PC heavyweights back emerging Unix standard

BY DOUGLAS BARNEY
CW STAFF

NEW YORK — A controversial version of Unix that is being jointly developed by AT&T and Sun Microsystems, Inc. should get a major boost today as the leaders of the microcomputer spreadsheet and data base management system markets pledge support for the operating system.

Lotus Development Corp. and Ashton-Tate Corp. are both expected to announce support for the upcoming Unix System V, Release 4. Many observers have claimed the new version will give Sun an unfair edge in the market because that company will be privy to specifications for the new operating system before other vendors.

If AT&T and Sun garner enough support for their Unix version, which will include a graphical user interface, Unix will be able to offer the same features as Apple Computer, Inc.’s Macintosh and Microsoft Corp.’s OS/2 Presentation Manager.

However, Unix System V, Release 4 will not even ship in beta-test form until later this year and will not formally ship until next year, giving competitors ample time to react, observers said.

Lotus confirmed that it will develop a Unix version of its market-leading 1-2-3 package, thus ending months of industry speculation. Lotus declined to provide pricing or a ship date, but the product is expected to use the core code from its upcoming 1-2-3 Release 3 spreadsheet.

Silverlake software scramble

BY STANLEY GIBSON
CW STAFF

As the announcement date draws near for IBM’s System/36 and 38 follow-on processor, commonly called Silverlake, developers are scrambling to test System/36 and 38 programs for compatibility with the new machine.

Silverlake is expected to run not only existing software for System/36 and 38 minicomputers but also Systems Application Architecture-compliant software in native mode, causing developers to look ahead to SAA compatibility issues.

The consensus of developers interviewed by Computerworld is that Silverlake will roll out June 21. Those developers also expressed the following opinions:

- In order to assure that software will be available at the time of the Silverlake introduction.

Continued on page 8

Fired-up DB2 due

BY CHARLES BABCOCK
CW STAFF

IBM’s next release of DB2, expected to be announced by the end of this month or early in May, will tap features of IBM’s new ESA/370 operating system to boost transaction throughput by 25% to 30%, according to sources who said they had been briefed by IBM.

In addition, the next release of DB2 is expected to incorporate an implementation of referential integrity more extensive than previously believed, according to industry sources and a spokesman for IBM’s Santa Teresa, Calif., development laboratory.

The double-pronged improvements will be aimed at addressing the weaknesses that have constrained DB2’s use for large production applications.

Although an immediate performance gain of 25% to 30% might be considered standard for a new release of DB2, larger gains are expected to follow as the product is reworked and applications are restructured to take advantage of ESA features.

Continued on page 105

Eastern recruits MIS to plug brain drain

BY ELISABETH HORTWIT
CW STAFF

Computer power is replacing some of the human expertise that Frank Lorenzo is said to be draining from Eastern Airlines. After a year and a half of concentrated development work, Texas Air Corp. subsidiary System One Corp. has begun test flights of the new systems it hopes will pull Eastern’s customer service record out of its current nosedive.

When only 61.5% of its January flights arrived on time — that is, within 15 minutes of their schedules — Eastern earned the worst performance record in the industry for that month, according to the Department of Transportation. In February, Eastern boosted its on-time flight percentage to 70.6% and moved up from 11th to 11th place.

Continental Airlines, another Texas Air subsidiary, slipped from 11th to 13th place, with 67.7% of its flights on time that month.

Eastern also reportedly received more customer complaints than any other airline except Continental.

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Fashionably late. Minis are all the rage at HP, which previewed models across its entire line last week, including two long-awaited HP 3000s. The Precision Architecture-based offerings are expected to give DEC, IBM a run for their money. Page 8.

Early arrivals. Just five weeks after announcing high-end Cyber 990s, CDC unveils a revamped Cyber 930 line, which is slated to ship in July. Page 14.

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Quotable
"Slander." MICROSOFT CORP.
Referring to Apple's copyright infringement suit over Windows 3.0. See story page 105.

IN DEPTH

Wides tapped
The Integrated Test Call System, an operation that tracks the type of calls coming into the IRS and the accuracy of the responses, was instituted in January.

Hands tied
Projects aimed at automating the accuracy of the response during the IRS were delayed for one year and found to have any trouble handling next week's expected deluge of tax returns processing.

SABRE

Quoted
"Isn't What it should be," LeBaebe said. "Unfortunately, it is revealing that the quality level of the response isn't what it should be," LeBaebe said.
Scores of men had failed to conquer Mount Everest. Then on May 29, 1953, a British expedition finally reached the summit. Not only did the men make the difference. The technology did. Lightweight portable oxygen developed for aviation made the 29,108-foot climb possible. Technology enhances performance.

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Unlock the potential.
IBM plans to announce its long-awaited repository, or central data dictionary, for Systems Application Architecture (SAA) by early 1989, according to consulting industry analysts recently briefed by the company.

IBM expects the repository to emerge as a storage facility for vital information across operating systems. But in its first implementation, the dictionary will act largely as an underlying foundation for a computer-aided software engineering (CASE) system, according to Paul Hessinger, chief technology officer at the Computer Task Group, Inc. in Buffalo, N.Y.

"I believe that within the next three months, you will see IBM prepared to go public with a clear-cut direction with regard to its repository," said Hessinger, adding that he has been in close touch with key personnel on the IBM repository project development team based at the company's research facility in Santa Teresa, Calif.

IBM officials with whom Hessinger has recently conferred believe that a repository is required as a foundation for CASE, Hessinger said. "It will supply the framework for other ventures to interface their products with IBM environments. It is definitely within IBM's reach to accomplish its goal of providing this framework."

George Schussel, president of Andover, Mass.-based Digital Consulting, Inc., recently spoke with staff members at IBM's Santa Teresa development laboratory and came away with the understanding that the repository will include an application generator and will sit on top of a relational database manager.

"IBM believes — rightly, in my opinion — that the guts of a CASE environment is the backend application generator rather than the front-end design models," Schussel said. IBM, he said, anticipates that third-party software companies will supply front-end CASE tools to interface the repository-based IBM back end.

In fact, the effort to line up such cooperative partners is probably already under way. IBM's Workstation Added Software (WAS) announcement, announced March 1 and slated for late May availability, contains tasks, activities and panels aimed at providing users with an integrated set of IBM application development products as well as products provided by designated third-party members of IBM's Vendor Logo Program. One of the products includes Index Technology Corp.'s Excelerator analysis and design software.

Multilingual? The forthcoming repository, according to Schussel, will deploy three primary sets of languages: Application System, geared toward professional business analysts; Query Management Facility, a query facility and reporter with links to third-generation programming languages; and Cross Application Expert.

Cullinet's DBMS draws raves, but will it sell? By NELL MARGOLIS CW STAFF

WESTWOOD, Mass. — Cullinet Software, Inc. marched its IDSMS/SQL relational data base management system squarely into the DEC VAX-based data base market last week and took its best shot at the likes of Sybase, Inc., Relational Technology, Inc., Data Management Corp. and Oracle Corp.

Market analysts found the newcomer technologically impressive and strategically wellthought-out.

"I was blown away by it," said Bob Therrien, an analyst at Paine Webber, Inc. Therrien saw IDSMS/SQL and its attendant tool kit demonstrated a week before its official debut. "In the use of the speed of its engine, the whole thrust toward transaction processing — the technology is solid, and Cullinet will also be able to build good applications on top of it as time goes by."

IDSMS/SQL and the Knowledgebuild tool set "look real strong, real competitive," said William Shattuck, an analyst with Montgomery Securities, Inc. in San Francisco. "All points considered, I think that Cullinet is going to make a strong showing in the VAX market. It won't happen overnight; it's going to be a building process. But they've got all the pieces in place."

However, Shattuck added, "no matter how good the product looks, the big question is going to be, Can Cullinet sell it?" IDSMS/SQL is a late entry in a crowded market.

Chief among the pieces in place is IDSMS/SQL itself, "designed from the ground up to be a production-powered data base," according to David A. Litwack, Cullinet's executive vice-president of systems products.

Bench using

Using the TP-1 benchmark, which is a simulation based on a standard debit/credit banking application, IDSMS/SQL turned a 13.4 transaction/sec. against a data base of one million account records, the company claimed.

That performance was shadowed somewhat by rival Sybase's own claim, made two weeks ago, that it had used a TP-1 benchmark of its Release 3.0 to record 29.3 transaction/sec. on a data base containing 100,000 accounts.

To substantiate its claim that IDSMS/SQL weirs relational DBMS's ease of use with the speed, reliability and integrity necessary for multilayer, high-volume transaction processing, Cullinet pointed to a barrage of features:

- Modular architecture consisting of an SQL command parser, a query optimizer and a data engine. The three-part design supports query optimization and compiled queries, multithreading, bulk data access and enhanced indexing capability, all of which combine to yield what Cullinet claims is high performance and throughput.

- "Twenty-four-hour availability. The Cullinet system, Litwack said, requires minimal human intervention and never has to be taken down to perform any data base activity, including maintenance:

- On-line, automatic recovery, as well as several alternative kinds of journaling and archiving that give the user multiple safeguards against system crashes and data corruption.

- A central data dictionary that ware Engineering product, integrity rules and data constraints. Dictionary-driven input language, IDSMS/SQL can save wear and tear on the MIS director, Litwack said.

He added that IDSMS/SQL fulfills all requirements of a fully distributed database system within any VAX network and will soon be able to connect on-line to any IBM data base.

"This is a scope of capabilities you don't see in its price class," according to John Krol, vice president of Knowledgebuild tool set and Application Expert.

But the battle, Meurer said, "will be waged at the tools level, and that's where Cullinet has real advantage: Knowledgebuild and Application Expert."
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Presentation Manager presents porting chore

BY STEPHEN JONES
CT STAFF

REDMOND, Wash. — What was expected to be a smooth bridge between Microsoft Corp.'s Windows application front and its OS/2-run Presentation Manager has turned into a bumpy road for programmers trying to port Windows applications to the new operating system.

These difficulties may stall the emergence of some early Presentation Manager applications if the porting process proves to be more difficult than Microsoft originally promised.

"Because it so closely resembles that system, Windows has been portrayed as the only graphics-based development environment that offers trouble-free upward compatibility to the Presentation Manager," said Brad Silverberg, vice-president of research and development at Borland International. "You shouldn't underestimate the potential difficulties confirm initial expectations and have development staff and finances to meet the task at hand. But some developers expressed concern over just how much work the recoding would require.

"Conversion of some kind was expected, but this could be more than anticipated," said Jeff Allen, manager of developer relations for Bythos Software, Inc. in Foster City, Calif. Microsoft said it hopes to include automatic conversion tools in an upcoming release of Windows 3.1.

Microsoft had been saying, "If you code for Windows, you code for OS/2," but that just isn't true," said Brad Silverberg, vice-president of research and development at Borland International. "You shouldn't underestimate the effort of porting a Windows application."

To ease the pain of mechanizing porting chores, developers will want to port their applications to the Presentation Manager. But other companies that have spurned Windows said such potential difficulties confirm initial doubts about the Windows/Presentation Manager compatibility issue.

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In addition to tackling a simple porting task, developers will be required to convert much of their Windows application code manually, on a line-by-line basis.

OS/2 Presentation Manager bears strong resemblance to Microsoft's Windows, but porting the two proves no easy task.

The reason: Microsoft's Presentation Manager software development kit does not include the automatic conversion tools that were originally expected to be included in the package, said Adrian King, director of marketing for systems software at Microsoft.

Reams of code

As a result of the lacking automation, King said, the code conversion process will take a minimum of two days for a basic Windows application consisting of a few hundred lines of code. What put in the context of a complex commercial application with tens of thousands of lines of code, developers could find writing to Windows to be a major task.

Heavyweights

FROM PAGE 1

Although it will not announce products, Ashton-Tate also intends to reveal support for Unix, a source close to Ashton-Tate confirmed.

Ashton-Tate's biggest money maker, Dhase, was developed under Unix, Ashton-Tate officials said. As a result, moving to Unix has always been a marketing dilemma rather than a technical challenge.

Although he would not specify how his firm will support the new version, Ashton-Tate Chairman Ed Esber said such a product would make Unix a more viable alternative to Microsoft and IBM's OS/2. "This could lift Unix out of the realm of CP/M/MS-DOS, applications and cut and paste text between Unix and MS-DOS windows."

Currently, the company has no plans to offer an OS/2 version of the workstation.

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Layoffs imminent as Prime restructures

BY NELL MARGOLIS CW STAFF

NATICK, Mass. — Prime Computer, Inc. last week restructured its business operations in the wake of its recent purchase of Computervision Corp. But even as the company announced its new corporate reporting chart, reports of imminent layoffs by the CAD/CAM giant, based here, swirled through the industry.

Confirming earlier statements of intent, Prime announced the formation of two separate marketing divisions. The Computervision division will concentrate on the computer-aided design and manufacturing (CAD/CAM) market. The commercial and technical division will center its resources on the markets previously served by Prime.

**Fischer retains post**

Under the new corporate structure, Robert A. Fischer, president of Computervision at the time of the merger, will remain as president of the Computervision division.

Fischer’s commercial and technical division counterpart will be W. L. “Roy” Brubaker, formerly Prime’s vice-president of worldwide sales. A single manufacturing and customer service organization will support customers of both divisions, Fischer said, as will one systems marketing and development organization. Within each such organization, Fischer added, resources will be dedicated to each Prime division.

Reports of an approaching layoff of 500 to 1,000 employees as a result of redundancies created by the merger with Computervision spread within hours of the corporate structure announcement. A company spokesman confirmed that layoffs are in the offing but did not say how many of Prime’s 13,500 employees are likely to be dismissed.

AT&T seeks FCC approval for first ISDN rate plan

BY JAMES DALY CW STAFF

NEW YORK — AT&T filed a tariff with the Federal Communications Commission last week for its first Integrated Services Digital Network (ISDN) service, a networking option that will give users high-speed access to its Megacom voice and Accunet data transmission services.

AT&T’s ISDN service will support up to 23 64K bit/sec voice or data channels over a 1.5M bit/sec. trunk, as defined by the ISDN Primary Rate Interface protocol. It will be the first ISDN Primary Rate Interface service and the first long-distance ISDN service offered in the U.S.

“This will make ISDN available over the whole national geography,” said Thomas Nolle, president of Haddonfield, N.J.-based consulting firm CIMI Corp. The long distance service is “the only pervasive form of ISDN possible, because it doesn’t require the concurrence of a half-dozen Bell operating companies to make a connection.” Two weeks ago, Illinois Bell became the first regional Bell operating company to file a commercial ISDN tariff.

AT&T’s tariff, which was filed four months behind schedule, includes a Call-by-Call Service Selection option to allocate 64K bit/sec. channels within the trunk to various AT&T services. A second option is Info-2, an automatic number identification capability that forwards the calling party’s billing number to the ISDN customer’s premises.

The Call-by-Call Service Selection is “what will make ISDN go,” said W. Edward Hodgson, manager of computers and communications at Westinghouse Electric Corp., adding that his company plans to implement AT&T’s service.

AT&T plans a $3,000 nonrecurring charge to set up an ISDN link plus a $400 charge per Primary Rate Interface link. Call-by-Call Service Selection carries a one-time $250 charge, plus a $500 charge for reallocating channels within a call-by-call access group. Channels can be reallocated within 24 hours. Info-2 costs three cents for each Info-2 number delivered plus a one-time fee of $200.

So, if you don’t have total RECALL...call Innovation and we’ll send you a Free No Obligation 90 Day Trial of a system that does...and you will receive Free, the deluxe 1987 Guinness Book of World Records.

*Bhandanta Vicitsara set a world record by reciting 16,000 pages of Buddhist texts!*
**HP boosts minis across the board**

*Precision Architecture rapid-fire releases cover entire spectrum*

**BY JAMES A. MARTIN**

NEW YORK — In hopes of gaining an edge on rivals Digital Equipment Corp. and IBM, Hewlett-Packard Co. last week announced minicomputers across its entire product range, from the low-end Micro 3000 to a high-end Spectrum model.

The press conference held here last week was to showcase HP's Precision Architecture, a reduced instruction set computing (RISC) environment the company is positioning as its platform for the future.

Because the first machines in the new line, the HP 3000 Models 930 and 950, were delayed for more than a year by software bugs, HP is now trying to gain back some momentum by releasing products at a rapid rate.

### Take the broad road

"This gives us a product line that is as broad as or broader than DEC's — and one that overlaps four architectures and operating systems from IBM," said Doug Sprecg, general manager of HP's commercial systems group.

Analysts were generally upbeat about HP's chances for gaining ground on its minicomputer competitors. "The ease of field upgradability, coupled with their price/performance, creates a new benchmark against what other vendors will do," said Christine Hughes, an analyst at the Gartner Group, Inc.

With its Precision Architecture environment, HP's product line is better positioned than any other vendor's to take advantage of the transition of distributed networking computing, according to Michael Millikin of the Gartner Group in Boston.

Among the announcements was the HP 3000 Model 955, an 11 million instructions per second (MIPS) system for commercial applications designed to compete in price and performance with DEC's VAX 8840 and IBM's high-end 4381.

The Model 950 reportedly provides 50% greater performance than the previous HP 3000 high-end machine, the 7-MIPS Model 950, according to HP's Spectrum investigations, Model 950 users can upgrade to the Model 955 with add-in boards at a cost of $120,000.

HP expects to increase the Model 955's performance at a compounded annual rate of 40% to 50%, Sprecg said. He declined to say how that increase will be accomplished but added that the company is investigating a variety of means, including quadratic symmetrical processing - similar to what DEC has announced for its Solaris Star project.

The HP 3000 line was further expanded with the Model 935, a 6-MIPS system that supports up to 240 users for $150,000; the Model 925LX, the new low-end model introduced as a result of the Spectrum line-up in the Model 930. It was announced with the Model 950 in February 1986, but both systems were delayed for more than a year because of software bugs. By the time the Model 930 rollout began last fall, the majority of HP customers were opting for the more expandable, more efficient Model 950. The Model 950 accounts for about 65% to 75% of all Spectrum models being shipped today, according to Kidd, Peabody & Co.

The Model 930 series is based on HP's Precision Architecture because a less expensive approach was needed to keep the low-end competitive, according to Sprecg.

### Silverlake

**FROM PAGE 1**

IBM has given Silverlake prototypes to developers or is allowing them to write software on Silverlake machines on IBM premises.

- With Silverlake, IBM will probably introduce a new version of the RPG language that an IBM official has referred to as RPG-IV. The new version reportedly will include RPG-II and RPG-III and will be offered in AA and non-AA.SAA versions.

- According to a developer who has had a Silverlake prototype for six months, Silverlake will run System/36 source code after being compiled to run on the new machine. System/36 software, however, will run in object code, he said. Ray Hughes, president of CRT Distribution Systems, Inc. in Waukesha, Wis., said there will also be so-called "Silverlake-SAA" mode.

Hughes said that adapting his firm's System/36 programs to run on Silverlake without much difficulty included the conversion from the System/36 data base to an SQL-type data base.

He also said that System/36 programs might not perform as well on Silverlake as they do on the System/36 because the latest source code must be compiled to run on Silverlake.

"No problem"

John Birch, corporate vice-president of McCormack & Dodge Corp., said he has been given all the information necessary to compile System/36 programs to run on Silverlake. He added that he has taken his firm's System/36 and 38 applications to IBM's Rochester, Minn., facility and run them on an engineering model of Silverlake. "We are very confident about compatibility," he said.

Birch said that although a System/36 user must have a software developer compile his program to run on Silverlake, a System/36 user should be able to run the program without alteration.

"The System/38 and Silverlake architectures are closely related," said Birch. Converting the System/38 relational data base with an SQL-based data base will not be a very difficult task, he added.

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**JOHN BIRCH**

MCCORMACK & DODGE CORP.

Birch reported that at a recent M&D users' meeting in Florida, an IBM official referred to RPG-IV in describing the new version of RPG that will be used on the Silverlake machine.

Carolyn Nimmy, manager of education at Insight Database Systems PLC, a London-based firm that develops software for the System/36 and 38, said developers are busily studying SAA manuals.

"We have been getting familiar with SQL for a while so that we can get familiar with the new box," said Nimmy. "Because the Silverlake data base management system will require SQL, Nimmy said. Insight expects to receive a prototype system soon, she added.

Nimmy said she understands that there will be two versions of RPG-IV: One will be a migration path for current System/36 and 38 users, and the other will be SAA-compliant.

#### Necessary conversion

Nimmy agreed that System/36 developers will be required to convert System/38 code to run on Silverlake but said such intervention will not be required in the case of System/38 programs. She suggested that any performance lag that System/36 users might experience will be compensated for by increased performance in Silverlake. Nimmy said IBM officials indicated that performance will be boosted by the use of new technology in Silverlake.

"However, because Silverlake is a complaint native mode will be the fastest and will include the migration potential promised by developers will be most attracted to write in the new mode.

The suit alleged that Barry and Cloer were instrumental in developing the BMC product line System/38, priced at third of the gross sales on the software. The suit charges the firm reneged on the agreement after 1982. BMC President Rick Hosley said he cannot comment on the suit and at present, holds nothing," The suit seeks $20 million in damages.

**BMC partners sue for $20M**

**BY JAMES A. MARTIN**

HOUSTON — Two former partners of BMC Software, Inc. in Sugar Land, Texas, have filed suit against the third partner and present owner, John Moores, in Fort Bend County Court.

The suit was filed by Scott Boulter of Amherst, Mass., and Daniel Cloer of Harris County, Texas. Cloer and Moores were the original founders of BMC, Richard E. Barry, also of Harris County, has filed a complaint against BMC as well.

BMC is a New York firm produces utilities for IBM's MVS and VM and reported $40 million in revenue in 1987.

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New face in supercomputing

BY ALAN ALPER CW STAFF

NEW YORK — Graphics hardware maker Evans & Sutherland last week became an unlikely player in the supercomputer arena, disclosing that it has been developing a general-purpose supercomputer for the past 18 months.

Evans & Sutherland said that the machine it will introduce later this year will exceed the scalar processing performance of Cray Research, Inc. computers.

The supercomputer will be built around a moderately parallel architecture, scalable to eight processors, that uses custom-designed very large-scale integration CMOS technology. It will contain a tightly coupled graphics engine, support up to 2G bytes of memory and run the University of California at Berkeley's Unix 4.2, according to Robert Stevenson, vice-president of marketing at the firm's computer division.

Each processor will contain two computational units offering 50% of the performance of IBM's 3090 mainframe and shared access to the system's large memory space, Stevenson said. The machine's 64 I/O channels will operate at 20M byte/sec, and will have access to hundreds of gigabytes of disk storage, Stevenson said.

In contrast to other supercomputers that operate in a batch-oriented mode, users will work interactively with Evans & Sutherland's supercomputer, Stevenson said. That will enable users performing graphically intensive applications to see the results of their work almost immediately, he contended.

In its largest configuration, the machine is expected to operate at more than one billion instructions per second and deliver one billion floating-point operations per second of vector performance when it goes into production early next year, Evans & Sutherland claimed. It will range in price from $3 million to $8 million, Stevenson noted.

Evans & Sutherland said it expects to compete with Cray, ETA Systems, Inc. and IBM, which offers a vector-processing facility with its 3090. The firm is hoping its reputation within the scientific and technical market, in both the commercial and government segments, will help ease its entry into the business.

"We'll be selling to the same customers who use our simulation and graphics systems products," Stevenson said. "We're not XYZ start-up company."

Marsha Brooks, an analyst with International Data Corp. in Framingham, Mass., said Evans & Sutherland has a well-conceived architectural approach and is properly positioning its product. "There's definitely room for another player in the very high-performance portion of the technical computing market," she said. "They have a strong background in technical applications, a good reputation among their customers and a good chance of succeeding by pushing price performance."

Balanced processing

Evans & Sutherland's supercomputer will reportedly offer balanced scalar and vector processing, in contrast to the emphasis on vector processing by other supercomputers and minisupercomputers.

The company took a balanced approach because many computing problems are not easily vectorizable, Stevenson claimed. "Some users we talked to said that at 70% vectorization, they were only getting 12% of their machine's performance. That's an inefficient approach; they're throwing away resources."

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MINNEAPOLIS — As bad news began to circulate about its financial position last week, Control Data Corp. took the second of three major steps toward reviving its fortunes, by announcing a revamped Cyber mainframe product line.

The Cyber 930 machines, scheduled for July shipment, emerged just five weeks after high-end Cyber 960s were announced — and two weeks before the planned debut of a new mid-range machine, the Cyber 960, CDC spokesmen said.

Next Monday, CDC is also expected to make significant functional changes to its NOS/VE operating system that will provide greater connectivity for Cyber mainframes by supporting Transmission Control Protocol/Internet Protocol and Ethernet communications standards, CDC spokesmen said.

Timing essential
The revamping of CDC's mainframe line could not have come at a more critical time. After spending the mid-1980s in the throes of a corporate reorganization, the company is just beginning to field new product lines and to reach profitability again.

"Control Data is gradually making progress, but the rate of progress is being retarded by trouble in the area of its peripherals and educational divisions, both of which lost money last year," said Mike Geran, senior research analyst with the Nikko Securities Company International, Inc. in New York. "CDC sold $975 million in disk drives and other peripherals last year and still lost money."

"CDC is banking on the fact that the Cyber 930s have proven to be entry points into new accounts, both in the U.S. and abroad. CDC's traditional mainframe base has been steadily eroding, industry analysts said. There are just more than 1,000 Cyber installations worldwide."

Reports deceiving
CDC's annual report, released last week, shows that the firm's $3.37 billion in revenue masks some underlying weaknesses, including the following:

- CDC operated with a negative cash flow in 1987, although it realized a profit from the $313 million sale of its Commercial Credit business unit. The sale allowed CDC to eke out a $19.3 million profit last year — the first year without carrying any domestic bank loans after issuing junk bonds in 1987, Geran said. Overseas banks provide CDC's continuing financing, he added.
- CDC said there were cost overruns of $2.5 million associated with the $50 million development cost of the Cyber 930. Financed by a limited partnership formed in 1982, the machine was introduced in March 1987 as the company's first departmental computer. CDC chose to pursue the limited partnership so that it could begin designing for the Cyber 930 while the company was being reorganized.
- Last week, CDC provided a dual-processor 930, called the Cyber 932-32, that is priced at $213,800 for a unit with 16M bytes of main memory. The 932-32 acts as a symmetrical multiprocessor, since either CPU can initiate I/O requests or process incoming jobs.
- Both new Cyber 930 unprocessors — the $60,000 Cyber 932-11 and the $125,900 Cyber 932-31 — have redesigned 8M-byte CPUs that are powered by fewer printed-circuit boards than older 930 models. New 64M-byte memory boards, powered by 1M-bit chips, are so compact that a second processor can be added to the 930 cabinet as an $80,000 field upgrade, according to Mike Deck, a Cyber 930 product manager.

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- *New offerings in the CASE arena, represented by our NATURAL Engineering Series; and
- A growing family of products for VAX users, with performance, functionality, portability, and integration beyond that of any other vendor.
Wang tweaks image-storing system

Wang Laboratories, Inc. last week broadly enhanced the WIIS line and introduced an add-on board for the IBM Personal Computer.

The year-old WIIS, which turns a Wang VS computer into a filing cabinet for thousands of digitally stored images, will be responsible for $100 million in sales by October, or a little less than 5% of the company’s $2.84 billion in annual revenue, according to Wang managers.

The most dramatic of the new WIIS products is a printed-circuit board that will convert an IBM PC AT or IBM-compatible model into a WIIS workstation. Until now, only Wang Advanced Professional Computers could be used to retrieve and display image files from a Wang VS minicomputer.

The PC AT upgrade, which is slated to be available during the third quarter, will cost $1,200 for the board and a 16-in. full-page monitor, according to Ren Arenson, senior marketing manager for Wang applications products. "A large company with hundreds or thousands of ATs can now make them capable of displaying images through the addition of the WIIS board," Arenson said.

Wang’s AT add-on boards were designed to make the firm’s imaging technology more attractive to large IBM sites that might consider buying the $200,000 Wang VS computer that supports WIIS.

Limited time only
As an added incentive, Wang also recently established a trial program that allows corporations to try WIIS for three months for a flat fee of $16,500. Arenson said Wang is acutely aware that it must grab market share before major competitors like IBM and Digital Equipment Corp. unveil competing imaging systems.

"We were told by consultants that we had a 12- to 18-month lead on the competition," Arenson said, "and that lead time is just about over. There is very little question that all our major competitors will be in the imaging market fairly soon."

Other new WIIS products include two preconfigured imaging workstations based on Wang Professional Computer 240s. One workstation, priced at $6,940, displays three image windows with 100 dot/in. resolution, while the other, priced at $7,940, displays two windows at 200 dot/in.

For image-intensive applications, Wang introduced the 4620 Image Workstation, a $7,940 terminal that uses a mouse to manipulate on-screen icons for document selection.

Fax server coming
To promote the networking of WIIS, Wang said, it plans to market a VS facsimile server this fall. The server would allow Wang Office electronic mail messages to be distributed to remote facsimile machines, even on a worldwide basis. The $13,900 VS Fax Server hardware and software is compatible with any industry-standard Group III facsimile machine, Wang spokesmen said.

Finally, Wang added an intelligent optical character recognition (OCR) device that it said allows paper documents scanned into a WIIS to be automatically indexed in a WIIS data base. The $34,830 OCR device and a $7,200 controller that interfaces with the VS computer are scheduled for shipment in the fourth quarter, Wang said.

Arenson’s hardware announcements were accompanied by the introduction of nine WIIS off-the-shelf applications and eight WIIS software packages developed by third-party vendors.
DEC wriggles way into WORM market

BY STANLEY GIBSON
CW STAFF

MARLBORO, Mass. — Digital Equipment Corp. last week slid its first write-once-ready-many (WORM) optical disk drive into the market but opted for the more established 12-in. format rather than the newer, but less widely used, 5¥½-in. size.

DEC's RV-20 optical disk drive handles 12-in. disks capable of storing 1G byte of data on each side.

DEC also announced a software package called Storage Library System, which reportedly can help users store and manipulate data on DEC's RV-20 subsystem as well as on tape subsystems. The library system can prevent the wrong volume from being mounted and the wrong user from seeing it, DEC said.

DEC added that it expects the RV-20 to find acceptance in the financial services, health care, engineering and pharmaceutical industries, in which long-term storage of important data is necessary.

