CAHNERS PUBLICATION

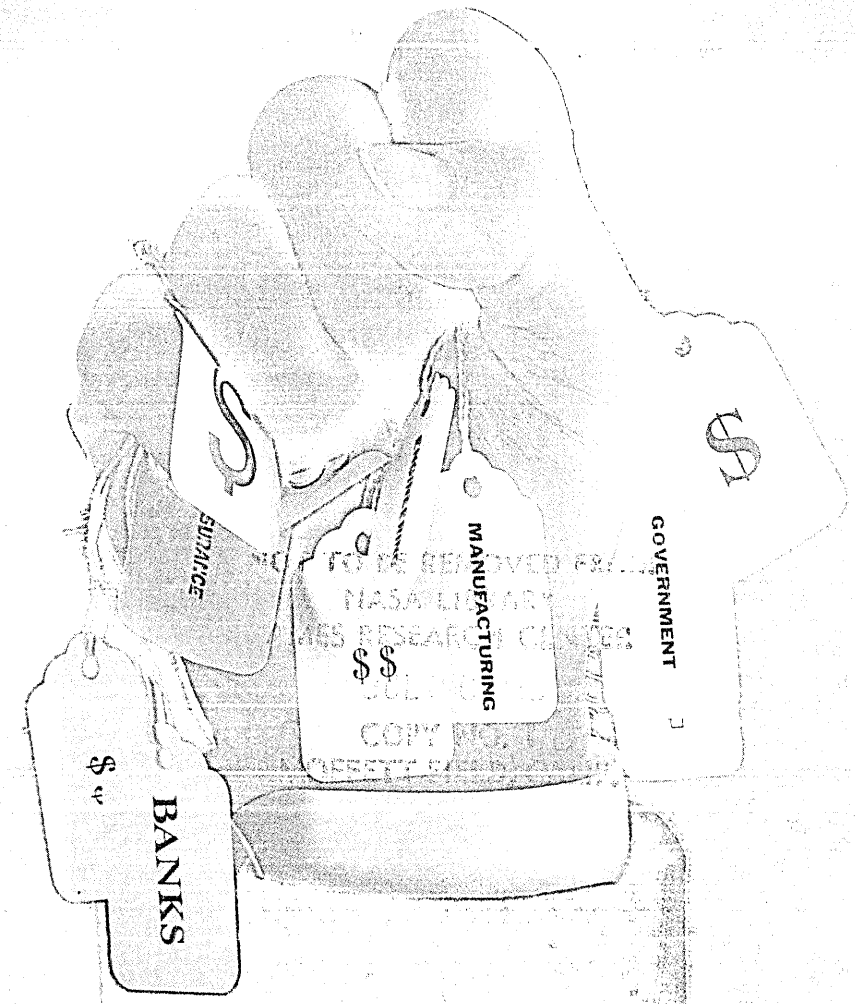
INTERNATIONAL EDITION/JULY 1, 1989

DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

THE SELLING OF I.S.

Users Are Offering Their IS Expertise for Sale. But at What Price?



Also in This Issue:

How To Reap a Harvest With CASE

DEC Goes Back to the OLTP Drawing Board

Data Encryption Is a Secret No More

The Liabilities of Working at Home

Here Are The Features That Make Our Competitors Green With Envy.

	LINK MC$_5$	ADDS 2025	Esprit® Opus® 4	IBM 3151-360	TVI® 965	DEC VT320
Refresh Rate	78Hz	70Hz	60Hz	60Hz	60Hz	60Hz
Overscan	Yes	No	No	No	No	No
# of Displayable Chars.	512	256	128	128	512	256
# Display Pages Standard	7	2	2	1	7	1
# Communication Ports	3	3	2	1	2	2
Virtual Terminals	Yes	Yes	Yes	No	No	No
Parallel Port	Yes	Yes	No	No	Optional	No

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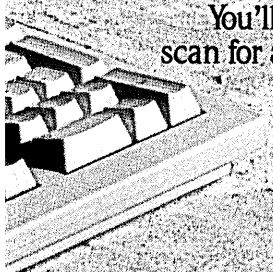

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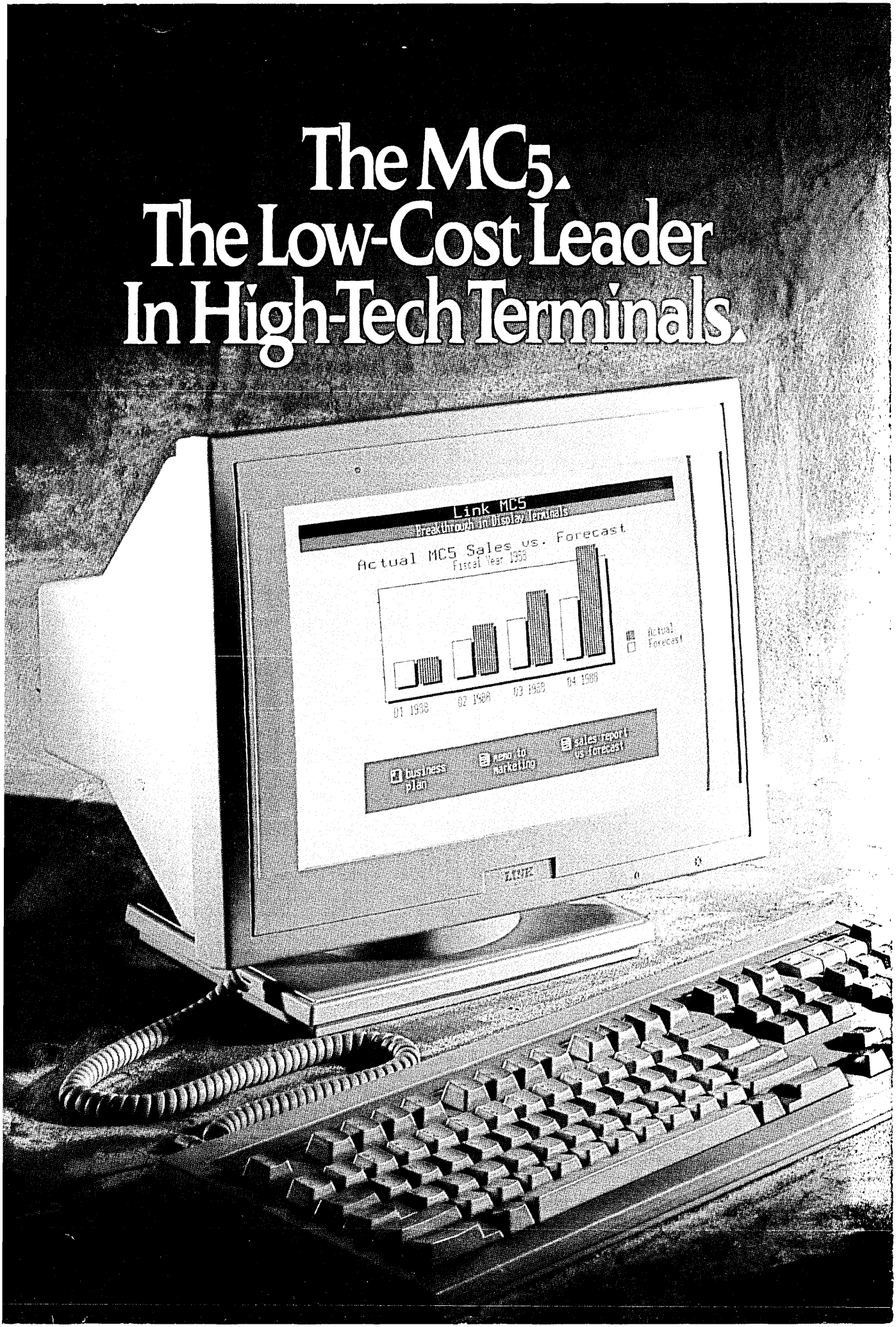

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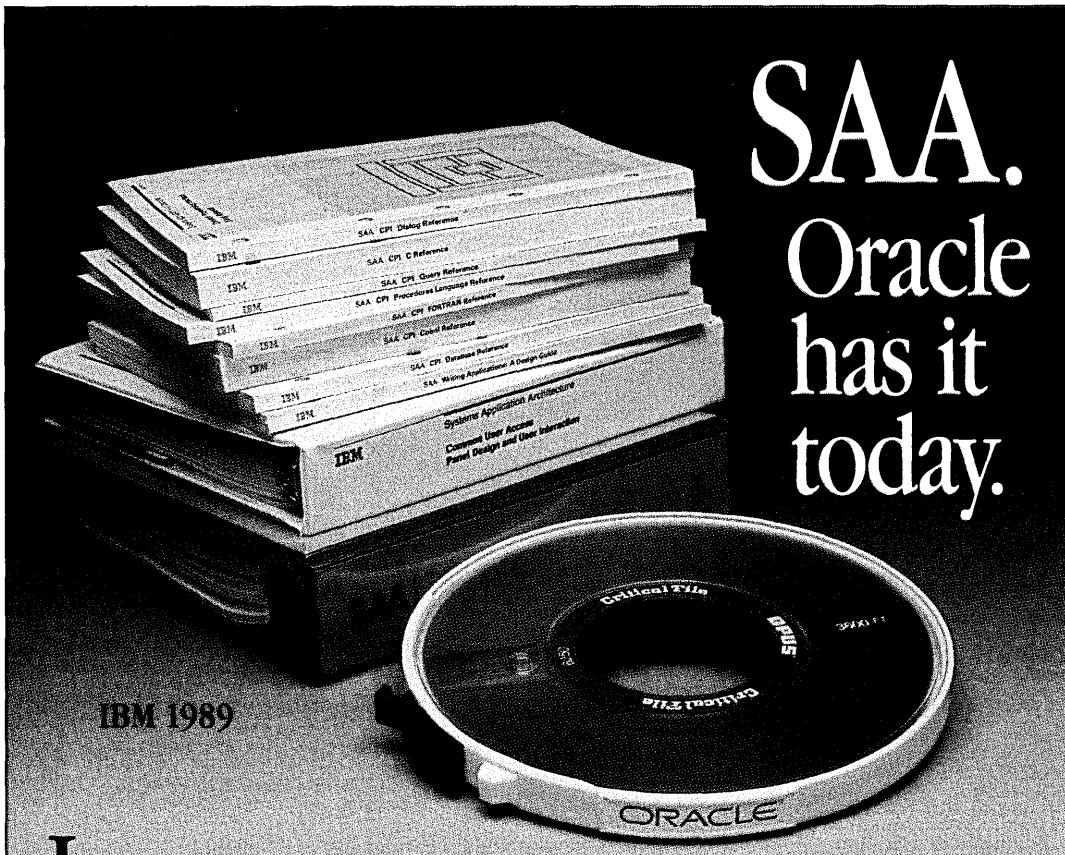

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1:IBM Journal of SAA 2:DATAPRO survey, August 1988, companies with sales over $10 million 3:Donaldson, Lufkin & Jenrette report

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AK	Anchorage	August 8
AL	Birmingham	August 16*k*
AR	Little Rock	July 13*f*
AZ	Phoenix	July 11
	Scottsdale	August 8*f*
CA	La Jolla	August 17*k*
	Los Angeles	July 20*fm* August 15*m*
	Newport Beach	July 18*k* August 10*a*
	Ontario	July 27*f*
	Sacramento	July 19*k*
	San Diego	July 13*f*
	San Francisco	July 25 August 24
	Santa Clara	July 13*fm* August 17*fk*
	Universal City	July 6*f*
CO	Colorado Springs	August 24 / Aug 24*g*
	Denver	July 20 August 22*gk*
CT	Farmington	August 3*f*
DC	Washington	July 13*gk* August 17*g*
FL	Ft. Lauderdale	July 14*k*
	Jacksonville	August 9*f*
	Melborne	August 23*k*
	Orlando	July 12*f*
GA	Atlanta	July 19*f*
	Savannah	August 10*k*
IA	Des Moines	July 19
IL	Chicago	July 19*fm* August 23*fk*
	Springfield	July 11
IN	Ft. Wayne	July 12
	Indianapolis	July 18*k* August 29*f*
KS	Wichita	August 15
KY	Lexington	July 18
LA	Baton Rouge	August 24*m*
	New Orleans	July 27*f*
MA	Boston	August 1*f*
	Burlington	July 12*a* August 10*g*
MD	Baltimore	July 18*f*
ME	Portland	July 19
MI	Dearborn	July 11*km*
	Grand Rapids	July 13*m*
	Lansing	August 10*f*
	Troy	August 8*am*
MN	Minneapolis	July 12*k* August 9*af*
MO	Kansas City	August 3*fk*
	St. Louis	July 11*fk* August 8*fm*
NC	Res Tri Park	July 26*k*
NE	Omaha	July 6*g*
NJ	Asbury Park	August 8*g*
	Iselin	July 20*f* July 22*f*
NM	Albuquerque	July 20*g*
NY	Albany	July 11*f*
	East Syracuse	August 10*k*
	Melville	July 19*f* August 16*a*
	New York City	July 12*f* July 26 August 9*f* August 23*p*
	Rochester	August 24*f*
OH	Akron	August 24*f*
	Cincinnati	July 20*fk* August 17*m*
	Cleveland	July 26*p*
	Columbus	July 5 August 15*f*
OK	Oklahoma City	August 2*fo*
OR	Tigard	August 22
PA	Harrisburg	August 15
	King of Prussia	August 15*f*
	Philadelphia	July 6*f*
	Pittsburgh	July 6*m*
RI	Providence	July 11
SC	Charleston	July 20*k*
	Columbia	July 19*k*
	Greenville	July 25*k*
TN	Memphis	July 11*f*
	Nashville	August 17*f*
TX	Austin	July 28*k*
	Dallas	July 11*fk* August 1*pa*
	Ft. Worth	July 18*o*
	Houston	July 13*fpa* August 17*fk*
	San Antonio	July 27*k*
UT	Salt Lake City	July 25
VA	Norfolk	July 11*g*
	Richmond	July 27*f*
WA	Bellevue	July 20
WI	Madison	August 17*f*
	Milwaukee	July 25*k*

The following key indicates additional afternoon seminars that are offered with these seminar dates:

- *a* Macintosh Networking
- *f* Oracle Financials
- *k* CASE/Application Tools
- *l* Oracle Mail
- *m* Computer Integrated Manufacturing
- *o* On-line Transaction Processing
- *p* PC Product Solutions
- *u* Unix

Please note:

- *g* Seminars held for Federal Government only.
- * Only the afternoon seminar is held that day.

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DATAMATION

JULY 1, 1989

VOLUME 35
NUMBER 13

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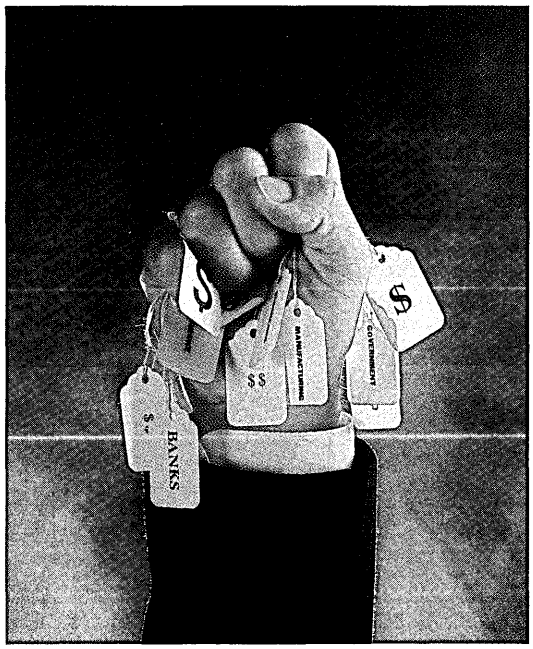
COVER STORY



The Selling of IS 22

BY RALPH EMMETT CARLYLE For some, they are just amateurs playing business games. But for others, they personify a trend. The trend is IS shops selling their software and management services—in a word, their expertise—to competitors, as well as to their own suppliers, on a scale heretofore unknown. But the big question is: do these IS spinouts run the risk of giving away too much?

Spinout Advice From One IS Veteran 24

Three Models for Spinning Out 26

Cover Photography by Curt Berner

DEPARTMENTS

Inside DATAMATION 10

Letters and Access 12

Look Ahead 17
General Motors' corporatewide computer project will rely on a forthcoming graphics standard called Product Data Exchange Specification.

New Products 66
Sun Microsystems has expanded its RISC-based systems offerings with a desktop computer and a workstation series.

Opinion 69

Planner 69

Information Economics 70

Career Opportunities 72

Ad Index 80

Company Index 80

SOFTWARE

CASE
Reaping CASE Harvests 31
BY MARCUS LOH AND R. RYAN NELSON A University of Houston study finds small software projects a fertile field for CASE tools. However, the adequacy of current tools for complex software development is by no means widely accepted.

DBMS
Tracking the Wild Data Base 37
BY TOM MCCUSKER Data base monitoring and SQL optimization tools are finding a place in those DB2 data base shops where production applications compete with ad hoc queries for precious system resources.

SYSTEMS

PCs
Can Stand-Alone EISs Stand Up? 41
BY STEPHEN G. DAVIS A handful of micro-based programs, loosely referred to as hypertext, are being used by IS and non-IS developers to change the look of a few high-profile executive information systems. But will they keep executive users satisfied?

A Word About Hypertext 42

Some Leading EIS Suppliers 44

MAINFRAMES
Loyalties Under Fire 49
BY DAVID STAMPS Control Data Corp. Cyber users, anxious over the company's continuing financial difficulties, are focusing on maintaining state-of-the-art operating system and application software.

COMMUNICATIONS

SECURITY
A Secret No More 53
BY SUSAN KERR Data encryption, an intriguing notion just a few years ago, is getting a second look from corporate security managers. Lower encoding costs and a greater fear of viruses are putting new impetus behind an old standard.

The Origins of an Encryption Standard 54

OLTP
Back to the Drawing Board 57
BY GARY MCWILLIAMS Digital Equipment Corp.'s first steps in the on-line transaction-processing arena have resulted in a few falls, but the company has picked itself up and is planning to get under way again.

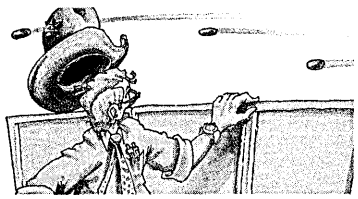
MANAGEMENT

PERSONNEL
Working at Home 63
BY JOHN W. OWEN Having employees, such as programmers, work at home can leave a company open to additional liabilities, but the biggest risks can be eliminated with a few easy measures.

Liability Is Not the Only Problem 64

INTERNATIONAL

Special supplement, not included in all issues. **68-1**



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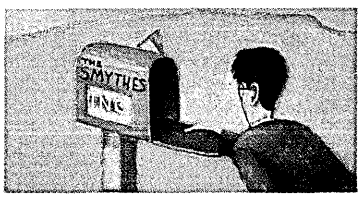

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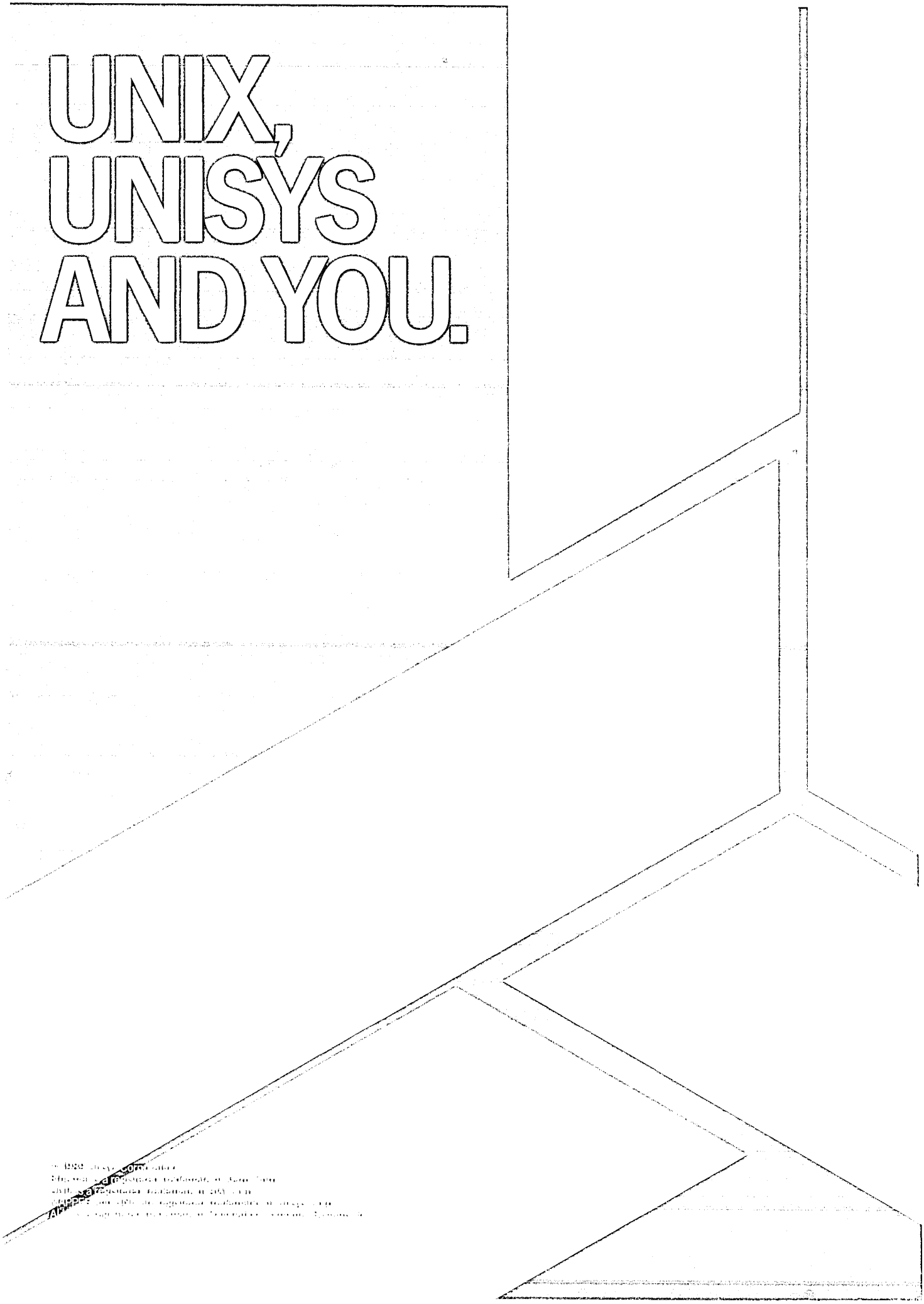
UNIX, UNISYS AND YOU.



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The Spread of the Entrepreneurial Spirit

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In our industry, the idea is spreading that the information systems function can do more than it has before. And if what we've seen so far is any indication, that idea is spreading fast. The "more" in this instance is selling the accumulated expertise of a company's internal IS organization on the open market. Whether it is incorporated in software or a service like facilities management, this expertise is being leveraged by IS departments any way they can.

Photograph by Peter Sylvia/Blackstar

SENIOR WRITER CARLYLE: Probing the spirit of entrepreneurial IS managers

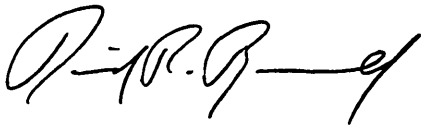
But the reasons that IS executives get into the business of selling IS expertise are certainly not monolithic. As senior writer Ralph Emmett Carlyle writes in this issue's cover story, "The Selling of IS," page 22, "For some, they are just techies: amateurs playing business games. . . . For others, they personify a trend in which centers of innovation have shifted from vendors to customers and are seen as a vital link in the industry's evolution. . ."

For Carlyle, who has been writing about information systems in DATAMATION for 13 years, the trend provides an opportunity to offer insights about the changing nature of the IS function and the role of the people running it. Solving problems may be rewarding, he says, but there are other motivations as well. Using IS to generate revenue and profit for a company, and therefore changing the perception that the IS organization is solely a cost center, is also a powerful idea.

Carlyle is quick to point out, however, that sometimes the rush to embrace the entrepreneurial spirit can be a reaction to reversals in a company's core business or a result of the industry's downsizing trend. Moreover, such a new role may not be easy to manage, particularly if a company runs the risk of selling expertise that has served to differentiate it from its competition.

CASE and Spreadsheets

Much has been written about the need for and benefits of computer-aided software engineering (CASE), but a recent University of Houston survey homes in on the actual effect CASE has on programmer productivity. Based on a survey of actual usage at 12 companies, our article, "Reaping CASE Harvests," page 31, tells where CASE has been effective and what the training and implementation challenges are for this important technology.



David R. Brousell, Executive Editor

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DATAMATION (ISSN 0011-6963) Magazine is issued twice monthly on the 1st and 15th of every month by the Cahners Publishing Company, a Division of Reed Publishing USA, 275 Washington St., Newton, MA 02158. William M. Platt, Chief Executive Officer; Terrence M. McDermott, President; Frank J. Sibley, Senior Vice President/GM, Boston Division; Jerry D. Neth, Vice President/Publishing Operations; J.J. Walsh, Financial Vice President/Magazine Division; Thomas J. Dellamaria, Vice President/Production and Manufacturing. Editorial and advertising offices, 275 Washington St., Newton, MA 02158. Published at Woodstock, IL. Annual subscription rates: U.S. and possessions: $69; Canada: $98; Japan, Australia, New Zealand: $180 air freight; Europe $157 air freight; $290 air mail. All other nations: $157 surface, $250 air mail. Reduced rate for U.S. public and school libraries: $47. Single copy: $10 in U.S. Sole agent for subscriptions in Japan is Maruzen Co. Ltd., 3-10 Nihonbashi, 2-Chome, Chuo-ku, Tokyo 103, J; sole agent for all other foreign subscriptions is J.B. Tratsart Ltd., 154A Greenford Rd., Harrow, Middlesex HA13QT, England, (44-1)-422-8295 or 422-2456. No subscription agency is authorized by us to solicit or take orders for subscriptions. Circulation records are maintained at 44 Cook St., Denver, CO 80206. Phone (303)-388-4511. Second-class postage paid at Denver, CO 80206 and at additional mailing office.
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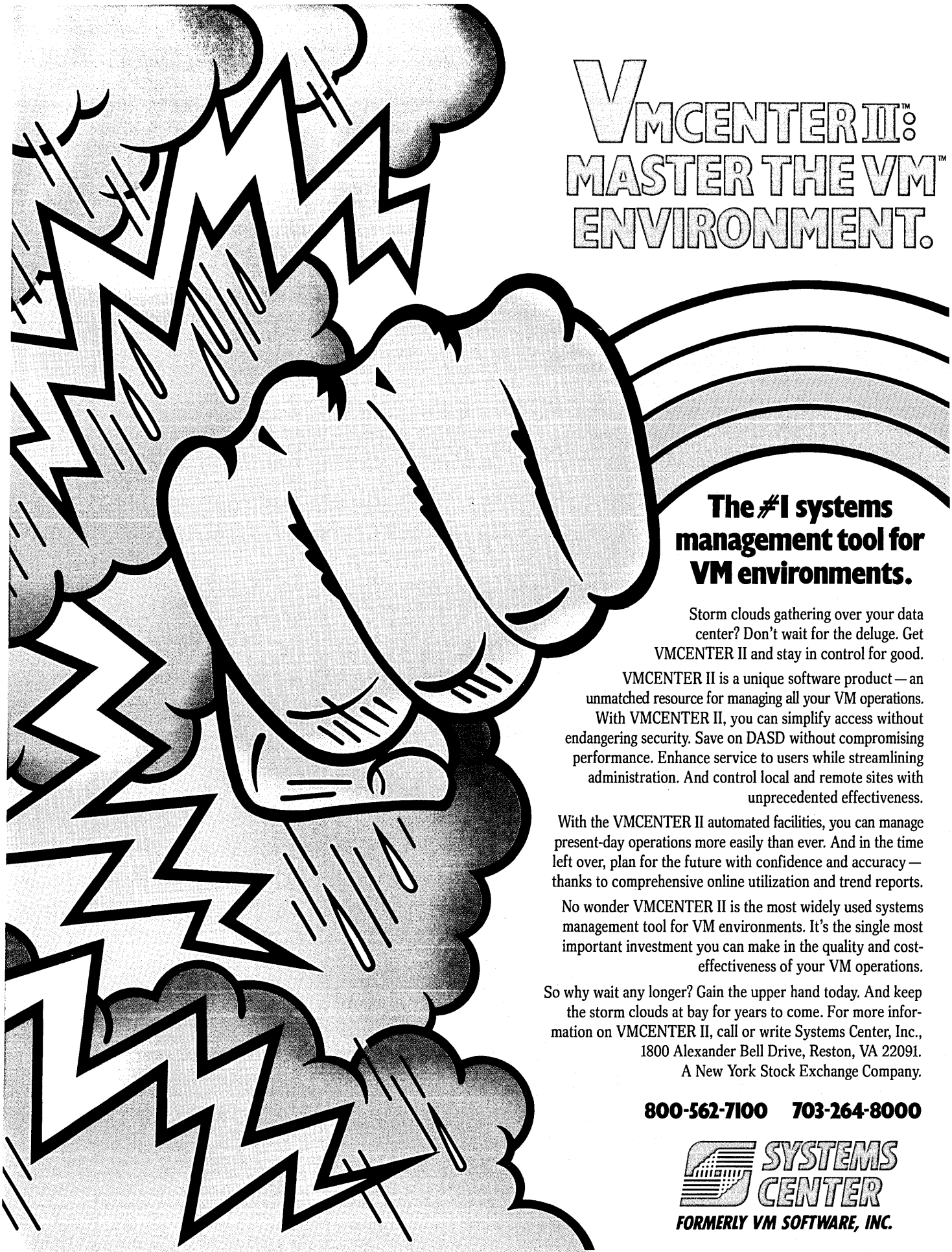

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LETTERS

Order out of CAOS

I am writing to clarify some quotes attributed to me in your article titled "Computer Associates: At a Crossroads," which appeared in the April 15 issue of DATAMATION [p. 61].

First, I am certainly a fan of Charles Wang; however, I am not a past critic of Mr. Wang nor of the Computer Associates organization. Secondly, my remarks about the benefits of dealing with one vendor for multiple products were made in a much more positive light than came across in the article. To clear the record, I am quite satisfied with the CA products we currently run. Furthermore, I am confident and enthusiastic about the future integration of these products. I not only believe Computer Associates is working on integration of products—I know for a fact that they are.

Finally, I feel obliged to comment on your reference to the user summit meeting in Garden City on February 6. I attended the meeting and I felt very comfortable with the results. I applaud Mr. Wang's willingness to sit face to face with us to discuss the issues of user group conferences and relations in general. I find Mr. Wang to be honest, fair and willing to compromise when it is reasonable. I believe he is very sensitive to the value of good relations with the user community. Maybe we should give him the benefit of the doubt until he demonstrates otherwise.

Ross E. Markley
President
CAOS User Group
Alexandria, Va.

A Voice in Response

Leila Davis' article "Phone Mail Gets Stamp of Approval" [April 1, p. 69] gives DATAMATION readers an incorrect impression. It referred to Syntellect's voice response applications but categorized them as phone mail and voice messaging. They are neither. They are voice response.

Voice messaging and phone mail systems record and forward spoken messages through the telephone. Voice response, on the other hand, allows users to interact with a host computer. Callers have access to specific information stored on the host. Information is entered or retrieved using a telephone key pad.

Both voice response and voice messaging are major market segments of the voice processing industry. In the 1990s, we will see these applications begin to overlap and merge. But for now, the distinction is important to companies seeking the best solution to improving customer service.

S. Thomas Emerson
President and CEO
Syntellect Inc.
Phoenix

ImPIOS Thoughts

We read with interest the brief news item on page 13 of the April 1 edition, "Battle of the Titans."

The last sentence gives readers the erroneous perception that Andersen Consulting is in the business of selling "Pious," an MRP II software package most recently sold by McCormack & Dodge. The story is incorrect on several accounts:

- The product is PIOS, not "Pious."
- PIOS is a Manufacturing Resource Planning (MRP II) system used in general commercial and aerospace/defense applications. It *is not* a financial accounting package.
- Andersen is not selling PIOS. As part of an agreement between the two organizations, McCormack & Dodge is no longer marketing or supporting PIOS. Andersen Consulting has assumed worldwide product rights for PIOS and will offer limited software maintenance to PIOS users as agreed upon by the two parties. In addition, Andersen Consulting will develop enhancements to PIOS as sponsored by users.
- Andersen does sell its MAC-PAC Manufacturing Resource Planning (MRP II) line of software products.

Richard L. Linting
Andersen Consulting
Arthur Andersen & Co.
Chicago

Error of Omission

I read with great interest the article "Shopping for a PC DBMS" by Marvin Bryan [March 15, 1989, p.25]. However, I was disappointed that you did not include Quicksilver from WordTech Systems Inc. of Orinda, Calif., in your survey. This dBase III Plus-compatible compiler is directly competitive with FoxBase+ and Clipper, two products you did include. Quicksilver offers one significant advantage over these competitive products: complete data base and index file compatibility with dBase III Plus. Both Clipper and FoxBase+ use index file structures that are incompatible with each other and with dBase III Plus.

Also, as a historical note, WordTech is the original pioneer in the field of dBase-compatible compilers. They have been in the business since the days of dBase II. They have been spared involvement in the recent law suits brought by Ashton-Tate against the other compiler developers because they have always operated under license from Ashton-Tate.

As for the future, the . . . joint development agreement between WordTech and Oracle for the purpose of advancing SQL technology holds great promise.

Melvin A. Carter
Coordinator of R&D
Gavilan Software
Soledad, Calif.

Correction

In the sidebar "Market Size: It Depends on Who's Talking" on p. 26 of the April 15 issue of DATAMATION, the compound annual market growth rates for CAP International and International Data Corp. for 1989–1992 should have been 36% and 66.4%. CAP's 117.5% figure was for a period of years prior to 1988, and IDC's 77% was for the period 1987–1992.

