AIX upgrade pace to slow
IBM move aimed at ending tape avalanche

WHITE PLAINS, N.Y. — IBM's move aimed at ending tape avalanche AIX, a situation that some users said has caused version-control problems. There has been a customer concern with the frequency." acknowledged Linda Ryan, IBM's director of AIX and advanced workstation marketing.

Users win in DEC/dealer war
Effort to undermine used equipment sellers creates VAX bargains

Like a barrel over a waterfall, the value of used Digital Equipment Corp. midrange VAXs has plunged so fast in the past three months that DEC resellers are scrambling to lighten their inventory loads.

Users can reel in incredible bargains these days, according to industry analysts. A used VAX 6000 Model 420 that sold for $225,000 in June is now re-tagged at about $150,000, resellers said.

Yet customers upgrading their current machines on the secondary market should be ready to pay premium prices to DEC for the mandatory operating system upgrade.

Ferret lovers unite — and download
Want to meet people who share your interest in raising ferrets? Just spotted a dodo bird in Kansas and want to know where to report it? If you have a personal computer and modem, chances are good that there is an electronic bulletin board service for you what- ever your interests are.

Special interest bulletin boards, the "electronic clubhouses" that can be tapped by anyone with a computer and modem, are proliferating as PC prices and telecommunications costs fall. In fact, a recent study by Boardwatch Magazine found nearly 30,000 public-access electronic bulletin boards in the U.S. That number compares with only 14,000 such systems the magazine found last year.

Oracle plans major rewrite of SQL*Net
Oracle Corp. is in the final stages of a major rewrite of its SQL*Net communications networking software, according to Oracle users and industry analysts. The new version will reportedly boost network performance, especially for client/server applications, and will provide a more reliable base for distribution database features expected to be provided by the forthcoming Oracle Version 7.0.

A product announcement could come as early as next month, users and analysts said. It would be the first major revi- sion for 5-year-old SQL*Net, which is used by about half of Oracle's installed base.

The rewrite amounts to a top-to-bottom revision of the SQL*Net code, originally written by Oracle programmers to handle protocol conversions across networks. In the future, network directory services and remote procedure call software could be added to the revised SQL*Net code, analysts said.

Most observers said they expect the announcement soon but were unable to give a precise date, partly because the new

Errant EDI sparks vendor action

Customer complaints of delayed and misplaced messages have spurred electronic data interchange service providers to fi- nally implement reliability stan- dards on the gateways used to exchange EDI documents between different services. At a meeting of the American National Standards Institute X12 Task Group held last week, 12 value-added network (VAN) companies committed to imple- ment the ANSI Interconnect Mail/ing Control Structures, a standard designed to ensure secure and reliable transfers of EDI messages between carriers.

All of the major EDI service providers were present at this meeting with the exception of Trescortments, Inc. The need for more intercon- nection reliability has burgeoned over the last couple of years as EDI customers expand their connections to users on other VANs, according to Victor Wheatman, program director of interenterprise systems at Gartner Group, Inc.

For example, messages that involve another VAN make up more than 20% of the traffic han- dled by AT&T's EDI service, ac- cording to AT&T EDI business manager Gary Dalton. Other carriers are involved in 15% of the 100,000 EDI message ex- changes handled by BT America, Inc.

However, the interconnec- tions used by VANs to exchange EDI messages have amounted to little more than "basically dial in and pray," Wheatman said. When users complain, they

Oracle plans major rewrite of SQL*Net

Oracle Corp. is in the final stages of a major rewrite of its SQL*Net communications networking software, according to Oracle users and industry analysts. The new version will reportedly boost network performance, especially for client/server applications, and will provide a more reliable base for distribution database features expected to be provided by the forthcoming Oracle Version 7.0.

A product announcement could come as early as next month, users and analysts said. It would be the first major revi- sion for 5-year-old SQL*Net, which is used by about half of Oracle's installed base.

The rewrite amounts to a top-to-bottom revision of the SQL*Net code, originally written by Oracle programmers to handle protocol conversions across networks. In the future, network directory services and remote procedure call software could be added to the revised SQL*Net code, analysts said.

