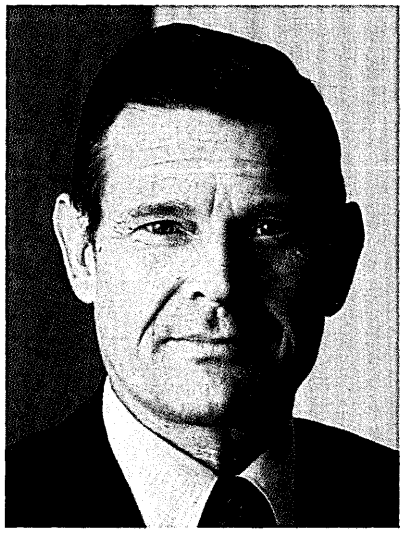


COSMO OIL DID.

"When three oil companies become one, tremendous opportunities arise. Before they can be seized, however, the challenges created by merger must be met and surmounted. With able assistance from Cullinet, we have integrated three complete and separate business operations into one smooth system. In my mind's eye, I have a very clear image of what I want our company to be in the future. Cullinet is helping me make that image a reality."

Yoshiro Nakayama, *President*
*Cosmo Oil Co., Inc.*

# SUCCESS. CULLINET.



VOLVO DID.

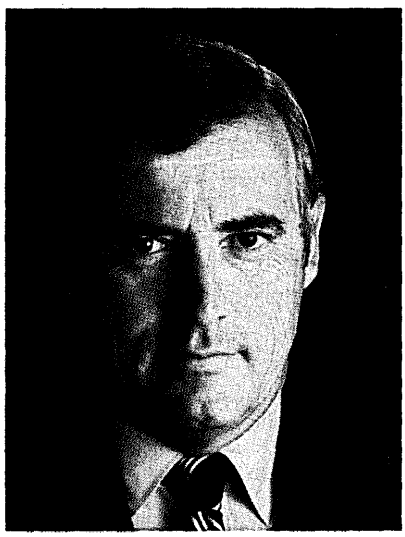
"In order to give Volvo customers in North America the attention they've come to expect, our on-line systems need to be up and running at least 98.5% of the time. Fortunately, Cullinet software exceeds that percentage. Cullinet has helped Volvo North America become a $3 billion corporation because we've developed a truly flexible information management system – one that addresses the wide variety of business problems faced by our various product divisions and companies. With IDMS/R, fourth-generation applications and the full set of information center tools, our organization is being driven to greater success all the time. And Volvo customers get the same level of professional service from us that we get from Cullinet."

Bjorn Ahlstrom, *President & CEO*
*Volvo North America Corporation*

RACAL-VADIC DID.

"We spent considerable time and money formulating a five year MIS plan. I was convinced the plan was sound, that it would satisfy the needs of our rapidly expanding, multi-site modem manufacturing company. All we needed was an application development software system capable of carrying out our plans. Of the six major vendors we considered, Cullinet offered the best price/performance ratio and functionality for our particular needs."

Kim Maxwell, *President*
*Racal-Vadic*



"Access Cullinet and you access a unique software technology – a proven three-level integration of database management, fourth-generation business applications and decision support. The Cullinet integrated software solution will put your corporate information strategy on target. And Cullinet applications specialists will work with you to implement your programs quickly. For the competitive edge you'll need to succeed into the 90s and beyond, call Cullinet at (800) 551-4555. In Massachusetts, call 617-329-7700. Or write to Cullinet Software, Inc., 400 Blue Hill Drive, Westwood, MA 02090-2198. *Your* success story could be next."

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CIRCLE 19 ON READER CARD

shipped 737,500 terminals. That number rose 11% in 1986 to 833,000, but despite the jump in terminal sales, dollar volume for the year dropped to $1.42 billion from $1.48 billion in 1985.

According to analysts, IBM has remained a formidable competitor in the terminal market, although in 1985 it slipped one percentage point in market share to the plug-compatible competition, mainly Telex. In 1985, IBM had 57.6% of the 3270 market, followed by Telex with 16.1%, ITT Courier with 7.1%, AT&T-Teletype with 4.7%, Memorex with 3.4%, Lee Data with 3.2%, Harris with 2.7%, and the remaining companies with 5.3%.

**Competitors Strike Back**

But even in this new era where more terminal shipments mean less dollars, some plug-compatible vendors are holding their own.

Instead of going offshore for margins, Telex Corp., headquartered in Tulsa, Okla., has made a large investment in a fully automated terminal manufacturing facility in Raleigh, N.C., and an automated distribution and repair center in Tulsa.

Last week, Telex introduced its entry into the 3191 market, the Telex 191, which will initially be available only in the U.S. Like the 3191, it is built in a completely automated facility to keep costs down. The 191 attaches to either a Telex or an IBM control unit. It offers an 88-key keyboard or a recently announced 122-key keyboard. An added optional feature is the ability to attach a light pen or a message printer. The 191 lists for the same price as its IBM counterpart, with a 90-day warranty.

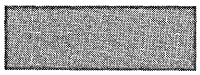
According to Mike Bowman, product manager for Telex's 3270 terminals, the company will be competitive with IBM on volume discounts and warranty periods, which run as long as three years.

Other vendors to enter the 3191 market include Beehive International (with an enhanced 3278 offering) and Memorex, both in San Jose. ITT Courier, also in San Jose, is readying its 3191 entry for a March announcement.

"It is an overriding situation. Plug-compatible vendors must have a 3191-compatible product because that is now the entry point for 3270 terminals," Wagner says.

As terminal prices drop, plug-compatible vendors have to look to other segments of the market to make up for slipping 3270 margins.

"Telex has expanded into new markets that complement and expand our 3270 [offerings]," says Pat Reiner, vice president of marketing and product planning for Telex. "For example," she says, "in July of last year, we announced a new series of airline [reservation] terminals. In September we introduced the C078 voice/data terminal, and in November we entered the System 3X market with nine new products."



**"THE TERMINAL GIVES IBM ROOM TO CUT PRICES."**

Analysts also say that specialized products like the voice/data terminal and airline reservation terminals can still command higher prices and margins for Telex. Companies such as Lee Data, Minneapolis, and Memorex are the only terminal vendors now offering a more diversified product line.

Another area in which Telex is doing well is control units. At the time of the 3191 announcement, IBM also said it would add multiple sessions and windowing capabilities to its control unit, but Big Blue has yet to offer a control unit with these features. However, analysts say IBM is readying products with these features for release sometime in the first half of this year.

**Taking Advantage**

In the meantime, companies such as Telex are taking advantage of the time by bringing out products that match IBM's direction.

Telex recently introduced its 274 control unit with windowing, which allows 3270 terminals to configure up to four displayable windows of four different host sessions. Data can be copied from one window to another, even if one of the windows is an ASCII host session. The control unit also supports the IBM 3179G graphics support feature, which enables an attached 3179G to use the all-points-addressable (APA) graphics support available from the host computer.

According to Telex's Bowman, when his company incorporates announced features from IBM, as in the case of the control unit, the vendor must adhere to strict compatibility.

"These vendors don't want to jepordize their plug compatibility. They don't want to extend themselves too far away from IBM," says IDC's Goldman.

In the short term, IBM is taking a very aggressive posture in the 3270 business as it attacks its competition's strongest selling point—price. But, until IBM can deliver all it has promised in the area of control units, there is plenty of room in the market for the plug-compatible vendors. ■

**LANGUAGES**

# What the Countess Didn't Count On

## Ada continues its slow march to the dp world, but can it shake off the DOD image?

BY EDITH D. MYERS

Ada, the Department of Defense-mandated programming language named for Ada Augusta Byron, Countess of Lovelace, is hardly topping the wish lists of corporate MIS managers.

There are those who think it should and those who think it someday will (see "Ada Fans Say Now's the Time," May 15, 1984, p. 38), and there are some things happening that could propel the language into a prominent position in the world of commercial data processing. Foremost in most minds was IBM's seeming endorsement of the language when it leaked news at a SHARE meeting in August that it would be offering Ada compilers and productivity tools for 370 systems running under MVS and VM/CMS. This disclosure eventually materialized as an agreement between IBM and Telesoft, San Diego.

Despite the IBM imprimatur, Ada apparently still has neither extended its identity nor ventured beyond the military/industrial world. One of those reasons, of course, is the entrenchment of languages such as COBOL in data processing departments. Another is the relatively re-

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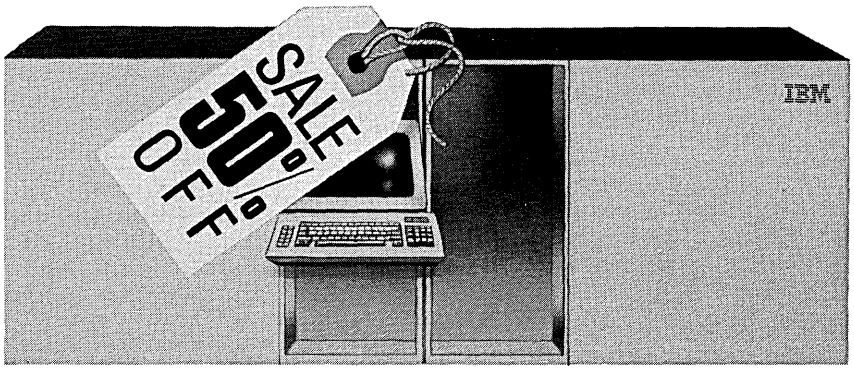


With ORACLE version 5, you save half the computer you thought you needed in order to "go relational"... some benchmarks indicate you save even more.

## WHY IS VERSION 5 OF ORACLE SO FAST ON MAINFRAMES, ON MINIS AND ON MICROS?

### □ REASON #1: AI OPTIMIZES QUERY PROCESSING.

V5 applies artificial intelligence to SQL query optimization. For example, few DBMSs can optimize the query "Select accounts 90-days overdue **and** accounts over $10,000." But only ORACLE can optimize "Select accounts 90-days overdue **or** accounts over $10,000."

### □ REASON #2: ARRAY PROCESSING OPTIMIZES ACCESS TO LARGE SETS OF DATA.

Relational DBMSs have always dealt with **logical** sets of data. But they manipulated only one **physical** record at a time. V5 eliminates overhead by physically delivering arrays of hundreds, even thousands, of records at a time.

### □ REASON #3: PARALLEL-PROCESSING OPTIMIZES COMPUTER RESOURCE USAGE.

V5 is 100% re-entrant shared code, and ORACLE's parallel-processing architecture fully exploits modern dyadic and quadratic processors from IBM, and other multi-processing computers such as those from DEC and Stratus. So ORACLE uses all the MIPS in parallel-processor configurations.

### □ REASON #4: MULTI-TABLE CLUSTERING OPTIMIZES JOINS.

ORACLE stores data from different tables on the same physical disk page. This technique—called *multi-table clustering*—permits you to access data from multiple tables in one disk read operation. Clustering improves ORACLE performance on all multi-table operations, such as join queries, update transactions, etc.

### □ REASON #5: HIGH-SPEED RELATIONAL SORT FACILITY OPTIMIZES DATA AGGREGATION

Ad hoc relational queries frequently request that data be grouped, ordered or otherwise sorted. V5's internal sort facility performs aggregation and elimination early, faster than previously thought possible.

### □ REASON #6: EFFICIENT ROW-LEVEL LOCKING OPTIMIZES TRANSACTION THRUPUT.

Row-level locking and a read-consistency model optimizes ORACLE V5 transaction concurrency. For the first time, high transaction thruput is achieved by a fully relational DBMS.

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Sacramento ... Jan 13, Mar 10
San Diego ..... Jan 8, Mar 3
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San Jose ... Jan 22, Feb 12, Mar 26
CO Colorado Springs ..... Jan 15
Denver ..... Dec 10, Jan 13, Feb 13, Mar 17
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New Haven ..... Dec 4, Mar 25
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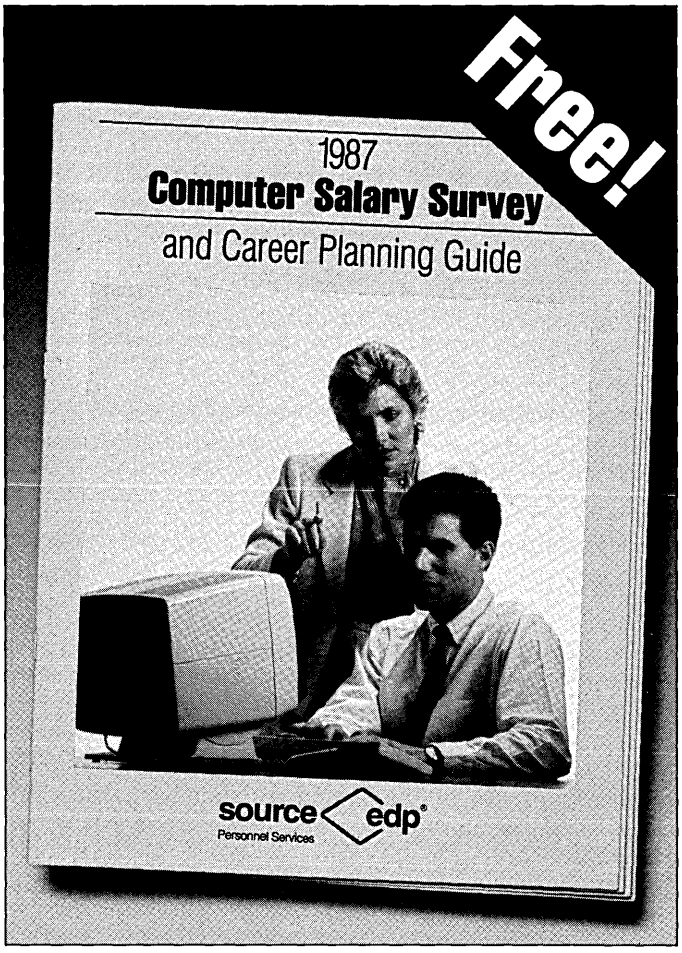


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cent incursion of so-called fourth generation languages from a number of vendors. Says Michael Ryer, director of Ada products for Intermetrics Inc., Cambridge, Mass., "There is a great inventory of billions of lines of COBOL code. You can't very well rewrite every single line, and it's hard to put a little bit of Ada on top of a lot of COBOL."

Nevertheless, Ada is moving along and is finding applications. One of the most visible areas where this is becoming true is in the aircraft industry.

Some of the lure for aircraft manufacturers to use Ada, primarily in embedded applications, is from the efforts of a working group of the Systems Architecture and Interfaces subcommittee of the Airline Electronics Engineering Committee (AEEC) of Arinc Inc., Washington, D.C., a nonprofit organization owned by a number of major airlines and manufacturing companies that provides reports and specifications for the avionics industry.

**"WE'VE GOT THE BEGINNING OF THE BUILDING OF A WAVE."**

Last month, the working group held a second meeting to review what is currently Arinc's proposed paper 613, which provides guidelines for using Ada in avionics design and which could become the Arinc report 613 by midyear, giving it a lot of weight with avionics designers. Paul Prisaznuk, avionics engineer with AEEC, says the instigation for, as well as much guidance in, the work came from Boeing Co., which plans to use Ada in the development of its 7J7 aircraft.

### Evaluation at Boeing

Brian Pflug, manager of software engineering for avionics design, Boeing Commercial Airplane Co., says Boeing definitely plans to use Ada in the 7J7 project if "the state of the technology proves such that there will be a cost benefit. We've told all our suppliers [for the 7J7 project] that that is our direction and we're in the middle of a project right now to determine if that is correct."

He says the project involves benchmarking currently available Ada compilers to determine the efficiency of code produced. An earlier, similar evaluation for the prototype stages of the 7J7 project was inconclusive to the point that Boeing then left it up to its suppliers whether or not to use Ada.

"The quality of the code produced by the compilers was not always as efficient as it could be in terms of space or time," says Pflug. "It has nothing to do with the language but rather with the maturity of compilers. Most are fairly new." He says the current project has a targeted production decision date of August of this year.

Pflug says about 100 companies are candidates to be suppliers of avionics equipment for the 7J7 project, with 15 to 20 of them probably destined to be major suppliers. The aircraft is scheduled for first customer delivery in 1992.

On another commercial front, a big push for Ada probably will come from creation of a Commercial Ada Users' Working Group (CAUWG) under the banner of SIGADA (Special Interest Group on ADA) of the Association for Computing Machinery (ACM). Corporate members include GTE, Stamford, Conn.; Lear Siegler Inc., Los Angeles; Boeing Co., Seattle; Advanced Computer Techniques, New York; and CRI Inc., Santa Clara.

The working group first met in November in conjunction with a SIGADA Ada Expo conference in Charleston, W. Va., and now has scheduled a third meeting for March 17 in Washington, D.C.

Dave Dikel, director of Washington, D.C., operations for Addamax Corp., a Champagne, Ill.-based contract software service firm focusing on the Ada market, and chairman of CAUWG, says he was asked to find a commercial Ada users group by the Ada Joint Program Office when an investigation he was conducting into commercial uses of Ada was terminated.

He said his investigation had unearthed the facts that there was "substantial" commercial work being done in Ada, that users tended to be secretive about what they were doing, that there was no single good source of information on Ada, and that there were a lot of "ghost facts" around, a prevalence of bad information.

### A Government Image

"I looked for a group but didn't find one," Dikel says. "I approached the users committee of SIGADA and found there was no group focusing on commercial uses and was asked if I wanted to start one." This he did with some financial backing from AJPO. Formation was started in March 1986. "Our aim is to influence development of efficient standards and products," he says, "and to fight the prevalent image that Ada is a government thing, is a DOD thing."

**Casper Weinberger: There will be fewer DOS waivers on Ada.**

But, he says, "the DOD has a key role in our group. There are a number of key executives in DOD who are determined to get the best technology for their dollars. They are buyers of commercial products for prices with lots of zeros. We welcome their support."

"We've got the beginning of the building of a wave," predicts Paul Fuller, vice president of marketing and sales at CRI. "We'll be getting fallout. Companies like Lockheed, Martin Marietta, and McDonnell Douglas will have to train thousands of people in Ada [for work on defense contracts] so why would they want to write their own in-house systems in C?"

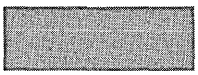
Edward V. Berard, founder and president of EVB Software Engineering Inc., Frederick, Md., notes that "the U.S. is the only place on the globe in which Ada is thought of as being primarily military. In Europe, 85% of all Ada applications are commercial. Japan is a huge commercial consumer of Ada."

Grady Booch, director of software engineering for Rational, Mountain View, Calif., which provides software development technologies based on Ada, says language is the least important aspect of the Ada movement, but "people relate to a language." The big thing, he believes, is software engineering, a discipline he thinks is scarce in the U.S., which accounts, in part,

for the more rapid spread of Ada elsewhere. "The Europeans, as a whole, take software a lot more seriously than we do. They don't have the money to waste that we have."

Booch says two past barriers—the lack of people well-trained in Ada and the lack of good compilers—have been lowered. "We are seeing Ada taught in the universities now and there are a lot of good compilers out there," he says.

One of the first companies to come out with Ada compilers was Telesoft, and the San Diego company's agreement with IBM for both



**"IT'S HARD TO PUT A LITTLE BIT OF ADA ON TOP OF A LOT OF COBOL."**

compilers and programming tools is considered to have much significance by both the company and its competitors. Fuller says IBM's association with Ada will promote the language to the commercial world.

"If IBM didn't tout it [Ada], it would have the same luck as Pascal. Why is C not more popular? Because of IBM's reluctance to support it," sats Fuller.

He also believes Digital Equipment Corp.'s heavy involvement with Ada will help advance the language in commercial markets. "We have the two biggest commercial [computer] companies in it. Everyone else will want in too." DEC offers a range of Ada products, both hardware and software.

Telesoft, too, believes the maturation of the market led IBM to come knocking. "We have been working with IBM for three or four years," says Bruce Sherman, Telesoft director of marketing. "Until now, it was with the Federal Systems Division on specific government programs. As the Ada market began maturing over the last few years, the commercial side of IBM decided to talk to us."

Telesoft also has an technology exchange agreement with Prime Computer, Natick, Mass. Prime isn't offering an Ada product now, nor would product manager Wolf Metzner say when the company would. He did say that he sees a lot of potential for Ada in large systems, "which Prime is getting into with its high-end machines." He notes that Prime does half of its business outside the U.S., "where Ada interest is high."

There are other encouraging signs, too. Two relational database management systems in Ada have been announced. One was announced more than a year ago by CRI of Santa Clara, and the other, internally called Adaplex, is under development by Computer Corporation of America, Cambridge, Mass. CCA's product is due for beta site installation late this year.

Two other producers of relational database management systems, Relational Technology Inc., Alameda, Calif., and Oracle Corp., Belmont, Calif., are offering Ada hooks to their software, primarily to get their feet into the government market but with an eye toward future commercial users.

Says Toby Younis, manager of technical support, federal operations for Oracle, "Ada has a great deal of potential and, when it blossoms, we [hope to be] leading the pack." ■

## BENCHMARKS

### Buys Graphics Firm

Bolt Beranek & Newman Inc., Cambridge, Mass., has acquired Delta Graphics Inc., a Bellevue, Wash.-based developer of computer image generation systems for simulation and animation applications. The acquisition, in the form of a stock deal, is valued at $16.5 million. Delta Graphics markets its products primarily to government and military agencies. Last summer, Delta Graphics was awarded a $30 million contract to provide its Simnet distributed multiuser training system for military vehicle operators to the Defense Advanced Research Projects Agency and the Army. Bolt will operate Delta as BBN Delta Graphics Inc.

### Lay Off at Wang

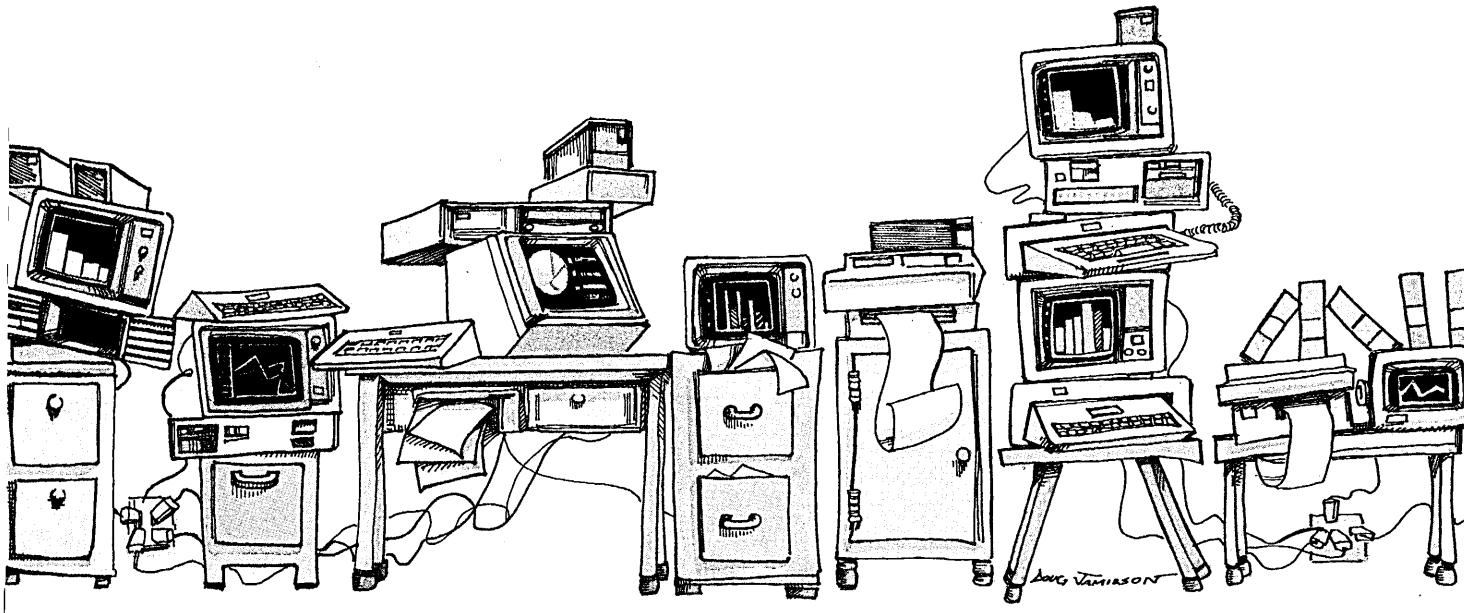
Weaker than expected sales at Wang Laboratories have prompted a new round of belt-tightening measures, including the elimination of 1,000 jobs and a 6% wage cut for all salaried workers. An estimated $35 million loss for the fiscal second quarter ended Dec. 31, 1986, was also blamed on overly optimistic sales projections, the company says. The size of the loss may be larger depending on results of an asset evaluation under way at press time, a spokesman says. Wang Labs two years ago began releasing workers after sales growth lagged behind expectations. Some 1,600 jobs were eliminated last July and a similar number were let go a year earlier in response to lower sales. The latest cutbacks will pare annual expenses by approximately $50 million and trim the employee roster to about 30,000 people.

### Pulling the Plug

IBM has rid itself of two unprofitable businesses in recent weeks. The first was International MarketNet, a two-year-old joint venture with Merrill Lynch & Co. designed to serve the financial services market. Imnet, New York, began shipping its standalone micro-based System 100 in June, but was never able to complete its cornerstone product, the Series/1-based System 500. The companies say the decision was made upon reassessing the financial viability of the venture. The majority of Imnet's 250 employees have been laid off. The second consolidation was that of IBM Instruments Inc., formed in 1980 to sell chemical analysis tools to laboratory scientists. The unit employed 150 people who the company says will be reassigned. IBM has sold its interest in two small firms that manufactured some of the instruments under IBM's label. IBM says it will continue to service products it sold in the last five years.

### Leaving the Fold

Unisys Corp., Lockheed Corp., and Allied-Signal Inc. have all announced plans to withdraw from Microelectronics and Computer Technology Corp. by the end of this year. The decision by these three companies to leave the fold brings the number of active members down to 18. According to a spokesperson for the Austin, Texas-based MCC, the withdrawal of these companies is unrelated to the resignation of Adm. Bobby Ray Inman, MCC's first and only chief executive. Allied's sale of its Amphenol division ended the Morristown, N.J., company's interest in the venture. A spokesperson for Lockheed, headquartered in Burbank, Calif., says that the aerospace company's departure had nothing to do with Inman's resignation or the other departures from MCC. Last year, Gould, BMC, and Mostek all left MCC, but the research consortium picked up Hewlett-Packard and Westinghouse. ■



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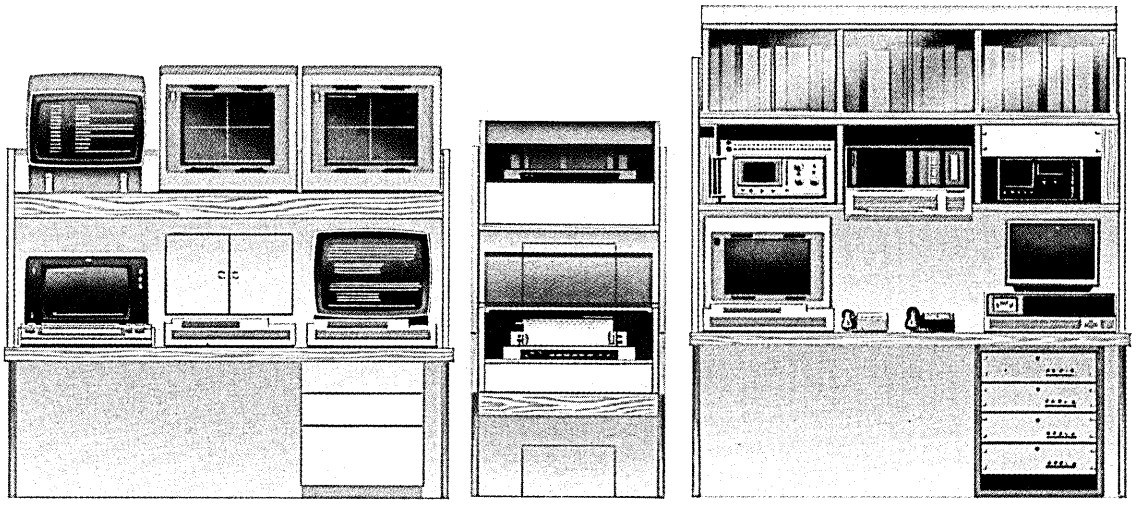

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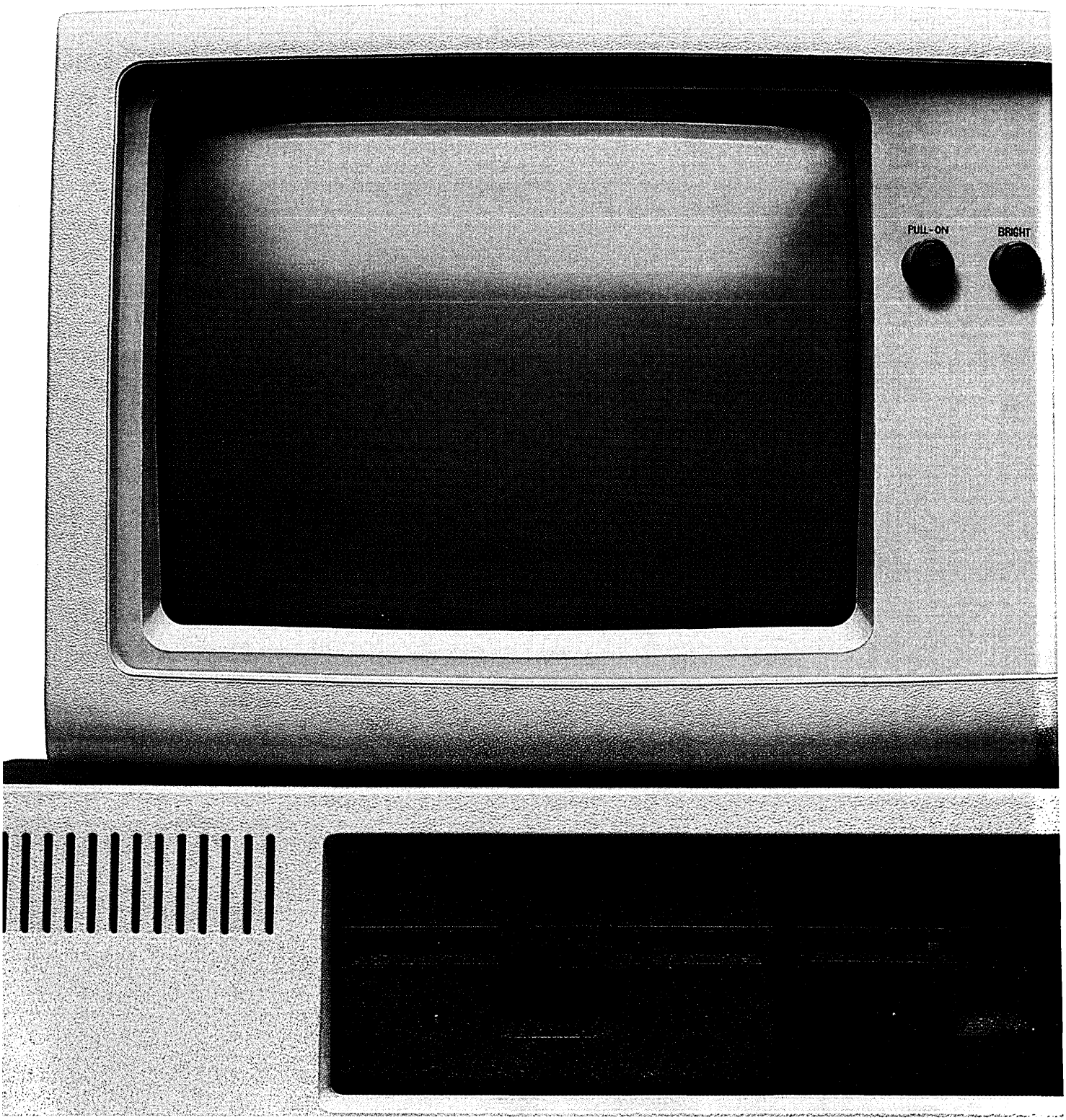