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Marsha J. Fisher
DATAMATION Magazine
275 Washington St.
Newton, MA 02158
617/964-3030

LETTERS TO THE EDITOR
Tim Mead
DATAMATION Magazine
275 Washington St.
Newton, MA 02158
617/964-3030
Fax 617/558-4700
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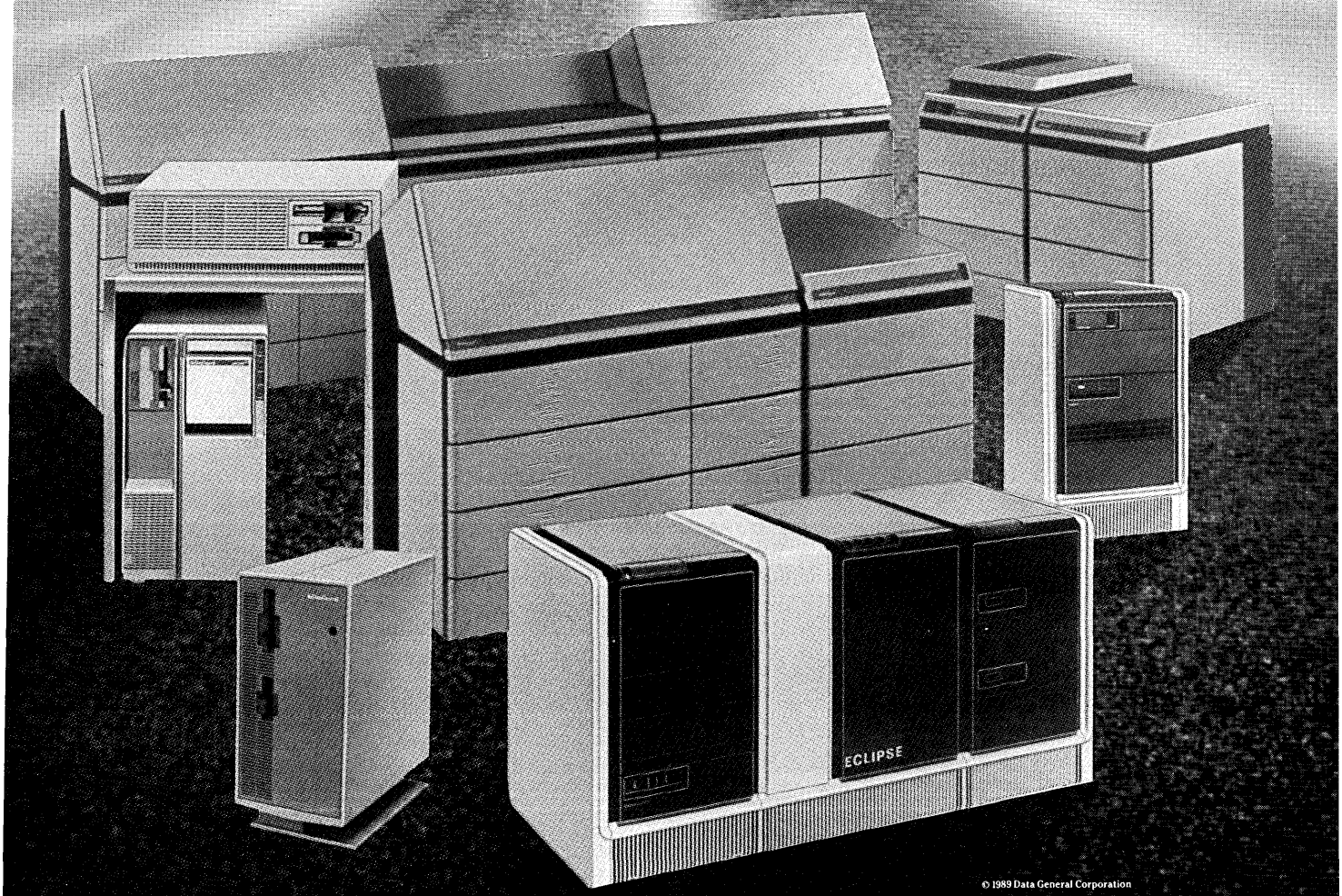

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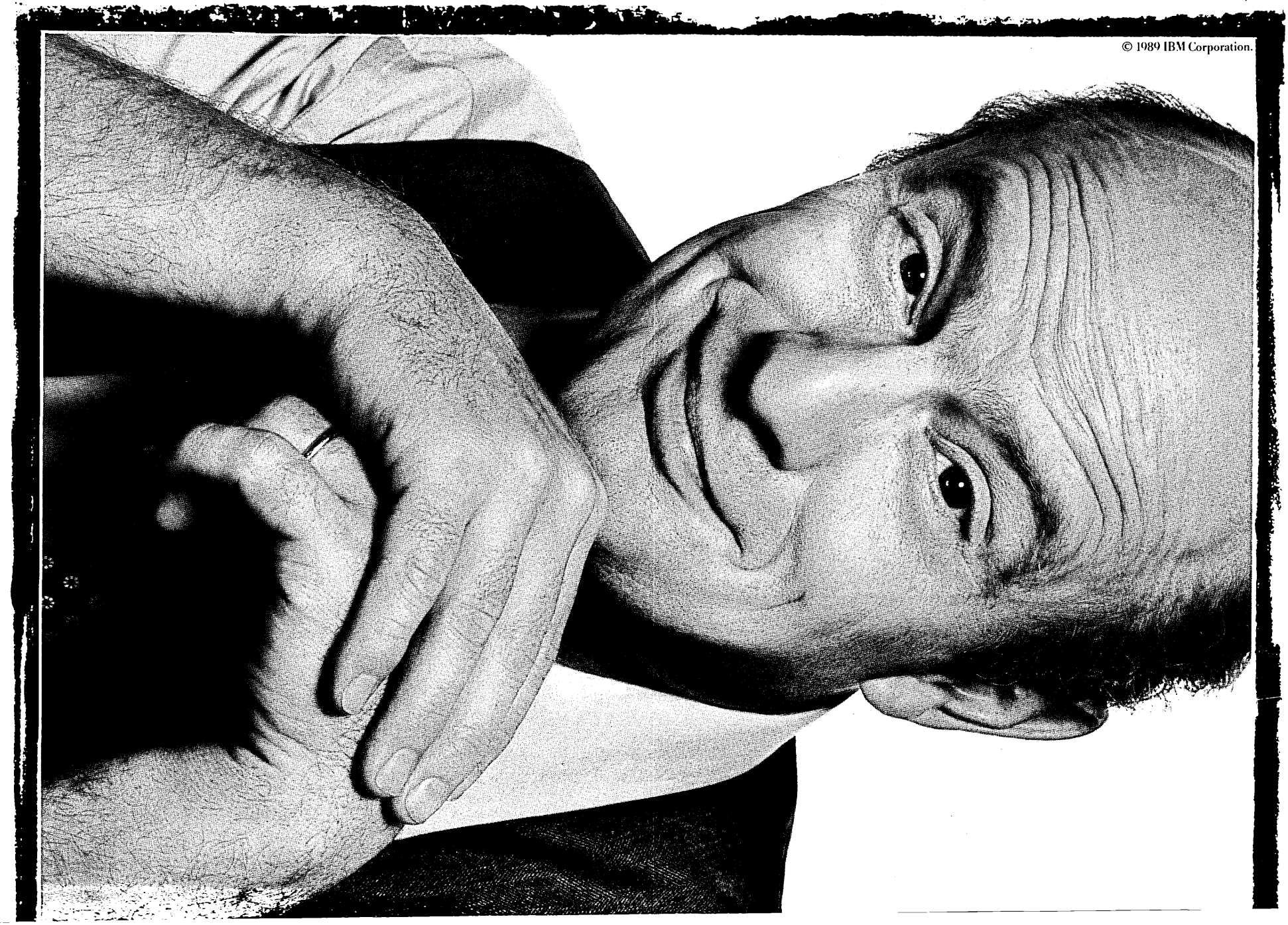
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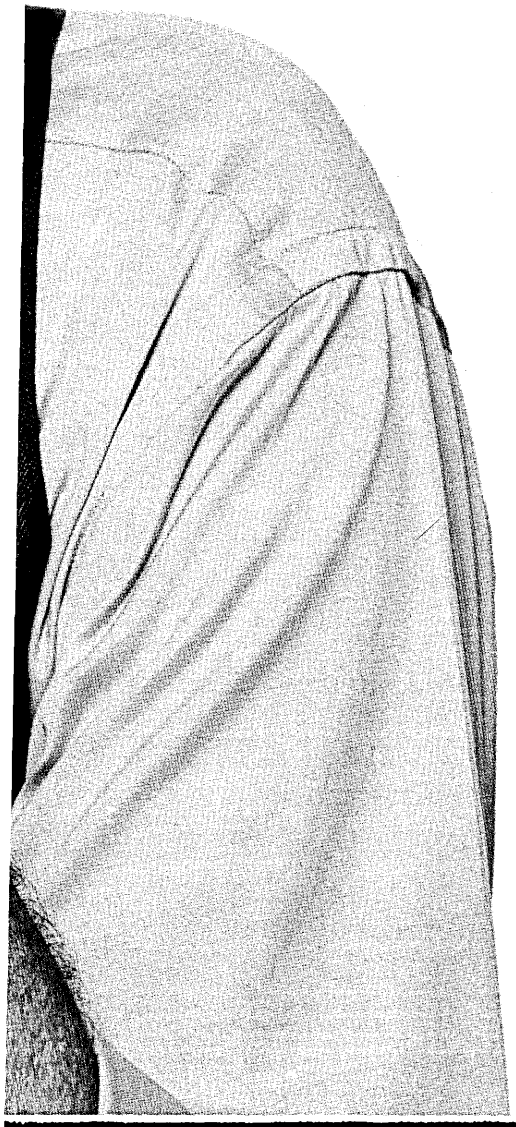
"This is not the IBM I thought I knew."



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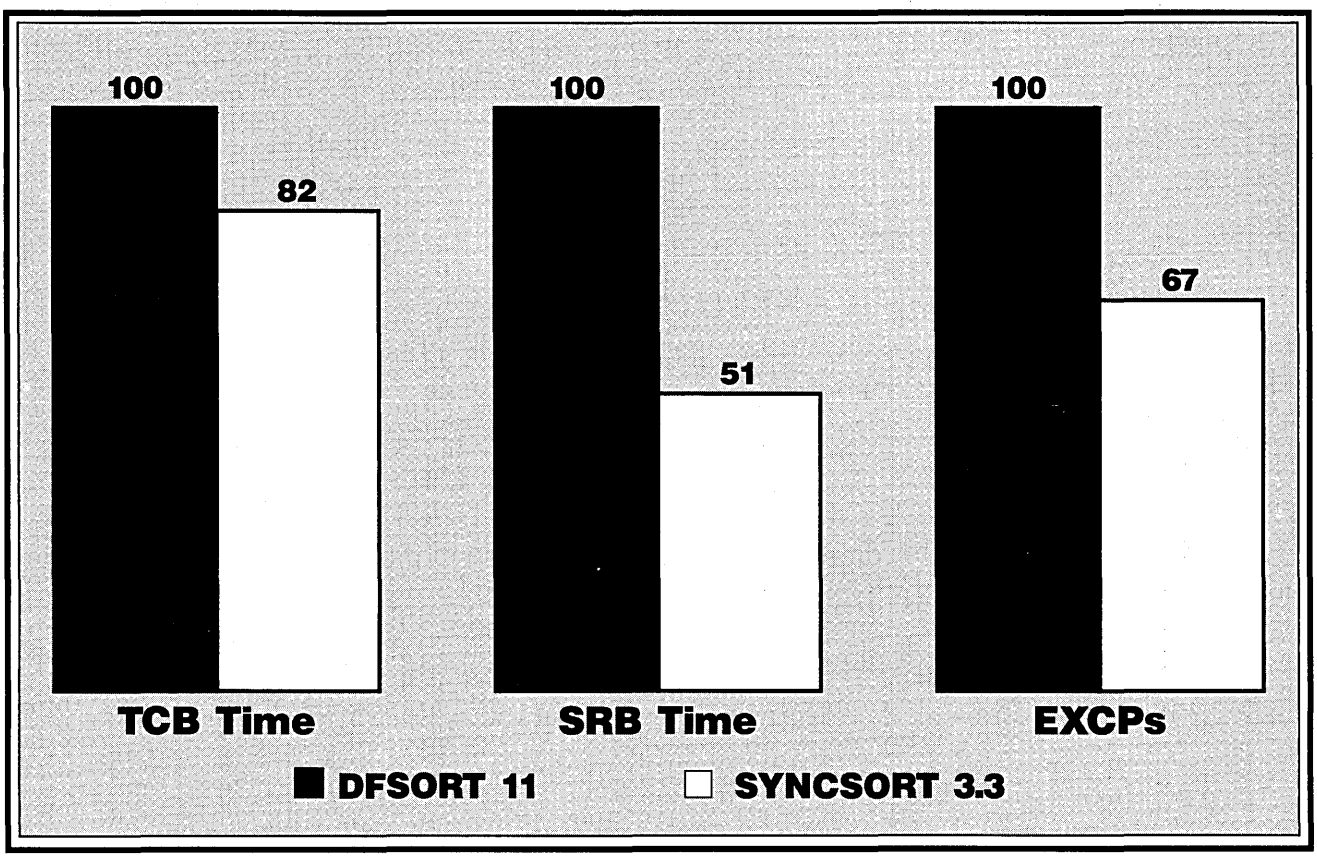

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GM Advances Graphics Tool

DETROIT—A key aspect of **General Motors Corp.**'s corporatewide computer project, titled C4, will rely on a new graphics standard that will replace the current Initial Graphics Exchange Specification. According to Rudi Gern, network development manager for **Electronic Data Systems Corp.**, the upcoming Product Data Exchange Specification will be required to tie the C4 project's disparate parts together. The C4 program will link advanced computer-aided design, engineering and manufacturing with computer-integrated manufacturing technologies across GM's worldwide network of plants and facilities. To accomplish that goal, Gern says, GM will need the new standard, which implements a vendor independent way of describing manufacturing data.

Wall Street IS Closing Affects 90

NEW YORK CITY—Nobody is sure how many prospects **IBM** has for its next generation mainframe family, but you can strike New York City investment house **L.F. Rothschild, Unterberg Towbin Inc.** from any list of candidates. Its once-expanding data center, housing two 3090 mainframes and 90 staffers, will soon be a memory—victims of post crash Wall Street's obsession with cutting costs and realigning businesses. "We were gearing up for the big time," says a newly unemployed staffer from Rothschild's New York data center. The data center in March had completed a 15-month, multimillion-dollar conversion program. Some 2,500 programs running under DOS/VSE had been rewritten to run under IBM's large-scale MVS operating system. That same month, Rothschild, which is owned by **Franklin Savings Association** of Ottawa, Kan., handed out termination notices to all 90 employees. The company had been a full service broker—equities, bonds, options—before the crash, but in the succeeding dark days was reduced to just investment and merchant banking. A Franklin Savings spokesman says the decision to phase out the data center was made solely by its subsidiary. Rothschild is now shifting to PC-based services.

Japanese Split on SPARC Use

TOKYO—Does **Sun Microsystems Inc.**'s recent licensing deal with Japan's **Toshiba Corp.** mean that Sun's SPARC microprocessor architecture is well on its way to unseating that of the more established processors, such as Intel Corp.'s 80386, as a standard general purpose architecture? Not really, says a top executive at another Japanese partner of Sun, **Fujitsu Ltd.** Fujitsu was Sun's first SPARC partner, helping Sun execute the design and fabrication of its SPARC reduced instruction set computing (RISC) chip in exchange for Sun's promise to buy lots of them. But, according to Fujitsu executive vice president Matami Yasufuku, who negotiated the original agreement with Sun, SPARC will be a niche architecture, primarily for technical applications. Fujitsu hopes SPARC becomes the standard among RISC chips, says Yasufuku. "But, for general purpose [systems], we're concentrating on the Intel architecture and TRON [The Real-Time Operating System Nucleus—a computer architecture project led by Tokyo University researchers]." For SPARC to break out of its technical niche, it would mean some customers would give up a substantial applications investment. "We don't think the customer will abolish those [software] assets. There are two basic architectures—RISC and CISC [complex instruction set computing]. Even Intel is doing both kinds," he says.

Global Name Directory For SNA

ARMONK, N.Y.—A distributed file service for **IBM** Systems Network Architecture (SNA) networks is detailed in the latest issue of the *IBM Systems Journal*. Called SNA/File Services, the new capability provides a standard naming directory for all files and data objects on an SNA network. The service maps local system file names to a global directory and can transfer function commands among heterogeneous systems, using Logical Unit 6.2 peer communications for all transfers.

Apple Opens A Party Line

CUPERTINO, Calif.—*Busy* is the word for **Apple Computer Inc.**'s networking folks this summer, as they announce a whopping 14 new products and three developers' toolkits for the communications world. Among the new products will be support for Token Ring and X.25 networks, an EtherTalk network protocol for A/UX (Apple's version of UNIX), a 2,400 bits per second modem and an Apple 3270 application programming interface. Additionally, Apple and **Digital** will give to developers this summer details on the first release of the AppleTalk network protocol for the VMS operating system. When presenting a preview of their joint projects last year, the two companies said that end-user products for file, print and terminal services would begin to appear this summer. Now, however, it looks like end-user services will not show up before the end of the year.

Compaq Is It

HOUSTON—Coca-Cola Foods Inc., already a big **COMPAQ Computer Corp.** desktop computer user, will be distributing several hundred of the PC maker's SLT/286 laptop machines to its sales force by the end of the year. Running customized software, the laptop computers should help sales reps keep closer track of their sales. For Compaq, the order adds additional fizz to an already big year for the SLT/286. The computer has captured 40% of the domestic market for battery-powered laptops, according to industry watcher StoreBoard Inc.

DEC Cranks Midrange Plans

MAYNARD, Mass.—Having promised to turn out midrange VAX computers at an accelerated rate, **Digital** is holding true to its word, with plans to introduce the third generation of its VAX 6000 line in the fall. With first deliveries anticipated later this year, the rumored VAX 6400 family is expected to offer up to 50% more performance at a price only 15% higher than the current VAX 6300 line. Look for prices starting at about $300,000 for a 7 million instruction per second (MIPS) entry level uniprocessor. UNIX isn't being ignored by the company's midrange planners. Later this year, Digital's version of UNIX, the Ultrix operating system, will support symmetric multiprocessing for a coming family of DECsystems computers. These will incorporate the latest MIPS Computer Systems Inc. microprocessor and VAX 6000 series packaging. But,

rather than make its UNIX customers mark time, Digital plans to release a 20MIPS uniprocessor in advance of the symmetric multiprocessing systems.

D-Day Looms For Super Center

PRINCETON, N.J.—Now that the **National Science Foundation** (NSF) has funded four of its five supercomputer centers, what's going to happen at the fifth—the **John von Neumann Supercomputer Center** (JVNC), which contains an orphaned ETA Systems machine? Neither side is talking, but there are only a few alternatives. "Only three things can happen," says one center director, who requests anonymity. "They can get a **Cray** [Research Inc.] Y-MP followed by an SS-1 [the first machine expected from Steve Chen's **Supercomputer Systems Inc.** start-up]. They can go with a massively parallel alternative architecture machine. Or they can try for a Japanese machine. No one's had the guts to do that so far, but the JVNC just might"—especially given the fourth alternative: termination. Word's out that the **Science Board**, which oversees the NSF, is tired of rubber stamping every move the foundation makes and may show its independence by announcing plans to close the center. The director estimates a 60% chance that the JVNC will be closed. The Science Board will disclose its decision by August 1.

NAS Sell-Off Hits Snags In Europe

SUNNYVALE, Calif.—The plan for the **Hitachi Ltd./Electronic Data Systems Corp.** collaboration to sell off the European operations of its newly acquired **National Advanced Systems Corp.** mainframe unit may not be dead, but sources say it's on the critical list. The plan was to sell the NAS European operations to competitor **Comparex Informationssysteme GmbH** for about $270 million. But that plan has been foiled by a couple of issues. Comparex officials say that NAS Europe's tax liabilities are greater than they had anticipated by some $27 million, making the deal uneconomical. Hitachi also got cold feet, sources say, after recognizing Comparex's apparent plan to cut most former NAS employees from the payroll after taking over. For the record, Hitachi officials say talks with Comparex are still continuing but, in the meantime, NAS Europe's operations will also continue—effectively competing with Comparex.

EDS Broadens EDI Services

DALLAS—**Electronic Data Systems Corp.** soon will be offering electronic data interchange (EDI) services outside its **General Motors Corp.** clientele. According to company sources, the giant systems integrator believes it has gained enough data interchange experience with parent GM to begin offering the network capabilities to non-General Motors accounts.

Model 204 Gets New Face

CAMBRIDGE, Mass.—**Computer Corp. of America** is planning to release Common User Access (CUA) compliant programming interfaces for its Imagine forms generator and its Model 204 User Language, an applications development language. Expected via a third-party agreement, the new tools will enable Model 204 users to split the mainframe software's 3270 data stream and map it to a CUA front-end module on a personal computer. The front-end software runs on IBM PS/2 personal computers, enabling users to build User Language applications and graphically construct forms on their PCs.

Italians Say Bonjour To Minitel

MILAN—Italian and French videotex users can look forward to expanded options when the two countries' systems are connected. **France Telecom**'s successful Minitel will officially connect to the Italian phone company **Sip**'s videotel system at the end of July. Initially, users of both systems will receive the other's services free. In October, Minitel's billable services will become available to Italian users. Sip expects to distribute 60,000 Minitel-type terminals made by **N.V. Philips'GL** and **Alcatel NV** to Italian users within the year, bringing total installations in Italy to 100,000. The Italian company hopes to have about 330,000 terminals in use by 1991. In contrast, over 4 million France Telecom terminals have been installed.

Ashton-Tate Looks to CASE

TORRANCE, Calif.—Front-end software engineering tools for the dBase IV data base are high priorities at **Ashton-Tate Corp.** The company released its first dBase code generator in March and hopes to complement the generator with analysis and design tools, says Ken H. Rhie, Ashton-Tate's product manager for data base product marketing. "We're seriously considering our direction for CASE [computer-aided software engineering] at the moment. . . . We're evaluating whether to develop tools ourselves or go into an alliance like RTI [**Relational Technology Inc.**]." RTI recently signed an agreement linking its Ingres data base management system with software engineering tools developed by **Cadre Technologies Inc.** of Providence, R.I.

ISO Gets Lisp Draft

GENEVA—A draft proposal for a Common Lisp programming language standard will be presented this month to the **International Standards Organization** (ISO) for action. Prepared under the auspices of the American National Standards Institute, the draft standard could be voted on by the ISO before the end of this year, according to X3J13 Common Lisp committee member Richard P. Gabriel. The draft proposal does not include standardized language interfaces for mixing Common Lisp and other languages. Gabriel predicts that current efforts by developers to create language interfaces will spur wider acceptance of Lisp.

Raw, Random Data

Interested in running a 16 megabits per second Token Ring over an unshielded twisted pair? Stay tuned, says folks at **Ungermann-Bass Inc.** . . . Quebec-based **Ogivar Technologies Inc.** releases its first laptop PC in November . . . A network monitoring device is under development at **Novell Inc.'s** Excelan Division. A fall launch of the device, which provides monitoring functions only, is expected.

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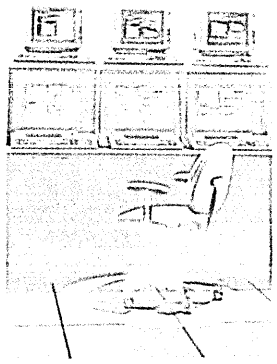

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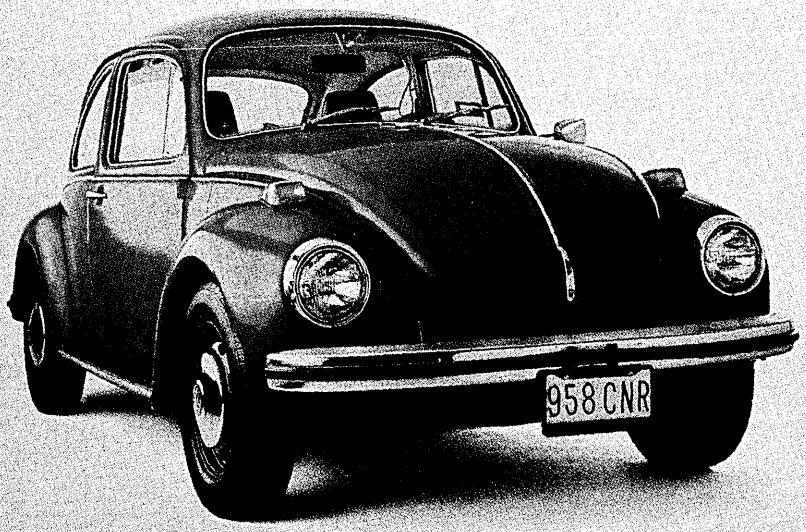

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LAN Acquisitions Shift To Corporate MIS Level

By GEORGE BRIGGS

BOSTON—Two new trends emerging in the personal-computer local area network marketplace — a shift in who is buying the equipment and a subsequent refocusing of vendor selling strategy — together will change the nature of the LAN market permanently.

PC WEEK CONNECTIVITY

MICRO-MINI-MA

IRMALAN Products Establish DCA as Leader in LAN Mainframe Gateways

By David Strom

Digital Communications Associates' (DCA's) new IrmaLAN 3725 Gateway, IrmaLAN SNA Workstation version 2 and APA Workstation version 2 products are a big step for the Alpharetta, Ga., communications firm. With these new products, DCA has the strongest local area network (LAN) mainframe-gateway product line of any vendor, including IBM.

The new IRMA

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BY TERI ROBINSON

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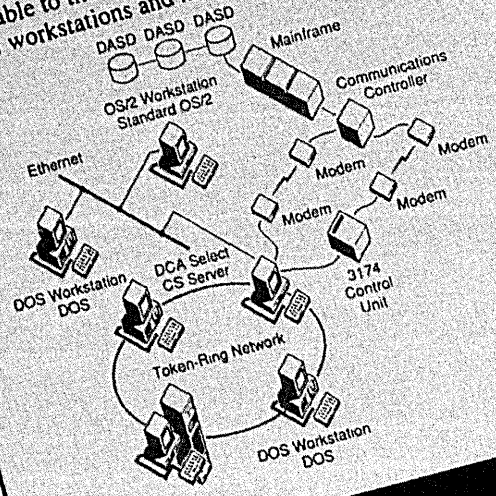

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The Selling of IS

IS shops are selling software and management services to competitors, as well as to their own suppliers, on a scale heretofore unknown. But do these IS spinouts run the risk of giving away the keys to their kingdoms?

BY RALPH EMMETT CARLYLE

For some, they are just techies: amateurs playing business games, but devoid of business sense—a passing fad. For others, they personify a trend in which centers of innovation have shifted from vendors to customers and are seen as a vital link in the industry's evolution. They're the multitude of IS shops inside organizations that are now open for business to outside customers. Found anywhere from tiny university departments to vast industrials in the Midwest, these "spinouts" are hawking everything from software to services to overall facilities management (FM).

What's good for these IS shops seems to be good for big business. IBM sees them as an extension to its marketing organization. Software companies want to harness their R&D firepower. And the industry may need their expertise to climb out of its slump. Whether they've got bodies, code or industry know-how, IS shops around the world are packaging their expertise and putting it up for sale.

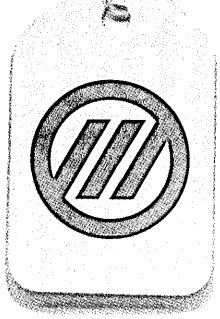
The roster of companies whose IS departments now serve two masters, both internal and external customers, grows daily and includes such big names as American Airlines Inc., Bechtel Group Inc., Caterpillar Inc., First Boston Corp., Kimberly-Clark Inc., Mellon Bank, The Travelers Corp. and Weyerhaeuser Corp. Despite the perceived potential, however, some corporations are steering clear of such initiatives because their IS departments have their hands full or because they fear a conflict of interest.

Corporations such as Aetna Life & Casualty insist that IS should be dedicated solely to the business it is a part of. However, despite its claim that IS has no business being in business for itself, Aetna is not averse to buying products from such IS spinouts—even those created by its competitors. And others that have poohpoohed the idea of IS selling itself believe that it's likely such ventures will evolve as extensions to electronic data interchange networks.

Caterpillar
- Contract programming
- conversions
- educational services
- medical claims processing

The new wave of IS spinouts shouldn't be confused with the activities of American Express Inc., whose $450 million external IS business, American Express Information Services Co., is the cumulative result of 10 years of acquisitions. The ventures tracked by DATAMATION are a direct outgrowth of an internal IS operation. For example, Johns Hopkins University of Baltimore, Md., which spun out its alumni services arm five years ago, is self supporting and acts as a marketing company through sales of alumni directories and direct mail.

In general, universities are headed down the same road as large corporations. "We're already self supporting, and our schools and faculties are not captive customers [they can and do buy outside]," says Maurice Murphy, director of Network Services at Harvard University's Office for Information Technology, in Cambridge, Mass. Murphy, who was lured away from Polaroid Corp., expects corporate talent to be recruited in growing numbers to put university IS departments on a more business-like and, eventually, sales-oriented footing.



Mellon
- Processing
- financial applications
- facilities management

However, the IS spinout concept isn't new; after all, aerospace companies have been turning underutilized data centers into profit centers for years by selling both software and computer time. Some big names, such as Lockheed Corp. and McDonnell Douglas Corp., are even retreating from this type of business. Aren't the current crop of spinouts just more of the same? Or does this round of big IS shops peddling their wares on the outside reflect a singular need to cut costs?

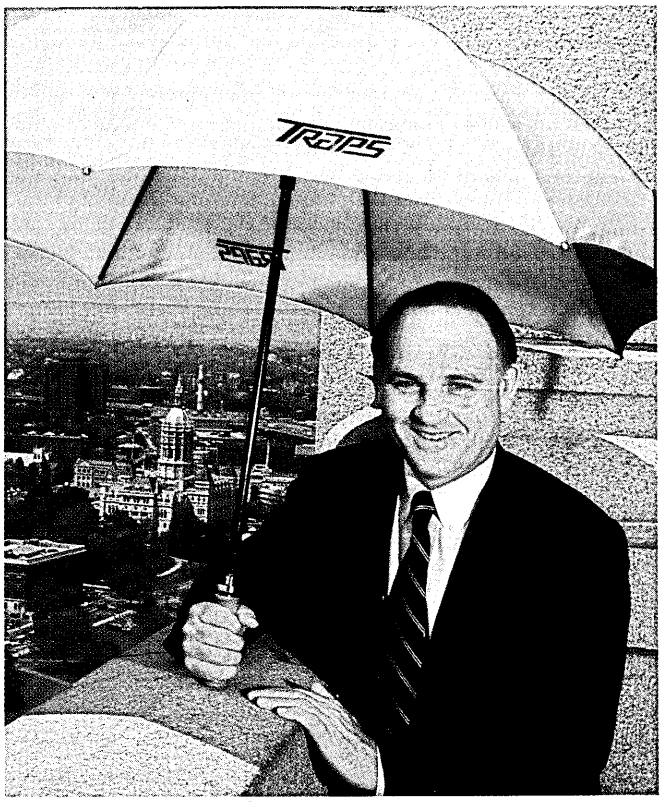
There is some merit in this latter view, say IS managers. IS spinouts sometimes follow in the wake of business reversals or result from corporate downsizing or cost containment. But there seem to be other forces at play in the current trend, too.

Many corporations are simply tired of what some refer to as reinventing the wheel. "Why should I try and recreate a bunch of standards for applications development if they already exist?" asks Jim Beitel,

executive vice president of Information Services at Nebraska-based First Federal of Lincoln, discussing his decision to buy from an IS spinout.

Beitel had been waiting for his vendor, Computer Associates International Inc. of Garden City, N.Y., to come up with new CASE tools for his CA-Datacom /DB data base manager and CA-Ideal programming language. "I don't doubt that over time we could have built something," he says, "but at a user group meeting we found that some other CA customer already had. So we're buying from them." That other customer is paper goods manufacturer Kimberly-Clark, which has just launched a spinout, Kimberly-Clark Computer Services Inc. in Irving, Texas, to sell the fruits of its internal development.

Another spinout customer is L.F. Rothschild Unterberg Towbin Inc. of New York City. Hank Hogan, a former applications manager at the company, says that internal IS staffers at the finance house could have handled the multiple conversions from IBM's DOS/VSE to MVS operating systems that were completed this March. "But it made sense to job this type of grunt work out to someone else," he says. This work helped launch the Caterpillar spinout, Caterpillar Professional Systems Group in Peoria, Ill. "Who knows the needs of an IS department better than another IS department?" Hogan muses. Many times it is the user group grapevine or informal visits by IS staffers to peers at other sites that provide the impetus for new IS ventures.



TRAVTECH'S QUIRK: Some clients have bought several hundred copies of the software product TRAPS.

And there seem to be few qualms about buying from such techies. "If it's the right technology, you'd buy from the devil himself—or, worse still, from competitors," quips Ali Firouz, a business systems consultant at Chubb & Son Inc. of Warren, N.J. Firouz is buying a program-testing-and-debugging tool from another insurance company, "because it's the best solution out there." He also notes that the parents of IS ventures are often corporations with deep pockets. "And it's they who are accountable if anything goes wrong. Often, there's less risk than buying from an independent software vendor. I know that Travelers [the IS organization he buys from] will still be around next year or 10 years from now."

Software companies are also driving the trend to the selling of IS by emerging as big buyers of IS shops' products. Leading software companies such as McCormack & Dodge in Natick, Mass., and Pansophic Systems Inc. of Oak Brook, Ill., test and debug their applications using a tool that came from an IS spinout. "We have a program that is a cruder form of Travelers' TRAPS offering," says Don Friswell, a product design and quality assurance consultant at McCormack & Dodge. "We could plow money into this or into TRAPS. It makes more sense to choose the latter." TRAPS stands for Testing, Recording & Playback System. It is a PC-based program that unearths bugs in software before they surface in expensive production systems.

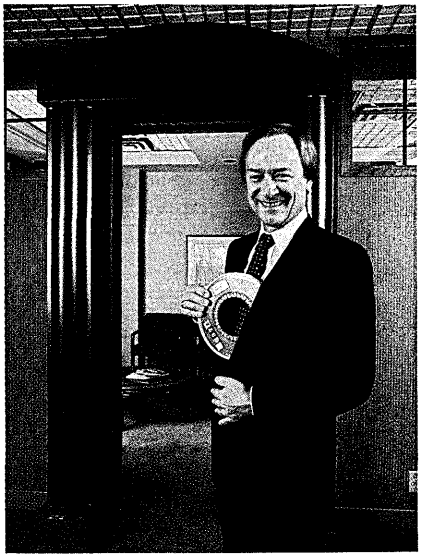
Friswell says that many IS shops are capable of producing hit software. "With the right marketing and distribution, they can take their place in the vendor community," he says—adding that there is a big opportunity for software companies to become the selling fronts for legions of techies in DP shops.

If IS as a separate business is rooted in anything, it's in the industry's need to solve acute problems, Friswell and other experts note. "Customers are only interested in quality and solutions. They no longer care where the parts come from," says Friswell. Partnerships and technology exchanges are the industry's way of putting heads together to surmount its software productivity crisis and reduce development costs.

Computer vendors, independent software vendors (ISVs) and, more recently, consultant/integrators have grappled with the industry's problems for some time, but they have lacked a pool of expertise that the IS shop can provide. Bob Hughes, Digital Equipment Corp.'s vice president of services industry marketing, once said that the biggest barrier to in-

Kimberly-Clark
- Application development tools
- professional services
- systems design and implementation

Photograph by Tom Sobolik/Blackstar



FIRST FEDERAL'S BEITEL: Why recreate standards for existing applications?

dustry growth was a scarcity of network integrators, in particular, project managers (both internal and external to IS shops) with such expertise. Frank Guthrie, a vice president at the forest products giant, Weyerhaeuser of Tacoma, Wash., believes that with increased exposure to outside customers, IS shop technicians could help fill this void.

Industry experts have looked for the next software best-sellers to come from the ISVs. But they may have to revise that outlook. The software package created deep within the bowels of The Travelers, TRAPS, is already a best-seller and the subject of three user group gatherings in 1988 alone.

More than 100 companies have bought TRAPS. Art Quirk, president of the Travelers spinout, Travtech Inc., says that some clients have bought several hundred copies each. TRAPS is priced at $18,000 per five copies and $1,500 for each additional copy.

By some strange twist of fate, an adjunct product for TRAPS, called Scoreboard, comes from an abandoned IS venture that had been known as Hitech. This Hartford Insurance spinout was a pioneer of integrated CASE tools back in 1985 and 1986. The company lost millions because the market wasn't ripe. But, as a part of its legacy, its Scoreboard program has a rating system that determines whether a program should go into production and is now being marketed exclusively by Travtech.

Meanwhile, the potential for IS to sell itself has not been lost on IBM. A scarcity of technical talent, applications expertise and even of funds at times have forced IBM to reevaluate how it develops its systems. For IBM, getting the job done often means going outside. The computer giant would love these IS ventures to weave their solutions around its flagship 309X mainframes to help dispel the growing perception that such machines are "dinosaurs." Those IS shops that do, and there are numerous examples already, could be viewed as extensions of IBM's marketing organization.

But there are dangers to IBM from such immense IS spinouts. "We started out in IBM's good books," says Dean Fitzbag, manager of data communications for General Motors Corp.'s Electronic Data Systems Corp., the company that pioneered FM back in the early 1960s. "But we reached a point when we didn't always replace old IBM equipment with its new offerings. Sometimes DEC or IBM plug-compatible machines were a better choice."

Mellon's Spinout Strategy

The potential for reward and the corresponding potential for peril exists for user organizations, too, which in recent years have farmed out a colossal amount of IS work to outsiders.

A case in point is Mellon Bank in Pittsburgh, a leading edge IBM test site that is generally regarded

Travtech, Inc.
- CASE
- quality assurance software

Photograph by George Ciolla/Blackstar

Spinout Advice From One IS Veteran

A driving force behind the spinout trend is the IS veterans and experienced entrepreneurs who can add marketing refinement to raw techie substance. One such personality is Art Quirk, whose résumé reads, under accomplishments, "Throwing strikes and getting the batter out."

This high school sports phenomenon went on to become a big league pitcher for the Baltimore Orioles and the Washington Senators before permanent fatigue plagued his left arm. Now 51, and after a varied career with IBM, Xerox Corp. and market research and software companies, he's characteristically tackling the toughest end of the IS spinout spectrum, the software business, as president of The Travelers' spinout, Travtech.

But Quirk is undaunted, and with the success of the PC-based Testing Recording & Playback System (TRAPS) behind him, he's working to position The Travelers' large IS group as a development shop for independent software vendors. His advice to would-be IS spinouts is to start small, preferably with a bootstrapped operation.

"We [Travtech] started [in late 1985] with two people and a $200,000 line of credit we didn't really need," Quirk remembers. The twosome sold $500,000 worth of products in its first year and has grown to 20 people and over $2 million a year in sales.

One secret Quirk gladly shares is his three ways to sell software. The first is a highly focused target market. "Don't just go for CASE, for example, pick a segment," he says. Quirk chose quality assurance. The second thing is get into "no warranty" software. "IS managers are willing, even eager, to buy just your source code and customize it themselves." The third key is to spin off packages to ISVs and computer vendors. An example is a DB2-based security system that was sold to a Boston company and became DB View and was in turn sold to the former VM Software, now Systems Center Inc. in Reston, Va. Another product, a VSAM forward recovery system, ended up in the hands of On Line Software International Inc. of Fort Lee, N.J.

Once a spinout is set up and its operations under way, the benefits to the spinout itself become tangible. In addition to a revenue stream, Travtech, for example, ends up with free maintenance and upgrades of its original software. There is also another form of fulfillment. "Travelers' IS group gets an enormous amount of positive reinforcement [and bonuses] of their work knowing that hundreds of companies are using their programs," says Quirk.

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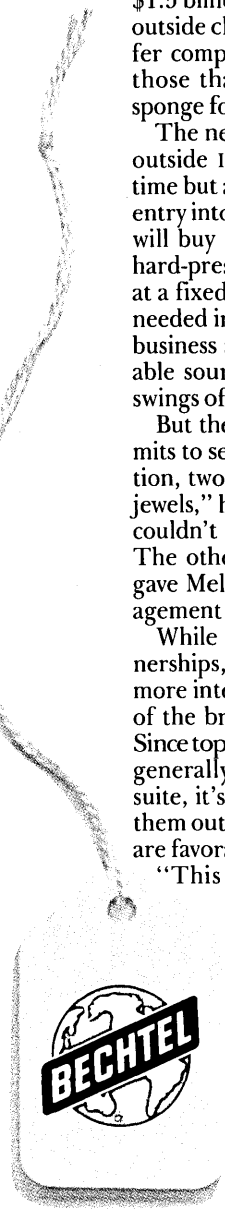
as one of the classiest mainframe shops in the country. Last year, reveals senior vice president of MIS George DiNardo, the bank's big iron processed over $1.5 billion worth of business, 51% of which was for outside clients, such as banks, trusts and stock transfer companies. Every one of these customers, and those that DiNardo has yet to attract, is a MIPS sponge for the next generation of IBM mainframes.

The next step in DiNardo's strategy—the bank's outside IS activities have been going on for some time but are not formally organized as a spinout—is entry into the FM, or total solutions, business. Mellon will buy the DP operations of midsized banks and hard-pressed mutual funds concerns and run them at a fixed cost to the client. The client gets a much-needed infusion of cash and can focus purely on the business at hand. Mellon gets a recurring, predictable source of revenue to offset the wild, cyclical swings of banking.

But there has also been a downside. DiNardo admits to selling a gigantic trust system to its competition, two large banks, in 1974. "We gave them the jewels," he says. One bank botched it up terribly and couldn't get the system to run. A win for Mellon. The other client made hay with the software and gave Mellon a terrible beating in the pension management business. Mellon lost.

While it's true that IS spinouts spring from partnerships, technology exchanges and the demand for more intellectual firepower, it's also clear that some of the breed are created for less laudable reasons. Since top IS professionals and their organizations are generally viewed as cost centers by the executive suite, it's a simple matter to package them and job them out to the highest bidder if their cost dynamics are favorable.