Analysts were undecided on the drive's chances for success. "The DEC WORM drive will be regarded as an advancement in the eyes of the computer industry, but the reality is that it's a total dog. It's at least a generation behind," asserted Jay Bretzmann, a storage systems analyst at International Data Corp. However, Louise Biggs, a storage analyst at Dataquest, Inc., was more positive. "I thought it was a great announcement. They're the second serious systems manufacturer, after Tandem, to integrate optical drives. It's a real positive indication for the optical industry. The 12-in. technology is proven and thoroughly tested. Systems vendors, such as DEC, are much more cautious than third-party vendors about what they will integrate."

Bretzmann, however, said that DEC should have utilized 5¥½-in. media because major technological strides are being made in that area and it is considerably less expensive.

"A third-party could come out with a 5¥½-in. product in the next year that could blow [DEC] away," Bretzmann said. The DEC-compatible optical storage devices now available from third parties are already generally as good as, if not better than, DEC's, he added.

The RV-20 subsystem is available immediately for B1 and Q-bus systems; Uni-bus support will be available in the future, according to DEC. Currently, the system is offered under DEC's VMS operating system, although DEC said support under its Ultrix will be offered later.

The RV-20 consists of an adapter card connected to a master drive, which consists of a controller and one drive. Three additional slave drives may be connected. The RV-20 is priced at $30,000. Additional RV-20 drives cost $25,000, and each optical disk is priced at $400. The subsystems and media are available 30 days after receipt of order, DEC said.

The Storage Library System, scheduled to ship next month, will be licensed according to number of users, with fees starting at $500.

Apple slices up sales, marketing

BY JULIE PITTA
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. last week restructured its sales and marketing organization into three separate units addressing different geographic regions. The regional distinction reflects the growing importance of international markets to the company, an Apple spokeswoman said.

The company also established an end-user services organization, allowing large end users to obtain service directly from Apple on a fee basis.

As a result of the restructuring, the Apple sales and marketing division is now composed of Apple USA, Apple Europe and Apple Pacific. Last year, international sales accounted for one-third of Apple's revenue.

Heading Apple USA will be Charles M. Boesenberg, former senior vice-president of U.S. sales and marketing and now vice-president and group executive for the new unit.

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Heading Apple USA will be Charles M. Boesenberg, former senior vice-president of U.S. sales and marketing and now vice-president and group executive for the new unit.

Apple International has been split into Apple Europe and Apple Pacific, encompassing Canada, Australia and Japan and exploring opportunities in Latin America and the Pacific Rim region.
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EDITORIAL

Beyond promises

THE SPECTER OF personal computer myopia — the vision of a world where everything except microprocessor-based hardware is incidental to the professional computing environment — is threatening to take a new twist.

The high priests of this vision are now throwing superminis onto the mainframe pyre, pointing to the faltering market performance of DEC and others as proof positive.

They also point to the heightened demand for local-area network servers relative to the slackening demand for minis and superminis as further evidence of the inexorable march to smallness in system design.

Instead of listening to this high-tech hoopla, perhaps it is a better idea to heed the message that is showing up regularly in the business press: The greatest threat to American competitiveness is the fixation on the short term.

Ironically, this fixation is promoted within the business media, where quarterly performance gains so much attention at the expense of real trends. This is a particularly important point for information professionals to comprehend, because their environment is increasingly tied to the long-term plans and goals of their companies.

The fact is that the relatively slack performance of some minicomputer makers can be traced to product cycles, as well as to general uncertainty about the U.S. economy in this election year. DEC is on the downward slope in a major product life cycle, while Hewlett-Packard is just mounting the up-side of the cycle with its Spectruman series, and HP's market performance reflects this.

There is absolutely no denying the vital role to be played by microprocessor-based distributed systems in information systems of the 1990s. But it is apt to assume that the high priests would have us doing — that technology stands still in some segments while it races ahead in others. The DEC PDP-11s of 15 years ago appear archaic next to the superminis of today, which still in some segments while it races ahead in others.

Wisely, the vast majority of large businesses appear to be taking a cautious approach to implementing PC networks other than in self-contained situations. The reasons are many, including the limitations of the microprocessor and PC operating systems for large, multiuser configurations; the lack of progress in developing true distributed data base technology that can maintain integrity in a large-scale environment; and the simple fact that a million instructions per second on a mini or mainframe is not at all like a MIPS on a micro.

Despite the 16-Mbyte potential address space of IBM's Personal Computer AT, practical applications tapping more than 640K bytes were never developed in the four-year life span of that machine. Serious systems development cannot live on promises.

Regarding the object-code only (OCO) article [CW, Feb. 8], the view from the mountain top is much nicer than it is from the trenches.

In the IBM VM world, OCO has made the job harder for the troops. In the past, we could debug the problems in bringing up a new release of our operating system. Now we cannot, and IBM's support center is not much help. So instead of improving migration in the complex VM shop, it has slowed down migration. Further, it has made migration more expensive. Instead of fixing the problem, we have to talk to someone at IBM who might be able to fix it.

The story as presented by Peter Schneider is much rosier than it is viewed by many of us. We see new features implemented in new releases that we cannot change. The full-screen support of VM/SIP Release 5 CMS is a classic example. The company promised us exits, and we have been given excuses.

I think IBM's OCO has had one beneficial effect. We certainly look much more closely at Brand X software vendors that provide source than we might have otherwise.

T. Y. Johnston
Manager, Systems Programming Stanford Linear Accelerator Center Stanford University Stanford, Calif.

I would like to go on record as being one customer who does not support the idea of object-code only. I disagree with the idea that IBM software is "functionally complete" as stated by Peter Schneider. For me, the strength of many of IBM's software products lies in the ability of users to tailor them to their environment. Changes that make business sense for some installations might not be for others, and it may be difficult to justify inclusion in subsequent product releases.

I realize that modifications can cause maintenance problems for myself and IBM. But it is important to remember that my business is to provide performance and functionality to my user community, not to make things easy. Most shops do not modify IBM code lightly, performing a serious cost/benefit analysis before doing so. IBM apparently considers itself more capable than its customers of managing customers' environments.

IBM has attempted to assuage customers by stating that exits and other interfaces will be supplied to replace the need for access to the actual code. I doubt that these new exits will be available at all except in cases of "sufficient demonstrated need," leaving customers with specialized needs to look to other vendors or do without.

I am not willing to sacrifice my ability to serve my users to solve IBM's problems.

J. R. Garrett
Manager Technical Services Fina Oil and Chemical Co. Dallas, Texas

I enjoyed the discussion of IBM's object-code only policy. However, I must take exception to Martin Goetz's comments regarding IBM's DB2.

Goetz argued that "the only interface to DB2 is SQL," and that this limited the capabilities to build complementary software for DB2. One of DB2's primary objectives is to guarantee the integrity of DB2 data.

However, in manuals for DB2, the internal structures of the DB2 data areas are rigorously defined. This information can and has been used to develop third-party data base design tools. A performance monitoring tool, developed by a non-IBM company, is scheduled to be available in the third quarter of this year and will be more powerful than IBM's current offerings.

Goetz also stated that "there is no way to determine through SQL where the data physically resides." This is because DB2 uses VSAM data sets to physically store the data. These sets are catalogued and follow strict naming conventions to identify the table space they belong to.

I agree that IBM has made third-party developers' jobs more difficult, but I believe IBM has also given them sufficient information to provide competitive products. I feel comfortable supporting non-IBM products that utilize DB2's standard interfaces because they will utilize the capabilities of DB2 as that product is enhanced without jeopardizing its integrity.

Tom Umberger
Consultant Spectrum Technology Group, Inc. Tampa, Fla.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Luberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.
When a skeptic tastes
a Macintosh — and likes it

ASHLEY GRAYSON

The culture shock of adopting the Macin-
tosh after 20 years with com-
mmand-line interfaces can be over-
come even by a skeptic like me.
Part of the reason is the in-
creasing availability of applica-
tions. However, Macintoshes
were not brought into my shop in
a search for more applications —
we can’t use even a fraction of
those available for the IBM PC.
We tried the Apple machine because our Mac evangelist finally got to us. We
adopted it because of the grow-
ing efforts of PC software devel-
opers to adopt Mac conventions.

The Mac offers a seamless
user environment that brings
two benefits: a uniform inter-
face, which allows skills learned
in one area to be immediately ap-
plied elsewhere; and the ability
to combine text, graphics and
spreadsheet data in a single com-
pound document.
Neither of these qualities has
been a PC hallmark. However, as
PC developers attempt to build
their capabilities on top of a re-
calculated DOS, they demon-
strate the superiority of the
Macintosh approach — a single
environment that can be shared
by all programs.
The improved DOS-based
products provide value to us PC
users, but the seams show. If the
most popular software packages
redefine the PC environment,
why not adopt the source of their
inspiration?

A tool for the job
And there are some applications
that are best solved with the in-
novative Macintosh tools. Our
organization has a unique re-
quirement for a small text data
base that is unified with a tickler
file — or “to do” list — a phone
directory and a spreadsheet.

After two years of searching
for a tool to implement the data
base on a PC, we decided that
Borland International’s Paradox
running on an IBM PC AT-class
machine was the best answer.
But this package was too big to
pop up, wouldn’t link to a spread-
sheet and would take much too
programming effort.

Using Apple’s Hypercard on a
Mac, I was able to implement our
application in just three days.
And it was fun. Fun is too impor-
tant to overlook as a factor. A
current Apple television ad posi-
tions the Macintosh as a system
that beats the training bottleneck
because “the users train
Continued on page 20

Tales of laundry, gunnery and AI

JOHN BARNES

It can be a mis-
take to extrapol-
ate too much from
the past, but now
and then I run
across a pattern
in the history of technology
that fits some present-day problems.
One that might bear on the
continuing quest for artificial in-
elligence — not so much about
how AI is likely to be achieved
but in what sort of environment
begins with the humble wash-
sheet machine. Once upon a time
the basic technique was to take
clothes down to the river, smear
soap on them, beat them against
a flat rock, then throw them into
the water and work your hands
over the soap. Fun is too impor-
tant to overlook as a factor. A
current Apple television ad posi-
tions the Macintosh as a system
that beats the training bottleneck
because “the users train
Continued on page 20

What’s not in
a name

ELISABETH HORKWITT

Vendors that tend to be a tri-
file austere and pran-
agricultural, not to say
original, in their choice of prod-
uct names have come up
with some weird project code names for
systems and software pack-
gest, the job of the slide rule/pencil/man
pencil and pad into a bearing and
processed them with a slide rule,
ively. That man was called the
“computer.”

Building smarter people
Maybe the question we should
be asking is, “How can a ma-
cine get smarter?” but, “How can
a machine help a person be
smarter?” Eventually, the ma-
cine will end up being smart for
the person.

In some ways, it already is. The
old IBM word processor knew
how to make some simple
spellings and would flag them
if you made a mistake. What
was it doing? It was doing the
same thing that you do when
you are making a mistake.

The current model knows
that, “Oh! Dr. Mangrove! You
startled me . . . what are you do-
ing?” is probably all one sen-
tence and will check with the
user to make sure. The word
processor is evolving toward
doing what a program needs to do
to understand English prose.
Similarly, a doctor using a
text processor to do research
questions toward a diagnosis is on the road to
a true diagnostic system.

Based on historical precedent,
one can imagine the machine
taking over parts of the job of
deciding what’s relevant, then
perhaps deciding what’s similar,
until one day the system can dis-
cover previously unknown syn-
dromes and write research pro-
tocols to identify them.

We can draw the following
few ideas from the history of oth-
er technologies:
• Shoot for a small increment ev-
time rather than a great leap for-

ward. Make every program
that’s as good as it can be at
that time. A program that mails col-
llection notices might first write a
short report on several collec-
tions and send back each ZIP code or
phone exchange. Later, it might

print in a book. When it was
time to use them, a man took the
bearings from spotters, looked
up the corresponding values,
processed them with a slide rule,
pencil and pad into a bearing and
elevation and finally ordered the
gunners to lay the gun accord-
Continued on page 20

VIEWPOINT

APPRI 11, 1988

COMPUTERWORLD

JOHN BARNES

It can be a mis-
take to extrapol-
ate too much from
the past, but now
and then I run
across a pattern
in the history of technology
that fits some present-day problems.
One that might bear on the
continuing quest for artificial in-
elligence — not so much about
how AI is likely to be achieved
but in what sort of environment
begins with the humble wash-
sheet machine. Once upon a time
the basic technique was to take
clothes down to the river, smear
soap on them, beat them against
a flat rock, then throw them into
the water and work your hands
over the soap. Fun is too impor-
tant to overlook as a factor. A
current Apple television ad posi-
tions the Macintosh as a system
that beats the training bottleneck
because “the users train
Continued on page 20

Tales of laundry, gunnery and AI

JOHN BARNES

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because “the users train
Continued on page 20

What’s not in
a name

ELISABETH HORKWITT

Vendors that tend to be a tri-
file austere and pran-
agricultural, not to say
original, in their choice of prod-
uct names have come up
with some weird project code names for
systems and software pack-
gest, the job of the slide rule/pencil/man
pencil and pad into a bearing and
processed them with a slide rule,
ively. That man was called the
“computer.”

Building smarter people
Maybe the question we should
be asking is, “How can a ma-
cine get smarter?” but, “How can
a machine help a person be
smarter?” Eventually, the ma-
cine will end up being smart for
the person.

In some ways, it already is. The
old IBM word processor knew
how to make some simple
spellings and would flag them
if you made a mistake. What
was it doing? It was doing the
same thing that you do when
you are making a mistake.

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tocols to identify them.

We can draw the following
few ideas from the history of oth-
er technologies:
• Shoot for a small increment ev-
time rather than a great leap for-
How to process your expenses.

Processing your travel and entertainment expenses in the past has been difficult and has required extensive resources. More than $100 billion is spent on T&E each year, yet most companies have failed to receive adequate data for analysis and reporting. Until CAPTURE™, that is.

CAPTURE is the first financial information system designed to leave nothing to chance in the documentation problem as dodged it. Proficiency at Lotus's 1-2-3 will not make you a more efficient user of Microsoft's Word on the PC because the metaphors are so different. On the Mac, however, every software package you use will enhance your skills with the machine because everything builds on the common base. Add-in word processors for 1-2-3 are trying to simulate a common metaphor, but they're starting too far down the chain.

**Pluses and minuses**

In the Mac community, the quintessential machine is the Macintosh Plus. Available at tempting discounts compared with the Mac Pluses and minuses. The Macintosh II, however, delivers a different psychological impact. Essentially a Motorola 68020-based workstation, it is the first packaging of the Mac that resembles a PC AT; like the Intel 80286-based computers, a truly high-performance system must be custom-built from third-party components.

For example, my favorite 286-based system is a Hewlett-Packard Vectra with a Video Seven, Inc. Deluxe extended Enhanced Graphics Adapter controller and a NEC Multysync Monitor. To replicate this approach in the Macintosh environment, we acquired a stripped Mac II. This $3,000 package included 1M byte of memory, one 800K-byte floppy disk drive and no video controller or monitor.

Surprisingly, it took a month to get add-in memory chips at reasonable prices. Third-party sources complained that Apple had dropped its own list price below the competitor's, but the Mac wasn't actually shipped any product. I finally had to sweat out installing an additional 4M bytes of Mac memory cards. An anoxia in the Mac world, the process is intuitively, mechanically challenging and best left to an experienced dealer.

Even including the memory woes, our high-performance package flew together, the entire system booting up in less than an hour. To the basic Mac II we added three components from Supermac Technology: an XP150L, which is a 150M-byte internal hard disk, an HP Spectrum video card and a Trinitron-based 19-inch color monitor.

Since our existing Mac Plus configuration included an external Apple hard disk drive, we simply screwed the small computer systems interface connector to the back of the Mac II and copied 15M bytes of applications directly to the Supermac hard disk. With a "shareware" program to colorize the standard Mac programs, we had the ultimate California Macintosh — aqua-tinted screens with salmon-color menus showing beige highlights — in less than an hour.

This is the real Mac II experience; it's like producing a motion picture. More than $12,000 worth of hardware and the talents of a creative director have brought alive amazing images on the screen.

But I wonder, is it a personal workstation or a departmental resource? And will we draw a large enough audience of users to the wide screen to make back the investment?

Laundry

CONTINUED FROM PAGE 19

be allowed to find out where collection notices make the most difference.

- Ask the people who read the output what they wish were included. Who would know better? Then, see if there's a way for them to tell the program, instead of you, what they want.

- Ask the output's readers what they do after they read it. Maybe part of the process can be integrated into the program.

- Upgrade existing programs by giving them better front-end filters and wider access to data. Historically, automation comes in steps — first the machine that does the work under guidance, then the self-guided machine and, finally, the machine that decides what needs to be done.

The more a program knows about what it is supposed to do, the fewer restrictions there need be on what data it can access — and the closer you are to AI.

- Keep risks low. Every program should automate as much as it safely can — no more. Shoot for machine-assisted natural intelligence in data base searching, but not in updates. A weird search costs little, but a weird update can be disastrous.

The key point is that it doesn't all come at once. If history tells us anything, true AI won't be born in one blinding moment. More likely, it will evolve slowly into existence from what can be called machine-assisted natural intelligence.
An important message about customer-controlled software.
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It's all accomplished without disrupting your staff, your DP department, or your business. And it all comes from a software company consistently rated by Fortune 500 executives as a top vendor in overall service and support.

The message is simple. Customer-controlled software makes everybody's job easier. To find out more, or to inquire about any of our Financial, Human Resource, Manufacturing and Application Development software, call McCormack & Dodge at 1-800-343-0325.

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We put the customer in control of the software.
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What's more, an INGRES dBASE III Gateway is now available for data trapped in old PC files. And gateways to IBM's IMS, DB2 and SQL/DS are on the way.

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INDBASE III

ARMS801CW
IBM’s magic carpet ride

IBM’s recent moves indicate it is attempting to escape its history as a silicon-and-sheet metal hardware manufacturer and instead wants to transport its customers to a new level of computing proficiency, allowing computer use to spread beyond current limits.

At this higher level, systems will work the way they logically should, rather than depend on specific machine and procedural requirements. Users will float above the fray, not caring about their underlying processor or data base management system.

They will be transported through this ethereal world as if on a magic carpet, with all bumps smoothed and all obstacles crossed as they enjoy an uninterrupted view of the business at hand.

IBM’s Systems Application Architecture (SAA) is a giant step in the direction of such a pseudo-machine environment. With its SAA approach, IBM could introduce underlying technologies without changing the way programmers develop applications or the way end users view their computing resources. In its more recent announcement, continued on page 26

Rebutting System/36, 38 fears

Users group president Sutherland takes calmer look at SAA issues

Since introducing Systems Application Architecture (SAA) a year ago, IBM has had little to say about how its mid-range System/36 and 38 line follow-on, code-named Silverlake, will fit into its plan to provide application portability across its major environments.

As a result, members of Common, IBM’s mid-range users group, have not been shy in expressing concerns about the lack of attention to the System/36 and 38 line in SAA. In a recent interview with Computerworld senior writer Rosemary Hamilton, Robert Sutherland, the president of Common, addressed those fears and took a calmer ap

Robert Sutherland

proach to the SAA issue.

What are Common’s concerns about SAA?

It at first appeared that the System/3X community is not completely excluded — but there were concerns that SAA is a 370 thing. I don’t feel that’s true. The concept is a great idea. I believe IBM’s intent is not to exclude us, but this has been a real hot button.

IBM has said Silverlake will come under the SAA umbrella. What is IBM’s position regarding the current System/36 and 38 line and SAA? They have been offering classes for writing [System/36 and 38] software for the future. They

Continued on page 27

Accountant takes CASE

BY ALAN ALPER

CW STAFF

NEW YORK — Claiming the ability to automate the entire application development life cycle, Arthur Andersen & Co. last week formally unveiled what it analyzes how those factors fit into the overall company profit picture, Information Management aims to ease the time-keeping burden of architects, public relations personnel, business consultants and others involved in time-bound services.

In addition to Accounts Receivable, Accounts Payable and General Ledger, Pro/Fit provides a Time and Billing module with which detailed information is automatically tracked for professionals working on billable or Continued on page 26

Pro/Fit eases time burdens

BY NELL MARGOLIS

CW STAFF

FALLS CHURCH, Va. — The latest offerings from Wang Laboratories, Inc.’s captive software house, Information Management Consultants, Inc., target professionals for whom time is money as well as nonprofit associations.

With Pro/Fit, a four-module software package that tracks billing and expenses and analyzes how those factors fit into the overall company profit picture, Information Management aims to ease the time-keeping burden of architects, public relations personnel, business consultants and others involved in time-bound services.

In addition to Accounts Receivable, Accounts Payable and General Ledger, Pro/Fit provides a Time and Billing module with which detailed information is automatically tracked for professionals working on billable or Continued on page 26

Inside

• Computervision ports Product Data Management to VAX. Page 25.
• Box System releases simulation software for Sun-3 family. Page 31.

Data View

Applications planned by Unix VARs

Manufacturing and medical top the markets targeted by 903 value-added resellers surveyed

Continued on page 27

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Inside

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CINCOM Boosts Production At Holly Farms.

PROBLEM: Improving programmer productivity in order to reduce a large applications backlog

CINCOM SOLVED IT: With MANTIS Application Development System

During a period of explosive growth, Holly Farms found itself with two problems: a large applications backlog and a short supply of programmers able to step in and produce immediate results. The solution was MANTIS® the application development system from Cincom®.

“MANTIS was ideal for us because you don’t need 2-3 years of experience to use it,” explained Bill Clontz, Director of Computer Services at Holly Farms. “It lets us take new graduates, quickly train them and, in a matter of weeks, turn them into valuable programmers.”

As a result, programmer productivity at Holly Farms has reached an all-time high. “We’ve seen substantial improvement ratios,” Clontz said. “In the time a programmer might turn out one CICS command-level program, he can turn out from six to eight programs on MANTIS®.”

Most of the 500-plus MANTIS applications now in production at Holly Farms are aimed at streamlining costs. For example, Data Processing used MANTIS to develop a model of how chickens consume feed over the course of their lives, allowing Holly Farms to cut production at one of its feed mills by 1½ days a week.

“We’ve got key users who are picking up on the term ‘MANTIS,’” Clontz noted. “Around here, MANTIS has become a synonym for ‘get it done quickly.’”

Find out how MANTIS can boost your productivity. Call us today for more product and customer success information. Or, write Marketing Services Department, Cincom World Headquarters, 2300 Montana Avenue, Cincinnati, OH 45211.

1-800-543-3010
In Ohio, 513-661-6000
In Canada, 1-800-387-5914

Mr. Bill Clontz
Director of Computer Services
Holly Farms Foods

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Accountant CONTINUED FROM PAGE 23
generation facilities into a package named Foundation. The CASE tool kit, which the company has been advertising for several weeks, is aimed initially at developing applications for IBM's DB2 relational data base management systems that run in CICS environments on IBM mainframes. The company is also implementing implementations of Foundation for Digital Equipment Corp. VAX and Honeywell Bull, Inc. DP 7 and DP 8 systems, but did not say when they will be available.

The name game
Arthur Andersen is entering the CASE business at a time when Big Eight rivals Arthur Young and Peat, Marwick, Main & Co. are also marketing application development systems to compete with the panoply of stand-alone and integrated products offered by independent software vendors. Arthur Andersen is betting that its name recognition among the Fortune 500 and its 25 years of software consulting will ease its entry into the market.

"Customers are looking to share development and maintenance costs," said Melvyn Bergstein, managing partner of Arthur Andersen's Management Information Consulting practice. "They're looking for partners with experience in CASE."

Key to Foundation is its active data dictionary for DB2 that provides referential integrity for all applications developed, noted Glover Ferguson, Foundation development director. Foundation fills a temporary void in IBM's DB2 product offering since IBM has yet to offer an active data dictionary for DB2.

Arthur Andersen will modify Foundation's data dictionary to support an IBM DB2 repository, which industry observers expect will debut in the fall.

Foundation consists of three integrated modules: Method/1, a set of life cycle methodology tools that run on an IBM Personal Computer; Design/1, which includes a data repository that resides on a file server to facilitate the sharing of design specifications among networked micros; and Install/1, the mainframe environment for implementing DB2 and CICS applications and generating Cobol II code.

An integrated development methodology provides a consistent approach to development and maintenance, Ferguson said, since specifications can be shared and reused in various development stages.

Design/1 has a screen design aid for creating field definitions, a graphics facility that is mouse controlled and offers a library of icons for data flow diagrams and a prototyping facility. Design/1 generates specifications that can be used to create documentation and operates on most networks that support IBM's Netbios protocol, the company said.

Specifications developed with Design/1 can be automatically uploaded to populate Install/1's data dictionary on the mainframe via an integrated data extraction and management facility, Ferguson said.

A single copy of Install/1 lists for $200,000; a Method/1 site license costs $50,000. Prices for Design/1 start at $7,300 for a single copy and decrease to about $4,300 per networked workstation, depending on the number of workstations.

Computervision PDM software eyes VAX

BY NELL MARGOLIS CW STAFF
BEDFORD, Mass. — The Computervision division of Prime Computer, Inc. is reportedly bringing its Product Data Manager (PDM) mainframe software to the Digital Equipment Corp. VAX in the second quarter.

Designed to manage computer-aided design, manufacturing and engineering data bases at both the MIS and departmental levels, PDM is made up of three basic facilities, said Al Hopkins, Computervision's systems marketing director. The first facility, Controlled Storage, allows for central security control of a data base storage area with the systems manager creating authorization levels.

Data Distribution lets users store, retrieve, move and manipulate data elements with a single keystroke command, while central control remains vested in the systems administrator.

A third facility, Data Management, provides a release/revision control system that ensures designs, plans or other collections of data that go through a review process are released only after all responsible parties have signed off on them. For instance, Hopkins said, if 10 people have to review design changes, the release and revision system is automatically invoked, and an altered design cannot be sent on to the next step until all 10 people have approved the change.

In addition, the Data Management facility includes an administration module and a customer programming interface. Through the interface, Hopkins said, users can program in macros or sets of procedures that can then be invoked with a single command.

The vendor recommends PDM for VAXs capable of 1.5 million instructions per second or more. PDM on the VAX will be priced starting at $75,000, Computervision said.

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Tandy Computers: Because there is no better value.
IBM at the controls
Lest we become mesmerized, it should be noted that IBM will exercise a great deal of control over this world and will sell a great deal of software in it. While SAA embraces public standards where they exist, it necessarily includes a great many features that only IBM can provide—and can change at will. SAA leverages IBM's programming resources, now heavily committed to the firm's existing product lines rather than innovation, and multiplies them by letting them develop for more than one hardware arena.

SAA also eliminates the need within IBM to constantly reinvent the wheel. The user interface will be set across all systems. One drawback to this, however, is that someone else will do the work if the interface is to be advanced.

In a world dominated by SAA, IBM will control the mainframe DBMS and have it closely tied to the operating system. The announcement of ESA/370, a new MVS dressed up with data spaces, was a step in that direction. Having undisputed control of the host and already owner of the network architecture, IBM also wants to be the possessor of the means of distributing corporate data.

Once IBM has convinced customers that all will benefit from this new software uniformity, it can begin addressing a larger base of end users. Instead of being isolated experimenters, this growing pool would be tied closely to a host through distributed data base systems and cooperative processing applications. And that software would become the engine that finally drives the demand for mainframes forward.

Wasted time
Just as professionals spend too much time tracking time, so do professional societies, trade associations and other nonprofit organizations that get bogged down in the attempt to track and manage membership and meetings, Shenoy said.

Information Management provides automated aid in the form of a second four-module software suite called Executive Director.

Membership Management System, Meetings Management, Exhibit Administration and Membership Accounting make up the Executive Director system, which is also written in Speed II. Pro/Fit and Executive Director, both of which run on Wang VS computers, are available immediately at prices ranging from $8,000 to approximately $50,000, depending on the modules purchased and the amount of support.
PRODUCTIVITY PLUS PERFORMANCE.
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OLTP fundamentals.
*If you don't have them all, you don't have OLTP*

NO ONE KNOWS OLTP LIKE US. Whenever there's a need for constantly current information, linear expandability and excellent price/performance, Tandem technology proves consistently superior. Compare us to any other OLTP system. You'll see why companies in every major industry choose Tandem. For more information, call 800-482-6336.

TANDEM COMPUTERS
OLTP is On-Line Tandem Processing.

How do users feel about IBM's overall mid-range strategy, which incorporates the 9370 and the System/36 and 38 line? I haven't seen the 9370 become a big issue. Other than SAA, I don't see much confusion.

HAS IBM ADDRESSED COMMON'S SAA STRATEGY? There have been some SAA sessions, yes, with IBM speakers.

WHAT HAS IBM TOLD YOU? I couldn't answer, since I wasn't at those sessions.

DO YOU KNOW WHAT IBM'S POSITION IS REGARDING THE EXISTING SYSTEM/36 AND 38 LINE AND SAA? Not exactly. I know their intent is to put RPG III under SAA.

I GET THE IMPRESSION THAT YOU VIEW THE SYSTEM/36 COMMUNITY AS ISOLATED FROM WHATSOEVER ELSE IBM IS DOING. You could say that. There isn't a need for change in the 36 area. I don't see it.

ARE YOU SAYING THAT SYSTEM/38 USERS SHOULD BE MORE CONCERNED ABOUT SAA THAN SYSTEM/36 USERS? That's a fair statement.

WHY? Primarily because they are database oriented. From what I hear, SAA is geared toward that environment. If you look at SAA, in my opinion, it would allow you transportability from PCs to high-end 370.

And that is a function that doesn't have a purpose in a System/36 environment? Not today.

WHAT ABOUT THE FUTURE? Who knows what that will bring. The gain is that it will give System/36 users other options, in terms of hardware platforms, for the future.

But that wouldn't be the case if the current System/36 line isn't under the SAA umbrella. I don't believe IBM will leave it out of the scheme of things. It's been the best-selling hardware for years. They won't exclude it.

IBM's intent may not be to exclude it, but what has the firm said that indicates it will include SAA? They had a session at Common that explained how SAA would fit together. A System/36 text processor was used under SAA as an example of what would be incorporated under SAA.