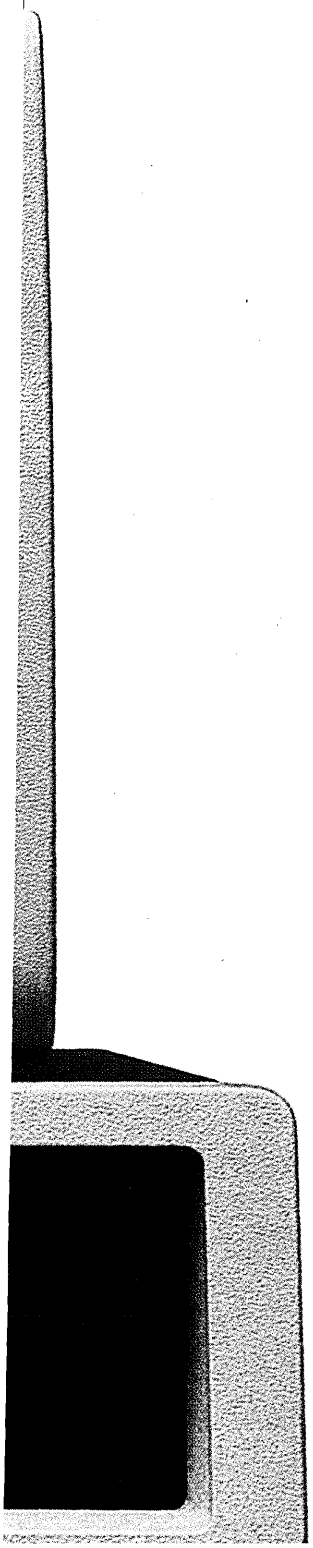

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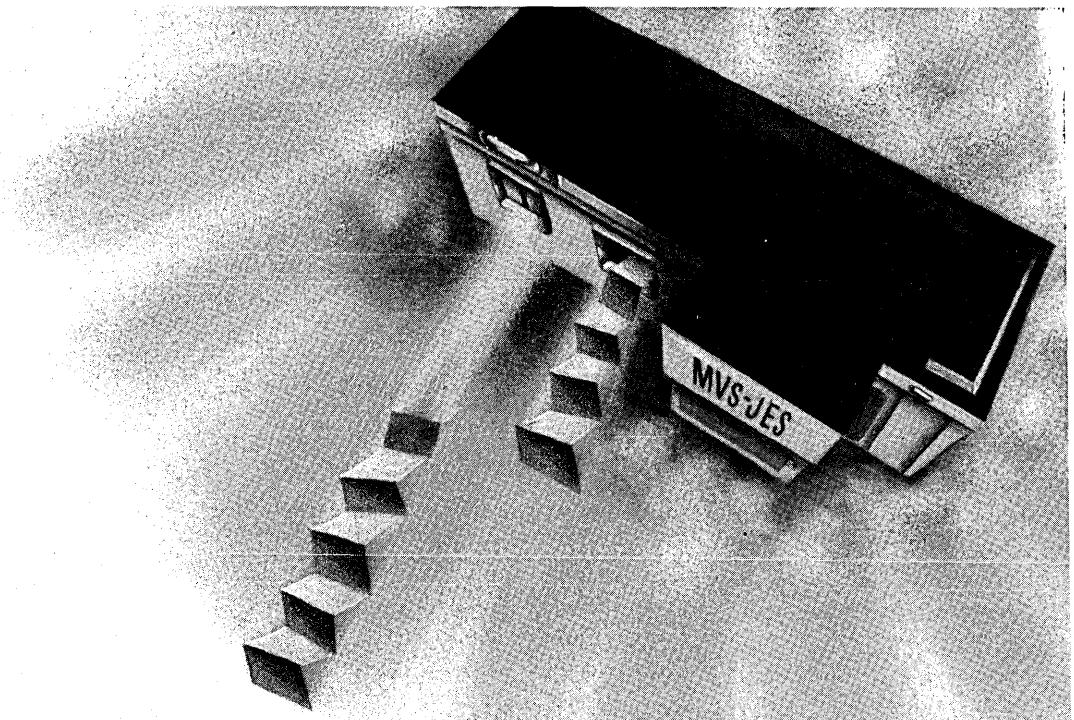


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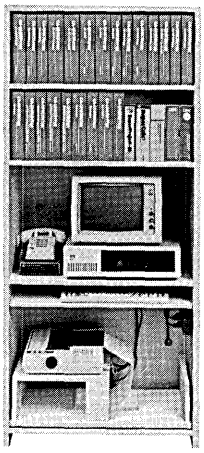

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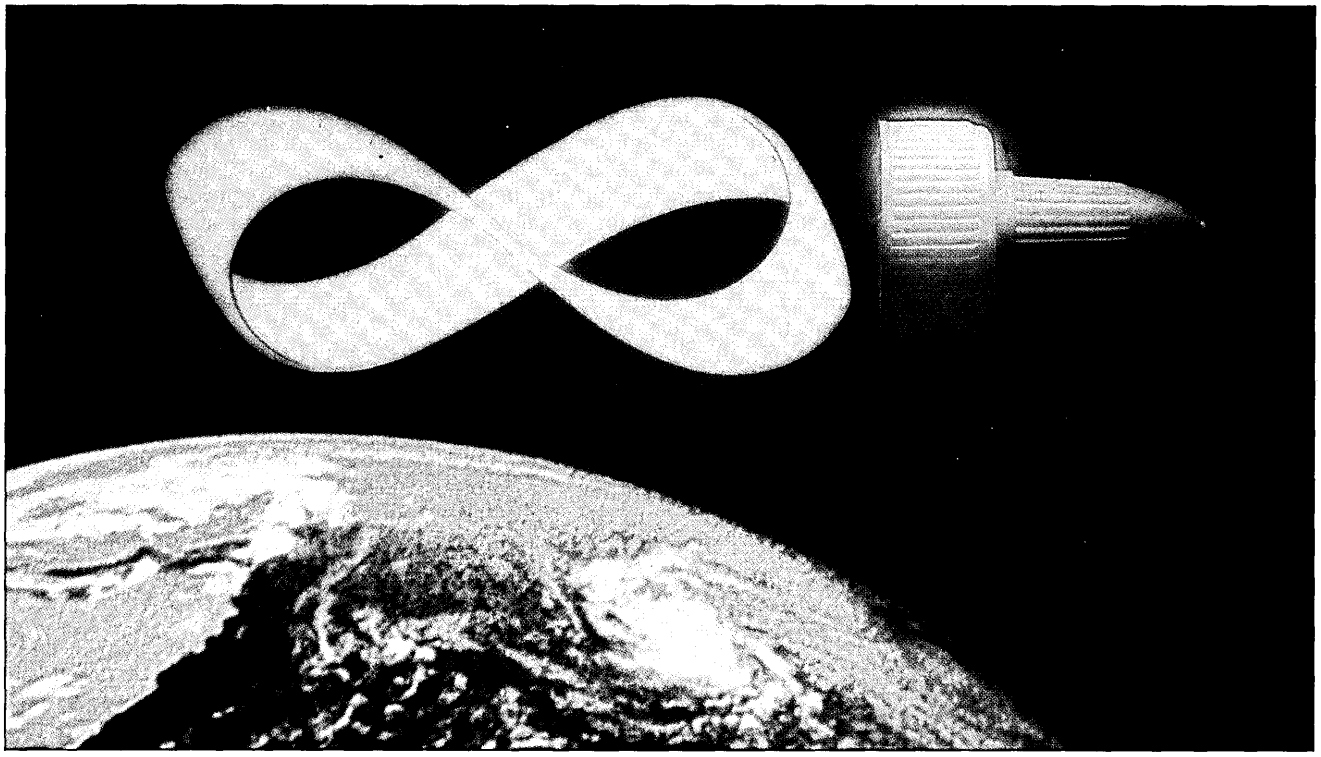

Photograph by Brian Kosoff

# Distributed DBMSs: In Search of Wonder Glue

## The promise of true distributed relational databases is still a ways off, but there are signs of progress.

BY EDITH D. MYERS

It's like those purchasing services being promoted these days by direct mail: "You only have to know what you want, we'll do the rest," their flyers proclaim.

It is the world as promised to MIS managers by the purveyors of distributed database systems, most particularly distributed relational database systems. They are promising global networks of disparate systems and dispersed data with which a user can interact as if he were dealing with a system all his own.

It's a lot more than mere connectivity, a word that seems to have replaced the term user friendly in the lexicon of dp sloganeers. Distributed database technology is promoted as a kind of wonder glue that will easily bring everything together.

While promises are being made about the ideal product and pieces of it are appearing, it does not yet exist. When and if this ultimate is achieved, it will represent, says George Schussel, president of Andover, Mass.-based Digital Consulting Inc., "the highest level of technology in the computing industry for delivery of services."

The most specific promises have come from Relational Technology Inc. (RTI), Alameda, Calif. (see "No DBMS Is an Island," June 1, 1986, p. 32), and Oracle Corp., Belmont, Calif. (see Look Ahead, Sept. 1, 1986, p. 9). Both are delivering pieces and have somewhat similar timetables for coming out with the whole.

Chris Date, vice president of Codd & Date Consulting, San Jose, believes there still are major technical problems to be solved but "they'll get there one day." Date notes that RTI has promised that sometime this year it will make it possible for any system using the SQL query language to talk to its Ingres relational database management system. But, he says, there are problems with SQL itself. Originally developed by IBM and adopted by numerous other database management system developers, SQL became an American National Standards Institute (ANSI) standard last October.

"Nobody," says Date, "actually implements exactly that standard right now. There are no two SQL implementations that are identical even within IBM, which uses different versions with DB2 and SQL/DS [IBM's two RDBMSs]. The SQL standard itself, in its present form, is deficient. Any implementation would have other functions implementationally defined."

Date's partner, Ted Codd, was the first to conceive the notion of relational databases, and he built what is now known as the relational model when he was a senior scientist with IBM's research laboratories back in 1969. Date has been closely tied to the concept for many years. He feels the term distributed database is suffering the same lack of definition that the term relational database did, and to some extent, still does.

"There's going to be a lot of confusion for a few years," he says. "What dis-

tributed database means in the academic world today, and ultimately will mean in the real world, is a communications network with a collection of individual sites tied together, each having its own standalone database, each with local operation not penalized because of the tying together, and all having an agreement to cooperate. End users wouldn't have to do anything different from what they do today, working at their own systems."

### A Question of Access

Most RDBMS watchers generally agree that eventually any user of any type of machine in a network will have easy access to data stored on any other machine in that network, no matter which company made the machine or which operating system it uses.

Anthony Schaller, manager of systems development at Carnegie-Mellon University in Pittsburgh, plans to use RTI's distributed product, Ingres-Star, to integrate 6,000 to 7,000 workstations with its central computer operations. Schaller already is using the first pieces of the product. "We're in the process of reworking all information systems for the university," he says. "The initial step of the integration process, with an IBM 3083 as the central processor, is the redeploying of all production systems.

"We're very like a large commercial organization from a data processing standpoint and we're building systems to really run the way the university runs."

Date cites this as a big advantage of distributed RDBMSs. "Most organizations are at least logically distributed and most likely are physically distributed as well," he says. "A distributed database can mirror the structure of the organization."

Carnegie-Mellon has a five-year agreement with RTI under which it gets advanced releases of all RTI products. "This gives us the ability to understand the functionality, to exploit the technology of distributed database and find out if it can operate in a real world environment," says Schaller.

So far, he says, "I'm very pleased with how well it performs. We are able to distribute function and to handle more problems with the same amount of processing function. We're at the point of providing location transparency, of providing all university facilities with this so the people using them don't need to know where the files they need are."

Schaller says the university has roughly 1,500 micros, 2,000 Macintoshes, about 75 Digital Equipment Corp. VAXs, eight DEC 2060s, 400 MicroVAXs, 200 RTs and over 100 Sun Microsystems workstations—all hooked up in an IBM token ring network. Schaller sees all of this, including the pcs, tied together with distributed databases by 1990. "And we'll still have the large mainframe machine to do chug work for the university," he says.

Generally, distributed database systems have an index that keeps track of all information on all databases on all computers in a network. The DBMS also includes a device that determines the fastest, cheapest way of retrieving the required information. The systems perform a higher-level translation than network devices can do alone so that information stored under one format is usable under another. He feels commercial MIS managers faced with a pc explosion in their organizations could view distributed database as "a key to getting control back, to control their organizations, because they have a way of monitoring what's going on. Pc-to-mainframe links just aren't that good."

**"THERE ARE NO TWO SQL IMPLEMENTATIONS THAT ARE IDENTICAL EVEN WITHIN IBM."**

### A Mainframe Alternative

Earlham College is a small Quaker liberal arts college in Richmond, Ind.; it was a beta site and is now a production site for Oracle's distributed product, SQL*. What Charles Peck, administrative analyst/programmer at Earlham, likes best about it so far is that "it enables us not to have to buy the newest, biggest mainframe. We can increase performance without buying more hardware. We're talking about raising performance incrementally now as opposed to quantum leaps with new cpus."

This kind of appeal is one of the reasons often put forth for why IBM is slow in bringing the concept to market. The company has had a distributed database product alternately called R* and Starburst in laboratory development in San Jose since 1978. "They may not see offering too much efficiency too soon as a smart marketing decision," says Brian Boyle, director of research at Novon Research Group, Berkeley, Calif. "Why sell two machines when three will do the job?"

Earlham has two VAX 11/750s networked together. "We spread the load of screen applications across two cpus, enhancing the power of the system," Peck says. "In the past, without distributed database, all users had to log onto one node on the network where Oracle resided. SQL* spreads that around the network. A number of offices have Oracle. All entities share some student data and have some that is needed only by them. They can store whatever makes sense, such as financial aid information.

"Initially, we can do more and spend no more. We're utilizing our hardware better, making better use of what we already had. If we buy more, we can be more specific, applying the power in specific places."

Another early SQL* user, John Rector, a member of the technical staff at the Jet Propulsion Laboratory in Pasadena, Calif., is developing an engineering system using two VAX 11/750s and four VAX workstations, with engineering data residing at the workstations, tied together on one Ethernet system. "We can get to all data with one SQL statement. We haven't found any errors. You can do more at a workstation and you don't have to make it that big anymore."

Rector says that the concept of distributed RDBMS is "the wave of the future, certainly. In the business world, a ceo can get a monthly report from data in New York, Chicago, and Los Angeles with one SQL statement. From a scientific standpoint, geologists and astrophysicists can have their own data. You don't want the same humongous amount of data on many machines. If you want to join, you can join with one statement. They [distributed RDBMSs] will become ubiquitous in coming years. All of a sudden, you're able to do things you never were able to do before, to get the view you want of joined data."

In announcing SQL* to Oracle users

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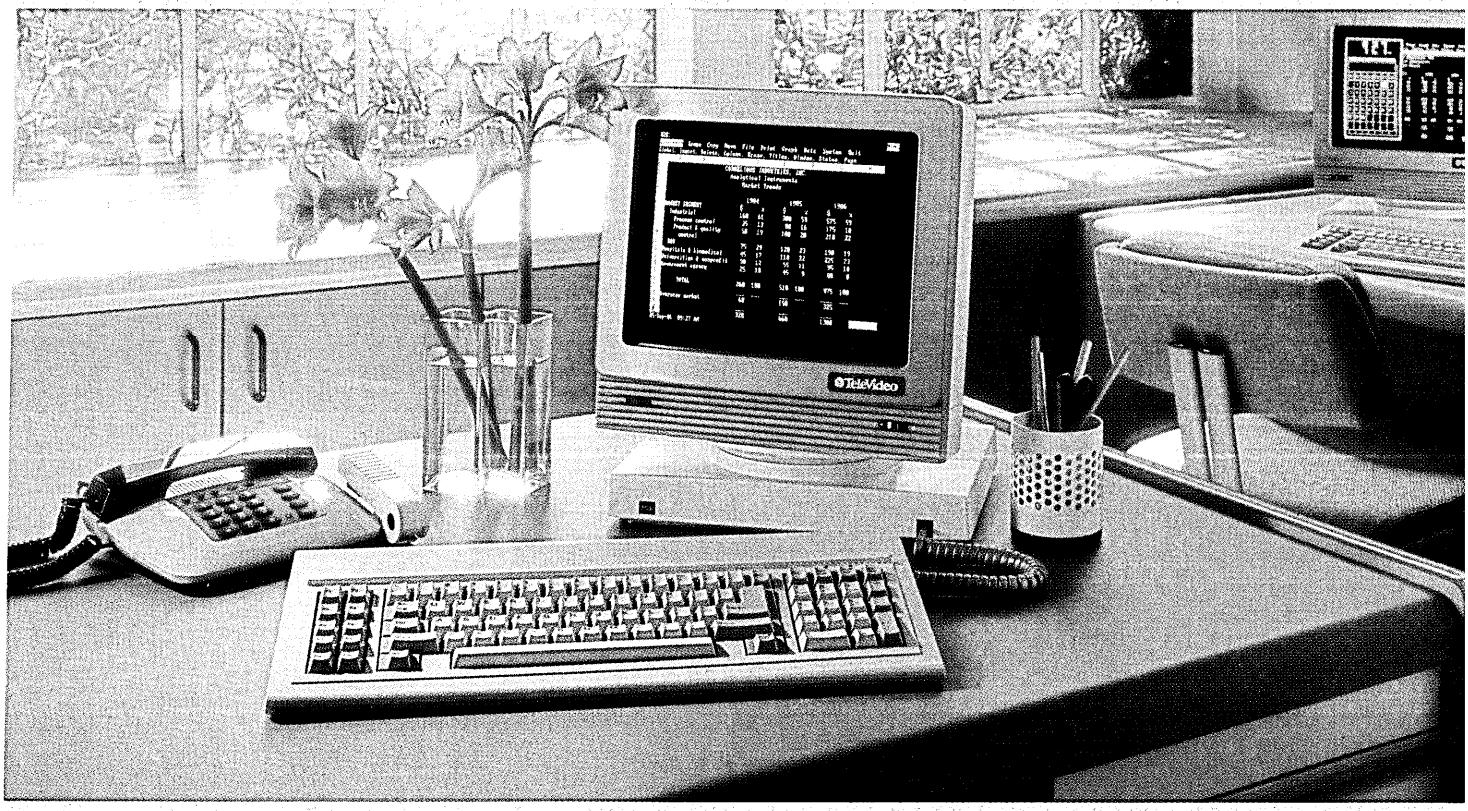


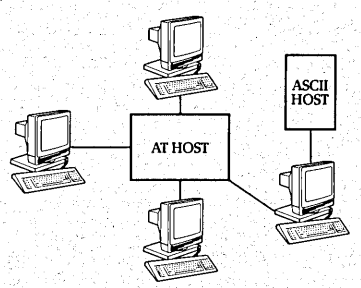

## The versatile PC Station.™ From TeleVideo.®

With all the power an AT offers, it's no wonder more people are using it to drive multi-user systems.

And when it comes to using all this power, only one terminal gives you the ability to share it for so little money: the TeleVideo PC Station.

*As you can see, the back panel of the PC Station is similar to the IBM PC's, with fully IBM-compatible ports for hooking up industry standard peripherals.*

This ASCII terminal has the precise look and feel of a PC. But that's just the beginning. It also has an IBM PC-style back panel where you'll find a parallel printer port. A serial port. And two host ports. So it can be simultaneously connected to an ASCII mainframe host and an AT host. There's no loss of memory when changing hosts, because the PC Station holds a page of memory from each at the same time.




*The PC Station is the only terminal of its kind with dual-host capability, which allows it to be connected to a mainframe host and an AT host simultaneously.*

And the PC Station gives you even more. Like a 132-column display, for spreadsheets. Programmable function keys, for customization. For better readability, there's a green, non-glare 14" screen, with IBM-style character fonts. Plus a smooth, quiet AT-style keyboard, with keytop LEDs. All included in the low $629 list price.

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CIRCLE 25 ON READER CARD

# Retire Your PC Coax Connection

The PC-to-host coax connection. She was a good piece of equipment working with coax cable and cluster controllers, but time just passed her by. End users started needing more than simple host access. They also needed their PCs to share resources around the office. That's when local area networks came along to fill the need.

LANs are dramatically increasing office productivity through efficient information management. And Gateways are exploiting LAN versatility by providing cost-effective host communication for PCs and other network devices. Now for thousands of dollars less, LANs and Gateways provide PC-to-PC and PC-to-host communications all without a cluster controller.

INS Gateway PC Adapters are engineered around proven INS SNA 3274 cluster controller emulation. A single INS Gateway PC Adapter in an IBM NETBIOS compatible LAN, including Token Ring, will support up to 32 logical unit sessions. The LAN allows each PC on the network to share disks, printers and other resources while the Gateway allows performance of any host-supported function and maintains host access.

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CIRCLE 26 ON READER CARD

at a user group meeting last August, company president Larry Ellison said features available in 1986 include transparent distributed retrieval; database support for DB2, SQL/DS, and Oracle; operating system support for MVS, VM/CMS, VMS, PC/DOS, and Unix; network support for SNA APPC, DECnet, Ethernet TCP/IP, async, and 3270 emulation; and a tool kit for adding new network protocols. He said 1987 would see additions of multisite update capabilities, synchronized copies of tables, single-table distribution, database support for IMS and VSAM, and a tool kit for adding new data sources.

RTI, in its June 1986 introductory announcement for Ingres-Star, talked about three phases. Phase one would be effected in the fourth quarter of '86 and include location transparency, multisite read transactions but only single-site update, SQL and Quel (RTI's query language), support for VAX and Unix, and full applications tools support. Phase two would be in the fourth quarter of this year and offer multisite update, replication of data, support for IBM and compatible micros, and access to companion SQL-based systems. Phase three, in the fourth quarter of next year, would include gateways to non-SQL based database management systems, including IMS.

"Oracle and RTI are definitely paving the way for this sort of thing to happen," says Novon's Boyle.

**"THERE'S GOING TO BE A LOT OF CONFUSION FOR A FEW YEARS."**

### Competing Solutions

Paul Cubbage, an analyst with Dataquest of Mountain View, Calif., feels there are competing solutions to distributed RDBMS out there, such as open software architecture, distributed applications, gateway approaches, distributed file systems, and database machines. All of these offer some pieces of what distributed RDBMS promises but none offer all.

David Britton, president of Britton Lee Inc., Los Gatos, Calif., one of the leading database machine companies, doesn't believe the RDBMS companies will either. "They're trying to have a database globally—one and only one database—and you just can't do that. The idea of doing it locally, in a lab, is doable and intriguing, but in the real world you run into problems with communications lines. There won't be any way to do it any time soon unless they literally use light pipes."

Britton would prefer the way Tan-


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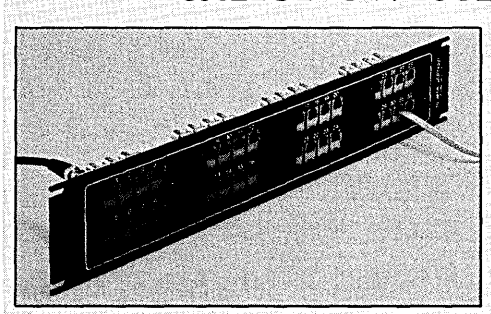
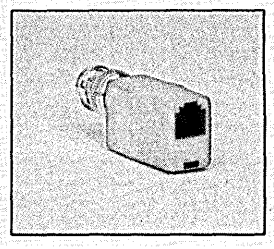
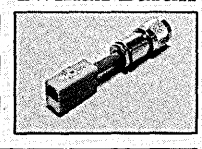
For those who would rather switch than fight!

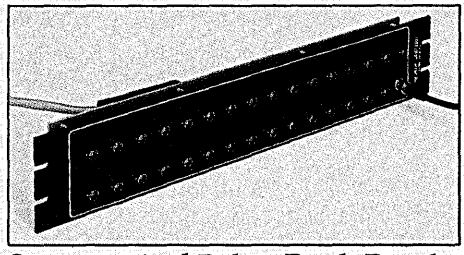


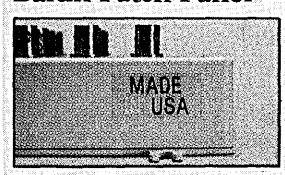


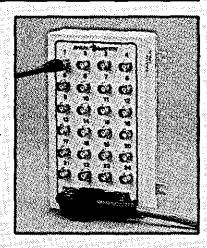
Balun
Twinax Balun



Balun Patch Panel





Balun Breakout Box

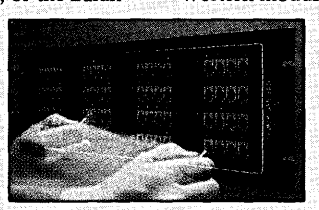
Connectorized Balun Patch Panel

Now, you can win the fight over coaxial cable by converting to twisted pair wiring throughout your entire network with the Nevada Western Balun.

And, you can do it in an organized fashion today with either the Balun, the Balun Panel, the Connectorized Balun Panel, or the Balun Breakout Box, that allows you to use twisted pair wiring in data distribution.

The Nevada Western Balun Family, when used in conjunction with the Modular Patch Panel, provides you with the extra advantage of patching your coaxial circuits using twisted pair wiring for easier and more economical moves and changes.

And, all are compatible with all other Nevada Western modular interconnection devices.



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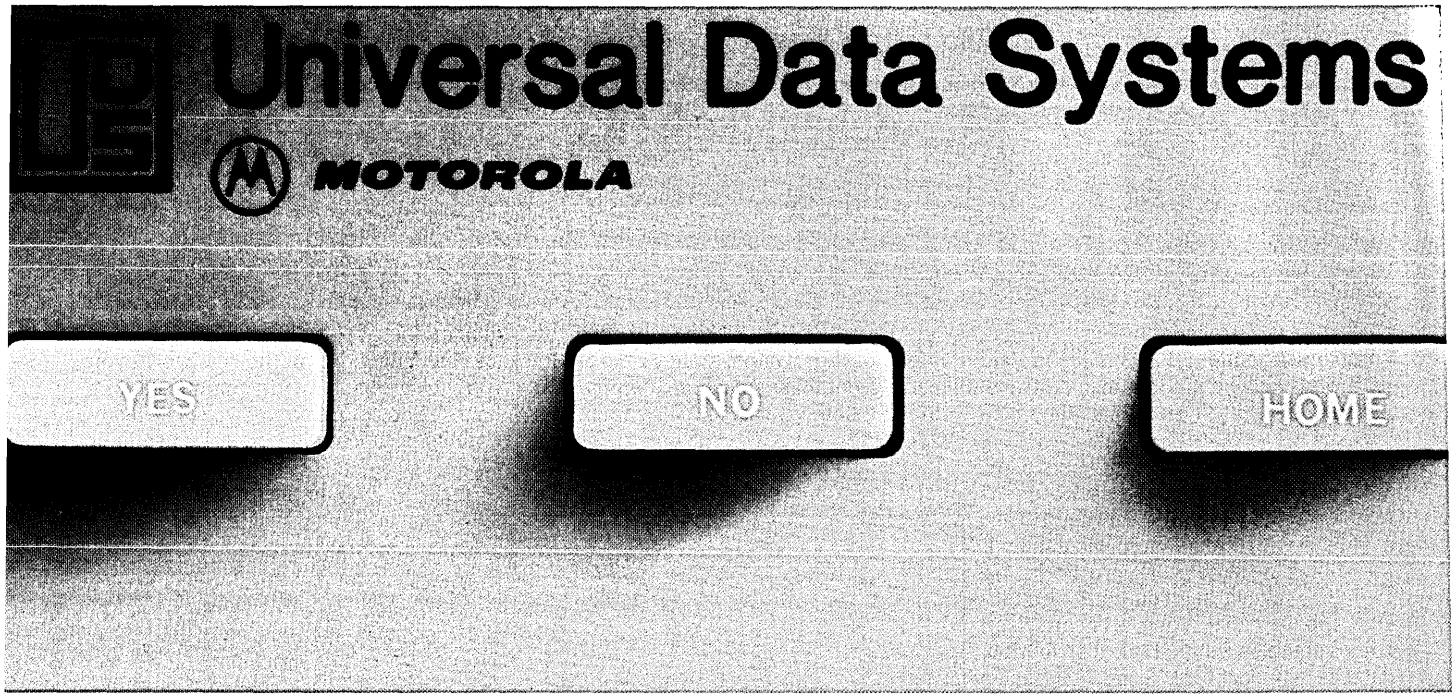


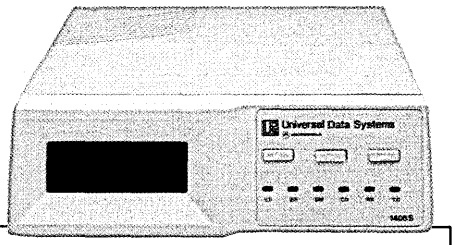

# Three Keys to Successful TDM or Statistical Multiplexing

Three keys! They're all you need to configure Universal Data Systems' new multiport V.33 modem/multiplexer combination. Separate versions offer either six-channel TDM or eight-channel statistical multiplexing capability.

In either configuration, the device is trellis coded at its basic 14.4 kbps operating speed and has alternate data rates of 12 or 9.6 kbps. If your system utilizes TDM, you may also choose between asynchronous and synchronous operation and you can have V.29 operation at 9.6 kbps.

The three-pushbutton/LCD control panel allows configuration choices (with different data rates for each channel if you desire), "soft strap" settings and easy review of both multiplexer and modem status.

The entire set-up and review process is menu-driven; the user need only answer a series of questions by pressing the appropriate YES or NO switch. When the process is complete, a push on the HOME switch returns the device to the communications mode.



QUANTITY ONE PRICES

| V.33 with six-channel Time Division Mux | V.33 with eight-channel Statistical Mux |
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Diagnostics on both versions of the V.33 multiplexer/modem include local and remote digital loopback on each channel as well as local and remote analog loopback. All test features are compatible with CCITT V.52 and V.54 recommendations.

**YES,** you can now have TDM or stat mux capability in a single package with a 14.4 kbps trellis coded modem.

**NO,** these devices are not expensive to buy or difficult to apply.

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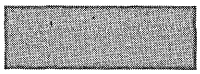
Created by Dayner/Hall, Inc., Winter Park, Florida

dem Computers, Cupertino, Calif., has been doing it for the last 10 years. Tandem has a database system it calls Encompass, which it has been offering since 1980. Dave Dempsey, product manager for systems and database software products, says it offers all the features promised by distributed RDBMS software vendors but with greater speed and integrity. "It is embedded in the operating system so you don't have to go up and down through layers of software," he says. It runs only on Tandem computers, however.

Jon Gausma, director of alternative sales for Teradata Corp., Los Angeles, the other leading database machine vendor, believes his company could ultimately be a player in the distributed database environment via arrangements with the RDBMS software vendors. "I see a significant synergy between ourselves and RTI, Oracle, and Sybase," he says. Sybase, in Berkeley, is a relative newcomer to the RDBMS arena.

Sybase hasn't delivered a product yet but it does have beta site users. One, Karen Kinamon, a contract systems engineer for the Jet Propulsion Laboratory, says she finds the company's RDBMS



**"INITIALLY, WE CAN DO MORE AND SPEND NO MORE."**

"fast and reliable." She is working on a prototype of a system for multiple missions where each mission would have its own database.

Teradata already has an agreement with Applied Data Research Inc., Princeton, N.J., to gateway its product with ADR's D-Net, which distributes its Datacom/DB databases across IBM mainframes. It allows access and update activities, local and remote, with location transparencies.