"This is the bad news," says professor James Wetherbe, director of the University of Minnesota's MIS Research Center. "You don't view IS as a separate cost center if it's something integral to your business, something that differentiates you from the competition and gives you a strategic edge."



Bechtel
- **software and services**

Adds Jeffrey Alperin, assistant vice president of corporate technology planning at giant insurer, Aetna: "You don't spin off your IS department if it's viewed as a business partner by top management. You use it to clobber the competition." Alperin, a critic of the spinout trend, says that though many exceptions exist in the form of ventures that complement a company's main business, many are merely "selling cheap MIPS and bodies, often in the wake of reversals in their main businesses."

One other critic goes even further. "[It's] merely a product of the current corporate preoccupation with downsizing and cost containment. I believe it's a passing fad," says M. Victor Janulaitis, chief executive at the Los Angeles-based consultancy, Positive Support Review.

Nick Simonds, director of MIS at Chrysler Corp. in Detroit, raises another objection, saying that his management has steered clear of spinout initiatives because of the dangers of IS trying to serve two masters. "It's easy to get distracted from the mission of serving your own business," he says, noting that outside clients would tend to lure away top technical talent "especially if they were high pay/big perks consultant/integrators."

This is the line taken by other large corporations such as Merrill Lynch, Pierce, Fenner & Smith Inc., Security Pacific Automation Co. and Aetna. But even these concerns agree that spinouts could accelerate as the degree of customer involvement in electronic data interchange grows. "We're putting a new national satellite network in for our dealers, and we could end up offering it to other sources—advertisers, financial companies and so on," says Simonds. He would consider this an example of where spinouts complement rather than detract from a company's main business.

But nagging questions remain: Does a spinout advance the company or just its technical staffs? And, is it possible for IS to serve two masters and still support its company's core mission without distraction and dilution of its efforts?

The answers could go either way, and perhaps therein lies the secret. True competitiveness lies beyond software and technology. The best and the brightest will always win. If the spinout trend is a reflection of a well-differentiated company that views IS as a business partner, IS managers everywhere will win. Going public with such expertise can only give the whole industry a much-needed shot in the arm. ▭

Three Models for Spinning Out

There appear to be three types, or models, of organizations that sell IS. All are profit-and-loss centers, but each functions in a different environment.

The first is the traditional IS organization that also happens to service outside clients. The outside sales activity is usually carried out by the existing IS organization. An example is Mellon Bank. The bank's IS organization has provided processing services and software packages to other banks—including competitors—for 30 years. It operates as a cost center and must fight for a slice of the overall budget with other departments. Last year was a milestone: sales to 450 outside clients exceeded those to Mellon itself—$786 million, as opposed to $745 million.

The second type of model is an actual spinout from an IS organization. A spinout is an organization that is given separate status, but unlike a true spin-off continues to have financial and other relationships with a parent organization. A spinout from a homegrown IS organization is an independent business unit, a self-supporting venture, that is ultimately accountable to the parent. It may or may not have close links with the stem IS organization, but should be viewed as an extension of such an organization. Kimberly-Clark Computer Services is one of the most recent examples.

The third model is not necessarily thought of as a spinout, but could end up as one. Some corporations have acquired IS assets over the years that are eventually spun out when they acquire a critical mass. American Express is a recent example of this type. Amex has bought a number of service bureaus over the past 10 years that together make up a $450 million operation. This composite was spun out in April and named American Express Information Services Co. It has no connection with internal IS.

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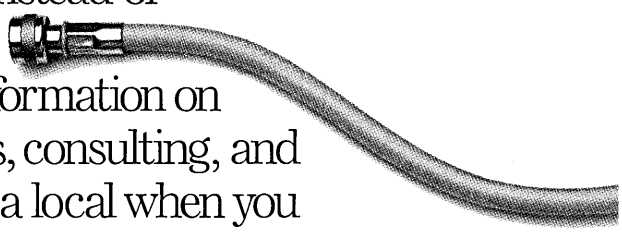

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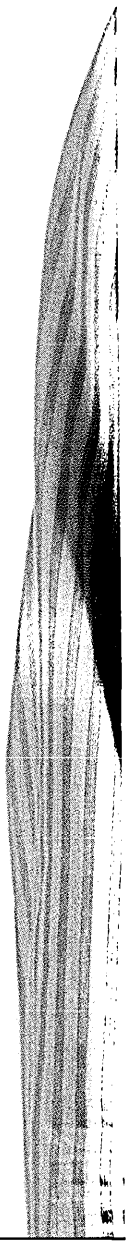

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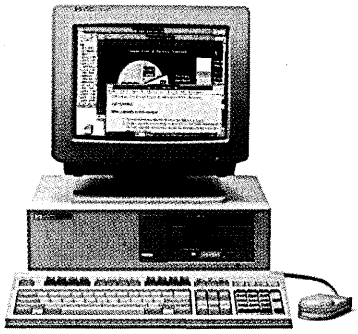

The HP Vectra QS/20 PC. One in a line of eight PCs from Hewlett-Packard.

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Reaping CASE Harvests

A University of Houston survey finds small software projects to be a fertile field for CASE tools. However, the adequacy of current tools for complex software development is by no means widely accepted.

BY MARCUS LOH and R. RYAN NELSON

Obtaining satisfactory results from computer-aided software engineering (CASE) can be a lot like gardening. The size of the harvest is determined to a large extent by when and where the seeds are sown.

Productivity gains from the use of software engineering tools vary depending on the suitability of a software project and programmers' acceptance of CASE, a survey recently conducted by the University of Houston of some 40 programmers, analysts and systems designers at 12 companies reveals. Among the survey's other findings:

- Using CASE typically changes existing development methodologies.
- Training programmers and designers in the use of CASE tools is no simple task. The variety of tools and a reluctance to change development habits are major hurdles to the successful use of CASE.
- Using CASE tends to result in a shift in programming time to front-end development, such as planning and design. Moreover, its use significantly lowers the time spent on writing code and maintaining software.

Overall, survey findings illustrate the selective impact that CASE has on programmer productivity. While companies generally agreed that using CASE tools increased productivity in all phases of the systems development cycle, proficiency in a particular tool, the size of the development project and the degree of tool integration all affect the results that can be obtained.

Beyond productivity, however, improved quality of software products, standardized development techniques and better project management were cited as CASE-related benefits by most respondent companies. But the study also identifies common problems in implementing CASE and shortcomings in the current generation of tools.

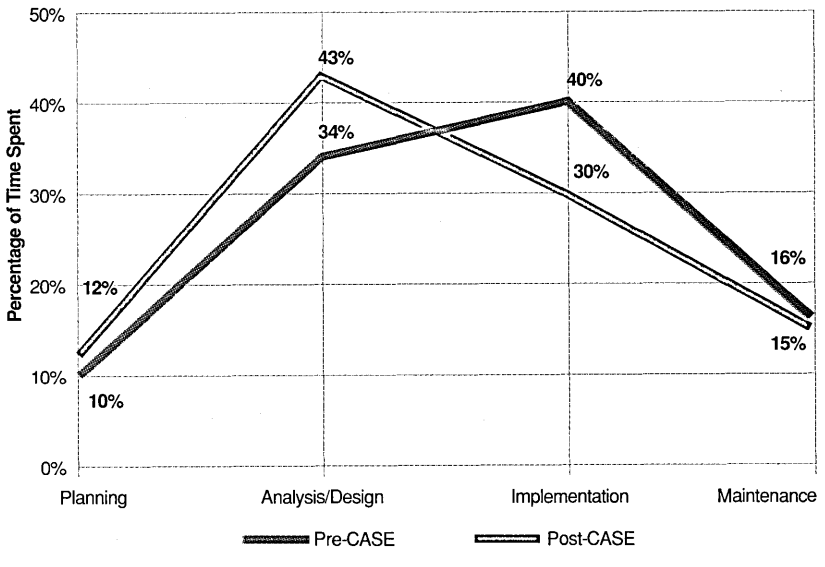
CASE tools automate tasks associated with the software development life cycle. Depending on their degree of tool integration and scope, these tools are either referred to as "toolkits" or "workbenches." For the purposes of the survey, a toolkit is defined to be a set of integrated CASE tools designed to work together to automate, or partially automate, a particular development job or a single phase of the systems development cycle. Workbenches are integrated CASE tools that assist across all phases of the systems development cycle—planning, analysis and design, implementation and maintenance.

Training Is Not Trivial

A significant finding concerned the amount of time most developers require to become adept in the use of CASE. Programmers, analysts and designers report they spend an average of 69 hours learning to use CASE tools on their own. Company-operated group-training sessions and private instruction account, on average, for another 86 hours of training. Such lengthy training requirements can impede CASE use.

Front End Tasks Consume More Staff Time

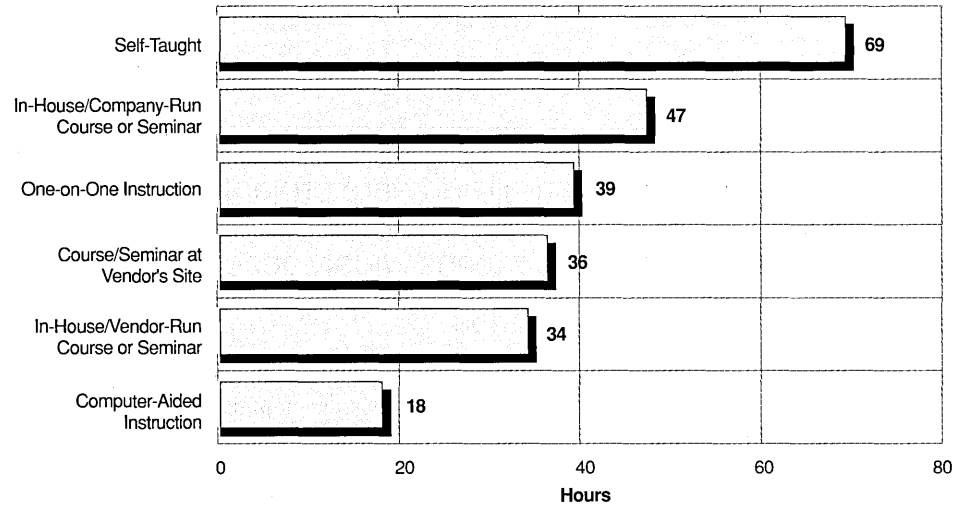
When CASE tools are employed, software development activity shifts from back-end coding and maintenance to front-end planning, design and analysis as a percentage of total time spent.



Source: University of Houston

Training Needs Consume Significant Time

Hours spent individually learning CASE tools far exceeds time in structured courses or seminars.



Source: University of Houston

For instance, hefty training needs prompted Service Corp. International (SCI) to replace a CASE tool from Atlanta-based KnowledgeWare Inc. in favor of data-modeling tools from Kimberly-Clark Computer Services Inc. in Dallas. The latter tools are tailored to a fourth-generation language and data base that are familiar to SCI's programming staff.

"The learning curve was much more difficult than we thought it would be," says George Shackelford, director of management information systems for SCI, a Houston-based operator of funeral homes. "Training was expensive, the package was expensive and then we found we had to spend several months to become proficient in it."

Training needs may reflect the users' tendency to implement two or more different CASE tools. In our sample, 26 different CASE tools were used among the surveyed companies. These firms showed a more than two-to-one preference for toolkits over workbenches. All but three of the 12 companies surveyed acknowledged using two or more vendors' tools.

Reasons for CASE Failures

A lack of involvement in selecting the CASE tools by those who use them may affect training needs. Most of the programmers and analysts we surveyed did not participate in their company's tool selection. In addition, poor training is high on the list of reasons for CASE failures, says Neil Tramel, an Electronic Data Systems Corp. development manager in Houston. But, according to Tramel, the three most common reasons for failure are a staff that doesn't understand methodologies, inadequate staff training and operating without management support.

Among the reasons for tool selection, survey respondents mentioned text and graphics integration, flexibility for stand-alone or LAN-based use and suitability for particular applications.

☐ Poor Data Sharing By Existing CASE Tools Confines Use To Small Projects.

CASE tools primarily are applied to the front end of the systems development cycle among the companies we surveyed. Every company acknowledged using at least one tool for the analysis and design phase and 75% used planning tools. Only 50% use tools for back-end coding and maintenance phases. One-quarter of the respondents reported using CASE tools throughout the systems development cycle.

On a scale of 1 to 5 (ranging from poor to exceptional), survey respondents rated their CASE tools a favorable 3.69. For individual phases of the software development cycle, CASE tools rated weakest in implementation (3.38) and maintenance (3.40) and strongest in analysis and design (3.85). Planning tools received moderate approval, with a rating of 3.50.

The higher rankings for front-end tasks support one respondent's conclusion that CASE tools provide "significant productivity gains on simple tasks, but there are no savings for complex tasks." The greatest savings in development come from automating merely clerical functions, such as diagraming. For instance, one company reports that, using CASE, a data flow diagram that ordinarily took two to three weeks to develop manually was constructed in one to two days.

Such benefits disappear for development projects ordinarily taking more than two years to complete. On projects of up to two years, CASE appears to have been able to reduce the average number of hours spent per project by 20%. For projects over two years, however, there was no significant reduction in time.

We believe the root of this productivity decline is the difficulty current tools have in sharing data. Given the greater data-sharing requirements of complex systems, this drawback places a restriction on the use of CASE tools in larger development projects.

The companies that we interviewed indicated that this lack of, or awkward nature of, interfaces to other tools, combined with poor compatibility, was a serious shortcoming of CASE tools. Furthermore, the typically long learning curve and the lack of a facility to forecast performance of the target system were mentioned as weaknesses by most companies surveyed.

Another sign of the immature state of existing tools was reflected in the time spent in the various phases of development. Prior to the implementation of CASE tools, companies reported that 44% of development time was devoted to planning, analysis and design. After using these tools, this percentage increased to 55%.

Our conclusion is that CASE tools effectively shift manpower expenditures to the front end of the development life cycle. However, this should be viewed as a benefit. Many experts claim a higher percentage of time should be spent in front-end activities.

More than 80% of the companies interviewed reported altering their chosen methodology as a result of using CASE

re·li·a·bil´i·ty, *n.* 1. the state of having qualities that merit confidence or trust; as, a *reliable* friend. 2. suitable or fit to be counted on; won't let you down. 3. yielding the same result on repeated trials.

see LIEBERT

tools. For example, four companies acknowledged adopting Gane and Sarson standard methodologies for data analysis and design. In fact, only two companies were able to use CASE tools with their existing methodology.

User Involvement Helps

Virtually all companies cited productivity increases in the analysis and design phase. For example, they found that information was captured quickly in joint application design sessions. Similarly, quality improvements were attributed to the enhanced user participation in analysis and design.

Respondent companies also averaged a 35% increase in productivity in the maintenance phase because applications required less rework. Having a common structure across programs made the maintenance effort much easier, they felt. Only two companies reported a reduction in productivity in the implementation and maintenance phases. Those who experienced a productivity decrease felt that less time was allocated to the latter phases and too much time to analysis and design.

Users generally indicated that CASE tools not only promoted gains in productivity but also provided consistency, facilitated communication and achieved significant savings in development time. CASE tools allowed designers to produce and maintain standardized design formats and similar screens and menus. This consistency permitted easier movement of people from one job to another. Better communication resulted from the joint analysis and design workshops at one company, allowing for better understanding by users, designers and managers. Moreover, the tools' graphic depiction of complex systems forged a common language for designers and users to discuss projects.

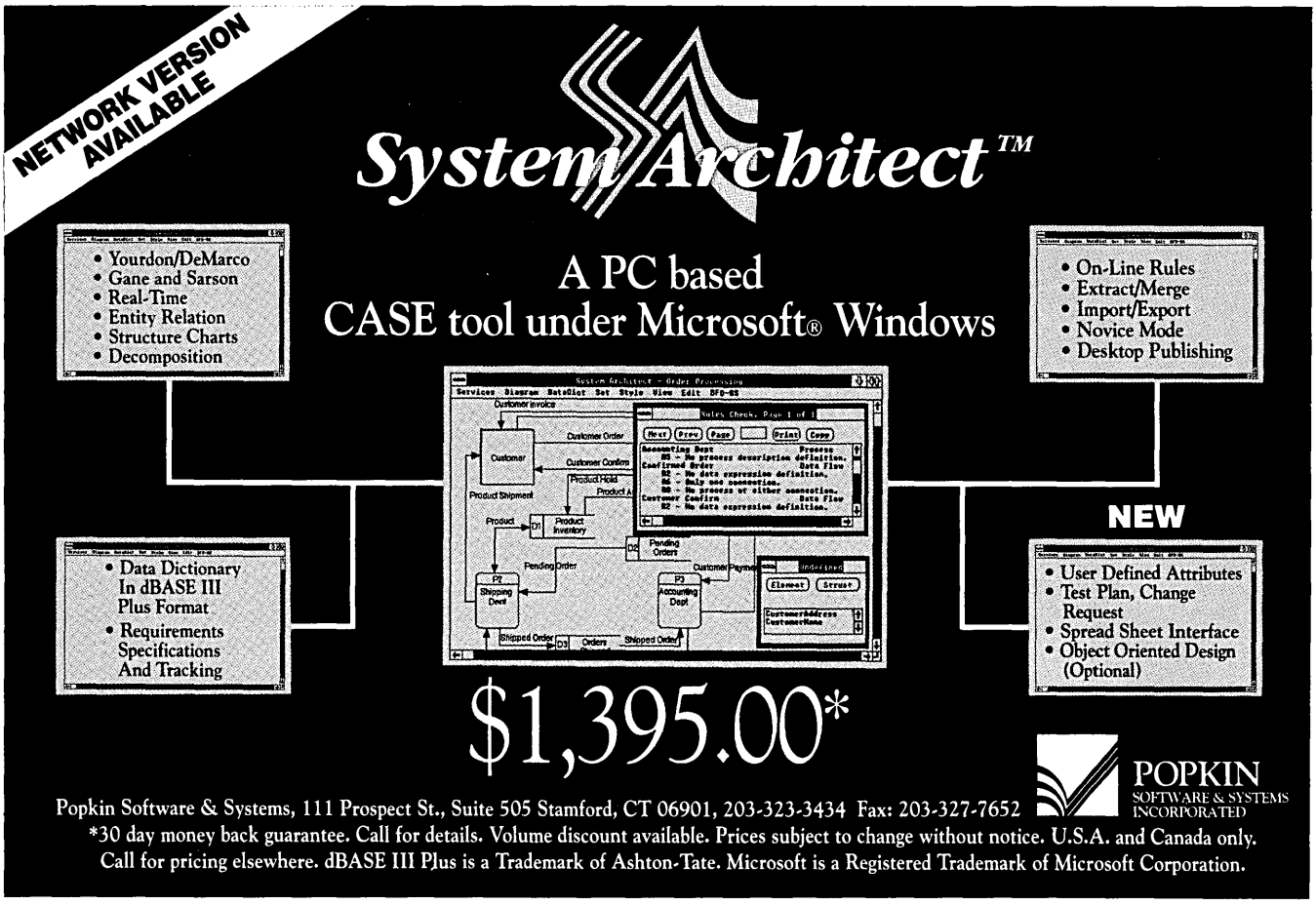
Better quality projects are produced more quickly after using CASE tools. This improvement is attributable to the use of diagraming and the resulting more precise data model.

Virtually all respondents asked for better interfaces and integration, reflecting a belief that there is no comprehensive tool that can handle all phases of the systems development life cycle. Even if such a product were available, respondents said, they would still be concerned about its ease of use.

Based on the findings in this survey, CASE tools have had a significant impact on the systems development process. Not only do programmers and analysts seem to become more productive they also seem to spend more of their time in the early phases of the development life cycle rather than on implementation and maintenance.

However, the unevenness of productivity gains across the development life cycle suggests that improvements are needed in tool integration and/or interproduct compatibility. The long learning curve that current products require also suggests companies must continue to devote a high level of organizational resources to CASE training. ▭

Marcus Loh is a graduate student in business administration, and R. Ryan Nelson an assistant professor of management information systems, at the University of Houston.



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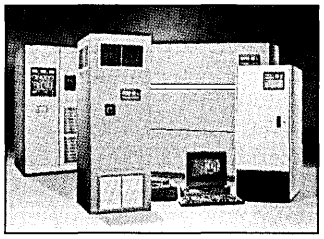

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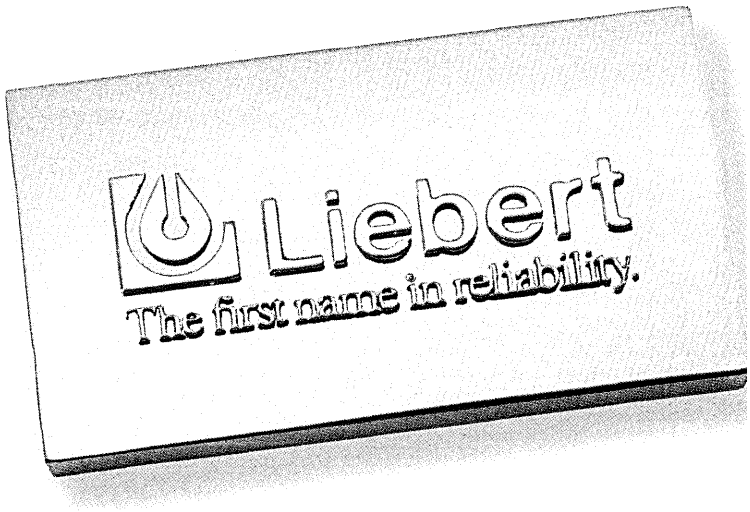

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Tracking the Wild Data Base

Data base monitoring and SQL optimization tools are finding a place in those DB2 data base shops where production applications compete with ad hoc queries for precious system resources.

BY TOM McCUSKER

Database 2 (DB2) customers are fast becoming the great hunters of the IS world. As the relational data base moves into broader use, IS shops are learning to track poorly constructed queries, trap errant SQL statements and, generally, protect system resources from the carnivorous appetites of less skillful data base users.

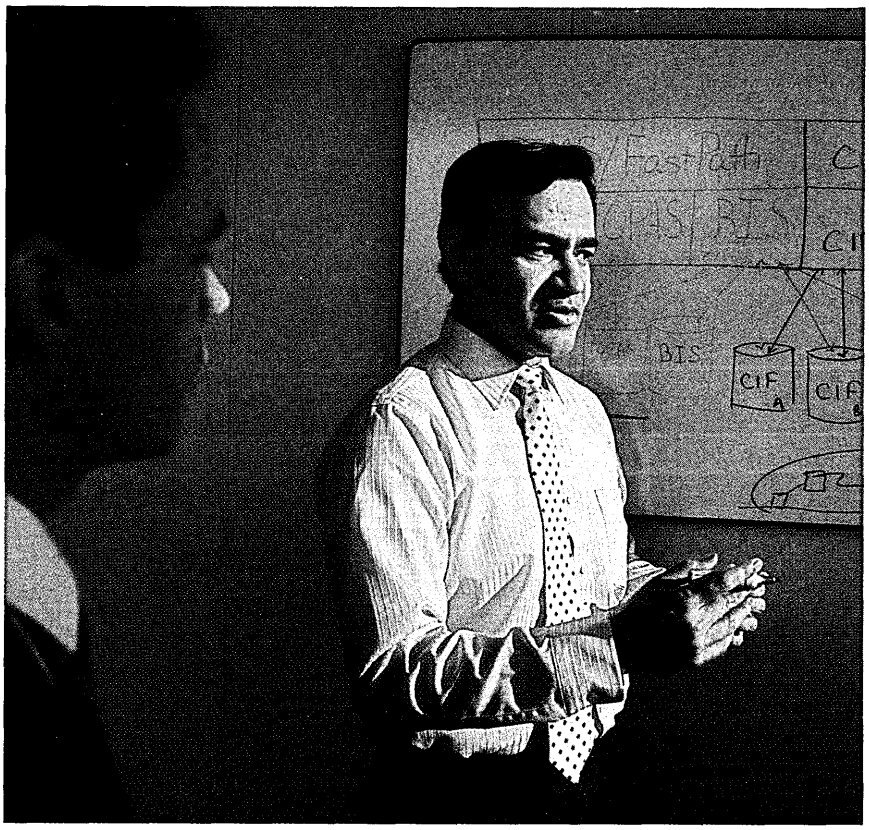
The need is especially apparent as production applications begin jostling end-user applications for system resources. In part, the demands stem from a recent tendency to open the data base to end-user queries. A single data base query can consume as little as five seconds to as much as five hours, depending on how well it is structured and the data access managed.

As DB2 usage expands, some customers have found the right prescription for performance woes in monitoring tools that include DB2 Manager from Boole and Babbage Inc., Omegamon from Candle Corp. and Insight/DB2 from Data Utility Group Inc. Still others are joining IBM's Query Management Facility (QMF) with SQL optimization packages to check the system demands of ad hoc queries.

"More experienced users think DB2 is the most elegant software product ever offered by IBM. But to the less experienced, it's a [resource] hog," says Gerald S. Hodge, a consultant with Los Angeles-based Candle Corp., a company that makes software to monitor computer performance.

Even DB2's QMF, which enables users to issue dynamic queries to the data base, offers limited guarantees that a user query won't tie up much-needed resources, according to Hodge. He recalls one such query that took six days to be answered. In part, such problems derive from the flexibility by which information can be stored in DB2. A poorly constructed query can request more information than users really need, Hodge explains. For those programmers or end users kept waiting for a query to be processed, more is definitely not better.

"DB2 has made it very easy functionally to produce systems. But if these systems are going into a production environment with a large number of transactions, then you've got to look at performance," advises Arun Ghosh, division manager for data base services at Security Pacific



SECURITY PACIFIC'S GHOSH: Fine-tuning SQL statements and encouraging programmers to use indexes keep DB2 from consuming too many system resources.

Photograph by Nik Wheeler/Blackstar

Automation Co. of Los Angeles.

The company, which provides information services to Security Pacific Bank, follows several guidelines to prevent unwieldy queries from impacting system performance. For instance, it constantly fine-tunes SQL statements and pushes developers to use indexes often. That's no small feat given that the bank's 20 DB2 applications employ tables with up to 10 million rows each.

In addition, Security Pacific uses Omegamon to monitor the efficiency of its data base usage. The services company was an early support program user of DB2 Version 2.1 and has more than a year's experience with versions of the relational data base.

Planning is essential to running an effective relational data base management system that doesn't consume CPU time or cause unacceptable surges in I/O activity, according to users such as Ray Stephenson, data base administrator at Sara Lee Direct, of Winston-Salem, N.C., a unit of food giant Sara Lee Corp.

Avoiding the Money Pit

"Unlike other data base management systems, DB2 is easy to use, highly flexible, can eliminate your data base administrator and is able to work across very large data bases," says Stephenson. However, he warns that a poor implementation can just as easily turn into a money pit. "You have to do the same things as installing IMS [Information Management System], and you've got to learn how to code SQL or performance will suffer."

Like many other DB2 licensees, Sara Lee Direct monitors all applications before they go into production. The company uses Insight/DB2 from Database Utility Group of Federal Way, Wash. Such monitoring "allows us to catch problems in development before they ever impact production," Stephenson says.

Janet Weber, systems programmer at Monumental Life Insurance Co. of Baltimore, says performance studies are turning up problems caused by a lack of planning. Monumental gave Weber a year to design standards, build DB2 tables and design queries for end users to run against the data base.

For example, Weber brought in Insight/DB2 to determine the source of response time problems on a CICS DB2 application. After editing the requests, she learned that a frequently used query was too vaguely structured to identify the correct index. Each time it was made, the entire index was read, and then every record in the data bases referenced by the indexes was also read.

"This can't be corrected by the system alone. It needed special monitoring," says Weber. She used DB2's Explain facility, but all it told her was that the index was being searched, not that every page of data was being read, as well.

Events that clobber response times can be controlled with IBM's QMF, a DB2 option for processing interactive queries. DB2 and QMF each include a resource governor to control the amount of system resources a query or series of related queries can consume. When a query exceeds predetermined limits, it is automatically shut off.

☐ Sara Lee Monitors Its DB2 Applications To Catch Problems Early.

Philip Morris USA uses that approach to save resources on a mass mobilization system of names, addresses and other characteristics of people who have an interest in the tobacco industry. At least 30 end users query the data base using QMF each day, says Cary Jones, a senior technical analyst for computer planning at Philip Morris in Richmond, Va. However, not everyone considers the governor to be helpful. Monumental Life's Weber says the QMF governor has been used only in test environments.

Flood of Queries

"As we open the door to ad hoc [queries], we have to prepare for the water that rushes through," says Christopher Myers, a senior data base consultant with Security Pacific. Myers' chief concern is that user queries do not negatively impact bread-and-butter production systems now running at the bank.

While agreeing that end users should be advised that optimum ad hoc query structures save resources, Ghosh of Security Pacific thinks proper SQL programming shouldn't be a user's first concern. "Users should be focusing on the business. They know how the business runs and, as part of doing their job, they need to use the system to get at data.

"On the other side of the coin, there are queries that will eat you alive," asserts Ghosh. As ad hoc queries have grown, Security Pacific has begun to examine the most efficient way to process them. Under study are such variables as processor requirements and software and hardware alternatives. "We're talking very large data bases of maybe 30, 40 and 50 gigabytes that could be [facing] very complex ad hoc queries," Ghosh adds.

Others are pursuing dual data base strategies to separate ad hoc queries from their production applications. For instance, United Parcel Service of Paramus, N.J., is diverting ad hoc applications from its IMS data base to a DB2 data base, according to capacity planner David Feigenbaum. The company assigns the more frequently requested data to DB2. In the face of some 15,000 queries per day, the extraction method has prevented serious contention problems, Feigenbaum adds.

PCs Relieve Host

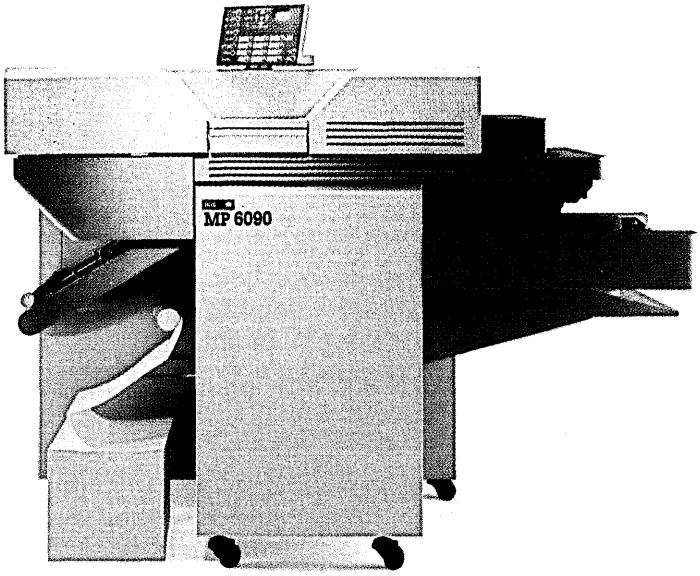
Offloading the mainframe is another strategy employed at Toronto-based Central Canada Grocers, one of a growing number of companies providing users with PC/SQL from Micro Decisionware of Boulder, Colo. The package enables end users to retrieve data from host data bases by means of menu-generated SQL statements. Douglas Chmara, senior technical analyst with the company's IS operations, says the product lets users do "what if" work without eating up mainframe cycles.

PC/SQL is part of the concept of cooperative processing, where data can be extracted from host mainframes; it can be updated and then uploaded to the host to populate DB2 data bases. About 100 installations now use the Micro Decisionware product; last year, the company was named an IBM authorized application specialist for DB2.

As performance monitors proliferate, DB2 users may come to realize more fully the promised elegance of what IBM calls the DBMS of the 1990s. "We bought it because—like SAA and IBM's Cross System Product (CSP)—we were told it was the direction of the future," says Stephenson of Sara Lee Direct.

These performance measurements, however, may also lead users to question the added resources DB2 requires and perhaps have second thoughts about trade-offs. One user says DB2 requires at least five times the system resources of flat file-based applications. Users such as Biggers Brothers of Charlotte, N.C., and Irving Oil in Saint John, New Brunswick—both of which have installed DB2 on 4381 class processors—are quickly having to move up to 3090s.

"I feel like I have a tiger by the tail," jokes Cary Jones of Philip Morris. "And I can't let it go. Too much is invested in it." ▭



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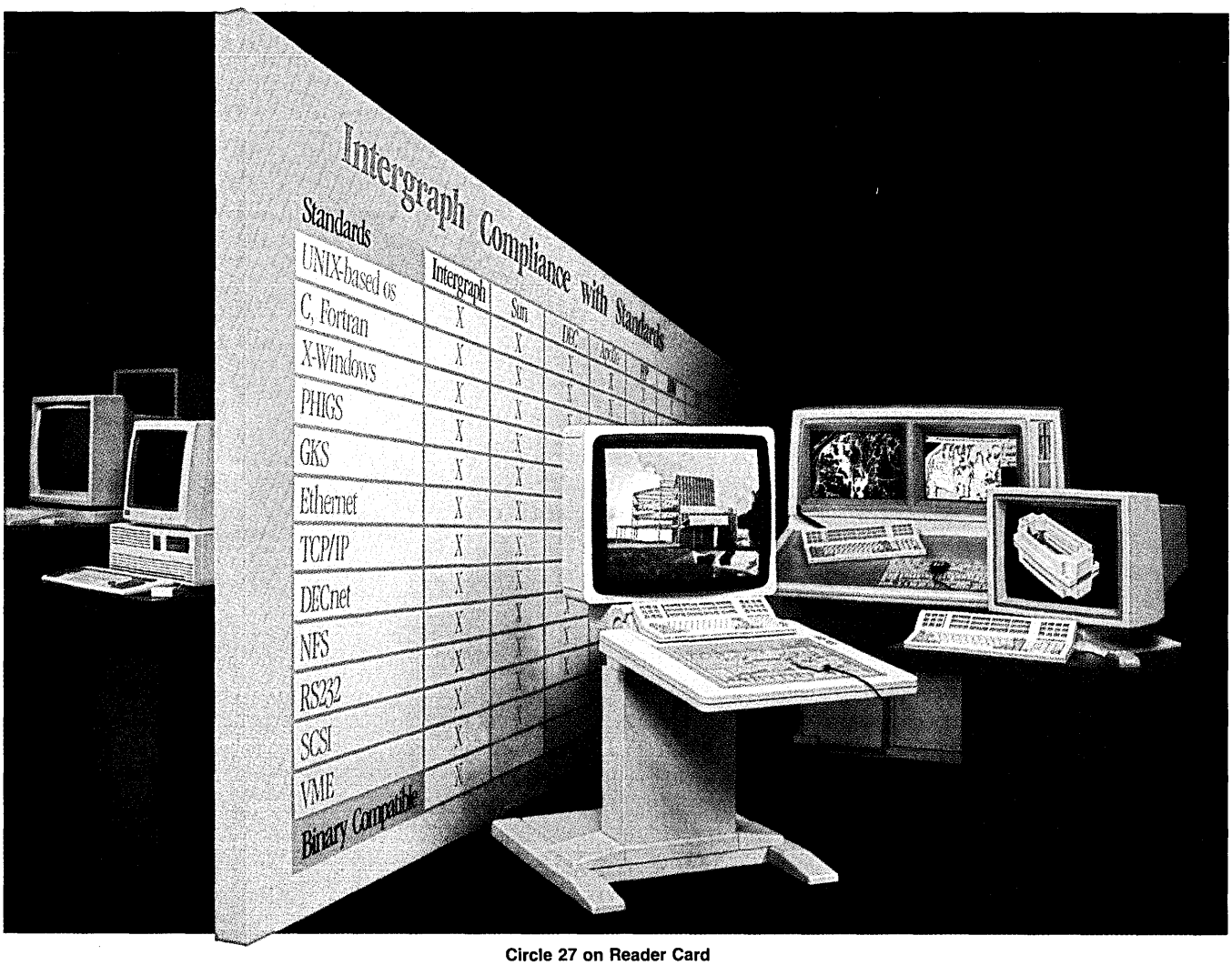

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Can Stand-Alone EISs Stand Up?

A handful of novel, micro-based programs, loosely referred to as hypertext, are being used by IS and non-IS developers to change the look of a few high-profile executive information systems. But will they keep executive users satisfied?

BY STEPHEN G. DAVIS

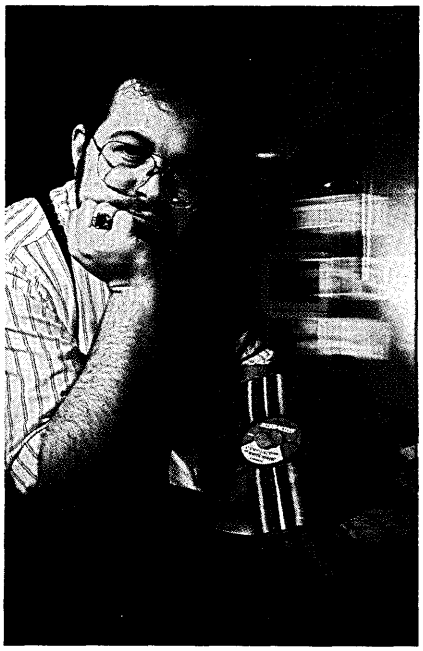
Throughout last year's presidential campaign, the senior anchormen at ABC News had an edge over their rivals at NBC and CBS. While their counterparts sat sifting through piles of 4×6 cards for their notes and for late-breaking bulletins, ABC's Peter Jennings and David Brinkley used a computerized information retrieval system that gave them on-the-air access to a vast library of political data.

The microcomputer-based program, essentially an executive information system (EIS), boasted graphics-intensive software and a touch-sensitive screen. It provided facts and figures about the candidates, their views on key issues, maps of convention halls showing where delegations were seated, not to mention the anecdotes and trivia about states and congressional districts that made the coverage so, well, watchable.

What makes this EIS even more remarkable, though, was the fact that it was developed in less than two man-months by one of ABC's producers, assisted only by an Apple Computer Inc. consultant. David Bohrman, a senior producer in ABC's Election Unit, says he did most of the coding himself, using a Macintosh-based, application-cum-development tool called HyperCard.

HyperCard is one of a novel breed of software loosely referred to as "hypertext." Hypertext is a microcomputer technology that makes it easier to retrieve random data by mimicking human thought processes (see box, "A Word About Hypertext"). The low cost of many hypertext-based packages is making it possible to develop lower cost EISs faster than ever. Apple, for instance, sells HyperCard for $49 and bundles it free with new Macintoshes.