Most observers said they expect the announcement soon but were unable to give a precise date, partly because the new

INSIDE

Adventures In The New Europe
Companies that do business in Europe are finding that systems unification is a must. See Adventures In The New Europe, after page 46.
IN THIS ISSUE

NEWS
4 There’s favorable industry response in store for IBM’s new data warehouse concept.
6 The computerized decision-making models relied on by Congress aren’t too reliable, panel reveals.
8 Apple’s Macworld Exposure unleashes a world of Macintosh news and new products.
10 JWP looks to expand its reseller status by buying Businessland.
14 IS professionals seek certified security via standards for personnel and products.
16 Good financial news is hard to find these days, but Sun Microsystems has hit the mother lode.

43 LAN switches are like traffic on the network gridlock.

48 User reaction indicates that IBM may be alone in caring how open its Application System/400 is.

55 Meet five companies that have made new technology pay off.

56 Even after the lifting of some trade sanctions, South Africa is no beacon for business. U.S. firms remain wary of dealing with the controversial country.

61 Sociology and software measurement go hand in hand. By Capers Jones.

63 The computerized decision-making models relied on by Congress aren’t too reliable, panel reveals.

65 State and local governments are hard-hit by these budget-conscious times. But careful use of IS is allowing the public sector to continue to serve citizens.

INTEGRATION STRATEGIES
53 Meet five companies that have made new technology pay off.

DEPARTMENTS
6, 87 News Shorts
17 Advanced Technology
20 Editorial
52 Calendar
73 Computer Careers
74 Fast Track
86 Stocks
90 Inside Lines

IN THIS ISSUE

IN THESE ISSUES

EXECUTIVE BRIEFING

■ DEC customers will find bargain-basement prices on the used market as re-sellers unload their inventories of recently devalued systems. However, some of that windfall could be lost because of DEC’s VMS upgrade charges. Resellers say DEC has recently been charging premium prices for operating system upgrades on used equipment as a way to discourage customers from shopping on the secondary market. Page 1.

■ Sensitivity to sociological and cultural issues is important for IS managers who want to create a successful software measurement program. Staffers will likely feel dismay and apprehension at the prospect of such scrutiny. What IS chiefs must convey is that the measurement program is not a punitive weapon but a way to identify problems and point out strengths. Page 61.

■ Financial know-how, coupled with a well-grounded understanding of a company’s way of doing business, often takes precedence over technical skills, according to some IS executives. Page 73.

■ Large-systems users support IBM’s idea for a data warehouse that will manage corporatewide data access, but some are confused about how the company will make the concept a reality. Page 4.

■ Leasing systems successfully takes careful planning, close attention to the contract on the part of IS managers as well as frequent updates. Page 80.

■ Local-area network switches are emerging as one way to bring relief to clogged networks. The switches can create a virtual path between two nodes on a LAN. Page 45.

■ On site this week: Laptops turn low-performing sales representatives into top-notch staff members at Bridgestone Tire. Page 35. Albright and Wilson Americans install a gateway between IBM and DEC equipment to give users easier access to both commercial and engineering data. Page 43. Canadian Airlines puts together a frequent-flier system in less than a year by using an existing software template and computer-aided software engineering tools. Page 23. National Westminster Bank corp plans to maintain its IBM and Wang environment, and says it does not foresee any major hassles from the recently announced alliance of its two vendors. Page 25.
Sorting time can be a costly drain on resources. Which is why most Fortune 500 companies use Syncsort to optimize sorting.

For the most efficient and effective sorting, Syncsort offers a complete solution of software, training courses and performance enhancement services. We act as your partner by evaluating your unique sorting needs and providing a tailored solution of software and services. Our professional services are unconditionally guaranteed. With Syncsort as your sorting partner, you can double your sorting efficiency.

No wonder most Fortune 500 companies have relied on us for over 20 years. They've seen us consistently outperform the competition, making us the leading sort company. They consider Syncsort to be an investment that pays for itself hundreds of times over.

For sorting efficiency, don't waste time. Call your sorting partner: Syncsort.
Data warehouse concept OK, users waiting for reality check

BY ROSEMARY HAMILTON
CW STAFF

Several IBM large-systems customers and industry consultants are bullish on the data warehouse concept the company is expected to announce next month [CW, Aug. 5]. However, they are also uncertain how this concept will become reality in a timely fashion.

"I think they might come out with a statement in September that it might take years to fulfill," said Howard Foddick, president of Foddick Consulting, Inc., and former president of the International DB2 User Group.