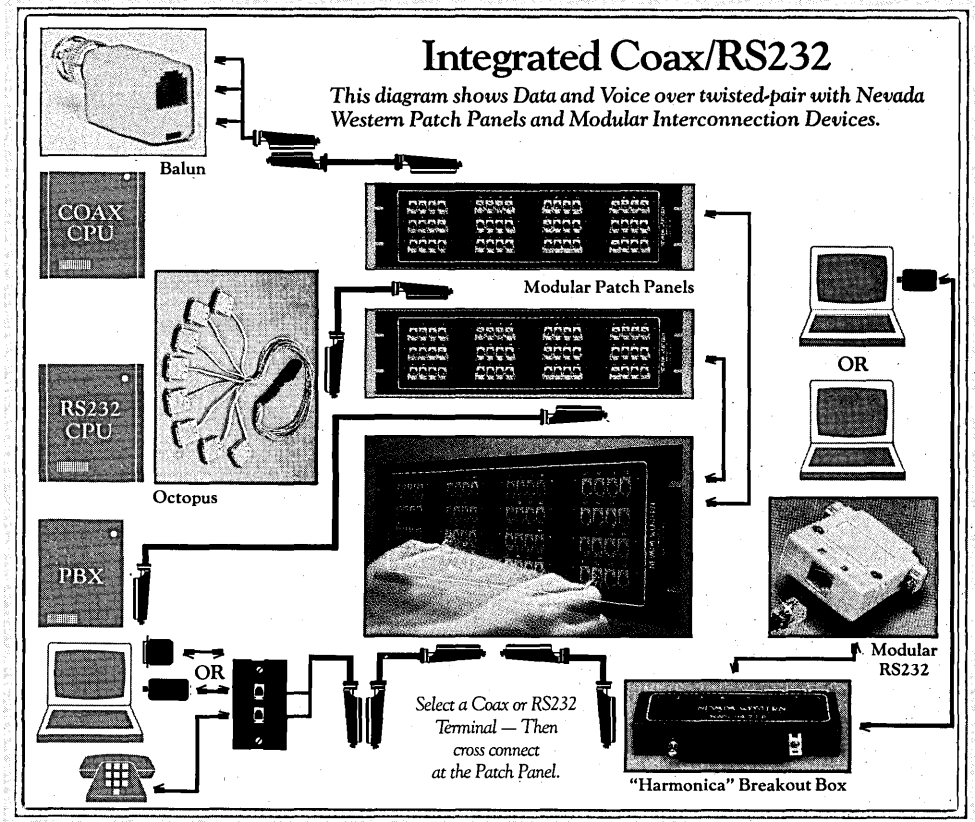
One user of D-Net, Leonard Hoch, vice president in charge of the systems division at the Chicago Board Options Exchange (CBOE), also is a Teradata user and would like to see his Teradata machine become part of the distributed environment when a product comes out of the agreement between the two firms.

### Single Data Image

As for now, Hoch likes the fact that D-Net "allows us to have dedicated processors for our production on-line system and our production batch system, with a single image of our data. We can use both environments without contamination and tune each environment according to use." D-Net was installed at CBOE last December. "We had been working toward it since July," Hoch says.


Nevada Western

# Wire Management Solutions

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"Before, we ran batch applications on the on-line processor, which had a negative impact, and we had multiple images of the same data, which also had negative impact."

ADR's next release of D-Net, scheduled for the third quarter of this year, will be implemented using IBM's Logical Unit Type 6.2 protocols. This also is a feature of a distributed RDBMS under development at Computer Corp. of America, Cambridge, Mass., due for introduction later this year.

Schussel of Digital Consulting believes the promise offered by distributed RDBMSs is something "the vast majority of users wouldn't be capable of using at this time." But for the future, he says, "it will become vital. By the end of this year, there will be 800 pcs for every mainframe in the U.S. and 13 or 14 minis for every mainframe. Isolated pcs are expensive and error prone. Connectivity is essential."

MIS managers, he says, "must do some strategic thinking about their computing environments, about delivery of data, where they want it stored, and where they want it used."

Boyle of Novon agrees. "They should be worrying about how to split up their resources," he says, "where resources to be shared should be distributed."

Cubbage of Dataquest worries about the the organizational aspects. Too many companies, he says, have what he calls "antirelational data" embedded in their number structures. "That is, numbers aren't just numbers. They're tied to information and the information could be different for the part of an organization that's in New Hampshire than for that part in Virginia or Arizona.

"Look at your organization and look at your system," he warns MIS managers. "A database is a model of your organization. You can't impose structure from the top." Cubbage says to work through the differences in procedure and in numbering schemes first, then to look at distributed database. He posits that there are organizations in which all parts work the same way and in those a distributed database can be installed successfully.

Date advises MIS managers to "be aware that this technology is coming and to gain a basic understanding of it. Also, learn about relational technology itself as it is becoming increasingly clear that that is a prerequisite to a proper distributed database. Most database systems out there now are not relational.

"Think at the same time about distribution, about how to distribute data so that nothing is hidden."

Most of all, Date advises thinking from the outside in—what data are needed, where they should be, what kind of performance is needed, and last, hardware and software. "Most people think from the inside out, which is why there are such messes around. The lucky ones will be those coming in fresh and thinking from the outside in. They're in a nice position." ■

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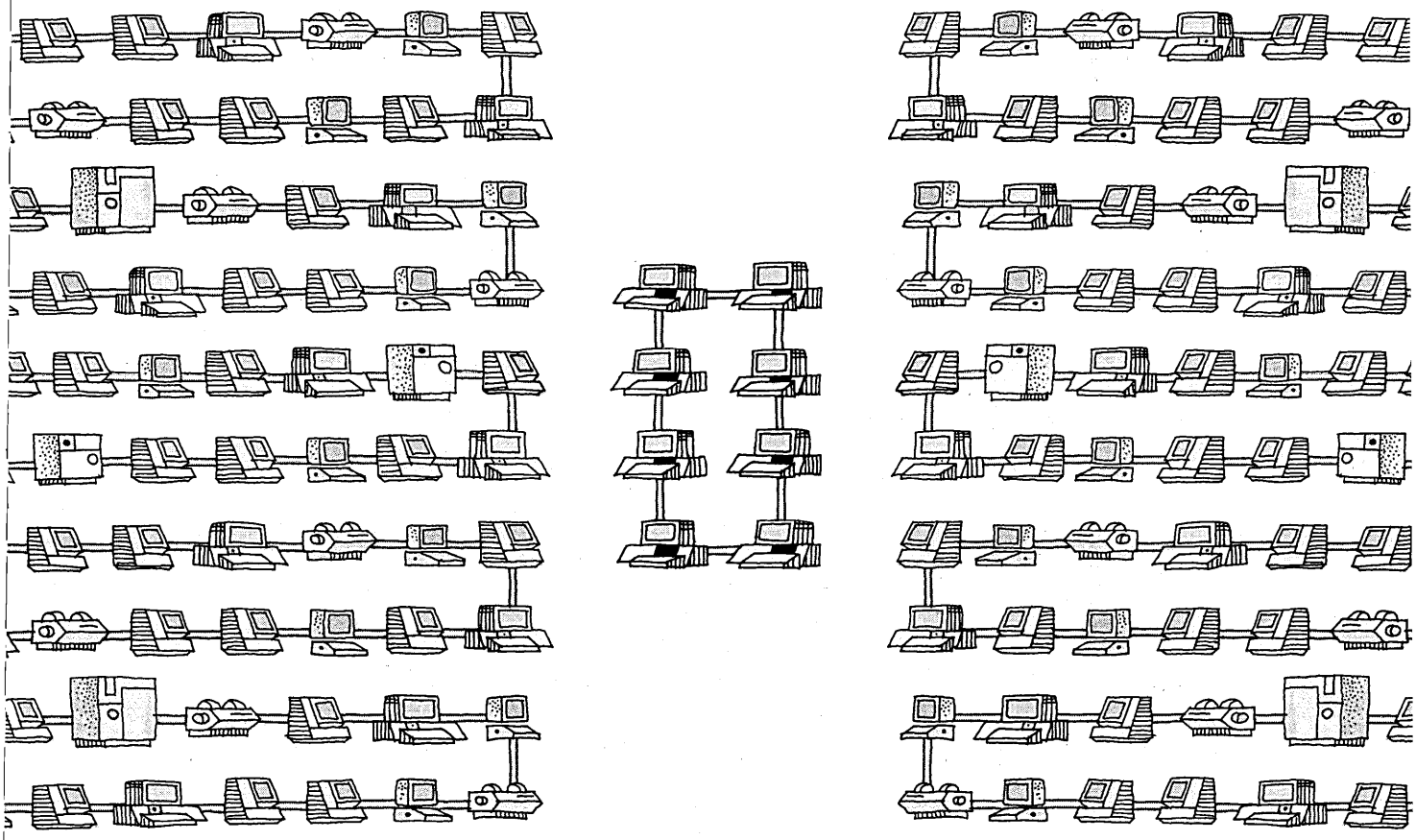

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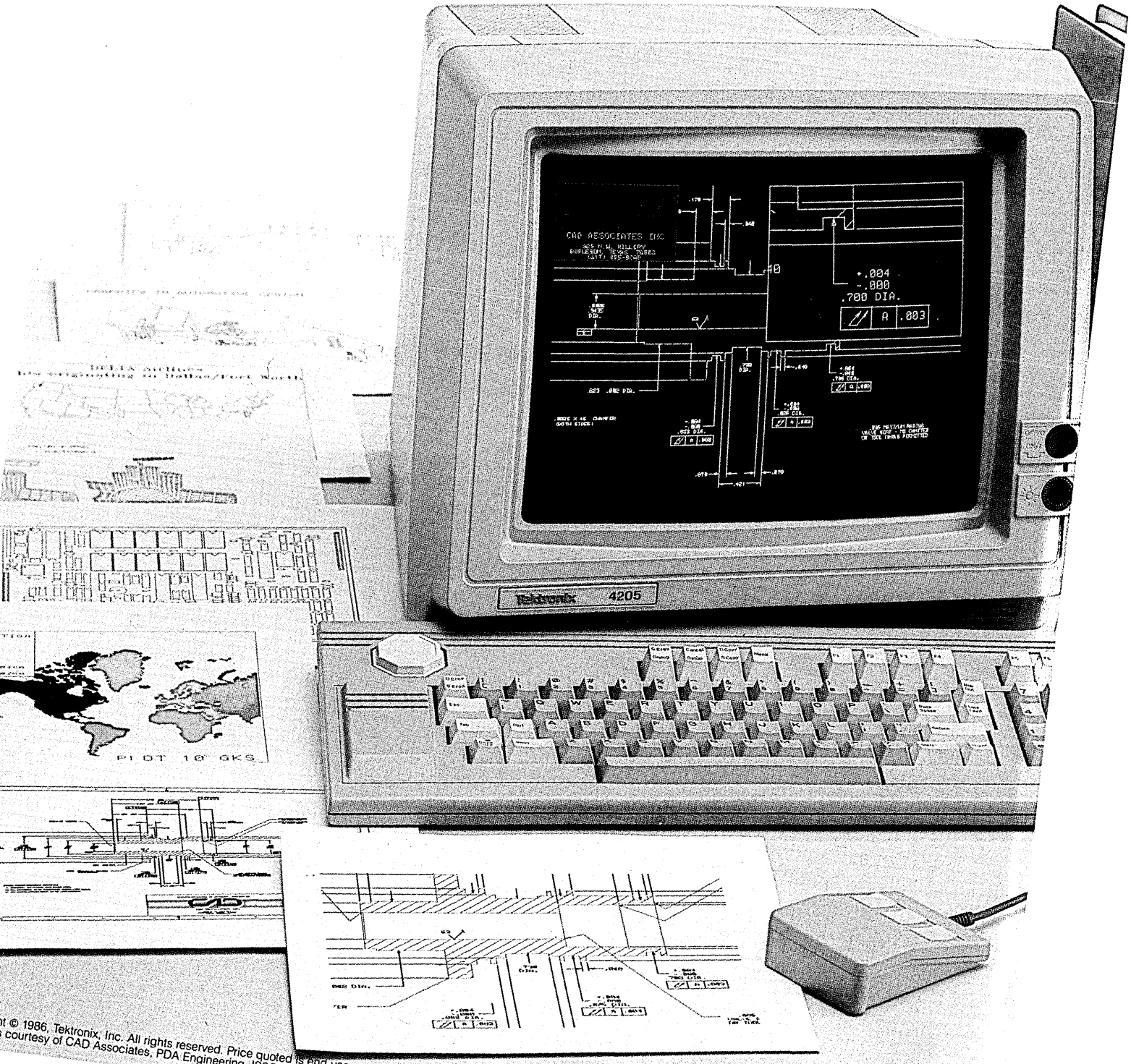


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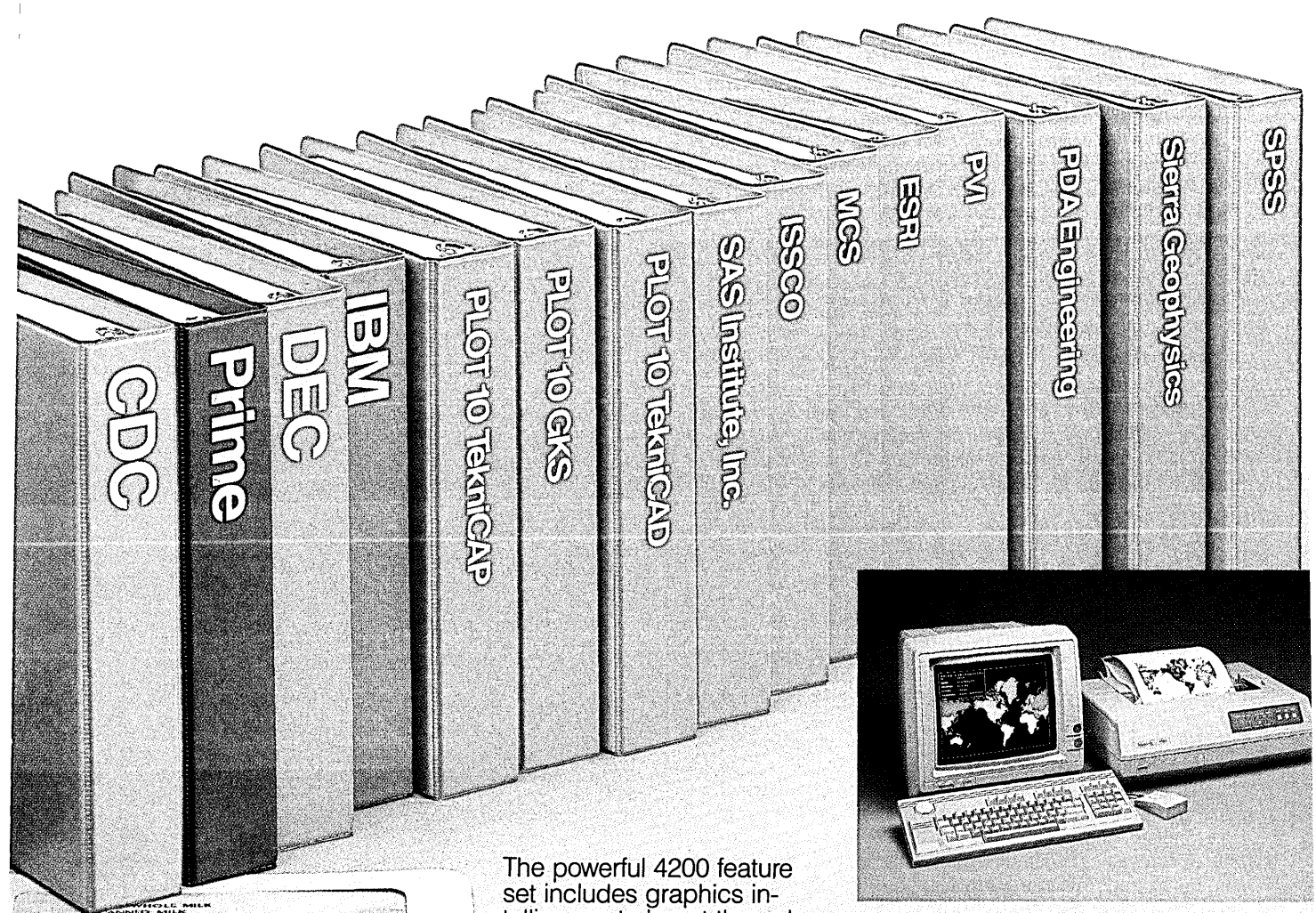


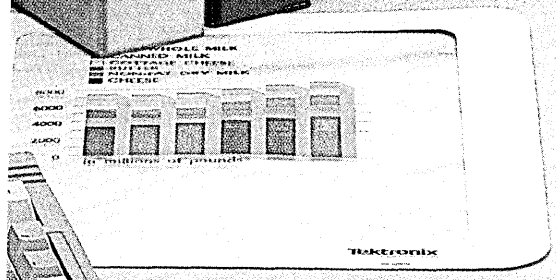


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ABSTRACT

**Although ISDN has been a buzzword within the telecommunications industry for years, it is only now being put through its paces. User trials in the U.S., Japan, and the U.K. demonstrate the potential of the new technology—but they also raise issues that must be resolved before commercial ISDN services start in 1988. No matter how soon ISDN becomes a reality, the organization that starts to plan for it now could gain a useful competitive edge.**

BY SARAH UNDERWOOD

Compared with the rapid rate of computer development, telecommunications technology has been slow to advance since Alexander Graham Bell made the world's first intelligible telephone call. That was on March 10, 1876. Over 100 years later the telephone is about to be transformed as telecommunications equipment suppliers and service carriers prepare to enter a new era.

The development that promises to change the nature of the telephone and to speed up the movement of information around the world is the Integrated Services Digital Network (ISDN). It should give users access to a wide spectrum of voice, data, text, and image communications services over a single network connection.

Benefits promised by the ISDN technology are improved services and new applications. These will be easier to use and simpler to support than today's services, many of which require the use of different interfaces, terminals, and networks. A less tangible gain will be the strategic direction provided by ISDN to companies in danger of losing their way in developing a communications structure. More important, the integration of services has the potential to provide significant cost advantages to end users.

Richard Kee, a telecommunications analyst with the London-based Ovum consultancy, maintains that users must take action on ISDN now. "ISDN is closer than many users expect, yet few have started to plan for it. They should. ISDN will offer significant benefits. The organization which starts to plan now could gain a useful competitive edge on others in its industry," counsels Kee.

But the network concept has its critics. They prefer to expand the ISDN abbreviation to mean "I Sure Don't kNow" and contend that the technology will fail to win worldwide support because of incomplete standards, a lack of terminal products able to take advantage of the extended services, and users' reluctance to invest in a relatively unproven technology.

The validity of these arguments and those of ISDN promoters is now being tested by a series of ISDN trials running in the U.S., Japan, and the U.K. These countries are among the first to put ISDN to the test, but they are not alone in assessing the new technology. Italy has already run some basic trials, while West Germany is scheduled to start a practical study of ISDN early this year. France, which made significant improvements to its communications structure in the 1970s, is under less pressure. Its ISDN trial, Project Renan, is not due to start until 1988.

Further afield, China plans to leapfrog older technologies and move straight to ISDN for new networks in metropolitan areas, while the U.S.-based international satellite organization, Intelsat, claims that satellites will be able to bring ISDN to the rest of the world during the 1990s. Intelsat claims that there are now ISDN plans in Brazil, Ecuador, India, Ivory Coast, and Peru.

Illustration by Daniel Adel

# ISDN on Trial

Official timetables for the introduction of ISDN suggest that this year will be one of intense preparation before commercial services become widely available. Initial offerings will be targeted at large users with a high volume of telecommunications traffic. They will use the primary rate access method defined by the Comité Consultatif International Télégraphique et Téléphonique (CCITT) back in 1984. It provides 1.5MBps transmission in North America and 2MBps in Europe, with the bandwidth split into either 23 or 30 user channels of 64KBps, plus a single 64KBps signaling and user packet data channel. Basic access, which will extend ISDN to smaller business users and residential subscribers, is expected to follow in the early 1990s, when local telephone exchanges are converted from analog to digital operation. Basic access uses ordinary twin wire telephone circuits to carry two 64KBps user channels and a 16KBps signaling and user packet data channel.

Most of the current ISDN trials use the primary rate access method, but beyond their basic technology they have little in common. Already the world is likely to be saddled with a variety of ISDN standards using their own implementations of the CCITT's recommendations.

Doane Perry, a senior telecommunications consultant at International Data Corp. in Framingham, Mass., warns, "ISDN is no panacea to the standards problem. The U.S. will see vendor-specific flavors of ISDN. Europe will see country-specific flavors of ISDN. Users will have to be just as careful about which vendor they buy from as ever."

Japan is probably the worst offender when it comes to bending the standards rules. Nippon Telegraph and Telephone (NTT) put its experimental information network system (INS) into operation in September 1984. It runs until next month and will provide the experience on which NTT will build commercial services for introduction in selected Japanese cities from 1988. The trial system offers digital and broadband telecommunications services to about 500 homes and businesses in downtown Tokyo and the suburban area of Mitaka. But instead of the I-series interfaces recommended by the CCITT after its 1984 plenary session, the network uses a proprietary Y-series interface.

NTT says it will adopt the I-series interfaces when its ISDN becomes commercial, but it has been lambasted by the Japanese Ministry of Posts and Telecommunications. In June last year the ministry accused NTT of developing a network that would not be fully compatible with international systems. It also warned of incompatibilities with other Japanese carriers' digital data networks.

## Suppliers Left Guessing

The standards issue is also a major concern for U.S. and European carriers, as well as for terminal equipment makers and users. Suppliers are left guessing at the possible direction the next CCITT plenary session in 1988 will take, while users must assess the risk of investing in equipment that may fall foul of future standards. Clearly, ISDN standards are particularly important to multinational companies that, whether they use private or public networks, need equipment that will interface across national boundaries.

David Hamer, chairman of the Information Technology Users Association (ITUSA) action group on ISDN and an information systems planner at the international headquarters of British Petroleum in London, sees a lot of problems for the future.

"ITUSA is concerned that there are too many so-called standards from too many groups both in Europe and the U.S.," says Hamer. "The CCITT can solve the problem, but there won't be a private ISDN standard until 1995. A public networking standard should be ready in 1988."

BP was one of the first participants in the U.K. ISDN trial organized by British Telecom (BT) and inaugurated in June 1985. Like the Japanese INS, BT's Integrated Digital Access (IDA) service is not a full ISDN implementation. Chris Wood, director of IDA promotion at BT, points out the supplier's dilemma: "When we introduced IDA we wanted to give our key customers an idea of ISDN's potential. But the problem was that there were no existing CCITT standards for the interface from the network exchange to the customer premises. So we had to use an interim standard." BT plans to adopt all existing CCITT recommendations early next year.

The European Commission became so concerned by the divergence of ISDN plans of member countries that it set up the Group d'Analyse et de Prévision (GAP). This group drew its members from the commission's Task Force on Information Technology and from Europe's telecommunications authorities, (PTTs). It made its first report in 1985, underlining the need for a cohesive European strategy that would develop a Europe-wide market for indigenous equipment suppliers. If this did not happen, GAP said, Europe's national markets would face domination by North American and Japanese suppliers.

But while the GAP recommendations are applauded by governments throughout Europe, observers now agree that they require a considerable amount of political goodwill. Ovum's Richard Kee believes the existence of that goodwill is debatable.

This confusion in standards is taking its toll of the amount of terminal equipment and applications available to ISDN users. Participants in the ISDN trials, however, believe that experience in using integrated services will generate ideas and new markets for suppliers. BP, for example, has been using a pc board under development at BT for 64KBps file transfer. That board will be brought to market this year.

Specific applications for ISDN are also expected to be developed in response to user demand, although this is more likely to happen in the U.S. than in Europe. Interest in European ISDN, says Perry, stems from the possible provision of cheaper bandwidth for large business users. "Prospects for application-driven ISDN in Europe are questionable," he maintains. "The attraction for European users is that ISDN will achieve less expensive data transmission by combining the small, expensive data system with the large voice system, which is less expensive because of economies of scale."

In the U.S., the geographical spread of ISDN, coupled with a comparably large amount of data traffic, is expected to lead to new—and as yet unthought-of—applications, particularly in recently deregulated markets such as banking. Earl Vogt,

**"ISDN WILL BE THE BEST TECHNOLOGY TO SUPPORT OUR INFORMATION NETWORK."**

## Applying ISDN in Arizona

At the Arizona Department of Transportation, deputy operations manager John Amidon is evaluating the potential of ISDN. "We're looking at the technology as a possible means of greater mobility for our users. We're often moving users from place to place and when you have terminals hardwired into a cluster controller it's hard to move them," he explains. Amidon also hopes to realize some cost savings eventually, although ISDN tariffs will not be fixed by government regulators until later this year.

The department, which handles motor vehicle licenses and registrations throughout the southwestern state, runs two Amdahl 5850s that support an IMS interactive query system 24 hours a day, seven days a week. Some 1,800 devices are attached, running a mix of bisync and SNA protocols.

The mainframes also support a tax revenue application, as well as an executive information system, an on-line payroll system, and interactive programming. The conversion to SNA is going along on a circuit-at-a-time basis.

Amidon expects that ISDN will prove particularly useful in such major metropolitan areas as Phoenix (where 65% of the state's population resides), Tucson, and Flagstaff. He does not expect the entire network to be converted to ISDN, but he thinks that it will be a viable and cost-effective alternative. By the summer of this year, when Arizona will finish its ISDN pilot, Amidon hopes to have some idea of how tariffs will be pitched.

The basic access ISDN is being implemented on a Comten 3691 front-end processor and a Northern Telecom switch. "We're looking at using NCR pcs as 3270 replacements," says Amidon, noting that Atlantic Research is supplying a special set of boards that will help connect a group of IBM pcs into an X.25 data network. That will enable those terminals and pcs to be moved around the state as work demands. The packet switched net would eventually hook into ISDN to enter the mainframe complex.

The department is also considering the installation of 15 Fujitsu Image Phones for use by administrators.

BY JOHN VERITY

telecommunications manager at the U.S. National Bank of Oregon, is working with Pacific Northwest Bell on a trial due to start next month. The bank's current communications are based on Centrex voice services provided by the Bell operating company (BOC) and a typical IBM branch banking data network. Key to the trial will be tests of ISDN connection to IBM 3270 terminals and connection of the bank's IBM hosts to Centrex services. If this integration is successful in providing a flexible communications infrastructure, the bank plans to develop a number of new customer services.

Mike Hrastinski, director of facilities at McDonalds' headquarters in Oak Brook, Ill., concurs with the view that ISDN will provide solutions to future information problems. The franchised restaurant chain started its Centrex-based trial with Illinois Bell last December. Hrastinski considers the adoption of ISDN technology to be critical to the company's infrastructure. He explains: "We looked at our needs today and we could have met them with current technology. But our information network is critical to us and ISDN will be the best technology to support it and look after our future needs."

While Hrastinski perceives ISDN as an evolution in telecommunications technology, the Bank of Oregon's Vogt views it as a fundamental change that will drive applications development quickly once it is more widely used. On the down side, however, such a dramatic improvement in technology will force a change in the bank's policies and procedures. "There will be a cultural problem for users. So at first we may get only a limited advantage from the new technology," forecasts Vogt.

In Japan and the U.K., where ISDN pilots have been running for a longer period, the additional services available have had a mixed reception. Japan Radio, a manufacturer of wireless telecommunications equipment with a main office in downtown Tokyo and a factory outside the city in Mitaka, is a dissatisfied subscriber to the INS service. "Frankly speaking, the usage conditions are very bad," says a company spokesman.

Japan Radio's complaints include poorly planned installation, unreliable equipment, and difficult operation. Video conferences between engineers at the factory and staff at the head office have been thwarted by the video service's limited resolution. Explains the company spokesman, "It is necessary to use written technical material in the meetings but we cannot see the letters on the screen."

More important, the ISDN equipment has been found difficult to use. "There are so many switches and buttons. One-touch operation is not available," claims the spokesman. In contrast, the facsimile machines, the backbone of communications in Japanese companies, are easy to use but malfunction so frequently that employees prefer conventional machines to the digital terminals supplied by NTT. With so many problems, the spokesman expects equipment to be returned to NTT rather than retained when it becomes commercially available.

The U.K. experience with BT's IDA service has been more encouraging. BP reports a successful pilot of high-speed data transmission and improved clarity in voice communications. The company is also developing an application that takes advantage of the ability to mix text and images. "The facsimile facility produces superb quality," enthuses Hamer. "It will create new business opportunities, but equipment suppliers need to get their prices down. An ISDN Group 4 fax, for example, costs over $20,000 against under $4,000 for a conventional machine."

How much users will have to pay for ISDN equipment and services once they become commercially available is a moot point. Only BT in the U.K. has fixed initial prices for connection to its ISDN.

By the beginning of last year, two schools of thought had emerged about how ISDN should be tariffed. Interestingly, carriers' and potential users' opinions differed on whether users should pay charges comparable to those they pay for analog telephony, or charges related to the additional services offered by ISDN.

### Tariffs Reflect Actual Cost

In the competitive U.S. telecom market, tariffs will increasingly reflect the actual cost to the carrier of providing services. Therefore, both the long distance carriers—AT&T Communications and MCI—as well as the BOCs need to increase traffic volumes to sustain long-term revenues. ISDN will be the strategic framework on which the competing factions will build future services—the long distance carriers will concentrate on primary rate access from large user sites, while the BOCs will offer extended Centrex facilities using both the primary rate access method and basic access.

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## ISDN on Trial

**FIGURE 1 Introducing ISDN**

| | TRIALS | COMMERCIAL SERVICE |
|---|---|---|
| *France* | 1988-90 | 1990 |
| *Germany* | 1986-88 | 1988 |
| *Italy* | 1981-87 | 1988 |
| *Japan* | 1984-87 | 1988 |
| *U.K.* | 1985 | 1987 |
| *U.S.* | | |
| Local RBOCs | 1986-88 | late 1987 |
| AT&T | none | 1987 |
| MCI | none | 1987 |

Source: Ovum, London

U.S. carriers have not made any announcements on ISDN tariffs, but they are expected to follow the telephone tariff structure on the grounds that aggressive ISDN pricing will increase carrier revenues. Competitive and political pressures are also expected to keep costs down. Limited evidence available from carriers in Europe suggests that they too will take the lower cost route. While the West German Bundespost has opted for volume-sensitive tariffs, the primary rate access tariff for the 30-channel IDA service in the U.K. is $2,175 per annum—the equivalent to the rental charge for 16 business exchange telephone lines.

Competitive pricing structures will obviously speed up the availability of ISDN around the world as telecommunications users realize the cost savings in single terminal access to improved services. There are still glitches to iron out, but this year's U.S. trials should go most of the way to solving them. More important, they will help open up the world's largest single telecommunications market to ISDN. By the end of 1990, predicts Ovum, the number of primary rate access connections to ISDN will have grown to 16,000 in Europe and to over 50,000 in the U.S.—that amounts to 60% of businesses with large PBXs supporting over 100 extensions.