These rapidly developed, low-cost micro-based EIS solutions, like ABC's, represent a new approach to an application that is gaining in popularity at many large corporations—despite, in many cases, minimal support from in-house IS. But even though the benefits of micro-based EIS are undeniable and developing them with hypertext products have made them more attractive, they have their limitations. Consequently, the more expensive, host-based EISs, both developed in house and from off-the-shelf packages, continue to dominate the field.



ABC's BOHRMAN: Teamed up with Apple to provide the network's election coverage.

Photograph by Ken Kerbs

At Chase Manhattan Bank in New York City, an EIS running on a Wang VS mini gives the top management team access to a data base of 30,000 worldwide business contacts while also automating routine office paperwork. Norman Ross, vice president of corporate communications, who works in the Chase data center that developed the EIS, began last year to look into migrating the system to IBM PC-compatibles to integrate new capabilities and perhaps take advantage of existing PC-compatible software packages. Ross built a new EIS prototype with a PC-based hypertext package called KnowledgePro, from Nassau, N.Y.-based Knowledge Garden Inc.

Cost Savings Are Real

Developing a HyperCard-based EIS that runs on a Macintosh, says Ray Palkovic, director of information systems technologies at GTE Corp. in Stamford, Conn., "gave us [in IS] the greatest amount of one-on-one contact with senior managers we've had in a development effort. It takes you from being the back-office accounting type to being an integral part of the business."

Other companies that have used micro-based EISs, in either pilot or production efforts, include DuPont, Lever Brothers Co. Inc., Mrs. Fields Inc., TRW Inc. and Union Carbide Corp.

Most stand-alone EISs run on IBM PC ATs and compatibles, which are also the preferred workstations for host-based EIS packages. In the United States, at

least, significant activity also centers on the Macintosh. Prices start as low as nothing (for bundled HyperCards) and can run up to $60,000 for turnkey installations of a customized PC-based EIS.

A System in Six Weeks

Users of these systems confirm that the savings with PC-based EISs are real enough. "We planned on spending $60,000 and six months doing the investigative work alone [for a host-based EIS]," says GTE's Palkovic. "Our project manager came back in six weeks, not with a prototype but with a working system." Palkovic and project manager Don Ginsberg figure the total cost of GTE's system was $14,000.

However, despite such cost savings, host-based systems remain the preferred EIS solution when large data bases need to be updated frequently. Even with hard disks, PCs are too small to contain the volume of data an EIS needs to satisfy executives at a typical large organization, warns John Paton, U.K. marketing manager for Thorn EMI Computer Software, in Middlesex, England. "It's [having] the optional information [always available] that matters, not what a senior executive may want on any one occasion," he adds. "If it's not there, he's going to be disillusioned very quickly."

Keeping EIS data resident on a single mainframe, adds Charles Hubbard, vice president and manager of management and financial IS at Marine Midland Bank in New York City, "avoids the confusion which would quickly destroy our credibility." Hubbard says that Marine Midland's EIS, which has over 100 users, further ensures credibility by gathering information from other systems automatically—that is, without having to enter the data a second time and thereby introduce another level of errors. Furthermore, Marine Midland's system displays the names and phone numbers of all information providers on each EIS screen.

Of course, the advantages of a host-based EIS do not come cheap. These packages cost between $30,000 and $300,000, according to vendors, and users most commonly spend between $100,000 and $150,000 per installation. Many observers say that customizing the packages usually doubles the expense. Even those who opt to develop such systems entirely in house can easily spend $50,000 to $100,000, either on tools or simply on maintenance time.

For their part, users experienced with lower cost micro-based EISs maintain that with the right connectivity scheme, their systems can do anything a host-based EIS can do. GTE's micro-based EIS, for example, uses dial-up communications to fetch data generated by the company's mainframe-based financial decision support systems (DSSs).

Big Vendors Interested

The connectivity of micro-based systems continues to improve, developers say, as vendors have come to appreciate its significance. At Northeast Utilities Service Co. in Rocky Hill, Conn., staff accountant Michael McCartney is working on a HyperCard-based PC EIS that uses data stored on an IBM mainframe. With new products designed to link various vendors' systems, he says, "eventually, we'll be able to connect VAXs, IBM mainframes, Apples and other PCs."

The micro-based EIS market remains primarily the province of consultants and small start-up firms, but this situation is beginning to change, too. Apple, for example, is showing its own EIS to business companies with the hope that EIS will help sell Macintoshes to corporate America.

Apple's information management marketing manager Don Nanneman, who is spearheading the EIS push, claims HyperCard-based EISs can help developers overcome what he sees as the two biggest constraints on EIS use: "the cost of implementation and the amount of meaningful functions that any system can address."

Another major vendor openly eyeing the micro-based EIS market is Wang Laboratories Inc., which claims that "executive decision support" is a target application for its new office automation product, Freestyle. The product, a $2,000 hardware and software package designed for PC ATs and compatible workstations, features an icon-intensive interface and allows users to add notes to screens captured from any PC applica-

A Word About Hypertext

Many users of executive information systems are often already familiar with the key attributes of hypertext, even if only due to a superficial and, in some cases, coincidental convergence of ideas. "We didn't [initially] know about hypertext," says Pilot Executive Software's chairman David Friend, describing the development of the user interface to his firm's EIS product, Command Center, which debuted in 1985. "What we were trying to do was develop something so obvious that executives could use it. It wasn't until about a year ago that a magazine editor pointed out that what we had was hypertext."

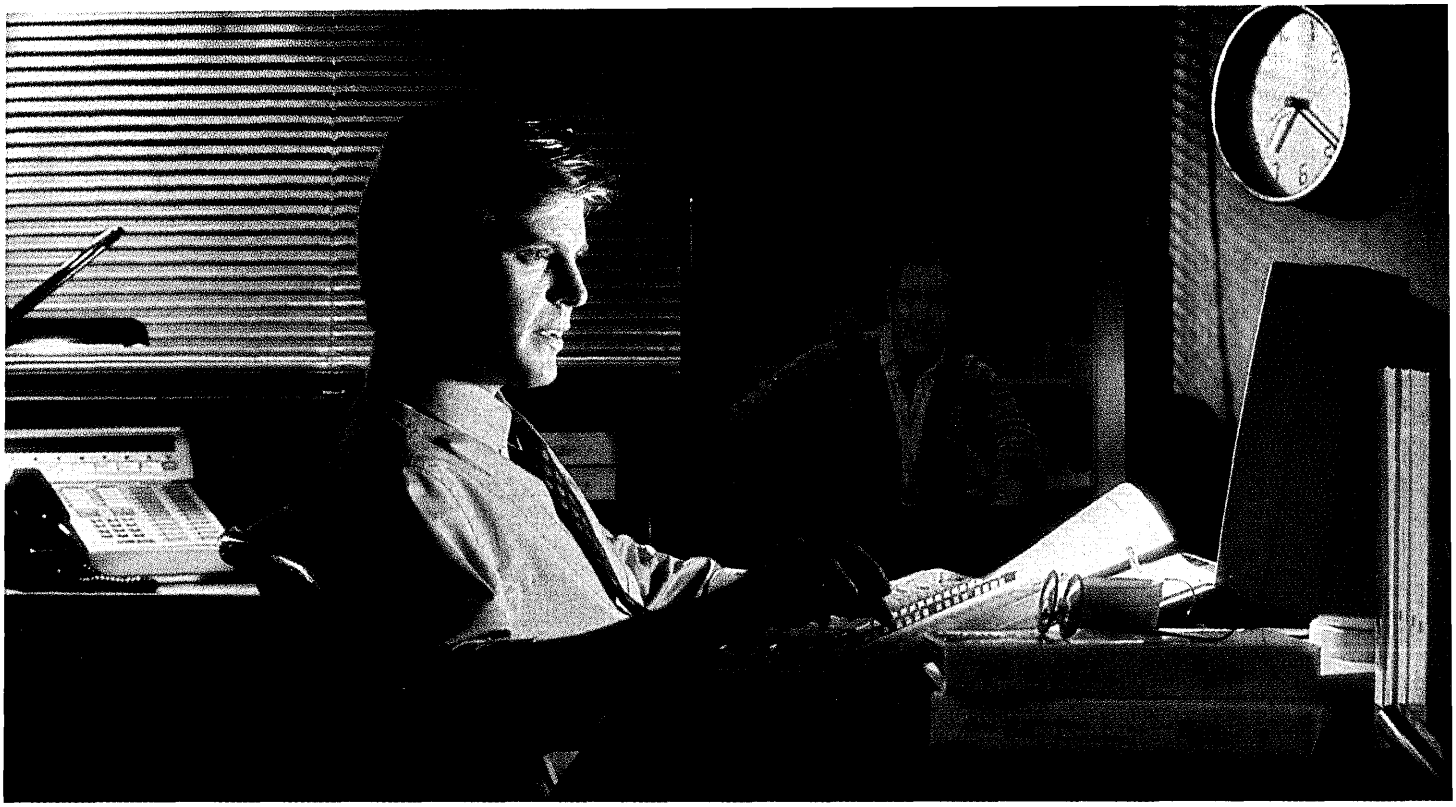
The word *hypertext* was coined by Ted Nelson, a computer researcher and entrepreneur (see "The Tyranny of the File," Dec. 15, 1986, p. 83), to describe a vision of reorganizing computer data so that access to it more closely resembles the way the human mind works.

Some people trace the idea back further, to a 1945 *Atlantic Monthly* article, "As We May Think," by Vannevar Bush, who built a pioneering analog computer at the Massachusetts Institute of Technology in the 1920s and later served as President Franklin Roosevelt's wartime science adviser. "The human mind," wrote Bush, " . . . operates by association. With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain."

It follows from this line of thinking that the traditional means of storing data on a computer—the file—is a clumsy way to label and group together related items of information. Deliberately or not, EIS developers have borrowed this insight from the hypertext concept. So, instead of forcing users to remember arbitrary filenames and presenting information sequentially in a fixed order, EIS developers using the hypertext system organize data according to a more three-dimensional model.

Labels and connections can be drawn between separate pieces of information in a hypertext system, and these, in turn, become an essential part of the information.

The standard components of many EISs aimed specifically at making them easy to use are often typical of hypertext systems, as well. Nelson has been working since the 1960s on a hypertext system, Project Xanadu, which is now being developed for Sun Microsystems Inc. workstations under the sponsorship of the Sausalito, Calif.-based software maker, Autodesk Inc. Other developers active in pursuing hypertext projects include Bellcore, McDonnell Douglas Corp. and Xerox Corp.'s Palo Alto Research Center.



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tion with an electronic stylus and pad, among other things. While conceding that Freestyle "is not an EIS in the conventional sense," Wang's director of product marketing Sharon Matthews argues that it could be the basis of an EIS.

Vendors of host-based systems feel that the advent of micro-based EISs is muddying their market because they often make use of products and tools not expressly designed for EIS. Apple's HyperCard, for example, was not designed expressly as a business applications development tool. The EIS market "is really abstract and difficult to quantify," concludes Clare Gillen, an analyst with the Framingham, Mass.-based market research firm International Data Corp.

While specific figures on sales of these low-end EIS systems and development tools are not available, sales of host-based EIS products in 1988 grew over 50% from 1987, to about $34 million, according to IDC.

Done Right, Worth Millions

The advent of the stand-alone micro-based EIS also "makes the EIS marketplace a bit less clear for the purchaser," says Thorn EMI's Paton. Thorn is the European and Australian distributor for a host-based EIS called Command Center, developed by Pilot Executive Software of Boston. "We're seeing exactly the same [division of the EIS market] over here," Thorn says.

Both host-based and micro-based developers tend to agree that EIS, when done right, is worth its cost.

Maybe so, but don't expect every executive to agree, say IS staffers who have delivered EISs. A successful EIS installation, they say, requires not just technical virtuosity but an abiding sensitivity to all the people involved. "You have to be careful to work with those who support you," advises Tesfaye Aklilu, manager of executive support systems at Xerox Corp. of Stamford, Conn., and not make people unused to such systems uncomfortable. A case in point: for all the user-friendliness built into ABC's news-anchor EIS, "David Brinkley never really used it," says senior producer Bohrman, with a shrug. He smiles and adds: "But then, he doesn't even use a notebook." ▭

Stephen G. Davis is associate editor of the "Business Week Newsletter for Information Executives."

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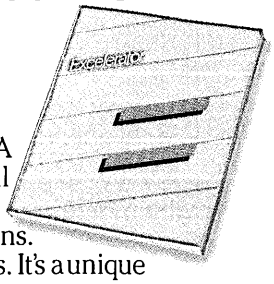

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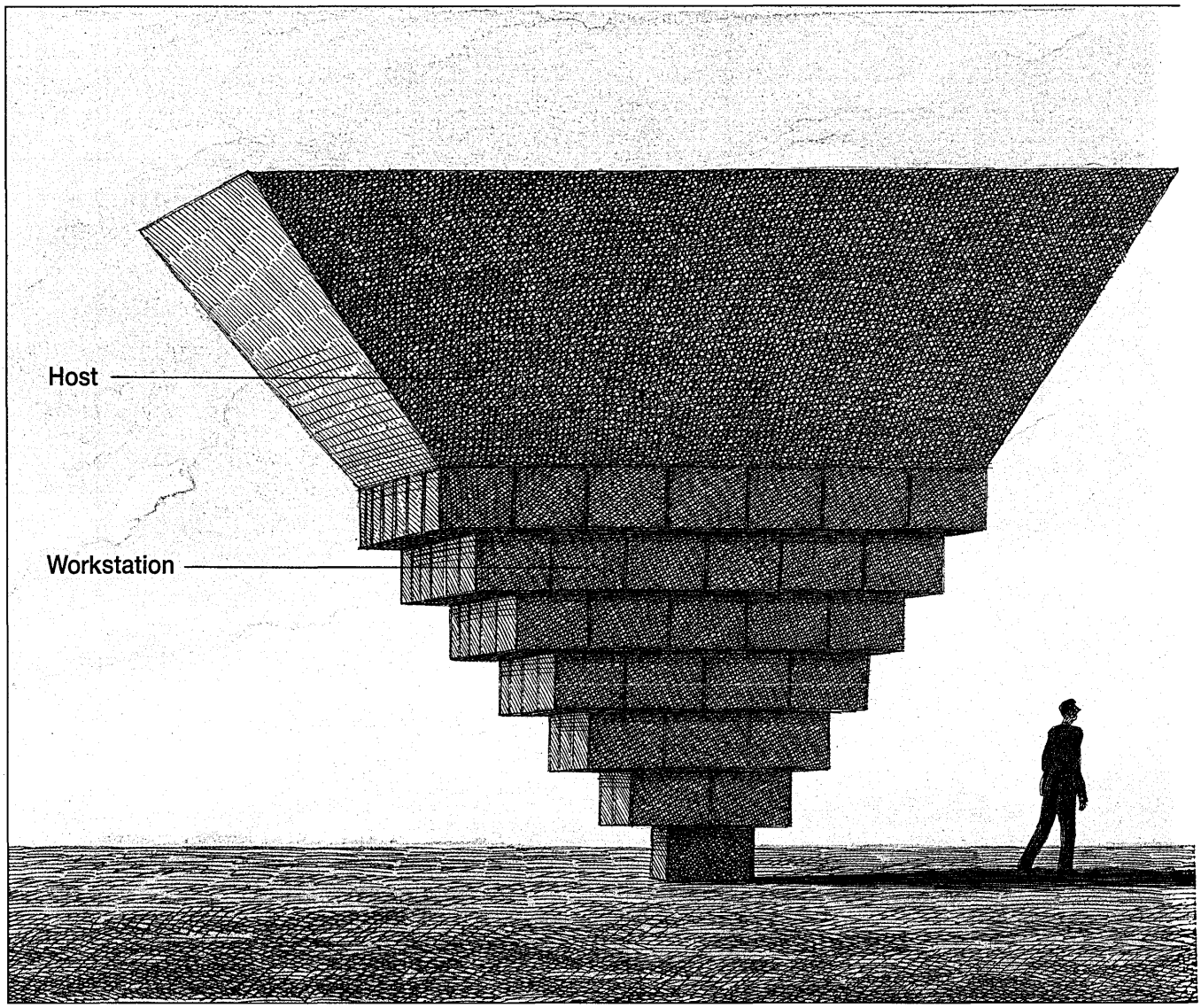

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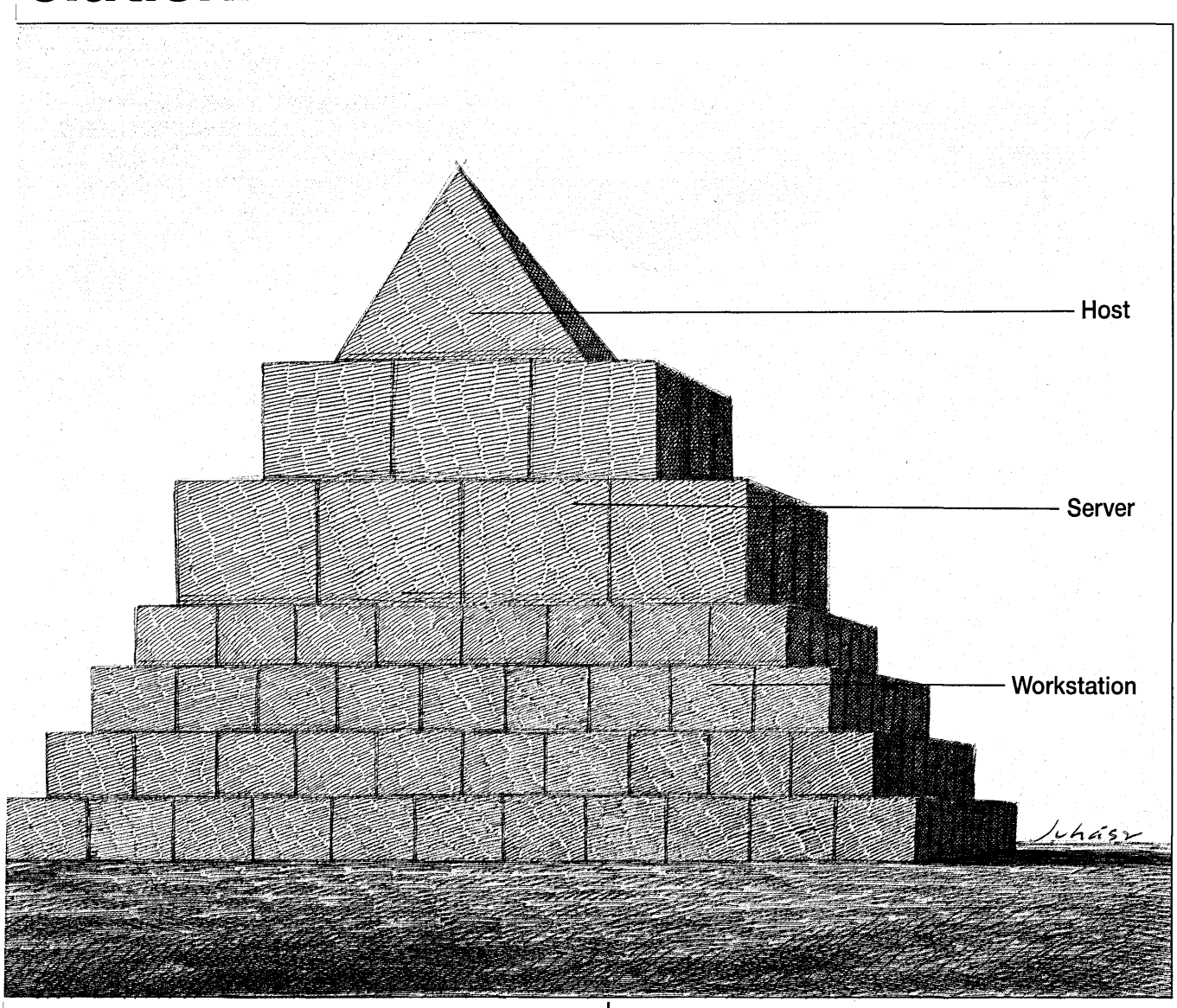

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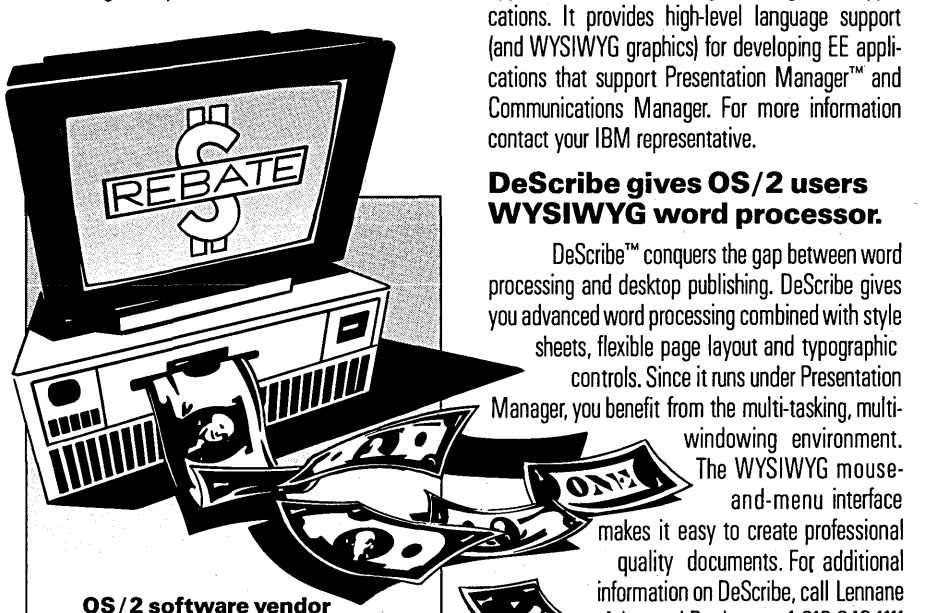

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Loyalties Under Fire

Maintaining state-of-the-art operating system and application software heads the list of Cyber users' anxieties over CDC's latest financial tribulations.

BY DAVID STAMPS

Amid the latest storm of anxiety over the viability of Control Data Corp.'s systems business, Cyber users appear to be remaining loyal, despite strong fears about rumored cutbacks in software development and in sales and support staff. Their loyalty, however, may be largely accounted for by the cost and pain of converting their proprietary Cyber systems to another vendor's equipment.

"We're concerned about CDC's viability, but we're not looking at contingencies because there really aren't any," says Morris Branch, IS manager at the Tennessee Valley Authority in Knoxville. "We've looked at moving some code over to IBM, but most of the analysis software we're using only runs on CDC."

The Electronics and Defense Division of TRW Inc. in Redondo Beach, Calif., may be one of CDC's most loyal customers. In April, two weeks after CDC announced that it was dropping its ETA - Systems supercomputer operation and streamlining its computer business, TRW was moving ahead with plans to trade in two old Cyber machines for a new, larger Cyber 994. "They've been an excellent company to us. They provide good hardware and excellent support," says Jerry Irmler, manager of scientific operating systems at TRW.

Horrendous Conversion Costs

Excellent support notwithstanding, the division's biggest reason for remaining in the CDC fold may be what Irmler terms "the horrendous cost of converting to a non-NOS operating system." Irmler confesses that a few years back TRW did look into migrating its large base of NOS 2 users to IBM VM. The estimated cost was $40 million in labor.

Although the IS staff at Milwaukee-based Briggs and Stratton Corp. had questioned what it would do, it also decided to renew a three-year lease on CDC gear when it expired last fall. "We concluded it was just too painful to switch vendors," recalls Jay Shaffer, Briggs and Stratton CAD/CAM manager.

But within six months, upon the announcement of cutbacks, Shaffer found himself wondering if the less painful decision was the right decision.

What Shaffer and others fear most is that CDC will cut away at an area vital to his company's needs—CDC's Integrated Computer-Aided Engineering and Manufacturing (ICEM) software for computer-aided design (CAD).

"I figure we'll continue to get support for our hardware, no matter what, because that's profitable," says Shaffer. "It's the CAD software I'm worried about. CDC's CAD software is already a couple of years behind other vendors. I'm afraid software will be one of the first things to get cut."

Robert H. Whalen, manager of engineering systems for toy maker Fisher-Price in Aurora, N.Y., shares Shaffer's fears. "CDC disclosed to us its plans for enhancing its ICEM software, and they were talking some nice improvements, some features we really need. But now we're hearing that the ICEM area will see cutbacks. No one we talk to seems to know how deep those cutbacks are, and that worries us."

A week after the announced cutbacks, CDC was flying key users to its Minneapolis headquarters to allay their fears. "We're going to continue to spend a significant amount of dollars on research and development," says Sharon Studer, vice president of marketing for CDC's Computer Products Group. "We have retained a commitment to our key products and markets: energy management systems, manufacturing, government and our base of research and education institutions."

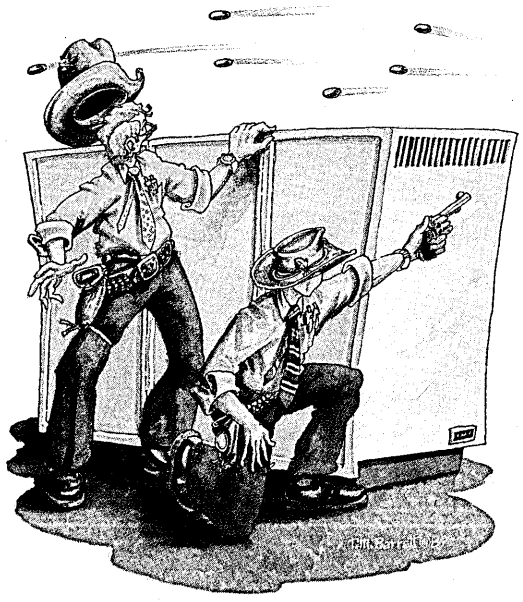

Illustration by Tom Barrett

One of the people who met with CDC management was Bob Kirkman, president of VIM, the Cyber mainframe users group. "The proof will be in the pudding," he says. "Users are a lot more anxious now than two years ago when the company went through its last management reshuffling. Now I think people are going to give them a year to either make it or fold."

In the meantime, Kirkman reports, he's seen CDC make some unsettling moves, for example, the elimination of three out of the four jobs at a local sales office. "If they cut the sales staff like that across the board, it's not clear they'll have the critical mass to do any selling," he says.

Briggs and Stratton's Shaffer also reports a decline among key CDC support staff.

"We were already weak in numerical support staff, having lost three of four people, in the past year. Then, after the April announcement, the fourth person quit," he says.

Operating System Rumors

Another area of concern to Cyber users is the status of NOS-VE, CDC's operating system. For the past several months, rumors have circulated that CDC had frozen development of NOS-VE and that the company might be backing away from plans to develop a native UNIX operating system for its Cyber line. A CDC spokesman asserts that development of NOS-VE is continuing, and that the company plans to implement a native UNIX by 1991.

Even so, some users have discounted the virtues of loyalty and have withstood the pain and cost of conversion, and some of these are long-time CDC customers.

Research institute Battelle in Columbus, Ohio, started its relationship with CDC in 1965 with one of the first 3400 systems and continued with the Cyber line right up to the Cyber 800 series. But five years ago, it began phasing out its Cybers in favor of Digital's VAXclusters.

"It was the slow development of NOS-VE that drove us into the VAX camp," says Tom Beerman, a 23-year Battelle veteran. "CDC gave us a good mainframe environment, and we got a lot of good service out of it over the years. But when DEC came along with VMS, CDC didn't adapt."

Tektronix Inc., in Beaverton, Ore., began as a CDC customer in 1972 and still uses CDC disks, but five years ago it decided to port the applications that it could to a variety of networked workstations and replace those that wouldn't convert.

☐ CDC'S CAD SOFTWARE IS ALREADY A COUPLE OF YEARS BEHIND OTHER VENDORS.

Thomas Bohan, manager of the scientific computer center at Tektronix, offers this assessment of CDC's troubles: "The CDC field staff gave us good support, but the folks back at corporate just lost touch with the technology. They stuck to an operating system that was too difficult to connect to other things, they tried to hold on to the high end of the market when the rest of the industry was moving to networked workstations."

Even a CDC loyalist like TRW's Irmler finds himself wondering where the company is headed in the wake of its decision to fold ETA, which he calls "one of the dumbest things CDC ever did."

One thing in CDC's favor may be the change in management instituted in December, in which Lawrence Perlman became president and chief operating officer of the company. Perlman is largely credited with turning around CDC's money-losing data storage products unit when he took control of it in 1985. Last year, CDC's disk business, now a separate subsidiary called Imprimis Technology Inc., earned $60 million.

VIM's Kirkman remains optimistic. "Don't count them out yet," he says. "They've got good technical talent and a new management team. They deserve one more chance, but this will probably be their last one." ▭

David Stamps is a freelance writer based in Minneapolis.

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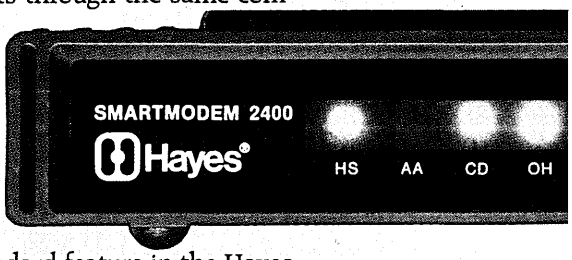

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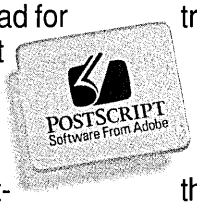

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A Secret No More

Data encryption, an intriguing notion just a few years ago, is getting a second look from corporate security managers. Lower encoding costs and a greater fear of viruses put new impetus behind an old standard.

BY SUSAN KERR

Legendary gumshoe Sam Spade always did his best work in a low-tech style: drinks with talkative office workers or an after hours visit to a company file cabinet. Security, where it existed, was a locked file cabinet or a readily distracted guard.

As a threat to data security, such detective-novel antics are not the only causes worry in this network era. For many large banks, insurance companies and multinationals, data protection is becoming as much a function of the encryptographer's key as the security guard.

Just ask Hal Tipton. As manager of information security at Rockwell International Corp. of Seal Beach, Calif., Tipton recently toured the aerospace concern's offices around the country to raise security consciousness. "We've had quite a few hacking incidents and viruses," he says. "They've all been benign so far, but the message is clear. Benign today, malignant tomorrow."

That same message has spread to others thanks to well-publicized viruses at the U.S. Department of Defense's ARPANET and security breaches at major corporations. As distributed processing and applications such as electronic mail grow, companies are probing their vulnerability to electronic breaches. How to limit such breaches is a question that increasingly concerns Tipton and others like him.

One solution getting a second look is data encryption. Widely criticized in the past as cumbersome and expensive, the security device has lately seen some advancements that are making some users reconsider it. Perhaps the biggest publicity boost was the decision by worm weary Internet to offer encryption services for the first time in the nationwide research network's history.

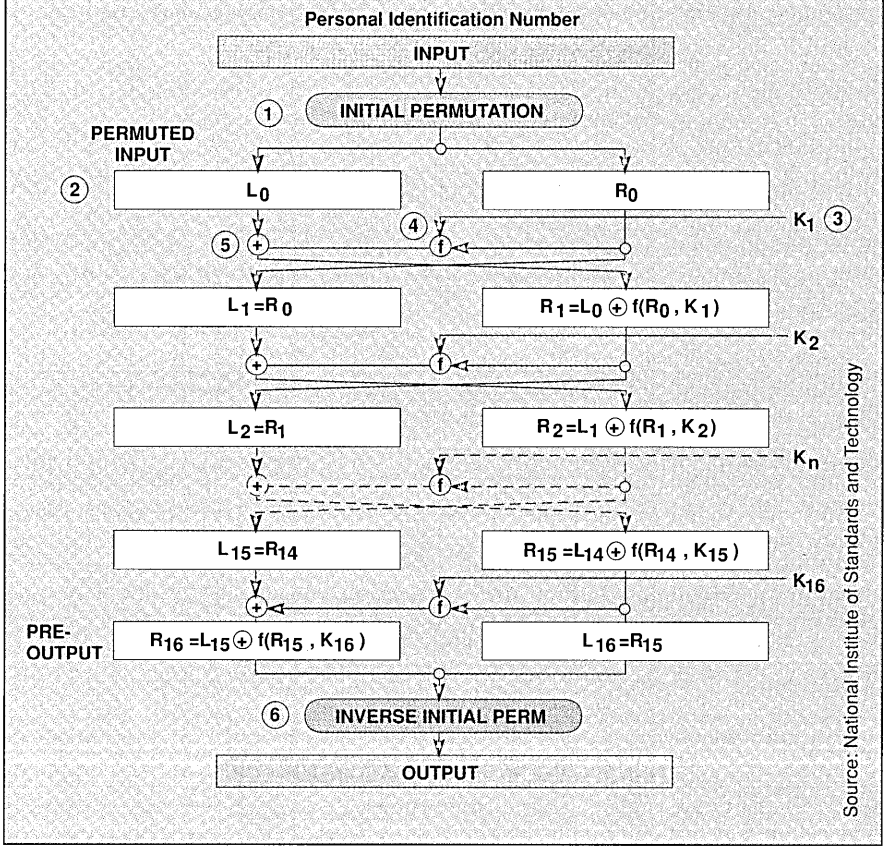
But even those old time users of encryption are noticing a difference. "As far as the general use of encryption, my observation is that it's up," says Bern Flaherty, manager of corporate security for Citicorp, in New York City. In certain instances, such as when communicating with the Federal Reserve Bank, Citicorp has no choice but to encrypt.

Precautions also are taken with executives' foreign travel itineraries and with electronic discussions of pending deals. In more routine communications, such as Citicorp's 25,000-user electronic mail system, encryption remains an option.

While encouraging employees to lock offices, Flaherty and others in his profession must also cope with information age burglars. For instance, there is plenty of

How Automatic Teller Machines Encrypt

Data Encryption Standard encodes bank transactions at an ATM using a multistep process that (1) scrambles bit order, (2) divides data blocks into 32-bit left (L) and right (R) halves, (3) applies predetermined key values in 16 separate steps (K1-K16) and combines (4) with results of the previous division or step (5). The encoded data are transmitted over a network to bank computers, where the process is reversed (6).



software available that monitors keystrokes and routines that can trap user passwords and system access codes. Yet, all too frequently, information flows without safeguards.

"Guys will lock up their file cabinets and doors, but they'll let information flow [unguarded] over microwave or telephone lines," says Lewis Morris, president of security products vendor Cylink Corp. of Sunnyvale, Calif. "We don't get people buying encryption because they're thinking ahead. It's because they've been stolen from. And it [encryption] is a growing business."

Encryption, in its many types and uses, is becoming recognized as one of the best ways to address such vulnerability. Internet, for example, this fall will begin using software-based encryption, which is slower but considerably cheaper than the hardware encryption schemes commonly used for electronic funds transfer. Internet users will be charged a $25 fee for a public key that decodes their messages.

☐ Companies Look For Data Protection After Theft Bring Home The Problem

When encrypting, an algorithm converts the message or document into an unreadable jumble of characters and symbols. The key—essentially a string of digital information—allows users to encode or decode a message. To date, key management has been the most complex and costly part of encryption. But newer electronic methods are simplifying the process.

Not Always a Bargain

Most encryption users will not get the same bargain as those on Internet. At Rockwell, Tipton estimates that encryption costs his company $1,500 per network node. Nonetheless, the company recommends that encryption be used for some sensitive information.

Very often, the first issue in a security review involves defining sensitive data. Encryption addresses two basic but very different security needs. The first and most obvious is keeping information secret. Companies may be legally responsible for even unauthorized disclosure of information, such as employee medical records. Keeping data safe from competitors or foreign governments is a similar application. For example, John Brown, staff specialist for computer security at Chevron Corp., reports that the oil company selectively uses encryption. One major use involves communication of drilling site information.

A second, and in some cases more practical, application ensures that data have not been altered. Financial institutions are less concerned with information being discovered than they are with numbers being changed. What they seek are authentication schemes. Users of electronic data interchange also have similar priorities.

Private users aren't totally free from external review. The federal government has long controlled the use and selection of encryption equipment.

The U.S. Department of State places this equipment in the same category as munitions. Export licenses are required to ship outside U.S. borders. Certain

The Origins of an Encryption Standard

Walter Tuchman saw the dangers some time ago. "With all this remote processing, we in the data-processing world added an element of insecurity that never existed before," says Tuchman, a senior vice president of engineering at Amperif Corp. of Chatsworth, Calif. "We inadvertently introduced an element of risk."

AMPERIF'S TUCHMAN: We introduced risk

Tuchman came to this realization almost 20 years ago while at IBM. The solution, the data encryption standard (DES), still stands as the undisputed champ.

Tuchman helped develop DES in the early 1970s. The algorithm today is the accepted U.S. standard for commercial data encryption. Tuchman says the need for encryption was recognized almost from the dawn of terminal networks.

In fact, DES was spawned by the development of on-line terminals for funds transfer. "We invented all these horrible scenarios of people emptying the cash box," Tuchman recalls. That led to a formal program and eventually to the DES 56-bit algorithm. "I was in the mind to make it a standard feature in the SNA [Systems Network Architecture] network world," he says. "We architected bits in SNA headers so . . . you'd know it was an encrypted session.'

DES might have ended up only as a footnote in IBM product history if it weren't for the National Bureau of Standards (now known as NIST, the National Institute of Standards and Technology). The then NBS got wind of DES and began pushing IBM to make it a standard—an unheard of thing in that day.

"I said you invent it, harden it, ship it, and then maybe you give it away," says Tuchman with a laugh. But NBS prevailed, and DES landed squarely in the public domain. "That was a rare thing: a technology whose primary focus was . . . for a purely social thrust," he remarks.

Tuchman later had to deal with the rumors that the National Security Agency (NSA) succeeded in persuading him to weaken DES, in effect allowing the agency and IBM to read others' data. He was grilled not only by university researchers but also by a U.S. Senate committee, which ultimately upheld the algorithm's integrity. "I was ticked off," he says. "But it's been a happy ending."

To the best of Tuchman's knowledge, the algorithm has never been broken. And for those wanting an added measure of security, he suggests multiple encryption.