Data warehouse, the informal name used to describe the new strategy, is intended to provide users with an architecture and tools to oversee the distribution of corporatewide data to end users. Earlier this year, IBM positioned it as a step beyond distributed relational databases.

Users said that while the details are unclear, the concept addresses a serious concern they have faced for a long time: how to get more data to users while keeping the flow of information under control.

"I don't understand exactly how IBM will implement it," said Dick Stromberg, a consultant in the information systems department at Da Pont Co. "We are on board with the concept. But the physical implementation is the hurdle to get over now." For IBM to actually achieve this objective will be far more difficult than promoting the concept. The data warehouse crosses a number of IS issues. It would also require level of management or a central point of control to ensure that the architecture IBM has defined is properly implemented and maintained.

Users and analysts said they expect IBM to unveil the data warehouse as the latest component under Systems Application Architecture. As such, it will likely be introduced as a long-term initiative that will consist of an IBM architecture and some key IBM products.

No grand plan

However, one observer said IBM intends to position the warehouse to fit various IBM user environments instead of announcing one grand plan.

"They've been learning from the AD/ Cyc cycle that you can't just put out a vision and expects people to buy components," said Paul Hessinger, director of research at Munich, Germany-based Softlabs and former chief technology officer at Computer Task Group.

Consultants are speculating that a number of existing products will be positioned under the data warehouse banner. For users of larger systems, DB2 will likely serve as a way station, or temporary storage facility, for end-user data extracted from corporate databases, consultants said.

With SQL-based front-end tools, users could then tap into the DB2 way station and pull out information. Consultants are predicting that Information Builders, Inc.'s Focnet data access system will play a key role.

A number of IBM and third-party tools will be required to extract data and move it into the DB2 way station, observers said. IBM's recently announced Data Propagator, which pulls data out of IMS and loads it into DB2, would likely be one of those tools, Hessinger said.

At a future date, IBM would likely position its Repository Manager software as one mechanism to control the architectural information on the warehouse, some consultants said.

IBM's Distributed Relational Database Architecture will fit a piece of the foundation, observers said. It contains the protocols and specifications necessary for databases to function in a distributed environment.

Banks invest in IS despite cutbacks

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — To justify continued technology investments in a tightening and overautomated banking world, information systems executives are seeking more efficient ways of managing their computing resources, according to survey results released last week by consulting firm Ernst & Young.

Top IS executives interviewed by Computerworld corroborated the study's findings. They said that despite consolidation trends and a glut of on-line services in the banking industry, the IS departments must forge ahead with investments they believe will strengthen their businesses.

The survey respondents said they are looking to finance new projects needed to stay competitive by controlling costs through downsizing, standardizing on fewer applications and consolidating networks (see chart).

You have to stay aggressive while justifying costs," acknowledged Arthur Claudio, first vice president of data processing, at U.S.A., the Caisse Nationale de Credit Agricole, a Paris-based bank, "but I can't just sit there and stay status quo because you might merge. Your performance continues to be measured for what it is today.

Too much power

The survey of 57 large U.S. banks, conducted for trade publication American Banker, revealed a surplus of computing capacity in the banking industry that has not yet paid off because of a saturated consumer market, said Greg Schmergel, an Ernst & Young consultant.

"Banks invested heavily in technology because they thought it would let them process each transaction at a lower cost. For that to be profitable, however, banks need to get their transaction volume up," Schmergel said.

"We must find creative ways to solve this dilemma because we're still going to make big technology investments," said Jim Wegmann, senior vice president of corporate electronic data processing at 86 billion Talman Home Federal Savings & Loan Association of Illinois in Chicago. One way Talman is controlling costs, Wegmann said, is via a "partnership approach with vendors.

Talman Home Federal, he said, has assembled a group of vendors as business partners to design, develop and roll out unique products and services that yield a "lower blended unit and production cost."

"We're managing tighter by the year or two ago so we can do more with less," said Martin Bronstein, senior vice president of systems development at the First National Bank of Chicago.

Despite efforts to manage more tightly, technology investment growth in the industry has slowed to about 2% per year, down substantially from system 10% to 15% a few years ago, according to Ernst & Young. Many new investments will be in equipment aimed at adding new products to the companies to ultimately save money in head count and operations.