As IDC's Doane Perry concludes, "It doesn't matter how quickly ISDN will become real. Even though there are non-ISDN services available and a million issues to resolve, ISDN will be important. Those who say ISDN stands for 'I Sure Don't kNow' are the defensive ones with their heads buried in the sand." ■

*Also contributing to this article was Robert Poe in Tokyo.*

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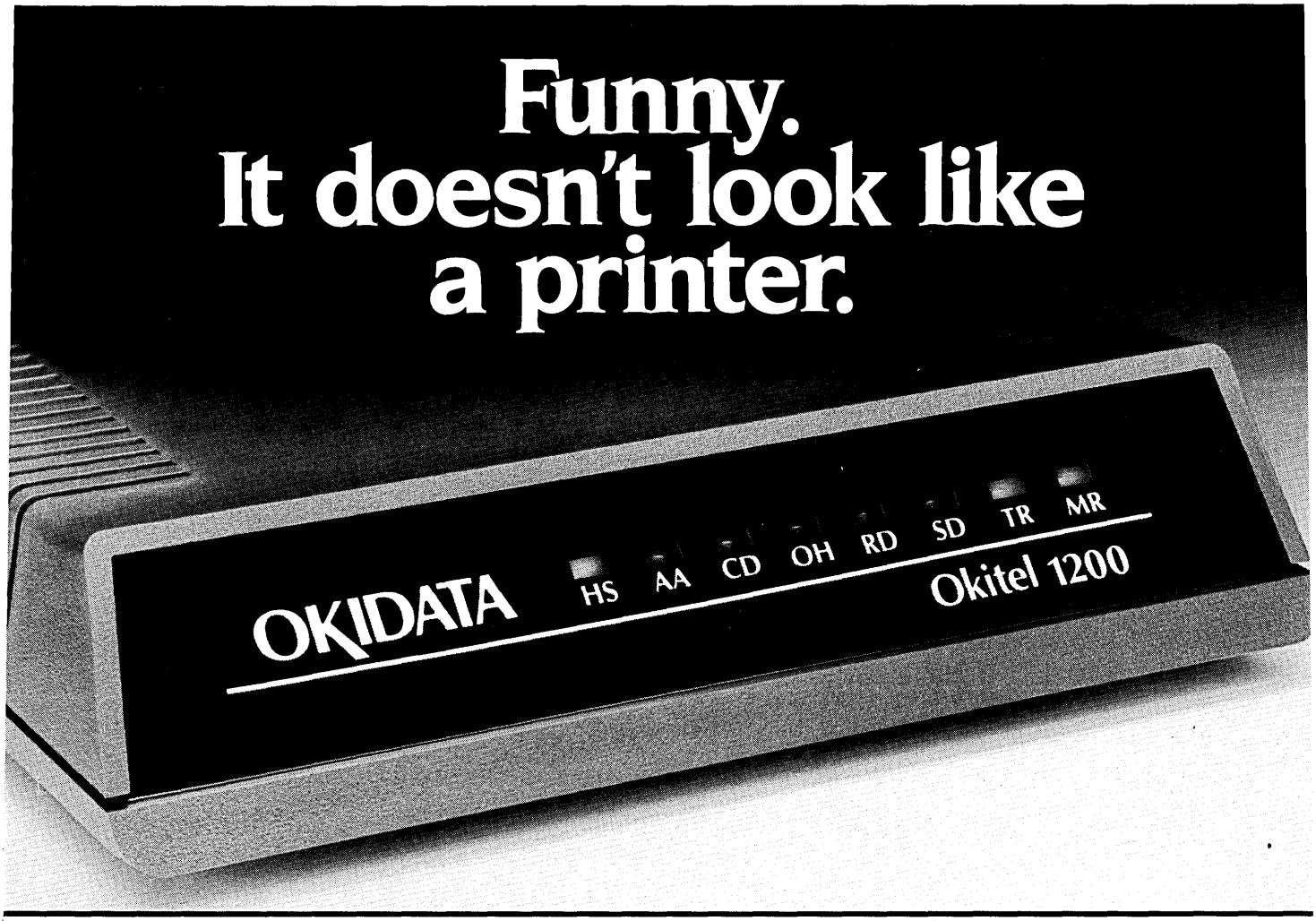


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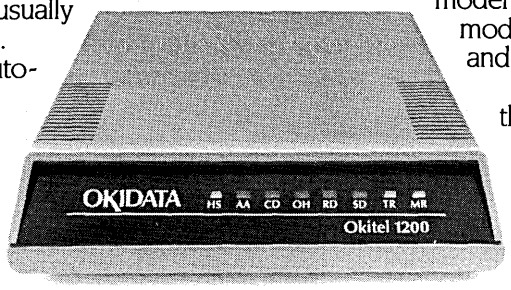


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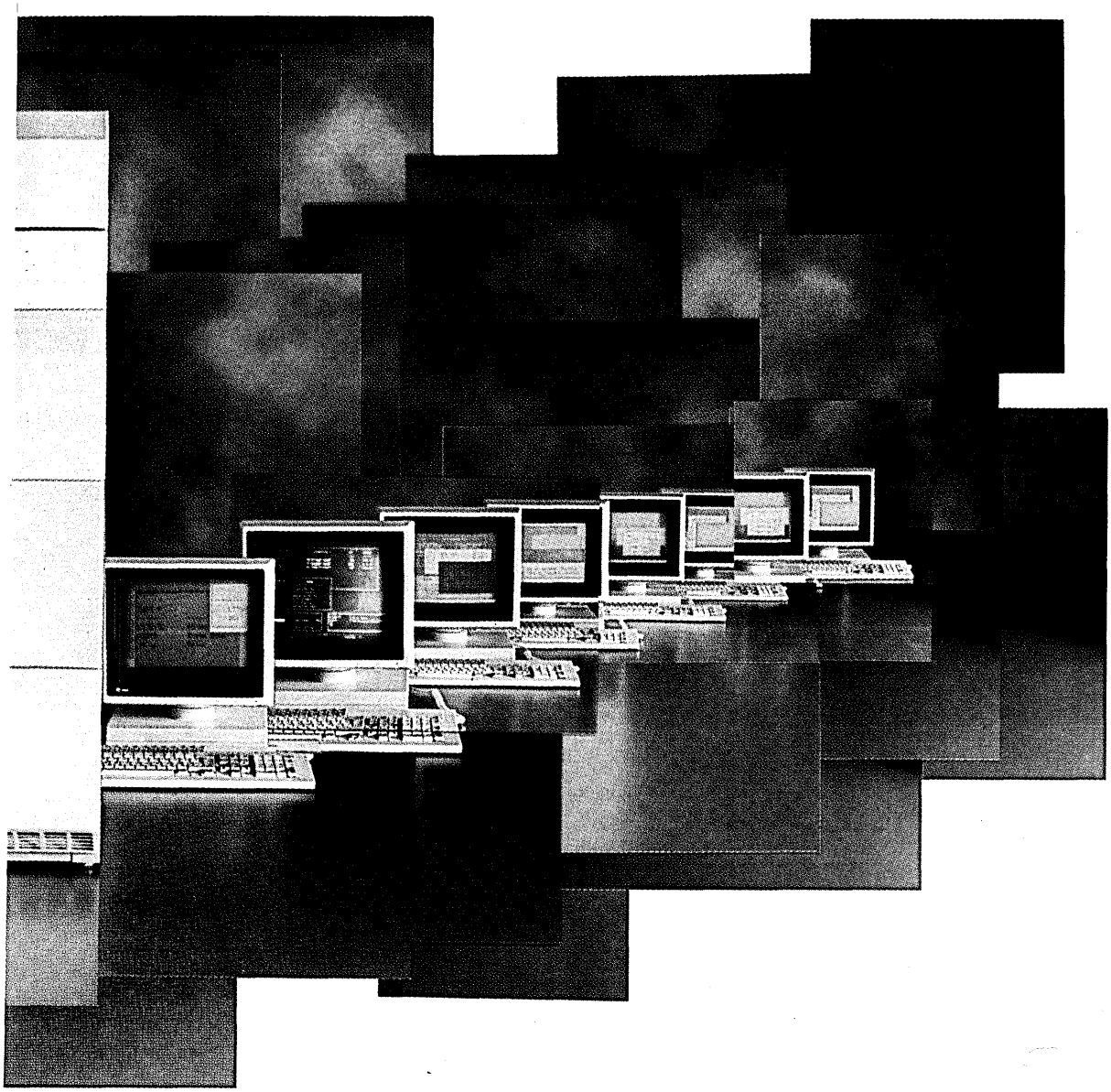

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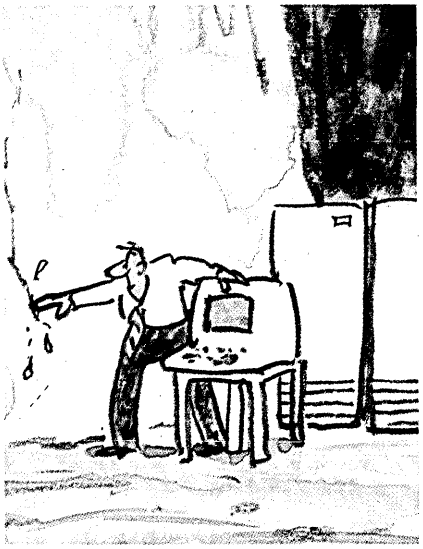


# Disaster Recovery: Who's Worried?

BY DAVID STAMPS

ABSTRACT

**The fires, earthquakes, and tornadoes that are talked about so forcefully by disaster recovery consultants and vendors are rarely on the minds of MIS managers. Real, workable contingency plans for catastrophes still seem to be the exception rather than the rule at most firms. The companies that are the most calamity conscious are financial institutions. Many have gone for backup to hot-site suppliers, who offer to keep a computer and disk and tape drives ready for a company in an emergency. Other options designed to put you on the road to recovery include cold (computerless) sites, reciprocal pacts between users, and do-it-yourself methods using a duplicate data center. No plan, however, can cover every contingency, so it is important that you rate your risks carefully.**

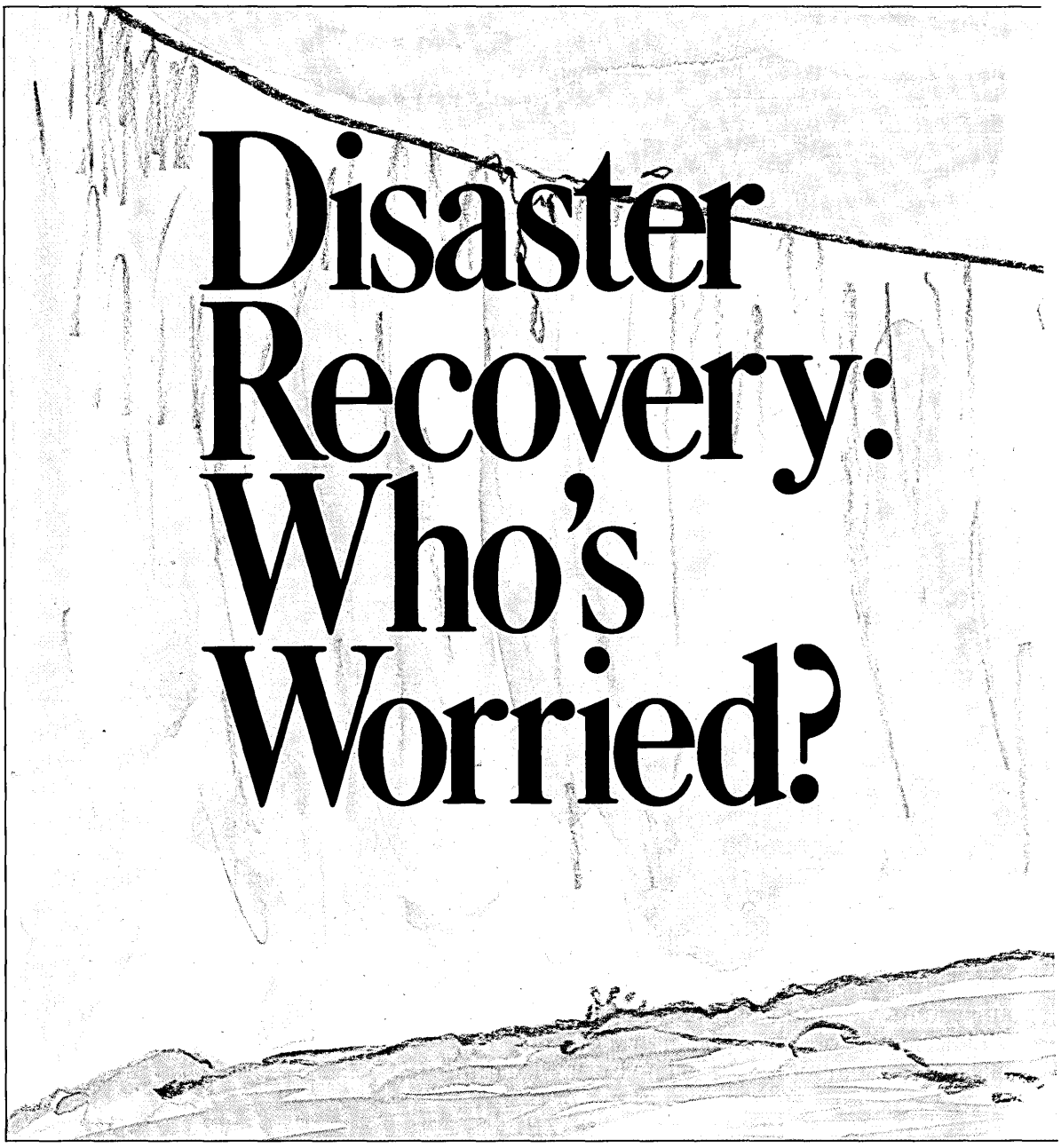
Who's worried about disaster recovery? Certainly the consultants and vendors that in recent years have been reciting a litany of catastrophes, from earthquakes to fires and floods, that can plague computer installations. But while these prophets of processing doom have raised awareness of the need for disaster planning, they have yet to overcome the "What, me worry?" attitude that pervades much of the dp industry.

Real, workable contingency plans that enable a company to survive a major dp outage still seem to be the exception, not the rule. One reason is the cold, hard fact that development of a disaster recovery plan is a big job—one that requires not only the backing of top management, but also the involvement of every department in the company. A dp manager often lacks the clout to pull off such a demanding job.

Practice, practice, and still more practice is the price of ensuring that a recovery plan will work, but practicing backup plans is a pain, so even the best-laid plans sometimes never get laid down.

Then there's the complacent attitude adopted by many dp managers who have enough day-to-day problems without worrying about hypothetical mayhem. In the cataclysmic jargon of the disaster recovery industry, a key phrase is "smoke and rubble." The idea behind it is that you'd better have a backup facility to move to when your data center has been reduced to smoke and rubble and so much melted plastic.

The smoke and rubble of a Montreal



fire last October finally may have provided the disaster recovery industry with the evidence it needs to convince recalcitrant computer users that the threat of computer disasters is all too real. Water damage from that fire sent $4.5 billion Canadian retailer Steinberg Inc. scrambling over the border with its computer tapes to a backup site in New Jersey run by Comdisco Disaster Recovery Services (CDRS), the disaster recovery subsidiary of the Rosemont, Ill., leasing firm.

CDRS runs a "hot-site" operation. That's where the recovery vendor offers, for a fee, to keep a computer and disk and tape drives ready and waiting for a company in an emergency. Industry figures indicate that more companies seem to be turning to commercial hot sites for backup. Still, less than half of large dp shops currently subscribe to these services—possibly less than 20%, according to some sources.

**IN THE FUTURE MORE FIRMS WILL USE HOT-SITE BACKUP.**

Until the Steinberg fire, the disaster recovery industry lacked the smoke-and-rubble evidence needed to support its scariest scenario. Instead, it repeatedly relied on a 1978 study conducted by the University of Minnesota MIS Research Center. That venerable effort, which has come to be known as the "belly-up study," asked companies how long they thought they could survive without their dp operations. A bank, for example, reported that it could last only two days, while a more optimistic insurance company said it could hold out for six days.

Now it's the Steinberg fire and not the Minnesota study that's fueling the disaster recovery industry. "The Steinberg fire is really the first well-publicized case where we can point to one of our

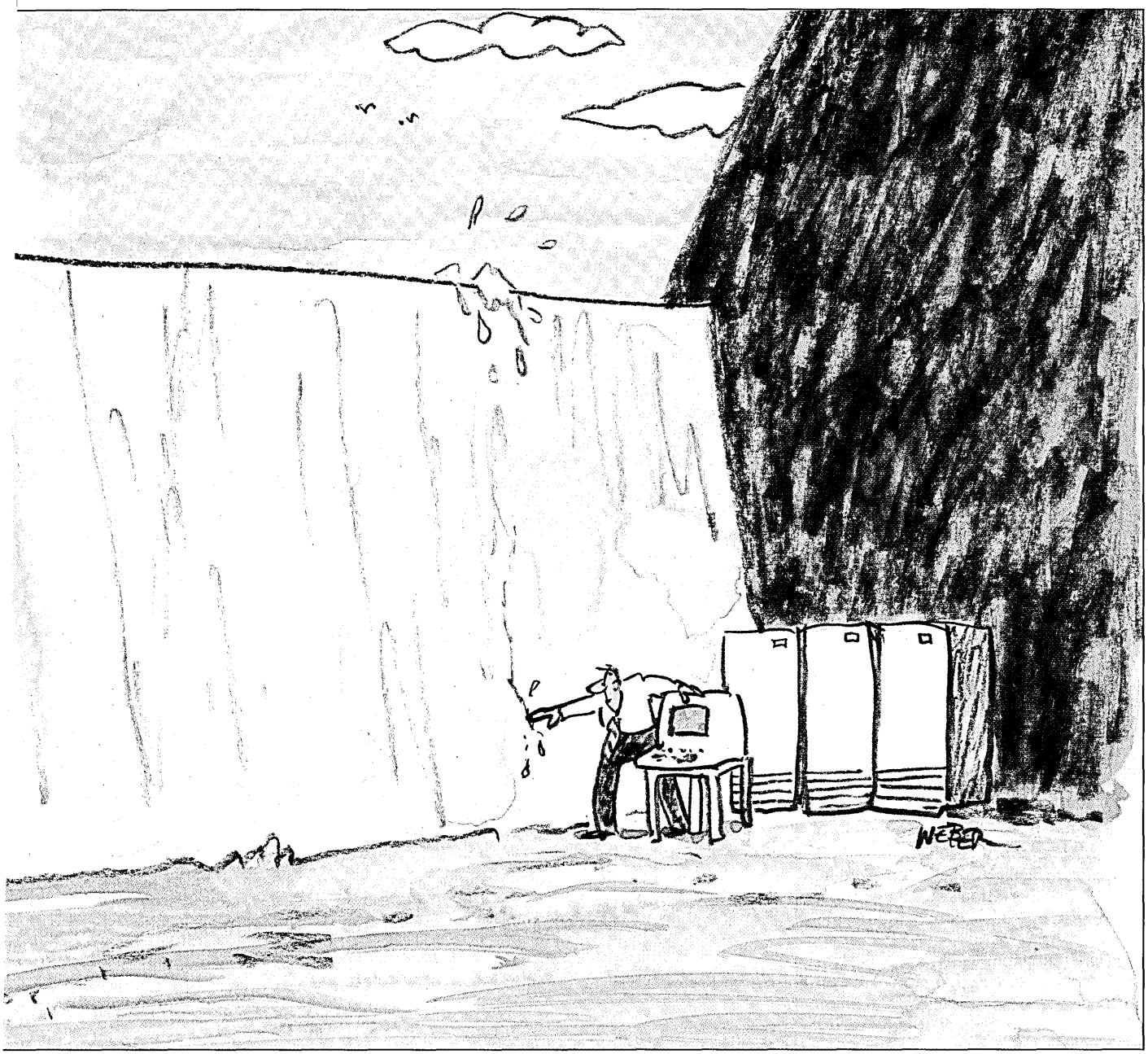



Illustration by Robert Weber

# Disaster Recovery: Who's Worried?

subscribers and say, 'They survived a disaster and they survived because they had a backup facility and a tested plan,' " explains CDRS marketing director Jim Mannion.

### Statistics Hard to Obtain

There *have* been other disasters, Mannion points out, but the clients have managed to keep a lid on any publicity. Nevertheless, where there's smoke, there's not always fire. Smoke-and-rubble disasters are indeed rare. Even more rare are statistics, which are hard to come by because of the hush-hush treatment of computer outages. Most dp managers say that troubles, when they happen, are more likely to be caused by a leaky roof than a four-alarm fire.

Comdisco, the leading provider of hot-site facilities, reports only five instances when customers have declared a disaster and moved operations to a hot site. The company, which has close to 700 subscribers, has been in the backup business since 1980. The second leading hot-site vendor, Sungard Services of Wayne, Pa., which boasts 360 subscribers, says it has never had a smoke-and-rubble disaster.

Not that any dp manager would dare cite these seemingly favorable odds as an excuse not to seek some sort of backup. Such optimistic notions, however, might well surface in that fleeting half second or so before a contract for commercial recovery services is signed. Those contracts can be costly propositions. The most expensive class of service offered by Sungard, for example, is a deal under which the company agrees to back up multiple IBM 3090s. While that pact can run as high as $270,000 per year, the average annual cost to a subscriber is more like $72,000, according to Sungard. That does not include, however, the costs incurred in testing a plan.

Some hot-site companies charge by the hour for testing. Sungard, which is the exception here, bills its clients for transporting employees to the hot site. Add in lodging too, since a thorough test will take two or more days. A major test can involve 100 or more employees, so costs can be considerable, especially if the backup facility is a thousand miles away. Transportation and lodging expenses can be cut or eliminated by subscribing to a regional hot-site vendor such as Compusource in Cary, N.C.; Hotsite in Niles, Ohio; Eloigne Corp. in Minneapolis; LDI Disaster Recovery in Solon, Ohio; and Weyerhaeuser Recovery Services in Tacoma, Wash.

## Rating Your Risks

Buying dp insurance is a little like poker without the percentages. An underwriter may tell you that you won't be insured if you don't have a sprinkler system but not tell you how much the installation of an extra smoke detector will save you on your rates. Unlike home or auto insurance, dp insurance has no standard formulas. An underwriter looks at a number of factors and then puts a client into one of two risk groups, high or low. Here are some of those factors:

- A dedicated data center, preferably in a modern building. Sharing a building with other operations, particularly manufacturing, is high-risk stuff. If the dp shop is underground, it had better not be in a flood plain. Old buildings without sprinklers or firewalls do not please insurers.
- Strict enforcement of NO SMOKING policy in the data center. "It may seem minor, but we might choose not to cover a company that allowed smoking in its data center," says Marr Haack, director of marketing for the technology group of St. Paul Fire and Marine Insurance Group, a leading underwriter of high-tech firms and corporate data centers.
- A dedicated heating and cooling system. Computer room fires are rare, but smoke damage from someone else's fire is common, say underwriters.
- Sprinkler or Halon gas systems. (Halon is the fire-suppressing gas developed by Du Pont.) "We don't take a stand as to which one a company uses," says Mark Schofield, training manager at Factory Mutual Engineering Research, a Norwood, Mass.-based firm that provides loss prevention and consulting services to insurance firms and their clients. "Sprinklers are cost-effective. Halon is good if one can be sure doors and windows won't be left open or broken. The best system is Halon with a sprinkler backup."

Having a contingency plan and testing will not by itself lower your rates, but a good plan will usually address many items on an underwriter's checklist, and thus reduce risks.

If you fall in the low-risk group, what will coverage cost? That's not so simple. There are four kinds of dp insurance:

- Destroyed or damaged hardware. That sounds straightforward, but just what constitutes damaged hardware can be a point of contention between underwriters and clients.
- Lost data, including programs, data, and blank media. "Most people back up tapes, but you'd be surprised how often vital information comes up missing," says Haack. The insurer covers the cost of reproducing information. That can conceivably involve rewriting a program.
- Extra expense coverage, which includes everything above the normal cost to run a dp operation—hot-site or cold-site fees, moving staff to a backup site, telecom costs, etc.
- Business interruption coverage, the loss of revenues that can be directly attributed to loss of dp.

Coverage of hardware and data loss ranges from 20 cents to 30 cents per $100 insured, or $20,000 to $30,000 for a $10 million data center, assuming a $25,000 deductible. Extra expense coverage runs an extra 20 cents to 30 cents for each $100 of expense. Business interruption is more expensive, but a well-tested recovery plan can save you money here. It's cheaper to buy coverage for a five-day interruption than for a 60-day outage. Some insurers won't even sell you business interruption coverage if you don't have a recovery plan.

Taken as a percentage of the total MIS budget, hot-site backup is not all that expensive. The Gartner Group, the Stamford, Conn.-based research firm, estimates that an IBM 30XX-class user pays $180,000 a year on average for hot-site backup. That includes testing, transportation, and related costs such as maintenance and development of the plan.

"That's only about .5% to 1% of a total MIS budget," points out Paul Spindel, vp and general manager of consulting at the Gartner Group. Spindel predicts that in the future, more companies will be including commercial hot-site vendors in their disaster recovery plans.

If you're not hot on hot sites, you may want to try other recovery alternatives. Those choices include cold sites or computer shells, reciprocal agreements, and service bureaus. Still another option is self-backup using a duplicate data center. In fact, some users contend that setting up a second data center to duplicate the hardware and software configurations of the production center is the most reliable approach to disaster recovery. It is also the most expensive.

A cold site or shell is basically a place to go in the event of a disaster. These facilities are equipped with raised flooring, cabling, power supply, and air conditioning, but no computer. Subscribers go through their hardware vendors to get computers installed. Once a new system goes in, a cold site provides long-term backup at a cost that is considerably less than the higher-priced hot-site haven. The possibility of a delay in installing a backup computer and the inability to fully test a recovery plan are some of the disadvantages of the cold-site option.

### Service Bureau Route Expensive

Service bureaus, on the other hand, offer ready availability for short-term backup, but this route could prove expensive for long-term backup. In the end, a reciprocal agreement with another company is probably the least costly alternative, but many dp users question their practicality.

"Reciprocal agreements don't work well, in my opinion," declares Jack Bannon, manager of security and procedures at RCA in Cherry Hill, N.J. "You can never be sure the other guy can make the time to do your processing."

Bannon is president of the Delaware Valley Disaster Recovery Information Exchange Group, an organization made up of some 500 companies that holds regular meetings to discuss disaster-recovery planning issues. Most of the group members have recovery plans in place, though some are still in the process of developing them. According to a recent membership survey, about half of the firms use commercial hot-site vendors, while the rest rely on a mixture of methods including reciprocal agreements, cold sites, and self-backup.

Generally speaking, the larger the user, the more likely it is to rely on a commercial hot site for backup. The Gartner Group estimates that 41% of 308X-class users have contracts with commerical hot-site companies, while only 11% of 4300-class users have signed up for this type of backup service. Those figures, however, don't jibe with the findings of Comdisco and Sungard, both of which report the total hot-site subscriber base to be substantially lower. According to Sungard, only 12% to 15% of the 14,000 to 18,000 data centers that have machines of at least 2MIPS have signed up for hot-site service. Comdisco quotes similar statistics.

To no one's surprise, financial institutions lead the list of hot-site customers. Many banks were quick to sign up with hot-site providers after the famous belly-up survey revealed just how vulnerable financial institutions were to computer outages. In 1983, the comptroller of the currency turned up the heat by requiring annual board reviews of banks' dp backup plans. Manufacturing firms, which have become more dependent on automation in recent years, are second on the hot-site customer list.

**RECIPROCAL PACTS ARE PROBABLY THE LEAST COSTLY RECOVERY ALTERNATIVE.**

Not every company with a 2MIPS or more data center is a candidate for commercial hot-site backup. Indeed, some dp shops are so big that it would take every commercial hot-site facility from the Carolinas to California to back them up. Many federal agencies fall into this category. The feds, traditionally slow to show interest in commercial recovery services, have recently evinced more interest in these services. For example, the Social Security Administration, which gets its dp power from a 125MIPS data center in Baltimore, now relies on a commercial hot site to back up some of its processing.

### The Do-It-Yourself Approach

In the private sector, some firms prefer the do-it-yourself approach. That's the one adopted by some airlines, banks, and by others such as Motorola, which found that the complexity of its communications and applications were enough to justify the cost of building a second data center for backup.

"We had vendors trying to sell us security from now until doomsday, but we made a decision to go with duplicate data centers in Schaumburg, Ill., and Phoenix," explains Earl Gommersall, former vp of operations and systems support at Motorola's MIS division in Schaumburg.

"We ran very complex software and hardware—lots of IMS, lots of remote computing, and a lot of CAD/CAM," says Gommersall, who is now director of technical development at A.C. Nielsen Co. in Northbrook, Ill. "Keeping every device talking to every other device is not a trivial issue. We even ran into trouble with stuff as simple as async and synchronous communications. It's a bitch. There's a myriad of details.... Clearly, the cheapest thing to do is find a mountain and build a giant data center inside it. We decided dual data centers was the price we were willing to pay for security."

Gommersall is the first to admit that redundancy has its payoffs. For instance, a company can fall back on its backup data center when minor aggravations like a two-hour power outage, a destroyed tape, or a broken pipe occur. "It can be a disaster of sorts," notes Gommersall, "if the printer paper doesn't show."

These are not the sort of catastrophes that justify declaration of a disaster as spelled out in a hot-site contract. (A declaration fee that ranges between $15,000 and $25,000 is assessed for moving dp operations to the commercial site.) Nevertheless, it's these types of annoying dp interruptions that occur far more often than the fires, earthquakes, and tornadoes that are the favorite topics of many disaster recovery consultants. "We screw up quite routinely without any natural or man-made disasters, and one needs to be able to rebuild on occasion," points out one pragmatic MIS manager.

## Disaster Recovery: Who's Worried?

Most hot-site suppliers do offer clients temporary backup, though these services go by many names. Clients who use Comdisco's contingency service can use the hot site for up to 72 hours without having to pay the declaration fee. Sungard helps its customers by letting them use their 48-hour test time as a short-term emergency backup.

### Avoiding Backup Problems

Such short-term situations are certainly more common than the full-blown smoke-and-rubble calamity. However, moving to a hot site for anything less than an all-out disaster can present problems, too. To avoid those backup problems is a goal of the Rainier National Bank, which is a subscriber to Comdisco's hot-site service. The Seattle bank has structured its backup plans in such a way that all of its normal production work is run, and at nearly the same schedule.

"It used to be you could back up just the two or three critical applications," explains Len Sanderson, manager of contingency planning at Rainier, "but now we've got so many applications that are interdependent . . . [that] if we tried to run application A without application B, we'd have a second disaster on our hands." That approach saves some time on systems development, since the bank doesn't have to worry about special batch runs that are used only for backup mode.

Sanderson figures it would take a minimum of 48 hours to switch over to its backup system—a time-consuming task that would entail rerouting the bank's entire on-line data communications network to the Comdisco hot site in Chicago. "For any emergency like a temporary power outage, we would just stay put if we thought it could be corrected in less than two days," says Sanderson.

Not that Rainier anticipates spending much time sitting in a blacked-out data center waiting for the power to come back on. Late last year the cautious bank opened a new data center that is designed to be as disaster-proof as possible. "The new center," according to Peter Rosenow, vp of information services at Rainier, "is built to withstand earthquakes and fires, has its own uninterruptible power supply, on-stream cycling and power generation set up to kick in within seven seconds, plus a 20-minute battery backup. And, just to be safe, we've identified alternative sources of diesel fuel and alternative supply routes."

Rosenow believes Rainier has "a very effective plan in comparison with others." At the same time, he knows from previous experience that it's hard to plan for all contingencies. Rosenow was at BancOhio in 1982 when a bomb threat was reported. It turned out to be a hoax, but at one point even the FBI believed a bomb was in the building.