Have you been briefed about Silver lake? No comment.
Digital has it now.
Kaman Corporation is a Fortune 500 company and one of the nation's largest industrial distributors. Kaman Bearing & Supply, its subsidiary, is connecting its 165 branches throughout the U.S. and Canada with a computer network from Digital. According to Harvey S. Levenson, President, "Digital is providing a network for transaction processing that will give each of our branches instant real-time access to the company's entire nationwide inventory - in effect, one 'big back room' for distribution."

"Transaction processing that lets Kaman manage an inventory of over 800,000 industrial parts with no paperwork."

Digital's technology played a major role in Kaman's choice. Levenson stated, "We needed reliability, flexibility and as few people as possible to run the system. We're getting a distributed transaction processing system to track the state of our business, and it's the most cost-effective of all the alternatives we've examined. Digital helps Kaman be more competitive; we'll run our business and serve our customers better, faster and smarter."

To get your competitive advantage now, write: Digital Equipment Corporation, 200 Baker Ave., West Concord, MA 01742. Or call your local Digital sales office.
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*This limited offer for Fujitsu Modem Insurance is only open to new purchases of 19.2 Kbps modems from an authorized Fujitsu America distributor and is subject to the terms of our Modem Insurance Policy.
N E W  P R O D U C T S

Systems software
Iko Systems, Inc. has released a version of its simulation system for Sun Microsystems, Inc.’s Sun-3 family of workstations.

The Sun-based Iko Simulation System consists of the Iko system software and an Ikos 800 or Ikos 1900 hardware accelerator module with an interface card. The system may be configured as a shared-network resource, allowing a single Sun workstation to act as a server for up to four Iko accelerator modules.

The Ikos 800 accelerator module provides modeling of up to 64K-byte primitives and simulation speeds up to 20 million events per second; the Ikos 1900 has the capacity to model up to 246K-byte primitives and offers simulation speeds up to 75 million events per second.

The Ikos Simulation System for the Sun platform is priced from $57,000.
Iko Systems, 145 N. Wolfe Road, Sunnyvale, Calif. 94086. 408-245-1900.

Utilities
TBS Software, Inc. has announced Release 2 of Hupdate, its IBM Distributed Office Support System (Disoss) on-line HUP management system.

Hupdate is a CICS transaction that lets the Disoss system administrator view, add, update and delete user definitions while the Disoss region is active and users are logged on.

Enhancements include support for Disoss Version 3, Release 4; support for working relationships; support for IBM MVS/XA 31-bit addressing; logging of updates; post-update user exit; and such usability enhancements as expanded access code fields, more primary commands, improved documentation and new installation options.

A single-CPU perpetual license is $5,000. A single-site multiple-CPU license costs $6,000.

An operations tool for users of IBM's CICS designed to enable the user to streamline operations and manage resources has been announced by Main Frame Software Products Corp.

Called Know/CICS, the menu-driven product offers information about terminals, transactions, files, storage areas, response times and system usage. It also automatically logs off terminals after a specified interval of time.

Other features include broadcast facilities, screen-capture facilities and diagnostics.

Know/CICS uses standard command-level CICS. License fees range from $2,900 to $3,900.
Main Frame Software Products, 1 Hollis St., Wellesley, Mass. 02181. 617-239-0288.

Services
A methodology for information resource management has been introduced by M. Bryce & Associates, Inc.

According to the vendor, Pride-EEM, which stands for Enterprise Engineering Methodology, is a universal approach for enterprise modeling and the development of an enterprise information strategy.

Pride-EEM consists of five phases. Each phase contains a defined set of activities and tasks to model the enterprise, both logically and physically.

A license fee for the methodology is $25,000.
M. Bryce & Associates, 777 Alderman Road, Palm Harbor, Fla. 32683. 813-786-4567.

Development tools
Information Resources, Inc. has announced a version of its Express Decision Support System, which features multidimensional data base capabilities. Called Express MDBG, it is written in the C language and is available for the IBM MVS/TSO environment. According to the vendor, Express MDBG increases system efficiency by using more compact code than Express. It also streamlines system operation by simplifying the command structure. It reduces the number of system commands from 1,100 to 100.
Express MDBG costs $125,000.
Information Resources, 200 Fifth Ave., Waltham, Mass. 02154. 617-990-1100.

Tominy, Inc. has ported its Data Base-Plus and Mach 1 application development systems to minicomputer and microcomputer environments.

The products are now available for Santa Cruz Operation, Inc.’s SCO 386 Xenix, AT&T’s 3B2 computers running Unix System V and IBM’s System/36 Model 5363. According to the vendor, any previously developed Tominy-based application programs are 100% portable to the new environments.

Data Base-Plus includes a data base manager, a screen handler, a print handler, utilities, an SQL-based query/report writer and programming language interfaces.

Development licenses range from $1,500 to $16,500; runtime licenses range from $750 to $4,000.
Tominy, 4221 Malibury Road, Cincinnati, Ohio 45242. 513-984-6605.

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APRIL 11, 1988
In less than 30 days from date of order, Data General computers were processing 10,000 loans for NCNB National Bank of North Carolina.

With nearly 600 branch offices, NCNB National Bank of North Carolina is one of the largest banks in the southeast, and among the top 20 in the country.

Recently, NCNB felt an urgent need to upgrade its loan processing system to better serve its customers. NCNB chose Data General to help set up the system. And Data General responded.

Within one month of order, Data General had an MV/Family system for over 60 people up and running. (Others had estimated 6 months to do the same job.)

The NCNB system was so user-friendly, it required only a minimum of training for the bank’s personnel to operate it proficiently.

In no time, they were servicing loans, processing payments and receivables in a way that exceeded all expectations.

Says Rod Bosscawen, Senior Vice President at NCNB:

“Data General’s ability to respond quickly and provide support on a broad-based front helped NCNB establish a loan-processing operation in record time. Without their commitment and performance, the accomplishment of this would have never been possible. We are extremely impressed.”

To learn more about Data General’s responsiveness across the board, send us the coupon below. We’ll send you the latest issue of PROFILES, our publication devoted to customer success. Or call: 1-800-DATAGEN. In Canada, call 416-823-7830.
Douglas Barney

C is for criticize

Assembler is better, you C.
The ever-effervescent Philippe Kahn of Borland International recently had some choice words about the delay of Lotus's 1-2-3 Release 3. According to the Kahn-man, the delay came as little surprise. "They said Release 3 had been delayed because they needed additional time to shrink and optimize their code. But it is not easy to shrink C code. The best way to do it is to change the code, but what we did with Lotus was to change the code, and what they had done with the first release of 1-2-3 — write it as assembler," Kahn said in an interview.

Kahn reasserted his theory in an MCI Mail letter sent to some 70 journalists and industry observers. Kahn raked Lotus over the coals for unkept promises that he said "hurt users and the industry" and that "the assembler is better than C for spreadsheets" distribute.

Who's right? Both. It is reasonable to assume that an assembler-based spreadsheet can be faster and smaller, but it is also true that Lotus will provide an assembler-based product for users in both the corporate and technical markets. The program will be available by the end of May, a spokesman said.

IBM also plans to market a core version of the Interleaf's 1-2-3 for its RT PC. The program is an upgraded version of Interleaf's TPS Release 4 and was designed for groups of writers whose systems are networked. It is set to ship in October.

Pact and lips sealed

The agreement calls for Interleaf to develop a number of publishing packages for a range of IBM systems. Both companies refused to comment on future products. The agreement gives IBM worldwide marketing rights to all Interleaf's DOS-compatible products.

Interleaf's version for the PS/2 Model 80 will compete directly against that company's version for Apple Computer, Inc.'s Macintosh. The agreement with Interleaf is seen by some observers as a serious attempt by IBM to break into the desktop publishing market, in which Apple has established a commanding lead.

The two IBM-Interleaf offerings have text, graphics and image capabilities and were designed to work primarily with long and complex documents. Both programs are capable of producing programs compatible with Adobe Systems, Inc.'s Postscript language.

IBM and Interleaf officials said they believe a major advantage of their products is that their desktop publishing packages are that users can lay out documents handwritten or typewritten on a keyboard, and then publish them as finished documents.

The first product IBM will ship under the agreement is the IBM Interleaf Publisher, a high-end publishing package intended for users in both the corporate and technical markets. The program will be available by the end of May, a spokesman said.

Data View

On the street

Lowest retail prices for IBM Personal System/2 Micro Channel models in February

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<th>THOUSANDS OF DOLLARS</th>
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Model 50 (40MHz 68000, 20MHz 80880, 256K of RAM) Model 60 (60MHz 68000, 20MHz 80880, 256K of RAM) Model 60 (60MHz 68000, 20MHz 80880, 256K of RAM) Model 80 (60MHz 68000, 20MHz 80880, 256K of RAM) Model 80 (60MHz 68000, 20MHz 80880, 256K of RAM)

* Random-access memory

INFORMATION PROVIDED BY WOOL ASSOCIATES

Continued on page 39

Epson has its ups, downs

BY ALAN J. RYAN

TORRANCE, Calif. — The fluctuating values of the Japanese yen and the dollar was one reason Epson America, Inc. cited as it hiked prices on its microcomputer printers and dropped prices on some of its personal computers.

The company increased the prices of the printers between $30 and $100. New pricing for Continued on page 38

Inside

- Phoenix's Levand draws around. Page 35.
- Lotus draws blueprint to data access. Page 35.

Epicor System Inc. has introduced a 20-MHz Intel Corp. 80386-based system capable of processing 5 million instructions per second that will be positioned directly against Compaq Computer Corp.'s Deskpro 386 Model 20.

The Step 386/20 achieves its processing speeds through the company's proprietary Advanced Memory Management Architecture. This memory scheme allows microcomputers to use write-back caching for the first time, a spokesman said. This technology is commonly used in mainframes.

The cache size is scalable, allowing it to increase according to the amount of main memory being used, a spokesman said. Although Epson has been selling systems for several years, the Continued on page 36

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It’s the midframe computer that’s setting a new price/performance standard for its class.

We created it by applying the most advanced commercially proven technology to one of today's best-known computer architectures.

We improved it by adding the ability to work with computers from other companies.

And we refined it by making the whole system modular for easy, cost-efficient growth.

That makes it the ideal solution for anyone needing a departmental system, an off-line software development system, or distributed processing. With Unisys Fourth Generation Languages, you can access mainframe data from your PC or terminal—no matter who made the mainframe.

It's also a natural enhancement for anyone using the Unisys 1100 Series.

A true product of the merger that created Unisys, the 2200/400 redefines midframe price/performance standards to give businesses the processing power they need.

Better information leads to better decisions. And investing in a computer that can help you to be more competitive, at the right price, over the long haul is a smart decision.

BETTER INFORMATION. BETTER DECISIONS.
Phoenix Technologies' Levandov urges PC makers to send in the clones

Richard Levandov advocates Micro Channel cloning

Rich Levandov, 33, Phoenix Technologies Ltd.'s vice-president of engineering, is a busy man at a busy company. As the provider of ROM BIOS, a key piece of software that allows systems from several major players to be legally 100% compatible with those from IBM, Phoenix has played a central role in the development of the microcomputer market.

Levandov joined Phoenix in June 1984. Prior to that, he worked for two years at Wang Laboratories, Inc., as a product manager for that company's Professional Computer series. Before joining Wang, Levandov worked as a director of marketing at CSSN, Inc., a Boston-based systems supplier, and at the former Burroughs Corp. as a software support engineer. He holds a B.S. degree from Harper College and a master's degree in computer science from MIT.

Levandov has been so busy these days, in fact, that he had to conduct this interview with Senior Editor Ed Scannell on his car phone on his way home from a usual 10-hour workday of meeting with vendors.

Is IBM's Micro Channel worth cloning?

Levandov thinks it is. Actually, there are two answers to that. The first is that on engineering merit, compared with the [IBM Personal Computer] XT and AT bus, I believe it is a better bus. It is cleaner, has more capabilities, and it is better defined.

The other thing people talk about is, 'What is the perceived value to the end user [of the Micro Channel]?' Well, does the end user really care about the bus? I think the answer is no. End users don't care that much about a bus, then there is nothing wrong with it.

What is Phoenix's role in cloning the Micro Channel?

Our role in that technology is obviously one of analysis and consultation and establishing close working relationships with silicon manufacturers as to the system-level design issues involved. Another role is in development of the BIOS and the systems software set.

We needed to be very aware of the features of the different silicon clones so we were going to be incorporating so we could "turn on" via the BIOS. It is the BIOS that essentially is the first piece of software in any personal computer to become active.

How far will IBM go in defending patent rights? How much is intimidation to gain time, and how much is real?

Continued on page 37

Lotus link's generality surprising

With Lotus Development Corp.'s recently announced Blueprint, the software giant's Ethernet path into expanded data access has become more clear.

Attempts by Lotus to make its applications the center of a networked universe came as no surprise. There was a surprise, however, in the breadth and generality of the Blueprint specification, which was positioned as a generic link layer to not only host data but also to any other data in Microsoft Corp. MS-DOS platforms — a "transparent back end," as Lotus called it.

In short, the Lotus application in use at the workstation connects to a networked called data driver, which is provided by the vendors in most cases. Lotus, however, is supplying several drivers itself, including one for Ashton-Tate Corp.'s Dbase.

Once connected, the application may move data between devices depending on the driver's specifications, for a list of available data maintained in its format. It may then begin retrieving or manipulating the data within the application's commands directly, such as with the Data External command in Release 3 of Lotus's 1-2-3, without any need to consider the architecture of the connected data or the syntax supported by the hosting product.

As is typical with announcements of this type, a list of vendors has been provided. Although no official confirmation was forthcoming, sources indicated that Network Innovations Corp., now owned by Apple Computer Inc., is working on a driver for the Ethernet environment. Thus, the platform may become as transparent as the pipe.

An interesting side note was that Synex Systems Corp.'s director for the SQL Server, jointly developed by Microsoft, Ashton-Tate and Sybase, Inc., will be a key competitor for the forthcoming Lotus/DBMS in the departmental, client-server networked data base management system market.

"The user will be able to make the case that clients can have SQL Server and still use 1-2-3," Lotus will have to prove that computer is: "The strength of the offering is equally worthy," said Muisse Shore, senior product manager for Lotus's connectivity products division.

For IBM to be at the de facto standard centering around their hardware, they have to understand, internally, that industry adoption of this bus is good for the industry and, therefore, that it is very good for IBM. This also relates to licensing.

I think there has been enough said to make people believe they are going to license the utility patents. In a market share orientation, everybody knows it is better to get a smaller piece of the bigger market than 100% of no market.

What kind of Micro Channel clones can we expect to arrive? [Source manufacturers] will be able to legally emulate the function of the Micro Channel bus and that option board that plugs into an IBM product will plug into a compatible product. And it will all be done under the proper methodology such that no one brings on patent or copyright infringement toward them. If that involves licensing from IBM, it will happen.

Continued on page 36

PCTools Deluxe top buy?

Disk utility packages score in completeness

BY T.A. ELKINS SPECIAL TO CW

In this article, I plan to examine the relative strengths and weaknesses of various disk utilities programs.

Central Point Software's recently introduced PCTools Deluxe, priced at $80, may become the new best buy in disk utilities. It is clearly a good and very complete software package.

The PCTools Deluxe has a deficit programming that program is unlikely to be very reliable. It also has a good backup utility. Central Point has even tossed in three format protection procedures and two surface-scan programs that provide considerable routine maintenance.

In addition, the central program undeletes, moves, copies, edits, word processes in small ways, maps and generally maintains files and directories in just about all ways that need to be altered. Not a bad lineup.

Peter Norton Computing's popular Norton Utilities has most of the capabilities of PCTools but is missing the Move Directory ability. It also lacks the disk trace and disk cleaning programs. On the other hand, it has unique extras like disk and file wipe utilities for obliterating files that should not be kept around and an interesting timer program called Time Mark.

There is one serious problem with the Norton package: Utilities got confused by ANSI key reassignments and could well have a testy. This point aside, Norton is the current standard, and Advanced Edition version 4 of Utilities is very good software.

Another competitor in this field, Paul Mace Software, Inc.'s Mace Utilities, includes a mix of some convenience features, such as undelete, defragment, an excellent cache and some hefty disk maintenance features. Some have called the Mace-like uniform and disk scan additions to both Norton's Utilities and PCTools Mace clones. But this is one of the pleasant cases in which users profit from a fight for market share between software.

Despite an array of features, the Mace Utilities should be viewed as a heavy-duty disk maintenance system first and everything else second. The Surface Fix feature of Mace's Remedy scans every part of a hard disk's data area looking for weak, marginal or bad spots.
Everex
FROM PAGE 33

Step 386/20 is the first system to be sold under the vendor's own label.

Besides the 20-MHz 386 chip, the standard configuration of the machine consists of 1M byte of main memory with zero-wait state operation, expandable to 16M bytes; Advanced Memory Management Architecture with 54K bytes of random-access memory cache, expandable to 256K bytes; a 1-to-1 interleave hard-disk/floppy-disk controller; a 101-key keyboard; and a floating-point coprocessor compatible with Intel's 80387 and Weikek, Inc.'s 1167.

Everex has introduced its first authorized reseller program to help get the Step 386/20 off to a fast start, a spokesman said. The system will be sold only through the company's authorized dealers.

The 20-MHz version of Step 386/20 is priced at $4,399; the 16-MHz model carries a suggested retail price of $3,699.

Levandov
FROM PAGE 35

And the types of clones we'll see, once again, will be compatible under the strictest tests of compatibility. The ante is high. It is a much more sophisticated set of rules to achieve compatibility. It's not just the Micro Channel, it is BIOS-affected and OS/2-affected; it is DOS implementation-level-affected as well.

Will the clones of the Micro Channel be able to run IBM's OS/2 Extended Edition? That is where the A BIOS begins to grow in importance. I think that is going to become a very important new criterion in the analyzer's role in evaluating the new crop of Personal System/2s — what defines compatibility and running IBM software no matter how it is written. It is also important to the extent that we can stay away from straying into gray areas that will affect the pristine nature of our copyright.

Do you think cloning is necessary to establish the Micro Channel as a standard?

I think it is absolutely essential. The problem IBM has is that for six years, they and the industry have put between 15 million and 17 million machines into circulation with a certain kind of bus. There is a critical mass of option boards supporting that bus. So for a critical mass to be achieved again — in order for major cor-

Micropro upgrads
Wordstar

SAN RAFAEL, Calif. — Adding capabilities such as advanced page preview and newspaper-style columns, Micropro International Corp. recently announced plans to roll out the latest version of its word processing program that has, in the past, been criticized as difficult to learn.

Wordstar Classic Release 5 will incorporate approximately 300 features that previous versions lacked, the company said. The program is able to run on IBM Personal Computers and compatibles.

Release 5, which is slated for availability in mid-May for $495, allows users to view the look of the entire document before printing, the company claimed. It reportedly displays font styles and sizes exactly as they will appear.

The program includes a user interface compatible with IBM's Systems Applications Architecture. It is able to perform telecommunications, outlining and mail-merge, the company said, and offers increased support of laser printers.

Other features include windows for editing two documents at once, a spelling and a thesaurus.

Current Wordstar Professional owners can update to Classic for $89 until May 1. After that, upgrades will be available for $119.

Computerworld
APRIL 11, 1988
corporate purchasing decisions to sway toward the PS/2 — there is going to have to be feeling that the industry is behind the standard.

The consortium is always as important as any one player; therefore, the signal will be, if the clone industry successfully rolls out some clones in the next couple of months, it will indicate a win-win situation for IBM and the clones.

**Do you expect to see many more systems like Sun Microsystems, Inc.'s 386i, which runs multiple operating systems?**

Yes. The technology we provide, coupled with the growing MIPS capability of the underlying processors, blends into that technology. Users want to get all the benefits and maximum leverage out of the boxes they buy; and benefit and maximum leverage is a function of the software. The fact that the hardware is getting more powerful, higher in bandwidth and faster in cycle times supports the concept nicely.

**How can Micro Channel cloners price their systems lower, given the large up-front investment in technology?**

That is a good question. It looks like one must license the technology from IBM and some from Phoenix and buy some chips sets and then manufacture all this stuff. I believe with all that, the economics are there, so they can be very competitive with IBM. It is not like we are charging $75 a machine.

---

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But the real beauty of Ultrasync is its versatility. It has the greatest autosynchronizing frequency range combination available with 45Hz to 120Hz vertical scan range (NEC’s Multisync starts at 50Hz and peaks out at 75Hz) and 15KHz to 35KHz horizontal scan.

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Nobody but Princeton Graphic Systems could bring you an image with such star quality at a suggested retail price that’s remarkably affordable. $849. After all, we’ve been doing it all along.

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**Lotus link**

FROM PAGE 35

whether a link that is easier to use than the current state of Microsoft’s Windows Dynamic Data Exchange protocol will become available. As it exists, that protocol builds a dependence on the less than universal windows operating environment into application links for the MS-DOS world, a restriction that seems less useful than one providing a tie to 3 million Lotus users.

As it did with The Application Connection (TAC), Lotus is publishing a format for data exchange in its driver, a so-called “envelope” that will go a long way in helping users to realize the long-promised benefits of application-to-application communications. The envelope is used to send units of information and commands back and forth between cooperating processes.

Communications product independence is a critical aspect of the design. Blueprint will work with the Dynamic Data Exchange under Windows in the DOS world — the Data Link Libraries are under OS/2. In local-area network environments, the named-pipes protocol will be an alternative. At the departmental level, there is no reason why DEC shops cannot join the party if Network Innovations delivers.

Blueprint will rely heavily on Lotus’s LEAF. “LEAF is the front end in the architecture,” Shore said. The runtime version will coincide with 1-2-3 Release 3, allowing front-end customization for software vendors and corporate programmers.

For Lotus users, Blueprint is the enabling step for true peer-to-peer applications. With TAC, near-time update is possible today through an autorefresh capability that polls host data bases and updates the workstation application when appropriate. In a true LU6.2 environment, a scenario driven by host events is possible, since either end of the connection may initiate actions.

Adrian is managing editor of the Focus Systems Journal for Information Builders Publishing in New York.
CONTINUED FROM PAGE 35

When it finds one — and, over time, it will find more than one — it tries very hard to recover the data at risk. It then moves this data and locks out the bad cluster so that other data will never again be assigned there. And it offers excellent format protection; its own Format program can lift data, format a track and replace the data. PCtools apparently now also has this ability, but it was not able to be tested in the time available.

Also distributed by Mace is a package called Htest/Hformat. If viewed on a cost-per-use basis, this would be one of the most expensive programs around. In fact, this package might well be used only once per system.

Htest tests the hard-disk controller card as well as what the software can be expected to be able to do. It then goes on to test the disk itself in a number of ways that used to be accessible only with handwritten programs.

Over and over

Hformat does a low- or machine-level format of a hard disk, but it does not stop there. It also tests each track repeatedly, to the limits of its user's patience, for bad spots. This kind of per-use testing can save a host of troubles later and could even find a poor disk within its warranty period.

But the real glory in this package comes from its Hoptimum program. This program will test a whole computer, drive card and disk system as a single unit — not for integrity, as other programs do, but for a very tricky performance issue.

Features for efficiency, speed

Hard disks have a feature called interleave. After a unit of data comes around the disk to be read, the system might find that it needs the next data sector or cluster. For a plain vanilla IBM Personal Computer XT or PC AT, it is too late to read the next unit of data at this point, because these machines are not fast enough. To keep efficiency up, the data is woven.

On an XT, a continuous file uses every sixth or seventh location on the track; with an AT, every third file is used in most cases. But what is optimum? It took more than a week to test an XT clone some years ago with different interleave factors and thus discover that in this case, a value of seven was optimum.

If you have a system that is in any way nonstandard or that may have been suboptimally adjusted at the factory — even IBM was guilty of this some years ago — the use of Hoptimum can buy you modestly to considerably improved performance with minimum effort.

Elkins is a computer and management consultant with academic interests in advanced public-key data encryption systems.

**Publishing**

CONTINUED FROM PAGE 33

dreds of pages long rather than one page at a time. For instance, if a user inserted a new paragraph into the first page of a very long document, the IBM-Interleaf program would automatically reposition the text or graphics throughout the rest of the document. This is something most personal publishing systems cannot do, according to IBM.

Among the enhancements announced last week were data export programs allowing both the Model 80 and the RT PC to create a bridge to IBM's mainframe-based publishing products and foreign language dictionary programs for French, German and Spanish that let the RT PC Edition perform concurrent multilingual spelling verification, correction and hyphenation within the same document.

With the aid of a special adapter card and interpreter program for Postscript, users can use IBM's 4216 Personal Pageprinter with the RT PC under AIX for the first time, a spokesman said. AIX is IBM's Unix-compatible operating system.

The Interleaf Publisher requires an Intel Corp. 80386-based FS/2 Model 80 with at least 6M bytes of random-access memory and a 40M-byte hard disk. It is priced at $2,495. The RT PC Edition is priced at $6,595.

**Epson**

CONTINUED FROM PAGE 33

the EX-800 is $699; the LQ-500 is now $529; the LQ-850 is $849; and LQ-1050 is priced at $1,199.

The PC price decreases ranged from $96 to $186, the company said. The price for the hard-disk configuration of the Equity III+ PC dropped to $3,299, and the price of the floppy-disk version dropped to $2,199. The price of the Equity II+ PC dropped to $2,699.

According to Steve Lapinski, vice-president of marketing, market conditions caused Epson to increase productivity at its Portland, Ore., manufacturing facility. Epson recently completed an expansion of that facility, which added 100,000 square feet of work space that will be used to produce more Equity III+ and Equity LT PCs and the FX-286E and LQ-1050 printers.

Lapinski said the ramped-up production facilities will "ensure more consistent pricing and reduce our offshore production capacity."
Barney
CONTINUED FROM PAGE 33

compatibility in the same box, something you need to do. C is combined with a healthy dose of assembler anyway, the Lotus folks say.

The main reason Lotus is rewriting the product in C is to make it portable to a broad range of environments. Hopefully, the C implementation will avoid the possibility that subsequent versions will not be so late.

Hey Phil, isn’t Paradox, your speedy data base package, written in C? And don’t you sell a product called Turbo C? AccordiC Snail.

If C is so slow, you could rename that product C Snail.

And a super wait for Supercalc? Computer Associates may or may not hold back the release of a new version of Supercalc due to Lotus’s 1-2-3 Release 3 delay.

“We are looking to come out at the same time as Release 3. We don’t want to give Lotus a chance to react to our features. But if 1-2-3 is really late, we will have to go ahead and release our product,” says Abraham Poznanski, director of the micro products division of Computer Associates. If you want to kick in an opinion, give Abe a call.

Hype always hurts the ones we love. Information professionals who have been around the block a few times understand that vendors blow a lot of hot air and that promised products are almost always late. But not everyone can see that the emperor is so scantily clad.

Individual end users are buying more magazines, reading more hype and believing this stuff. And the people who manage the end users and their systems are being asked a lot of dumb questions, like “Can I upgrade to Dbase IV?” or “When can I run OS/2 on my XT?” or “Can you get me SAA?”

Meanwhile, information pros are saying things like, “Maybe when it’s ready” and “Forget it” and “SAA what?” To make matters worse, the computer publications often begin to break stories about products when they are little more than a twinkle in a programmer’s eyes.

“The biggest problem I have with my users is someone with less experience reading about something when it hasn’t hit the streets yet, explains R. Bruce Johnson, manager of the PC Resource Center for Deloitte Haskins & Sells. Some users have suggested an interesting solution. If a publication is writing one technical article aimed at the savvy, it should write another aimed at the less sophisticated. The second article would explain what the first article meant. Typical headlines would probably read: “Don’t even think about this,” “They were late before and will be again” or “Your system just can’t handle this software.”

Barney is a Computerworld senior editor, microcomputing.

Finkelstein
CONTINUED FROM PAGE 35

terchange and query language. Because of numerous SQL dialects, IBM chose to emulate its own DB2 SQL, permitting the development of tightly integrated and portable applications. The Data Manager duplicates DB2’s return codes, error messages and catalog names. It also duplicates DB2’s SQL program-bind logic to an extent that other PC SQL vendors cannot match.

Implicit in cooperative processing is the notion that all participating platforms have equal reliability and stability. Together with the PC’s hardware reliability, the Data Manager offers a powerful DBMS platform that includes automatic transaction management, full security and a complete set of data administration utilities.

In its initial release, the Data Manager will support an end user-oriented SQL facility. This will help end users develop SQL queries through a series of windowed questions and answers. IBM’s version of the C language will have a forms-based application development system, which will be in the first release. Future releases will support Cobol, Pascal and a more robust forms system. IBM will also complete the SQL syntax with the inclusion of the Union command.

These tools are just the beginning. IBM will woo third parties with an open database platform and a potentially huge customer base. Borland International has already pledged its support, and more tools are on the way.

Eventually, there may be hundreds, or even thousands, of vendors supporting the Data Manager. This will give users more choices and will ease users’ transition from a stand-alone environment to the new world of cooperative processing.

But the single-user world that IBM will target initially has limited value in the era of cooperative processing. IBM, however, has already announced intentions to ship a multimaster, requester-server version of the Data Manager.

Corporations will likely consider the Data Manager to be an important component in IBM’s future distributed DBMS architecture. Whether IBM will dominate the PC world the way that IMS and DB2 have ruled the mainframe world is an open question, but the potential is definitely there.

Finkelstein is a senior consultant with the Codd and Date Consulting Group in Chicago and publisher of the “SQL Review” newsletter.

PACBASE
CONTINUED FROM PAGE 32

Teamwork
PACBASE is an integrated, comprehensive system with a common user interface for each phase of the application development life cycle, it lets analysts, designers, programmers, data and database administrators work with the same set of specifications stored in an active enterprise dictionary. This integrated approach fosters communication and allows each team member to build on work from preceding phases to get applications up and running quickly.

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APRIL 11, 1988
COMPUTERWORLD
A product for use in disaster recovery plan development has been introduced by M-Plus Consulting Services.

Called Basic-Recovery, the product provides a planning document to implement a complete three-year project work plan, 20 predefined planning forms, a maintenance and testing process and a supporting personal computer-based data collection and reporting module.


A software system that enables a user to analyze and cross-reference a multivariate data base to manage and time activity schedules has been announced by MacNeal-Schwendler Corp.

The Eighty/20 Client Information Management System allows analysis of customers based on up to 16 different criteria, such as company type, products purchased, buying patterns, distribution and pricing. As a time and date manager, the software turns appointments into a visual calendar and offers a choice of daily or monthly schedules.