Despite half-hearted attempts by the NSA to move people away from DES, it remains the number-one choice by U.S. commercial users. Tuchman suggests that DES's age has more to do with NSA actions than has any security breach. What to use instead, though, no one has really decided. Thus DES may well soon be in its third decade with few challengers.

As to why encryption isn't more widely used, Tuchman says that no one has yet reached the obvious conclusion: provide encryption without a performance penalty and at no cost. He advocates encryption as an integral part of a network. Until then it's not a natural sell, he says. Mimicking an IBM salesman, Tuchman quips "Did you know that this wonderful SNA product I just sold you has a data communications problem?

"All we were trying to do was to get security back to the good old days where the physical security of your office was the problem. I think we succeeded," Tuchman says.

Photography by Ken Rogers

Communist nations are off-limits for any licenses. Conversely, some foreign nations place restrictions on what type of encryption equipment U.S.-based companies can import. Licenses are generally easy to get for financial institutions with established encryption needs.

The U.S. government—the most practiced user of encryption—is frequently at the helm of the technology. The heart of encryption is the cryptoalgorithm. The most widely available algorithm is called data encryption standard (DES), which was developed in the early 1970s and gained widespread use (see sidebar).

A New Program

In 1988, the National Security Agency (NSA) stopped using DES for classified security needs and began recommending that commercial companies also move away from DES to new encryption algorithms that the NSA controls. Since the algorithms are secret, their export is severely limited. NSA calls its effort the Commercial COMSEC Endorsement Program (CCEP).

DES is publicly known and is the basis of many products, even within the government. The reasons behind NSA's decision to move away from DES remains the subject of speculation. One rumor has it that DES has been broken and hence is no longer safe. Then there is the belief that because DES is into its second decade, it's just good sense to move on to something new. Finally, there are the popular conspiracy theories. The problem with DES, these theories go, isn't that it's weak, but too strong. They suggest the U.S. government wants commercial companies to use algorithms it knows how to break. The NSA would not grant an interview for this article.

☐ The National Security Agency's Alternatives To DES Are Not Widely Adopted

So what does this mean for commercial users? So far not much, considering that the National Institute of Standards and Technology (formerly the National Bureau of Standards) has continued to reaffirm DES for nonclassified use until at least January 1992. NSA early on positioned its new algorithms as commercial alternatives to DES. But, in reality, use outside the government has been limited. "Originally, the NSA said there'd be a broader market," says Cylink's Morris. "Now it's restricted."

Despite the availability of these new algorithms and rival security schemes, users show little or no disaffection for DES. "We did not seriously consider anything else," says Stephen Kent, chairman of the Internet Activities Board Privacy Task Force.

"People on my task force are not cryptographers. We know how to take algorithms as building blocks and form them into useful systems, but we do not know how to evaluate how good any algorithm is." Likewise, says a security official with the NIST, "I see more and more users going to DES."

Users Keep the Standard Alive

There are several reasons behind the continued support. Nothing has forcefully supplanted DES; there are plenty of products incorporating it; and companies feel that—even if data were disclosed—the use of U.S. government-certified encryption standards offers certain legal protections.

This support holds despite the NSA actions and the constant rumors that there may be a "trap door" in DES that compromises it. While some users privately feel that the NSA or foreign governments may know how to break DES, they're not too concerned. Even if the algorithm is compromised, it might take a Cray-sized computer a month to break a message. Most commercial data exchanges are time sensitive and quickly lose their value.

But if security isn't an issue, cost and complexity certainly are. Traditionally, encryption incurred high overhead. For example, escorted couriers would deliver keys on computer tape to the encryption equipment users. Senders and receivers generally share a key, allowing even one user to compromise a network. Also, the couriers had to be trusted and keys stored in secure boxes. For all the cost, there sometimes was little extra safety. Recent spy incidents at the U.S. embassies in Moscow and Leningrad show that keys can be compromised and often for very little money. One executive places the rate for stolen commercial keys as low as $150.

But improvements in key management are beginning to make encryption cheaper and easier to handle. Notable among them is public key technology, which uses electronic distribution methods. Each user has two keys, one private and one public. Although the public key bears a specific mathematical relationship to the private key, it requires no security precautions. Indeed, the public key usually is published in a common electronic directory, such as those found on electronic mail systems. The user then decodes the message with his private key.

Although the NSA is not believed to use public key technology, many commercial users do. Two of the better known systems are RSA from RSA Data Security Inc. of Redwood City, Calif., and SEEK from Cylink.

Networked Software Protection

One RSA product is the RSA Digital Signature, an authentication tool that verifies the originator and the integrity of the transmitted data. In this case, the messages may not be hidden, but the recipient will know if they've been tampered with.

☐ Authentication Tools Lend An Air Of Confidence That Network Applications Are Safe

An outgrowth of this type of security product is used to protect networked software. One user applying the technology in this manner is the U.S. Department of Labor's Bureau of Labor Statistics, which has 1,200 networked PCs.

"We aren't involved too much in the sending around of secret messages," says Richard Heddinger, a computer scientist at the Labor Bureau's Division of Communications and Computer Technology. Rather, they want to ensure that none of their software has been hit by viruses. "We have networked software, and to give us the feeling of confidence that nothing has disturbed it, we put on the Digital Signature," he adds.

Most users cannot cost justify, nor do they need, the millions of dollars worth of encryption equipment that a Citicorp has, for example. However, many companies will start to increase the use of the technology in different forms. For example, Lotus Development Corp. recently embedded RSA technology in its Notes workgroup software.

"Connectivity is the buzzword of the day," says Rockwell's Tipton. Security no longer means locking up the mainframe; terminal users no longer are restricted to changing a single data base field at a time. Today, users can change whole files at a time and from a distance. "We have 16,000 microcomputers around the country," he adds. "These are 16,000 computing centers. I'm telling them that they must take some of the responsibility." ▭

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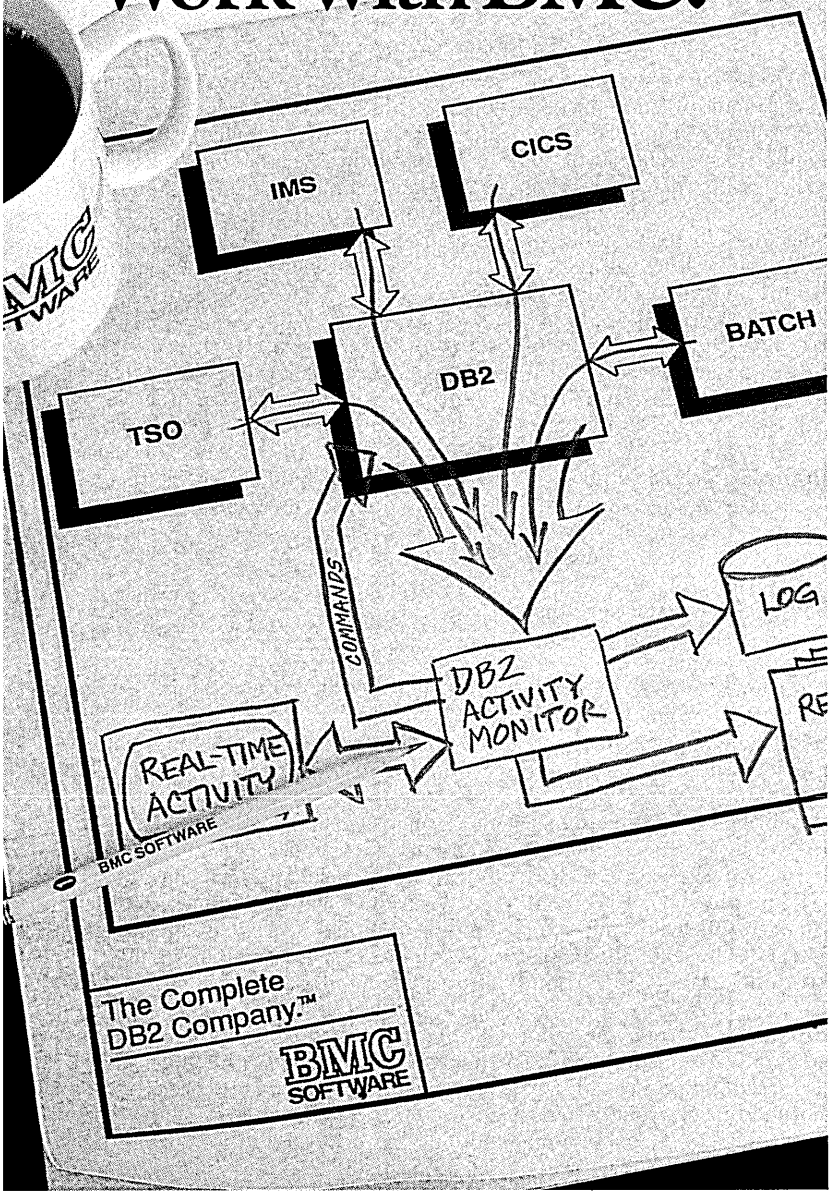

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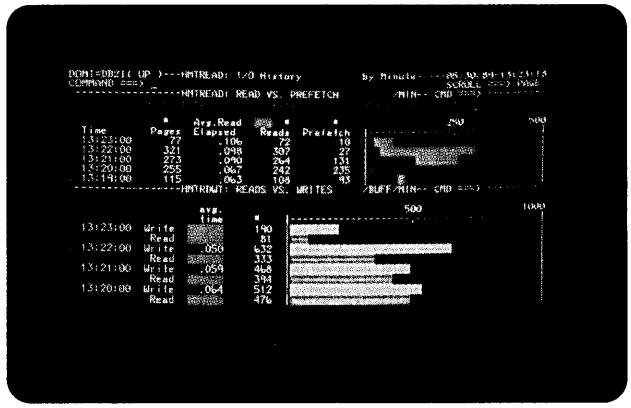

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Back to the Drawing Board

Digital's first steps in the on-line transaction-processing arena have resulted in a few falls, but the company has picked itself up and is planning to get under way again.

BY GARY McWILLIAMS

Digital Equipment Corp. may have begun its push into transaction processing with a swagger, but customers—who have watched a series of recent organizational and product changes—say a series of uncertain moves is forcing Digital to retrace its steps in the high-stakes transaction-processing arena.

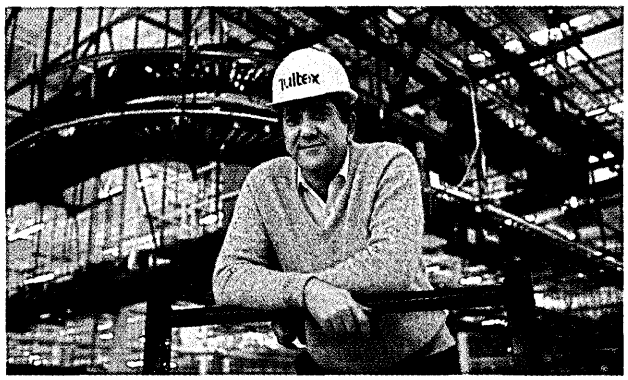
That wasn't the impression the company gave last summer. The focus then was on a pair of transaction-processing (TP) monitors, on data base and development tool enhancements and on what then was described as an aggressive marketing campaign targeting the world's 5,000 largest companies. Digital executives boasted of traveling the TP high road—and of besting TP rivals IBM and Tandem Computers Inc.

More recently, though, the swagger has given way to a more cautious approach. Digital now plans significant changes to its TP software, including a consolidation of its two TP monitors. Marketing and sales have been redirected along industry specific lines; a much-heralded software-training program has been replaced; and some highly touted TP benchmark tests, delayed by several months, have been challenged by benchmark data released by IBM.

Still, Digital remains optimistic about its TP future. The company anticipates a 50% increase in TP software licenses and a healthy—but undisclosed—increase in customers for the year ending in July.

Recent marketing changes will see TP sales focused on specific vertical markets, such as manufacturing, finance and telecommunications. Later this year, the company will also begin calling on government and health care customers, as well. Training and recruiting is also becoming more specialized. In place of a general TP training school for U.S. employees, the company is now hiring skilled TP developers and providing applications-focused training seminars.

For some, the changes reflect a broad disappointment with the company's TP efforts thus far. Software developers, even those who say they expected a slow rollout, feel Digital's TP performance so far has been underwhelming. Some Digital TP beta sites have not even begun to develop applications, and others with existing packages already installed have been slow to add newer releases.



TULTEX'S SMITH: He got Digital to arrange on site training classes for OLTP program users.

Although the company sketches a consistent strategy, its positioning of multiple monitors and varied data management tools continues to confuse even loyalists. Digital currently offers two TP monitors—the Application Control and Management System (ACMS) and DECintact. And software development tools Rally and Teamdata have been joined by Relational Technology Inc.'s Ingres toolset.

Such product overlaps interfere with a clear reading of the company's long-term strategy, says Howard Niden, a Price Waterhouse consultant based in Pittsburgh. Niden has advised his clients to steer clear of Digital's TP products until a better focus emerges. "I look at ACMS and DECintact as two very different systems. How can anyone choose one as an architecture to grow on?" wonders Niden. "In my opinion, Digital threw some things on the market to say they had something [in transaction processing]."

In at least two cases, customers who planned to develop applications using Digital's transaction-processing software have cooled their heels while awaiting further releases of key TP packages. A third potential customer abandoned efforts to convert mainstay business applications to Digital's VAX computers using its Rdb/VMS data base.

Chicago-based Andersen Consulting, which had been expected to convert its manufacturing planning and control software to run with ACMS, hasn't yet begun to convert a single line of code, according to Kim M. Rutledge, an Andersen Consulting support manager. Devel-

Photograph by Jim Stratford

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opment was postponed until the release of the newly unveiled forms management package. Similarly, Cerner Corp., a Kansas City, Mo., software developer and DECintact field test site, hasn't committed to using DECintact in future versions of its clinical information systems software. DECintact has been used to write Cerner's office automation applications, but any further use will await the selection of a data base.

"We have not made a decision to develop product for our customers in [DECintact]," says Charlie Whitcraft, Cerner's vice president of technology. "We're continuing to look at that [DECintact] architecture. That still seems to look like the best way to go." The decision as to whether to use the TP software will stay on hold pending an analysis of a run-time version of the Rdb/VMS data base. Digital recently promised that the version would be bundled at no charge with its proprietary operating system.

Another company cited during the TP product unveilings, Foundation Health Corp., put aside plans to migrate its commercial health systems to the VAX. The Sacramento, Calif., health maintenance organization abandoned its migration after concluding it could not meet conversion deadlines. The company's commercial business systems will remain on the HP 3000 family, a company spokeswoman confirms.

Digital Takes Aim

Such instances do not reflect a strong TP debut, says Digital's manager of transaction systems, Dennis A. Roberson. However, he adds, the company is continuing to fine tune its engineering and marketing efforts. Moreover, consolidation of overlapping products will accelerate, he promises. Development teams for the two TP monitors have been combined, and marketing efforts have been reoriented. "We're getting marketing locked down. We have that crisper than in the past. We're now taking good aim," says Roberson.

In a sharp contrast to its initial positioning strategy, the company is now intending to merge the two TP monitors — ACMS and DEC intact—at an undisclosed point in the future, he says. Whereas the two once were described as embodying different programming styles, Roberson now says a single monitor was always planned. "The only change is now we think we know how to [consolidate the monitors]. Now, there are a lot more people who feel more comfortable saying, 'Yes, we know how to do it.' "

Applications developed in either monitor will be compatible with the single, future version, Roberson pledges. As the first step in consolidating the two, Digital recently released a forms management package, which is intended eventually to support both TP monitors. But the difference between its intentions and its present products is a continuing problem for Digital. Some developers familiar with both monitors question the feasibility of combining the two, noting sharp differences.

☐ DIGITAL CAN NO MORE SAY WHEN DECINTACT WILL SUPPORT RDB/VMS THAN IT COULD A YEAR AGO.

In fact, no where is the dichotomy between intentions and results more obvious than with the present TP monitors. For instance, although Digital promised Rdb/VMS relational data base support for both TP monitors last year, the company can no more say when DECintact will support Rdb/VMS than it could a year ago. When the new forms management package will support DECintact also has not been disclosed. DECintact support for Rdb and Forms is a question of development priorities, says Roberson. "The present debate is, Which [should] we push the hardest, Forms or Rdb? . . . We'll have Forms or Rdb [supporting DECintact] within the year and both capabilities in two years," he says.

Furthermore, as much as Digital is committed to accelerating its software development, little in the way of new software has appeared thus far. Performance improvements since the July unveiling have exclusively involved faster hardware. Since acquiring DECintact, for instance, Digital's only change has been to improve documentation, say customers.

" 'In OLTP [on-line transaction processing], system software and data bases are key. Unless [Digital] brings those to the market rapidly, we don't see its position changing," says Praful Shah, a Tandem product marketing manager. Moreover, despite Digital's aggressive positioning a year ago, Shah claims there has been little impact on Tandem's sales.

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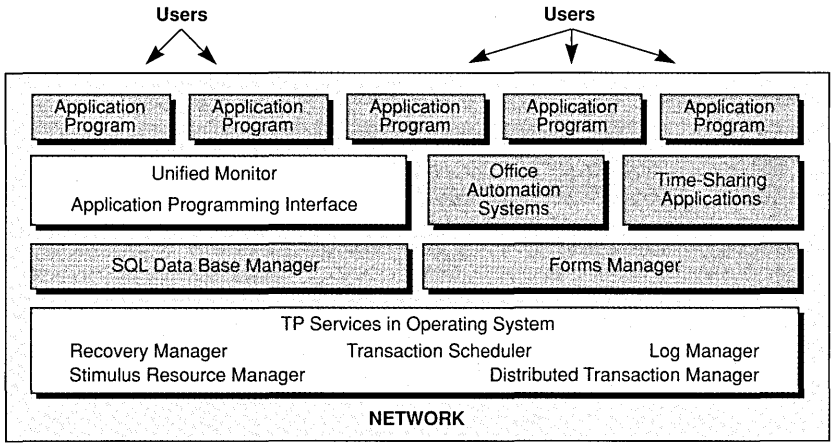
What Digital Promises for Transaction Processing

Red boxes illustrate a promised, unified transaction-processing monitor and standard application-programming interface. Future capabilities will include operating system support for transaction services. Currently available pieces of the environment are shown in blue.



" 'We've not seen [any] substantial difference [in competition]."

Ben Rosenberg, president of Advanced Systems Concepts Inc., the Hoboken, N.J., developer of DECintact, believes that, initially, Digital wasn't adequately prepared to handle the issues involving its entry into transaction systems. "It's all manpower issues—learning and training issues," says Rosenberg, who sold Digital the rights to the DECintact monitor. "I've talked to the company, and it would be the first to admit they didn't have their act together."

Lack of resources is also an issue when it comes to software support. Tultex Corp., a Martinsville, Va., athletic-clothing manufacturer writing its first DECintact applications, sought training help from Advanced Systems Concepts in the absence of any Digital training. In addition, Tultex—a new Digital customer with an estimated $4.5 million committed to VAX hardware and software—has had to rely on specialists from Digital's Massachusetts headquarters to help design its systems. The local Digital office could provide no TP specialists, says Tultex's Danny Smith.

Digital's manager of transaction systems, Dennis A. Roberson, says software specialists experienced in other vendors' systems are being hired to augment Digital's in-house training program. That hiring comes despite a general freeze at the company, says Rosenberg. As another sign of a growing responsiveness to TP customers, Digital recently authorized a special systems managers' training class at the Tultex facilities.

Tultex is building DECintact systems for a cluster of three VAX 6210s networked to 10 MicroVAXs, says Smith. When completed later this year, the systems will control automated inventory storage and retrieval systems in a $60 million distribution center. The TP systems will accept order information from an IBM 3090 mainframe. Based on order requirements, the VAXcluster devises storage paths and downloads instructions to MicroVAXs controlling a series of conveyors and cranes.

The TP system, which will offload such tasks from the IBM mainframe, is designed to process between 15 and 25 transactions per second, says Smith. Tultex chose DECintact over ACMS for its sophisticated queue management features, says Smith. A corporate decision to base all distributed systems on VAX ruled out consideration of products from Stratus Computer Inc. or Tandem, he notes.

As much as Digital is putting into Tultex's development, other customers say Digital still has a ways to go to live up to initial expectations. "[Digital] is getting its feet wet in OLTP at the applications segment, not the systems segment any more," observes James Quigley, an assistant vice president at Bankers Trust.

Quigley says that until Digital can prove it is able to meet those expectations—created by its own aggressive positioning in the TP market last year—it faces more trouble. "Unless DEC gets moving on some of the general feelings it was putting out last year, it is going to be surprised," Quigley says. "There will be better products on the market." ▭

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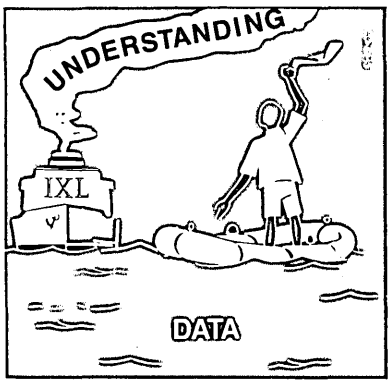

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Working at Home

Having employees, such as programmers, work at home can leave a company open to additional liabilities, but the biggest risks can be eliminated with a few easy measures.

BY JOHN W. OWEN

The perception is growing that progressive companies are the ones that allow employees to work at home at a remote PC or terminal as an alternative to commuting to the office. This is particularly true in an IS shop, where programming work typically can be accomplished on any PC regardless of location. This arrangement may be much less common than the press would suggest, but companies considering such a policy need to recognize the legal liabilities, financial risks and other problems that can arise.

The best way to evaluate the legal liabilities associated with programmers and other employees working at home is not to ask "Are there any liabilities?" but rather, "Which liabilities are created or increased above those that already exist when employees work on company property?"

Although the list of potential liabilities is longer for an employee who works at home, the likelihood of a successful bodily injury or property damage claim resulting from a home-based worker is largely remote. The major exception would be a company that has its home-based employee commuting on an irregular basis to the office with company equipment or printed reports.

Worker Injuries

Injuries not normally covered by workers' compensation insurance are those that are intentionally self-inflicted, those caused by inebriation and those that occur when the employee is acting outside the scope of employment.

Employees who work at home are obviously covered by workers' comp while they are working on company business—for example, working at their terminal, writing reports or going to get their briefcase. They would not be covered while taking a shower, doing laundry or carrying out the garbage, even though these activities might occur during their intended work periods. Even though a programmer, for example, might be performing personal tasks while waiting for a program to finish running, he or she ceases at that time to be functioning as an employee. While the potential for workers to make fraudulent injury claims could increase in a work-at-home situation, some claims might be difficult to disguise as work-related accidents.

The largest additional liability that working at home creates involves employees who transport company equipment. Programmers, for example, who commute between the office and home with a portable computer are considered to be on business, and not personal, time. Depending on the circumstances, the same reasoning should apply to an employee who works at home four days a week but is required to report every fifth day to pick up and deliver printed reports. This means that an employee who is injured while walking, driving or riding public transportation to the office would be covered under workers' compensation.

Since the liability outlined above occurs only when employees transport company property, any arrangement eliminating the need to transport property eliminates the liability. If the employee were required to commute to the office every fifth day, as in the example above, to attend meetings or deliver verbal reports, commuting would likely not be an activity covered by workers' compensation insurance.

Damage to Company Equipment

Company equipment, such as a portable computer that must be transported between home and office, is more likely to be damaged than equipment that is installed permanently either in a residence or at the office. The maximum liability for replacing the equipment including the PC and peripherals is probably

Illustration by David Cutler

around $5,000. Risk to company equipment can be reduced by permanently installing terminals at employees' residences, using portable terminals designed for frequent transport and purchasing protective cases for use when transporting portable terminals.

Damage to Employees' Property

Claims that would fall under this category represent risks additional to those assumed when an employee works at a company office.

If the work-at-home programmer uses a home PC in lieu of a portable, company-owned terminal, the company is liable for any damage to the computer while it is being used for business. Since damage that occurred during personal use to a personally owned computer is likely to be reported as having occurred during business activities, the company could wind up insuring the employee's computer 24 hours a day.

What many companies do not realize is that they are liable for any property damages that result from a chain of events whose initial cause can be linked to business-related equipment. For example, if the personally owned computer or company-owned terminal causes a fire in the employee's residence, the company would probably be called upon to indemnify the employee. A homeowner's policy would probably respond, but the carrier would certainly attempt to collect from the employer through a process called subrogation.

On those occasions when a commuting employee is transporting a terminal, any damage to the employee's car would also, after subrogation, be considered a loss to the company. The maximum single loss related to the employee's car is probably not over $15,000.

Injury to Third Parties

Injuries to nonemployees that arise out of business activities or are caused by company equipment are covered under the general liability category.

A child or other family member could sustain injuries from the computer terminal. These accidental injuries could include back injury to a family member who assists the employee by carrying the terminal in from the car, a child who manages to pull the terminal from the desk surface or a family member who receives an electrical shock from the equipment, even if use of the equipment was not authorized.

Other injuries to third parties could include family members or neighbors injured by a house fire caused by either a company- or employee-owned PC and pedestrians or other drivers injured by the employee's vehicle while the employee is transporting company-owned equipment.

Of all the potential scenarios for company loss from a claim by a third party, however, a fire is the most unlikely event. Computers are low-current, fused devices that rarely overheat to the point of combustion. Any house fire caused by a computer would probably spread slowly, giving occupants of the employee's house and adjoining houses adequate time to evacuate.

The amount of loss from any bodily injury claim is difficult to estimate. Expenses include medical bills, rehabilitation, lost income, increased housekeeping/child care expenses and legal expenses. The last item can be a deceptively large expense, even if the employer wins the case.

Having programmers work at home can potentially jeopardize the fulfillment

Liability Is Not the Only Problem

When employees work at home full time, problems of a more practical nature may also arise. These include:

- A gain or loss in productivity. Some would doubtless argue that employees who work at home are not as productive as those working in the office. Reasons would include the comparative ease with which they could rise late or take a long lunch; the temptation to mix personal activities, such as doing laundry, with company work; and the temptation to watch TV while trying to work. The relative inaccessibility of other employees and end users could also reduce work efficiency.

  The contrary argument could also be made, though, that the work-at-home arrangement actually fosters a gain in productivity for individuals who are productivity-minded. Commuting time becomes productive time and interruptions from other employees and users should be less frequent.

  Whether a gain or loss in productivity occurs is probably dependent on the technical ability and personal motivation of the work-at-home employee. As such, productivity should be assessed on a case-by-case basis. The greatest difficulty would be in defining standards by which to assess the productivity of individual employees and devising a method for applying such standards to all employees.
- A double standard of discipline. Employees who work at the company may complain that they are subject to numerous rules that do not apply to employees working at home and that some of these rules create grounds for termination. It could be argued, for example, that work-at-home employees would never be reprimanded for excessive lateness, nor would they have to keep an account of their sick days. Employees working at home would also have the opportunity to drink on the job or use illegal drugs—actions normally resulting in immediate termination for employees who work at the office.
- A drop in morale. A team spirit is difficult to maintain if some team members spend large amounts of their time at home. If the work-at-home option is seen as a reward, yet is extended to only certain team members, it may create an elitism. This can easily affect the morale of those who must report to work, causing them to feel slighted and unappreciated.

  At the same time, the work-at-home employee's morale may suffer from a feeling of being left out of decisions, politics and promotion consideration. Work-at-home employees often begin scheduling more and more time at the office shortly after starting their new work situation.
- A confused definition of disability. In a recent informal phone survey, several employers said they allowed mothers on maternity leave to work at home via a terminal. This period of about 12 weeks surrounding birth is usually treated as a disability. Since disability is usually considered the inability to perform work, not the inability to commute to work, some confusion occurs regarding its definition. Since disability pay may also be less than normal pay, the confusion expands. Should an employer pay someone at a reduced rate yet expect them to perform their normal duties?

Most of the problems outlined above can be mitigated by effective management practices and advance planning. They are not so great that work-at-home arrangements should be avoided, but they raise issues that should be recognized and anticipated.

of software licensing agreements, which require the employer to protect that vendor's products from appropriation.

As a practical matter, the likelihood of this occurring is small. Most purchased mainframe packages are so large that a copy on paper or floppy disk would have little market value, especially without its extensive documentation. It could be argued that such piracy can occur just as easily in the office as at home and that a work-at-home arrangement does not pose an increase in risk.

The greater risk seems to be that if a theft does occur in a work-at-home situation, the resulting court award could be higher than in a conventional work arrangement. A jury probably could be convinced that because the company may have been less able to police the actions of that employee, it was negligent and, therefore, breached the licensing agreement.

The resulting damages would probably include what the vendor lost in revenue, which is often the retail price of the pirated software multiplied by the number of black market copies and legal expenses.

Whether an employer decides to assume the few additional risks of a work-at-home arrangement should depend on a set of value judgments that determine how likely a loss might be and how much it would cost the firm.

Summary of Risk Exposures

The most serious exposure involves bodily injury to a commuting employee who is transporting company equipment or injury to others involved in an accident. As this commuting is usually undertaken so the work-at-home employee can meet with office employees, it would probably take place during rush hour. Consequently, the probability of accidents cannot be considered remote. This exposure can be avoided by any arrangement that makes it unnecessary for employees to transport company equipment. Avoiding or limiting this exposure should be considered an important part of any proposal to have employees work at home.

☐ SOFTWARE PIRACY CAN OCCUR JUST AS EASILY AT THE OFFICE.

Damage to an employee's personal computer is limited by the value of the equipment; it does not represent a major loss exposure. In fact, rather than try to avoid this exposure, the employer would be wise to accept it as the cost of avoiding the more serious exposures involved in the transportation of company equipment.

Liability for third-party injury in the residence, fire damage to the employee's residence or adjacent residences and third-party injury to residents in those adjacent houses represent potentially severe, but highly unlikely, losses. The risks associated with them are probably worth accepting. ☐

John W. Owen, a programmer with General Accident Insurance Co. of America in Philadelphia, has worked in the insurance industry in the areas of human resources and data processing.

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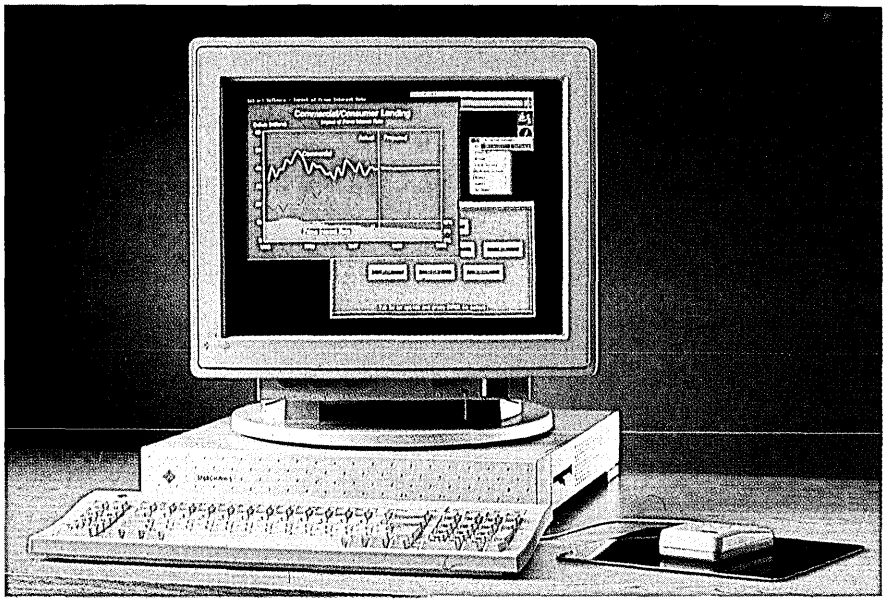
SYSTEMS

Sun Introduces Desktop, Workstation Computers

Sun Microsystems has expanded its RISC-based systems offerings with a new desktop computer and a workstation series.

BY JANE MAJKIEWICZ



SUN'S SPARCSTATION 1: The company says this new desktop computer offers the power of a workstation with the ease of use of a personal computer.

Sun Microsystems Inc. claims its new desktop computer, the SPARCstation 1, is designed to bridge the PC and workstation worlds by combining workstation performance and capabilities with the ease of use of a personal computer. The 20 megahertz computer uses a SPARC floating point coprocessor that performs at approximately 1.4 million floating point operations per second (MFLOPS). Standard features of the SPARCstation 1 include 8 megabytes of memory, expandable to 16MB; a preloaded operating system; two serial ports; and two additional ports. The computer can contain up to 208MB of internal hard disk storage and more than 1 gigabyte of total mass storage, including support for a 150MB ¼-inch tape backup.

Sun notes that the SPARCstation 1 is smaller than an IBM PC, having a footprint of 16.0×16.0×2.8 inches. The SPARCstation employs the SBus architecture, which uses three expansion slots on the motherboard instead of a backplane.

The SPARCstation 1 is compatible with more than 500 software applications and is binary compatible with Sun's entire family of SPARC systems, allowing upward migration, according to Sun. Pricing is configuration dependent (there are five configurations from which to select) and ranges from $8,995 to $14,995. The SPARCstation 1 will be available in volume 60 to 90 days after receipt of order (ARO).

For users requiring large amounts of memory, extra disk storage and VMEbus expansion, Sun has also unveiled the SPARCstation 300 series of workstations.

Sun claims that powerful graphics and expansion capabilities are the prime features of this new two-model family. Designated the SPARCstation 330 and 370, the two models can accommodate from 8 to 56MB of main memory. While the 330 configurations provide 1.3GB of SCSI mass storage, the 370 configurations offer 5.5GB of SMD disk storage. Both models are available in two configurations: GX and GXP. The GXP configurations have 3-D solids-modeling capabilities that deliver speeds of 90,000 Z-buffered 3-D vectors per second and 5,500 Z-buffered Gouraud-shaded polygons per second. Sun says that GX configurations of the two models provide graphics capabilities suitable for electrical and mechanical computer-aided design and CASE applications, as well as for computer-aided publishing applications. GX models process 450,000 2-D vectors per second and 200,000 3-D vectors per second.

The SPARCstation 300 series is available in six configurations that range in price from $29,900 to $73,900. The three SPARCstation 330 models are available 60 days ARO. The three 370 models are available 120 to 150 days ARO and so are upgrades to existing Sun-3 and Sun-4 systems. SUN MICROSYSTEMS INC., Mountain View, Calif.

Circle 150

More Desktops From Motorola

Motorola Inc. has extended its Delta series 3000 family of MC68030-based desktop computers with a low-end model designed to be used by up to 12 individuals.

The new computer, designated the model 3200 Workgroup Computer, is available in either 16 or 25MHz versions. Standard features of both versions include VMEbus architecture, 4MB of memory, four serial ports, one parallel printer port, one 3½-inch disk drive and one 3½-inch 155MB streaming tape drive. Standard storage capacity is 48MB and 104MB, respectively, on the Winchester drive. The 16MHz version uses the MC68881 floating point coprocessor, and the 25MHz version, which uses the MC68882 floating point coprocessor, also includes an Ethernet interface and an external SCSI adapter. Motorola claims that additional hardware and software options provide growth and expandability, as well as networking capabilities. For example, the 16MHz version allows for wide-area network applications using X.25, SNA or bisynchronous communica-

tions, and the 25MHz version is useful for TCP/IP and DECnet LAN applications.

List prices for the currently available model 3200 range from $7,495 for the 16MHz version to $10,995 for the 25MHz version. MOTOROLA INC., Motorola Microcomputer Division, Tempe, Ariz.

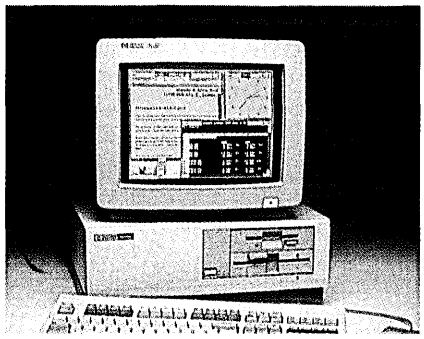
Circle 151

Three Companies Unveil 386-based PCs

Intel Corp.'s 386SX microprocessor is the base for new systems from Datamedia Corp., Hewlett-Packard Co. and Tandy Corp.

Datamedia has announced the NETmate/SX, a three-model family of PCs capable of being connected on DEC local area networks such as PCSA, Netware and NFS. Datamedia says the NETmate/SX provides the power of a workstation. The three configurations—diskless, diskette-based and hard-disk-based—have standard features of 2MB of main memory; a 16-bit VGA graphics controller with 256KB of video memory; and NETmate's DEC terminal emulation software, NETerm. The disk-based model also includes a SCSI controller. Optional add-on and upgrade features are available, depending upon configuration. List prices range from $2,795 to $3,965 for standard configurations of the PC family, which is available immediately. DATAMEDIA CORP., Nashua, N.H.

Circle 152



Hewlett-Packard's HP Vectra line of PCs now includes HP's newest model, the QS/16S, designed for desktop publishing, data base management and entry-level CAD. The base model, priced at $3,295, includes 1MB of RAM and either a 3½-inch or 5¼-inch flexible disk drive. Like HP's seven other Vectra PCs, the QS/16S can be configured with optional features. The Vectra line consists of laptop, desktop and floor-mounted PCs priced between $1,395 and $15,695. HEWLETT-PACKARD CO., Cupertino, Calif.

Circle 153

The 4000 SX is Tandy's smallest footprint 386-based system, measuring 6.25 × 15.75 × 17.0 inches. Standard configuration includes 1MB of RAM; one 3½-inch 1.44MB floppy disk drive; four 16-bit expansion slots; VGA graphics; and a 200-watt power supply. Tandy says the 4000 SX is suitable for use as a stand-alone business system, as a workstation in a networked environment or as a basic desktop publishing system. Suggested prices start at $2,599, without a hard drive, and range to $3,498 for an 80MB system. TANDY CORP., Fort Worth.

Circle 154

SOFTWARE

Digital's CASE Strategy Broadens

Digital Equipment Corp. has introduced one new product and enhanced four of its existing CASE development tools in what it says is an effort to continue broadening its CASE strategy.

Digital's newest product, named DECforms, is a set of development tools and services that help application developers create fixed-format user interfaces, such as forms and menus. Digital says that DECforms is the industry's first commercial implementation of the proposed ANSI/ISO standard Form Interface Management System (FIMS).