"I found myself having to decide whether we could even occupy the building to put our recovery plan into place," recalls Rosenow. "That was a consideration our plan hadn't addressed." ■

*A frequent contributor to DATAMATION, David Stamps is a Minneapolis writer who specializes in technology topics.*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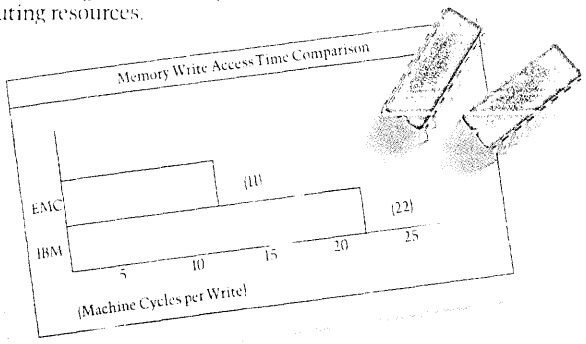


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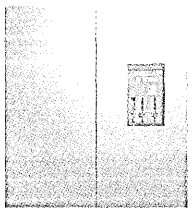

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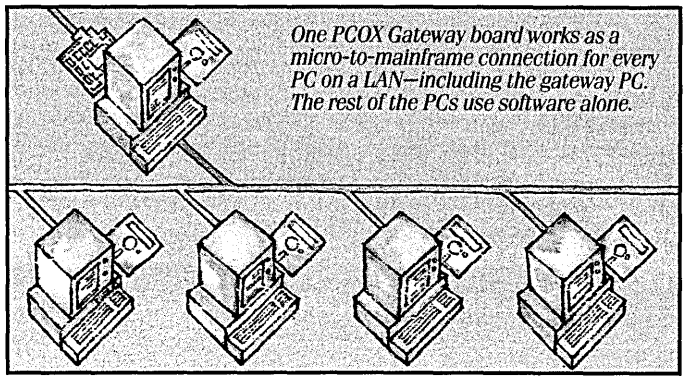

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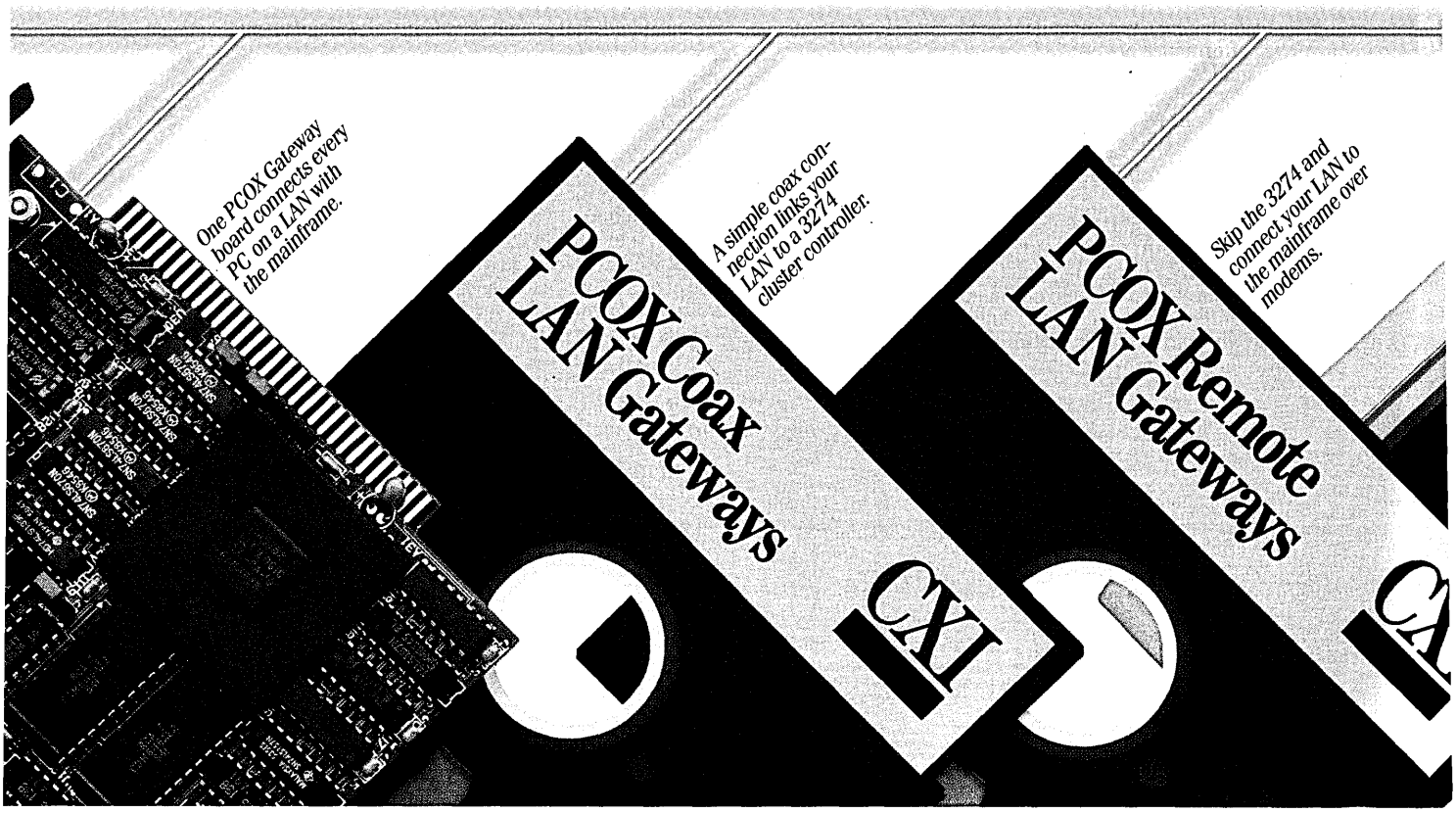

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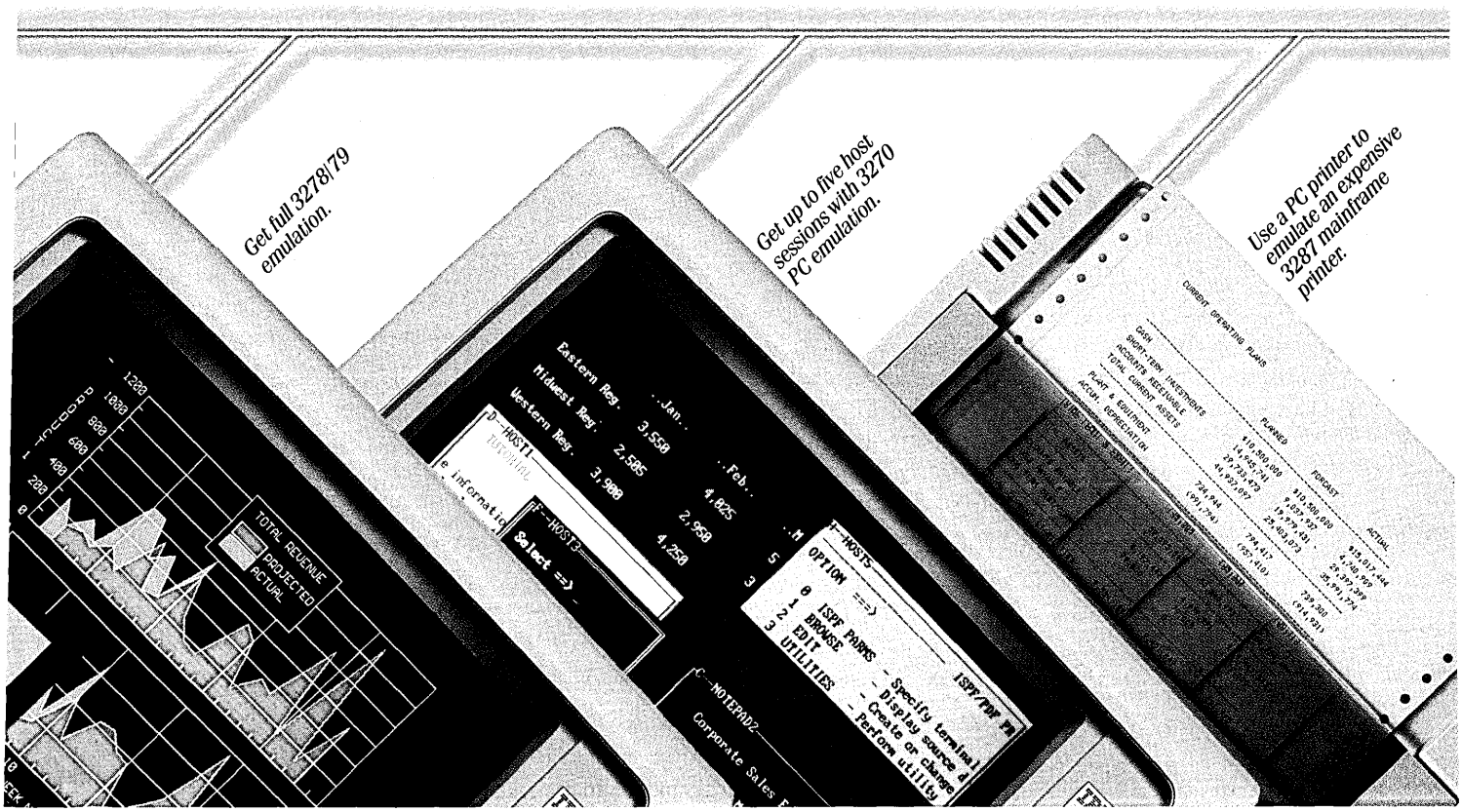

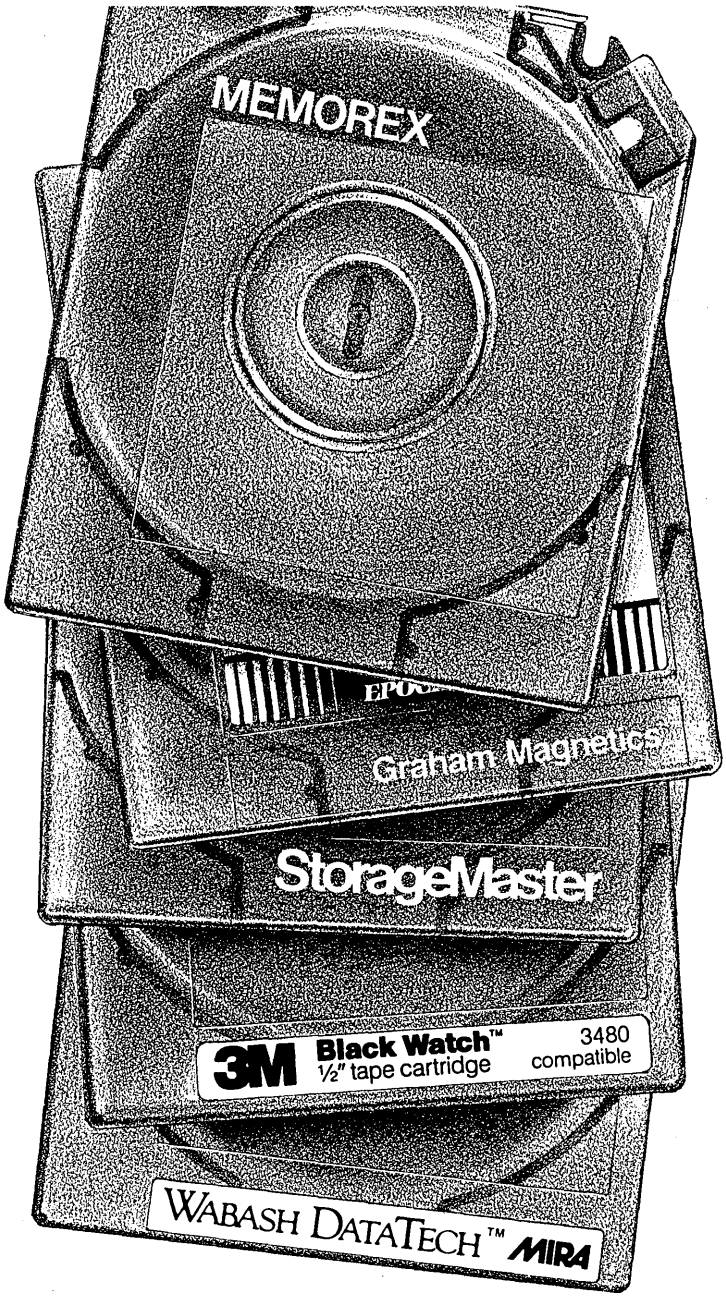


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ABSTRACT

**Security in an on-line environment requires attention to accountability, prevention, detection, and enforcement. In terms of accountability, users must be made to realize their roles in keeping their systems secure. The role of MIS, on the other hand, is to provide the tools to prevent and detect break-ins. Both MIS and users must agree on how to enforce security, and on what is to be done with trespassers once they're caught. What we do with trespassers should be determined by the effects of their actions, not by their intentions. A sliding scale of punishment may be the solution to the enforcement problem.**

# How to Build a Security Chain

BY FRANK SWEET

As the old adage goes, a chain is only as strong as its weakest link. In the on-line environment, the chain that will keep out unwanted users consists of four major links—accountability, prevention, detection, and enforcement. Each of these links must be strong enough to make any system secure.

The first link on the security chain is accountability. Who should be accountable? I recall a client who received an unfavorable audit report, stating that his staff was not security conscious. Some staffers had shown friends or relatives how to dial in and log on. His response to the auditors was, "That's a computer problem. Talk to data processing." But data processing can provide only the tools to secure a system. Users must provide the security.

The dp tool set is crucial to the second link on the chain: prevention. To prevent unauthorized access, on-line security should work like this: the first screen should ask for identification. The second screen should display a selected menu, listing only those applications for which the user is authorized. The third screen should invoke the selected application and, optionally, record the fact. When the operator finishes with an application, the system should display the selected menu again. When the user finishes the entire session, the system should display the identification screen for the next user. There should also be screens for granting or revoking authorization, and for changing one's own password.

One major key to securing an on-line system is the password. The system should double-check the user's identity by validating the password against the employee's record in the database. The password should identify the individual, not the application.

Employees should assign their own passwords. Without the red tape of needing approval for new passwords, people are more likely to change them frequently. Allowing users to choose—and change—their own passwords focuses accountability; it makes users accountable. If a password is divulged, there is no doubt who is responsible. If a centralized technician is responsible for maintaining all passwords, nobody is accountable. There is no way of proving who leaked a password, the user or the technician.

The password should be validated against the employee's record in the firm's central database. An employee's password is a datum about that employee, defined by his or her identification number. As such, it should be in the company's database.

A separate standalone file of opera-

Photograph by Steve Cooper

tors and their passwords is risky for the same reasons all redundant files are. Employees may be in one file but not in another. And those in both files may have different names or ID numbers. Double-updating is also necessary whenever someone is hired or terminated.

The password should be encrypted before it is stored in the employee's record. This prevents it from being legible in stock information extracts or through on-line queries. The screen's validation routine should encrypt the password before comparing it with the one that's already scrambled in the employee record.

Encryption can be achieved with a simple byte substitution routine. Two identical 36-byte wraparound arrays contain values A to Z and 0 to 9. To encrypt the employee's ID number, divide it by 34. Then, use the remainder, plus one, to rotate the second array. That is, shift it one notch to the right as many times as the number's value. Finally, use the second array to translate each byte of the password found in the first array.

Once employees identify themselves, the system should lock out the applications they don't have authorization for, displaying a selected menu of ones they do have access to.

The menu screen should be a stock archetype with standard window control functions but without data control. In other words, you can scroll forward or backward through the menu, search for an application based on a partial key, and select one by pointing to it with the cursor or by typing its name. You can't update application names, add new ones to the list, or delete any.

### Specify Desired Application

Systems that list all applications—authorized or not—encourage penetration attempts. They say to the user, "Look at all the applications you're not supposed to get into." One alternative is to make the user specify the desired application, rather than select it from a menu. But this is harder on the user because it replaces point-and-choose with remember-and-type, which requires lists of application codes to be kept near the workstation.

The authorization record is the intersection between an employee and an application. It contains one data element, which tells what sort of authorization the person has. The simplest system has only two values: for normal and for supervisory, which allows the supervisor to add others to the application list. It is simpler still if there is only one supervisor per application.

Only application supervisors should have access to a full-function screen. A supervisor should be able to scroll and search through the list of people with access to the application, as well as add or remove operators from the list. In this way, only the supervisor can remove or add the application to someone's menu. The exception to this rule is the one-screen password-change application, which needs no supervisor. All employees can access it to change their own passwords.

Responsibility or accountability for security should rest in the hands of those who own the data—the users. MIS can build the links, but users have to guard the chain.

It's an unfortunate fact of life that people do penetrate security. Improving the prevention link without strengthening the detection link makes the chain vulnerable to break-ins.

**IMPROVING PREVENTION WITHOUT STRENGTHENING DETECTION WEAKENS THE CHAIN.**

Detection makes up the third link. I propose allowing hackers to think they have penetrated the system. Instead of getting an "unauthorized access" message, trespassers should be allowed into forbidden applications. The keyed password should still be matched against the one in the employee record, but this should not be indicated on the screen. If the passwords do not match, a "security breach in progress" message should go to a printer at the company's security station.

This system lets hackers think they have successfully broken in and keeps them busy doing whatever they want until the security guards arrive to drag the offenders away.

If the method is imperfect upon occasion, and the guards find that the hacker really is who he or she claimed to be but simply forgot his or her own password, they can say they came to check the sprinkler, apologize for the interruption, and quietly leave.

### Effect and Intent

Having detected a break-in brings us to the fourth and final link—enforcement. Once hackers are caught, what should be done with them?

I think the guiding principles of how we handle hackers should be effect and intent.

By effect, I mean we must distinguish between trespassing and vandalism. Criminal prosecution of computer burglars fails, often because the victims confuse illegal entry with sabotage and try to pin the second, and far worse, crime on the criminal. Often sabotage cannot be proved, and the victim loses credibility with judges and jurors, sinking the whole case. If it can't be proved that the hacker did nothing more than snoop, he or she should be punished for snooping, rather than be accused too harshly and then receive no punishment.

Intent is the more difficult enforcement issue because it obscures the real issue by diverting attention from the facts. Too often, people are willing to believe that an offense is not really an offense if the person did it without malice.

The words used to talk about computer crime suggest intent: trespassing, instead of illegal entry; vandalism, as opposed to sabotage; unauthorized use, vs. stealing. Each of the words in these pairs reports the same fact—what the person did. Their differences imply why he did it. Since it's impossible to prove what someone else was thinking, security policies will be effective if we measure only what is measurable.

I think we should define a sliding scale of punishment for offenders. At one end, there should be informal counseling by a supervisor for activities like snooping into data not critical to the firm's operation. In the middle, there should be a formal reprimand, suspension, or even firing for extracting critical data, or doing minor damage. At the opposite end of the scale, there should be criminal prosecution for people who do hundreds of thousands of dollars' worth of damage. Intent should not enter into the punishment picture. ■

*A frequent contributor to DATAMATION, Frank Sweet is a freelance consultant in Jacksonville, Fla. He publishes* Boxes and Arrows, *a monthly newsletter for IDMS users.*

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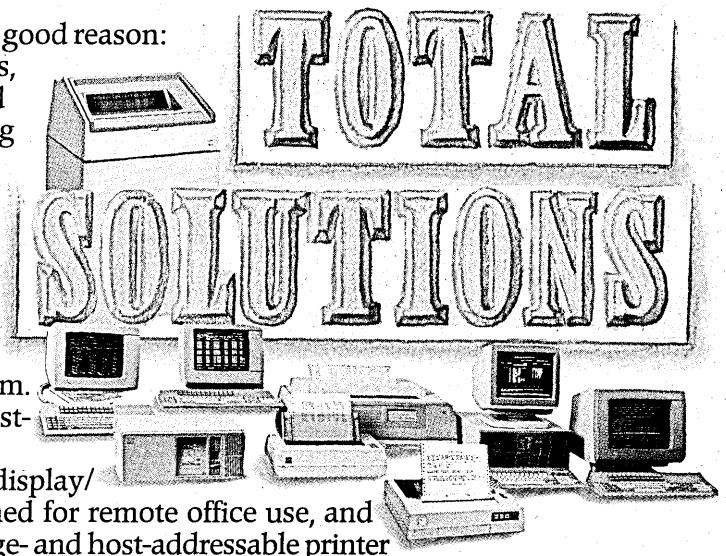


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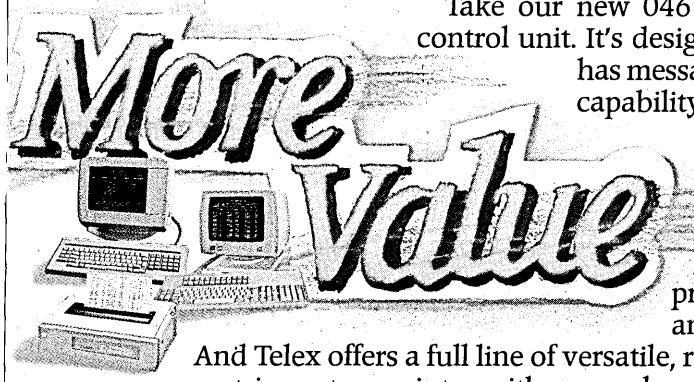


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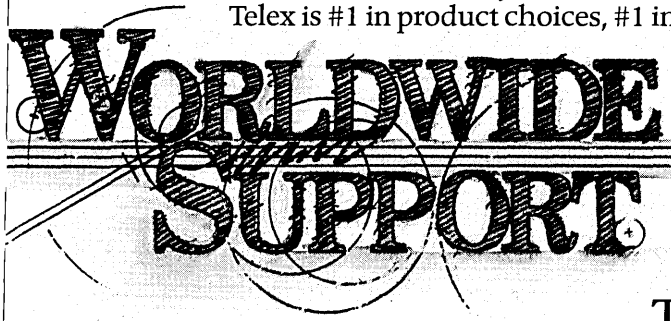


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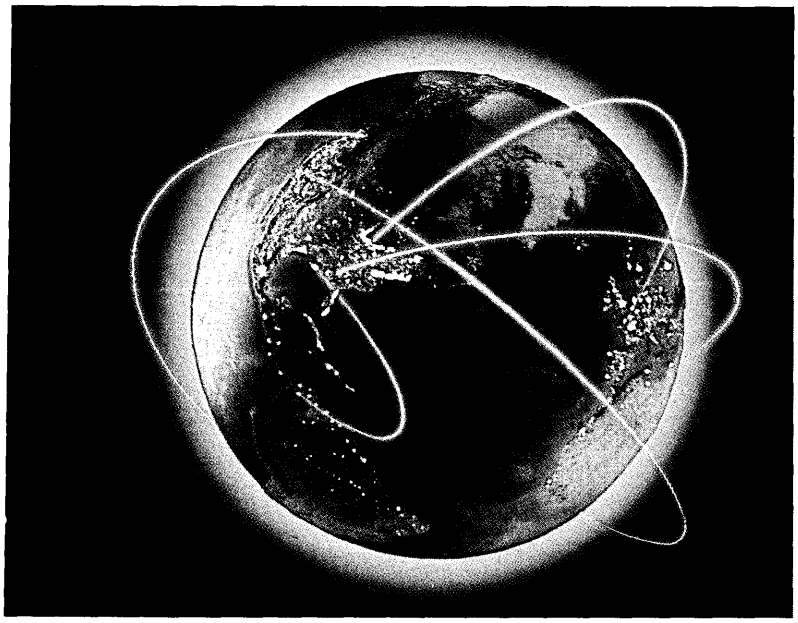

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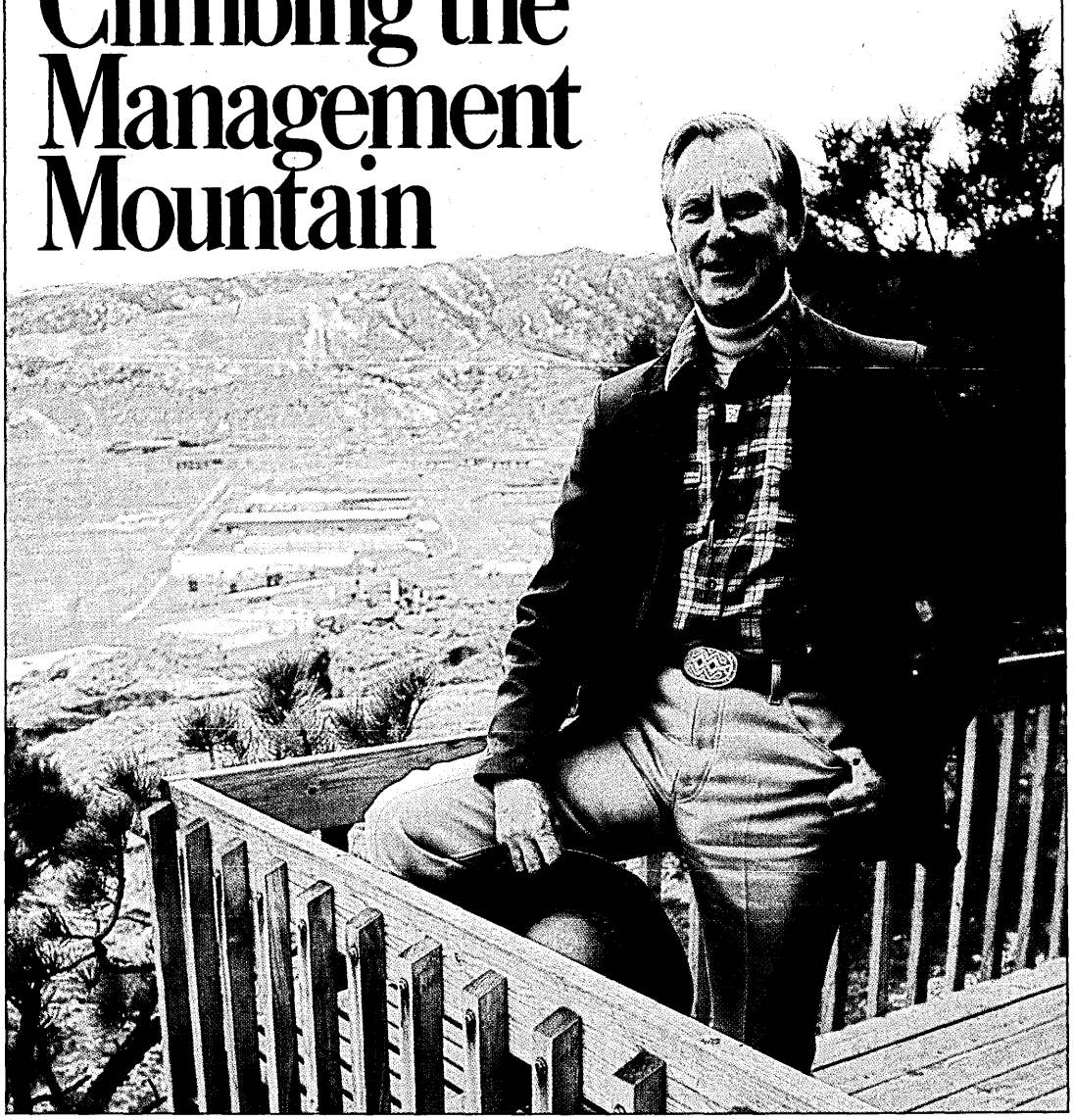
CIRCLE 42 ON READER CARD

# Climbing the Management Mountain



ABSTRACT

**To be a successful MIS manager, you must be more than just a well-qualified technician. You must be a generalist and develop the whole spectrum of management skills that are needed to operate almost all aspects of the business. The job calls for planning, motivating, evaluation, and control—in short, leadership. These words of wisdom come from a former MIS chief at a large U.S. firm. He learned his job was like that of a cardinal: all the rules are written down, you listen to confessions regularly, and assign penance when necessary.**

BY JAMES F. COLLINS JR.

Out West, where it isn't so wild any more, a few of the old customs linger on. The Ute tribes and the Apache nation, and even the Chiricahuas, still have councils of elders that pass along their wisdom and judgment to the operating chiefs. These current chieftains eagerly listen to the revered old-timers whose success is attested to by the simple fact that they have survived.

In our information society, we haven't quite come to that yet, nor has the MIS world. Nevertheless, it is with this council-of-elders concept in mind that I thought I might offer some observations and free bits of advice in the hope that it just might help some of you out there climb the management mountain. I made that climb myself for 15 years when I was in charge of corporate information services at Johnson & Johnson in New Brunswick, N.J.

To begin with, I want to tell you that your racket hasn't changed all that much. Running a successful worldwide information services operation is really done by old-fashioned good management practices and hard work. It's a little like managing a ballet troupe. You assemble a competent corps, keep them in training, evaluate their performance constantly, hold their hands frequently, and keep them inspired and motivated always.

Then you go about your marketing extravaganzas and develop the confidence of all your users. You convince them that they are getting the very best deal and service there is. You persuade them that they would end up with a disaster if they didn't conform to the central standards and if they tried to match elsewhere the quality, price, and performance they are currently getting.

All of this adds up to one thing—you have to be a good general manager. Of course, there are nuances, like devel-

Photograph by Bruce McAllister

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oping your own network of supporters, both internally and externally. It's even better if that support can come from a top sponsor. But don't expect that to bail you out all the time and be the answer to all your problems and frustrations. As the chairman of the board once told me, "Jim, don't expect me to make all the top managers do what you want and think is best. You go out and convince them yourself. If you can't sell them on what you believe is best for them and for the entire corporation, then maybe you've got the wrong product." That was a great learning experience, believe me—and it worked.

To be a successful MIS manager, you must be more than just a well-qualified technical manager. You must also be a good general manager and develop the management skills needed to operate almost all aspects of the business. The job calls for planning, motivating, evaluation, and control—in short, leadership.

Of key importance here is the ability to select good techincal management people for each section of the company's operation. Once that's accomplished, you have to continually observe what they are doing and keep them on course. And if that monitoring process is performed well, you should be able to detect when these managers begin to stray and their work starts to falter.

### Knowing the Total Costs

Knowing what the total systems and dp costs of your corporation are is also crucial. Although there is a lot of talk about this, there hasn't been too much success in gathering and collating the real total costs because they are spread throughout all operating units of a corporation. That means you must develop cost accounting procedures or reporting systems that actually segregate the information services costs from all the rest of the local operating costs. The resulting consolidated information should then be reviewed by top management.

Once this is done, you can compare the costs of systems and dp operations with what they are actually accomplishing. Just what they are accomplishing, however, is quite a bit harder to read. In fact, much of the benefit from dp is recorded in the accomplishments of other functions—in marketing, sales, and manufacturing cost improvements, for example. That's perfectly fine because, after all, that's what the MIS operation is all about. So you have to learn to work closely with the managers of the other functions in the company to know what they need and want.

The role of MIS and the technology to carry it out has been constantly changing since it all began only a few short years ago. But the more things change, the more the general management of them remains the same. Information services and data processing is not your main business. It is a service to make your main business successful. The purpose of that service is to quickly get information into the hands of every manager of the mainstream operations. That process involves passing meaningful summary information to the top and greater detail down to the line operations so that it can be used promptly for effective planning and control.

Back in the old days, this dissemination process was all done manually right at the operations site. Then came punched cards and collating machines that moved it back a notch. The costs and operator training required by the large-scale digital, stored register computing machines that came next meant that the operation had to be centralized and the collated and summary information laboriously handed out to all concerned.

Since then, we've gone through several cycles of centralization and decentralization, with local management

**DP IS A SERVICE TO MAKE YOUR MAIN BUSINESS SUCCESSFUL.**

and central staff management trying to hang on to their power bases. Within the last several years, the decentralization drive has been fueled by technology advances; one particularly significant advance came in the form of the low-cost, high-performing micro.

Today, managing corporate information services activities without causing chaos can be done only by decentralizing and distributing. That decentralizing and distributing, however, should be done within the context of very sound and enforceable standards and procedures. Standards for systems, systems engineering, operating software, and programming software selection, along with procedures for cost collection, evaluation, and reporting must all be established, and they must be explained, accepted, and monitored. That means visits to users to convince them of the value of standards and procedures. Then comes conferences to get everyone working together, not only for their own good but for the common good.

User councils are one of the very best ways to get everybody working together. User representatives meet regularly to share experiences, problems, and ideas. Working committees can be formed to solve overlapping problems and develop common systems. In this way, the latest technology, systems, and operating procedures filter down to everyone in the corporation. If your company is widely dispersed, you might want to do what we did at Johnson & Johnson: have separate councils in the U.S., Europe, and in the Far East. Then invite users who can afford it to visit meetings of the other panels.