Other features include a build-in word processor and add-on modules for completing expense reports, product and price tracking and order. Eighty/20 costs $495. On-site training is available at additional cost. MacNeal, 6101 Baker Road, Minneapolis, Minn. 55345. 612-931-1280.

A graphics modeling program that allows users to create personal computer-based models that can be used to perform finite-element analysis of engineering designs has been announced by MacNeal-Schwendler Corp.

Called MSC/Mod, the software allows users of finite-element analysis to create and edit models of proposed designs and analyze their reactions to stress, vibration, pressure and temperature without building a physical prototype. MSC/Mod can be used by both microcomputer-based finite-element analysis software and mainframe-based packages.

MSC/Mod costs $495. The company also announced enhanced versions of its MACS/Pal, a three-dimensional static and dynamic stress and vibration analysis package, and its MACS/Merlin computer-aided design program analysis package. The packages cost $2,295 and $1,785, respectively. MacNeal-Schwendler, 815 Colorado Blvd., Los Angeles, Calif. 90041. 213-259-3875.

A personal computer-based mapping package that allows users to access information in existing databases and then display the results has been announced by MapInfo.

Called MapInfo, the software automatically creates pin maps as well as thematic maps. Users can locate a data point at any street address on the map, search a data base for points that lie within specified boundaries, create a window on the screen to display the complete data record behind any specific point or region on the map or determine the latitude or longitude of any point on the map.

New data can be loaded, or information can be used directly from Ashton-Tate Corp.'s Dbase III. MapInfo costs $750. Map Info, 200 Broadway, Troy, N.Y. 12180. 518-274-8673.

A list management system that develops, maintains, analyzes, segments and prints lists on IBM Personal Computers and compatibles has been announced by The Integrator.

List Tamer allows the user to profile, record and retrieve specific information for each record within a list. According to the vendor, it can handle any number of lists, and each list can contain up to one billion records. Features include: a memo for each list; user-defined codes and profiles; ticker capabilities; a mail-sort option; built-in Help; and import facilities.

Print output features include the ability to print mailing labels in up to 13 formats, merge listings to most word processing systems.

List Tamer is priced at $199. The Integrator, 731 Indiana Ave., Trenton, N.J. 08638. 609-393-7277.

Dreamas, an integrated set of computer-aided design tools for use on the Apple Computer, Inc. family of Macintosh personal computers, has been introduced by Innovative Data Design, Inc.

The basic Dreams program can be customized with different optional modules in the form of tool palates, symbol libraries, utilities and an integrated database. Other features include full Macintosh II color support, layers limited only by memory, keyboard entry, zoom up to 32 times, full operational and compatibility with Adobe Systems, Inc.'s Postscript.

Dreamas can be purchased at $550. It will reportedly be available in July.

Plains & Simple Healthcare Accounting costs $695. It is available for the medical, optical, dental and chiropractic fields.

Great Plains Software, 1707 S.W. 38th St., Fargo, N.D. 58103. 701-251-0550.

Software utilities

IMR has introduced an interface to its Micro-Control personal computer-based financial reporting tool for handling and retrieving financial data familiar with syntax-driven report writers.

Called Telepath, the interface incorporates IBM's Systems Applications Architecture standard screen format, the vendor said. It is menu-driven and prompts the user to follow the most typical and logical path of report creation. Standard report formats can be predefined, but a user may also redefine the formats to meet specific needs.

Telepath evaluates all data from current Micro-Control user at no cost. It is included with a site license of Micro-Control, which is priced from $70,000.


A network version of the Relay Gold personal communications software package and micro-to-mainframe link has been announced by VM Personal Computing, Inc.

Called Teleaway, the version, available for the IBM Personal Computer Network, the IBM Token-Ring network, Novell, Inc. networks and other IBM Netbios-compatible networks, is said to allow users to transfer files with IBM mainframes running IMRS, 1033 Washington Blvd., Foster City, Calif. 94404. 415-345-6000.

A version of the Bookmark disk utility software program has been announced by In telsoft International for use with Apple Computer, Inc.'s Macintosh Plus and Macintosh SE.

Bookmark is a desk accessory designed to store unwise work to a hard disk. It can also be used to save files to floppy disks at user-specified intervals.

Called Bookmark, the software installs the Apple Macintosh Switcher environment. It can be used as a multi-level Undoc function.


A random-access memory-resident utility designed to increase storage capacity on hard disks used with IBM Personal Computers has been announced by Eroton Corp.

According to the vendor, Newspace automatically and transparently compresses word processing, spreadsheet and other data files. In addition, users can retrieve the last five deleted files. Files that are backed up or copied onto diskettes arrive uncompressed.


An add-in utility for Lotus Develop ment Corp.'s 1-2-3 that includes such tools as message exchange, share data and counterpoint.

Called Uniflex/RT for Apple Computer, Inc.'s Macintosh II computer system software, Uniflex/RT is a real-time operating system designed for the Macintosh II, compatible with real-time microprocessors. It was written in assembler language and offers such features as message exchange, shared data and a named queue de/queue mechanism for semaphores and re- source control. The product can be used in real-time task priority control and a cost...

Continued on page 42

APRIL 11, 1988
If you can see the difference, you must be looking at the price.

Dear Reader:

This letter was printed on two of the finest printers available today. One half on a laser printer, the other on the new HP DeskJet Printer. But which one printed which half? Hard to tell, isn't it?

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Sincerely,

Greg Wallace

Hewlett-Packard Company
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A software utility that allows Hewlett-Packard Co.'s Deskjet printer to print engineering drawings and business graphics has been introduced by Insight Development Corp.

Called Deskplotter, the software is a personal computer-resident program that converts vector information into a format that can be printed by the Deskjet.

The user sets certain print characteristics to match application requirements. Pen patterns and pen widths can be selected from a menu. A gray-scaling option is also included.

According to a company spokesman, Deskplotter allows a program that outputs HP's HPGL (Hewlett-Packard Graphics Language), a popular language for HP plotters, to automatically convert the print data into a Deskjet format that can be sent to the printer.

Included in Deskplotter 6.0 are user guides, keyboard templates, a reference ruler and a quick reference guide. A full-page editor, keyboard烂 programs, an insert guide, menus and an insert guide addition.

Enhancements include automatic label eject, a second address line, an optional Quick Reference Guide, an instructor's guide and a 5%- or 3"-in. diskette. It costs $449. Additional student kits cost $39 each.

Rodime, Inc. has announced three external Winchester disk drive subsystems for Apple Computer, Inc. Macintoshs.

The Rodime 60 Plus, the Rodime 100 Plus, and the Rodime 140 Plus offer formatted capacities of 62M, 104M and 144M bytes, respectively. All feature a 28-msec average access time, and all have embodied small computer systems interface controllers.

The Rodime 60 Plus costs $1,795; the Rodime 100 Plus costs $2,295, and the Rodime 140 Plus costs $2,995.

General Computer Corp. has added Hyperdrive FX/80, Hyperdrive FX/60 and Hyperdrive FX/100 to its series of hard disks for the Apple Computer, Inc. Macintosh.

The Hyperdrive FX/80 and FX/60 are portable external versions of the FI models for the Macintosh II and Macintosh II. They attach externally to the Mac's SCSI.

The Hyperdrive FX/60 costs $1,899; the Hyperdrive FX/60 costs $1,699; and the Hyperdrive FX/100 costs $999.

General Computer, 580 Win- ter St., Waltham, Mass. 02154. 617-890-0880.

A 32MB-removable disk drive for IBM Personal Computers has been introduced by Western Dynex Corp.

The Dynex Datamodule can be exchanged among all IBM PCs, PS/2s, XTs, ATs and compatibles, the vendor said, allowing different computers to access the same 32MB of data. It is a Winchester disk drive, and additional Datamodules can be added, providing unlimited storage.

Prices start at $695. The company also introduced a portable, diskette-removable subsystem with a small computer systems interface. Called the Dynex FileMate, it contains one fixed and one removable 15MB-removable Winchester disk drive. It costs $12,000.
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Print samples were created using Microsoft Word, Microsoft Excel, and Aldus PageMaker.
A 40M-byte hard disk drive for use with IBM Personal Computers and compatibles has been announced by Origo International.

The Inboard-49 offers an average access time of 65 msecs. It is compatible with the Macintosh II/AT and can be used as a second drive with the existing hard-disk controller. It is in the Intel Corp. 80286 compatible and operates in 8- and 16-bit slots.

The Inboard-49 costs $749. Origio, 20675 Bahama St., Chatsworth, Calif. 91311. 818-340-7552.

A family of multifunction tape drives developed for the Apple Computer, Inc. Macintosh has been introduced by Irwin Magnetic Systems, Inc.

The systems offer support for A/U, Apple's Unix operating system. The external drives use the small computer systems interface (SCSI) and operate with industry-standard DC 2000 minicardtridge drives. The two currently available models are capable of storing 40M and 64M bytes.

The 40M-byte tape drive for the Macintosh II A/UX system costs $1,395. The 64M-byte model costs $1,595. Products include Irwin's Etape-A/U backup software, a selectable SCSI, a 256KB cache memory and a self-contained power supply.


A series of hard disk drives for the Apple Computer, Inc. Macintosh has been announced by Giga Cell Systems/Nudata, Inc.

The Slimline series includes 40M-, 60M- and 90M-byte hard disk drives. It features an internal hard disk and tape drive combination unit. The 40M- and 60M-byte hard disk drives feature an average access time of 28 msecs. The 90M-byte drive offers a 16.5-msec average access time. The products feature embedded small computer systems interface controllers and come with software utilities that include backup and a laser writer speeder.

Prices range from $1,395 to $2,559.

Giga Cell Systems, 4201 Burton Drive, Santa Clara, Calif. 95054. 408-727-1049.

A 360K-byte, 5½-in. external formatted disk on the line for the IBM Personal System/2 family has been announced by Dolphin Systems Technology.

The 360-IBM offers an average access time of 81 msecs. It operates with IBM PC-DOS 3.2 or higher. PS/2s can run pro-

A computer graphics drawing tablet called Easy! PC has been introduced by Inforfit Corp.

Easy! PC is a pressure-sensi-
tive, 1,024 x 1,024-pixel tablet for use with IBM Personal Computers and compatibles. According to the vendor, it allows the user to write a message directly into the computer with an ordinary pen or pencil on paper. It is compatible with software such as Z-Soft Corp.'s Paintbrush and Media Cybernetics, Inc.'s Dr. Halo in IBM's Color Graphics Adapter and for Enhancements of Color Graphics Adapter modes. It also works with software that operates under the Digital Research, Inc.'s GEM or Microsoft Corp.'s Windows environments.


An enhanced version of the Dis-

k board controller for IBM Personal Computers has been announced by Kurzwell Computer Products, Inc.

The TM9000 board features up to 2M bytes of memory expansion and is hardware-compatible with IBM's Micro Channel architecture. It features a four-layer printed-circuit board design and a low profile design that allows it to be placed beside the edge of the connector.

The TM9000 board costs $225.


Two variable-resolution graphic boards for IBM Personal Computer AT's have been announced by Dolen Computer Corp.

The Multimax and Multi-

x XL boards are based on National Semiconductor Corp.'s Raster Graphics Processor (RGP) and Advanced Graphics chip set. They can be programmed to support screen resolutions of 600 by 800 to 1,280 by 1,024 pixels. In addition, the basic eight-plane, 256-color board can be expanded to 24 planes and 16 million simultaneous colors.

The Multimax XL has 2M pixels of memory and can support up to 256K bytes of program memory, 2K bytes of dual-port RAM. It operates with a compatible programmable read-only memory and a 38.4K bit/sec. serial port.


A plug-in transaction processor board for real-time data collection applications using IBM Personal Computers has been announced by Burr-Brown Corp.

The QIC-File Plus system supports all 17 VGA display modes as well as IBM's Enhanced Graphics Adapter (EGA), Color Graphics Adapter and Monochrome Display Adapter standards. According to the vendor, the boards can drive IBM analog monitors as well as fixed- and variable-frequency digital monitors. They also provide EGA resolution of up to 80 by 600 pixels.

Two models are available: The QIC-File Plus Adapter, priced at $394, and the VGA/AD, priced at $545. The VGA/AD includes software drivers for the EGA and the EGA compatible with Novell, Inc. and IBM DOS.

Burr-Brown, P.O. Box 11400, Tucson, Ariz. 85734. 602-746-1111.

Teccmar, Inc. has expanded its line of IBM Micro Channel mem-

ory and multifunction boards for the IBM Personal System/2 with the addition of two Micron boards.

The Micron AD offers software and parallel I/O capabilities. It offers up to 8M bytes of IBM OS/2-addressable memory on a single expansion board as well as the ability to expand Lotus/Intel/Microsoft Expanded Memory Specification (EMS) 4.0-compatible memory to 8M or 16M bytes. It works with IBM, Microsoft Corp., MS-DOS users.

The Micron 50/60 offers up to 2M bytes of memory for 4M-byte expandable hardware-com-

putable with EMS4.0.

The Micron AD with 2M bytes of memory costs $1,145. The 2M-byte version of the Micron 50/60 costs $995.

Teccmar, 6225 Cochran Road, Solon, Ohio 44139. 216-349-0600.

An expansion card, called the Addcard, designed for use with Tandy Corp.'s Tandy 1000 and 1000A has been announced by Merak Industries, Inc.

The device adds four slots in-

side the system unit. According to the vendor, expansion cards connected to the Addcard operate as direct extensions of the bus. No external cabinet is re-

quired.

The Addcard costs $89. A version for IBM Personal Computers is available.

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At under $1,300, the HP ColorPro Plotter may be just where you want to start. It will turn your ideas into colorful, easy-to-grasp visuals. Or, if you need to combine near-letter quality text with color graphics, you can rely on the HP PaintJet Color Graphics Printer for under $1,400. Whichever you choose, you'll create desktop presentations with startling color and greater impact.

For a colorful sample overhead and the name of your nearest dealer, call 1 800 752-0900, Ext. 903A.

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Contrary to myths, ISDN works

BY PATRICIA KEEFE
CW STAFF

CHICAGO — A handful of myths about Integrated Services Digital Network (ISDN) are impeding user acceptance, according to Ian Angus, president of Angus Telemangement Group, Inc. in Pickering, Ontario.

And they should not have, because ISDN no longer stands for "I still don't know," he told Interface '88 attendees here recently while speaking on "ISDN Test Site Realizations."

Angus, who is admittedly bullish on the technology, noted that ISDN is even mentioned in in-flight magazines now — a sure sign that it has achieved broad general awareness, he joked. And the most recent AT&T ads promoting ISDN, he added, do not even bother to explain what the term means.

A cornucopia of ISDN test sites have produced real examples of ISDN applications, enabling the technology to progress to the point at which the correct interpretation of ISDN should be: "It starts delivering now," Angus said.

Concerns not validated

Angus set about exploring a series of misconceptions culled from a list of concerns clients had asked him to investigate. But the trials have failed to validate most of these concerns, he said, adding that ISDN works.

"We are no longer discussing whether we can deliver ISDN over twisted-pair in large environments. We are in the final details of how to deliver," he said. And given that ISDN is working, the issue now is whether anyone wants to work with it, Angus stressed.

In no particular order, Angus addressed the following typical user concerns:

- ISDN competes with local area networks. There may be some overlap, but LAN strength lies primarily in a work group typically supporting fewer than 10 workstations, Angus said. ISDN's raison d'etre, he said, is in linking to the wide-area network or functioning as a bridge between LANs. It is not a replacement for LANs.
- ISDN does not offer enough bandwidth. Claiming this theory is put forth by Digital Equipment Corp. and other LAN companies, he said that ISDN's 64K bit/sec. transmission rate is 40 times as fast as most applications today.
- ISDN is a way of making users pay for the telephone network. It is true that users are not demanding ISDN, Angus said, but

Continued on page 51

SAA still has a way to go

BY KATHY CHIN LEONG
CW STAFF

CHICAGO — Has IBM got it made with its new Systems Application Architecture (SAA)? Not necessarily, according to William Maybaum, vice-president of Ann Arbor, Mich.-based Systems Application Architecture (SAA) still has a way to go.

Quite a few pieces are missing, yet, Maybaum told Interface '88 attendees at a session entitled "SNA: Enhancements for a new era," adding that IBM will be faced with several difficult challenges in the years ahead.

Continued on page 51

Can Your Unix DBMS Guarantee Data Integrity?

Data integrity is essential for any commercial application. Unfortunately, no Unix-based DBMS product is able to provide absolute data integrity without sacrificing performance or forcing the use of complex raw devices. Except the ORACLE® RDBMS.

The Solution

Unix has a special option called "write-through cache" which allows blocks of data associated with a particular file to be written to disk as soon as they are processed. The database application can continue until the write has been completed.

Oracle uses this feature to guarantee that those blocks of data associated with your database are on disk before the words "transaction completed" appear on your terminal's screen. Other Unix database vendors — 1) Don't address the problem at all; 2) Force a complete flush of all data in the buffer cache causing tremendous performance degradation or 3) Require the use of complex raw devices.

Other Unix database vendors

Free General Information Manual on ORACLE for Unix

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Call 1-800-345-DBMS, ext. 100 today.
CHICAGO — The recent disappointing slow Interface '88 left many exhibitors and attendees harking back to warmer thoughts of rival conference Communication Networks. Held in January, it was bustling by comparison. One exhibit cracked that he measured the success of a show by "alleys," or how far he could roll a bowling ball. At Interface, he reckoned, he could count on a good roll.

Domestic buyers were a disappointment to exhibitors, but Interface did attract a lot of serious international buyers, according to William Lanfri, manager of market development at Mountain View, Calif.-based Synoptics Communications, Inc. A number of French vendors banded together in one huge booth, hoping, no doubt, to attract some Yankee dollars.

IBM ignore ISDN? Not according to Toby Terrell, manager of ISDN Product Planning at IBM's Communications Products Division. First, he said to look for IBM to launch a second U.S. ISDN trial in August. (IBM is already involved in the Nynex Corp. trial.)

Terrell also said ISDN will enhance IBM's Systems Network Architecture, adding that the two are complementary, not competitive.

INTERFACE '88

The icing on the cake were the following recommendations, which Terrell said are required to push ISDN to a point at which it can begin to help customers: finish standards, make sure implementation is consistent across vendors, get competitive general tariffs that are cheap and widely available and provide planning information about availability of service, performance characteristics and projected tariffs.

Interface abounded with ISDN time lines. This one comes from Scott Augerson, ISDN product manager at Siemens Information Systems: By late 1988 or early '89, expect some ISDN-based private branch exchange (PBX) announcements offering limited shipments with a focus on circuit switching only. By 1989 or 1990, look for expanded services on ISDN, full shipment of new PBXs with a focus shift to packet switching. The 1990s will feature broadband ISDN at 600M bit/sec. and an increasing pot of services.

Wavering over token-ring? You might want to consider David Levin's point of view. Despite what you may have heard, the token-ring is not all things to all people, the president of Netcomm said. The strengths of IBM's anointed network lie in departmental or subdepartmental networking with a gateway to a broadband network. Added Synoptics' Lanfri, Ethernet sales are hot overseas, while token-ring sales are growing at a steady clip.

Speaking of Ethernet, despite the buzz over twisted-pair wire, coaxial cable is not dead, Levin said. He advised users considering twisted-pair to consider how robust or efficient that approach might be and suggested they take a hard look at vendors' claims of supporting networking over twisted-pair.
SAN JOSE, Calif. — Communications Software, Inc. (CSI) recently introduced phase two of its Maxess SNA Gateway, a product said to support Microsoft Corp. OS/2 gateway and 3270 functions, the gateway reportedly can eliminate the need for the Communications Manager, a feature of IBM's OS/2 Personal System/2.

The Communications Manager provides additional 3270 and LU6.2 emulation and IBM Token-Ring network attach interfaces.

The Maxess SNA Gateway reportedly can run alongside the Communications Manager without affecting any of its functions.

The first release of Maxess SNA Gateway, which supports Microsoft's MS-DOS, was announced in February and ships this month. According to CSI, the gateway runs up to 32 concurrent sessions and cuts costs by running at the file server vs. in each network node.

When the Maxess Gateway for OS/2 ships in January, it will only support MS-DOS workstations as network nodes, CSI said.

Pricing for Maxess SNA will be set later this year. A third version of Maxess SNA will extend OS/2 support to the workstation. When all three versions of the Maxess SNA Gateway are in place, users reportedly will be able to run both OS/2 and MS-DOS on workstations and file servers on a single network.

Novell, Inc. added another notch to its TCP/IP belt with The Wallongong Group's release of WIN/PC/Route Release 3.2 and WIN/PC Route Release 1.0, said to provide complete Transmission Control Protocol/Internet Protocol services and routing capabilities for Novell's Netware.

Excelan, Inc. and Micom-Interlan, Inc. already provide TCP/IP services to Netware users.

Looking for Telenet to offer IBM Professional Office System compatibility via the CCITT X.400 standard in the near future, according to Miles Morimoto, Telenet's X.400 product manager.

Going to any lengths to keep exhibitors happy, The Interface Group presented awards for the best booth in a variety of categories at the show.

Much to Novell's amusement, it received "The Shelly Award" for the "Outstanding City Block-Sized Exhibit." Among the awards, the blond Olympian periodically went through his paces on the pommel horse, signed autographs and just generally looked cute.

APRIL 11, 1988

COMPUTERWORLD
A lousy foundation can knock your network out of whack too.

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Codex 2600 Series high speed modems form a solid foundation for your network now, and as it grows.

Nets beat mix
CONTINUED FROM PAGE 47

CIAL market and began buying up the top two or three real estate offices in each major market. "Two years ago, the company went to 35 offices in the early 1980s, but efforts to bring other offices on-line soon ran into a wall of incompatible units from vendors such as the former Sperry Corp. and Burroughs Corp., Wang Laboratories, Inc. and Digital Equipment Corp., said Jeff Cantor, director of MIS for Grubb & Ellis's New England region. The only point of commonality were some IBM Personal Computers.

In the meantime, Pritchard and Cantor, unbecknowst to each other, had implemented several pilot local-area networks. Both networks were based on Novell, Inc.'s Netware network operating system and supported software from Lotus Development Corp. and Wordperfect Corp., along with Borland International's Paradox and Meridian Technology, Inc.'s Carbon Copy.

Both systems were very user oriented and featured a seamless environment, work-group data sharing and tailored, context-sensitive on-line Help screens.

All systems go

Inevitably, the two put their LANs together and came up with a plan to resolve Grubb & Ellis's information-sharing woes. In January, the plan got the green light from the board of directors on down, he said. Half of the minicomputer equipment is leased and can be written down, he said.

Out of 8,000 employees, the firm plans to expand into about 35 offices in the early 1980s, efforts to bring other offices on-line soon ran into a wall of incompatible units from vendors such as the former Sperry Corp. and Burroughs Corp., Wang Laboratories, Inc. and Digital Equipment Corp., said Jeff Cantor, director of MIS for Grubb & Ellis's New England region. The only point of commonality were some IBM Personal Computers.

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companies provide telephone services locally, handing off long-distance services to inter-LATA carriers. Similarly, the regional companies could handle local E-mail while handing off long-distance mail to inter-LATA message carriers. Low-cost local messaging services for consumers coupled with efficient interconnection to national services and big business would certainly hasten the adoption of E-mail by a large new group of users.

If this eventuality were to occur, it would be beneficial to consumers, large and small businesses and most of the E-mail industry. Whether this happens is dependent upon many factors, including further regulation, marketplace dynamics, competitive reaction and the holding companies themselves.

Steve Glasgow of Coopers & Lybrand says he sees Greene’s recent order as part of a long-term tendency to gradually loosen the bonds of the Consent Decree. To the extent that this is true, the regional holding companies can be expected to aggressively provide permitted services, competing strongly with existing players. Although controversial, the short-term implications of the regional holding companies’ new freedoms are favorable. This year promises to be an exciting one for the E-mail industry, for the AT&T regional companies and for mail users everywhere.

Ulrich is president of Walter Ulrich Consulting, a subsidiary of Coopers & Lybrand.
prove its network management capabilities. In particular, Maybaum asked, "How is IBM going to manage shops with decentralized systems?" Exactly how IBM will integrate other vendors' products into its network management picture remains to be seen. For now, third-party developers are left to create their own hooks into IBM's Netview, but actual offerings are slim. And as AT&T's regional holding companies move to open up their networks as a result of Open Network Architecture, IBM has said that its Systems Network Architecture will interface with the CCITT X.25 standard. However, "IBM has to realize that support for [Open Systems Interconnect] is crucial, and interfaces for X.25 aren't enough," Maybaum charged.

While IBM has plans to support most major communications protocols under SAA, "it's not clear to users [or vendors] what that really means," Maybaum ended on a bitter-sweet note: "IBM is working on all of these things, but, being IBM, it just can't respond fast enough."

While IBM works out its snags, some users say they are willing to wait. Travelers Insurance Co., a subsidiary of The Travelers Corp., for example, is moving right along with plans to implement IBM's Token-Ring network, according to Travers Waltrip, vice-president of telecommunications at The Travelers.

Four years ago, Travelers decided every new building would be installed with IBM-type twisted-pair cabling. Today, there are approximately 60 Token-Ring networks all wired up at the insurance company, with many more to come. In addition, the company is migrating all of its 20,000 IBM Personal Computers to the successor Personal System/2 models. Clones need not apply in this IBM shop.

Dedication
Travelers is as dedicated to this industry giant as they come. Devoted to the IBM game plan, it has no intention of migrating to the International Standards Organization's OSI model.

"Why should we?" Waltrip asked. "OSI is good for companies that have many overseas offices. We are mainly concentrating here in the U.S. and Canada. Our presence overseas is trivial."

However, IBM gear cannot be found everywhere within the company. Several years ago, Travelers developed its own IBM network management program called Netpic, which manages both SNA and packet-switching networks. "We will wait and see how Netview matures and possibly convert later," Waltrip said.

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The NCR System 10000. Created to increase productivity for data processing and business professionals. For more information, dial 1-800-CALL NCR.
New Products

Local-area network hardware

Paraport, an IBM-compatible parallel four-port board, has been released by The Software Link, Inc.

Designed to run with the vendor's Lanlink 5X software-based local-area network, Paraport can also be used as a multiple printer board. It supports parallel connections at rates to 0.5M bit/sec. It also uses a proprietary cabling scheme that supports a bidirectional flow of data.

Paraport costs $495.

The Software Link, 3577 Parkway Lane, Atlanta, Ga. 30092. 404-448-5465.

Local-area network software

Network Software Associates, Inc. (NSA) has adapted its entire AdaptSNA line of communications software for IBM Personal Computers and Personal Systems/2 to be compatible with Hayes Microcomputer Products, Inc.'s Autosync feature, which is incorporated in all Hayes 2,400 and 9.6K bit/sec. modems. According to the vendor, once the telephone connection has been established, Autosync enables the modems to transmit synchronous data over standard asynchronous links by automating an asynchronous-to-synchronous data conversion process.

The software line includes AdaptSNA APPC, priced at $285; AdaptSNA RJ, priced at $785; and AdaptSNA 3270, priced at $585.

NSA, 22983 Mill Creek, Laguna Hills, Calif. 92653. 714-768-4013.

Customer-premise equipment

Voice Computing, Inc. has released a version of its Voiceline voice-mail system for IBM Personal Computer XT's and PC/AT's.

Voiceiline Version 1.3 offers standard voice-mail functions as well as the ability to activate the host computer when it is turned off, call forwarding, departmentalization of messages and interruption of or transfer of calls.

The system administrator also has the ability to activate such functions as maximum message length, transfer to operator, security codes, log file, changing ID codes, line greeting, no-erase messages and customized message recipient lists.

Voice Computing, 1250 Femrite Drive, Madison, Wis. 53716. 608-221-0001.

Electronic mail

Personal EMCC2, a personal computer-based electronic-mail software package, has been introduced by Fischer International Systems Corp.

According to the vendor, Personal EMCC2 allows users to read and answer the vendor's host-based EMCC2 mail while not connected to the host system. Users can also create mail, letters and documents. Features include an editor, in-basket, out baskets and the ability to access mainframe EMCC2 to perform standard functions.

When necessary, connection to the mainframe can be made via an asynchronous dial-up connection, an IBM 3270 coaxial connection or an IBM Synchronous Data Link Control/Systems Network Architecture remote configuration.

Personal EMCC2 costs $89.

Fischer International, P.O. Box 9107, 4073 Merchandise Ave., Naples, Fla. 33942. 813-643-1500.

Security

A stand-alone computer security device said to prevent unauthorized computer access through a modem has been introduced by Adalogic, Inc.

Called Gateway II, the product installs between the modem and the computer port. If a valid password or ID code is not entered, it terminates the call. When the dial backup option is used, Gateway II will dial an authorized user at a predetermined number. Gateway II stores up to 40 remote users.

Continued on page 58
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A major computer company is saving over $25 million a year on product ordering and configuration, thanks to expert systems they developed in-house.

A leading financial services company has substantially reduced bad credit losses with a computerized system they developed based on artificial intelligence.

These are true stories. Yet expert systems still have not taken a serious place in the business world.

Why? Because they've been available only on specialized systems using esoteric languages like LISP and PROLOG. So, like the companies described above, you could only benefit from knowledge-based systems if you had a great deal of money, people and time to make them work.

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KBMS is a mainstream software system that is an extension of conventional DP practices. It provides seamless, high-level integration with your existing applications and databases.

The system runs under major IBM operating systems, teleprocessing systems and database management systems. It can be integrated with your existing applications by calling a KBMS module from a standard COBOL program, or vice versa. It even has the speed and processing power to be used in high-volume, transaction processing applications.

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KBMS, which stands for Knowledge Base Management System, incorporates the four key techniques of AI programming methodologies: goal-directed reasoning (backward chaining), data-driven reasoning (forward chaining), hypothetical reasoning, and object-oriented programming.

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To register for the seminar in your area, please call (617) 890-8400. AlCorp, 100 Fifth Avenue, Waltham, MA 02254-9156.

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**Modems/ Multiplexers**

A multiplexer and packet assembler/disassembler (PAD) for public and private CCITT X.25 packet-switched digital networks has been announced by Gandalf Data, Inc. Mmux is said to provide asynchronous statistical multiplexing, synchronous multiplexing, intelligent local switching and X.25 access for four to eight desktop devices or computer peripherals. It features an integrated modem card for direct connection at 9.6K bit/sec. to leased company lines. It supports input channels up to 19.2K bit/sec. and offers split-speed operation. The output composite link can operate at any speed up to a full 64K bit/sec. level.