The Ernst & Young study showed banking trends away from outsourcing and distributed processing. One possible reason behind the anti-outsourcing sentiment is that such contracts typically represent an eight-year commitment, said M. Arthur Gilman, president of Computer Based Solutions, Inc., a New Orleans banking systems consulting.

Only 2% of Ernst & Young's survey respondents said they were using distributed processing as a method of controlling costs.

The Ernst & Young study showed banking trends away from outsourcing and distributed processing. One possible reason behind the anti-outsourcing sentiment is that such contracts typically represent an eight-year commitment, said M. Arthur Gilman, president of Computer Based Solutions, Inc., a New Orleans banking systems consulting.

"With the big picture, the banks have to ultimately save money in head count and operations."

Source: American Banker/Ernst & Young Technology Survey

Body count

Consultants in data processing staff and independent programmers are among the cost controls used by banks

Methods | Number of banks:
---|---
Employed fewer independent programmers | 42
Reduced number of data processing staff | 41
Standardized on fewer application systems | 41
Constrained maintenance resources | 41
Consolidated networks | 35
Consolidated data centers | 32

Survey of 57 banks Multiple responses allowed

The Ernst & Young study showed banking trends away from outsourcing and distributed processing. One possible reason behind the anti-outsourcing sentiment is that such contracts typically represent an eight-year commitment, said M. Arthur Gilman, president of Computer Based Solutions, Inc., a New Orleans banking systems consulting.

Only 2% of Ernst & Young's survey respondents said they were using distributed processing as a method of controlling costs.

The Ernst & Young study showed banking trends away from outsourcing and distributed processing. One possible reason behind the anti-outsourcing sentiment is that such contracts typically represent an eight-year commitment, said M. Arthur Gilman, president of Computer Based Solutions, Inc., a New Orleans banking systems consulting.

"With the big picture, the banks have to ultimately save money in head count and operations."

Source: American Banker/Ernst & Young Technology Survey

Banks invest in IS despite cutbacks

BY ROSEMARY HAMILTON
CW STAFF

NEW YORK — To justify continued technology investments in a tightening and overautomated banking world, information systems executives are seeking more efficient ways of managing their computing resources, according to survey results released last week by consulting firm Ernst & Young.

Top IS executives interviewed by Computerworld corroborated the study's findings. They said that despite consolidation trends and a glut of on-line services in the banking industry, the IS departments must forge ahead with investments they believe will strengthen their businesses.

The survey respondents said they are looking to finance new projects needed to stay competitive by controlling costs through downsizing, standardizing on fewer applications and consolidating networks (see chart).

You have to stay aggressive while justifying costs," acknowledged Arthur Claudio, first vice president of data processing, at U.S.A., the Caisse Nationale de Credit Agricole, a Paris-based bank, "but I can't just sit there and stay status quo because you might merge. Your performance continues to be measured for what it is today.

Too much power

The survey of 57 large U.S. banks, conducted for trade publication American Banker, revealed a surplus of computing capacity in the banking industry that has not yet paid off because of a saturated consumer market, said Greg Schmergel, an Ernst & Young consultant.

"Banks invested heavily in technology because they thought it would let them process each transaction at a lower cost. For that to be profitable, however, banks need to get their transaction volume up," Schmergel said.

"We must find creative ways to solve this dilemma because we're still going to make big technology investments," said Jim Wegmann, senior vice president of corporate electronic data processing at 86 billion Talman Home Federal Savings & Loan Association of Illinois in Chicago. One way Talman is controlling costs, Wegmann said, is via a "partnership approach with vendors.

Talman Home Federal, he said, has assembled a group of vendors as business partners to design, develop and roll out unique products and services that yield a "lower blended unit and production cost."

"We're managing tighter by the year or two ago so we can do more with less," said Martin Bronstein, senior vice president of systems development at the First National Bank of Chicago.

Despite efforts to manage more tightly, technology investment growth in the industry has slowed to about 2% per year, down substantially from system 10% to 15% a few years ago, according to Ernst & Young. Many new investments will be in equipment aimed at adding new products to the companies to ultimately save money in head count and operations.

Supersaturated?

The Ernst & Young survey measuring the banking industry's data processing capacity revealed the following:

- An estimated hardware/software value of $200 billion.
- Accumulation of 1 million pieces of computer information per capita. At the current pace, this will grow to 10 million by the year 2000.
- A one-to-one PC-to-employee ratio expected by 1995.