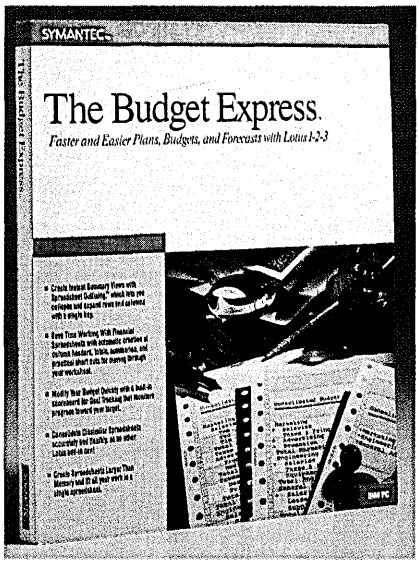
The CASE enhancements include four new versions of existing CASE tools: the CDD/Plus Common Data Dictionary, version 4.1; VAX COBOL Generator, version 1.3; VAX Notes, version 2; and VAX OPS5, version 3. VAX CDD/Plus, a single storage repository for definitions and descriptions shared by multiple software products, now works with the VAX COBOL Generator and the VAX DBMS. It also now has enhanced memory management and new security features. The new VAX COBOL Generator, V1.3, an icon-based programming tool, is meant to be used with VAX CDD/Plus dictionary and the Rdb/VMS relational data base to increase programming consistency, reduce duplication of effort and speed data processing. Both VAX Notes V2, a computer-conferencing product running over LANs and WANs, and VAX OPS5 V3, which aids in developing expert systems, run within the DECwindows environment.

The CASE tools, which can be used with a variety of Digital's hardware and software, are available now. Pricing ranges from $300 to $30,000. DIGITAL EQUIPMENT CORP., Maynard, Mass.

Circle 155

Easier Than 1-2-3

Symantec Corp. has formally announced its new software package that works with the Lotus 1-2-3 spreadsheet program. The new product, called The Budget Express, has been in development for over a year and will be jointly marketed through Symantec and Lotus Development Corp. to 1-2-3 users working with budgets, plans, forecasts and other structured financial applications.



Symantec says The Budget Express is a core enhancement to Lotus 1-2-3 releases 2, 2.01 and 2.2, providing specialized analysis facilities. Symantec claims The Budget Express' primary feature is its consolidation facility, which enables information from dissimilar worksheets to be combined by matching rows and columns, by matching labels and locations or by following a user-created specification. The consolidation facility also lets the user write hidden rows to the disk, permitting the creation and manipulation of a worksheet larger than memory constraints normally allow, according to Symantec.

Other new capabilities include outlining, which enables the user to summarize large amounts of information, and goal tracking, which features an on-screen

scoreboard that lets a user experiment by calculating and comparing the value of current and target financial goals. Available now, The Budget Express lists at $149. SYMANTEC CORP., Cupertino, Calif.

Circle 156

A Tool for DB2

Individuals wishing to update and change objects or sets of objects in a DB2 data base can bypass the process of creating codes in SQL language with On-Line Software International Inc.'s new product, which is designed to assist in analyzing, tuning and maintaining DB2 relational data base systems.

The new DB2 product, called ProAlter/Plus, is a set of tools made up of six components. Among these is a Path Analysis facility, which, the company says, allows a data base administrator to analyze how users access data base information. The facility subsequently allows the administrator to alter and fine tune the access paths of individual applications. Another feature, designated the Alter/Migrate facility, is designed to allow DB2 objects or sets of objects to be transferred from one environment to another, for example, from a test environment to a production environment. The Catalog Analysis facility is meant to enable an administrator to review information by category within a data base and understand the relationships among the categories. In addition, the product offers a Security Administration facility, a Data Download facility and a DB2 Utilities Management facility.

ProAlter/Plus is available for immediate delivery. The price is $25,000. Leasing options, volume discounts and corporate licenses are also available. ON-LINE SOFTWARE INTERNATIONAL INC., Fort Lee, N.J.

Circle 157

COMMUNICATIONS

IBM Offers More EDI Options

IBM says it will make available a new series of electronic data interchange (EDI) software products designed to allow businesses to exchange standard format documents electronically on IBM's midrange computers.

The five-product expEDIte DataInterchange series is intended to make more comprehensive IBM's existing expEDIte family of EDI software, which had consisted of the Communicator and Integrator series. IBM claims its five new EDI products allow a user to translate company documents into standard EDI formats to electronically transmit them across a network. By doing so, the company says, users can minimize costly bookkeeping errors and significantly decrease the time spent in processing and mailing business documents manually. One product, the DataInterchange/MVS, is available now. Three products are slated to be available in the third quarter—the DataInterchange/400, DataInterchange System/38 and DataInterchange System/36. IBM also says it will make the DataInterchange/2 available during the first quarter of 1990.

The EDI products support ANSI X12 standards in the United States and EDIFACT standards internationally. Annual license charges range from $4,000 to $38,000. Primary license charges are also available. IBM has further announced that the company's System Integration Division (SID) will make available EDI consulting, education, systems integration and turnkey installation services to help users plan, design and implement EDI applications, systems and processes. IBM, White Plains, N.Y.

Circle 158

High-Speed Modem

Fujuitsu America Inc. is offering a new modem operating at 19.2 kilobits per second, which, the company says, increases effective data transmission by reducing modem throughput delay.

Fujitsu's new modem, designated the M1928Li, combines traditional trellis coding with multidimensional trellis coding. Multidimensional code can operate on a higher percentage of lines, but, Fujitsu claims, if it is used exclusively, multidimensional trellis coding often results in increased throughput delay.

The two-port, synchronous modem is intended for use over D1-conditioned lines and contains a built-in modem-sharing function to accommodate various system configurations, such as point-to-point, multiport or multiport polling. Some of the modem's features are a built-in bit-error-rate tester, an integral two-channel multiplexer and a liquid crystal display. The modem lists at $4,495. FUJITSU AMERICA INC., San Jose.

Circle 159

BRIEFS

Berkshire Computer Products of Framingham, Mass., has recently unveiled **three new series of storage products.** The Maximizer disk series of subsystems is a seven-model series compatible with Digital's DSA/SDI architecture. The four-model Discovery I series, for Digital's QBus and Unibus users, is a group of nine-track tape drive subsystems. The Discovery II product is an 8-millimeter helical scan cartridge tape drive. Prices range between $16,900 and $205,000.

Citizen America Corp. in Santa Monica, Calif., has announced its third generation of **dot matrix printers.** The two models, the HSP-500 and the HSP-550, are nine-pin printers that produce 300 characters per second in draft mode and 66cps in letter mode. The prices are $499 and $699, respectively.

Prime Computer users who need **an electronic mail package** can now use PostMARC, according to Palo Alto, Calif.-based **MARC Software International Inc.** PostMARC runs the PRIMOS and Prime Information operating systems. The product is available immediately and is priced from $3,675 to $14,625.

Circle 160

Hancock Software Inc. of North Andover, Mass., has introduced a **VAX/VMS file and directory management program,** FILEMASTER. For use with any Digital-supported terminal, the product is priced between $495 and $7,950.

Circle 161

A time- and expense-tracking system, which runs on IBM PCs and compatibles, has been formally announced by **Software Partners Inc.** The TimeSheet Professional automates the collection and analysis of client specific expense records in an electronic time sheet. The product sells for $149.95.

Circle 162

Sola, a unit of General Signal Corp., has unveiled a series of **electronic UPS products** with built-in isolation transformers. Designated Sola's Electronic 57 series, the three-model family of uninterruptible power supplies exhibits power ratings of 5, 8 or 10 kilovolt amperes and ranges in price from $9,640 to $15,200.

Circle 163

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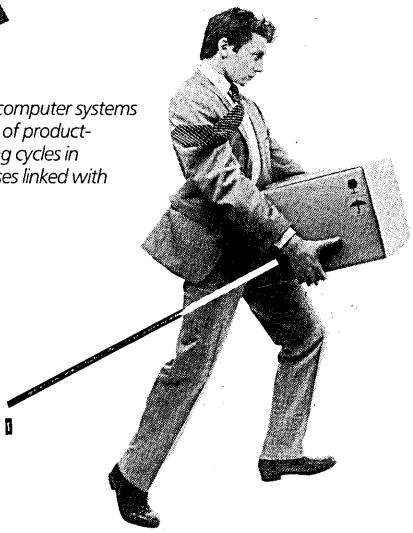

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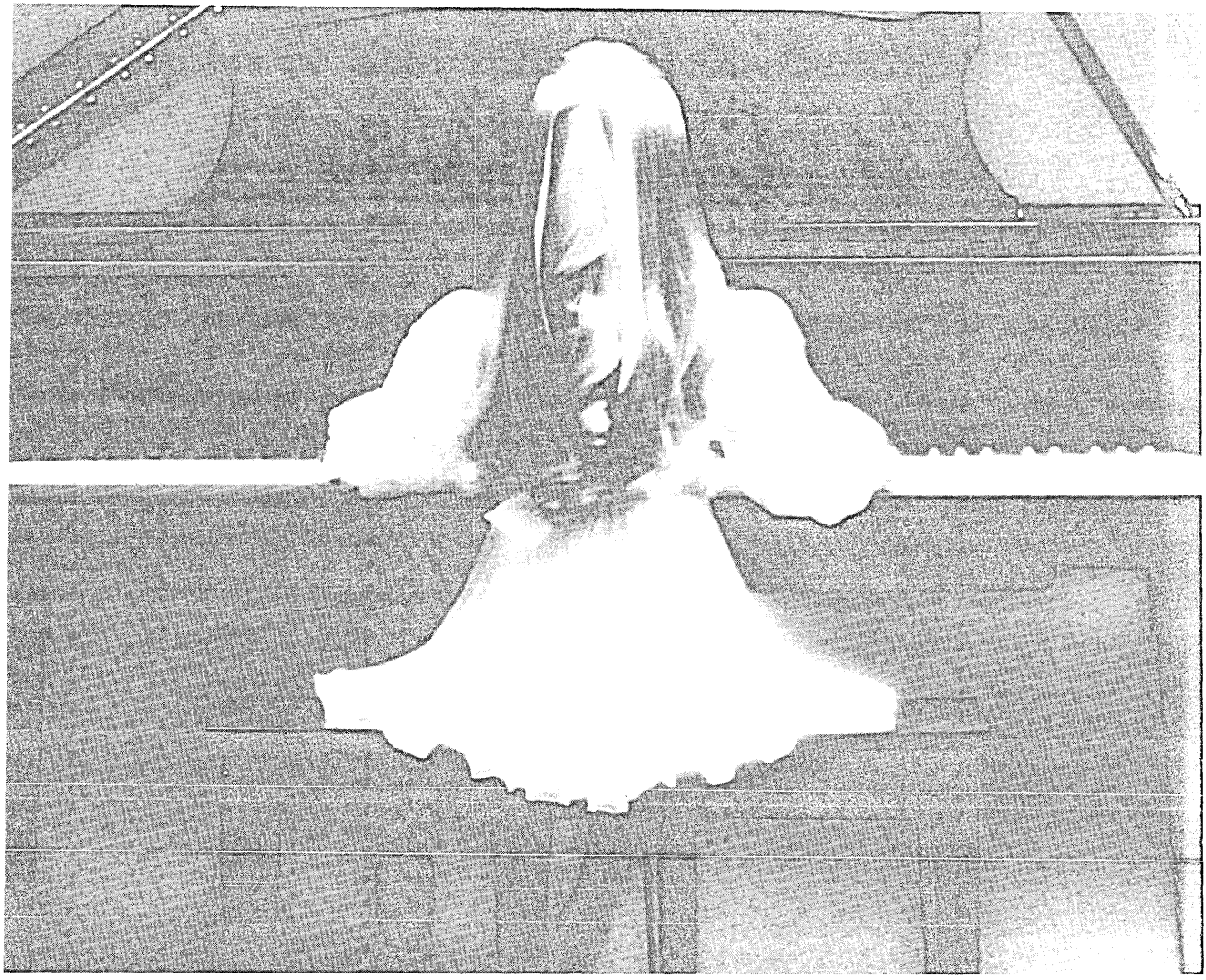

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The Battle For Europe

The world's vendors are jockeying for position as the battle heats up for IS rule in the single European market.

BY PAUL TATE

It was a year of furious preparation for the IS industry in Europe. Throughout 1988, companies across the globe gathered their European forces, forged strategic alliances across the region, reorganized their internal lines of command and prepared for a competitive onslaught the likes of which neither Europe—nor any other continent—has ever seen.

The increasingly realistic prospect of a single market emerging sometime after 1992 has turned Europe into a global battlefield once again. Europe's IS markets have always been noted for their fierce combination of pan-European U.S. giants, patriotic national champions and major Japanese distributors. But, in the past, the majority of clashes among them were local incidents. In 1988 all three groups took the fighting onto a European plane. It was the year that the battle for the single European market really began.

The 25 companies most likely to succeed in the new Europe make up the 1988 DATAMATION Top 25. Together, their combined IS revenues rose 16.8% in U.S. dollars to $66 billion. Because the dollar fell slightly against most European currencies—about 2 to 3%—the increase in revenues in European currencies was less than what it was when calculated in dollars. And with European merger activity high, real growth is closer to 13%.

The threshold of entry to the DATAMATION's European elite soared in 1988, however—up from $493 million in 1987 to $723 million in 1988, a massive increase of 47%. The big in Europe are getting bigger. With a total European IS market of over $90 billion in 1988, the Top 25 companies represent over two-thirds of 1988 European IS sales.

IBM Grows But Loses Share

IBM still rules the European market, with revenues almost four times larger than its nearest rival, West Germany's Siemens AG. IBM Europe's IS revenues were up 10.3% in 1988 at $20.5 billion—the first time the company has burst through the $20 billion barrier in Europe.

Last year Big Blue's European revenues accounted for 34% of IBM's corporate sales and 43% of its profits. While the company watched profits tumble by 27% and revenues dip by $184 million in its U.S. operations, IBM Europe pushed income up 6% to $2.3 billion. The importance of the European operations to IBM's global health is increasing—but it hasn't been easy.

IBM managed to claw back some growth during 1988 in most of its major markets after a dreadful 1987. The revenue improvement was due in part to widespread interest in its AS/400 systems and an increasing number of lucrative systems integration and networking deals. Even so, its share of the European Top 25 revenues is down again to 31% from 33% in 1987 and 42% only four years ago in 1984.

Big Blue's biggest sigh of relief came in West Germany, where its oldest and largest foreign subsidiary managed to improve sales 5.5% after dropping 3.5% of revenues in 1987. Last year, it brought in $4.2 billion worth of business—accounting for 20.4% of IBM's European sales.

In France, the second largest market for IBM, revenues were up 8.0% after a flat 1987. The United Kingdom's position as IBM's European number three market with $3 billion in revenues is now in jeopardy, however. The Italian market is booming, and after a 13.5% rise in 1987 and another 14% in 1988, IBM Italy is now only a hairbreadth away from toppling the U.K. subsidiary, with Italian sales reaching $2.99 billion last year.

INTERNATIONAL

EUROPE: The world's vendors are jockeying to be in position for the single European market. 68–3

ITALY: Benetton's visionary senior management has used IS to sharpen the company's competitive edge. 68–15

EUROPE: Managers are beginning to come to grips with executive information systems. 68–17

INNOVATIONS: NEC's new supercomputers; ozone-friendly printers from Memorex Telex. 68–20

Europe's other booming market—Spain—provided IBM with 16% more sales than in 1987, and in the Netherlands, where revenues plummeted by 18% in 1987, the Dutch subsidiary regained some momentum and reported a 10% increase for 1988 to $940 million (see chart, "IBM Europe's Major Markets").

Japanese Firms Enter the Top 25

IBM is one of 10 U.S. companies on this year's European ranking, with 13 Europeans and for the first time two Japanese firms—printer specialist Canon Inc. at $1.05 billion and plug-compatible mainframe supplier Hitachi Ltd. with $824.8 million. The combined European revenues of the 13 European firms amounted to over $28 billion, accounting for 43% of the total revenues of the Top 25 companies. That's down a little from the 46% share enjoyed in 1987, but more than the 41% garnered in 1986.

The Japanese are a new factor. Selling its plug-compatible manufacturers machines through National Advanced Systems Corp., Comparex Informationssysteme GmbH and Ing. C. Olivetti & Co. SpA, Japan's Hitachi has become a powerful force in European mainframe sales. This may increase further when Comparex completes its acquisition of the European operations of NAS later this year. The coordinated sales operations should clear the way for further market growth before IBM muddies the waters once again with its new Summit mainframe line.

While both the Japanese companies in the ranking have shown strong progress in Europe over the last year, inadequate geographical breakdowns from the Japanese companies have precluded their inclusion in previous rankings.

Hitachi and Canon are two of the six new names on the 1988 Top 25. Also featured this year is Finland's aggressive IS group Nokia Data Systems, which acquired the Information Systems Division of Sweden's LM Ericsson in early 1988. In the first year, the consolidated revenues of the new Nokia Corp. reached $1.2 billion, putting it in 14th position.

Prime Computer Inc. enters the table at number 18 with revenues of $909 million, up substantially over 1987 due to its acquisition of Computervision Corp. Control Data Corp. has jumped back onto the ranking in 1988 after an absence of one year, this time at number 23, with revenues of $781 million, and the current darling of Wall Street, U.S. PC supplier COMPAQ Computer Corp., has burst in at number 25 after raging growth in Europe as well as the United States.

Barriers to Entry

The rising entry threshold took its toll on companies that were nevertheless performing well. Altogether, six firms are no longer on the ranking this year. Apart

The Top 25 Suppliers in Europe

Ten U.S. companies rank among the biggest vendors.

1988 RANK	1987 RANK	COMPANY	COUNTRY	1988 EUR. IS REV.	% CHG. FROM 1987 $/AAC*	TOTAL IS REV.	% CHG. FROM 1987 $/AAC*	EUR. % OF TOTAL IS/ % CHG.
1	1	IBM	U.S.	$20,520.0	10.3/—	$55,002.8	8.7/—	37/0
2	2	Siemens	W. Germany	5,296.4	6.7/4.3	5,951.0	4.4/2.0	89/2
3	4	Digital Equipment	U.S.	4,422.5	29.0/—	12,284.7	18.2/—	36/3
4	3	Olivetti	Italy	4,396.6	15.6/16.0	5,427.9	17.0/17.5	81/(1)
5	6	Groupe Bull	France	4,025.5	11.1/10.1	5,296.7	6.7/5.7	76/3
6	5	Nixdorf	W. Germany	2,831.8	6.8/4.3	3,044.9	7.9/5.4	93/(1)
7	7	Unisys	U.S.	2,639.0	14.0/—	9,100.0	2.2/—	29/3
8	9	Hewlett-Packard	U.S.	2,331.0	29.5/—	6,300.0	26.0/—	37/1
9	8	NV Philips	Netherlands	2,207.7	7.4/4.8	2,794.6	7.4/4.8	79/0
10	10	STC	U.K.	2,061.3	19.3/10.1	2,425.1	14.2/4.9	85/4
11	11	NCR	U.S.	1,756.9	7.9/—	5,324.0	4.7/—	33/1
12	13	Alcatel	France	1,647.4	29.5/26.1	1,716.0	(16.5)/(18.5)	96/34
13	15	Société Générale	France	1,173.7	21.0/19.9	1,222.6	26.0/24.9	96/(4)
14	—	Nokia	Finland	1,165.1	179.1/165.8	1,165.1	179.1/165.8	100/0
15	16	Atlantic Computers	U.K.	1,113.5	16.4/6.9	1,341.6	30.5/19.9	83/(10)
16	—	Canon	Japan	1,051.4	47.8/31.0	3,391.6	43.0/26.8	31/1
17	21	Apple	U.S.	931.2	70.1/—	4,434.1	45.8/—	21/3
18	—	Prime	U.S.	908.6	186.5/—	1,594.0	65.9/—	57/24
19	19	Wang	U.S.	891.6	8.4/—	3,074.4	0.9/—	29/2
20	—	Hitachi	Japan	824.8	19.5/5.9	8,247.6	31.5/16.5	10/(1)
21	22	Cap Gemini Sogeti	France	800.7	46.7/45.4	976.5	43.1/41.9	82/2
22	24	Amstrad	U.K.	782.9	14.1/4.8	841.8	15.3/5.9	93/(1)
23	—	Control Data	U.S.	781.0	(6.2)/—	3,524.3	9.4/—	22/(4)
24	14	Inspectorate Int'l	Switzerland	725.9	0.4/(1.9)	1,230.3	0.4/(1.9)	59/0
25	—	Compaq	U.S.	723.0	146.1/—	2,065.6	68.7	35/11

Source: DATAMATION.
All currency figures are in millions.

from Ericsson, the other company that has merged is Honeywell Bull Inc., now controlled worldwide by France's Groupe Bull, which ranks at number five on the list.

The only company that dropped in ranking due to reduced sales was Netherlands-based Memorex Telex NV, which reported European revenues down 18% at $685.9 million. By contrast, West Germany's Mannesmann Kienzle AG had a booming year with IS sales up 16%. But its $717 million sales figure was too low to place the company on the table and Mannesmann slipped from 20 in 1987 to number 26. Leasing company Econocom International BV slipped from number 23 also off the table to number 29 despite revenues being up 26% to $664 million, while Amdahl Corp. reported revenues up 13% to $559 million but dropped from last year's number 25 slot down to number 32 in 1988.

Reporting solid growth and booming revenues last year and approaching the new threshold were Xerox Corp.'s European joint venture, Rank Xerox, which is doing well with revenues up to $677 million, and Commodore International Ltd., which pushed its European sales up to $621 million in 1988.

Nine companies ascended in rank on the table last year, four slipped down and six remained in the same position. The biggest jump was Apple Computer Inc.'s surge from number 21 in 1987 to number 17 in 1988. This reflects the burgeoning PC market in Europe, which also pushed U.K.-based PC maker Amstrad PLC up two places from number 24 to number 22, and also accounts for Compaq's sudden arrival at number 25. Also heading upward by two places was French bank Société Générale, reaching number 13. Société Générale has two main interests in the IS sector—its Europe Computer Systems leasing operation and the SG2 software and services company. ECS performed particularly well, and between the companies they pushed the bank's IS revenues up 21% to $1.2 billion.

U.S. % OF TOTAL IS/ % CHG.	NET INCOME	1988 EMPLOYEES	FISCAL YEAR END
42/(4)	5,806.0	387,112	Dec.
10/(2)	792.1	353,000	Sept.
48/(3)	1,209.1	124,400	July
10/1	273.5	57,560	Dec.
18/(3)	50.9	45,557	Dec.
5/1	14.8	31,037	Dec.
54/(2)	680.6	93,000	Dec.
48/(3)	816.0	87,000	Oct.
14/0	534.1	310,300	Dec.
7/(2)	264.9	33,848	Dec.
42/(3)	439.3	60,000	Dec.
0/(31)	497.9	127,000	Dec.
0/0	6.9	1,137	Dec.
0/0	259.7	44,600	Dec.
15/10	65.8	1,431	Dec.
30/(2)	229.5	40,740	Mar.
66/(6)	419.3	10,836	Sept.
43/(14)	19.0	12,500	Dec.
57/(3)	50.1	31,255	June
11/1	1,060.3	161,000	Mar.
18/(2)	67.5	12,000	Dec.
5/2	165.1	1,644	June
71/(4)	1.7	33,657	Dec.
40/—	90.2	7,698	Dec.
61/(13)	255.2	6,000	Dec.

*Actual accounting currency.

Surge Continues

Moving up by one point was Digital Equipment, which has pushed Olivetti out of the number three position. This is the second year that Digital has proved how much life there is in the European market. In 1987 it reported an increase of 27% in sales and in 1988 it added a 29% surge to its European business. Two of Europe's mini makers—Norsk Data AS in Norway and Nixdorf Computer AG in West Germany — suffered, however, with losses of $42 million at Norsk and profits below expectations at Nixdorf.

Also up one position each were Alcatel NV (now at number 12), U.K. leasing company Atlantic Computers PLC (at number 15), France's Cap Gemini Sogeti (at number 21), France's Groupe Bull (which replaced Nixdorf at number 5) and Hewlett-Packard Co. (at number 8).

Sliding down the list were Nixdorf, Olivetti and NV Philips' GL each by one place, and Swiss-based leasing group Inspectorate International Ltd. fell by 10 places to its rightful position at number 24 (1987 figures have been restated).

Widespread Restructuring

Corporate reorganization characterized many of the European companies during 1988. In Scandinavia, Nokia Data spent the year merging its activities with the data systems division of Ericsson Information Systems. In the Netherlands, Philips began to build a new corporate organization around four core businesses—one of them information technology—and trying to coordinate its worldwide marketing and manufacturing activities. In addition, Alcatel, registered in Amsterdam but headquartered in Paris, is still interweaving Compagnie Générale Électricité's IS operations and ITT's European network of offices.

Both Olivetti and Siemens announced massive restructuring programs toward the end of the year. Olivetti is being divided into three main subsidiaries: Systems and Networks, Office, and Information Services. By 1994, Olivetti's new joint managing director Vittorio Cassoni expects them to be eligible for listings on the Italian stock exchange.

West Germany's Siemens, meanwhile, plans to divide up its massive product groups into between 15 to 20 independent business units by the end of September. The process will involve shuffling 9,000 staff members around the organization.

This year also featured a significant number of mergers and acquisitions, especially in the software and services sector.

A Shift in Spending

The biggest problems the European contenders are going to have to face over the next year or two may not be in Brussels, where the European Commission is thrashing out the details of the new market structure. The problems may well be in the thousands of IS divisions, user departments and retail outlets found in 17 countries. European market growth is beginning to show signs of slowing down. Not because European companies are not buying as many products, but because they are looking for more value for every

mark, franc and pound they spend.

And the balance of spending has shifted markedly over 1988. A DATAMATION Price Waterhouse International user survey shows 19% fewer French and 6% fewer U.K. companies planning to up their hardware budget for 1989, compared with the first quarter of 1988. Most of the money is going into software—developed both in and out of house—and on networks.

As hardware increasingly becomes a commodity product, and the open systems standards movement that began in Europe in the late 1970s and early 1980s creates new dynamics in the European hardware industry market, the competitive focus is on electronic trading links, network services and mission critical systems as the factors for success in a single market.

But both international hardware and software companies alike may have to face a much more difficult problem in Europe over the next few years—the possible emergence of a European trading bloc and all of its incumbent trade barriers. The threat of a "Fortress Europe" developing to protect European companies in the transition to a single market became a potent issue in 1988. It's an issue that many U.S. observers treat seriously and some feel has major global ramifications.

"It seems to me that a common market is inherently discriminatory," said onetime U.S. Secretary of State Henry Kissinger at a recent European conference held by International Data Corp. of Framingham, Mass. "Its external barriers are higher than its internal barriers. That's what makes it a common market. You can negotiate them down, but you must do so from a similar position. I don't think the world of the future will be a matter of GATT [General Agreement on Tariffs and Trade] negotiations between countries, but between trading blocs."

The world's major IS companies are consolidating their positions in Europe before that happens. This year will reveal who wins the first few skirmishes in the battle for Europe.

Results for non-U.S. companies are converted into dollars using Organization for Economic Cooperation and Development (OECD) average exchange rates. For those currencies not part of the OECD, exchange rate information was provided by the International Monetary Fund. For 1988, equivalents to $1 in these currencies were as follows: European Currency Unit, ECU1.15; Finland, Fmk4.18; France, FR5.95; Italy, L1,301.68; the Netherlands, G1.98; Norway, Nkr6.52; Sweden, Skr6.13; Switzerland SFR1.46; the United Kingdom £0.56; West Germany, DM1.76.

The Top 25 European Companies

Siemens and Olivetti lead the pack this year.

1988 RANK	COMPANY	COUNTRY	1988 IS REVENUE	% CHG. FROM 1987	% CHG. FROM 1987 IN AAC*
1	Siemens	W. Germany	$5,951.0	4.35	2.0
2	Olivetti	Italy	5,427.9	17.05	17.5
3	Groupe Bull	France	5,296.7	6.69	5.7
4	Nixdorf	W. Germany	3,044.9	7.92	5.4
5	NV Philips	Netherlands	2,794.6	7.42	4.8
6	STC	U.K.	2,425.1	14.18	4.9
7	Memorex Telex	Netherlands	2,078.5	99.64	94.9
8	Alcatel	France	1,716.0	(16.51)	(18.5)
9	Atlantic Computers	U.K.	1,341.6	30.46	19.9
10	Inspectorate Int'l	Switzerland	1,230.3	0.43	(1.9)
11	Société Générale	France	1,222.6	26.03	24.9
12	Nokia	Finland	1,165.1	179.13	165.8
13	Cap Gemini Sogeti	France	976.5	43.12	41.9
14	Econocom	Netherlands	897.0	33.03	29.8
15	Amstrad	U.K.	841.8	15.28	5.9
16	Mannesmann	W. Germany	779.0	13.56	10.9
17	Comparex	W. Germany	614.5	15.77	13.1
18	Racal Electronics	U.K.	554.1	0.91	(7.3)
19	Finsiel	Italy	545.4	28.60	29.1
20	Norsk Data	Norway	450.2	6.53	3.1
21	Sema Group	U.K.	375.1	90.21	74.6
22	SD-Scicon	U.K.	366.4	27.67	17.3
23	Sligos	France	343.1	47.51	46.2
24	Logica	U.K.	269.9	38.69	27.5
25	GSI	France	262.8	14.01	13.0

Source: DATAMATION, company reports. *Actual accounting currency.
All currency figures are in millions.

IBM's Seven Major Sources of Revenue in Europe

West Germany is IBM's biggest market in Europe.

IBM SUBSIDIARY	1988 LOCAL REV.	1988 LOCAL REV. AAC*	% CHG. FROM 1987	1988 TOTAL REV. AAC*	% CHG. FROM 1987 AAC*	NET INCOME	NET INCOME AAC*	% CHG. FROM 1987 AAC*
West Germany	$4,181.0	DM7,342	5.5	DM11,372	(1.5)	$367.3	DM645	18.3
France	3,379.6	Fr20,129	8.0	Fr38,169	1.2	388.2	Fr2,312	3.1
United Kingdom	3,078.3	£1,730	5.1	£3,874	11.2	581.9	£327	3.8
Italy	2,994.6	L3,898,000	14.0	L6,570,000	21.9	442.5	L576,000	26.0
Spain	1,133.7	Pta132,071	16.0	Pta187,090	5.4	183.7	Pta21,396	(3.6)
Netherlands	940.8	G1,860	10.1	G3,243	0.8	68.3	G135	(35.4)
Sweden	798.7	Skr4,895	12.2	Skr9,024	18.1	64.8	Skr397	5.6

Source: IBM Europe, Paris.
All currency figures are in millions; all exchange rates are OECD average rates for 1988. *Actual accounting currency.

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SIEMENS

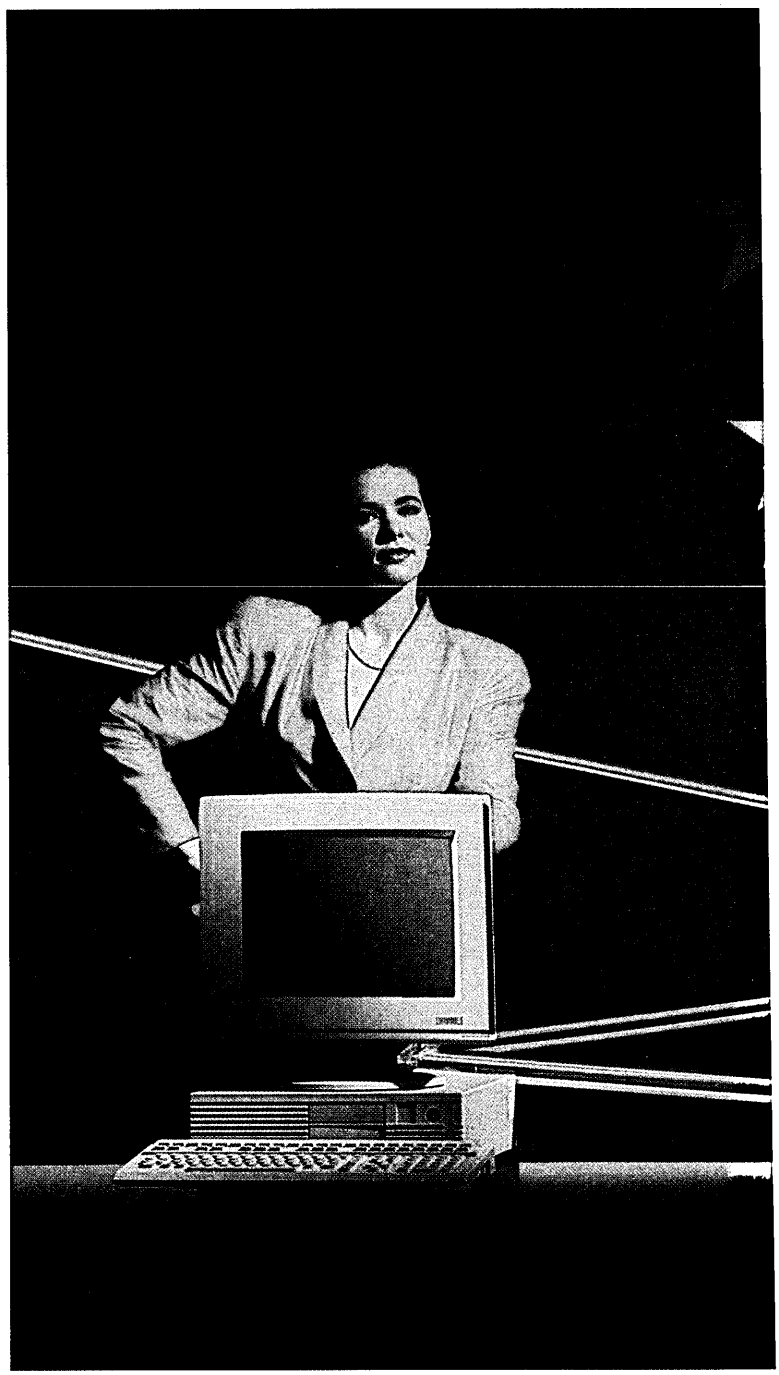
European common sense leads to common computer standards for the world

Europe 1992 will be not just a beginning, but also a consequence. The result of years of preparation, for example the standardization in the DP world. For computer communications from person to person, office to office, across national borders and the barriers of different makes.

It was precisely the variety of nations and standards in Europe that led to talks between European manufacturers in the 70s.

Siemens has played a decisive part in these activities. For example in the OSI Group: 14 leading computer companies and post office administrations have implemented X.400, a series of standards for open text and data communications via electronic mail. The wide range of Siemens OSI products already speak the international language for communications of the future. And Siemens is also a founder member of the X/OPEN group, which has defined and guaranteed common market standards and interfaces for their UNIX* products.
Siemens is now European number one in the UNIX market.

Siemens Computing
The European Solution



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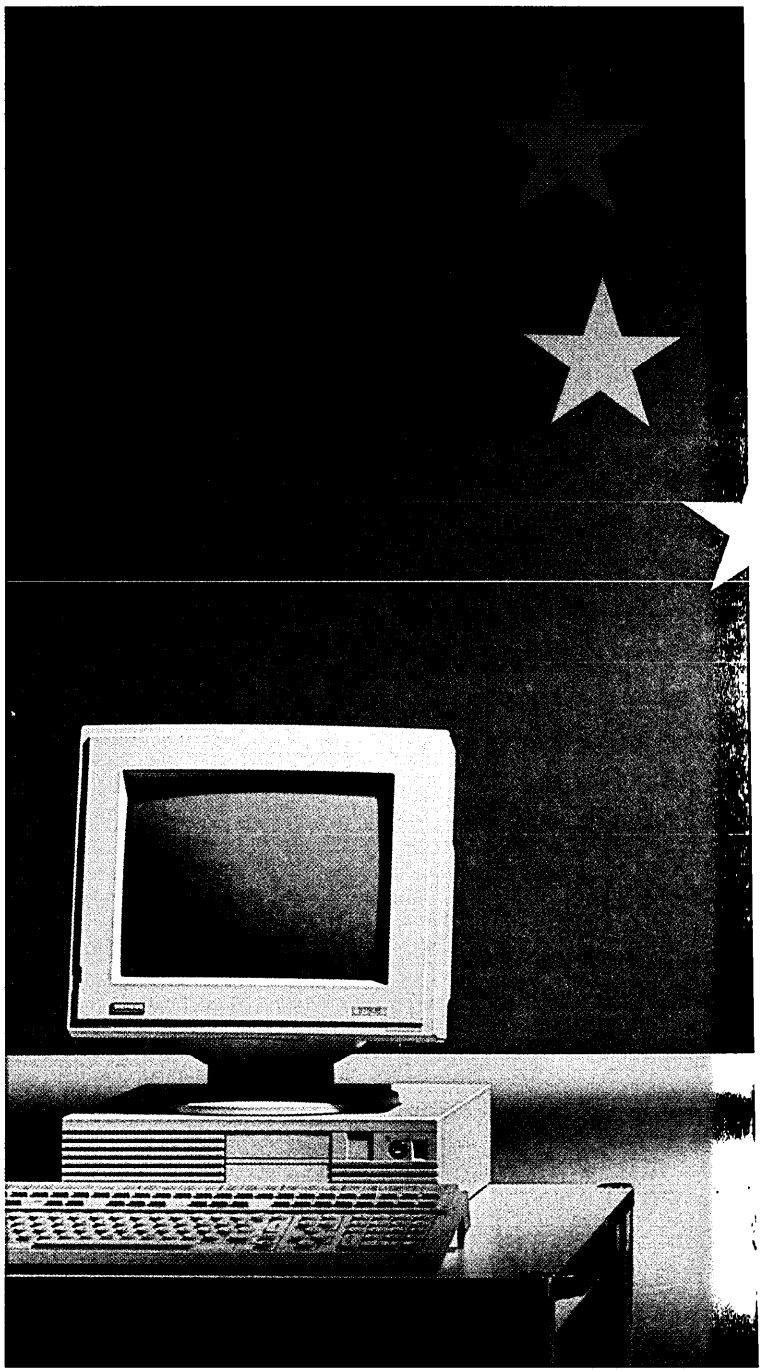
* UNIX is a registered trademark of AT&T

SIEMENS

SINIX plays first violin in the European UNIX concert



European computer users are already tuning up for 1992. The communications barriers between the different computer worlds are falling. The unifying force is UNIX*, the most successful operating system for multi-user computers. In the lead is Siemens with its user-friendly UNIX derivative SINIX*.