The four-channel Mmux costs $995; the eight-channel version costs $1,495.

Gandalf, 1020 S. Noel Ave., Wheeling, Ill. 60090. 312-541-6060.

Two stand-alone desktop modems designed for use over dial-up lines have been introduced by Digital Equipment Corp.

The DF212 and the DF242 models feature four levels of security, automatic speed adjustment, the ability to store up to 30 telephone numbers 36 characters long and automatic dialing capabilities. Also included are on-line error correction, built-in diagnostics and two command languages.

The DF212 transceives data at 300, 600 and 1,200 bit/sec. in asynchronous mode and at 600 and 1,200 bit/sec. in synchronous mode. The DF242 transceives data at 300, 1,200, 2,400 bit/sec. asynchronously and at 1,200 and 2,400 bit/sec. synchronously. The products cost $645 and $795, respectively.

DEC, 146 Main St., Maynard, Mass. 01754. 617-897-5111.

A transcoder said to allow twice as much voice traffic on existing 1.54M bit/sec. T1 lines has been introduced by Analogic Corp.'s Telecommunications Products Group.

The adaptive differential pulse-code modulation unit is called the ATC-48. The product is configured as a single stand-alone unit and, according to the vendor, can handle all standard voice and data formats, including M44 bundled or 48-channel, robbed-bit 4.8K bit/sec. data, which embeds signaling in voice to provide four extra lines.

The transcoder supports transparent and bypass modes for high-speed end-to-end digital data transmission. Automatic re-routing of one T1 line reroutes signals around the unit should failure occur.

The ATC-48 costs $5,000.

Analogic, 8 Centennial Drive, Peabody, Mass. 01960. 617-647-1900.

An internal 300/1,200/2,400 bit/sec. modem for IBM Personal System/2 Micro Channel-based computers has been announced by U.S. Robotics, Inc.

The Courier 2400/PS fits into any PS/2 Model 50, 60 or 80 Micro Channel expansion slot. It offers autodial and answer capabilities and is CCITT V.22 bis compatible at 2,400 bit/sec. and Bell 212A- and 103-compatible at 1,200 and 300 bit/sec., respectively.

Features include Help screen summaries of commands and settings, on-screen call-progress monitoring, call duration reporting and automatic speed matching with the remote modem, the vendor said.

Courier 2400/PS costs $449.

The vendor also announced a Unix-adapted version of its 9.6K bit/sec. Courier HST modem bundled with a Unix-based data communications program. The package costs $1,295.

Breuners binges on automation

Boasts second place in furniture industry due to tight inventory control

BY J. A. SAVAGE
CW STAFF

SAN RAMON, Calif. — For the last 15 years, the MIS department at Breuners Home Furnishings has ridded a financial roller coaster as a result of the firm's business environment: The company was bought, sold and transferred with management alternately funding and ignoring MIS.

Breuners is now on an automation roll with its own industrial roller coaster equivalent: huge, fast elevator cranes for grabbing furniture that operate in an enormous warehouse. As a family-owned business founded in 1856, Breuners claims it is now the second largest furniture retailer in the country. Still family-owned in the early 1970s, it was an innovator in technology. With IBM, it developed BOLTS, or Breuners On Line Terminal System. BOLTS ran for six years on an IBM 371/58.

MIS couch potatoes

The company, which now has revenue of about $225 million, was bought by Marshall Field & Co. in 1977. According to John Longridge, management information services director at Breuners, Marshall Field left MIS in a "static" situation.

Marshall Field was using then-Sperry Corp. equipment and wanted Breuners to move to Sperry Univac machines, but that posed compatibility problems with Breuners' IBM equipment. Instead, both companies kept their vendors, and Marshall Field eventually adopted IBM machines.

Breuners, however, began to restructure its business from a decentralized model in which each retail store had its own warehouse — the plan for BOLTS — to a centralized model, with a parent warehouse and satellite stores.

When this was done, BOLTS caused problems with the parent-satellite structure. BOLTS was rewritten to accommodate the new arrangement, and in the

Data View

Packing disks

Amdahl 5870 supports highest average disk capacity at Amdahl user sites

BY ALAN ALPER
CW STAFF

NEW YORK — Spurning the entreaties of a host of other vendors, Paine Webber, Inc. recently extended an offer to Quotron Systems, Inc. to continue using its stock quote system at Paine Webber's 285 offices in North America. The precise value of the multimillion-dollar, five-year contract extension was not disclosed.

The brokerage firm said it will install Quotron's Unix-based

Quotron gets major boost

Continued on page 64

Mid-frame Unisys line appealing

BY ALAN ALPER
CW STAFF

NEW YORK — Unisys Corp.'s recently disclosed extensions of its 1100/2200 "mid-frame" processor family are giving many users of entry-level Sperry Corp. 1100 mainframes a reason to remain loyal to their supplier, according to a cross section of customers surveyed recently.

Unisys Chairman W. Michael Blumenthal did what he promised by creating a third company [from the merger of Sperry and Burroughs Corp.] that has advanced the 1100 architecture," said James Ault, president of Use, Inc., a Sperry users group, and director of information services at Creighton University.

The six-member 2200/400 family, which ranges from single- to six-processor systems, offers a hardware migration path from the 1100 Models 60 and 70 that preserves user investment in applications running under Sperry's proprietary operating

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Inside

• Stratus improves customer service network. Page 60.
• Unisys adds low-cost banking printer. Page 64.
• Memorex divests Unix operates ASCII terminal. Page 66.

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Stratus maintenance centers get redundancy

BY STANLEY GIBSON
CW STAFF

MARLBORO, Mass. — Stratus Computer Corp., known for the redundant hardware components in its on-line transaction processing systems, recently said it plans to add redundancy to its worldwide network of maintenance centers as well.

Under the plan, which will be implemented gradually this year, four of Stratus's principal maintenance sites will become, in effect, exact copies. The centers, located here and in London, Amsterdam and Hong Kong, will each contain the same customer information, which will be instantly updated as changes occur.

As a result, any center will be able to handle a call from any customer in the world, because information on that account will be stored at the customer center.

Worldwide help line

"This provides experts a 24-hour basis, without a third shift being on call," said William Elliott, Stratus vice-president of product marketing. Calls made late at night will be placed to whichever center is open at that hour, according to Elliott. For example, if a New York data center makes a call in the middle of the night, the call may go to Hong Kong, where that customer's information would be stored, Elliott said.

The system will make use of the remote diagnostics currently offered to Stratus customers who are connected to Stratus's Marlboro headquarters. Stratus said it does not plan any additional charge for what it claims will be improved service.

In response to questions about the security of customer data transmitted worldwide, Elliott reiterated Stratus's current policy regarding remote customer hookups: a customer may determine what data is sent to Stratus. "The security level is controlled by the user," he said.

Elliott said customers recognizing extremely high levels of confidentiality may establish their own service networks using Stratus software. He added that several customers thus far have purchased Stratus software for this purpose.

The four centers will be connected by leased lines, although Stratus said it is as yet unclear on whether the centers will be connected in a star configuration with Stratus's Marlboro headquarters as the hub or whether each center will be connected directly to all other centers.

Elliott said Stratus plans to add more customer centers with identical data bases to the network once the connection of the initial four is complete.

Unisys

CONTINUED FROM PAGE 59

system, OS 1100 (CW, March 21). The series, which is set to ship in the fourth quarter, also extends the performance of the older 2200 family to 14 million instructions per second, the company said.

Ranging in price from $177,951 to $952,065, the 2200/400 series should appeal to customers who seek to disperse processors throughout various locales or departments within their organizations.

By using very large-scale semiconductor technology, Unisys said, it was able to reduce the parts count on the systems by almost 90%, resulting in systems that offer four times the performance and require 70% less space, power and cooling than the 1100 models they effectively replace.

Creighton's Ault said the university is considering upgrading its two 1100/72s at some point during the next 18 months and is leasing toward the 2200/400 family rather than going with 1100 Models 73 or 74. "The price/performance of the new series is impressive for our environment," he said.

Ault said he has also entertained proposals from IBM and Digital Equipment Corp. but remains unconvinced that those vendors can match the price/performance of the 2200/400. "They've not showed us that they can tie things together with our current environment," he said.

A less obvious advantage of the 2200/400s is their ability to operate with minimal data center personnel, Ault noted. "There's a PC-based facility that provides operatorless functionality that makes the products perfect for departmental use."

Power needs spark applause

Other users pointed to the low power consumption and reduced footprint as key features of the 2200/400. "This product uses electricity at the same rate as a copier," said Allen Elliott, data center director of Westchester County in New York. Elliott told Computerworld that the county is also interested in higher-end additions to the 2200 family to offload from its workhorse 1100/94.

"We're using an 1100/94 that is partitioned into four engines; three are used for production, the fourth is used for development," he said.

A Unisys spokesman declined to comment on follow-ons to the 2200/400 line beyond saying an announcement is planned for later this year.
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1. Industry (check only one)  

- Noncomputer-related businesses [ ]  
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  - 2. Agriculture, mining, construction, oil [ ]  
  - 3. Business consulting (noncomputer-related) [ ]  
  - 4. College/university [ ]  
  - 5. Elementary/high school [ ]  
  - 6. Engineering/architecture [ ]  
  - 7. Finance, banking, accounting, insurance, real estate [ ]  
  - 8. Government [ ]  
  - 9. Health/medical services [ ]  
  - 10. Legal services [ ]  
  - 11. Manufacturing [ ]  
  - 12. Military [ ]  
  - 13. Other business services [ ]  
  - 14. Publishing/advertising/public relations [ ]  
  - 15. Research and development [ ]  
  - 16. Retail/wholesale [ ]  
  - 17. Transportation, communications, utilities [ ]  
  - 98. Other (specify) [ ]  

**Computer-related businesses**  

- 15. Computer consultant [ ]  
- 19. Computer retail [ ]  
- 20. Distributor/wholesaler [ ]  
- 21. Manufacturer (computers, software, peripherals) [ ]  
- 22. Service bureau [ ]  
- 23. VAR/systems house/integrator [ ]  
- 99. Other (specify) [ ]  

2. Title (check only one)  

- A. Chairman/president/owner/partner [ ]  
- B. Vice president [ ]  
- C. Controller/treasurer/accountant [ ]  
- D. Director/supervisor/manager [ ]  
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- J. Microcomputer specialist/manager/analyst [ ]  
- K. Programmer [ ]  
- L. Educator [ ]  
- M. Professional (lawyer, doctor, etc.) [ ]  
- Z. Other (specify) [ ]  

3. Department or function (check only one)  

- A. Accounting/finance [ ]  
- B. Administration/management/personnel [ ]  
- C. Consulting [ ]  
- D. Education/training [ ]  
- E. Engineering/R&D [ ]  
- F. Manufacturing/production [ ]  
- G. Microcomputer center/office automation [ ]  
- H. MIS/DP [ ]  
- I. Purchasing [ ]  
- J. Sales/marketing/distribution [ ]  
- Z. Other (specify) [ ]  

4a. Does your company own or lease any mainframe computers at this location?  

- Yes (indicate quantity below) [ ]  
- No [ ]  

<table>
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<td>Existing</td>
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<td>New</td>
<td>(quantity)</td>
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4b. Does your company own or lease any microcomputers at this location?  

- Yes (indicate quantity below) [ ]  
- No [ ]  

<table>
<thead>
<tr>
<th>Quantity</th>
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</table>

5. Does your firm have a plan or buy any of the following types of personal computers or microcomputer systems at your location?  

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- No [ ]  

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<tr>
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<td>New</td>
<td>(quantity)</td>
</tr>
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<td>Own one</td>
<td>(quantity)</td>
</tr>
<tr>
<td>Macintosh II</td>
<td>Purchase or acquire</td>
<td>(quantity)</td>
</tr>
<tr>
<td>IBM or compatible</td>
<td>Purchase or acquire</td>
<td>(quantity)</td>
</tr>
<tr>
<td>Sun/Apollo</td>
<td>Purchase or acquire</td>
<td>(quantity)</td>
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6. Does your company own or lease any microcomputers at this location?  

- Yes (indicate quantity below) [ ]  
- No [ ]  

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9. Other (specify) [ ]  

10. Legal services [ ]  

11. Manufacturing [ ]  

12. Military [ ]  

13. Other business services [ ]  

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15. Research and development [ ]  

16. Retail/wholesale [ ]  

17. Transportation, communications, utilities [ ]  

98. Other (specify) [ ]  

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**Title**

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1. Industry (check only one)

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16. Retail/wholesale [ ]  

17. Transportation, communications, utilities [ ]  

98. Other (specify) [ ]  

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Name: __________________________  Title: _________________________
Name: __________________________  Title: _________________________
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Gibson
CONTINUED FROM PAGE 59

sor speed. Well, isn’t I/O the manner in which most jobs, especially commercial ones, are performed?

Sun also said the Sun-4 has not been targeted for business applications. Maybe the Sun 4 isn’t, but it sure has sounded like the Sparc chip has been. The clear message has been that the Sparc chip is intended to be the platform of choice for all kinds of computing. Now, AT&T lead the user community into a brave new Unix-based world. For some time, Unix backer’s have been trying to get Unix into general use in business applications. Indeed, at least one Sparc licensee, Arrix (formerly Arete Systems), sells general-purpose business systems.

AT&T has said that its general-purpose computer systems will be migrated to the Sparc architecture, which is licensing from Sun. AT&T still wants to crack the business market, doesn’t it?

In other tests, Nelson benchmarked other RISC-based systems, including the IBM RT Personal Computer, the Mips Computer processor and the Hewlett-Packard Spectrum system. In all cases the results were similar: The RISC-based system underachieved.

Not content with Nelson’s single voice, I recently posed the RISC-as-a-business-processor question to a high-ranking official in hardware development at a major minicomputer manufacturer. The executive told me that in general use, he found that the Sun-4 generally delivers about half of the 10 MIPS claimed. The executive’s company has no ax to grind, because it does not compete with Sun.

No short cuts

The reason RISC sometimes offers no benefit is apparently that RISC instructions, being reduced, are shorter, and more of them may be required for the same task that a single instruction of a complex instruction set computing system might require. Thus, a high MIPS rating would not necessarily indicate that work can be accomplished faster. Only in an application in which the short instructions performed the same work of longer instructions would this be the case.

It may be that many applications need to be optimized for RISC. If so — fine. But that means that more work will have to be done: work that is not being factored into the current headlong rush toward RISC, we suspect.

It is still early in the game; the Nelson benchmarks have just been released. But they are an auspicious opening for what promises to be a lively period of discussion. There are signs that they are generating intense interest from all sides. Sun and others invited scrutiny by their MIPS claims. Their response so far has been incomplete.

Gibson is Computerworld’s senior editor, systems & peripherals.

Quotron
CONTINUED FROM PAGE 59

Q1000 system at each branch location to distribute stock quote information, financial news, office automation applications and proprietary research to brokers and executives using a mix of intelligent terminals and desktop microcomputers.

Paine Webber, which has evaluated the technology for the last two years, chose Quotron over a host of stock quote vendors, including Automatic Data Processing, Inc. (ADP), Unisys Corp. and Wang Laboratories, Inc., observers said.

THE PAINE WEBBER contract extension is considered a substantial victory for Quotron, which is struggling to retain brokerage industry customers.

Installation in the first 30 offices is expected to begin next month.

The contract extension is considered a substantial victory for Quotron, which has struggled to retain major brokerage industry customers following its acquisition by Citicorp two years ago. Merrill Lynch & Co. and Shearson Lehman Hutton, Inc. are said to be considering replacing Quotron with ADP because they are wary about doing business with Citicorp, which is viewed as a major competitor.

Paine Webber Corporate Vice-President John Murphy said the firm chose Quotron because it met all of Paine Webber’s current technical requirements. “It seems we don’t have the same concerns about dealing with Citicorp as some of the other firms have,” he explained.

Stock quote information and news will be piped into Q1000s via Quotron’s proprietary network, while client and product information residing on Paine Webber’s IBM mainframe will be accessed through the branch processor.

Spreadsheet and word processing applications will reside on the Q1000, Murphy said.

Approximately 1,500 Q1000s have been installed since February 1986, according to George Levine, Quotron’s marketing vice-president. Other Q1000 customers include Smith Barney, Harris Upham & Co., Dean Witter Reynolds, Inc., Shearson Lehman and certain offices of Merrill Lynch, he added.

AriX Systems

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S_YSTEMS & PERIPHERALS

COMPUTERWORLD

APRIL 11, 1988
CONTINUED FROM PAGE 59

process was changed from nonnative Breuners language.

Longridge said, "We were down about 12% of the time," Longridge said. "They were brought in during a management change-to keep the old IBM CICS system from going down. Since then, he said, the system is down less than 2% of the time.

In 1985, an MIS savior arrived in the form of one of Great Britain's largest corporations, Batus, Inc., the U.S. division of London-based B.A.T. Industries PLC. Batus, which took over Marshall Field in 1985, "changed us from a maintenance to a development shop," Longridge said. At the time, BOLTS was running on an IBM 4341; the shop was upgraded to a 4381.

With the shop under control and management interested in new projects, Longridge said the warehouse was the most ambitious area of the company's new undertakings—consolidation of the company's 20 warehouses into one. The job is expected to be completed in July. The consolidated warehouse is 70,000 square feet high and dark inside except for the headights of the roving elevator cranes that run at seven miles per hour up and down the building's narrow aisles. The cranes brandish long-range bar-code scanners to locate furniture from distances of up to seven feet.

Longridge said the rack space used for the cranes alone would account for 20 football fields with half a field left over. Also in the building are two finishing centers and a truck maintenance facility.

The "high-bay" warehouse is run by a Hewlett-Packard Co. HP 9000 on Dispatch software developed by Logisticon, Inc. in Santa Clara, Calif. The system manages both the storage and retrieval of material and the resources needed to carry out the tasks.

Purchasing order information is downloaded from the 4381 to the HP 9000 with the aid of a protocol converter that changes EBCDIC to ASCII.

"In one transaction, the system checks stock, makes a reservation, gets credit approval and figures the next available delivery date based on the buyer's ZIP code," Longridge said. The warehouse, which is the major part of a $16 million investment in customer service, puts Breuners "absolutely ahead" of the competition, Longridge said, and will contribute to "astronomical savings."

He estimated that the centralization project will eliminate the need not only for warehouse workers but also for some clerical workers. He said it will also contribute to substantially less damage and pilferage.

Furniture assembly

"The system is old technology, but it's never been put together for a furniture application," Longridge said. He said the scanner idea was borrowed from manufacturing applications and that the high-bay approach is used in Europe.

Although Longridge is on Breuners' management team, he said it took him years to get funding for the automated warehouse.

Since being acquired by Batus, the company is also planning to install personal computer-based cashiering. Longridge said using PCs will eliminate dual processing. The company's current IBM 3683 point-of-sale system cannot interface with information in the CICS. Information must be entered twice. "We need the ability to get into CICS. With a PC, we can have one single entry point for information," he said.

Other MIS projects include an as-yet unspecified relational data base system at to be acquired the beginning of next year with a fourth-generation language. Longridge estimated that the centralization project will eliminate the need not only for warehouse workers but also for some clerical workers. He said it will also contribute to substantially less damage and pilferage.

Unisys banks on passbook printer

BLUE BELL, Pa. — A printer designed to sit at bank teller windows is now available from Unisys Corp, for $2,300.

The EF 4565 Passbook and Document Printer is a low-end extension of Unisys's EF 4560 line of printers. Other printers in the series contain daily journals and ticket dispensing devices.

The top of the four-printer line has a character recognition device that can read the last line of a passbook and provide information on the account. In this new version, a user must key in that information. The EF 4565 is priced $3,600 less than the top-of-the-line model.

The printer is a nine-wire dot matrix printer that prints 10 to 16 char./in. at 100 to 160 char./sec. in either draft or high quality. The printer is available from Unisys for $2,300.

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Processes

A 16- or 32-bit single-board microprocessor that employs Motorola, Inc.'s MC68000 running at 8, 10 or 12 MHz has been announced by Swisscomp, Inc. The M68K512MB costs $999. Swisscomp, 5312 56th St., Tampa, Fla. 33610. 813-628-0906.

Graphics systems

A video frame-grabber option has been announced by Chromatics, Inc. for use with its Le Mans and Baja Colorgraphic display systems.

Features of the CX Frame Grabber include real-time video frame grabbing at 30 frame/sec. and software-selectable mapping configuration and resolution.

Data storage

An external optical drive subsystem said to add 2.4G bytes of storage to micro and minicomputers has been announced by Memorex Telex, a division of Memorex Corp. The Memorex Telex 0220 ANSI Display Station is a plug-compatible replacement for Digital Equipment Corp.'s VT220, VT100 and VT52 display terminals. According to the vendor, the product can be used in both DEC and IBM environments.

Features include a flat 14-in. nonlarity screen, an 80- or 132-char. by 25-line screen, a tilt-and-swivel base and a choice of green, amber or white phosphors. Along with the ASCII character set, the Telex 0220 displays the full DEC supplemental and special graphics character sets as well as any VT220-compatible down-line-loadable character sets.

The 0220 costs $545. Memorex Telex, 611 S. Milpitas Blvd., Milpitas, Calif. 95035. 408-957-1000.

Printers/Plotters

An internal interface card that enables Hewlett-Packard Co.'s Laserjet Series II printer to be used with IBM System/36 or 38 minicomputers has been announced by I-O Corp. The I-O 8200HP Lasercard connects through the Laserjet Series II's internal I/O port. It features Auto DP Mode, which the vendor said allows automatic selection of the appropriate font and page orientation to allow printing of 80, 132- or 198-col. data-processing output.

According to the vendor, a Laserjet with a Lasercard appears to the IBM host as plug-compatible with an IBM 5219 printer.

The I-O 8200HP Lasercard costs $995. I-O, 2256 S. 3600 West, Salt Lake City, Utah 84119. 801-973-6767.

Decision Data Computer Corp. has announced the letter-quality 6815 Band Printer, designed for use with IBM System/36 and 38 minicomputers. According to Decision Data, the 132-col. printer offers full IBM 4245 emulation. It is said to print 1,500 line/min at 48 char./sec.

Other features include a straight paper path, flat tractor feeds and powered paper pullers, a wide carriage throat, a five-position adjustable output tray, a digital display, self-diagnostic capabilities with error conditions shown on a 32-char. display and five LED indicators.

The 6815 accepts continuous feed, multipart and oversized forms up to 17¾ in. wide. Fully formed character sets for multipart and oversized forms up to 17¾ in. wide. Fully formed character sets for up to 30 fonts, including foreign languages, are available.

The 6815 Band Printer is priced at $24,500. Decision Data, 400 Horsham Road, Horsham, Pa. 19044. 215-674-3300.
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EDGING TOWARD POWER MACHINES

BY ALAN RADDING

Small skirmishes are taking place in organizations throughout the country over which chip technology to choose for IBM and compatible computers. Microcomputer managers are staving off anxious users — who want a machine built around the Intel Corp. 80386 chip simply because it is the latest advance in microcomputer technology — while wrestling with the classic quandary of performance vs. cost.

“I’ve had two or three user requests for 386 machines, which we’ve beaten back,” says Chuck Davis, who oversees 300 microcomputers as vice-president of strategic technology for Chicago-based Computech Systems, Inc. Davis says he discouraged these requests because they were prompted not by need but by the lure of owning the newest and the best.

Jim Wilt, office systems analyst at Sundstrand Corp., an aviation components manufacturer based in Rockford, Ill., says he is also standing fast and refusing to jump into 80386 commitments. “For us, the issue is a simple one: cost vs. speed,” says Wilt, who manages roughly 350 personal computers. Cost, he adds, is winning out.

“We’re buying only 80286 machines for the average desk.”

Not all the decisions being made favor the status quo, however. Addison-Wesley Publishing Co. in Reading, Mass., recently implemented a new computer purchasing strategy that puts the organization squarely in the 80386 world. “We are recommending [to user departments] that the IBM Personal System/2 be the new standard,” says Robert Petersen, manager of user services. A dedicated IBM shop, Addison-Wesley has approximately 500 Personal Computer XT and ATs and is warning user departments that, following IBM’s lead, it will eventually phase out support for the PC. Departments can buy PS/2s based on older chip technology, but Petersen advises against it. “I’m telling them that if they are going to want high-powered tools, they are going to have to go beyond the PS/2 Model 30 or face having to upgrade within two years,” he says.

Two sides to every issue
Just as people can cite the Bible to support opposing sides of the same issue, computer professionals can find evidence in computer history that will justify either staying with current technology or buying the latest improvement.

Since computing needs always catch up to, and eventually surpass, the performance of existing equipment, a company can justify buying the most computing power it can afford; sooner or later, it will need it. It is also true, however, that prices always come down, and as long as a company’s productivity isn’t suffering, waiting until the last possible moment can also make sense. When a company finally needs 386 power, it will likely be able to buy it at a lower cost.

The issue governing most organizations is whether the need for 386 performance is pressing enough to justify paying the premium this equipment commands.

Right now, the retail price of an 80386 16-MHz machine from a major manufacturer with 2M bytes of random-access memory and a...
Edging
FROM PRECEDING PAGE

"As a long-term investment, the 386 chip is a better buy ... [but] it depends on your threshold of pain," he says. If an organization is willing to spend $5,000 anyway, it might as well make the extra investment for the 386 microcomputer.

"You could argue that the 8088 [at less than $1,000] is a great buy, but if you have to replace the machine in two or three years instead of six, you eliminate any savings," the analyst adds, to have at least the full cost of the machine throughout its entire life cycle.

Still, the question remains whether there is a pressing need for companies to buy into the 386 chip now. To begin answering that question, you have to understand the basic differences between the two chip types.

The chip difference
To most users, computer power means either processing speed or the ability to address more memory at the hardware level. A chip like the 386, which handles a 32-bit data word, is faster than the 286, which handles a 16-bit data word, because each cycle of the 386 can process more information and address more memory on the hardware level. The fastest commercial 386 chips currently operate at 20 MHz, while 286 chips offer a top-end speed of 12 MHz.

The speed difference between the two chips can be best seen in how each handles mathematical processing. To multiply two numbers, the equation...
executive director of the Chicago Association of Microcomputer Professionals and manager of office technology at a large Midwest company with several thousand micros, says that in addition to graphics, there is a need for 386 software in the desktop publishing area. "Desktop publishing is a pain at 10 MHz," he says.

**Change on demand**

Virginia Talamo, microcomputer technology manager at Coopers & Lybrand in New York, says she expects her organization to eventually switch to 386-based machines but that it will not be in 1988. Coopers & Lybrand currently has 700 PCs and expects to have 1,000 by the end of the year. Talamo says she will recommend the changeover to the new chip when users demand software applications that require 386 technology.

Exactly what software applications those might be is not clear yet. If new word processing software for the 386 were to evolve into full-featured text processing, "that would put a glint in my eye," Talamo says. But, she adds, she wouldn't leap at it because her users currently have a mainframe-based central word processing and document control data base, and she could risk losing compatibility and connectivity if she switches.

Because Talamo has not seen much software yet, she says she has opted to wait. "I'm waiting to see how soon the actual software arrives and how necessary it is for my users," she says.

At this point, most microcomputer managers are approaching the question on an individual basis, Horwich says. "You have to look at the individuals' needs. If they need power and have the cash, then go with the 386. If they don't need the power or the budget is an issue, don't go with the 386," he says.

A prime example of special-case purchasing is Boston's Spaulding Rehabilitation Hospital. The hospital just bought its first 386-based computer, according to Davis Sweet, manager of information services at Spaulding.

Sweet says the 386 to address a particular problem, a very large data base. In that case, he says, speed issues overrode cost. "We had been doing this particular application on a 286 machine, but the difference in speed is incredible. With some operations, it is over three times faster," he says.

Still, the hospital primarily runs 8086 and 286 machines. Sweet says the 386 machine's cost would have dissuaded him from purchasing it if it hadn't been that top executives favored — and actually originated — the idea. "We would have saved about $1,000, all told, if we bought a 286," he notes.

**Incremental strategies**

Many companies are approaching the chip migration issue incrementally, either choosing key applications and key users for early purchases of 386 PCs or upgrading through board-level additions. Seybold says some of the first logical fits for 386 technology are in graphics applications, for IBM's Micro Channel architecture or an alternative bus or when a

OU HAVE to look at the individuals' needs. If they need power and have the cash, then go with the 386. If they don't need the power or the budget is an issue, go with the 286 machine.

**JULIAN HORWICH**

CHICAGO ASSOCIATION OF MICROCOMPUTER PROFESSIONALS

The add-on board strategy "is like


What gives the AST Premium/286 personal computer its name? For starters, it operates 50 percent faster than an 8 MHz PC AT and maintains full compatibility with standard PC and AT-based enhancement cards. Which means that when you buy the fastest personal computer on the market, you also provide for an expandable and upgradeable future, easily accommodating the next generation of IBM enhancements.

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COMPUTERWORLD

8088-based machine "if their needs are modest and they will be comfortable with the machine for a few years."

Although Computech's Davis discourages most users from buying 386 machines, he purchased several of them himself to use as high-speed servers. This, he says, is an application for which the machine's advanced speed provides an immediate advantage.

Not cheap, but cheaper

The add-on board strategy is not necessarily a cheap solution, but it is certainly less expensive than buying a whole new machine; it constitutes a $2,000 vs. a $5,000 investment. Still, many people shy away from the board solution.

The add-on board strategy "is like
stuffing a hot automotive engine into a cheap compact car," the Gartner Group's Kirwin says. "You go fast off the line, but you will still be stuck with old problems." You will still be stuck with old disk drives and an old bus, he says. "And with right architecture, you'll limit your new CPU's capabilities."

Spaulding's Sweet agrees. "I've seen a lot of upgrade boards. It's a lot like hot-rodding. I believe you should buy some new stuff. And I don't believe in supercharged old accelerators," he says. "If you use the Deskpro 386/20 and IBM's Personal System/2 Model 80 heading the list. Even when choosing between these two computers, however, there are numerous levels and options that can become confusing. For example, the '20' in the Deskpro 386/20 means it runs on Intel Corp.'s 20-MHz microprocessor, making it the fastest machine in Compaq's line. Other Deskpro 386 machines ran at 16 MHz. For its part, the PS/2 Model 80 has submodels, two that run at 16 MHz (Models 80-041 and 80-071) and two that run at 20 MHz (Models 80-111 and 80-311). This discussion will be confined to the PS/2 Model 80-111, which will be referred to generically as the PS/2 Model 80 throughout.