"If the large 150 largest banking companies have outsourced data center operations.

Source: American Banker/Ernst & Young Technology Survey
On March 12, Oracle® recorded the highest TPC Benchmark® B rate ever: 425 tpsB on a VAXcluster.
And the fastest TPI score ever on January 21st: 416 tps on an IBM-compatible mainframe.

Both were industry-standard tests on 8 gigabyte databases, independently certified by Codd & Date.

All these benchmarks are further proof that ORACLE not only runs virtually everywhere, it runs fastest everywhere. Fastest on PCs, workstations, minicomputers and mainframes. Fastest on stand-alone machines, or in a client/server configuration.

So no matter what system you choose, you get the best performance and lowest cost per transaction. No small concern to managers trying to squeeze the most out of their MIS/DP budgets.

1-800-633-1071 Ext. 8116

But don’t just take our word for it. Call, and ask for the benchmark reports audited by Codd & Date. They certify the test results and give a full account of the testing methodology and system configurations.

Just the thing for a little speed reading.

ORACLE®
Software that runs on all your computers.
NEWS SHORTS

Hybrid telephony examined

The North American Telecommunications Association, based in Washington, D.C., formed a membership council last week to focus on expanding the market for computer-integrated telephony products — those that link a customer's incoming telephone call to the company's database management system. The Alliance of Computer-Based Telephony Application Suppliers will have industry/user task forces and education programs covering such applications as customer service, sales automation and telemarketing, officials said.

Bull adds systems integration group

Bull Information Systems, Inc. last week formed a systems integration business unit focusing on technologies such as personal computers, networks and open systems. Steve Gardner, former vice president of marketing at Bull, was named president of the unit.

OS/2 Workbench gets new tool

IBM just keeps adding packages to its forthcoming OS/2 Programmer's Workbench, which should be formally rolled out in its entirety next month, according to John Soyring, who coordinates IBM's third-party OS/2 developers' program. The latest addition to the Workbench, announced last week, targets large enterprises running Fortran. IBM announced an agreement with Waterloo, Ontario-based Watcom under which Watcom will develop and market OS/2 2.0 versions of 32-bit optimizing compilers for Fortran 77 and C.

Bill would hit pirates

The U.S. Senate Judiciary Committee approved a bill that would impose criminal penalties for software copyright infringement. The bill would impose a fine of up to $250,000 and a prison term of up to two years for illegal reproduction or distribution of 11 to 49 software copies. Currently, first-time piracy is a misdemeanor. Meanwhile, the Software Publishers Association released results of a study showing 1990 piracy at an estimated $2.4 billion in the U.S., down from $2.5 billion in 1989 and $2.9 billion in 1988.

Acer pares prices

Acer America Corp., a PC-compatible maker based in San Jose, Calif., brought out a new line of PCs and cut prices by as much as 29% on its older product line. Among the machines introduced last week is an entry-level multimedia box, the Acer 1125E, based on a 25-MHz Intel Corp. 80386DX chip. The basic model costs $1,995.

Amdahl disks delayed

Amdahl Corp. said last week that shipments of its high-end 6390 disk drive would be delayed about six weeks because of a need for additional testing. The move, which pushes first shipments from September to November, occurs as Amdahl's late entry into the IBM 3390-compatible market. IBM has shipped its 3390s since late 1989; Amdahl competitor Hitachi Data Systems Corp. in Santa Clara, Calif., started shipping its 7390s this year. "They didn't give any details. They just said it wasn't ready," said Robert Callery, a senior analyst at Technology Investment Strategies Corp.

Job cuts at Siemens-Nixdorf

Germany's Siemens-Nixdorf Informationssysteme AG, a unit of Siemens AG, said last week that it will slash 3,000 of its 51,000 jobs as part of a program to save $341 million by the end of 1992. The firm said the cost-cutting plan was part of the second phase of the company division and Nixdorf Computer AG, which Siemens rescued in 1989. On the domestic front, Siemens-Nixdorf announced a major contract with Cummins, a Columbus, Ind., engine maker, signed a contract to install Siemens-Nixdorf point-of-sale terminals, software and Targen minicomputers at 47 stores throughout the U.S.