An installed base of 28,000 SINIX systems and 120,000 interactive workstations makes Siemens the European leader of the UNIX world. Siemens has long been a proponent of open communications within and between companies with a large-scale development programme. That also means active participation in various international standardization committees. For example, Siemens is a founder member of the X/OPEN group of 13 European UNIX companies, which have defined common standards and the associated interfaces. A decisive contribution to a free data market, in Europe and the world.
SINIX is already calling the tune for 1992.

Siemens Computing
The European Solution

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* SINIX is the Siemens derivative of UNIX

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SIEMENS

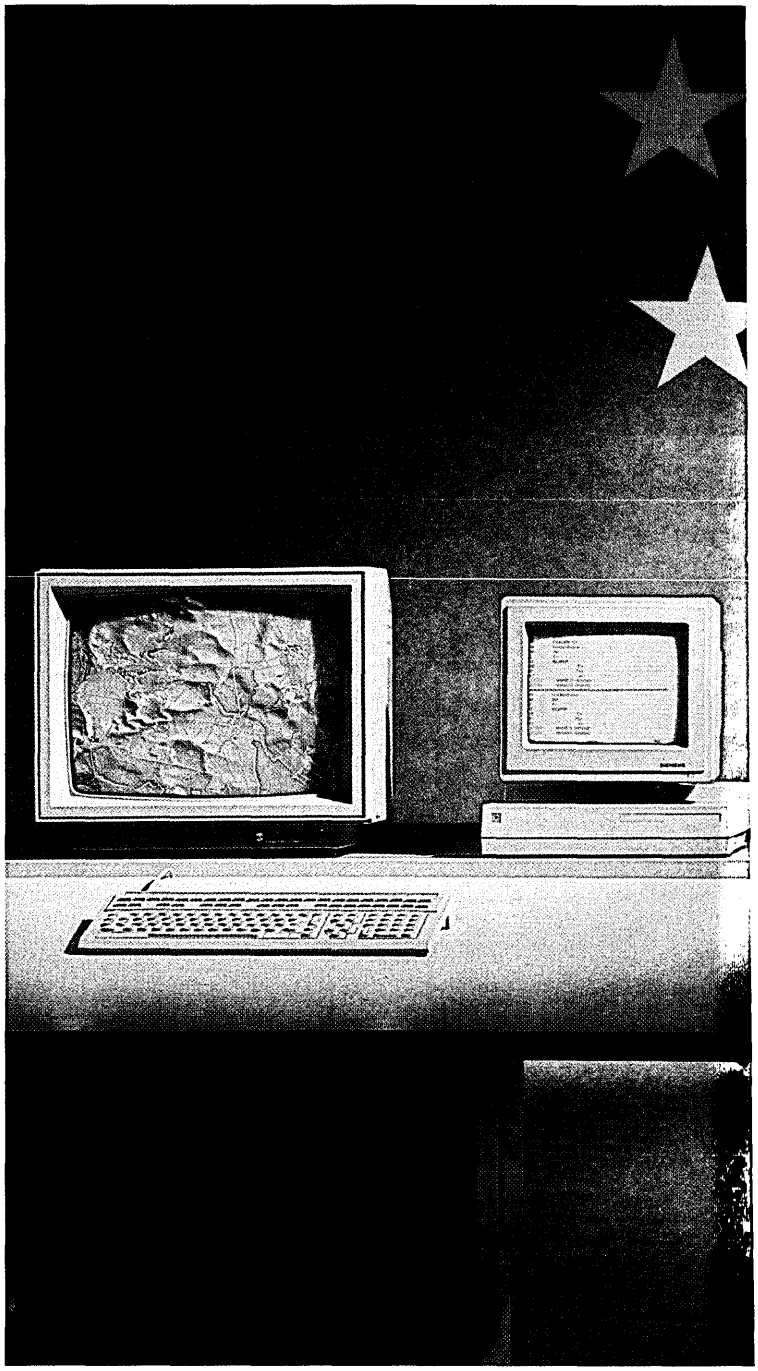
A European mapping system goes round the world

When Europe's frontiers open in 1992, the old world will gain the strength of unity, without losing the strength of variety – the variety of its nations, traditions, and ways of thinking, concentrated in a relatively small area.

These geographical limits have made effective planning a European speciality. 1000-year-old city centres must be renovated, new ecological problems solved. Tasks that involve recording and analysing enormous quantities of data. Siemens was one of the first to recognize this need, and has collaborated with universities and research institutes over the years to develop SICAD®: a geographical information system for map-making that is already being used for the most varied applications all over the world.

For town planning in China, for example. Or forest management all over Europe. Or updating air navigation charts. SICAD rapidly turns graphics and non-graphics data into clear purpose-made maps and plans. Documents on which far-reaching technical, economic and political decisions can be made. For Europe 1992 and the world of tomorrow.

Siemens Computing
The European Solution



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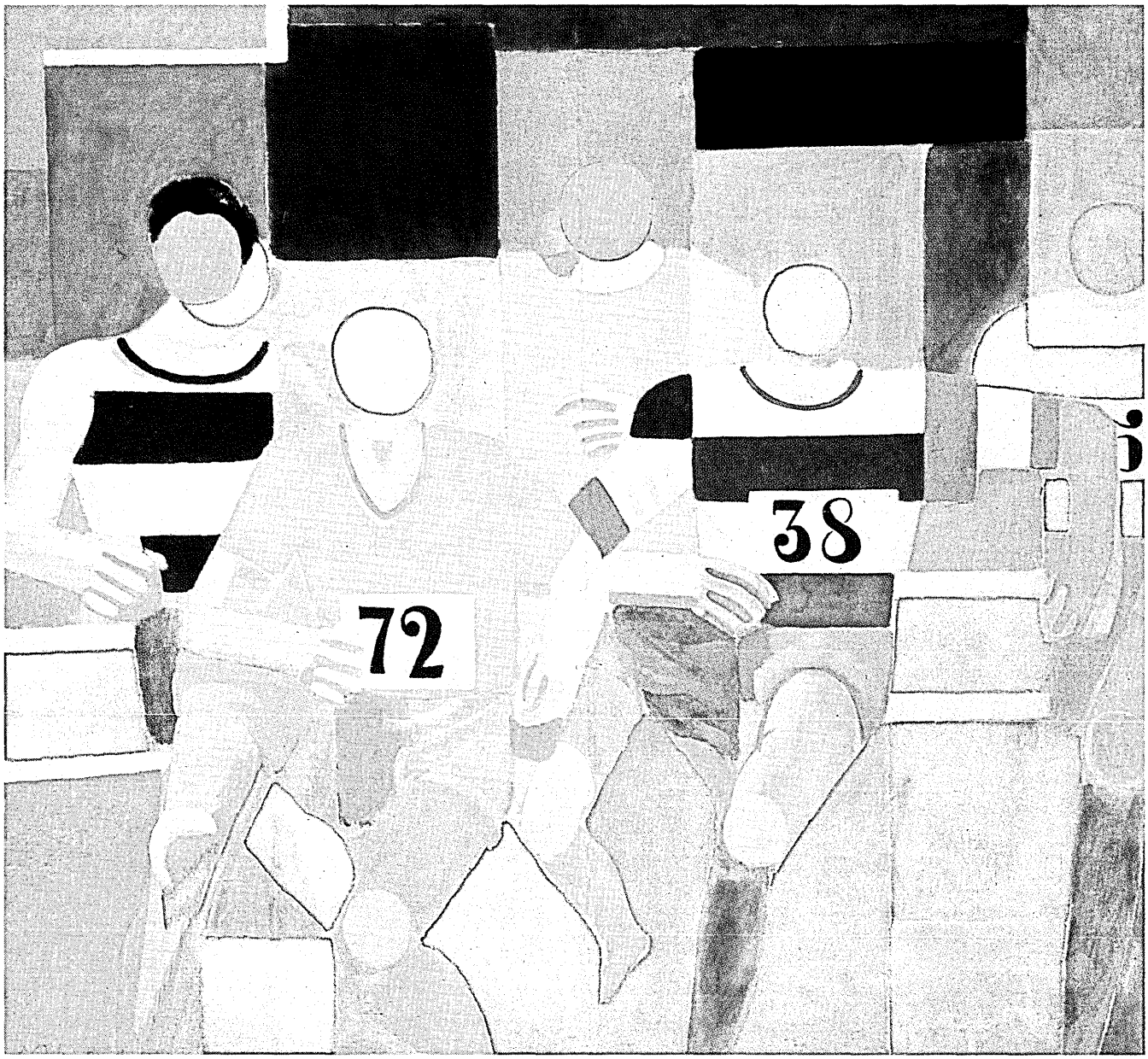

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Benetton's IS Instinct

Visionary senior management at one of Italy's most famous high-street fashion firms has sharpened the company's competitive edge—sometimes at the cost of internal disruption.

BY JANETTE MARTIN

Colorful Italian clothing company Benetton SpA, which has exploded from a simple door-to-door family operation to a billion-dollar multinational over the last 20 years, is fast becoming an industry reference model exemplifying the competitive use of information technology. In the industry's view, Benetton's commercial success is linked intrinsically to its well-planned and extensive IS strategy. But the story isn't quite that simple.

When Bruno Zuccaro took up his position as the company's MIS manager in 1984, he walked straight into a crisis. "There were a lot of people leaving, applications were old, there was no new development and people weren't motivated," recalls Zuccaro. Worse than that, he adds, the existing data-processing manager wasn't prepared to think big, but the company was already headed in that direction.

Things have changed. "Four years ago, we had two problems—redesign all existing systems and implement new systems," he says. "Today, we've redesigned 70% of our systems. IS is three times bigger than it was in 1984."

The Benetton Instinct

One thing strongly in Zuccaro's favor as he faced this challenge was the support of company founder and director Luciano Benetton, whose strategic IS decisions, say insiders, are based more on instinct than on formal cost justifications.

"Benetton is founded on the concept of centralizing the production and distribution phases that add the highest value to product lines and on decentralizing less important phases," explains Luciano.

Instinct has done Luciano little harm so far. Since the days when he wandered the streets of Milan selling sister Giuliana's colorful sweaters, he has built up a group of companies that produces over 50 million garments a year, has 4,000 points of sale in 60 countries (soon to include the Soviet Union) and manufactures in Brazil, France, Italy, Scotland, Spain and the United States. Giuliana's sweaters now share space with underwear, sunglasses, watches, perfume, shoes, school and office supplies, and bed and bath linens, all bearing the Benetton logo. And in 1987, Benetton diversified, setting up In Holding, a holding group for a range of financial services companies.

"Benetton's market is, for reasons of product and target, very dynamic, evolving rapidly," says Luciano. "Following, managing and anticipating trends and changes in the conditions of this market is possible thanks to the considerable contribution of the company's information systems." That contribution amounts to around 1.3% of the company's global revenue.

THE BENETTON FAMILY: The company was founded on the concept of centralizing the production and distribution phases that add the highest value to product lines.

This budget comes under the control of IS chief Zuccaro, who, friends say, has two hobbies—skiing and work. At work, the restructured computer center and network system is his pride and joy. Benetton uses a 30 million instructions per second IBM 3090 280E for production and an 11 MIPS IBM 3090 150E for development. He chose the relational data base management system SUPERA because, he explains, DB2 wasn't ready

Janette Martin is DATAMATION's Italian correspondent based in Milan.

when he made the relational DBMS decision two years ago.

Last year, Benetton spent L3 billion ($4.1 million at L731 = $1) on relational DBMS development, and in 1989 the company will increase that amount by some 33% to L4 billion ($5.5 million). Zuccaro points out that the company considers relational DBMS to be the most important development in IS to come along in years. About 2.5 gigabytes of Benetton data are on relational systems today.

Networks in use include the General Electric Information Services Co. (GEISCO) Mark III, which Benetton has used since 1985, and the Mark 3000, recently integrated with the Mark III system. Benetton began to use the Mark III network in 1988 for electronic data interchange (EDI) with its 75 independent agents, each in charge of retail operations in one geographic area. Document movement time has been trimmed over 20% with the Mark III system, and the time it takes to clear exports through customs has been greatly reduced. Benetton claims it is pioneering the use of intercontinental EDI in the textiles industry.

The Mark 3000 has a tracking system for agents, so they know which items are in production, which are in the warehouse and which have been shipped. At the end of March, Benetton added a customer credit service to the network to enable agents to keep track of customer billing.

The distribution division's monument to high technology is the automated warehouse in Castrette, a stone's throw from Benetton's Ponzano headquarters. Operational since 1986, the warehouse cost more than $57.6 million to build and outfit. A Digital VAX minicomputer directs robots via remote control. The robots read bar codes on boxes, sort them and store them in logical areas. Storage and retrieval movements are made in one pass for economy.

The robotics, by Fiat's industrial automation subsidiary COMAU, has been built to handle up to 12,000 individual boxes per day rather than the normal pallets of boxes. There is space in the warehouse for 250,000 boxes of nine different sizes.

Robots in the Warehouse

"The warehouse is the logistical heart of Benetton's systems," says Luciano. "It's the point at which the flow of products coming from diverse production units converges and the distribution flow of the system explodes.

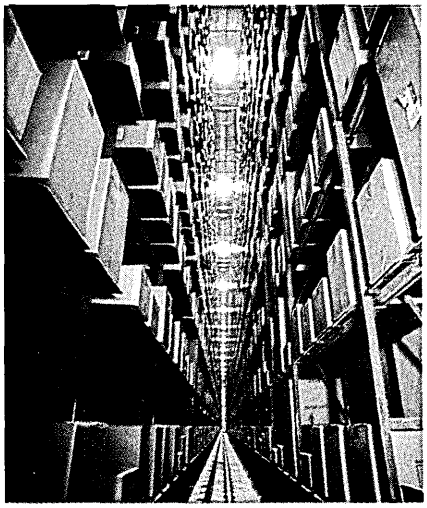
With a sophisticated distribution system in place, the major IS challenge for 1989, Zuccaro says, is the design of a production system that will serve the company in the years of growth and change ahead. Efficient, market-targeted production, including design, color studies, cutting and dyeing, is crucial to Benetton's success, he adds.

"We need ideas," Zuccaro says. They are also looking at expert systems—one is in development—that will help provide a method to estimate the complexity and productivity of IS projects. Zuccaro complains that expert systems are still a marketing product, not a production product.

Designer Lasers

A recent example of how Benetton has employed technology in the production process is a laser disk system that aids in designing seasonal clothing collections. Designers used to go to the warehouse to look over past seasons' clothing models, since about 20% of new models are designed from old models. These trips were time consuming.

With the laser disk system, clothing models are photographed and made into slides, which are transferred to videotape. The video is linked to a laser disk attached to an IBM PC AT. The personal computer has a data base of information on each piece of clothing in each collection. Pieces are coded by item number, season and fabric group name (or "family"). A design team member can request all trousers from the family "city" from the men's Spring/Summer 1986 collection, for example, and the computer displays the correct models. Five years of collections, about 10,000 images, are on disk. The system will hold 50,000 images.



A BENETTON WAREHOUSE: the "logistical heart" of the company's systems

While Benetton ports the newest technologies to its slightly remote Ponzano site, the company prefers to recruit IS staff locally, a difficult feat for a company headquartered northwest of Venice, far from any major metropolitan center. But local recruits mean lower attrition rates. In order to complement the needs of its own operations, Benetton started a software company called In System, located in nearby Treviso. Zuccaro confides that, "it's difficult to mix cultures within a company—mainframe and midsize systems—and software companies are scarce here. In System helps us solve the problem by giving us a good 'outside' consulting company we can work with."

Visions Versus Reality

In contrast to the exemplary automated distribution and production systems, Benetton's office automation is not what it could be. Of 15 first-level managers, only one uses a personal computer, while all 45 second-level managers use them. But office automation is slated for growth and, setting a good example, Luciano recently installed a PC on his desk. "As one hungry for the new," he says, "I couldn't resist the appeal of the personal computer and am learning to use it. It continuously fascinates me."

But sometimes, the Benetton staff finds, Luciano has been known to show an overzealous dedication to technology. One manager tells of the time a year or so ago that Luciano became fixated on the paperless office concept. He ordered the commercial department to stop using paper, since systems were well automated and computers abounded. "The poor people had to work without paper records for about a week," the manager recalls. "But then they started to sneak paper back in to use, and Luciano realized after all that paper is necessary."

Now IS chief Zuccaro admits he's a bit worried about what Luciano has in mind for the future of IS at the company. Luciano has set up a meeting with Zuccaro to talk about the "after the computer era" at the company. Zuccaro's guess is that Luciano wants to start using the computer more as a motivator, and not just as a data-processing tool.

"He says that it's not enough to know what we sold," explains Zuccaro, "but we need to know what we should have sold and that we lost X dollars by not realizing our potential."

What Luciano Benetton wants next, says Zuccaro, is a system that gives people incentives. ▭

Europe's Information Seekers

In their search for understanding, European managers are beginning to come to grips with executive information systems. But companies are finding that one manager's information may be another manager's screen clutter.

BY CLIVE LESTER

European executives are under more commercial pressure than they've felt for decades. In head offices and throughout middle management, staffs are being reduced. The challenges of melding Europe into a single market are generating competitive anxieties. Increasing numbers of mergers and acquisitions are creating more complex organizations. All of these factors are increasing the demand for good executive information in Europe. But Europe's IS managers are beginning to realize that they must face some key issues before they can develop the much-needed executive information systems (EISs) of the 1990s.

First, IS managers are recognizing that EIS technology cannot be limited to top executives but must be extended to a wide range of management levels. Second, they are finding that an effective EIS is as much a matter of corporate structure as of executive information access. And third, IS managers are realizing that access to data from outside the organization is becoming increasingly important for senior management.

Fewer than 200 package EIS systems are available in Europe today, according to major suppliers' installed base figures, but this number is expected to double annually over the next few years.

Imperial Chemical Industries (ICI) of London, the world's fourth-largest chemical manufacturer, with 1988 sales of $19 billion, installed an EIS four years ago. Developed by Pilot Executive Software Inc. of Boston, the package runs on Digital VAXs. "Most of the information executives are provided with had previously been accessible to them in paper form," says Ian Lang, ICI's head office information technology manager. "Our EIS makes it easier for them to digest, compare and contrast data."

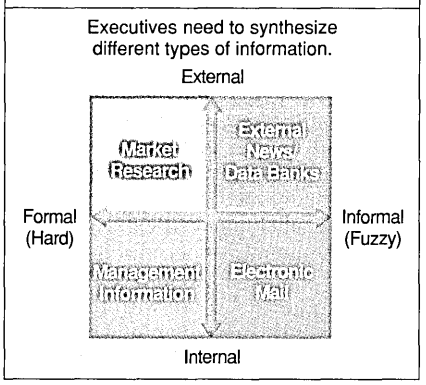
From the start, the EIS was designed to help increase the productivity of ICI executives. "Our former chairman, John Harvey-Jones, wanted an EIS to allow him to access data directly and look at options without necessarily involving the data-processing department directly. He wanted to reduce HQ staff, and at the same time [he] was putting more demands on existing staff."

Like many firms, ICI found its existing systems weren't good enough. Most MIS and decision support systems (DSS) do not address executive information needs because such systems were never designed with the particular needs of executives in mind. The level of detail provided by MIS and DSS systems is frequently inappropriate to the working style of executives, who are often more concerned with monitoring broad trends within the business than with dealing with day-to-day detail.

Doug Brough, systems designer with Shell U.K. Exploration and Production at the oil company's center in Aberdeen, Scotland, describes a similar situation, pointing out that an EIS system was developed because "although the directors were used to receiving good information, the EIS was intended to increase the quality, timeliness, consistency and pertinence of information to help them run their business."

London-based international electronics and leisure group, Thorn EMI, sees an additional need for EIS—as a way to create an external market focus. "There are 10 options in our EIS systems, two relate to the internal data and eight to the external world," says Mark Hall, Thorn EMI's EIS development manager. "The plan is to test the system over the next year or so and then filter it down to our subsidiaries. Potentially, there are between 20 to 30 sites worldwide [where we plan to install the systems]."

Figure 1: What Executives Need to Know



Hard and Soft Data

Recent research by the University of Leuven in Belgium has cast some light on the information requirements of top European executives. As shown in Figure 1, executive data requirements can vary quite significantly, ranging from a need for hard data, such as market research and management information systems, to "fuzzy" or soft data, such as external news items or internal mail.

Furthermore, the survey found that executives often need information based more on fuzzy than hard data. Confirms ICI's Lang: "Our business is definitely in the camp of fuzzy data."

The Leuven study also discovered that

in a well-run company an executive may spend up to 75% of his or her time dealing with external data and information. In a badly run company, the reverse is true, with an executive spending up to 75% of time dealing with internal data.

ICI's system deals primarily with external data. "A minority of time [is] spent on internal data," says Lang. "Our EIS complements our external data collection and helps an executive assimilate a range of external data very quickly. Our ICI corporate executive information needs are very wide, ranging from hourly share price information to 10-year projections. We need to monitor a wide range of external issues, ranging from genetic engineering through to the depletion of the ozone layer."

But, observes David Awcock, a consultant at PA Computers and Telecommunications in London, the EIS in many other companies is often being used less broadly "as an internal corporate control mechanism. There is little evidence of directional setting."

Steep Learning Curve

As ICI illustrates, executive information requirements in a single company can be very diverse, ranging from the broad-based concerns of group executives primarily looking at external information to the more specialized focus of those of company executives dealing with internal data, often with the aid of such tools as financial planning packages (see Figure 2). What may be an ideal EIS system for a corporate senior vice president may be wholly inappropriate for a director of a division.

The experience of many organizations shows that installing an EIS is a complex task. It raises fundamental questions about how executives operate and what forms the basis of their decision-making processes. As Hall at Thorn EMI explains, "There is a massive learning curve for both systems staff and executives. Only by prototyping can an executive learn how he wants to see data."

"You can't simply ask a top executive what information he wants to see," adds Shell U.K.'s Brough. "They normally don't have the time to undertake a study. You must decide what are the critical success factors for the business. The EIS is then designed to collect data on business parameters in order to measure each critical success factor."

An EIS can be a catalyst in a changing corporate culture. "One example is an organization where the chief executive firmly believes that when he is using his EIS to look at a particular area of concern, such as profit or cash flow, then the whole organization starts to focus on it also," says PA Computers' Awcock. "Another example is the use of an EIS to change an organization's focus from concern with internal matters to more attention externally."

ICI has recognized the need for strategic facilities—and the fact that they are not that difficult to provide. According to Lang, "the 'what-if' capabilities [of our EIS] are relatively straightforward compared to [those available on] a DSS. For example, executives would only change one variable at a time. The system provides a table scaled from 0 to 9, allowing an executive to take his choice."

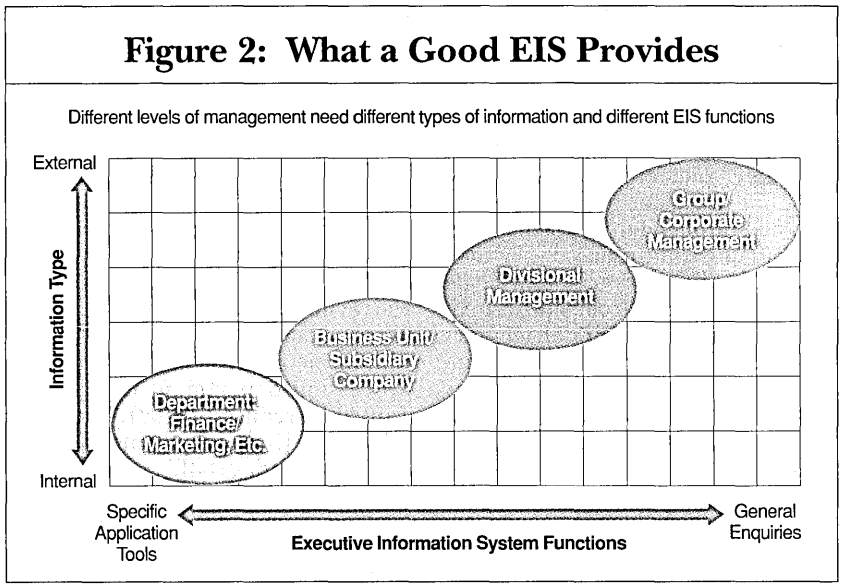
Furthermore, although ICI's Lang reports that he had "concerns that board members would request access to a lot more data, asking for more micro- rather than macro-level data, they have not done so."

ICI's approach may signify a greater convergence of EIS and DSS in the future. ICI has also used a fourth-generation language available within the EIS to develop artificial intelligence (backward and forward chaining), modeling and analytical techniques for the system.

Although EIS may be introduced by upper management as a strategic tool designed, for example, to change management focus, more often than not the decision to install an EIS is made at a lower level in the organization. As Mark Wyllie, financial decision support manager at UB Brands, a subsidiary of United Biscuits in London, explains: "Although we are part of a £1 billion company, we operate as a trading company, calling upon external services as required. In this structure, we, the end users, are the key decision makers in acquiring an EIS. We chose a PC-based EIS to meet our needs."

At least some barriers to EIS use have been overcome. Technologies (such as advanced graphics and touch screen facilities on PCs and workstations) and new presentation facilities (such as preconfigured screens) have allowed for access to information in a way appropriate to the needs and working style of top executives. Often integrated from both external and internal sources, data can be presented selectively in a manner that immediately highlights how well the business is doing.

But one of the most important issues yet to be sorted out is a standard for the presentation of information. Microsoft Corp.'s Windows, IBM's Presentation Manager and Digital's DEC-Windows are leading contenders. In the next few years, this is going to be an area of rapid innovation and fierce competition. That may not be such a bad thing. From the user's point of view, it is easy access and the clear presentation of the information that makes an EIS worthwhile. As Shell U.K.'s Brough puts it: "My managing director is a professional engineer with 25 years' experience. His interest is in getting information, not playing with a computer." ▭



Clive Lester is managing director of Primus Consultants in Twickenham, U.K.

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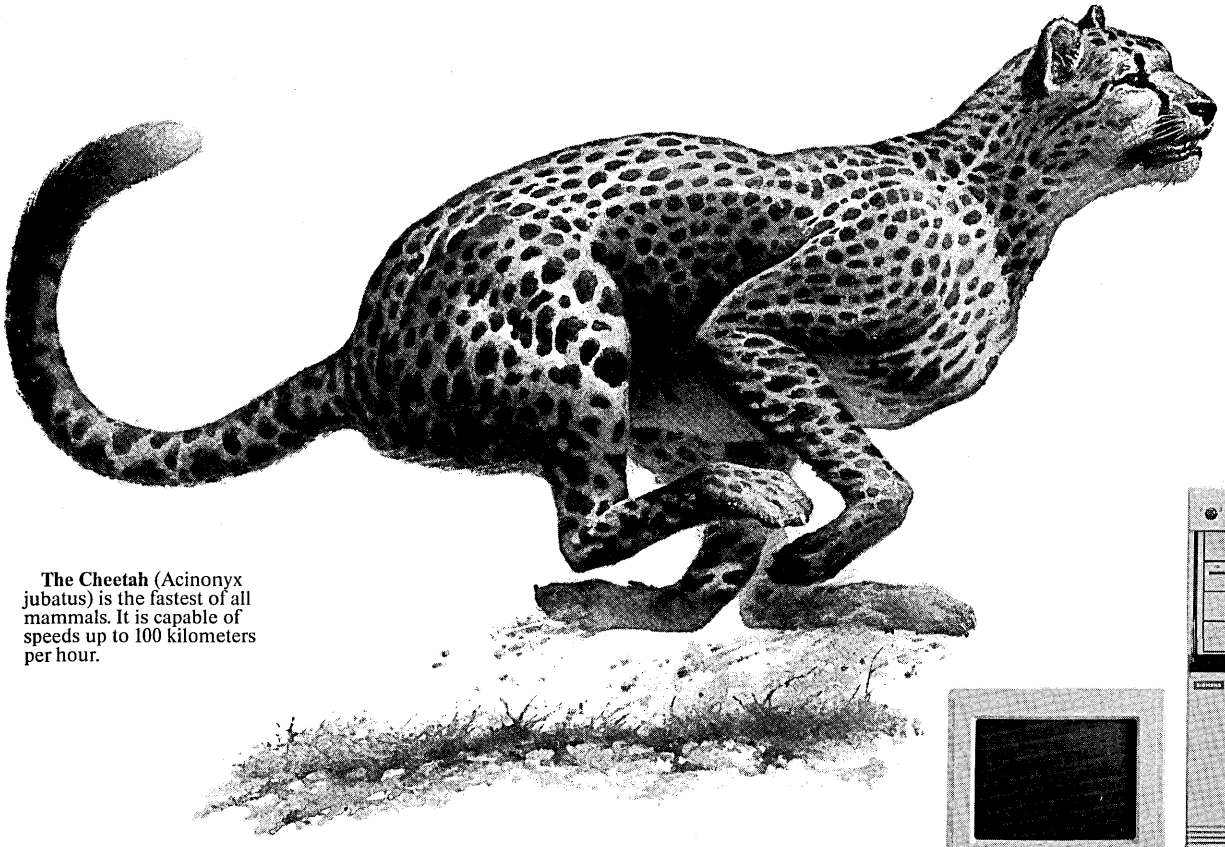
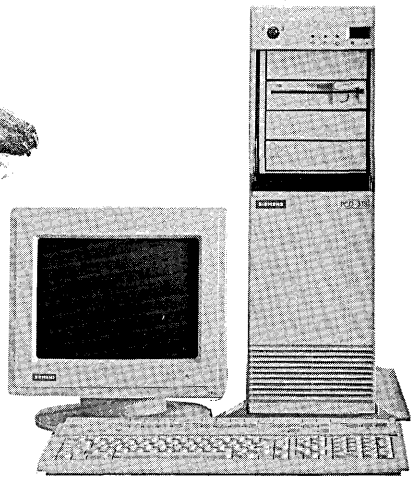


The Cheetah (Acinonyx jubatus) is the fastest of all mammals. It is capable of speeds up to 100 kilometers per hour.



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But the use of state-of-the-art technology is only a part of the Siemens PC concept. Siemens is, after all, the largest European manufacturer of communications and data systems and has extensive know-how in system integration. Siemens PCs are available in Austria, Belgium, France, Germany, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and Switzerland.

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Circle 20 on Reader Card

Supercomputers, Software and PCs

NEC's new supercomputer family and ozone-friendly printers from Memorex Telex.

BY LAUREN MURPHY

Japan's NEC Corp. has launched its SX-3 series of supercomputers, boasting not only that the machines have achieved speeds of 22 billion floating point operations per second (GFLOPS), but that they are also the first Japanese supercomputers to use a multiprocessor configuration.

Seven models are available in the series: SX-3 models 22, 24, 42 and 44 are multiprocessor versions, with speeds ranging between 5.5 and 22GFLOPS, while models 11, 12, and 14 are single-processor systems, with speeds ranging from 1.37 to 5.5GFLOPS. The computers are based on the NEC SXOS operating system, but also support the company's UNIX-based system, SUPER-UX.

Prices for the SX-3 series range between $7 million for the model 11 and $24.2 million for the top-of-the-line model 44. NEC CORP., 33-1 Shiba 5-chome, Minato-ku, Tokyo 108, Japan, (81-3)-454-1111.

Circle 175

Software

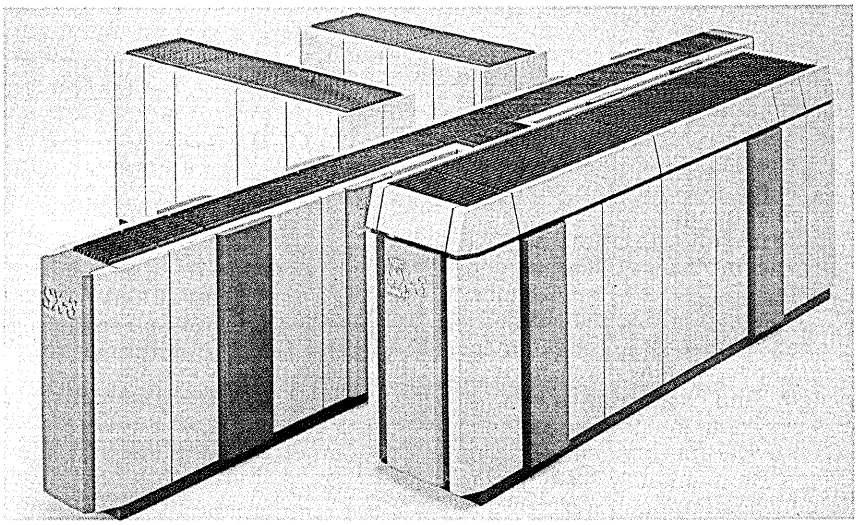
GIE Emeraude of France, says its newly launched Emeraude PCTE is the only industrial implementation of the European standard Portable Common Tool Environment (PCTE). The company says Emeraude PCTE acts as a "super operating system," allowing development of CASE tools that can be readily ported from one shop to another, independent of both the operating system and the hardware. While it is currently offered for UNIX-based systems, there is a version for Bull-HN workstations, and the company will be announcing versions for Apollo Computer Inc., Hewlett-Packard Co. and Sun Microsystems Inc. workstations in the near future. GIE EMERAUDE, 38 Blvd. Henri Sellier, BP 145, 92154 Suresnes Cedex, France, (33-1)-45-06-18-18.

Circle 176

Canada's Empress Software Inc. has announced version 4.0 of its relational data base management system, providing engineers with object-oriented programming coupled with relational data base technology 4GL tools.

Empress says applications have ranged from mapping and voice messaging to simulator design and image processing, as well as traditional RDBMS applications. EMPRESS SOFTWARE INC., 250 Bloor Street East, Toronto, Ontario, Canada M4W 1E6, (416)-922-1743.

Circle 177



NEC's SX-3 series of supercomputers provides speeds of up to 22GFLOPS.

Personal Computers

Olivetti Systems & Networks has premiered its new M380/XP9 microcomputer. Based on the Intel Corp. 80386 microprocessor, it runs at a speed of 33 megahertz and is fully compatible with IBM AT/XT architecture. The M380/XP9 features 4 megabytes of RAM, expandable to 8MB, and a 32KB cache memory. The XP9 runs a number of operating systems, including MS-DOS, MS-OS/2 and UNIX V/386. ING. C. OLIVETTI & CO. SPA, G. Jervis 77, 10015 Ivrea, Milan, (39-125)-525.

Circle 178

"Green" Printers

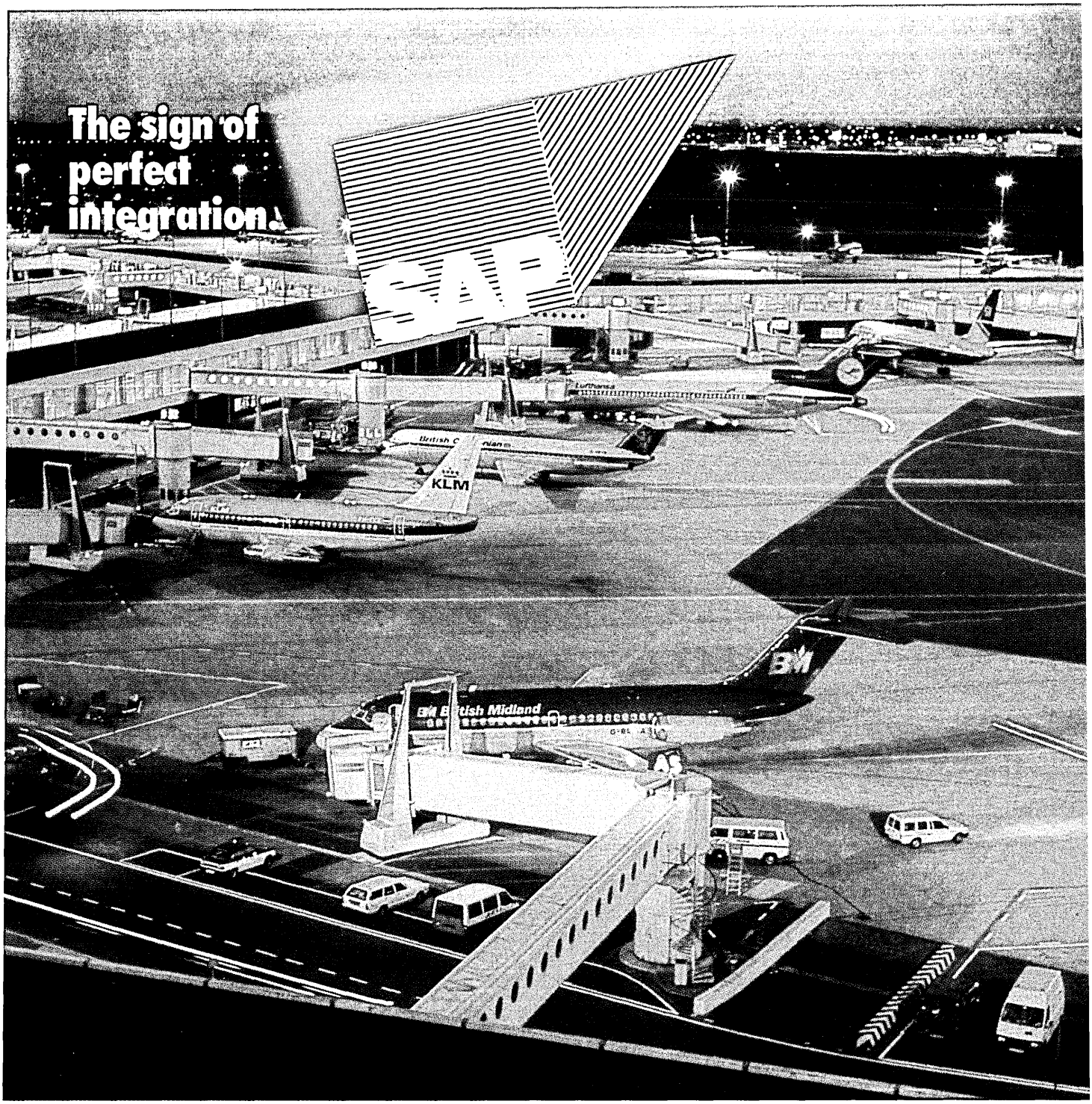
Memorex Telex NV has declared that its latest line of high-speed 4390 and 4780 printers, along with the 4800, and the desktop 2115 and 1808 laser printers, is "ozone-friendly" because the models do not use or emit chlorofluorocarbons (CFCs). European guidelines seem to lag behind U.S. rules for environmental safety, but the company's printers are monitored by U.S. standards officials, whose rules stipulate that the machines must not emit any CFCs. The company also says that all models use nontoxic toner powder. MEMOREX TELEX NV, Hoogoorddreef 9, 1101 BA Amsterdam, The Netherlands, (31-20)-97-4331.