Both machines are extremely fast, and to the naked eye, about equal in speed. When a user loads a program, it is on the screen in a blink. Running a Lotus Development Corp. 1-2-3 spreadsheet application and hitting the CALC key (my own benchmark) caused the red "wait" mode indicator to flash on for about a second on both machines. Huge data bases are sorted in half the time it takes on other computers.

Are they for everyone? "So what?" a user may ask. "Does everyone really need that speed and power? And what are the differences between the machines?"

It's true that no one needs that power. Just as you don't need a race car and hitting the super market, top-of-the-line PCs are not appropriate for every use. The PS/2 Model 80 and Deskpro 386/20 are designed for power users — people who run departmental applications or even some mainframe, corporate-wide applications. The machines are also excellent dedicated file servers on local-area networks.

One business line manager at Phillips is president of David Phillips Associates, Inc., in West Hempstead, N.Y., a consulting firm specializing in programming efficiency and end-user computing strategies.

While there are hundreds of personal computing devices in the marketplace, too many come to pitting the top-of-the-line for power, the field narrows down to a very few. With Compaq Corp.'s Deskpro 386/20 and IBM's Personal System/2 Model 80 heading the list.

Even when choosing between these two computers, however, there are numerous levels and options that can become confusing. For example, the "20" in the Deskpro 386/20 means it runs on Intel Corp.'s 20-MHz microprocessor, making it the fastest machine in Compaq's line. Other Deskpro 386 machines ran at 16 MHz. For its part, the PS/2 Model 80 has submodels, two that run at 16 MHz (Models 80-041 and 80-071) and two that run at 20 MHz (Models 80-111 and 80-311). This discussion will be confined to the PS/2 Model 80-111, which will be referred to generically as the PS/2 Model 80 throughout.

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When I first heard the Deskpro 386/20 was in the works, I was constantly fine-tuning an important departmental application that was executed in 1-2-3 with a lengthy macro.

He says he used to go out to lunch and come back, and the macro would still be running on his IBM Personal Computer XT. Migrating to a 386 machine at 16 MHz helped substantially, but the extra jump up to the Deskpro 386/20 gave him an additional 25% savings in time.

Compatibility One area in which the Deskpro 386/20 holds an edge over the PS/2 Model 80 is in its compatibility with the older equipment. The Model 80 comes with one 3½-inch disk drive. Since an internal 5⅛-inch disk drive will not fit into the system unit, if a user wants to run the machine in a networked work group environment alongside older machines, he has to buy an external 5⅛-inch disk drive. Even that format of drive is not a normal-density drive. Remarkably, the Model 80 cannot run high-density diskettes, even on an external drive.

This is a serious drawback because it severely hampers compatibility in an IBM Personal Computer AT environment. You would have to go through some sort of file transfer from one machine to the other, which can be tedious and is certainly more difficult than physically passing the diskette around.

The Deskpro 386/20, on the other hand, comes with a high-density disk drive and allows users the option of both a 5⅛-inch normal-density drive and a 3½-inch disk drive built into the system unit. In fact, with 60MB-byte half-height hard disk drive, users could actually have all three diskettes inserted in their system unit.

Both machines will run MicroCalc and a spread of CP/M and OS/2. The Deskpro 386/20 will even run IBM OS/2, although it has its own proprietary version of the operating system that is optimized to run on its hardware.
Can Japan annex the desktop PC?

BY GLENN RIFKIN

Dan Bartoli likes Epson personal computers, but when he put out a request for proposals in 1987 on an acquisition of up to 400 PCs, he felt compelled to go with an American vendor.

Bartoli, a financial analyst in charge of PCs at Dallas-based Southmark Management Corp., was not swayed by nationalistic feelings or anti-Japanese sentiment. His decision was a pragmatic one based on the fact that Epson Corp. submitted a proposal designating Sears Roebuck & Co. as its front-end reseller.

Since Southmark is a realty company with 400 apartment complexes in 36 states, Bartoli felt that Sears simply did not offer the field support to adequately cover the network he wanted to establish. He eventually purchased NCR Corp. PCs. "I didn't go with Epson because I wanted to deal directly with the vendor," Bartoli says.

Not much luck yet

Bartoli's reasoning is illustrative of corporate America's tenuous relationship with Japanese PCs much as it is a reason why Japanese vendors have had so much difficulty gaining a foothold in the lucrative U.S. personal computer market.

According to market research firm International Data Corp., Inc. (IDC), six Japanese firms are currently selling PCs under their own names accounted for less than 8% of the laptop market in 1987. NEC alone has managed to make it into the Top 10 IBM compatible market in 1987.

And though IDC analyst Aaron Goldberg predicts that figures will be much higher in 1988, it remains clear that the Japanese are not, as was once anticipated, taking over the market by storm. Epson America, Inc., says Japanese vendors are uncomfortable competing with IBM's and other American products. "I don't think they would like to own a piece of the U.S. portable market," says Charles Lapinski, vice-president of marketing for Epson's portable products division.

"We're assuming a greater responsibility for the market's evolution to make it worthwhile," Lapinski says he believes IBM's and Micro-soft Corp.'s OS/2 could be a problem for Japanese vendors. "OS/2 makes people even more nervous about standards," Cayne says. "It's a lot easier for the Japanese vendors to sell printers."

A bigger concern is gaining credibility with MIS shops in big corporate accounts. The issue of buying clones remains a major one in corporate environments. In the long run, the issue will not likely be decided by the machine's origin. As consultant Dick Stuek puts it, "Does anyone care if a Canon copier comes from Japan? No. All the customer wants is a product that meets his needs."*

Can Japan annex the desktop PC?

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**Footnotes:**

*The laptop PC market, which is slowly but surely gaining momentum, is the only PC category in 1987, NEC is focusing its attention on its U.S.-based production facilities in Boxboro, Mass., and now ranks second among Japanese desktop vendors in the U.S.*

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Portables: A technology whose time has come
BY G. BERTON LATAMORE

Mobility is becoming a sought-after characteristic in corporate personal computers. Sales departments and traveling executives were the first to latch onto portable and laptop computers and are still among the heaviest users, but organizations are also finding many other applications for totable computers.

Salespeople are the primary beneficiaries of portable computers at the Aid Association for Lutherans (AAL), a national fraternal benefit society based in Appleton, Wis. Insurance sales representatives at the society are seldom seen without Data General Corp. Data General One portable computers, even though they must shoulder the cost of the equipment.

Despite the fact that purchase of the computers is entirely voluntary, Jim Bork, director of new ventures at the organization, estimates that 1,800 sales representatives out of a total force of 2,000 have opted to invest in them as well as companion Hewlett-Packard Co. 2225P ink-jet printers.

"Of course, we get a large discount for volume purchases from Data General, which we pass along. And we offer very favorable financing arrangements," Bork says. Just the same, he adds, the fact that so many salespeople decide to take the step strikes him as a testimony to the machines' effectiveness.

Not only do laptops and portables simplify routine tasks by giving sales representatives the means to use tools such as a custom-written prospect file system, Bork says, but they also help in the sales process itself. "We do financial-need analyses and illustrations of our products that we print out and leave with the prospective member as part of our sales process," he says. "When the computer comes back with a recommendation, the prospective member tends to believe it more than if the recommendation comes from the salesperson."

The AAL is also testing the use of an electronic insurance application form. "Conceptually, you could expect this to be the first application for portables," Bork says. "But as a practical matter, it is a little hard to pull off. To get the real benefit, you need to get into direct transmission of applications to the mainframe. We don't have the electronic link set up yet, but we do have the logic captured."

The program of making portables available to salespeople started in 1986, but the organization had actually been considering such a move since 1983. Until the DG model came along, however, none seemed to meet all of the AAL's criteria, which included IBM compatibility, an 80- by 25-pixel screen that could be read easily from a variety of angles, 512K bytes of random-access memory, two disk drives and an internal modem with a speed of at least 1,200 bit/sec.

Of these, the display was the most critical factor, according to Bork. The salesforce needed a screen that at least three people — the salesperson, the client and the client's spouse — could read simultaneously in normal indoor light.

Driven to portables
Screen legibility is also a critical issue at Atlantic Richfield Co. (Arco) in Los Angeles, where most users are managers trying to keep up with office responsibilities while traveling. "Mainly, it was first- and second-level managers who drove the company into portables," says Chris Broome, senior technical consultant at the company. "They wanted something they could use to get their electronic mail when they were on the road. We were using dumb terminals, but when the portables came out, they were smaller, and they had computing power."

Broome estimates that Arco has several hundred portables, although, he says, it is difficult to get an exact figure because the machines are treated as commodities and bought by individual departments rather than through central purchasing.

"In differing numbers, we have IBM PC Convertibles, Toshiba 1100 Pluses, Toshiba 3100s," he says, and "we're just starting to get into Toshiba 1200s and Grid 1520s."

The high-end Toshiba America, Inc. T3100s are for people who need hard disks. Right now, that means mainly engineers who use the portables to run test calculations in the field. But, as Broome observes, hard-disk support is becoming a requirement in many areas.

"We're starting to find that as we put

A single graphics package can make everybody in your company look good.
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"We're starting to find that as we put
real business applications on these machines, we really need the hard disks," he says. "The programs take up a considerable amount of room, let alone the data."

Arco has started giving portables to its field representatives to use while visiting individual service stations. "They need battery power and hard disks, and that's why we bought the Toshiba 1200s and Grids. They are two approaches to the same technology," he says. "We hope to focus on one or the other soon."

Ironically, sharp screen display may be a drawback for this application. "We're concerned that we might have a problem with station managers or owners looking over the field rep's shoulder and reading sales data from other Arco stations off the screen," Broome says. "The reps will have to be careful about positioning their computers before turning them on."

"We're starting to think we should automatically put in a laptop the way we used to automatically put in a printer as part of every desktop configuration we install in the office," Broome continues. "The Toshiba 1000's street price is only about $600 — the same cost as the small dot matrix printers we often use at individual desks. So why not just automatically include one?"

Price, as well as durability, is what drew Standard Oil Co. in Cleveland to portables. In May 1987, the firm installed Tandy Corp. TRS-80 Model 100s and 102s in its more than 1,000 service stations.

Although the Model 100s and 102s ranked among the lightest portables on the market, Standard Oil was interested in transportability. The attraction was price — the machines cost little more than $200 each and durability.

"We're talking about a service station environment that is definitely hostile," says Deloitte Haskins' Matsuo. Ralph Rocco, manager of retail automation, says, "The computers can get dropped, attendants spill Coke and coffee on them, there may be problems with power supplies. We have more than 1,000 units out there, so we need something durable and backed by a good national service organization." From Standard Oil's view, PC compatibility and a fancy screen would be distracting. The company took out the models' read-only memory-based generic programs and replaced them with software created by an employee.

While the number of computers in the program is stable, the scope of their use is expanding rapidly. "We started with one application, and now that it works so well, management is constantly asking us to do more," Rocco says. "We've downloaded more than 50 program enhancements to the stations."

Even high-end laptops are not enough for some people, however. The Big Eight accounting firms, for example, need both portability and real computing power. Portability is important because these companies' accountants often work in clients' offices rather than their own, and they now take computers with them.

"We have Compaq Portable 386s, Portable 3s and Portable 286s," says Jon Matsuo, systems consulting manager at Deloitte Haskins.

The worldwide accounting firm has two sides to its business: systems development, which Matsuo heads up, and traditional accounting and auditing for major corporations. Both sides equip consultants and accountants with Compaqs.

"We build systems for clients and conduct audits of our clients," he says. "Just about everything we do is of a very high level and very sophisticated. Otherwise, the clients can do it themselves. We develop accounting systems, financial models and sophisticated financial modeling packages and data base information systems, so we need portables with the power to do all these things."

The Deloitte Haskins accountants' mainframe computers are Compaq Portable 386s,Portable 3s and Portable 286s. Matsuo says. "We're starting to think we should number the power to do all these things."

What these applications demand, Matsuo says, is a full PC that employees can carry with them. Laptops just do not deliver enough speed and storage capacity, mainly because their design philosophy is to pack as much as possible into a small package of predetermined size and weight. Compaq, on the other hand, starts with a full IBM-compatible PC, then shrinks it as much as possible without losing any capabilities. In fact, Matsuo says, even executives who do not travel have switched from PCs to Compaq laptops. "Almost all our new computer purchases are Compaq portables," Matsuo says. "I don't think we buy any desktop machines anymore."

---

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APRIL 11, 1988
PCs gain maturity

BY SALLY CUSACK

Personal computer users are now a force to be reckoned with in many organizations as they push for dispersal of information, create new applications and shove their desktop machines onto center stage.

In the retailing field, one generally recognized as lagging in technological implementation, there are clear signs that PCs are beginning to play a more pivotal role. Vahe Katros, MIS PC coordinator at Wm. Filene's Sons Co., a Boston-based retail chain, attributes that change to the creative energy of PC users.

Until recently, Katros says, PCs were not a driving element in corporate decision making. "In our industry," he says, "senior management is just becoming aware of the value of the end user being in control of data."

Hitting the stores

Filene's, which operates 31 stores, is moving gradually from centralized to decentralized computing as more funds are made available for end-user support. Originally, PCs were brought into the company by finance department employees interested in running Lotus Development Corp. spreadsheets. Now, 100 to 150 PCs — IBM Personal Computer ATs, Personal System/2 Models 30, 50 and 80, Compaq Computer Corp. portables and IBM 4680 AT controllers — are installed throughout all Filene's locations, and more purchases are planned.

The store is currently installing an executive information system — a front-end system capable of turning mainframe information into graphics and exception reports for chief executive officers and analysts.

Filene's is also using PC technology to revive the old-fashioned concept of service. It is developing local-area network-based systems for customer service and personalized shopping assistance. The increased level of PC acquisitions at Filene's, Katros says, largely attributable to the success of user-developed applications.

User sophistication is also changing the way things are done at Hartford Insurance Group in Hartford, Conn. According to Michael Fontana, product evaluation group leader, today's user is "sophisticated not only the application but the hardware that powers it."

Many of these users, Fontana says, perform much of their own maintenance. Respecting that know-how, Fontana regularly includes them in product evaluations.

Jeff Lee, senior marketing manager at Focus Research Systems in West Hartford, Conn., agrees that user sophistication is on the rise and says that as it continues to grow, users will demand more direct data access from MIS.

Price to pay

With power and visibility, however, come regulations and controls. Now that organizations have begun to realize the scope of the PC phenomenon, they are also thinking about standards and cost containment.

Organizations are pursuing better control through a number of measures, Lee says, including appointing microcomputer managers and maintaining strict inventory counts.

"Purchasing departments are now looking at cost. A more 'less' philosophy is emerging," Lee says. "This also results in more individualized cost accounting and workstation configuration, which means we will see more clones, more compatibles and more mixtures such as Korean keyboards with the IBM machines."

At Dravo Engineers, a division of Dravo Corp. in Pittsburgh, efficiency has meant mixing Apple Computer, Inc. with IBM machines. In the near future, the company plans to further drift away from a pure Blue shop toward IBM compatibles, according to Sandra LaPietra, manager of computer services.

In its 400-employee engineering division in the Pittsburgh area, Dravo currently mixes IBM PC XT's, Compaq 386's and Apple Macintoshes. Sixty-five XT's and Compas equipped with Intel Corp. 80387 math co-processor chips are used for engineering applications, and 85 Macintoshes are used for electronic mail, document creation, spreadsheet analysis and data base functions. According to LaPietra, Compaq 386 Model 20s are taking the places that might have gone to PS/2s.

"The Compaq 386 Model 20 is more powerful at a lower cost. We can't afford to wait for IBM and OS/2," she says.

Combining resources

At Hartford Insurance, where there are currently about 2,000 PC users working on a mixture of IBM, Wang Laboratories, Inc. and ITT Corp. machines, allocation is decided on the basis of business need.

For employees whose normal work loads do not cost-justify a PC installation, Hartford has created Shared Centers — walk-in facilities housing PCs, plotters and laser printers.

At Filene's, control is maintained by a requirement that all departmental requests for PCs must be approved by Katros' division. The purpose, Katros explains, is not only cost containment but standardization.

Filene's is trying to keep the variety of hardware it purchases to a minimum, with the eventual goal being a standardized move to the PS/2.
ASK THE VENDOR
The following questions were solicited from users and conveyed to the vendors for responses.

I recently purchased a Tandy 4000/386. When I used my high-resolution graphics display board, I found an address conflict at memory location C6000:000. When and how does Tandy plan to resolve this issue?

Gary Oberg
Manager of Office Systems
Texas Instruments, Inc.
Greenville, S.C.

The Toshiba T1000 laptop has Microsoft Corp. MS-DOS 2.1 built-in read-only memory. Why didn't Toshiba install MS-DOS 3.2? Any plans to upgrade?

Jeff Tanner
Director of Advanced Information Technologies
Whirlpool Corp.
Benton Harbor, Mich.

The NECIS personal computer hardware platforms support all networking products that would run on an IBM Personal Computer XT and AT add-on cards. Also, despite advertised claims, the bus can slow the PC in key applications. PCs are purchased to solve a problem, so performance and features are key. PS/2s from IBM or other companies will need to solve the performance deficiencies of the PS/2 products to compete with faster, less expensive AT compatibles.

We have one NEC Powermate 286, one NEC Powermate 386 and two other 80286 machines from Wyse Technology operating as stand-alone computer-aided design stations. Is it possible to network these machines together?

Ron Reed
Lead Design Draftsman
Telesis, Inc.
Spokane, Wash.

The NEC IS personal computer systems will not diminish the importance of AT machines. Networking the PS/2s from IBM or other companies does 32-bit expansion slot and two open half-height front drives. Optional 20M- and 40M-byte hard drives.

Continued on page S12
## Portables and Laptops

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>MICROPROCESSOR</th>
<th>CLOCK SPEED (MHZ)</th>
<th>WEIGHT</th>
<th>FOOTPRINT (IN INCHES)</th>
<th>SCREEN DIMENSIONS</th>
<th>SCREEN RESOLUTION</th>
<th>BATTERY POWER</th>
<th>NUMBER OF KEYS</th>
<th>MEMORY: RAM STANDARD/ MAXIMUM (IN BYTES)</th>
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<th>NUMBER OF EXPANSION SLOTS</th>
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<td>86</td>
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<td>Two 30-A, floppy</td>
<td>RGB, VGA</td>
<td>Optional</td>
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<td>PPC/60</td>
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<td>86C30</td>
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<td>30 x 35</td>
<td>Supervide LCD</td>
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<td>60</td>
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<td>800x600</td>
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<td>Cenox, Inc.</td>
<td>(212) 961-4400</td>
<td>86116</td>
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<td>1 x 7.6</td>
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<td>15A00-0</td>
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<td>16 x 13 x 3</td>
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<td>Single</td>
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</table>

Enhanced Graphics Adapter  *Transistor-Transistor Logic  *Random-access memory

The companies included in this chart responded to a recent telephone survey conducted by Computerworld. When a vendor is unable to provide specific information about its product, this is designated NP (not provided). When a question does not apply to a vendor’s product, this is designated NA (not applicable). Further product information is available from the vendors.

*S10 COMPUTERWORLD APRIL 11, 1988*
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>MICROPROCESSOR</th>
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<th>WEIGHT (lbs)</th>
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<th>SCREEN RESOLUTION (IN PIXELS)</th>
<th>SCREEN TYPE</th>
<th>BATTERY POWER</th>
<th>NUMBER OF KEYS</th>
<th>INCLUDES SERIAL/ PARALLEL PORTS</th>
<th>MEMORY, RAM, STANDARD, EXPANSION</th>
<th>NUMBERS OF EXPANSION</th>
<th>PRICE</th>
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<tr>
<td>International Systems Marketing, Inc.</td>
<td>Express 386VGA</td>
<td>80386</td>
<td>16 or 20</td>
<td>35 lbs</td>
<td>8.5 x 17.5 x 18</td>
<td>18 in. diagonal</td>
<td>640 x 488</td>
<td>2MB/16MB</td>
<td>None</td>
<td>84</td>
<td>1MB/2MB</td>
<td>1.394-byte floppy disk</td>
<td>Both Eight</td>
<td>$8,995</td>
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<tr>
<td>Try Microcomputer Corp.</td>
<td>Try 87 AHEC</td>
<td>80386</td>
<td>10</td>
<td>30 lbs</td>
<td>8.4 x 17.5 x 17</td>
<td>9 in.</td>
<td>640 x 200</td>
<td>CRT</td>
<td>No</td>
<td>64</td>
<td>64/66/1M</td>
<td>None</td>
<td>Both Eight</td>
<td>$2,595</td>
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<tr>
<td>Try 88 AHEC</td>
<td>80386</td>
<td>20</td>
<td>31 lbs</td>
<td>8.4 x 17.5 x 17</td>
<td>9 in.</td>
<td>640 x 200</td>
<td>CRT</td>
<td>No</td>
<td>64</td>
<td>128/64M</td>
<td>One 3.5-in. floppy disk</td>
<td>Both Eight</td>
<td>$2,595</td>
<td></td>
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<tr>
<td>Try XT</td>
<td>80386</td>
<td>10</td>
<td>30 lbs</td>
<td>8.4 x 17.5 x 17</td>
<td>9 in.</td>
<td>640 x 200</td>
<td>CRT</td>
<td>No</td>
<td>64</td>
<td>256/640K</td>
<td>None</td>
<td>Both Eight</td>
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<td>Epexx Corp.</td>
<td>Express 5000</td>
<td>8088/8086</td>
<td>15 lbs</td>
<td>11.9 x 16.6 x 2.2</td>
<td>5.8 x 9</td>
<td>640 x 200</td>
<td>SuperVGA LCD</td>
<td>Dual hard drive</td>
<td>Two 3.5-in. floppy disk</td>
<td>1.44M-byte floppy disk</td>
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<td>Micro-Micro Business Systems Corp.</td>
<td>exec 5000, exec 6000</td>
<td>52000, 62000</td>
<td>12 or 20</td>
<td>14.9 lbs</td>
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<td>7.5 x 5.5</td>
<td>640 x 400</td>
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<td>Nordic</td>
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<td>Uncovered</td>
<td>8048A, 8048D, 8048E</td>
<td>16.12.30</td>
<td>17 lbs</td>
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<td>8 x 6</td>
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<td>8048/8050</td>
<td>EGA</td>
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<td>National Datacomputer, Inc.</td>
<td>Data computer 3.6</td>
<td>8086</td>
<td>4</td>
<td>26 lbs</td>
<td>5.5 x 6.0 x 1.3</td>
<td>5.5 x 3.0</td>
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<td>SuperVGA LCD</td>
<td>Three AA cells</td>
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<td>1022/2044</td>
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<tr>
<td>NEC Home Electronics (USA), (312) 860-9500</td>
<td>Multilap SD</td>
<td>80286</td>
<td>9.25/4.77</td>
<td>14.3 lbs</td>
<td>5.2 x 13.0 x 12.6</td>
<td>4.7 x 9.1</td>
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<td>Nordic</td>
<td>85</td>
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<td>RGB</td>
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<td>Multilap Ill Model 2</td>
<td>80386</td>
<td>9.25/4.77</td>
<td>11.5 lbs</td>
<td>5.1 x 13.0 x 12.4</td>
<td>4.7 x 9.1</td>
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<td>80386</td>
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<td>11.5 lbs</td>
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<td>85</td>
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<td>NEC Information Systems, Inc.</td>
<td>Series Micro Peripherals</td>
<td>80286</td>
<td>8 or 10</td>
<td>12 lbs</td>
<td>11.5 x 15.5 x 4.9</td>
<td>8.5 x 7.5</td>
<td>640 x 350</td>
<td>SuperVGA LCD</td>
<td>No</td>
<td>90</td>
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<td>RGB Both Three</td>
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<td>Polytronics Computer Corp.</td>
<td>PCC Portable XT</td>
<td>8086A</td>
<td>4.7 and 10</td>
<td>10 lbs</td>
<td>7.5 x 15 x 1.6</td>
<td>4.7 x 7</td>
<td>SP 4828</td>
<td>TTL monochrome</td>
<td>None</td>
<td>640/424/4096</td>
<td>One 3.5-in. floppy disk</td>
<td>TTL Both Serial</td>
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<td>Remote Equipment Corp.</td>
<td>5151736-4666</td>
<td>80256</td>
<td>12</td>
<td>6.2 x 12.8 x 1.9</td>
<td>7 x 5.7</td>
<td>4828/2088</td>
<td>Electromechanical</td>
<td>Head</td>
<td>180</td>
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<tr>
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<td>Troy 1400</td>
<td>80186/286</td>
<td>10 lbs</td>
<td>5.1 x 12.9 x 1.7</td>
<td>5.75 x 4.75</td>
<td>640 x 200</td>
<td>SuperVGA LCD</td>
<td>Lead</td>
<td>84</td>
<td>320K/160K</td>
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<td>80286/386</td>
<td>20 lbs</td>
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<td>5.75 x 4.75</td>
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<td>SuperVGA LCD</td>
<td>Lead</td>
<td>84</td>
<td>320K/160K</td>
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<td>NF Parallel Two</td>
<td>$1,995</td>
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<td>Telebit Corp.</td>
<td>Telbit 5000</td>
<td>8086/8050</td>
<td>18 lbs</td>
<td>8.12 x 17.0 x 18</td>
<td>9 lbs</td>
<td>730 x 218</td>
<td>80186</td>
<td>CRT</td>
<td>No</td>
<td>84</td>
<td>640/44/1MB</td>
<td>1.394-byte floppy disk Two 3.5-in. floppy drive</td>
<td>Both Eight</td>
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<td>Telbit Corp.</td>
<td>Telbit 100</td>
<td>80286/286</td>
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<td>5.75 x 4.5</td>
<td>640 x 200</td>
<td>SuperVGA LCD</td>
<td>Lead</td>
<td>84</td>
<td>640/44/1MB</td>
<td>Two 3.5-in. floppy drive</td>
<td>RGB Both Five</td>
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<tr>
<td>Tandy Corp.</td>
<td>Tandy 1400</td>
<td>NEC V20</td>
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<td>6.5 x 4.5</td>
<td>640 x 290</td>
<td>SuperVGA LCD</td>
<td>Nordic</td>
<td>76</td>
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<td>84</td>
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<td>One 3.5-in. floppy disk</td>
<td>RGB Both One</td>
<td>$2,995</td>
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APRIL 11, 1988 COMPUTERWORLD S11
### Top 15

**COMPANY**

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>MICROPROCESSOR</th>
<th>SCREEN RESOLUTION (IN PPI)</th>
<th>SCREEN TYPE</th>
<th>BATTERY POWER</th>
<th>MEMORY: RAM STANDARD/ MAXIMUM (IN BYTES)</th>
<th>STORAGE: STANDARD/TYPES OF MONITOR PORTS</th>
<th>NUMBER OF KEYS</th>
<th>MAXIMUM NUMBER OF PORTS</th>
<th>NUMBER OF EXPANSION SLOTS</th>
<th>PRICE</th>
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<tr>
<td>Toshiba</td>
<td>80386 15B</td>
<td>80386</td>
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<td>24.2</td>
<td>640 x 400</td>
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<td>90</td>
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<td>640 x 400</td>
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<td>90</td>
<td>1</td>
<td>20</td>
<td>$7,499</td>
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<tr>
<td>Eazy PC Corp.</td>
<td>8088-compatible micro</td>
<td>IBM 7.16 MHz</td>
<td>720K-byte floppy drive</td>
<td>40MHz</td>
<td>4.77</td>
<td>4.77</td>
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<tr>
<td>IBM PC- or PC XT-compatible micro</td>
<td>IBM 7.16 MHz</td>
<td>720K-byte floppy drive</td>
<td>40MHz</td>
<td>4.77</td>
<td>4.77</td>
<td>$3,599</td>
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<tr>
<td>Compaq Computer Corp.</td>
<td>HP Vectra RS</td>
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<td>HP Vectra RS</td>
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<td>HP Vectra RS</td>
<td>HP Vectra RS</td>
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<td>HP Vectra RS</td>
<td>HP Vectra RS</td>
<td>HP Vectra RS</td>
<td>$3,599</td>
</tr>
</tbody>
</table>

### Z-86

- Uses the 80286 processor operating at 8 MHz, one-watt state. IBM PC AT compatible. Offers four open expansion slots, one serial and one parallel port and 512K-byte RAM.

### Z-886

- Uses 16-MHz Intel 80386 32-bit microprocessor, compatible with the IBM PC AT. Includes 2MB-byte RAM expandable to 16MB bytes, a Winchester/floppy controller, a Winchester disk drive, and one 5¼-in. 1.2MB-byte floppy drive.

### Z-886/20

- IBM 12 MHz, one-watt state. Includes 40MB-byte hard disk and one 1.2MB-byte diskette drive, sockets for Intel 80387 and 80287 coprocessor boards.

### Z-886/386

- IBM Personal Computer AT- compatible micro based on Intel Corp. 8086 compatible microprocessor running at 7.16 MHz. 512K-byte random-access memory expandable to 640K bytes, 3½-in., 720K-byte disk drive, parallel port, processor running at 7.16 MHz.

### IBM PC- or PC XT-compatible micro based on the 8088 microprocessor running at 4.77 or 8 MHz. Includes 760K-byte RAM expandable to 1.2MB bytes. Memory expandable to 5MB-byte RAM.

### IBM PC- or PC XT-compatible micro based on the 8088 microprocessor running at 4.77 MHz. Includes 512K-byte RAM expandable to 640K, dual 5¼-in., 360KB-byte floppy disk drive or 3½-in., 720K-byte floppy drives.

### Zenith Data Systems

- Uses Intel 80286 microprocessor operating at 8 MHz, zero-watt state. IBM PC AT compatible. Includes 512K-byte RAM expandable to 15MB bytes.

### Top 15

- Uses the 80286 processor operating at 8 MHz, one-watt state. IBM PC AT compatible. Offers four open expansion slots, one serial and one parallel port and 512K-byte RAM.

- Uses 16-MHz Intel 80386 32-bit microprocessor, compatible with the IBM PC AT. Includes 2MB-byte RAM expandable to 16MB bytes, a Winchester/floppy controller, a Winchester disk drive, and one 5¼-in. 1.2MB-byte floppy drive.