### Financial Considerations

Financial considerations should also be on the mind of the MIS manager. You really can't afford to have local management duplicating costs by doing the same thing. So, a corporate catalog of available systems, broken down by functional categories, size, and type of dp equipment used should be compiled and made available to all users around the world. Then systems of interest to local users can be requested along with the software and documentation. Tailoring the system to local needs can be done with central systems assistance if desired.

I ran into a buzz saw of resistance when I had to deal with managing directors around the world who didn't really want to conform to standards issued by corporate headquarters in the U.S. of A. At the time, some managing directors were actually in favor of standards. These were general managers who were in trouble and wanted help. The others, who were adamantly against corporate standards, were not in trouble—that is, not quite yet. These bosses were also being influenced by their regional dp managers, who couldn't stand the thought of having someone knowledgeable look into what they were doing and the money they were spending to do it.

As I traveled around talking to each of these managers and to their staffs, it appeared obvious to me that the only hope was to get the general manager involved in planning how their information services function would evolve to serve future needs.

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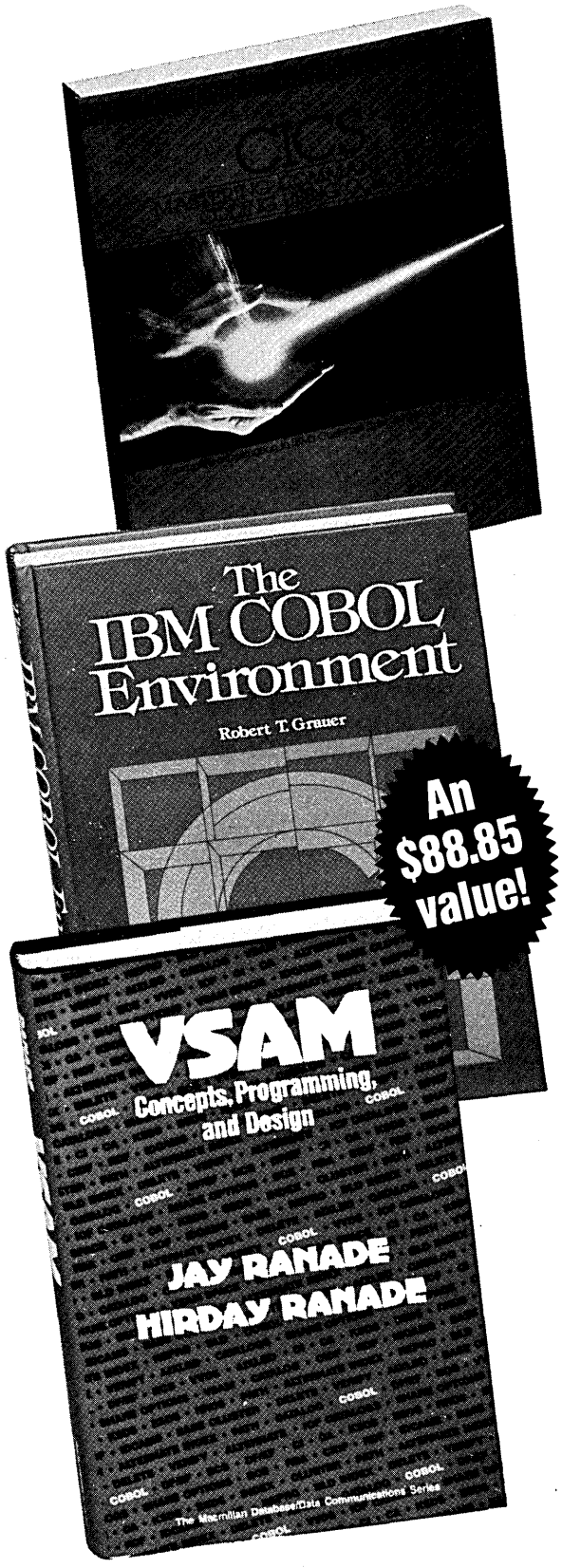


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Therefore, I told the managing directors that if they did not like the corporate policy my staff and I had prepared—and trust me, they didn't—then they should help me develop a policy with standards that were truly good for all. That policy, I further pointed out, would be reviewed by me, by the executive committee, and by the chairman, all of whom would know the managing directors were working together for the good of the whole corporation.

What a stroke. I appointed the managing director of Britain, a very experienced and very competent executive, to head up a committee of European managing directors. The group would help draft the new and revised corporate policy for information services throughout the corporation. After much hard work and many working meetings that were not always completely harmonious, the committee came up with a corporate policy that each general manager believed in. Guess what? It contained practically all the tenets that had been included in the original corporate policy.

Communication is the root of all evil—the lack of it, that is. One way to ward off that evil is through "communicating sessions" for members of all of the information services organizations throughout the corporation. These meetings are even better if key members of the functional units served by MIS are included.

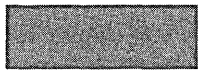
### A Matter of Priorities

Involving the general managers of these functional units and finding out what their needs are is very important. No company makes enough money to afford all the systems everyone wants. It's a matter of priorities. That's where you come in. Your job is to help the general managers select the most vital systems first and find ways to effectively allocate their always inadequate resources.

Make friends with the top-level managers of your company's different operating divisions. They need and want your help and you need them to back you when local disagreements arise. You have to be able to convince them that you stand for and provide the best and most cost-effective service there is.

I found this approach worked very well, and recall having only a couple of truly difficult confrontations. I remember one instance where a recalcitrant company president supported his MIS director, who seemed overly anxious to make a quick name for himself. Both the director and his boss refused to follow the corporate policies and guidelines for an extensive order service system being planned. They had already selected an outside contractor to design and program their system, and since this contractor wanted to use a Brand X computer, that's what they were going to use.

After several unpleasant discussions that led nowhere, I scheduled a meeting with the executive committee member to whom the company president reported. I reviewed the problems, pitfalls, and risks associated with the systems plan proposed by the company president and his MIS chief. They, in turn, pointed out that they knew what they were doing and intended to go right ahead. I then explained that in addition to whatever else they did, they would have to arrange to provide the required corporate accounting of sales, costs, and income. No problem, the duo replied. I finally told the executive committee member that I really did not want to drag him and the trivial matter up to the ceo,



**CONSTANTLY GO INTO THE FIELD AND TALK TO USERS.**

who had lots of more important problems to solve. Therefore, I said, he could be responsible for these people.

And these people blew it. They went way over budget and the time forecast for the project, and the far-out system finally delivered by their blessed contractor was down more than it ran. The company was suddenly in utter chaos, running a once-successful operation with pencils and paper. Every day, the company fell farther and farther behind, losing valuable customers by the droves. In well less than a year after the confrontation, the company president was fired and the MIS chief was demoted to a staff job and exiled to some distant location.

My corporate information services organization picked up the pieces, restaffing the company's MIS department with competent and productive leadership. The company lived happily ever after and so did my organization. You would be surprised how fast this episode was spread around the corporation's family of companies, and just how much it helped our strained relations in the few remaining problem locations.

Relations with vendors are another story. The lesson in the first chapter of that story is simple: just know more about their business than they do. That means doing your homework very carefully. Choosing a vendor is something like choosing a spouse: you want one with whom you're going to be compatible and who's going to be able to grow and keep up with you over the long haul.

Your vendor is your ally, not your adversary. A vendor wants you to be successful, very successful, because then you will buy more from it. I long ago decided which dp equipment designer and manufacturer I thought would be best for the long run, one with the best research, manufacturing, marketing, systems engineering, sales, and service around the world. I won't tell you who it is, but you can probably guess its initials.

Being a good director of information services is like being a cardinal: you have all the rules written down; you listen to confessions regularly; you encourage, instruct, and assign penance when necessary. The key is the rules or standards. Develop corporate standards for all aspects of information services. Write them down clearly and concisely. Make sure that all abide by them, and understand that they are abiding by them for the common good as well as their own.

Remember, you are a corporate leader and good leaders are always highly visible. Constantly go into the field and talk with users. You can't be everywhere, of course, and that's why you have a staff that can also go out on these fact-finding forays. Nevertheless, your sampling is important because it will validate the field information you get from your own people. And believe me, your own sampling will often turn up errors of omission or bias on the part of your staff that, if caught in time, can save you from disaster.

To tell you the truth, I kind of miss the old rat race. I'll think about you when I'm out in the mountains and up on the slopes. Hang in there, gang, and do a great job! ■

*As vp of the corporate staff of Johnson & Johnson in New Brunswick, N.J., Jim Collins was responsible for organizing MIS services worldwide for the J&J family of companies. Collins is now retired and living happily ever after in Colorado Springs.*

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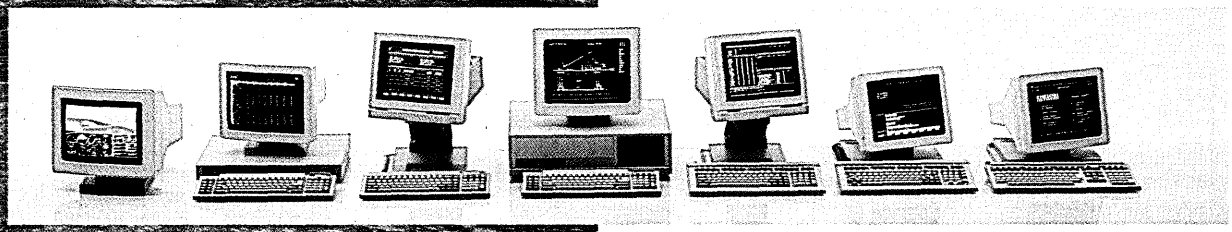

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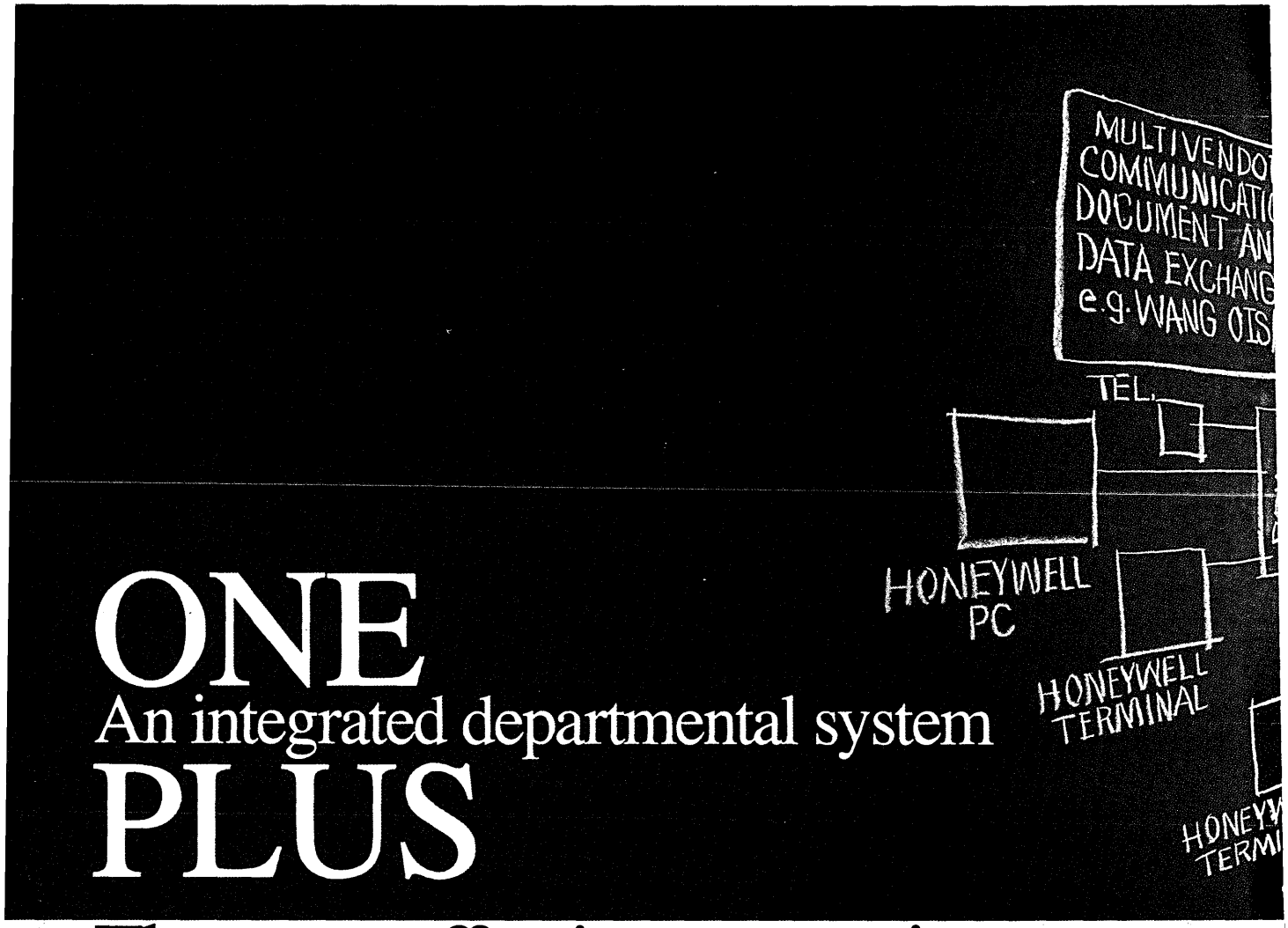


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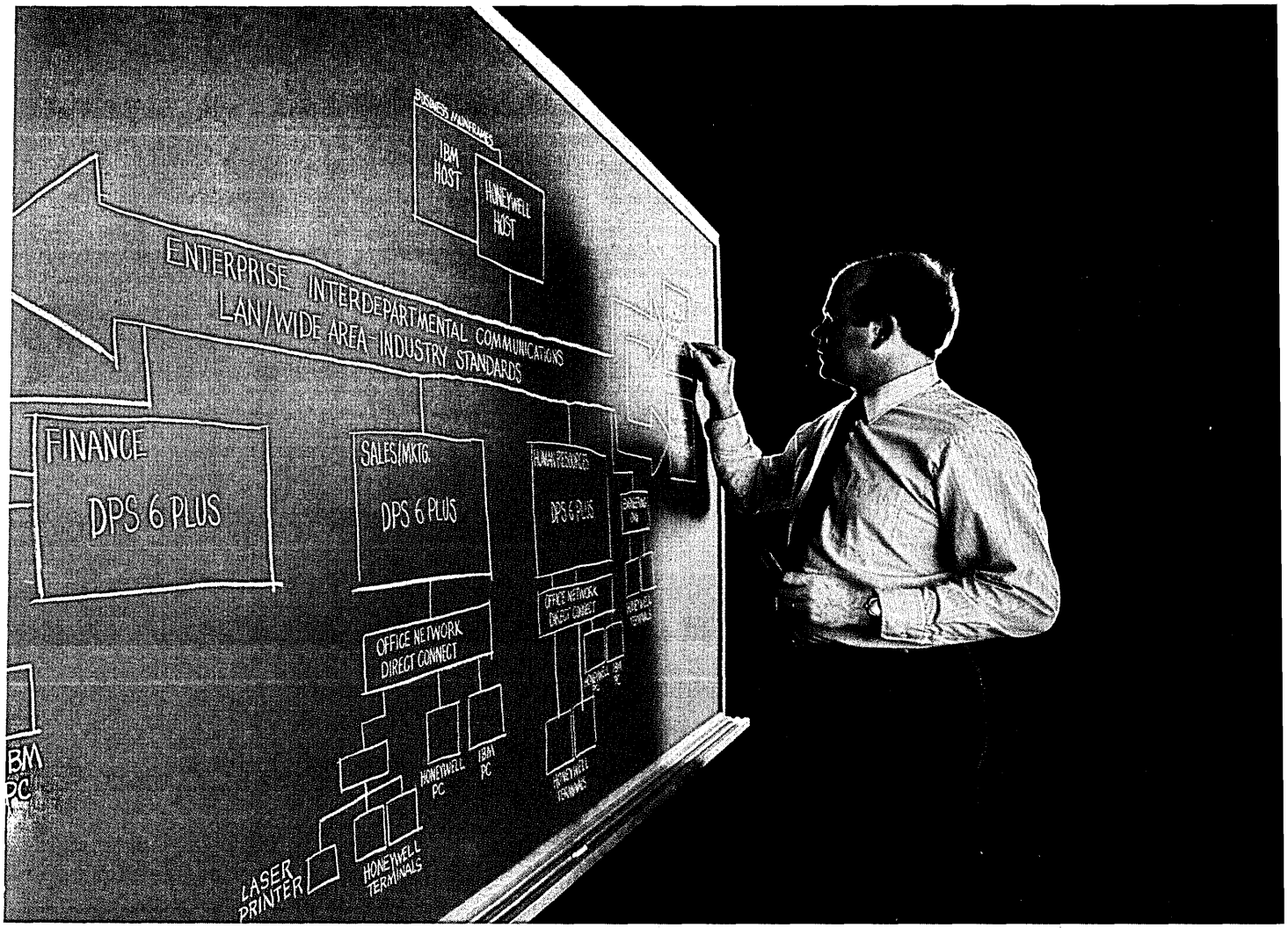


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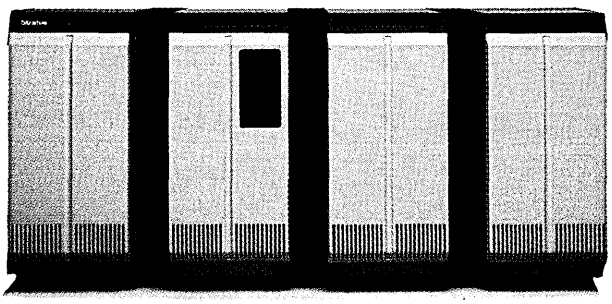

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# Real Time

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**WHILE SUPERCOMPUTERS have not yet made distinct inroads into the "real world" of MIS computing, mainframe and mini vendors are trying to meet users' demand for more MIPS by offering near supercomputer-level performance. Some manufacturers have added or are developing vector and parallel processors for the high end of their lines, while others have entered into agreements with supercomputer firms to market their machines or to codevelop product.**

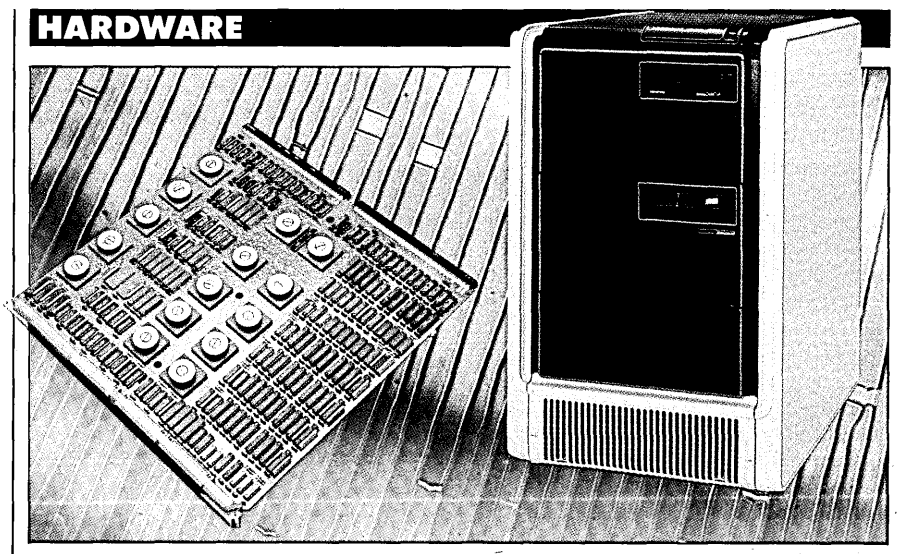
**Digital Equipment Corp. is doing both. A multimillion dollar agreement was signed recently between Digital and supercomputer manufacturer Floating Point Systems, Beaverton, Ore. Digital will sell FPS's M64 64-bit computers along with its VAX 8000 series of 32-bit minicomputers for use in compute-intensive scientific and engineering applications. It was not revealed which FPS M64 machines were involved in the deal, but an FPS spokesman says it would not be a new machine, as has been reported.**

**This is not Digital's first deal with FPS (they share certain technical and sales information, and they have an oem agreement whereby FPS sells Digital workstations with its processors), but it is the first time they've agreed to sell FPS machines directly. Both Digital and FPS stress that it's not an oem agreement because Digital is not taking title to the machines. Digital declines to comment about the deal, but is expected to make an announcement about its agreement with FPS sometime this quarter. There's speculation that Digital, which reportedly has an integrated vector processor for its VAXs under development internally, is still more than a year away from announcing such a proprietary product, and that the FPS deal is an interim measure. The agreement may prove to be a shot in the arm for the struggling FPS, which has posted third quarter, fourth quarter, and year-end losses for 1986. An FPS spokesman says the deal will definitely bolster sales for FPS and notes the large number of VAX users in FPS's minisupercomputer installed base.**

**Digital has also signed an agreement with Cray Research Inc. to develop a high-speed interface between Digital's VAX 8200 and Cray's X-MP supercomputer. The 2.7MBps interface, which includes Digital hardware and Cray software, is slated for June availability. VAX 8500 and 8600 interfaces are reportedly being evaluated.**

**Digital's two deals are seen as reactions to recent incursions into its markets by such minisupercomputer makers as Alliant Computer Systems Corp., Littleton, Mass., and Convex Computer Corp., Richardson, Texas.**

## HARDWARE



**Data General's Eclipse MV/15000 Models 8, 10, and 20 are implemented on two 15-inch-square, 32-bit circuit boards. Upgrade, which involves replacing processor boards, takes minutes.**

# New Family of Superminis Unveiled by Data General

## Three-member Eclipse MV/15000 series provides easy upgrade path and price/performance levels aimed at IBM and DEC.

BY THERESA BARRY

Data General has announced the three-member Eclipse MV/15000 family of computer systems. This latest introduction by the company, at one time a not-so-distant follower of both IBM and Digital Equipment Corp. in midrange systems, follows in the footsteps of the MV/20000, introduced in November 1985. That introduction was seen as an out-and-out attack on the two market leaders because Data General offered price/performance levels significantly below Digital and IBM.

The Eclipse MV/15000, models 8, 10, and 12, execute 2.9 million, 4.3 million, and 6.4 million single-precision whetstones, respectively. Data General claims that when measured against comparable Digital VAX systems, the MV series is up to 50% faster and 37% less expensive. Using a different performance measure, single-precision linpacks, DG claims the MV/15000 series is 12% faster than IBM 9370 systems and 29% less expensive.

DG says the MV/15000 family is the first of its systems to incorporate 1 million-bit memory parts. The cpu on all MV/15000 systems is implemented on two 15-inch-square printed circuit boards, and the systems can be configured with up to 32 million characters of main memory storage.

One model of the MV/15000 series can be upgraded to another in minutes by replacing one processor board and reloading model-specific microcoded instructions. DG claims the series is fully compatible with their complete line of 32-bit systems. The AOS/CS operating system is standard and the series supports DG's CEO and TEO integrated OA and technical OA software.

At the time of the introduction, Data General announced that four users were currently running applications on all three models of the Eclipse MV/15000 series.

The series, which is available now, ranges in price from $60,000 to $230,000. Price reductions on 4MB, 8MB, and new 16MB and 32MB add-on memory boards for both the MV/15000 and MV/20000 computers have also been announced. DATA GENERAL CORP., Westboro, Mass. CIRCLE **257**

## Mainframe Connectivity

### Intel extends Fastpath capabilities to include all IBM S/370s

Intel's enhanced Fastpath 9750 is a hardware/software channel connectivity platform that acts as a high-speed interface between IBM System 370-class mainframes and an intelligent Ethernet controller. The vendor has designed it to the channel specifications for the integrated Ethernet controller available in IBM's new Series 9370 computers. With its Ethernet enhancement, Fastpath enables all users of System 370 mainframes to share Ethernet network applications.

A 3MBps data transfer rate for IBM mainframe channels is supported. Off-the-shelf industry standard Multibus boards have been integrated into Fastpath, allowing additional applications to be developed. Fastpath supports up to six concurrent applications. Fastpath 9750 with the new Ethernet controller environment is available now. The price of Fastpath 9750 is $32,000; the enhancement upgrade is $5,500. INTEL CORP., Santa Clara. CIRCLE **258**

## DECmate III with Hard Disk

### Allows flexibility in choosing word processing packages

The DECmate III Plus from Digital is a hard-disk version of the DECmate III floppy-based word processing system. The

DECmate III Plus offers the complete word processing features of the DECmate III, and floppy diskettes are compatible throughout the entire DECmate family, says Digital. Both machines will operate as standalone workstations, as terminals on a host, or for document transfer, and provide VT100 or VT200 series terminal emulation access to either a LAN terminal server or directly to a VAX host.

The DECmate III Plus is available now and is priced at $4,695 (compared with $2,695 for the DECmate III). It comes with a 20MB hard-disk drive, a single floppy drive, monitor, keyboard, Master Menu software, and Digital's word processing software. DIGITAL EQUIPMENT CORP., Maynard, Mass. CIRCLE **260**

## Streaming Tape Drive

### Quarter-inch drives available in 60MB or 125MB capacities

A family of 1/4-inch half-height streaming tape cartridge drives was introduced recently by Siemens. The Tandberg TDC 3600 Series drives are available in both 60MB and 125MB capacities.

The TDC 3600 series consists of four models: the 3610 and 3620 each include a 60MB capacity, and the 3630 and 3640 have a 125MB capacity. Functional specifications include 60MB or 125MB SCSI or QIC-02; 1.45MBps data transfer; 88KBps average data transter rate; 16KB buffer size (optional); programmable buffer thresholds; built-in formatter; 9 or 15 tracks; and 8,000bpi or 10,000bpi recording density. The series is available in oem quantities and ranges in price from $525 to $740. SIEMENS INFORMATION SYSTEMS INC., Memory Products Div., Westlake Village, Calif. CIRCLE **259**

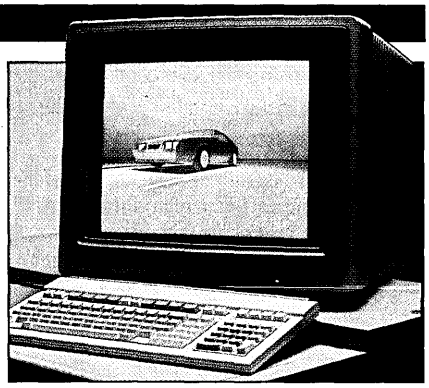
## HP Extends 9000 Series

### New high-end workstation available in six different models

Hewlett-Packard has extended its HP 9000 Series 300 with the Model 350.

The Model 350 uses the 25MHz Motorola 68020 microprocessor, supplemented by a 20MHz Motorola 68881 floating point processor. A 32KB write-through cache operating with zero wait states has also been added. Standard on the machines are 8MB of RAM expandable to 32MB, an IEEE 802.3 LAN, a high-speed disk interface, and HP-IB and RS232C interfaces. I/O expanders that support up to 36 accessory boards and 18 interface cards are also available. Mass storage options range from 10MB to 517MB drives.

Model 350 systems are available as workstations or standalone system processing units. The six models are the high-end 350SRX for advanced graphics applications ($54,900); the 350C for 2-D color ($32,900); the 350M for monochrome engineering design ($24,600); the 350CX for high-performance 2-D and 3-D wireframe color graphics ($43,900); the 350AIM for AI software development on a monochrome display ($28,400); and



the 350AIC for AI software development using a high-resolution color display ($36,700). HP claims the 350 family is object code compatible with all other models in the series. HEWLETT-PACKARD, Palo Alto. CIRCLE **261**

## Drawing Processor

### Capable of storing drawing on a floppy disk

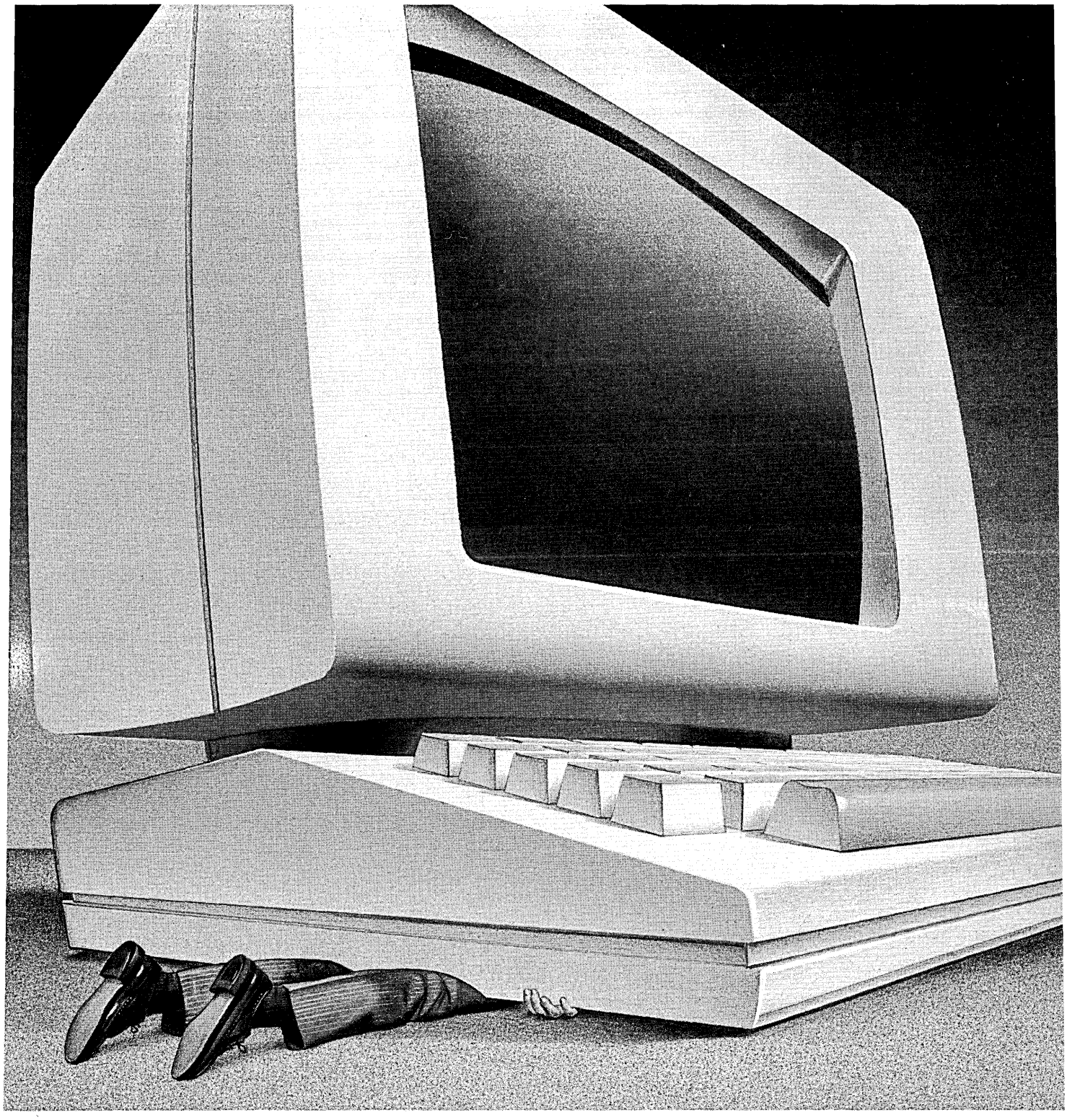
The recently released GTX 5000 Drawing Processor from GTX Corp. is an ADC (automatic drawing capture) system designed to transfer hardcopy drawings to CAD systems. The system works like this: first a drawing is scanned by the GTX 400 D Image scanner and pixelized. The pixels are transferred to the ADR (automatic data recognition) engine, compressed to run-lengths, and saved. These run-lengths are recognized to lines, circles, arcs, and filled areas, or converted to characters, arrowheads, dimensions, line styles, and industrial symbols, and formatted to a Metafile, which is said to be like a CAD database. The Metafile is transferred to the PC workstation and saved in a disk file. A Drawing-to-CAD (D-CAD) program cleans up the Metafile.