Panel faults federal data models

"There is very little done to assess the validity of the estimates, the amount of uncertainty in the estimates and the options for improving them," said the study leader, Eric A. Hamu- shek, a political economist and former official at the Congressional Budget Office.

Move from mainframes

In addition to recommending that the federal government stop skimping on model validation and statistics, the study said the next generation of models should be developed for desktop computers, not mainframes. Policymakers seem to believe that the computer-generated estimates are error-free and rarely ask or are told about the uncertainties caused by faulty data and assumptions, the study said.

Microsimulation models are used by government offices, contractors and think tanks to simulate the effects of government programs on individual households. Typically, they are ultra-complex Fortran programs run in batch mode on IBM mainframes. In the next few years, desktop computers will have enough processing power to handle the data-intensive models, the report said, and graphical user interfaces will make it easier for policy analysts to use, analyze and modify the models.

One issue that neither protocol resolves perfectly is how to track message delivery from one user's site to another. Mailbag tracks exchanges only between EDI carriers, not end users. X.435 can track an EDI message end to end as long as all parties agree to use the X.435 electronic mail standard — which few users do for EDI. The ANSI task group is now considering a delivery-notification notification protocol.
To The Most Advanced RDBMS, It's Just Another Server.

Client/server computing integrates the powerful, graphical capabilities of desktop workstations with the proven data storage and processing capabilities of mainframes. Client/server computing, in essence, turns mainframes into servers.

But turning mainframes into servers creates two tough problems: Preserving MIS control over corporate data. And integrating existing applications with new ones.

Only SYBASE® solves both problems. Unlike most RDBMS gateways, SYBASE gives MIS complete control over mainframe data, applications, and services by providing desktop access transparently through CICS—ensuring that all requests meet current transaction management, security, and monitoring requirements. In addition, SYBASE allows MIS to regulate network access to specific transactions, regions, and data sources. With SYBASE, MIS is always in control.

SYBASE also leverages the investments made in existing mainframe applications. SYBASE integrates new, LAN-based applications with mainframe applications written in COBOL, PL1 or Assembler, as well as with all data sources and services accessible from CICS, such as DB2, IMS/DB and VSAM. With SYBASE, existing mainframe applications don't have to be rewritten.

SYBASE is the only product that lets you effectively turn your mainframes into servers as you deploy new LAN-based applications on VAXes, UNIX, OS/2, and DOS-based platforms, Macintoshes, and others.

What's more, our professional services division, SQL Solutions, can help you design, develop, and integrate complete multi-vendor relational systems for your on-line, enterprise-wide computing environment.

To find out more, call and register for a Sybase Educational Seminar near you. Because the time to turn your mainframes into servers is now.

Just call 1-800-8-SYBASE.
Apple goes for corporate gold

BOSTON — Apple Computer, Inc., continued its aggressive pitch for the corporate customer at the Macworld Expo last week, unveiling a licensing pact with Computer Associates International, Inc. designed to give Macintosh users access to CA mainframe database and applications software.

At last week's show, most product introductions came from third-party vendors (see story below). Besides the CA announcement, Apple officials signed themselves to promoting System 7.0 and quietly showing off QuarkXPress, its multimedia extension to System 7.0.

The CA pact, however, could prove important to Apple's goal of penetrating the Fortune 500, according to Bob Puetz, president of Apple USA. Under the terms of the agreement, CA has agreed to license Apple's Data Access Language (DAL), a connectivity language that provides users with interactive access to the information residing on a variety of servers and hosts.

CA plans to develop DAL server software for its database management systems as well as develop Macintosh-based client/server versions of its Masterpiece general ledger package. These products would begin trickling out by the end of the year, with full availability expected by the middle of 1992, according to Kurt Seibert, CA's vice president of strategic business alliances.

Macworld highlights System 7.0

The announcement, along with Apple's relatively low-key appearance during the four-day event, indicates a shifting of gears at the biannual show. Once a gathering place for the technological counterculture, Macworld has become increasingly staid as Apple has used the event to woo the large customers it desperately needs in order to stem its hemorrhaging market share. Some research estimates have Apple's market share shrinking from 15% to 10% in the coming three years.