- IBM Personal Computer AT- compatible micro based on Intel Corp. 8086 compatible microprocessor running at 7.16 MHz. 512K-byte random-access memory expandable to 640K bytes, 3½-in., 720K-byte disk drive, parallel port.

- Uses Intel 80286 microprocessor operating at 8 MHz, zero-watt state. IBM PC AT compatible. Includes 512K-byte RAM expandable to 15MB bytes.
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A competitive strategy for the rest of us

Even the small or mid-size company has the wherewithal to gain an edge

BY MICHAEL PACKER
and JANICE BRODMAN

Top executives have heard that information systems should deliver a competitive edge — yet they remain skeptical. The legacy of poor relations between the systems function and top managers means that any investment has to be justified every step of the way. But as MIS managers know, an aggressive use of technology requires a major investment.

The problem rarely lies in a lack of opportunity for using information systems; the hang-up is in the execution. As one manager comments, "It's not that we can't get good ideas for using systems strategically. Where we hit a brick wall is in actually making it happen faster or better than our competition."

Four ways to go

The firm that wants to use information systems for competitive advantage can choose from among four strategies:

- Proprietary advantage.
- One step ahead.
- Discontinuity.
- Implementation.

The first three strategies are the ones we usually hear about. In a proprietary advantage strategy, the firm develops a distinctive technology, one that sets it apart from the rest of the industry. Then it protects that technology with barriers, such as patents, extraordinary investment, long lead time or a rare skill base.

This way, the company can keep the technology away from its competitors long enough to profit and gain market share. Lotus Development Corp.'s 1-2-3 spreadsheet is an example of proprietary advantage.

A one-step-ahead strategy demands that the firm continually release new and improved technology. This ongoing innovation keeps it just ahead of the competition, despite rivals' abilities to duplicate any particular feature of the technology.

Pittsburgh National Bank is a good example: This organization was the first in its market to approve automobile loans within 24 hours. Pittsburgh National then raised the stakes to a two-hour turnaround time, and now it is pushing for 10-minute approval. Ongoing innovations like these have brought Pittsburgh National market share and kept the bank ahead of its competition.

With a discontinuity strategy, a firm applies technology to produce a quick, decisive shift in the fundamental competitive structure of the market it serves.

One outstanding case is Citibank NA. The bank's...
How risky is your project?
For each step you take toward the strategic use of information systems, weigh the move's relative importance against the risk of violating your corporate culture.

These strategies may all make great stories, but how many companies can imitate that kind of success? The truth is, very few.

There is a fourth strategy, however, which, though rarely discussed, is potentially even more powerful than the other three. Many organizations that could pursue the implementation strategy successfully do not even recognize it as an option.

The overlooked strategy
The core of an implementation strategy is to apply commonly available technology uncommonly well.

The executive who complained that his information systems strategies hit a brick wall identified implementation as the culprit. His predicament shows why an implementation strategy can offer a double payoff: It can deliver a competitive advantage in itself, and it improves the performance of other information systems strategies.

The advantage comes neither from cutting-edge technology nor from being first to lock up customers. It comes from detailed management know-how that makes it possible to achieve optimal performance. Those superior implementation skills then add power to every other information systems strategy.

An MIS manager has the leverage at hand to improve systems implementation. There are six key steps to follow:

- Build knowledge.
- Develop a shared vision.
- Determine desired changes in values and beliefs.
- Translate new values into concrete behavior.
- Recruit power to support new values and behavior.
- Harness high-impact management techniques.

The goal of the first step, knowledge building, is to develop a clear understanding of what is at stake for the firm and how an information systems strategy can contribute. The manager must learn and be able to communicate to others the company's strengths and weaknesses. He must size up the corporate culture, including beliefs about the role of information systems, and zero in on the firm's customers and competition.

To start, draw a picture of the chain of business activities in the firm and the company's relationship to the outside world. For each activity, identify its cost, the support information systems provide it and the dynamics of support costs as demand changes. Also, consider how customers are affected if the activity is performed extremely well or very poorly.

Then, ask yourself these three questions:
- Can information technology improve the business process?
- Can you serve customers more quickly, improve the consistency of internal decisions or restructure the expense base of the firm?
- Are there penalties for inaction? If you don't begin today, will you fall behind rivals who did invest in system flexibility and can now develop new products faster than you can respond?

Are there ways to use information systems to add value via distribution channels? For example, can an interorganizational computer system linked to customers make it easier and more attractive for them to buy from your firm rather than from rivals?

It is also important to look at the ways the firm has used information technology successfully in the past and what people's expectations might be about how the systems organization can make the biggest contribution. In the small appliances division of a large consumer products

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March 22, 1988

EMC Corporation

EMC Corporation is pleased to announce the commencement of trading of its common shares of stock on the New York Stock Exchange, under the symbol EMC.

Salomon Brothers Inc. Merrill Lynch Capital Markets
firm, senior management wanted an information strategy that would deliver bottom-line results. The goal was to reduce the number of tasks required to serve customers, cut costs and shorten response times. Senior managers told the head of information systems that they would support his efforts to involve end users. But at the same time, they were wary of ambitious information systems efforts because of previous lackluster results.

The head of MIS pulled together an informal team of systems managers and some interested end users. He chose a respected business manager to lead the group, and together the team identified what changes would reap the highest payoff. It chose supporting retailers and streamlining links with suppliers.

Using information technology to restructure the business process could reduce the number of steps in processing a customer order from 19 to nine, cut costs by 23% and reduce turnaround time by 60%. Moreover, the team found that functional managers had sought these improvements in the past but did not understand the costs and capabilities of the technology deeply enough to construct a specific action plan.

The team’s report became the basis of an implementation strategy that contributed significantly to the division’s marketing and distribution capability. Other divisions eventually used the strategy as a model for building their own courses of action.

Clear the way
The success of an implementation strategy depends on a clear vision of how it will contribute to the firm. It is up to the head of MIS to take the lead in developing that vision.

To do so, the manager must address three questions:

- How will information systems contribute to the firm’s ability to compete?
- How will those systems contribute to the firm’s ability to manage itself?
- How will the firm manage the technology?

It is critical that the MIS leader’s words and actions consistently support the strategic vision. Discussions with systems staff and end users, the way the leader allocates time and even the information center’s newsletter should send the same message.

One way to determine the fit between your implementation strategy and the firm’s beliefs is through a cultural risk assessment. There are two major steps to the process:

- Define the beliefs about information technology by developing a list of simply stated “rules of the game.”
- Assess the fit between those beliefs and the implementation strategy. How compatible is each element with the corporate culture? How important is each element of the strategy to its overall success?

If an important element of the implementation strategy is incompatible with the organization’s beliefs about the technology, it represents an area of high cultural risk that must be resolved (see chart on page 70). One resolution is to change the strategy. Another is to try altering the current corporate beliefs. The latter solution is difficult, however, and you will need solid commitment from the top to succeed.

Consider the experience of one multinational insurance company. A team of information systems staff and end users conducted a cultural risk assessment of the firm’s new implementation strategy. First, the team listed the major elements of its strategy:

- Use teams of systems staff and full-time, dedicated business representatives to specify, build and implement systems.
- Have the teams report to senior business executives — not to MIS.
- Build a real-time customer service

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For more information about the Ethermodem III/12 and III/18 Series of products, call us today. Government buyers, please note that Chipcom is listed on the GSA Schedule, contract number GS00K87AG5888.

IN DEPTH: A COMPETITIVE STRATEGY

1. Develop a shared vision
   - Learn to show how information strategy will contribute to your firm's bottom line.
   - Demonstrate commitment to the vision.
   - Build a team to spread the word.

2. Pull strategy and organization together
   - Pinpoint when information strategy conflicts with values and beliefs.
   - Think about changing parts of the strategy that won't fly.
   - Think about changing beliefs that clash with the strategy.

3. Translate new values into concrete behavior
   - Help employees apply the strategy's values in their jobs.
   - Set up feedback mechanisms so MIS can test its decisions.
   - Recruit powerful allies, when necessary, to explain rewards.

4. Reorient power to support new values and behavior
   - Figure out who will resist and who will support your strategy and why.
   - Shift power toward employees whose skills, beliefs, or functions support it.
   - Link these power shifts, in the staff's eyes, to the strategy's values.

5. Harness high-impact management systems
   - Focus on the most influential management techniques.
   - After high-impact systems to support the strategy.
   - Make sure systems capture the information manager's need.

Six action items

Build knowledge
- Look at your company's competitive strengths and culture.
- Pin down the role and cost of systems in your business chain.
- Identify competitive opportunities and penalties for inaction.

1. Develop a shared vision

2. Pull strategy and organization together

3. Translate new values into concrete behavior

4. Reorient power to support new values and behavior

5. Harness high-impact management systems

MIS and the heads of the bank departments. Afterward, the MIS manager led a review within each system group, bringing together systems managers and key users.

When a manager wields only indirect influence, he will have to use more subtle tactics. A good approach is to pick a couple of key issues that have already captured general management's attention, then show how the strategy will help resolve those issues. A manager can, for example, build a model of how the MIS strategy will contribute to the cost structure of various businesses or functions. Another technique is to show how the strategy will improve management information. Sometimes it is necessary to use strong-arm tactics.

1. Develop a shared vision

2. Pull strategy and organization together

3. Translate new values into concrete behavior

4. Reorient power to support new values and behavior

5. Harness high-impact management systems

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APRIL 11, 1988
down into the organization to place his own people in leadership positions. If this tactic is clearly linked to the values of the new strategy, it provides a compelling incentive for them to come on board. In addition, he may want to bring in outsiders whose skills and values support the strategy.

More visibility The manager can also alter the structure of power by advancing roles that contribute to the new strategy. In one large brokerage firm, the implementation strategy demanded attention to new technologies and better teamwork between systems staff and end users.

The vice-president of operations, who was also head of information systems, raised the systems' advanced technology group, which reported within systems engineering, to the departmental level.

The manager also took someone from the computer operations group who had been unusually responsive to end users and gave him departmental-level responsibility for development.

Knowing this, many managers in the systems area paid more attention to end-user responsiveness in performance evaluations, and critical projects were turned around faster. Those who could not adapt were shifted into purely technical support roles or moved elsewhere in the firm.

Power redistribution is often difficult because it tends to become a zero-sum game. Furthermore, a manager may have to take power away from those who have been loyal to him. The ability to deal directly with the issue of power, however, will strongly affect the success of the implementation strategy.

High-impact management It is best to figure out early which management methods have the greatest impact on behavior and which behaviors can be influenced.

Compensation is one of these high-impact tactics. Performance appraisals tied to compensation can be used to encourage behavior that supports the new strategy. For example, since an implementation strategy calls for getting the details right, a manager may need to realign performance appraisals so they reward the precision-oriented master craftsman as well as the creative worker.

Resource allocation also carries a lot of impact. The head of information systems in a major bank led the systems review board in cutting projects not supporting his implementation strategy and shifting resources to those that did. As a result, critical projects were completed almost 30% more quickly than in the past.

It is also useful to conduct a review of the firm’s information systems to make sure they capture the information manager’s need. In some cases, data that is supposed to be in the system and is needed to make implementation successful is not actually entered or proves to be inaccurate. This may have to be worked out with executives of end-user departments.

An implementation strategy is difficult to pursue successfully. However, it offers companies the opportunity to gain an edge without a massive investment in capital resources. This is the strategy the Japanese have often used to outmaneuver U.S. firms.

What poses an unusual challenge for many managers is the need to consider both “soft” management systems — vision and values — and “hard” ones — compensation plans and the organizational reporting structure. These areas can be orchestrated to reinforce one another.

By improving implementation from the ground up, a manager can make the value of his strategy visible to senior executives. With support from the top, he can deliver a powerful competitive edge for the firm.

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Debit cards negotiate
the road to acceptance

BY JAMES DALY
CW STAFF

You're on your way home one evening and you notice the old Cherry is low on gasoline. You stop at the nearest gas station, fill 'er up and pull out a small magnetically striped card. The attendant quickly swipes it through a machine, and you're on your way.

Halfway home, you swing by the cleaner's to pick up shirts dropped off that morning. Out comes your wallet and the same card. A clerk behind the counter handles it with the same ease and confidence that the gas station attendant did. There's one final stop: a convenience store to pick up a half-gallon of milk. Again, the card comes out.

Sound farfetched? It may not be in a few years. Although debit cards are hardly household items, they may be the norm before you know it. And when a special task force at the Electronic Fund Systems Transfer Association (EFTA) in Washington, D.C., to begin ironing out the particulars of the customer-retailer debit card relationship, it may be laying the groundwork for a device that task force members said could one day be as common as a 24-hour automated teller machine card.

"We've been trying to introduce these cards since the 1960s, but today there are so many consumers walking around with them," said Michael Eltman, president of EFTA. "We're getting close to the point where these cards will be in everyday use."

Data View

Micros in MIS
Most systems personnel surveyed use personal computers; almost half use them daily

<table>
<thead>
<tr>
<th>PC use</th>
<th>Frequency of use</th>
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<td>16%</td>
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<tr>
<td>84%</td>
<td>84%</td>
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Informative provided by an Association for Systems Management survey of 3,000 members.

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Job One: MIS quality measurement to soar in importance

BY JAMES CONNOLLY
CW STAFF

ORLANDO, Fla. — MIS quality measurement, which results in the quantification of factors such as project costs and customer satisfaction, is set to grow in importance in MIS groups during the next two years, according to a survey of organizations now involved in or contemplating a measurement program.

But even among the 69 organizations that showed an interest in quality measurement, just more than half already have a formal measurement program, and those groups have been doing measurement for an average of only 2.7 years. Almost all said they expect quality measurement to become more important within two years.

The Quality Assurance Institute recently released the results of a survey conducted at its 1987 National Conference on Measuring Data Processing Quality and Productivity, held here. The institute is an Orlando-based company that promotes quality in data processing and vendor products through conferences and seminars.

The key benefits already realized from quality measurement — with more than half of the respondents reporting that they have identified tangible results — include identification of areas and activities needing attention, an increased consciousness of customer concerns and a shorter time span to fix defects.

Hallmarks of success

The MIS organizations surveyed, which included the colleges called leading-edge — although not necessarily representative of the DP world as a whole — said the most effective measures of quality are the cost of an activity or MIS-built product, project and activity activities at the computer or terminal availability.

Those same organizations said the measures they plan to introduce during the coming year include customer satisfaction survey, defects in system and program development and function points as an estimating and management tool.

The institute noted that only 7% of the organization representatives knew what rates in relationship to development or production defect rates as measured in defects per 1,000 lines of code.

In addition, most of the respondents said quality measurement remains a largely manual task. They said the best sources of data for developing measures are job accounting systems, problem reporting systems and manual reporting systems such as project status reports.

The respondents listed the biggest obstacles to a successful measurement program as determining what to measure and gaining the acceptance of the DP staff and support from MIS management.

They said the best arguments for having a measurement program include not knowing whether MIS projects succeed or fail when they are not measured, improved quality and productivity, improved customer satisfaction and identifying areas for which improvements can be made.

Carrying the load

Transport firm's MIS boss keeps freight moving

PROFILE

Jim Marston

Position: Chief information officer, American President Companies Ltd.

Mission: To use systems as a strategic weapon in the competitive, cost-conscious shipping industry.

Inside

• Televised MIS seminars set for September debut.

Inside IT/Strategic Computing Conference put on hold. Page 77.

• Fall Joint Computer Conference put on hold. Page 77.
Debit cards
CONTINUED FROM PAGE 75

Debit cards - "an awful term," Schmelzer sniffed, "and one of the things we'll definitely have to work on" - essentially function the same way credit cards do.

Deduct it now
But instead of the consumer paying all or part of the bill when a statement arrives each month, funds are immediately deducted at the point of sale from an account the customer keeps with a bank or the retailer.

"The debit card is pulled through a card reader, you enter a personal identification number, and your account is debited for a transaction," said Jim Callan, senior director of the EFTA. "But there's no interest charged, no statement to sign and no fee for the card."

No interest? No fee? So who foots the bill? "We're still working that out," Schmelzer confessed, "but we're looking at the retailer for many reasons. We're convinced customers are going to use it, and retailers can use it as a means of attracting customers.

"We're also hoping they see the value in consolidating the unbelievable amount of transactions that come across their desks," Schmelzer continued. "Retailers also know from experience that noncash payment alternatives tend to produce larger sales."

Hard questions
While Callan and Schmelzer said they anticipate tough questions from the retailers on the task force, they are already preparing their ammunition. "Debit cards are already successfully testing the water around the country," Callan asserted.

"If you belong to one of four or five banks in California, you can use your bank's ATM card at any of a number of Lucky Stores. There is another organization out West, called Star Systems, which is used mostly for gasoline stations," Callan added.

While both Schmelzer and Callan admitted there are still formidable barriers to clear — with start-up costs and delays at the checkout counter being the major sticking points among retailers, according to Schmelzer — both said they are confident that debit cards will survive.

"We're facing the same challenges as did the guys who introduced the automobile, the airplane, the radio or the TV," Schmelzer said. "There's a whole battery of technological and psychological considerations we must face in successfully selling this card, but we feel its time has come."

Televised MIS seminars set for fall debut

STEWART MANOR, N.Y. — The producer of an MIS and telecommunications seminar series has planned a September debut for the interactive, televised program that will be transmitted to corporate sites via satellite.

The Computer Channel, Inc. said it will announce in May the schedule for six months of telecasts with a goal of two or three full-day programs offered each month.

Computer Channel Chief Executive Officer Joe Rizzo, formerly an executive with Private Satellite Network, Inc. (PSN), said Computer Channel is taking a different approach than PSN, with which Rizzo worked for more than a year on a pilot program to produce continuous MIS-related telecasts. He said Computer Channel will offer one-time viewing with its scheduled all-day seminars.

"It's very much in the sense of a nationwide classroom," said Rizzo, whose company is receiving funds and production support from the Technology Transfer Institute. He said two types of seminars will be offered; the first will be professional education seminars, and the second will be industry research or overview productions.

However, Rizzo declined to provide details about which topics or speakers are expected to appear on the programs.

He claimed the telecast seminars will offer savings for customers in comparison with live seminars offered at hotels or conference centers.

Rizzo said he is targeting MIS organizations in which an entire staff might be brought into a conference room to view the telecast seminar. The seminars will include lectures and question-and-answer sessions involving customer sites.

Rizzo said fees will range from $1,500 to $2,000 per site, depending on the program being offered. He said companies that do not have satellite dishes can rent them on a daily basis for prices that range from $600 to $1,000 per day, depending on location. Rizzo said that satellite subcontractors have not yet been selected.

Rizzo said Computer Channel currently has one other employee and that three more will be hired when the company moves into offices in Floral Park, N.Y.
**ACM, IEEE conference postponed**

The joint effort of the Association for Computing Machinery (ACM) and the Computer Society of the Institute of Electrical and Electronics Engineers, Inc. to build a broad-based conference around educational issues has suffered a setback with the suspension of the 2-year-old Fall Joint Computer Conference (FJCC).

The conference, held in Dallas in 1986 and 1987 and tentatively scheduled for Orlando, Fla., this year, has been postponed, and its functions are being dispersed to various other special-interest group meetings. The conference targeted such issues as technology transfer and legal concerns relating to computers.

"The postponement or suspension of the FJCC was part of a strategic plan to expand the number of ACM conferences," said Pegotty Cooper, manager of conferences for the ACM. She said the ACM's focus has turned more toward vertical conferences and that the organization is stepping back and will re-evaluate the FJCC concept at a later date. She said administrative functions carried out at the FJCC, such as awards, will be spread among 31 ACM special-interest group meetings.

The FJCC attracted about 1,250 attendees in 1987, according to that conference's organizers. Much of the focus at last year's conference was on educational seminars aimed at helping organizations deal with issues such as the transfer of computer technology from research groups to the commercial world and making neotechnical managers familiar with the computer technology that they rely on or must market.

Cooper said the cosponsor relationship between the ACM and the Computer Society of the IEEE remains intact for about 12 other conferences that the two organizations host.

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**Carrying the load**

Continued from page 75

as travel agents, but they are also taught other skills required for the job during a four-week course.

While on a week one, Marston received a call "out of the blue" from APC Chairman and Chief Executive Officer W. B. Seaton. It took three visits with Seaton to convinced him to leave American Airlines to join the shipping firm. All Marston will say of his decision is: "He made me an offer I found difficult to turn down."

At APC, Marston's task is to manage an international network of systems that supports the company's air, rail and overseas shipping business. APC operates two computer centers: one in San Mateo, Calif., and the second in Hong Kong. Both house IBM mainframes. Additionally, the company has minicomputers in six locations in the Far East to handle heavy local processing requirements at those sites.

Nearly 2,000 terminals and 950 personal computers allow remote locations domestically, in the Far East and in the Middle East to access shipping information stored in the mainframes. Through that intricate and far-flung network, an office in Nashville can access the IBM mainframe to receive detailed information regarding a shipment.

**Ace in the hole**

Information systems has evolved from a support function to a strategic tool for APC, Marston says. In fact, he is reluctant to offer specifics on any upcoming investments the company will make in systems because he wants to shield APC's future strategy from competing firms.

"The transportation industry — outside of the airlines — was probably not as forward-thinking as other industries," Marston says. "But there's been a recognition of growing competition in the shipping industry, especially from the Far East."

As in other industries, shipping firms have been engaged in a cost war. With Far East companies having the advantage of less expensive labor, U.S. firms were left seeking a way to keep up. They found it with computer technology, Marston explains.

MIS has become so important to APC that Marston became its first chief information officer, a title that has become somewhat controversial among MIS professionals. Although he concedes that the CIO title can sound "awfully presumptuous" and that it has become generic, he defends its use at APC.

"It's serving a purpose," Marston maintains. "It's a recognition that information systems is a strategic element of the business. It has become a fundamental underpinning of what we do here."

The message that MIS is key to APC's strategy must reach its remote locations, Marston says. Although the firm's widely dispersed offices are linked technically, that does not always mean they are otherwise connected.

"The biggest challenge is the fact that we have a very diverse geographical spread," he explains. "There's diversity in the level of computer literacy in the companies that we operate in. For example, in the Middle East, most people haven't used computers on a day-to-day basis. We have to bring some regions that are only beginning to understand information systems into the fold."
Fort Worth, Texas 76102.

Association for Systems Management Annual Systems Conference. San Diego, April 17-20 — Contact: ASM, 24787 Bagley Road, Cleveland, Ohio 44138.

Info Canada '88. Toronto, April 18-19 — Contact: Postal Station F, Toronto, Ont., Canada M4Y 2L4.

Information Industry Association Spring Conference & Exhibition. New York, April 18-20 — Contact: Michele Ryan, Radio Shack, 1700 One Tandy Center, Fort Worth, Texas 76102.


Eastern Simulation Conference. Orlando, Fla., April 18-21 — Contact: The Society for Computer Simulation, P.O. Box 17900, San Diego, Calif. 92117


Comten Users' Exchange Spring Conference. Fort Lauderdale, Fla., April 18-22 — Contact: Dave Beren, CUE Coordinator, NCR Comten, 2700 Seiling Ave. N., St. Paul, Minn. 55113.

Advanced Manufacturing Systems Exhibition and Conference (AMS '88). Chicago, April 19-21 — Contact: ComexExpo Group, P.O. Box 5060, 1390 S. Wacker Dr., Chicago, Ill. 60601.

Tandy Computer Business Users' Group Annual Conference. Fort Worth, Texas, April 18-20 — Contact: Michele Ryan, Radio Shack, 1700 One Tandy Center, Fort Worth, Texas 76102.

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Managing for me to do it now and do it right.”

They were paid to manage, not to program, and that their subordinates followed one of two paths: They didn't get a chance to improve their performance by being forced to do so, or the employees were perfectly happy to watch the new boss do everybody's work. The first group of employees couldn't be blamed for not developing their skills if they were not driven. As for those in the second group, they aren't stupid, they are just the folks who seem to survive in every type of organization.

What successful managers say they have learned is that they are better off if they risk taking the heat from senior management when their first few projects are a little late in order to develop a qualified, experienced staff, rather than feed their own ulcers by doing everyone else's job just to have the project come in on time.

The new managers who let their workers develop — and the senior management that recognizes why a project is running late under that new manager — is one of those who seem to survive in every type of organization.
Edelman wants all of Datapoint

Arbitrageur leads $60M leveraged buy-out offer for LAN, mini firm he chairs

BY CLINTON WILDER CW STAFF

SAN ANTONIO — For the second time in less than three years, Datapoint Corp. Chairman Ash B. Edelman has offered to take the sluggish minicomputer and local-area network company private in a leveraged buy-out.

A management and investors' group led by Edelman announced last week that it has offered $6 per share, or a total of about $60 million, for Datapoint's outstanding shares.

Edelman had offered an identical $6 per share in his first leveraged buy-out attempt in 1985; however, a greater number of outstanding shares made that offer total an estimated $100 million (CW, Sept. 9, 1985).

Conceded offer

Edelman withdrew his 1985 offer several months later (CW, May 12, 1986), citing Datapoint's expected return to profitability. Although the firm has reported profitable quarters since then, upbeatness at the company have not stopped.

Former Datapoint President and Chief Executive Officer Edward P. Gistaro resigned suddenly in early 1987, and the company reported a loss of $57.8 million on revenue of $312 million for the fiscal year ended Aug. 1, 1987.

The group currently seeking to take control of Datapoint through the buy-out includes Edelman, Datapoint President and CEO Robert J. Potter and two investment firms: Citicorp Capital Investors Ltd. and KBA Partners L.P.

Edelman personally owns about 10% of Datapoint's 10 million shares.

Profitable pattern

If the Datapoint buy-out is successful, Edelman could follow the pattern of his first computer industry takeover, that of Management Assistance, Inc. in 1985. He proceeded to sell units of Management Assistance for tidy profits.

Both units are now prospering under new owners — the Sorbo Independent computer maintenance business under Bell Atlantic Corp. and the MAI Basic Four, Inc. turnkey business systems vendor as a publicly held firm chaired by New York investor Bennett LeBoeuf.

Edelman was widely expected to follow that pattern after his successful hostile takeover of Datapoint in 1985. Although he did spin off Datapoint's service business as a separate company, Inlogic Trace, Inc., he has retained the chairmanship of and significant equity positions in both firms.

Edelman could not be reached for comment last week.

By James Daily CW Staff

Financial analysts are painting a first-quarter earnings forecast that resembles a huge Golden Gate Bridge stretching across the computer industry.

As most major vendors report their financial results in the next two weeks, analysts predict the industry will be staunchly supported by rising demand for equipment from the personal computer and mainframe sectors but will sag badly in the center, where mid-size computer sales resist.

Indicators of a flattening in the minicomputer sector have been in the wind for about a month. In mid-March, heavy hitters like Digital Equipment Corp. and Wang Laboratories, Inc. scaled back their first-quarter earnings expectations, while rumors widely circulated that Prime Computer, Inc. was in the same boat.

Analysts said the fall-off stems Continued on page 83

The British are coming — checkbooks open

By Nell Margolis CW Staff

Continued on page 81

Mini-profits seen for mini firms

BY JAMES DALY CW STAFF

Top five and bottom five technology stock performers, January through March 1988

<table>
<thead>
<tr>
<th>Stock</th>
<th>Change in Stock Price</th>
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The message is being received. “Over the last two years, our revenues from European operations have almost doubled,” said a spokesman for El Segundo, Calif.-based Computer Sciences Corp., a $1 billion player in the computer services industry. “During the 1987 to 1991 period, we have made more than $200 million budgeted for acquisitions, and European professional services companies are one of the key areas we are looking at.”
Ungermann stock sale buoy DCA quarter

BY JAMES DALY
CW STAFF

ALPHARETTA, Ga. — Although its recent buy-out attempt of Ungermann-Bass, Inc. came up short, Digital Communications Associates, Inc. (DCA) netted a cool $1.9 million profit from the subsequent sale of Ungermann-Bass stock. That contributed to a healthy increase in both revenue and net income for DCA's third quarter ended March 31, the firm said last week.

DCA had purchased more than one million shares of Ungermann-Bass stock by last November, when it made an unsuccessful $175 million offer for the local-area network vendor. After Tandem Computers, Inc.'s more lucrative $260 million offer was accepted in mid-February, DCA sold off its stock at an inflated price and came away with a handsome profit for the three-month investment.

DCA reported revenue for the quarter at $59.3 million, an 18% increase over the $50.3 million reported for the same period in 1987. Net income was $12.5 million, or 82 cents per share, a 41% increase over the $8.8 million, or 58 cents per share, reported for the same quarter one year ago.
The PROBLEM, however, was that customers just weren’t buying what IBM’s Information Services said users presumably wanted.

The latter supplies IBM’s semiconductors, and the former, which is headed by newly promoted IBM Vice-President Ellen Hancock, develops IBM’s networking infrastructure.

By far, the bulk of IBM’s product business resides in the three product groups that so closely paralleled the old divisions. There is simply no escape to what effect IBM’s reorganization is likely to have on its product strategy in the next few years.

IBM’s explanation implies that there will be no change in product strategy as a result of the reorganization. The company’s stated purpose is to help IBM be more responsive to the market and get products to market faster. IBM’s basic problem is not so much the speed with which products get to market as the question of which products are brought to market and who decides among the possible candidates.

Prior to the reorganization, the former Information Services Group, now the Marketing and Services Group headed by Ed Lucente, was the primary gatekeeper. This marketing and sales organization had great influence on future product plans. The problem, however, was that customers weren’t buying what Information Services said users presumably wanted.

Garden party
With the new structure, IBM has adopted what amounts to a “Jet 100 flowers bloom” strategy: Customers will far more likely be able to truly decide what the company should sell if IBM takes into account what users buy and don’t buy. In other words, IBM’s new organization means that product introductions are likely to be more numerous, more diverse and more likely to compete with one another than in the recent past.

Rather than let planners in the Information Services Group “rationalize” the product line, IBM will now adopt a more liberal “throw it up against the wall and see if it sticks” approach to product introductions. Proponents of products within IBM are more likely to get their ideas to market. At the same time, IBM will also be much more likely to kill off unsuccessful products.

A potential casualty of all this will be IBM’s recent efforts to approximate DEC’s “one company, one architecture” strategy. While IBM will certainly continue to tout the integration of solutions like Systems Application Architecture, the reality is likely to be more diversity and more internal competition among IBM products.