D-CAD is said to allow the operator to convert entities into other entities, manipulate and standardize text, and assign line widths and line types to separate layers. The Metafile is then converted into the CAD format. An IGES 2.0 Converted is included in the D-CAD package and an AutoCAD Translator is available. GTX is planning translators for Autotrol, CADAM, Calma, Computervision, and Intergraph.

The complete system is priced at $70,000. GTX CORP., Phoenix. CIRCLE **262**

## New Name

A product that appeared in Hardware, Jan. 15, p. 88, has a new name. VAXpak, from Keyword Office Technologies, is now called KEYpak. CIRCLE **263**



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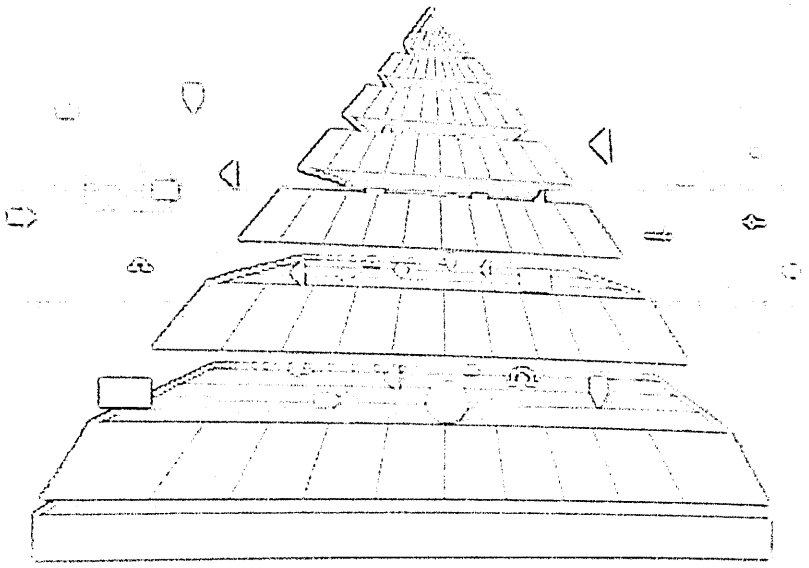
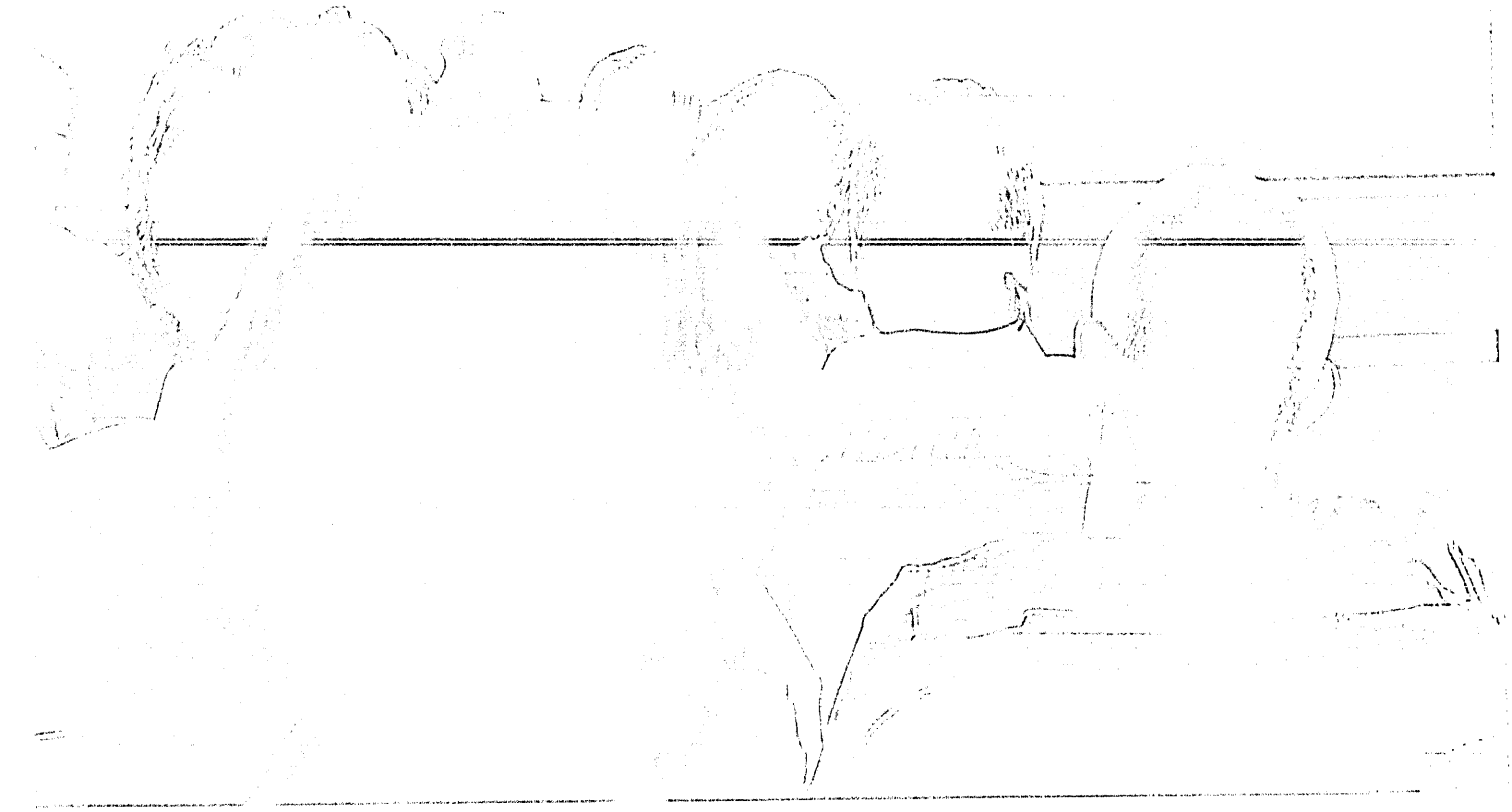
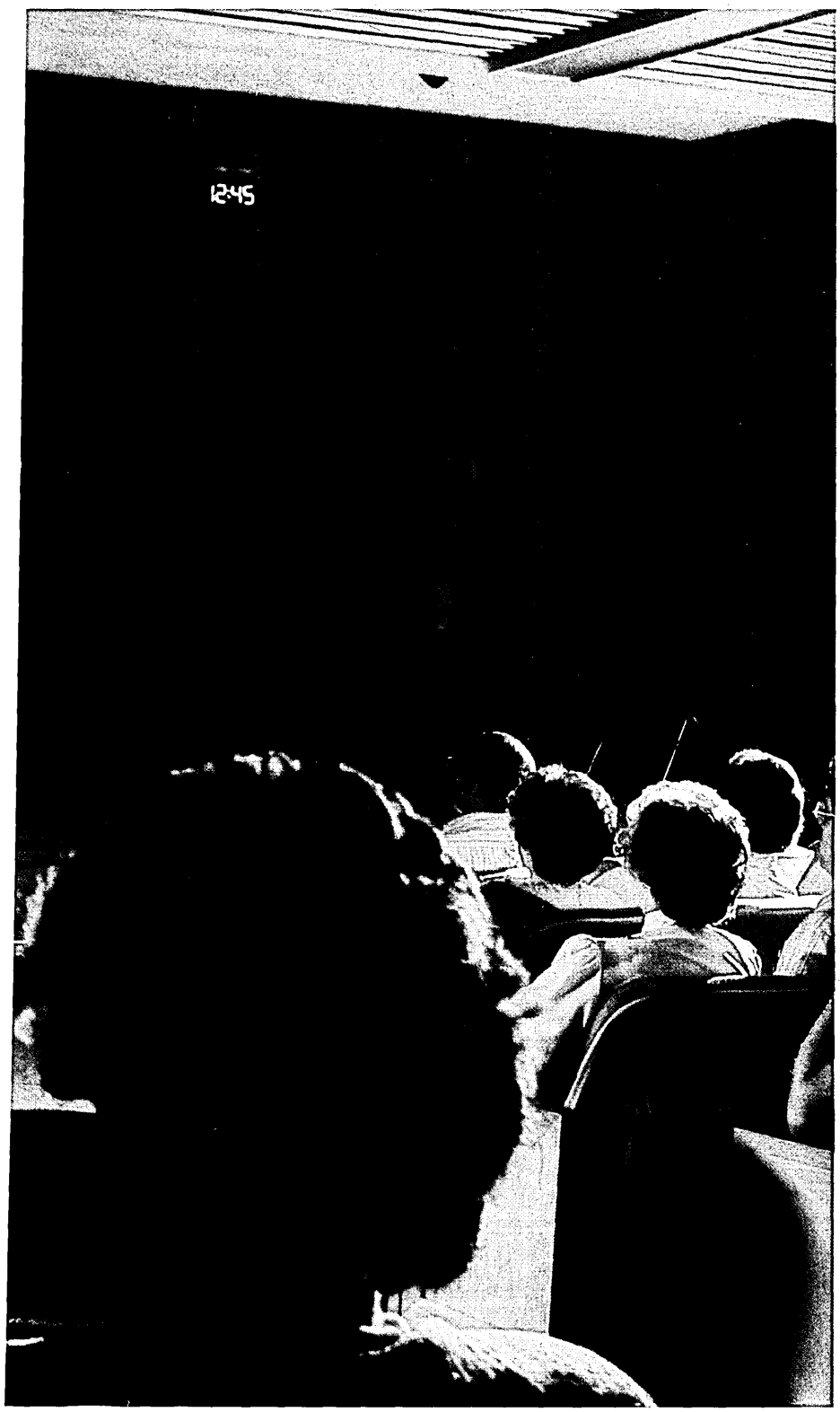
# How GE make a Texas-s



Information Engineering Facility



# helps TI zed impression.

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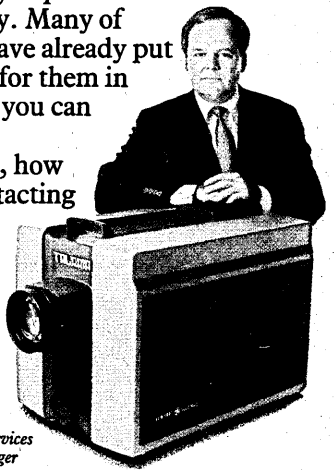

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*Texas Instruments*
*Information Systems & Services*
*Products Marketing Manager*

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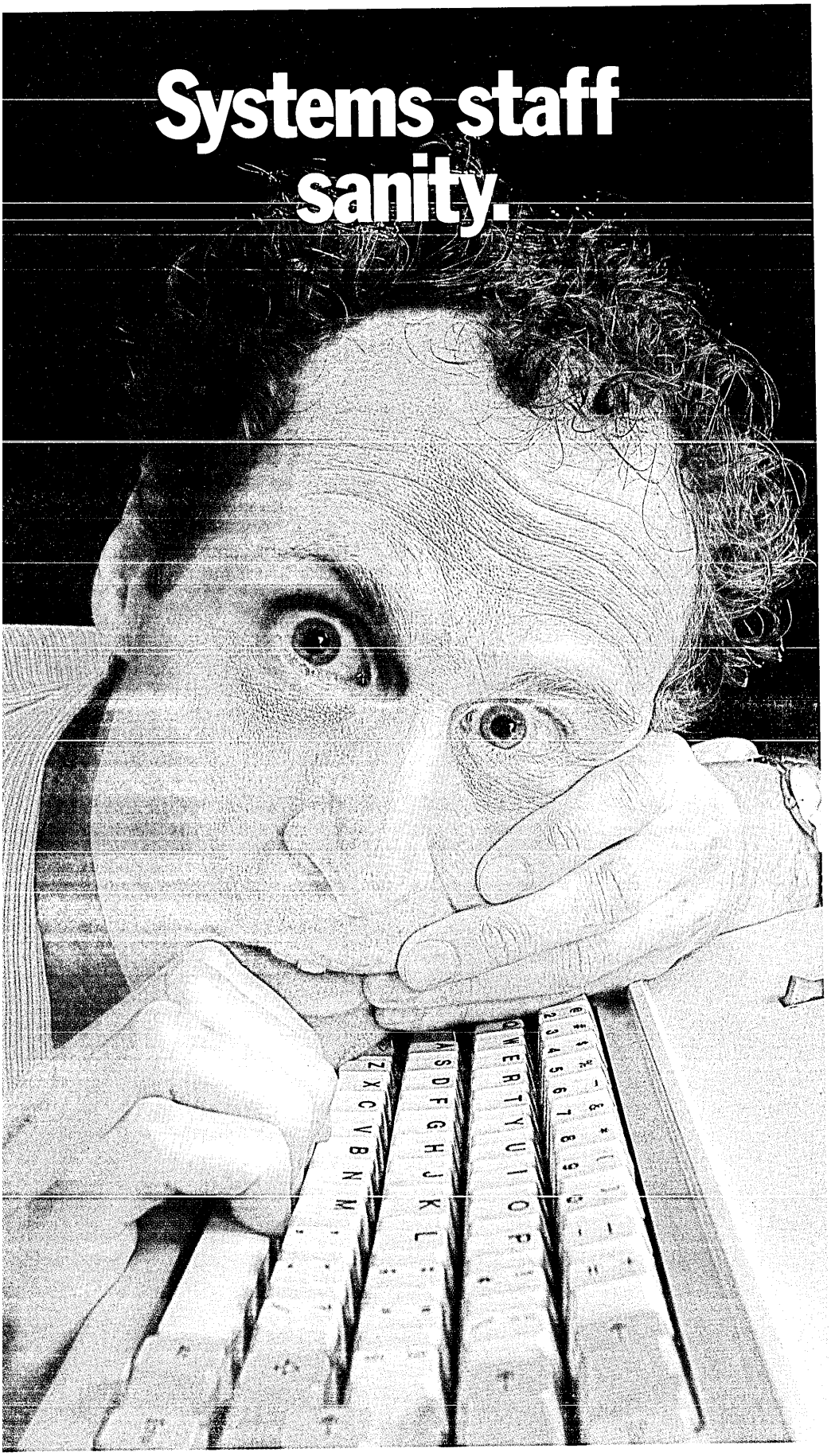


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## UPDATES

**"THE WORLD IS going DB2." So says John Imlay, chairman and ceo of Management Science America (MSA), the Atlanta-based supplier of mainframe application software.**

**The company recently unveiled its first product utilizing IBM's DB2 relational database. The product, MSA's General Ledger System, also employs Information Expert—MSA's fourth generation technology, which uses SQL set-level processing capabilities—to access data directly from DB2 databases.**

**MSA, claims Imlay, had DB2 in-house when it was first announced by IBM in June 1983 and even gave IBM advice on ways to improve the product. "We try to complement IBM whenever we can," says Imlay of MSA's relationship with the industry giant.**

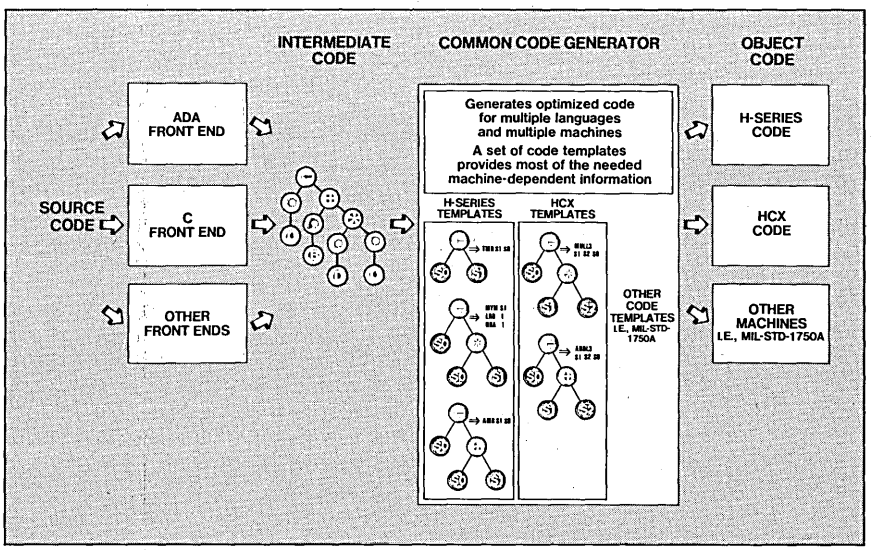
**He adds that General Ledger was the "obvious choice" for MSA's first DB2 application because it represents the software firm's largest installed base. The product is presently in beta test at the Toyota Motor Sales operation in Torrance, Calif., (see Look Ahead, Jan. 1, p. 12).**

**MSA put forth its database platform in 1984. At that time, a division exclusively dedicated to providing MSA applications utilizing database technology was established. The software firm made a commitment to three distinct database groups: all IBM databases including DB2, IMS, and DL/1; ADR's Datacom-DB; and Cullinet's IDMS/R.**

**Imlay sees DB2 as the future industry standard and predicts that the 1990s will be a DB2 environment. Systems software companies will grind to a halt, he feels. Backing up his prediction for the future of mainframe databases, Imlay says MSA will continue to implement its product line using DB2 over the next two years until "just about every product" is affected.**

**MSA's General Ledger using DB2 is planned for midyear general availability and will be priced at $128,000.**

## SOFTWARE




**Harris's new generation of software compilers is based on its proprietary Common Code Generator. It was developed to bridge its entire line of computers.**

# Harris Corp. Launches New Generation of Compilers

## Ada compiler uses proprietary Common Code Generator technology.

BY THERESA BARRY

The Computer Systems Division of Harris Corp. recently introduced the first in a series of a new generation of software compilers. The compiler is based on Harris's Common Code Generator, a software engineering technology for rapidly producing software code that can be transferred to non-Harris computer systems (see diagram above).

Harris says its CCG technology was developed in response to a need for a suite of compilers that could bridge its entire line of computers. The existing lines are the H Series of superminicomputers, which utilize Harris's proprietary virtual memory operating system and support real-time and batch operations. They are used chiefly for modeling and simulation. Boeing, for example, designed its 757 and 767 jumbo jets using H Series computers, says Harris. The CX Series is composed of superminis and supermicros and features an open systems architecture. It is Unix based. Harris has decided not to expand the H Series, citing opportunities in the Unix marketplace, and is focusing its energies on the CX Series. The third Harris line of computers, the HS series, is composed of 32-bit, Unix-based workstations for high-resolution graphics and engineering applications.

The first Harris product developed using the Common Code Generator is a U.S. Department of Defense-validated Ada compiler, which is a component of the Harris Ada Programming Support Environment, or HAPSE. HAPSE is a fully integrated set of tools for developing software in Ada, the programming language mandated by the DOD for embedded mission-critical computer systems. Harris claims that when using its CCG, the process of developing object code for its machines is cut to five man-years from 25 man-years. It also claims that common code protects users' investments, because software developed today can be run on a machine developed 10 years from now. A C compiler is also being made available for $7,000, and Harris is planning further developments in this area.

The Ada compiler utilizing Har-

ris's Common Code Generator is available now for $50,000. HARRIS CORP., Computer Systems Division, Melbourne, Fla. CIRCLE **250**

## Spreadsheet Enhanced

### Integrated mini-based package now supports Digital's All-in-1.

Access Technology has just announced a version of its 20/20 integrated spreadsheet that supports Digital Equipment Corp.'s All-in-1 office and information system for VAX systems.

Access says that All-in-1 users can access 20/20 spreadsheet files as they would any other document under All-in-1, a system that integrates word processing, electronic mail, time resource and information management, communications, and business applications. Users can, for instance, mail live spreadsheets across network nodes, write to the All-in-1 Scratchpad, utilize Gold keys, and have access to the interrupt facility. The spreadsheets can be combined with WPS-Plus documents, and its import/export facility allows for access to data stored in database packages.

The price for 20/20 with All-in-1 is $3,300 on the MicroVAX II and $14,700 on the VAX 8800. Access plans to support other OA databases, including Data General's CEO. ACCESS TECHNOLOGY INC., South Natick, Mass. CIRCLE **251**

## PC Graphics Package

### Lotus enhances Freelance product and offers a mapping capability.

Lotus recently enhanced its Freelance package with Freelance Plus.

New functions added to the package include a charting module to create standard business charts by entering data directly into Freelance Plus. Another level of integration with Lotus 1-2-3 and Symphony has been added, allowing the import of data from worksheet files, giving users the flexibility to generate presentation and report charts directly from worksheet data.

A text chart module has also been added, providing predefined formats to streamline the creation of word charts. Text chart formats can be created and saved for frequent use. Existing core capabilities have been enhanced, including more powerful freehand drawing, new fill patterns to show gray scales when printing in black and white, and an expanded file export capability.

Freelance Maps are also being offered as a companion set to Freelance Plus. Map symbols available in sets include continents and countries, U.S. counties, U.S. major cities, and the U.S. complete set.

Freelance Plus runs on the IBM PC, XT, AT, and compatibles with 384K of memory or an IBM 3270 PC with 640K. A Hercules Graphics Card, IBM Color Card or EGA is required.

Freelance Plus is available now and is priced at $495. Freelance Maps is priced at $145 per set, or $395 for the U.S. complete set. LOTUS DEVELOPMENT CORP., Cambridge, Mass. CIRCLE **252**

## COBOL Maintenance

### Automates software logic analysis on mainframes

Viasoft Inc. has introduced Via/Insight, an interactive system that automates software logic analysis of mainframe COBOL programs. Viasoft says that corporations can make their programs more effective and reduce maintenance backlog using Via/Insight.

Via/Insight is designed for any COBOL program used with IBM's OS/VS or VS COBOL II compiler, including on-line and database programs and those requiring a preprocessor. It executes on any IBM mainframe or compatible running ISPF under the MVS or MVS/XA operating systems. (VM/CMS will be supported this year, says Viasoft.)

Here's how Via/Insight is said to work: a program analysis is performed by the system that captures all important information about the COBOL program. Next, an interactive, on-line query session takes place. A programmer can trace a logic path, backward and forward. Via/Insight also locates data variables in large multimodule programs.

The package is priced at $60,000 and has a 99-year license. VIASOFT, Phoeniz. CIRCLE **254**

## Application Generator

### "Language free" program solution for developing applications on PCs

Magic PC from Aker Corp. is said to be able to create business applications without using a programming language. The process of implementing an application is one of filling in execution tables and information banks. The designer interfaces to the tables by highlighting selections from pop-up, menu-driven windows.

Each entry in the execution table is an operation that manipulates data in a relational database environment. The inference engine orchestrates the information in the tables into one file containing both the database and the program library. The file is executed in run time by Magic Run. A zooming capability displays multiple Magic PC programs or external programs on-line.

Magic PC was initially introduced in Europe in 1985. It supports Novell multiuser LANs and runs on an IBM PC with MS/DOS 2.0 or higher and the IBM PC, XT, AT, or compatible with 512K and a hard disk. The price is $695, and it's available now. AKER CORP., Irvine, Calif. CIRCLE **253**

## Production Control Software

### Israeli company enters U.S. market with IBM mainframe package.

Tome Software of California recently signed an agreement with 4D Software Ltd. of Tel Aviv to market in the U.S. 4D's Control-M software product. Control-M is a production control software package for large IBM mainframes. This package releases jobs for execution on the basis of what is actually happening with all computer resources at the time jobs are released for execution, 4D claims, therefore avoiding resource contention and bottlenecks. Other production control systems, the company contends, are run based on average lapse time and cpu utilization experiences, which can result in stacked fixed schedules. Control-M has the ability to reallocate resources between multiple cpus, says 4D.

Other facilities include job dependency definition, user notification, job recovery, dynamic print disposition, auto-edit setup of JCL, and reporting.

Control-M is priced from $39,000 to $75,000 depending on system configuration. TOME SOFTWARE CORP., Anaheim, Calif. CIRCLE **255**

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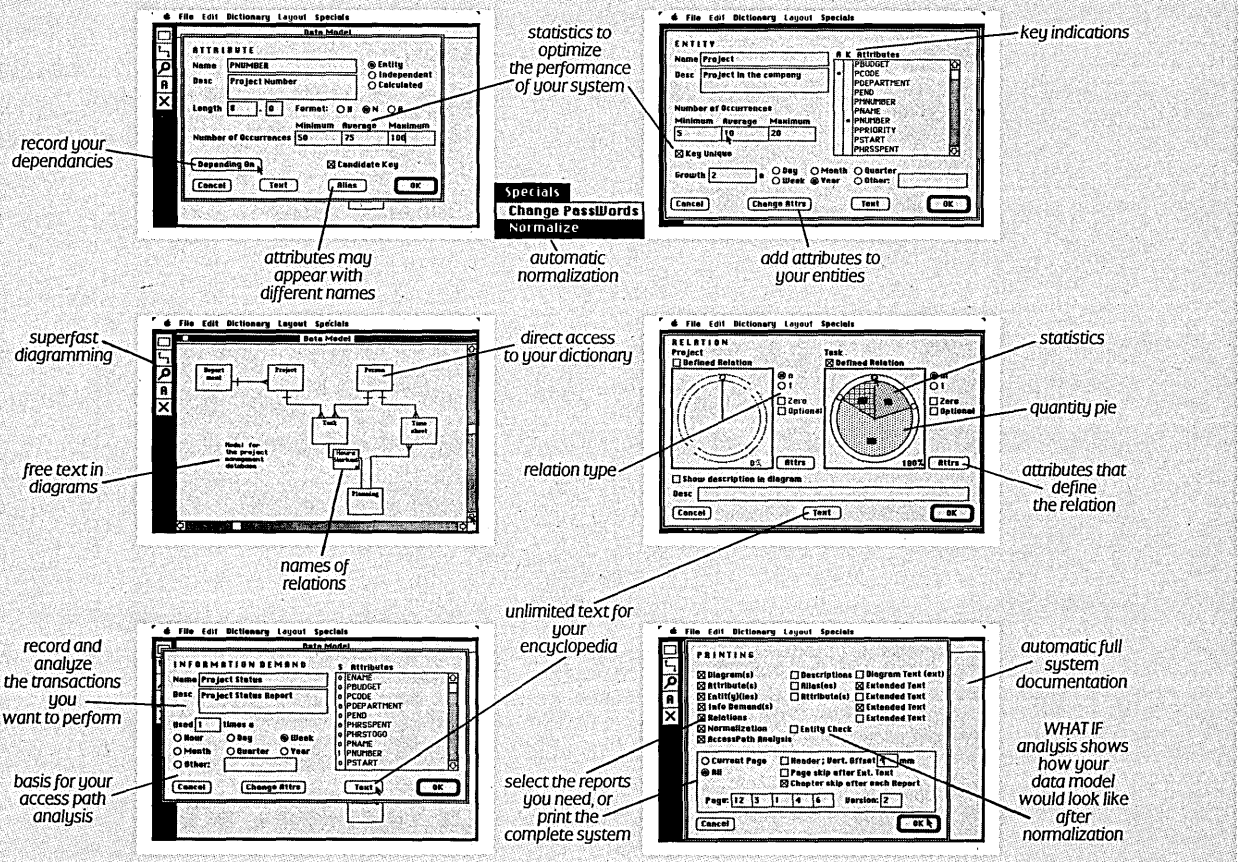


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## BOOKS

# Outfitting the Soviet Computer Room

HIGH-TECH ESPIONAGE
by Jay Tuck, St. Martin's Press, New York (1986, 211 pp., $14.95).

BY DAVID HEBDITCH

In the German and British editions of this book, Jay Tuck reports that "The Reagan administration believes that [the Soviets] were . . . tapping into a strategic Cray-1 high-speed computer at Reading University in England—and using it to simulate atomic bomb blasts." Powerful stuff. A spoilsport reviewer in England undermined this allegation when he pointed out that Reading University does not possess a Cray of any kind. In the U.S. edition, Tuck hedges by saying that the hacked computer was "at Reading." In fact, though, there are no Crays anywhere near Reading.

Riddled with errors and written in a style that borders on the hysterical, *High-Tech Espionage* does a remarkably poor job of arguing "How," as the book's subtitle would have it, "the KGB Smuggles NATO's Strategic Secrets to Moscow." At first sight, Tuck—an American journalist working for a West German tv station—appears to be reassuring. "Great care has been taken in tracing the accuracy of details," he says in the preface. "The bulk of the investigation here . . . is based on first-hand investigation." A cursory browse through the sources, however, leads one to believe that the book is predominantly based on what authors call "secondary material"—the work of other reporters in newspapers, magazines, television documentaries, government reports, and what have you. Indeed, a more careful examination of the sources suggests that seven out of the book's 13 chapters do not include any original research at all.

As the title suggests, the book is concerned with the worlds of high technology and espionage. Tuck seems to be comfortable in neither. At one point he makes the curious claim that Software AG's ADABAS database system—the object of an attempted Soviet heist—can "increase the effectiveness of computer software by up to 1,000%." At best this is empty ad copy and at worst it misunderstands what DBMS software does. As if that were not enough, Tuck claims that ADABAS is so versatile that it can be used by the National Security Agency for "electronic eavesdropping." A reading of the manuscript by a computer specialist would have eliminated these and other misspellings and misconceptions.

Unfortunately, high technology isn't all that Tuck has gotten wrong. The state bank of Poland is called "Nadlovy," instead of Handlovy; the last Soviet ambassador to France was "Yuli Vorontsov," not Vorontsov; the KGB headquarters is in "Dzerzhinsky Place," rather than Square; and, throughout the book, the CIA headquarters are placed in "Langely, Va.," not Langley, Va.

Although *High-Tech Espionage* is pockmarked with such mistakes, the book's errors of omission are even more serious. The central contention of the book is that the Soviets have reaped many benefits from Western technology, stolen virtually at will. But the book is simply a melodramatic rehash of some old stories that makes no attempt to debate the relevant issues. Nowhere does Tuck make clear the extent of the debate among the NATO allies about the long-term effect of the West's embargo on high-tech trade with the USSR.

Unquestionably, the Soviets lag behind the West in at least one key area: semiconductor manufacture, but Soviet successes in areas such as lasers, metallurgy, and space exploration underline the dangers of characterizing them as evil idiots.

Moreover, as Gorbachev fitfully prods the economy of the USSR to modernize, we may well see the Soviets catch up in some other areas. Should a new U.S. administration decide to try the path of détente again, some serious thinking will need to be done about the high-technology issue: will world peace be best furthered by cooperation or confrontation? This book contributes nothing to that debate. ■

*DATAMATION contributing editor David Hebditch is the coauthor, with Linda Melvern and Nick Anning, of* Techno-Bandits *(Houghton-Mifflin Co., Boston, 1984).*

## CALENDAR

### MARCH

**WESTEC '87 (Western Metal and Tool Exposition and Conference).**
March 23-26, Los Angeles. Contact Gwyn Farrington, SME Technical Activities, One SME Dr., P.O. Box 930, Dearborn, MI 48121, (313) 271-1500.

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**ANSI Public Conference.**
March 25, Arlington, Va. Contact ANSI, Development Dept., 1430 Broadway, New York, NY 10018, (212) 642-4952.

**Interface '87.**
March 30-April 2, Las Vegas. Contact the Interface Group, 300 First Ave., Needham, MA 02194, (617) 449-6600.

**1987 IEEE International Conference on Robotics and Automation.**
March 30-April 3, Raleigh, N.C. Contact Robotics, North Carolina State University, Lifelong Education Div., Box 7401, Raleigh, NC 27695, (919) 737-2261.

### APRIL

**The Great April Fair (Informatics and Telecommunications Trade Show).**
April 4-12, Milan, Italy. Contact Lisa Tucci, Delia Associates, P.O. Box 338, Route 22 West, Whitehouse, NJ 08888, (800) 524-2193 or (201) 534-9044.