Circle 179

Monitors

Belgium-based ETAP Information Technology NV, a manufacturer of high-resolution monitors, has announced the ETAP Pictor 2, a Trinitron color display-based monitor for the PC, PS/2 and Apple Computer Inc. Macintosh. Aimed at professional desktop publishing, CAD and engineering markets, the system has 1,024×768 square pixel resolution on a 20-inch screen and a low transmission factor (38%), which ETAP claims is the blackest monitor background on the market. Thanks to the company's dedication to ergonomics, the monitors are coated to decrease glare and have tilt and swivel bases.

The ETAP Pictor 2/10 is designed to



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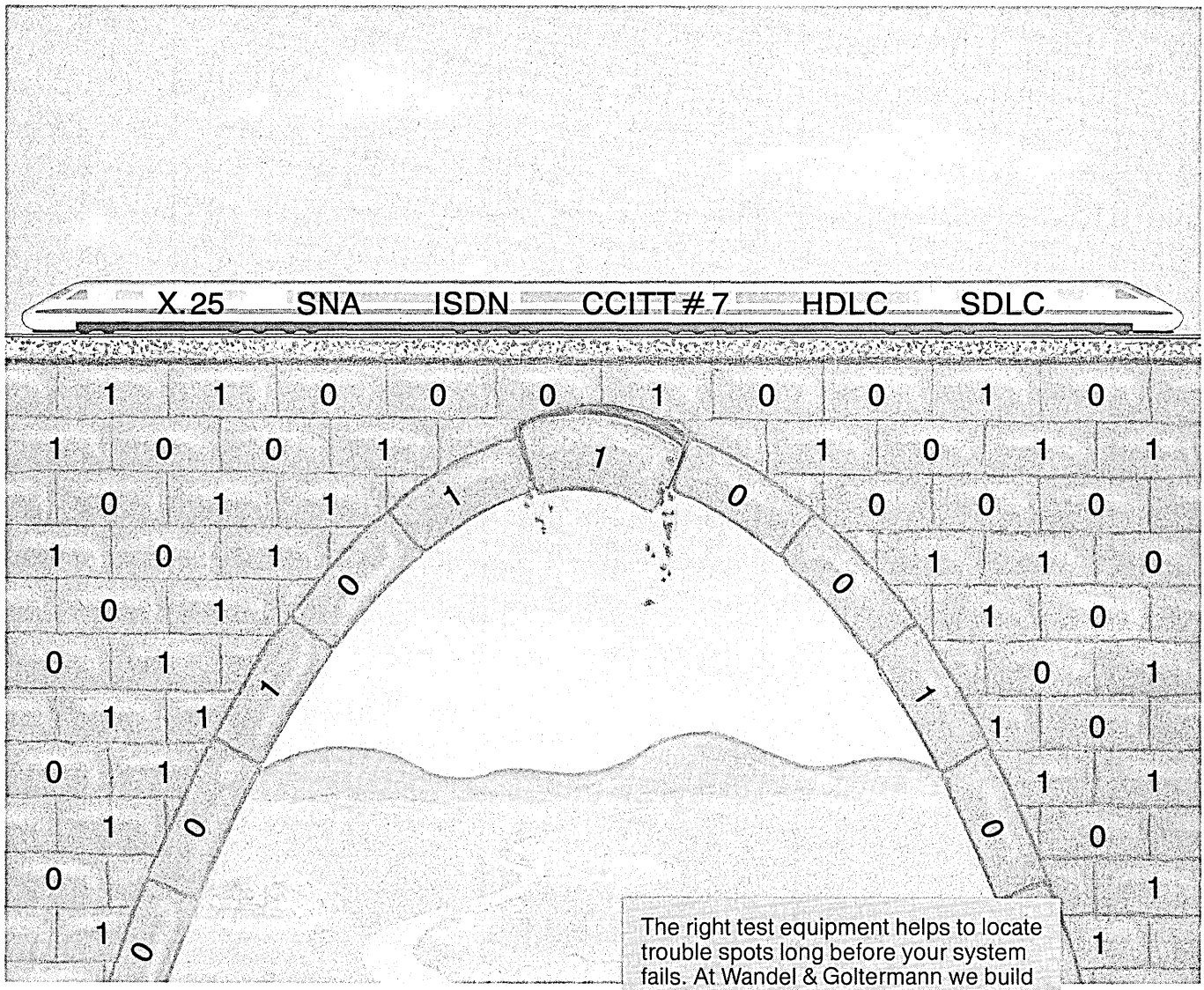

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be used with for IBM PC ATs and compatibles, while the Pictor 2/20 is for PS/2s and compatibles, providing 16 colors simultaneously from a palette of 4,096. The Pictor 2/50 is for the Mac II, IIx and IIcx, and features 256 simultaneous colors from a palette of 16.7 million hues. ETAP INFORMATION TECHNOLOGY NV, Steenovenstraat 1A, B-2150 Malle, Belgium, (32-3)-310-04-11.

Circle 180

Cebra Communications Ltd. has a new series of 9-inch color monitors for use with the industrial and process control applications.

The EG1522 runs applications compatible with the Extended Graphics Adaptor (EGA) and Color Graphics Adaptor (CGA) standards, with automatic scan frequencies of 15.75 kilohertz to 21.8kHz and pixel resolution of up to 640×350. The EG2040 automatically scans frequencies between 20kHz and 32kHz, with pixel resolution of 640×350 to 640×480, and is EGA compatible. It also offers a range of VGA graphics cards. The VM3135 is designed for use with the IBM PS/2 and the Macintosh II. It has pixel resolutions of 640×350, 640×400 and 640×480 and allows use with a wide variety of VGA cards. CEBRA COMMUNICATIONS LTD., Suite 2, 26 Lorne Park Road, Bournemouth, Dorset BH1 1JL, U.K., (44-202)-299048.

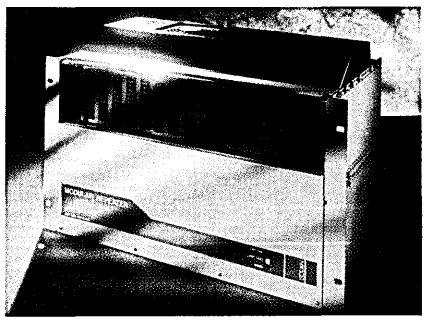
Circle 181

Networks

BICC Data Networks, the British computer-networking manufacturer, has launched its ISOLAN Modular Repeater. Developed to reduce the problems of cable management, the repeater, the company says, provides the ability to control individual ports in an open systems manner, covers all standard media, can provide multiple redundant links through software and supports the only open systems standards for network management (IEEE 802.1). It can interface with networks at speeds of 100 megabits per second. BICC DATA NETWORKS, The System Centre, Brindley Way, Hemel Hempstead, Hertfordshire HP3 9XJ, U.K., (44-442)-231000.

Circle 182

Alcatel Business Systems has launched a new connectivity system to link an IBM environment with a variety of non-IBM environments.



BICC'S MODULAR REPEATER supports the only open systems standards for network management.

The Alcatel 8940 lets IBM and compatible mainframes communicate with networks running the TCP/IP protocol. The system can be enhanced to provide high-speed IBM-to-DEC connectivity, and Alcatel says IBM-to-OSI connectivity will be available shortly, as well. ALCATEL NV, 33 rue Emeriau, 75011 Paris, France, (33-1)-40-58-58-88.

Circle 183

From PC to PS/2

Israel-based Brain Computer Systems Ltd. has developed a motherboard that can turn a PC or an XT into a PS/2 model 30-compatible computer. BRAIN COMPUTER SYSTEMS LTD., 5 Halapid Street, POB 490, Petah Tikva, Israel, (972-3)-924-0955.

Circle 184

Reports and References

Associated Computer Experts BV has a new report called "Benchmarking UNIX Systems," surveying a variety of UNIX systems on the market. The 467-page report consists of background information and benchmarking results on 62 systems. ASSOCIATED COMPUTER EXPERTS BV, Van Eeghenstraat 100, 1071 GL Amsterdam, the Netherlands, (31-20)-664-6416.

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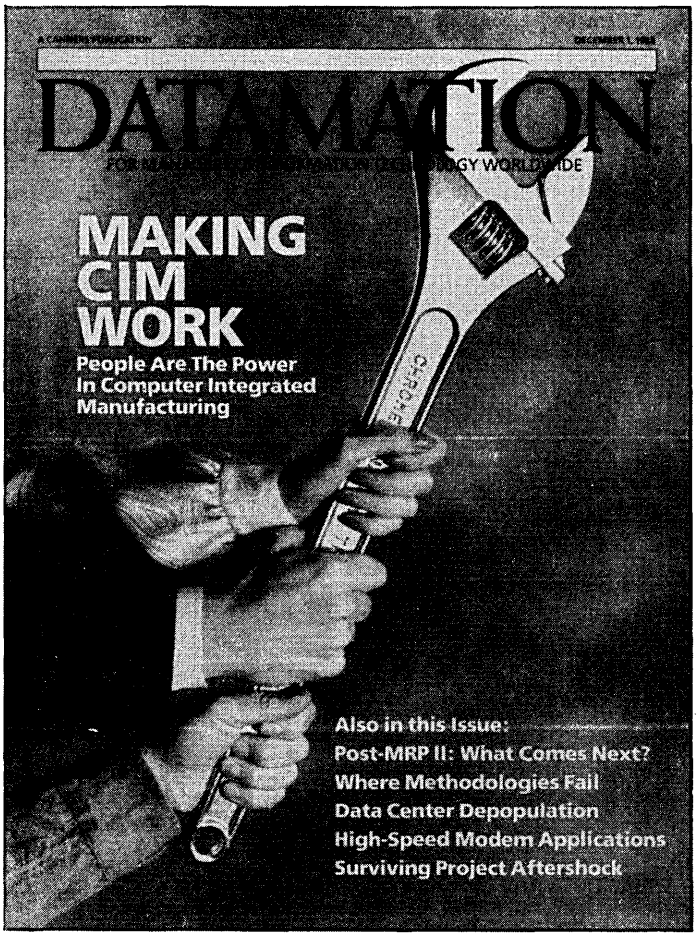

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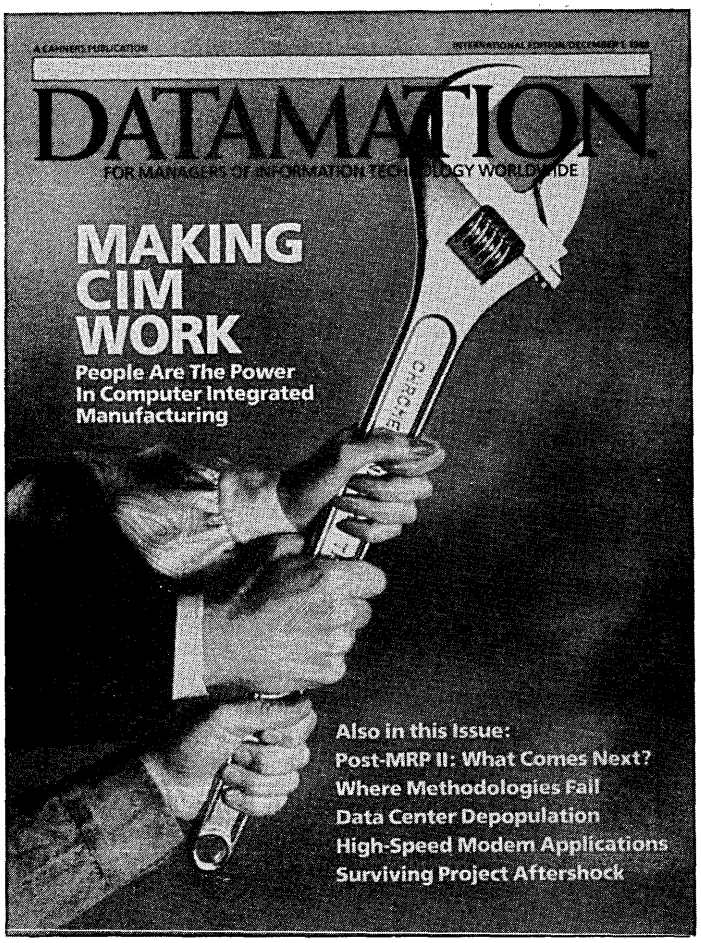

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OPINION

Blank Stares At Blank Pages

At the risk of sounding like the DATAMATION version of "60 Minutes' " Andy Rooney, I would like to pose a question to printer manufacturers that has burned in my mind for some time now.

Why is it, with all of the brilliant intellects at work in the computer industry, that no one has been able to engineer a continuous feed printer that does not waste one sheet of paper for every sheet it prints?

I can't count the number of times, printing out letters on not-inexpensive DATAMATION stationery, that my hackles have been raised upon having to toss out at least one blank page. After the first few encounters with this frustration, I recall asking whether we shouldn't perhaps save the cast-off stationery for that endangered species, the typewritten letter. The editorial assistant said, yes, that was a good idea, but one that already had been tried. The castoffs just piled up too quickly, she said; no one used them, and eventually they were just thrown out. Nevertheless, I tried saving them for a while and promptly discovered that she was right.

Since flinging epithets at the innocent printer seemed a dead-end way to deal

with the problem, I decided to talk to some of the responsible parties. Incredibly, posing the question to a few representatives from Hewlett-Packard Co. got blank stares and stammered nonresponses. They seemed to think I was joking. But they didn't say it couldn't be done.

Granted, the notion is out of the ordinary. The way continuous feed printers operate would seem, on the surface, to be one of those trivial facts of computing life that is not worth noticing. In fact, however, it cannot be doubted that any corporation would be shocked to discover the amount and cost of unused paper discarded from all of its continuous feed printers.

Given the never-ending search for cost-cutting measures and greater efficiency in corporations, I cannot understand why users have not pressured manufacturers to end this obvious source of waste. It must be because such an endeavor, if an IS manager were to consider it, would fall into the category of All Those Things I Should Do but Will Never Have the Time For.

The printer manufacturer that undertakes to change this situation could reap substantial benefits. In intangible terms, such a company would surely generate goodwill among potential customers by lending credence to the axiom that computers increase an organization's efficiency, not to mention helping to conserve natural resources. In tangible terms, building a continuous feed printer that did not waste paper certainly would sell better than one that does.

With all of this, would it be too much to expect that a printer manufacturer might take it upon itself to end such an embarrassment to the industry? I certainly couldn't answer that, but let's just say I'm not holding my breath until it happens.

—Marsha J. Fisher, Section Editor

PLANNER

JULY

SIGGRAPH '89 Traveling Art Show
Through Sept. 5, Boston. Contact Gail Jennes, The Computer Museum, Museum Wharf, 300 Congress Street, Boston, MA 02210, (617)-426-2800.

National Conference on Methodologies and Tools for Real-Time Systems
July 17–18, Arlington, Va. Contact Adrien Meskin, The National Institute for Software Quality & Productivity, P.O. Box 70555, Washington, D.C. 20088, (301)-498-8200, ext. 114.

16th Annual Conference & Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH '89)
July 30–Aug. 4, Boston. Contact Chris Herot, Javelin Software Corp., 1 Kendall Square, Building 200, Cambridge, MA 02139, (617)-494-4842.

Database '89
July 31–Aug. 2, San Francisco. Contact Sales Office, Digital Consulting Inc., 6 Windsor Street, Andover, MA 01810, (508)-470-3880, fax (508)-470-0526.

AUGUST

International Symposium on Telecommunication in Education (ISTE)
Aug. 21–24, Jerusalem. Contact ISTE Symposium Secretariat, C/O International Ltd., P.O. Box 29313, 65121 Tel-Aviv, Israel, 03-654548/9/0, fax 972/3-660604.

UniForum Regional '89
Aug. 22–24, Boston. Contact Heidi Thorne, Professional Exposition Management Co., 2400 East Devon, Suite 205, Des Plaines, IL 60018, (800)-323-5155, fax (312)-299-1349.

XI World Computer Congress '89
Aug. 28–Sept. 1, San Francisco. Contact Stephen Yau, Organizing Committee, University of Florida, CIS Department, Room 301, Gainesville, FL 32611, (904)-335-8006.

As the U.S. Economy Slows, What's Going To Happen to Technology Prices?

Potential buyers of new information systems may be getting confusing signs from the economy and industry.

BY MADELINE FRANCHI

Do you remember stagflation? That economic relic of the 1970s, when U.S. economic growth slowed while inflation accelerated, is back—to hardly anyone's surprise. It almost always happens at the tail end of an economic expansion. Growth rates begin to slow down. But previous activity has generated price increases, which take a year or two to work their way through the system.

This time, however, buyers of information systems may feel as if they're experiencing the effects of stagflation for the first time ever. Prices of systems aren't exactly on their way up; they're just not dropping as fast as they did in past years. In fact, prices of computers are hardly dropping at all, annually. But that borders on inflation for customers used to paying 15 to 20% less each year for their organizations' systems.

In the general U.S. economy, both producer and consumer prices have increased more than 5% over the past year.

The Federal Reserve's effort to contain inflation has resulted in higher interest rates in the United States. If you're part of a U.S. company or agency, you no doubt have felt the pinch of higher interest rates making your borrowing and leasing costs more expensive. The Fed has been steadily pushing up the federal funds rate—the rate that member banks charge each other for short-term loans—in an effort to cool inflation. With their costs of funds rising, banks have been passing along higher rates to borrowers. This credit tightening has resulted in a three-percentage-point increase in the prime rate from February 1988 to May 1989.

With the U.S. economy showing signs of finally slowing down, inflation is expected to abate. The consumer price index is forecast to rise merely 3.6% next year. The Fed is now expected to ease pressure on interest rates. Cahners Economics anticipates that interest rates will begin to decline as early as next month—for the first time since the October 1987 stock market crash. By the end of this year, the prime rate is forecast to be down to about 11% and then drop to near 9% by year-end 1990.

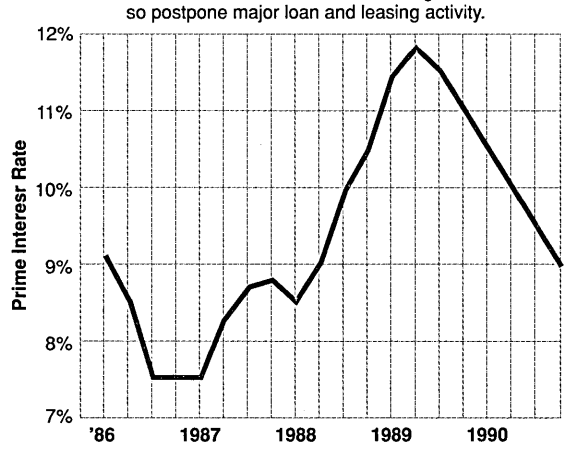
So if your organization's business strategy calls for borrowing funds to purchase or lease computer equipment, you might get better credit terms if you can delay action until next year.

In the meantime, what is going to happen to prices of systems? According to data from the U.S. Commerce Department, prices of computers and office equipment remained relatively stable over the past several quarters, though still lower than they were last year at this time. Such stability is unusual for an industry that has typically experienced steady price declines on the heels of advances in microprocessor-based technologies. The cost of materials, notably semiconductor memory chips, is one factor keeping computer prices in a holding pattern now. Cahners Economics expects much the same for next year, with computer prices dropping barely 3%.

Communications prices, however, are continuing to rise—albeit modestly. During the second quarter of this year, the price indicator for communications equipment was about 4% higher than it was in the same quarter of 1988. This hike was in line with the producer price increase of the general U.S. economy. Expect a steady inflationary climb of 2 to 4% in prices of communications equipment over the next two years.

The Right Time to Borrow

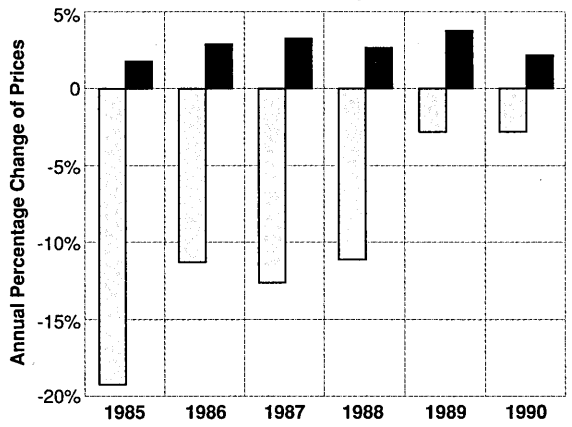
Lower interest rates are coming, so postpone major loan and leasing activity.



Source: Federal Reserve Board; Forecasts: Cahners Economics

The IS Pricing Game

Bet on CPU prices to go down slightly, and count on communications gear to cost more.



Source: U.S. Commerce Department.; Forecasts: Cahners Economics

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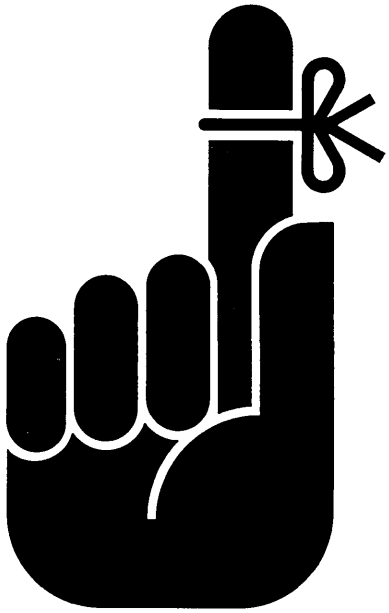

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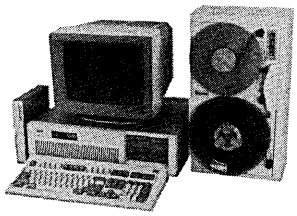

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Career Opportunities

DATAMATION

1989 Editorial Calendar and Planning Guide

Issue Date	Recruitment Deadline	Editorial Emphasis
July 15	June 21	On-Line Information Services
Aug. 1	July 10	Graphical User Interfaces
Aug. 15	July 25	High-Level Languages
Sept. 1	Aug. 9	User Role in Standard Setting
Sept. 15	Aug. 23	Best Computer Science Universities
Sept. 21	Aug. 31	
Oct. 1	Sept. 7	Salary Survey

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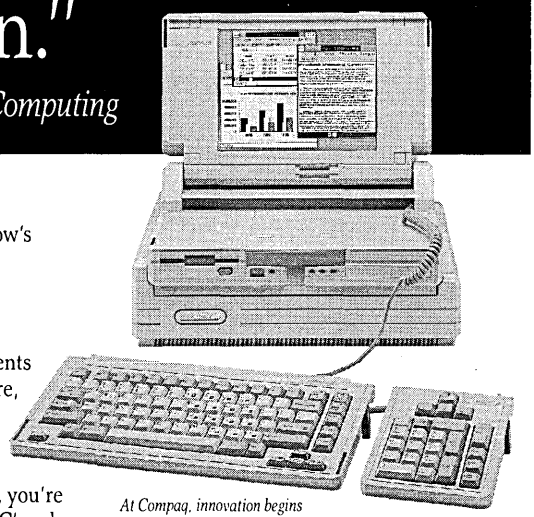

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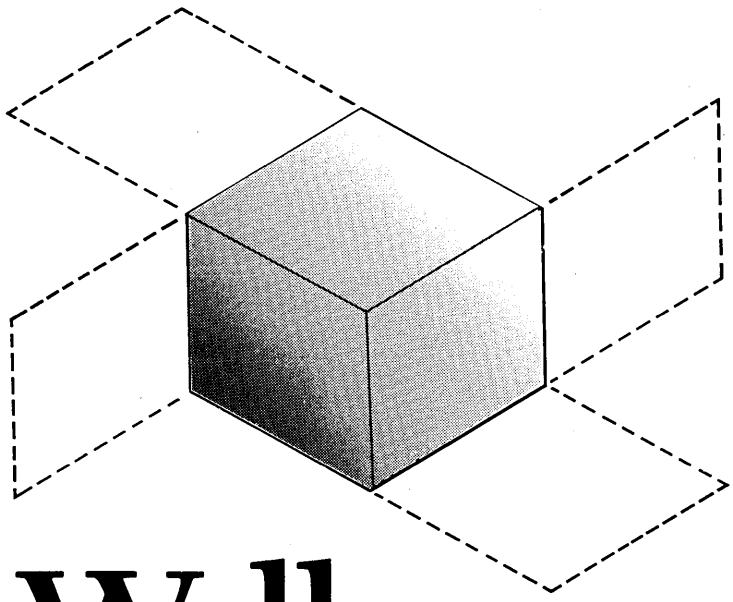

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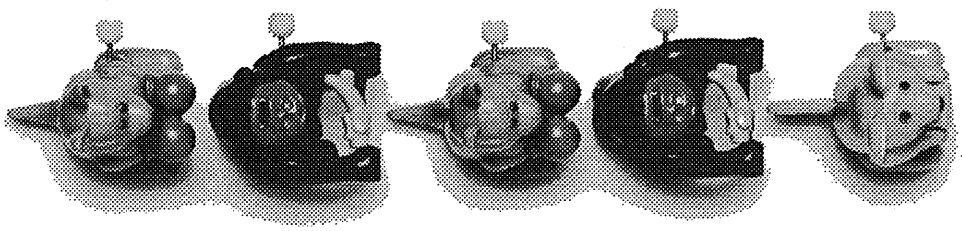

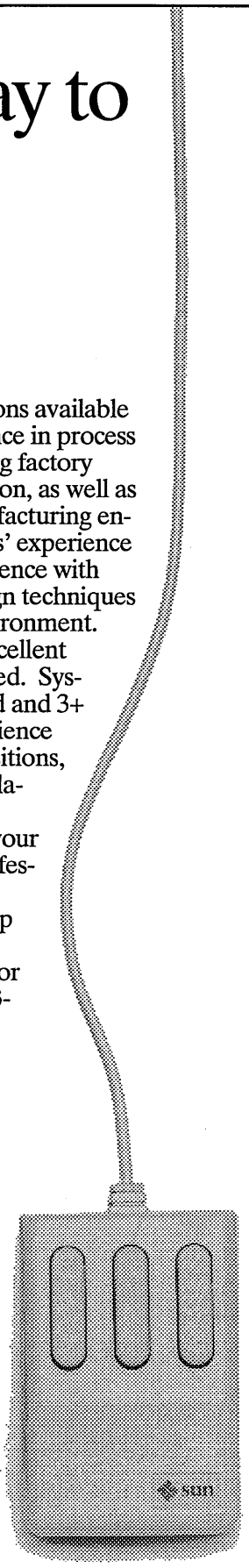

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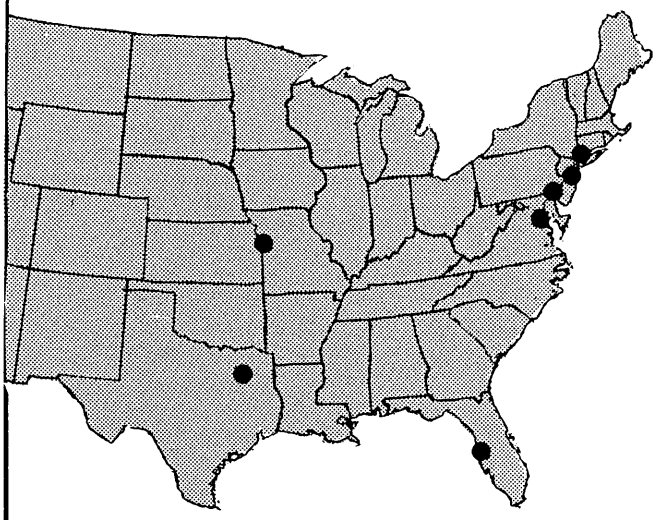

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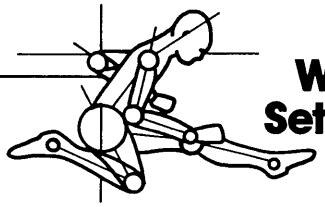

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COMPANY INDEX

This index lists vendors, users groups and industrial associations mentioned in this issue of DATAMATION, excluding those mentioned only in passing. Page numbers refer to the first page of articles.

A
Advanced Systems Concepts Inc. . . . 57
Aetna Life & Casualty . . . 22
Alcatel NV . . . 17, 68-3, 68-20
Amdahl Corp. . . . 68-3
American Airlines Inc. . . . 22
American Information Systems Inc. . . . 41
Amperif Corp. . . . 53
Andersen Consulting . . . 57
Apple Computer Inc. . . . 17, 41, 68-3
Apricot Computers . . . 68-15
Ashton-Tate Corp. . . . 17
Associated Computer Experts BV . . . 68-20
Atlantic Computers PLC . . . 68-3
Autodesk Inc. . . . 41

B
Bankers Trust Co. . . . 57
Battelle . . . 49
Bechtel Group Inc. . . . 22
Bellcore . . . 41
Benetton SpA . . . 68-15
Berkshire Computer Products Inc. . . . 66
BICC Data Networks . . . 68-20
Bigger Bros. . . . 37
Boole and Babbage Inc. . . . 37
Brain Computer Systems Ltd. . . . 68-20
BrainPower Inc. . . . 41
Briggs and Stratton Corp. . . . 49

C
Cadre Technologies Inc. . . . 17
Candle Corp. . . . 37
Canon Inc. . . . 68-3
Cap Gemini Sogeti . . . 68-3
Caterpillar Inc. . . . 22
Cebra Communications Ltd. . . . 68-20
Central Canada Grocers . . . 37
Cerner Corp. . . . 57
Chase Manhattan Bank . . . 41
Chevron Corp. . . . 53
Chrysler Corp. . . . 22
Citicorp . . . 53
Citizen America Corp. . . . 66
Cognition Technology Corp. . . . 41
Commodore International Ltd. . . . 41, 68-3
COMPAQ Computer Corp. . . . 17, 68-3
Comparex Informationssysteme GmbH . . . 17, 68-3
Computer Corp. of America . . . 17
Computer Products Group . . . 49
Computervision Corp. . . . 68-3
Comshare Inc. . . . 41
Control Data Corp. . . . 49, 68-3
Cylink Corp. . . . 53

D
Database Utility Group . . . 37
Datamedia Corp. . . . 66
Decision Technologies Inc. . . . 41
Digital Equipment Corp. . . . 17, 57, 66, 68-3, 68-15, 68-17
DuPont . . . 41

E
Econocom International BV . . . 68-3
Electronic Data Systems Corp. . . . 17, 31
Empress Software Inc. . . . 68-20
Ericsson Information Systems . . . 68-3
ETAP Information Technology NV . . . 68-20
Execucom Systems Corp. . . . 41
Executive Office Solutions . . . 41

F
Federal Reserve Bank . . . 53
Fiat COMAU . . . 68-15
First Boston Corp. . . . 22
Fisher-Price . . . 49
Foundation Health Corp. . . . 57
France Telecom . . . 17
Franklin Savings Association . . . 17
Fujitsu America Inc. . . . 66
Fujitsu Ltd. . . . 17

G
Generale Electricité . . . 68-3
General Electric Information Services . . . 68-15
General Motors Corp. . . . 17, 31
GIE Emeraude . . . 68-20
Groupe Bull . . . 68-3
GTE Corp. . . . 41

H
Hancock Software Inc. . . . 66
Hewlett-Packard Co. . . . 57, 66, 68-3
Hitachi Ltd. . . . 17, 68-3

I
IBM . . . 17, 22, 41, 53, 66, 68-3, 68-15, 68-17
Imperial Chemical Industries . . . 68-17
Imprimis Technology Inc. . . . 49
Informix Software Inc. . . . 41
Ing. C. Olivetti & Co. SpA . . . 68-3, 68-20
Inspectorate International Ltd. . . . 68-3
International Data Corp. . . . 41, 49, 68-3
International Standards Organization . . . 17
Internet . . . 53
Irving Oil . . . 37

J
John von Neumann Supercomputer Center . . . 17

K
Kimberly-Clark Inc. . . . 22, 31
Knowledge Garden Inc. . . . 41
KnowledgeWare Inc. . . . 31

L
Lever Brothers Co. Inc. . . . 41
L.F. Rothschild, Unterberg Towbin Inc. . . . 17, 22
Lockheed Corp. . . . 22
Lotus Development Corp. . . . 53

M
Mannesmann Kienzle AG . . . 68-3
MARC Software International Inc. . . . 66
Marine Midland Bank . . . 41
Marvelin Corp. . . . 41
McCormack & Dodge . . . 22
McDonnell Douglas Corp. . . . 22, 41
MediaWorks . . . 41
Mellon Bank . . . 22
Memorex Telex NV . . . 68-3, 68-20
Merrill Lynch . . . 22
Metapraxos Ltd. . . . 41
Micro Decisionware Inc. . . . 37
Microsoft Corp. . . . 68-17
Monumental Life Insurance Co. . . . 37
Motorola Inc. . . . 66
Mrs. Fields Inc. . . . 41

N
National Advanced Systems Corp. . . . 17, 68-3
National Institute of Standards and Technology . . . 53
National Science Foundation . . . 17
National Security Agency . . . 53
NEC Corp. . . . 68-20
Nixdorf Computer AG . . . 68-3
Nokia Corp. . . . 68-3
Norsk Data AS . . . 68-3
Northeast Utilities Service Co. . . . 41
Novell Inc. . . . 17
NV Philips' GL . . . 17, 68-3

O
Ogivar Technologies Inc. . . . 17
On-Line Software International Inc. . . . 66
Owl International Inc. . . . 41

P
PA Computer and Telecommunications . . . 68-17
Pansophic Systems Inc. . . . 22
Philip Morris USA . . . 37
Pilot Executive Software Inc. . . . 41, 68-17
Price Waterhouse & Co. . . . 57
Price-Waterhouse International . . . 68-3
Prime Computer Inc. . . . 68-3

R
Rank Xerox . . . 68-3
Rockwell International Corp. . . . 53
RSA Data Security Inc. . . . 53

S
Sara Lee Corp. . . . 37
Science Board . . . 17
SD-Scicon . . . 68-3
Security Pacific Automation Co. . . . 22, 37
Sema Group . . . 68-3
Service Corp. International . . . 31
Shell UK . . . 68-17
Siemens AG . . . 68-3
Sip . . . 17
Société Générale . . . 68-3
Software Partners Inc. . . . 66
Sola . . . 66
Sun Microsystems Inc. . . . 66
Stratus Computer Inc. . . . 57
Sun Microsystems Inc. . . . 17, 41
Supercomputer Systems Inc. . . . 17
Symantec Corp. . . . 66

T
Tandem Computers Inc. . . . 57
Tandy Corp. . . . 66
Tektronix Inc. . . . 49
Tennessee Valley Authority . . . 49
The Federal Reserve . . . 70
The Travelers Corp. . . . 22
Thorn EMI . . . 68-17
Thorn EMI Computer Software . . . 41
Toshiba Corp. . . . 17
TRW Inc. . . . 41, 49
Tultex Corp. . . . 57

U
Ungermann-Bass Inc. . . . 17
Union Carbide Corp. . . . 41
United Biscuits U.K. . . . 68-17
United Parcel Service . . . 37
University of Leuven . . . 68-17
U.S. Commerce Department . . . 70

W
Wang Laboratories Inc. . . . 41
Weyerhaeuser Corp. . . . 22

X
Xerox Corp. . . . 41

ADVERTISERS INDEX

This index lists advertisers in this issue of DATAMATION.

	Page	Circle
Adobe	52	—
Ameritech	58	34
AT&T	62	35
AT&T Technologies	43	—
BMC Software Inc.	56	33
Bull Peripherals Corp.	39	26
Computer Associates	19	9
Data General Corp.	13	6
Digital Comm — PCCG	20-21	10
Hayes Microcomputer	51	32
Hewlett-Packard Personal Computer	28-29	13
IBM Corp.	14-15, 48, C3	7, 30, 1
Index Technology Corp.	45	28
Intelligence Ware Inc.	59, 61	41, 42
Intergraph	40	27
J.D. Edwards & Co.***	68-2	18
Landmark Systems Corp.	5	2
Le Club de L'Informatique Francaise***	68-1	25
Liebert Corp.	33, 35	15
Link Technology	C1-3	75
Lortec Power Systems Inc	50	31
McDonnell Douglas Information Systems Co.	30	14
MSA	C4	3
Network Systems	25, 27	11, 12
Nixdorf Computer AG	46-47	29
Oracle Corp.	6	—
Output Technology Corp.	4	37
Popkin Software	34	16
Qualstar Corp.**	71	200
SAP***	68-21	21
Siemens***	68-7-68-13, 68-19	40, 20
Siemens Semiconductor Div.***	36e-36f	23
Software AG	68-14	19
Syncsort Inc.	16	8
Systems Center Inc.	11	5
Unisys Corp.	8-9	4
US West Comm.	36, 36a-36d*	—
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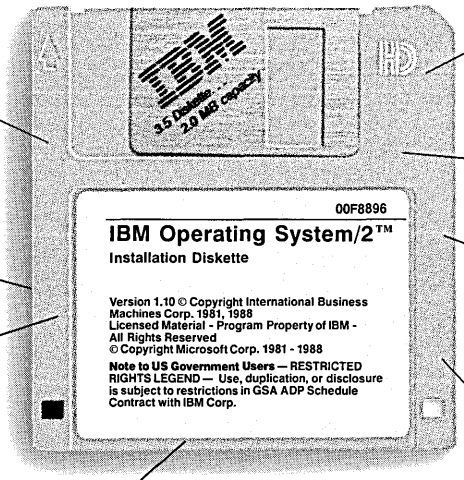

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