The superficial result will be an even more chaotic situation regarding IBM’s overall strategy. The deeper and more promising prospect, however, is a more vigorous IBM that really does start building what users want — instead of what IBM planners think they want.
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AT&T opts for natural cleanser

BY J. A. SAVAGE
CW STAFF

NORTH ANDOVER, Mass. — In its printed-circuit board manufacturing process, AT&T is making one small step toward preserving the earth's ozone layer.

This year, three of the company's circuit board manufacturing plants are set to replace 20% to 30% of their annual consumption of the ozone-depleting chemical CFC-113 with an organic substitute called Bioact EC-7. AT&T plants in Illinois, Massachusetts and Nebraska use CFCs to clean printed-circuit boards for computers and telecommunications equipment.

AT&T plans to increase the use of Bioact EC-7 in the future, according to a spokeswoman. "Of course, the environmental reason is strong, but there is also an economic side. There will be less CFCs to be had in the future. And although the replacement cost is about the same, you can reuse Bioact. You cannot reuse CFCs," she said.

The substitute was jointly developed by AT&T and Petroferm, Inc. in Fernandina Beach, Fla. It is based on chemicals derived from citrus products and coniferous trees.

CFCs are used as a solvent in cleaning semiconductors and circuit boards. According to a 1984 report by Menlo Park, Calif.-based SRI International, 37% of all CFCs are used in the electronics industry. CFC-113 is nontoxic to humans in the workplace and has been historically vented openly.

Last month, the National Aeronautics and Space Administration reported the ozone layer over the U.S. had declined an average of 2.5% annually since 1969 and blamed the decrease on CFCs. The decline was far higher than expected, increasing humans' risk of developing skin cancer from exposure to ultraviolet rays, which are screened by the ozone.

Finding alternatives to CFCs will be critical to the computer and electronics industries in the next few years as scientists predict destruction of the ozone layer to continue. Late last month, Du Pont Co. said it would phase out manufacturing of its CFCs, which are marketed under the trade name Freon. Du Pont currently makes one-fourth of the world's CFCs.

Other major users of CFCs in computer manufacturing may not be as ambitious as AT&T but are also exploring alternatives. John Harris, IBM's director of product and process engineering, said he expects to see substantial improvements in his company's CFC consumption in the next two years. Instead of substituting chemicals, IBM's near-term plans are to improve enclosures to keep CFCs from being vented. He said IBM uses about 16 million pounds of CFCs per year — more than five times AT&T's use.

Mini profits

CONTINUED FROM PAGE 79

from pressure created by heightened sales of networking PCs and workstations, which continue to ebb on the low end of the mini market [CW, March 21].

"Downsizing has become a fact of the industry," said David Wu of S. G. Warburg & Co. "Workstations are picking up the slack in the technical area, while networked PCs are becoming a bigger fact of life in the commercial sector."

Although conservative spending early in the year often makes this period the toughest for vendors, there are indications that the minicomputer squeeze play may be somewhat more than seasonal. A recent study by The Sierra Group, a Tempe, Ariz.-based research firm, indicates that the minicomputer's work is increasingly being usurped by powerful network servers. Another study by The Yankee Group in Boston outlines a surge of interest in mainframes. Both reports showed that users' mainframe and PC purchasing plans remain strong.

"The only reason that mainframes weren't affected this quarter is that they were hit earlier," S. G. Warburg's Wu said. "Microcomputers are now doing to the minicomputers what the minicomputer did to the mainframe."

"No one is going like gangbusters on the mainframe front, but we'll see IBM with a slight uptick in orders and earnings, NCR and Amdahl with a super earnings quarter and Cray with strong orders," said Peter Labe, vice-president of research at Drexel Burnham Lambert, Inc.

Shortfalls on first-quarter expectations at DEC and Wang may have also been the by-product of flourishing fourth quarters last year. "The revenue shortfalls were relative to expectations; people got a little too enthusiastic," said Michael Geran, a senior vice-president of research at The Nikko Securities Co.

Some analysts said economic uncertainty in the wake of last October's stock market crash has affected capital spending for technology. "People are waiting to see what is going on with the economy before committing to major projects," said George Elling, vice-president of research at Merrill Lynch & Co.

But others cautioned against using the economy as a safety net for poor performance. "Yes, people are being careful with their money, but it's not the economy, because then the PC and mainframe sales would have been lost, and they haven't been," Wu said.

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A Different Kind of Computer Company
Health care needs specialists

Ailing industry seeks combination of clinical insight and systems skills

BY DAVID A. LUDLUM CW STAFF

Current prospects for a career in the medical world seem less than healthy for systems professionals who don't possess a comprehension of both Cobol and cardiac arrest.

After the rapid expansion of recent years, the health care industry is currently mired in slow growth; an abundance of competitors now face the prospect of a shakeout.

"Hospitals are closing or consolidating. It's not a good time to write 'there is a boom,'" says a manager at one leading vendor of health care information systems. "But, the increased competition is creating some opportunities for the most qualified professionals who don't possess a command of both clinical and technical environments."

Opportunity knocks

These opportunities stem from efforts by health care providers to cut costs and provide better service, which has led them to integrate formerly isolated systems and introduce new ones.

"Health care is being bogged down in applying computers," says Fred Pirman, senior vice-president of information systems at Hamana, Inc. in Louisville, Ky., which operates 85 hospitals across the country. "But with the competitiveness that has emerged, every health care provider is looking for a better way to provide service, and that depends on computers."

The emphasis is on implementation of packaged software or turnkey systems: customizing programs, making sure data is accurate and systems are easy to use and training end users. These tasks call for analysts and project managers who understand nursing and medical technology.

It's easier to find the technical folk, harder to find qualified, experienced systems analysts and project managers who really know the milieu," says Edward Heller, chief of computer operations at Massachusetts General Hospital.

The trend is spreading to the vendors of health care systems, according to Scott Holmes, a spokesman for Shared Medical Systems Corp. in Malvern, Pa. "Hospital MIS departments all have [former] nurses as analysts, and we're beginning to see that at vendors," Holmes says. "I think the classic Cobol and MIS programmer is in trouble."

The fragmentation of the health care systems field provides a solid source of employment for technically elite software engineers, according to John Siipola, chief of the Northern California region of data processing recruiting for Robert Half International, Inc.

In the medical systems divisions of General Electric Co. and Hewlett-Packard Co., there is a demand for software engineers to develop high-tech diagnostic systems for functions such as axial tomography and nuclear resonance imaging, Siipola says.

Unlike health care MIS, this field appears to be more and more technically oriented, calling for a command of both Unix and C. "It becomes more difficult for someone with a broad, generalized education," Siipola says. Salaries for the positions are competitive within the systems engineering community. What about the salary for developing and deploying health care information systems? Hospital MIS departments traditionally have lagged behind competitors, including insurance and supply companies and health management organizations. But hiring will still be oriented to experienced systems analysts and are able to compete salary-wise, they are people out of the industry," Shared Medical's Holmes says.

"We view our pay scales as satisfactory, probably no different from many other industries," adds Massachusetts General's Heller.

Two sides to every story

There are differences between the two sides of the health care information systems field. Vendors can offer career paths unavailable at hospitals, such as a move into marketing. Also, they generally provide more generous remuneration to senior managers, Heller says. On the other hand, hospital jobs offer the satisfaction of working to help the sick.

The future is likely to bring closer cooperation between the vendors and health care providers as they set their sights on increasingly sophisticated systems, Heller says. The needs will include long-term computerized storage and management of medical records and more hands-on use of systems by physicians, including decision-support applications.

Such projects will call for a grasp of obscure technologies, but hiring will still be oriented toward practical implementation at hospital MIS departments, General's Heller says. There is no great demand for the more esoteric skills now, he says, but "if somebody walked in here with a clinically practical point of view, I'd probably hire him today."

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  - Systems Programmer/Warehousing
- **HONEYWELL**
  - Prog/SP/TP, COBOL, PL-I
- **IBM**
  - Prog/COBOL, IMS/DB, PL-I
- **Common Spec - COBOL, PASCAL**

Data Base Analyst

Requires three to five years experience with COBOL and DB2. A Bachelor’s degree and experience with the following databases are essential: IMS-DL1, TSO/ISPF, VSAM, Assembler, and IMS/DB2. Previous management and data base experience is desirable.

Programmer—Tandem

Requires two years professional programming experience with the following: COBOL, TSO, PL-I, IMS/DB2, and IMS-DB2. A Bachelor’s degree and experience with the following databases are essential: IMS-DL1, TSO/ISPF, VSAM, Assembler, and IMS/DB2. A Bachelor’s degree and experience with the following databases are essential: IMS-DL1, TSO/ISPF, VSAM, Assembler, and IMS/DB2. Previous management and data base experience is desirable.

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SOFTWARE ENGINEERS

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Computer Task Group (CTG) is an international computer-related professional services firm that provides custom solutions for the Fortune 500 sized companies. We use state-of-the-art technology and industry expertise which allows us to gain the competitive edge.

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- **ADS**
- **CSP**
- **ESE**
- **INGRES**
- **ST CLASS ARCHITECT**
- **IDMS**
- **GOLDWORKS**
- **BANKING**

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SYNON, INC.

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(415) 458-6200

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If you have two or more years experience with any of the above, call or send resume to Don Thompson, Director of Research, 7948 Es Way, Suite 160, Jacksonville, FL 32256, (904) 737-8955.

If you're a top programmer analyst, explore this opportunity to tap the success of Martin Marietta Data Systems—one of the world's largest providers of superior information services.

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- HP3000, HPF-V, CORDIS, IMAGE, VIEW, QUERY, business, financial, manufacturing or engineering applications.
- LPAR mainframes, GS/VS, CORDIS, HS6/DC (mandatory), financial accounting or manufacturing applications.

Martin Marietta Data Systems' progressive salary and benefits package—including relocation, medical, vision, dental care and tuition reimbursement—combines with enviable career growth potential to make these opportunities exceptionally attractive.

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APRIL 11, 1988

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If you are interested in applying for this position, please send your resume to: Rebecca F. McNamara, STScI, P.O. Box 3800, Los Angeles, CA 90051.

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Located in Silver Spring, Maryland, we serve the automation needs of the country's largest 3rd-party prescription claims processor. Our installation features the latest releases of IMS, DB2, CICS, and Data Dictionary. Applications run on 303X hardware (under MVS/XA and SNA/SDLC) and Tandem VLSI (VX/PU). Our compensation/benefits programs rank among the best. You will enjoy results based accountability and believe in accountability versus checks and balances, a send resume in confidence to:

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JOHN KENDA
President

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Computer Professionals

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Programmer Analysts—will design programs and implement business systems such as: Application and Development Services, Allstate Inventory and Order System, and Intranet. Two to five years work experience in a large MVS/XA environment, COBOL, Interactive CICS (CCL) Level, O/S/JCL, ZOS/BTIF and strong user interface/communications skills are required. Knowledge of personal computer and structured design and programming techniques is preferred.

We offer a challenging and diverse environment, as well as competitive salary and comprehensive flexible benefit package. For immediate consideration please send your resume with salary history in confidence to: Barbara McNamara, AD-22, Transamerica Information Services, P.O. Box 3800, Los Angeles, CA 90051.

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President

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- REXX, VM, EXEC, SOLIS
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For Florida only: 1-800-282-4141

or send resume to: Cy Dougherty, Personnel Director
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**Computer recruitment advertising index**

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*Analysis of computer recruitment advertising space in Computerworld and selected major U.S. newspapers*
IBM trying to win PS/2 race

Lack of software, "look and feel" lawsuit slow new machines' acceptance

BY CAMERON HALL
BOSTON BUSINESS EXCHANGE CORP.

It is a year since the introduction of IBM's sleek Personal System/2 computer. It is a year in which 1.5 million machines were sold, and the market still awaits the software that will make the promised wonders of this machine come true.

The recent announcement of Apple Computer, Inc.'s "look and feel" lawsuit against Microsoft Corp.'s Presentation Manager -- the cornerstone of OS/2's elegance and user-friendliness -- has made this promise look further away. Developers got a curveball, delaying the introduction of OS/2-specific software into the computer market.

What is the essence of the look and feel lawsuit? An industry insider, when asked for his comments, mentioned a meeting he'd recently had with Dan Bricklin, co-originator of Lotus Development Corp.'s Visicalc, who first felt the look and feel challenge. The insider walked up to Bricklin, gave him a hard stare and murmured, "Feels like Dan Bricklin."

Just as the enthusiastic acceptance of the original IBM Personal Computer hinged on the availability of applications software, so too does the PS/2. The 1.5 million early adopters (estimated to be two million by mid-year) have a faster, slicker machine with better resolution, but this is still an incremental change.

The IBM market was up, the Compaq Computer Corp. market was virtually unchanged, and the Apple Computer, Inc. market was slightly down.

The old Personal Computer models that IBM phased out were still in ready supply. Now the only place to purchase these primary machines is the secondary market. The latest -- and last -- PC XT and AT models had prices rising in a demand-oriented market.

Ups and downs

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The Apple market continued down this week, with used Macintosh prices on early models still sliding. The Macintosh SE and Macintosh II models remained at the previous week's closing prices. In the Compaq domain, the 286 models were the most popular all week, with the Portable II up $25 to $2,200 and the Deskpro 286 down $50 to $3,300.

The PC model market participants as most attractive, end users will need to retain their CBX IIs and use the secondary market to obtain low cost parts and upgrades.

The third option applies to CBX II users who have experienced problems with the switch or support of the switch by IBM and Rolm. These users will be tempted to change vendors. Northern Telecom, Inc. is hoping to be the PBX pied piper by luring the CBX II users away from IBM. Since Feb. 1, Northern Telecom has been offering a $40-per-port rebate to CBX II users who switch to its Meridian SL-1. To make this rebate financially attractive, end users will need to sell the line cords, cabinets, phone sets and other peripheral equipment in the secondary market.

The BoCoEx Index

Closing prices report for the week ending April 1, 1988

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<th>Product</th>
<th>Closing Price</th>
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<th>Recent Low</th>
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The second option regards a segment of end users purchasing only basic switching with an emphasis on keeping expenditures for new phone equipment low by maximizing the existing system. These end users are likely to retain their CBX IIs and use the secondary market to obtain low cost parts and upgrades.

The third option applies to CBX II users who have experienced problems with the switch or support of the switch by IBM and Rolm. These users will be tempted to change vendors. Northern Telecom, Inc. is hoping to be the PBX pied piper by luring the CBX II users away from IBM. Since Feb. 1, Northern Telecom has been offering a $40-per-port rebate to CBX II users who switch to its Meridian SL-1. To make this rebate financially attractive, end users will need to sell the line cords, cabinets, phone sets and other peripheral equipment in the secondary market.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at 617-872-8200.
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Computers come to conference centers

BY MICHAEL BALL
SPECIAL TO CW

Add operators of conference centers to the businesses that are exploiting the potential of computers.

About two-thirds of the 120 conference centers in the U.S. have been built in the last five years, and they generally have the capability to conduct microcomputer training for small groups, says Paul Glewot, director of Chase Manhattan Bank NA's Development Center.

One center with a particular emphasis on computers is the Center for Financial Studies in Fairfield, Conn., which is set up to accommodate groups of up to 35 users, says Jim Shumway, general manager of the center.

Students tend to be middle and upper managers — those at a level high enough that companies will foot the bill to provide them with off-site training lasting from one day to two weeks.

Companies often use the facility to prepare managers for the installation of new hardware or software or to conduct business simulation exercises.

A year ago, the center retrofitted a conference facility it operated on the campus of Fairfield University in Fairfield, Conn. Its parent company recently opened a microcomputer facility at Babson College in Wellesley, Mass.

Classrooms in Fairfield are equipped with 16 IBM Personal System/2 Model 50s with 20M-byte hard drives along with printers, scanners and a monochrome projection system. There are 10 IBM Personal Computer AT clones on carts that can be wheeled to the rooms where trainees sleep.

Such facilities meet a need for Roger Raber, director of education for the National Council of Savings Institutions in Washington, D.C. His organization sponsors about 100 courses for more than 600 institutions.

Raber says the council now needs computers in its conference rooms, preferably ones that trainees can wheel back to their rooms.

That’s particularly true for a graduate-level program, the council’s National School of Finance and Management, which meets for two-week sessions during consecutive summers.

A highlight of that program is a simulation in which students compete as directors of rival banks. “It’s almost like a big computer game, but it’s serious,” Shumway says. “The computer tells them how they’re doing and keeps changing the situation. They must calculate and react quickly.”

Using the Fairfield center is more expensive than housing students for such programs in a college dormitory, which the council did in the past, but less costly than putting them up at a resort, Raber says.

The center is preferable to standard hotels, which specialize in lodging and dining rather than training, Raber claims. “Here, we can run from 7 a.m. to midnight in an atmosphere that’s conducive to [training].”

Ball is a free-lance writer based in Boston.
### Computerworld Stock Trading Summary

#### Closing Prices Wednesday, April 6, 1988

#### Communications and Network Services

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<th>Stock Symbol</th>
<th>Company Name</th>
<th>Price (Close)</th>
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### Money talks

#### Most tech stocks come back, cash in on dollar's surge

Although Monday's down-trading started the second quarter off on a soggy note, a surge in the U.S. dollar Wednesday sent the Dow Jones industrial average up more than 64 points and helped most major computer companies post modest gains as of Thursday's close.

The market's rise was especially beneficial to leaky Digital Equipment Corp., which sagged to as low as 102 during Tuesday's trading but jumped 2% points on Wednesday. Despite the boost, the Maynard, Mass.-based giant still finished the four days of trading down ¥% of a point at 104%.

Most tech stocks came back, cash in on dollar's surge
BY ROSEMARY HAMILTON O'TOOLE

IBM confirmed last week that it will ship a revised release of VM/SP High Performance Option Release 5 to replace the current release 5, which has problems in what a spokesman called "various areas."

The new release, which the company called a "refreshed version," is scheduled to be announced at the end of this month, according to IBM. The original shipment of VM/SP HPO Release 5 began in October.

"The experiences with HPO 5 have not been pretty ones," said Bruce Mancinelli, vice-president of marketing at VM Systems Group, Inc., which sells software utility for the VM operating system.

The HPO versions of the VM operating system were designed for the larger IBM mainframes and are the highest performing versions for the 370 architecture. The graduated one-time charge ranges from $57,665 to $92,265.

**Problem with spool file**

Although there are no details of the problems of HPO Release 5, users contacted last week said the primary problem involved the new spool file system. With HPO Release 5, IBM changed the constraint of 9,900 spool files per system to 9,900 per user, a change that required a significant redesign, users said.

"It wasn't that there were a lot more problems with this release, but it concerned the spooling system. That is a very sensitive area," said Peter Kronenberg, a systems programmer at Information Builders, Inc. in New York.

Kronenberg said his facility installed HPO Release 5 in October, and 10 days later was not able to move to production mode until February. The process typically takes a few weeks, he said.

The spool file system governs the movement of all files throughout the system, including those sent to the printer or passed among users. Each time Kronenberg's group brought up the new spool file system, the program bug would appear, he said.

"We have been making adjustments and will be coming out with a refreshed version that incorporates all adjustments made," an IBM spokesman said.

"We think it was a massive repair exercise," said one. "They didn't get it right, and they didn't test it enough."

**Delivery date ships on IBM 3990 cache**

BY STANLEY GIBSON CW STAFF

RYE BROOK, N.Y. — Causing relief for plug-compatible manufacturer Bull and concern for users, IBM announced last week that the important cache memory function for its 3990 Storage Control Unit will not be shipped on schedule.

The 3990 controller, announced with IBM's 3880 Models J, K and C2 disk drives in September 1987, was expected to be shipped in the third quarter of this year. While the hardware will ship in that time frame, microcode necessary for sophisticated cache functions will not be ready until the first half of 1989, IBM said.

"This is going to cause PCMs nervous, because if IBM has a problem, then it is likely that they will have one too," said Louise Biggs, a storage analyst at Dataquest, Inc. "End users will have to redo their decision process."

IBM said the 3990 Models 1 and 2, which do not come with cache, will be shipped August 26. A customer may also choose to receive a Model 3, which includes cache functions and add those functions in the first half of 1989.

**Eastern FROM PAGE 1**

crews as well as some 500 pilots. Experienced baggage handlers are key to acceptance of his recent proposals to the International Association of Machinists and Aircraft Workers, which calls for handlers' wages to fall from $15.60 to $8 per hour in the next two years.

The new regime at Eastern also caused the early retirement of more than 100 baggage handlers who made key decisions on how the carrier responded to flight delays, breakdowns and other emergencies, according to Zegan.

"Not a menial job in the era of computerization, baggage handling can be computerized so easily. 'Lorenzo has been trying to break open a few bottles of champagne, and it will cost IBM some revenue in 1988," said Bob Dzuricic, president of Annes Research in Phoenix. "This delay lengthens the window for PCM losses."

A spokesman for National Advanced Systems said his firm is going ahead with hardware development for its competing controllers and plans to deal with compatibility when microcode becomes available.

"This will make the PCMs nervous, because if IBM has a problem, then it is likely that they will have one too," said Louise Biggs, a storage analyst at Dataquest, Inc. "End users will have to redo their decision process."

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**Flapping in the breeze**

The brain drain at Eastern will continue to plague the carrier's service levels for some time to come, according to David Stockman, associate airline analyst at Paine Webber, Inc. "Texas Air is flapping in the breeze until [Eastern's labor problems] are settled, and it will be hard to bring people back once they have left," he said.

But System One's development staff is exploring computer solutions that will improve service while minimizing the need for highly paid human employees. And yet, Eastern's operation staffs are now under development are intended to automate much of the decision-making process in areas such as flight scheduling and baggage handling, in which Lorenzo's cost-cutting measures are taking their toll.

While Lorenzo carried on his campaign to trim Eastern Airlines' operations, he was beefing up the carrier's computer systems division, System One. Now a separate subsidiary supporting all Texas Air carriers, System One's staff has increased from 2,300 at the beginning of 1987 to its current level of 3,500.

The division's systems development work is focused on two main objectives: supporting Texas Air as its computerized reservation system, which currently holds approximately 18% of the market; and developing systems to improve Texas Air carriers' performance in the most visible areas of customer dissatisfaction. Those areas include lost baggage and cargo and scheduling delays, said David Hultsman, System One's staff vice-president of technology planning.

Pulling System One out of the Eastern morass and infusing its technical staff with new blood "was a smart way for Texas Air to spend its dollars," Stockman said. "You can't move forward in this industry without a state-of-the-art computer system, because all the other carriers have them."

And yet, Eastern's operational problems do not stem from its existing computer technology, which includes "some very excellent real-time systems that we know exist everywhere in the airline," it is due in, what crew members are on board and where the aircraft is supposed to go next," he said. The systems provide real-time information to a team of experienced operators, including one person to coordinate flight crews, another to look after passengers and a third to keep track of aircraft resources.

"The source of trouble is the increased turnover that has left fewer seasoned operators, according to Zegan.

"Don't blame the computer"" Baggage delays are also caused primarily by humans, rather than machine, error within Eastern, Zegan added. Although the airline has one of the industry's most advanced baggage-tracking systems — it is now used by several other airlines — "the problem is that we have to put the baggage on the right airline and take it off again," Zegan explained. "We've had cases of a luggage tag coming from falling on a Boeing 711 for two weeks."

System One hopes to address the troublesome spots by getting computers to minimize human error, Hultsman said.

For example, a prototype system currently running at Houston's Hobby Airport generates bar codes for each baggage tag, from which a video scanning system can read each item's flight number, ultimate destination and owner name. Computer-controlled ramps then route each bag to the right flight. "All the handlers need to do is prevent passengers from falling on the ramp," Hultsman said.

Not a menial job

Union spokesman James Conley disagreed with Hultsman's implication that baggage handling requires "menial work" and was "not a menial job in the era of computerization, baggage handling can be computerized so easily. 'Lorenzo has been trying to break open a few bottles of champagne, and it will cost IBM some revenue in 1988," said Bob Dzuricic, president of Annes Research in Phoenix. "This delay lengthens the window for PCM losses."

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**Directing traffic**

In an effort to address scheduling and other service-related problems, System One is trying to "automate as much of flight operations as possible" through knowledge-based systems that will embody the expertise some employees may lack, Hultsman said. An expert system called Gatekeeper, which is now running at Houston's Hobby, San Francisco's Symbolics, Inc. and Digital Equipment Corp. computers at Houston's Hobby, and Dallas/Fort Worth International Airport, is said to make judgment calls on the routing of incoming aircraft to terminal flight gates. If the trial is successful, the system will soon go into operation at other Texas Air terminals, beginning with Miami and Denver.

Late last month, System One began developing a knowledge-based system that allocates backup aircraft to minimize delays when flights are held up "during irregular scheduling periods," Hultsman said. Eventually, terminals should have a prototype running within three to four months.

Each system will save the company money, Zegan said, by "reducing the number of people involved on the ground." In the other hand, Texas Air might run into more trouble with Eastern's unions if they get the idea that the technology is another move to imbalance another of Lorenzo's strategies for getting along with a smaller company — at least lower-paid and less skilled — work force.
**IBM creates division around SAA, tools**

**BY CLINTON WILDER**

PURCHASE, N.Y. — Moving quickly to coordinate and focus its Systems Application Architecture (SAA) efforts, IBM late last week announced the formation of IBM Programming Systems, its first business organization dedicated exclusively to software.

Led by Vice-President Earl F. Wheeler, IBM Programming Systems will be responsible for developing IBM's applications development tools, data base management software — including IMS and DB2 — and programming languages under SAA guidelines. Significantly, the unit provides a focus for SAA efforts independent of IBM's three specific hardware architectures.

Wheeler will report directly to Terry R. Lautenbach, senior vice-president and general manager of IBM United States. That indicates Programming Systems' status as IBM's sixth line of business in the U.S., on par with the firm's three hardware architectures, communications and semiconductors.

"It looks like they are turning SAA into a real business," said Peter Burris, a research consultant at Framingham, Mass.-based International Data Corp.

**IBM hires PC royalty rates**

**BY ALAN J. RYAN**

ARMONK, N.Y. — In a move that could adversely affect pricing on future IBM Personal Computer- and Personal System/2-compatible products, IBM last week hiked royalty rates for companies that license current and future IBM patents.

The industry's royalty rates currently apply to more than 32,000 IBM patents, including those of IBM's PS/2 family. Although IBM's announcement mentioned the PS/2 by name, the provisions do not appear to affect the Micro Channel architecture, which is central to IBM's PS/2 strategy.

The Micro Channel is not currently available under licensing because it is protected by copyrights as well as other forms of intellectual property protection, according to Michael Starka of IBM's corporate intellectual property department.

Starks would not comment on who currently has patent licensing agreements with IBM, but he said the patents would be available "to everyone — under reasonable terms and conditions."

**Don't knock Apple**

Analyst Peter Labe of Drexel Burnham Lambert, Inc. said the company's change in patent licensing policies is "not a gauge of Apple's integration strategy. They're not going to just license anybody who knocks on the door," he said. "People seem to think that now the flood gates are open, and IBM will license everything to everyone, but that's not true."

Existing patent licensing agreements will be not be affected.

The rates, which had netted IBM up to 1% of sales revenue on products using IBM patents, will now range from 1% to 5%. 

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**Microsof countersues Apple, cries slander**

**BY STEPHEN JONES**

SAN JOSE, Calif. — Microsoft Corp. filed a legal volley at Apple Computer, Inc. last week, filing a countersuit to Apple's claim of copyright infringement and an attempt to stifle all Windows-based applications development.

In a 20-page document filed in a U.S. District Court here, Micros-soft charges that Apple's attempt to block the development of software that competes with Apple products.

Apple's lawsuit against Mi-
crosoft charges that Microsoft's Windows 2.03 and Hewlett-Packard Co.'s New Wave violate the look and feel of Apple's Macintosh user interface. Both companies were required to respond to the suit by last week, but HP received a 60-day extension.

Microsoft rebutted all of Apple's claims and stated its belief that it can move quickly to market and license the Windows technology.

In a series of counterclaims to Apple's allegations, Microsoft is stating that it is not going to block the development of operating systems that use Apple's patented technology.

A passage in Microsoft's suit reflects the belief of many industry watchers that Apple is trying to divide the development of the OS/2 Presentation Manager as a graphic user interface for IBM Personal Computers. "Apple has undertaken these actions with the intent of rightfully inhibiting" the development of Windows-based systems by Microsoft and other companies, the documents stated.

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**Fired-up DB2**

**FROM PAGE 1**

nouncement stage as DB2 Fast Path. Fast Path is the name used by IBM for its mainstream IMS data base system after it has been specifically designed for high-transaction throughput.

**Notives are restless**

There are signs that DB2 customers are growing restless for better transaction processing. The MIS director of a large IBM installation in New York, who asked to remain anonymous, said that as his firm's DB2 production applications have grown, "one of the problems we've had is tuning them extensively to get the performance we need." His staff greeted the March ESA/370 an-
nouncement as opening the door to DB2 performance gains.

"There's a sense among some of my compatriots that if it doesn't lead to that, we're wasting our time," he said.

The announcement of ESA/ 370, to be available in August, was timed to lay the groundwork for the next release of DB2, ac-

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**IBM**

**NEWS**

**POSTMARKET: Send Form 3579 (Change of Address) to Computerworld, Circulation Department, P.O. Box 1566, Neptune, NJ 07754-1566. APRIL 11, 1988**
There is a saying that a little guilt never hurt anyone. In the case of an MIS executive, that might be amended to include the phrase "even if you're innocent."

It appears that information executives — those carrying the title, or at least the job description, of chief information officer — may be their own harshest critics. That is one conclusion from a survey of 876 executives conducted by United Research Co. and Businessweek magazine.

As part of a survey of 876 executives, United Research matched the responses of 92 CEOs with their top information managers. The results show a pattern of CEOs giving the information systems groups higher marks than those groups' managers gave themselves.

Some of the sharpest differences appeared in questions relating to corporate relationships and strategies and how information is used. For example, 57 out of 92 CEOs, but only 42 out of 92 MIS managers, agreed with the statement that MIS does an excellent job of listening to and designing systems for managers at the top management level.

But the contrast blurred when the questions moved away from the CEO's immediate realm; more CEOs were unsure of their opinions.

JAMES CONNOLLY

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