**SICOB 1987 (38th Annual Conference and Show on Information Processing, Automation, and Office Organization).**
April 6-11, Paris. Contact SICOB, 4, Place de Valois, 75001 Paris, France, (01) 42-61-4621.

**AI '87 (Artificial Intelligence and Advanced Computer Technology Conference and Exhibition).**
April 22-24, Long Beach, Calif. Contact Jim Hay, Show Manager, Tower Conference Management Co., 331 W. Wesley St., Wheaton, IL 60187, (312) 668-8100.

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# Advertisers' Index

| Circle | | Page |
|---|---|---|
| 9 | ADR | 11 |
| 37 | American Association for Artificial Intelligence | 64 |
| — | AT&T Communications | 1 |
| — | AT&T Info Systems | 58-59 |
| 40 | BASF Systems | 68 |
| 55 | BMC Software | 105 |
| 48 | Bell Atlantic Systems | 85 |
| 39 | CXI | 66-67 |
| 6 | Cincom Systems Inc. | 5 |
| 54 | Comdex International | 96 |
| 24 | Computer Associates—SPD | 40 |
| 19 | Cullinet Software | 30-31 |
| 7 | Data General Corp. | 6-7 |
| 10 | Datasouth | 13 |
| 200-208 | **Dataware Inc. | 101 |
| 15 | Digital Communications Association | 24-25 |
| 38 | EMC Corp. | 65 |
| 62 | *Ericsson Information Systems | 56-2, 56-3 |
| 8 | Exide Electronics | 8 |
| 61 | *GNT Automatic A/S | 56-1 |
| 49 | General Electric Co.—Projection Display Products | 86-87 |
| 23 | Hewlett-Packard | 38-39 |
| 46 | Honeywell Info Systems | 80-81 |
| — | IBM Corp. | 102-103 |
| 43 | ITT-CSG | 75 |
| 18 | Index Technology | 29 |
| 2 | Informix Systems | Cov 3 |
| 22 | Infra-Structures | 37 |
| 26 | Integrated Networks | 44 |
| 51 | Interprogram N.V. | 91 |
| 1 | Kennedy Co. | Cov 2 |
| 3 | MSA | Cov 4 |
| — | Macmillan Book Clubs Inc. | 77 |
| 66 | *Mimer Information Systems AB | 56-14, 56-15 |
| 57 | NCC '87 | 109 |
| — | NEC | 106-107 |
| 27,29 | Nevada Western/Anixter | 45, 47 |
| — | Northern Telecom Inc. | 92-93 |
| 35 | Okidata | 57 |
| — | Oracle Corp. | 33 |
| 59 | Peat, Marwick, Mitchell | 111 |
| 16, 17 | Printronix | 27 |
| — | SAS Institute Inc. | 21, 23 |
| 64 | *Salcom AB | 56-10 |
| 53 | Simware, Inc. | 95 |
| 67 | *Software AG | 56-17-56-20 |
| 33 | Software Quality Engineering | 56 |
| 12 | Sorbus | 16 |
| — | Source edp | 34 |
| 63 | *Star Micronics Deutschland GmbH | 56-9 |
| 11 | Storage Technology | 14-15 |
| 47 | Stratus Computer | 82 |
| 31 | Sytek | 49 |
| 32 | Tektronix, Inc. | 50-51 |
| 42 | Telenet/U.S. Sprint | 72-73 |
| 25 | Televideo Sytems, Inc. | 43 |
| 41 | Telex Computer Products | 71 |
| 65 | *Toshiba | 56-13 |
| 28 | Universal Data Systems | 46 |
| 50 | VM Software, Inc. | 88 |
| 45 | Wyse Technology | 79 |

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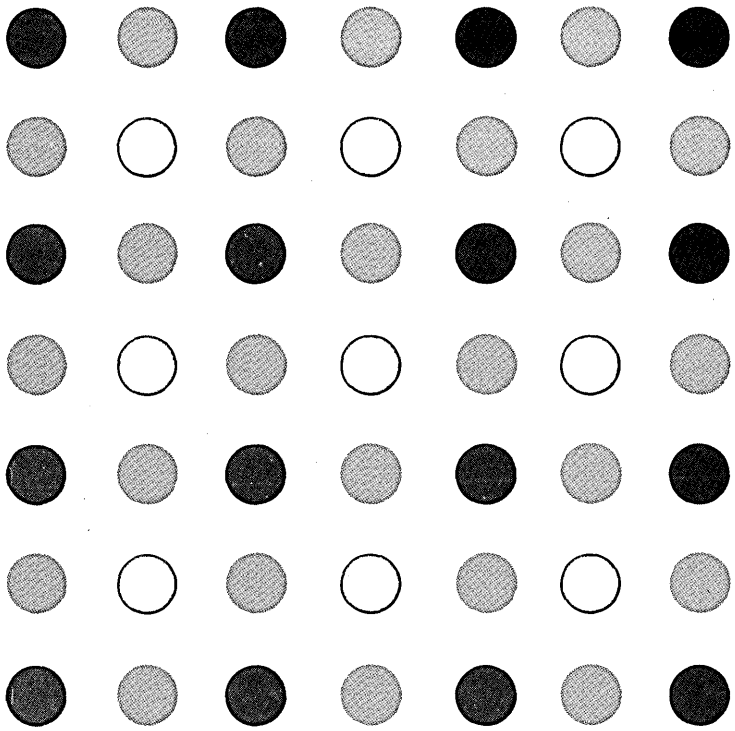

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PEOPLE

# Coming Home Again

## Since Romauld Slimak, ADAPSO's first chairman, left his job 20 years ago, he has traveled the world over, but finds you really can come home again.

BY EDITH D. MYERS

When the Computer Software and Services Industry Association (ADAPSO) was trying to round up its past chairmen for a 25th anniversary celebration last October in Phoenix, the most elusive proved to be its first chairman and founder, Romauld Slimak.

The conversation that led to Slimak's invitation—a mere three days before the event—took place in Seoul, South Korea. It was there that Tom Farewell, ADAPSO's vice president, finally discovered Slimak's whereabouts. "I had about given up on him," says Farewell. "Two weeks before the meeting, when I was in Seoul at a World Congress meeting, I was having coffee with a guy named Johnnie Moon who runs his own software company in Singapore. I told him about the problem of locating our first chairman and he asked me his name. When I gave it to him, he whipped a card out of his pocket containing phone numbers for Slimak in England and Portugal." Moon had known Slimak when they worked together in Singapore for Sperry and they had kept in touch.

Slimak, 65, has been retired for more than a year after some 30 years in the data processing business. He now divides his time between Portugal, England, and the U.S.—England because his wife is English; Portugal because "it's a place where you can get the sun when you want it and I have a very nice villa, overlooking the sea, reasonably close to a nice golf course"; and the U.S. because two of his four children are there and "because I love it."

Farewell says he made several unsuccessful attempts to reach Slimak at the number in England and finally found him in Portugal. "He didn't hesitate to agree to come even with only three days notice."

"I was on the next available plane to Phoenix," says Slimak.

Farewell had never met the first ADAPSO chairman when Slimak's plane arrived in Phoenix, but Farewell recognized him instantly. "I'd been looking at his picture everyday [a picture in the ADAPSO office, taken in 1962] and he hadn't changed a bit."

Slimak found that ADAPSO had changed more than a bit in some ways, but in other ways it was the same as it had been in his day. "The most dramatic change was its sheer size. When I saw that vast hall [the scene of the black-tie dinner honoring past chairmen] and 1,000 people, I couldn't help comparing it to the 12 people we had at the beginning.

"At the real first meeting, where the idea was conceived, there were only two people having lunch," Slimak recalls, "myself and Bill Evans [ADAPSO's first executive director; see "ADAPSO Milestones and a Bit of Nostalgia," Oct. 15, p. 72]. "Bill and I had known each other for quite some time and we both felt the need for an organization such as ADAPSO."

The year was 1961, and Slimak was chief executive officer of the services division of Univac. Evans was executive director of an organization involved with office furniture. "He didn't know the data processing services business," says Slimak, "and I didn't know the association business and each of us sought the other's advice.

"I felt it was very important with the impending entry of other people, such as [those in] banks, into the service bureau business, to lay down some reasonable, ethical rules. In those days people would come to a service bureau and want things done. They didn't realize the limitations, technical or financial, and they didn't know what they were letting themselves in for."

Slimak remembers that he and Evans sent letters to 12 people, including Frank Cary, then president of IBM's Service Bureau Corp., inviting them to the first meeting. "Cary sent a sidekick, an executive of SBC. SBC did participate."

A native of Poland, Slimak spent the first 13 years of his life in that country. "Then came the war years. My parents were arrested by the Russians. As a boy of 13, I had to go with them. We spent two years on a collective farm in Siberia. Then Russia and Germany went to war and there was a repatriation treaty that included the Polish government in exile and we were sent to Britain."

Slimak had all his schooling in England, culminating in graduate work at the London School of Economics. His field was mathematics. While still doing graduate work, he was working as a mathematical statistician at a nonferrous metals company. "They asked me to produce an efficient, optimal pricing system for their products," he says. "I worked on it for about a year and came up with a system that involved a very large matrix that had to be inverted. I realized I had to have a computer and at that time there were only two, the ENIAC in the States

**John Imlay, president, Management Science America (left) and Romauld Slimak share the podium with a friend at ADAPSO's 25th anniversary celebration.**

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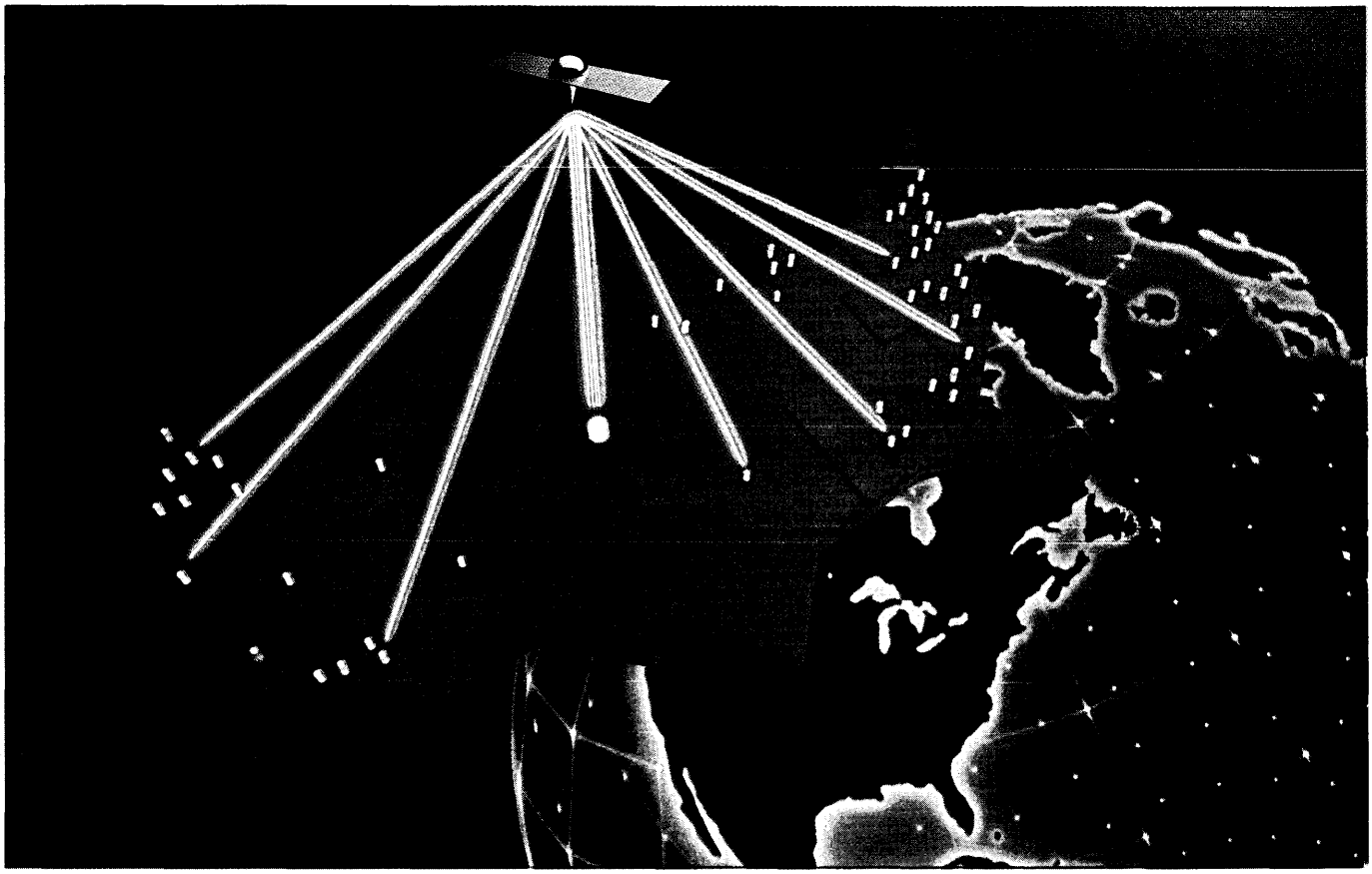

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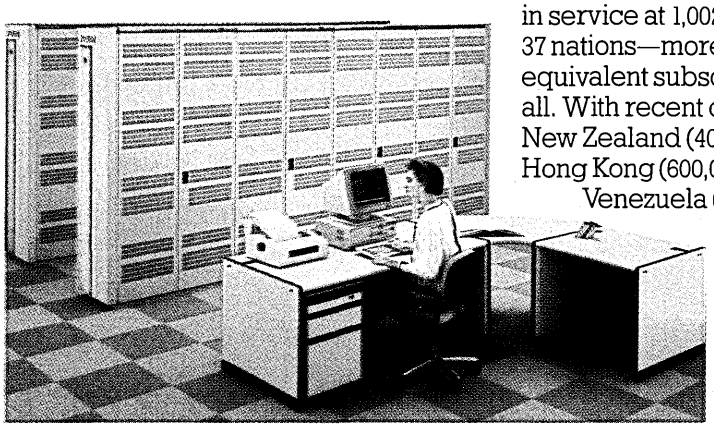

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and the EDSAC [Electronic Delay Storage Automatic Calculator] being put together in Cambridge. This was in the early '50s and I knew I couldn't get on those. They were just for government work.

"I began to read about the situation in the States. The first Univac was about to be delivered to the Bureau of Census. I realized that the only way to get in on the wave of the future was to go to the U.S. I did, and selected three companies to apply to: IBM, RCA, and Remington Rand. All three offered me jobs. I chose Remington Rand because they said I could start tomorrow."

Slimak spent his entire computer industry career with Remington and its derivatives, first Univac and later Sperry Corp. He started as a statistician. "Then they trained me to be a programmer," he recalls. He next became an executive, which led to his involvement with ADAPSO.

His first 12 years with the company that became Sperry were spent in the U.S. "Then, because I knew languages, Sperry asked me to move to Europe," he says. He held a variety of positions with the company's international division in France, England, the Middle East, Eastern Europe, Russia, and finally as head of the Southeast Asia operations with headquarters in Singapore, the position from which he retired and in which he met Johnnie Moon.

Slimak says he kept in very close touch with the ADAPSO organization for the first five years after he left the U.S., but then got involved in other things and lost touch.

His return to the fold in Phoenix last fall was, he recalls, "an unexpected treasure. It had exceeded all my expectations. What had grown out of an insignificant idea was beyond my wildest dreams."

What was it about ADAPSO he found unchanged? "Why, the spirit of real adventure and entrepreneurship. I saw the same types of members ready to charge away at the market, to get their ideas going. I was very, very happy."

## Looking Back

TWENTY-FIVE YEARS AGO IN DATAMATION: "There exists a continuum of opinions on what constitutes intelligence, hence on what constitutes artificial intelligence. . . . Minsky has suggested in a number of talks that an activity which produces results in a way that does not appear understandable to a particular observer will appear *to that observer* to be somehow intelligent, or at least intelligently motivated. When that observer finally begins to understand what has been going on, he often has a feeling of having been fooled a little. . . . The author of an 'artificially intelligent' program is, by the above reasoning, clearly setting out to fool some observers for some time. . . ." (From "How to Make a Computer Appear Intelligent," by Joseph Weizenbaum, February 1962, p. 24.)


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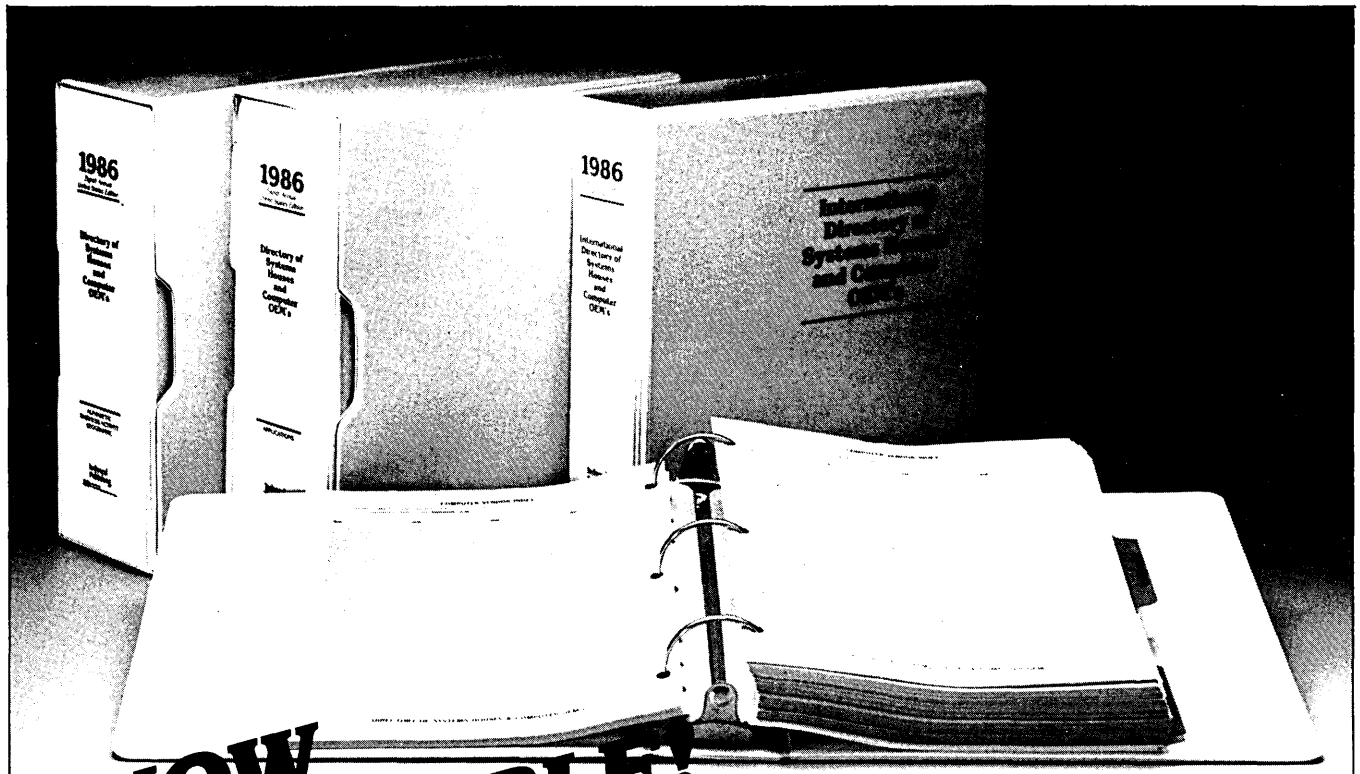


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## LETTERS

### Vector Matures

Karen Gullo's article, "The Next Frontier" (Oct. 15, p. 28), was a good overview of the current work in vector compiler technology. It would have been more complete, however, had it mentioned the work being done at Rice University by Ken Kennedy and his associates and the extension of autovectorization to languages other than FORTRAN by Convex Computers.

As a consultant specializing in supercomputers, I really appreciate the coverage that DATAMATION gives to the whole supercomputing milieu.

VINCENT B. WAYLAND
Wayland Associates
Boulder, Colorado

### The Real J.R.

In "How to Get Rich" (Nov. 15, p. 38), you cited the Forbes 400 listing for one John Richard Simplot. Many have known of an Idahoan with a sizable "tuberous vegetable" fortune. More recently, a smaller group have ogled a three-story-high illuminated American flag flying over a hilltop estate in Boise.

None of these people know of a John Richard Simplot, however. We do know of a J.R. Simplot (long before that upstart Texan) and some of us know a Jack Simplot.

We suggest that DATAMATION and *Forbes* jointly hire an ACO (acronym control officer) to clarify not only corporate and product acronyms, but also the "real" names of the owners.

As an additional note of interest, J.R. is no longer involved in just spud chips—he is also involved in the semiconductor variety, as the major shareholder of Micron Technology.

R. KENNETH STOLZ
Missoula, Montana

### Computer Consultants

"Is Anyone Really Using Computer Consultants?" (Oct. 15, p. 99) contains a quotation purported to be from me. My position here at the County of Los Angeles does not provide me the access to the type of information that would be required in order to say anything for quotation in your publication. I request that you retract any information that may be attributed to me.

TED KOBAYASHI
Data Processing Specialist
Los Angeles County
Data Processing Department
Downey, California

## READERS' FORUM

### Security and Reality

I had been in a dp staff position when data security was assigned to me on a part-time basis. I was eager but mystified when my boss ordered me to go "do" security. I wondered, how does one effect security? Flip on the security switch? Or was it somewhat more complex? And how did one know when he was finished?

Security as an abstract idea is enthusiastically supported by every self-respecting employee in the organization. Many managers believe they know something about it because they are managers and security is a management issue. In reality, however, their ideas on what constitutes security are widely disparate, much as are their notions of what constitutes good management—with little reliance on research or education. Varying definitions help make security an easy concept to exploit, for indeed, almost anything can be said to have an impact on security. A badly written program, the incorrect disposal of printouts, a broken door, a decision to purchase one hardware or software system over another, bad data, all can be said to affect security.

Security administrators, too, are grappling with the meaning of data security. At a security conference I recently attended, the moderator of one session, a thorough and well-known professional, asked the class of experienced security administrators to define the components of a security curriculum. An hour and 15 minutes later, the class was still on Roman numeral I. The episode suggests that security administrators are far from being in general agreement on a professional curriculum and farther still from accreditation.

Nonetheless, I believe the perceptions discussed above are slowly changing, and that the security administrator should be instrumental in effecting these changes.

One of the first changes that should be effected is the security administrator's perception of his or her role. A security practitioner should be not only a technician, but also an educator and (alas) a politician. As educators, security administrators should target management as their primary audience. Through articles, formal presentation, and even over cups of coffee, the security officer can attempt to present management with a realistic view of security, as follows:

- Effective security has to be part of the project design stage.
- Managers, not the security officer, must determine the levels of access needed by their employees.
- Security is overwhelmingly a human problem, not a technical one.

Security administrators, too, must realize that data exist to be used, not to be protected. After all, data do not accrue interest, and their value is based almost exclusively on their timeliness.

A security policy from the dp/MIS department alone cannot ensure the safety, integrity, and accuracy of the corporation's informational assets. Without a corporate policy (and it falls within the security administrator's purview to educate management that one is needed) security becomes no more than a swinging door to data, a minor inconvenience easily shoved aside. Moreover, if the users are the delegated owners of the data (with the organization being the ultimate owners) and can therefore make the ultimate decisions as to who can see, change, or delete the data, then the security policy of dp is largely irrelevant. If an owner wants to open the floodgates of access, then all data processing can really do is issue a warning that the owner's data are at risk.

Perhaps, then, the reality of security rests with the questions my boss and I grappled with in the first paragraph, namely, how does one effect security? The answer is that one doesn't; it is the work of many. The applications and system programmers, management at all levels, the users, consultants, clerks, and even visitors, all, at one time or another, are engaged in the security business. For what is security if not the controlled exchange of information? Although many people are involved, there should be no "turf" problems here. The security administrator, working in his milieu of enlightened paranoia, can use all the help he can get, and can be deemed successful if he can get everyone in the organization aware that they too are in the security business.

ROBERT D. HARGROVE
Security and Contingency Planner
University of Texas
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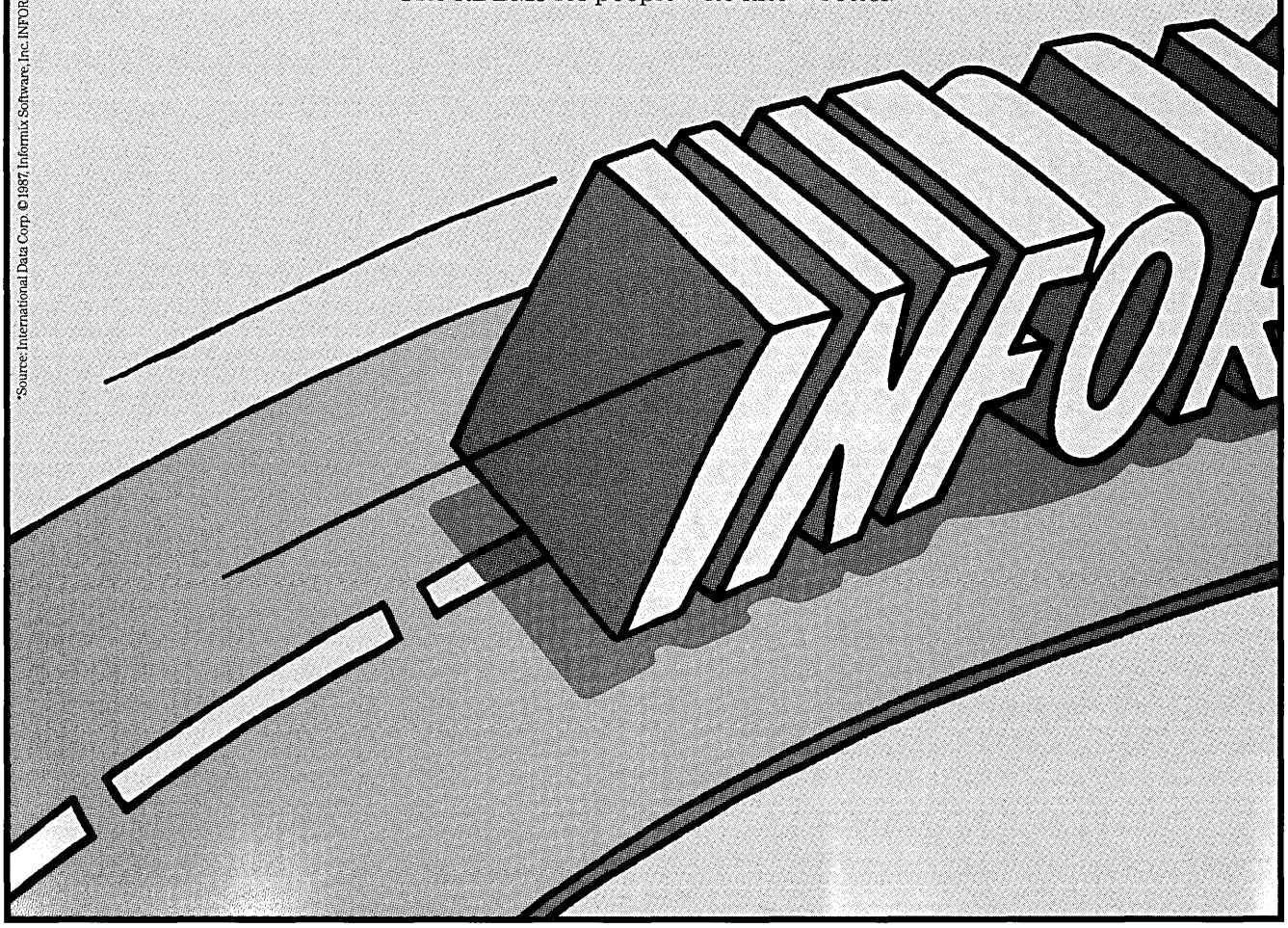


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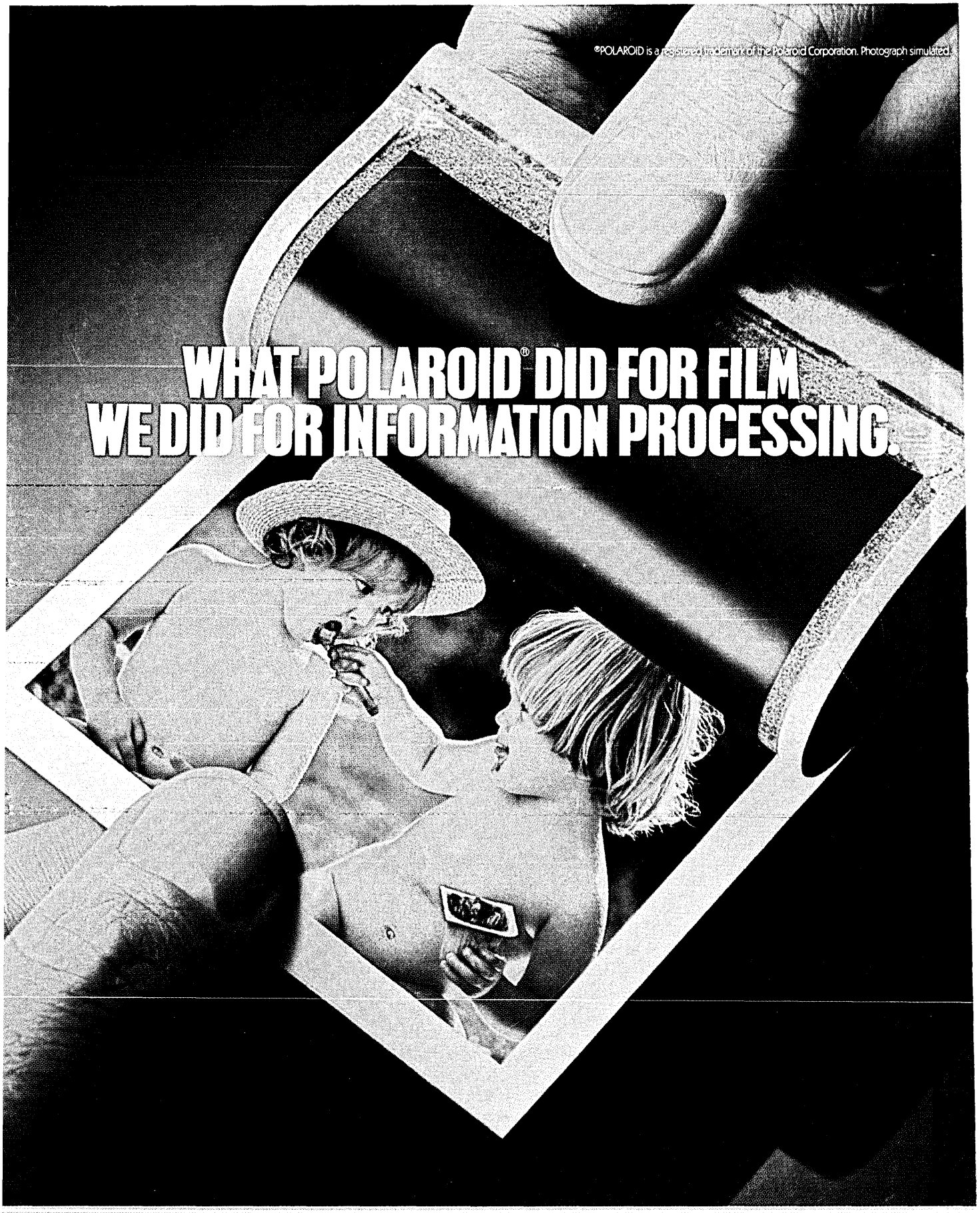


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