A big draw, so to speak, at last week's Macworld was a pro-
mensional drawing tool. Using a highly advanced form of mathematics, Sketch's tool lets a user sketch and gesture freely in a 3-D atmosphere to create organic forms. Changes can be made using an eraser, and any point of any curve can be refined and manipulated in the 3-D environment. Curves always remain alive: Change one, and the entire surface is automatically updated. The $1,985 product is scheduled for beta-testing at the end of the month.

Lotus agrees to adapt 1-2-3 for AIX users on RS/6000

BY PATRICIA KEEFE

CAMBRIDGE, Mass. — Lotus Development Corp. announced plans last week to port its 1-2-3 spreadsheet to IBM's AIX-based RS/6000 product line. Delivery of the $695 program is slated for early 1992. The new release will support AIX Version 3.1.5 and later, as well as concurrent licensing.

This is the latest in a series of agreements between IBM and Lotus that so far have spawned a version of 1-2-3 for MVS and a remarketing and technology access deal involving Lotus Notes and CC:Mail.

The pact also takes IBM closer to launching an assault on the low end of the workstation market, which overlaps with high-end personal computers in the business sector. IBM is expected to introduce its lowest priced workstation in the $6,000 to $8,000 bracket this September.

"All of IBM's competitors are taking a major run at the desktop at the high end of the PC world. IBM has to protect that ground," said David Rome, Lotus' director of Unix products.

The AIX port is also fueled by customer input, Rome said, adding that Lotus receives roughly 10 calls a week from users asking for a 1-2-3 port to AIX.

The version of 1-2-3 for AIX will be based on 1-2-3 Release 3.0, and it will use the same core code underlying Lotus' other Unix spreadsheets. The one major difference, Rome explained, is that Lotus will move that core code over to ANSI-standard C for AIX's AIX.

Furthermore, 1-2-3 for AIX will be able to talk to 1-2-3 for MVS by interchanging files over IBM communications links, Rome said.

Under the current system, tapes are sent every few months to customers to fix bugs and provide functional enhancements. With selective fix, tapes will address specific problems and will be sent only to users who request them.

General-maintenance tapes with new features or enhancements will be sent out approximately twice a year, according to Ryan.

"That will give customers more flexibility and more capability not to have to put on these maintenance releases as frequently," she said. "With selective fix, a customer can install an individual fix to his problem."

Ryan would not disclose a delivery date for the full release.

IBM has had to issue major software releases to AIX users to make up for past problems, according to Silverman and other users. Early versions of AIX had major weaknesses, including the propensity to cause system crashes.

IBM fixed many of the large faults when it released Version 3.1 in February 1990 but has since introduced subsequent releases to fix more minor bugs.

"If IBM has sent out a lot of releases, it's because they understand it's important to get AIX right," said Judith Hurwitz, vice president at Patricia Seybold's Office Computing Group in Boston.

"They've had their problems, but they're not twiddling their thumbs in the meantime," she added.

Apple began licensing DAL to third-party developers in March and has signed agreements with Byth Software to develop DAL for DOS, Microsoft Corp.'s Windows, OS/2 and Unix clients. Apple has also enlisted Novell, Inc., Tandem Computers, Inc., Data General Corp. and Pacer Software to develop DAL servers.

Apple officials were anxious to focus attention on System 7.0, the revamped operating system that Apple is betting will turn its hardware into major corporations. Nearly three months after System 7.0's introduction, products exploiting many of its features are beginning to arrive in mass.

AIX upgrade

FROM PAGE 1

Under the current system, tapes are sent every few months to customers to fix bugs and provide functional enhancements. With selective fix, tapes will address specific problems and will be sent only to users who request them.

General-maintenance tapes with new features or enhancements will be sent out approximately twice a year, according to Ryan.

"That will give customers more flexibility and more capability not to have to put on these maintenance releases as frequently," she said. "With selective fix, a customer can install an individual fix to his problem."

Ryan would not disclose a delivery date for the full release.

IBM has had to issue major software releases to AIX users to make up for past problems, according to Silverman and other users. Early versions of AIX had major weaknesses, including the propensity to cause system crashes.

IBM fixed many of the large faults when it released Version 3.1 in February 1990 but has since introduced subsequent releases to fix more minor bugs.

"If IBM has sent out a lot of releases, it's because they understand it's important to get AIX right," said Judith Hurwitz, vice president at Patricia Seybold's Office Computing Group in Boston.

"They've had their problems, but they're not twiddling their thumbs in the meantime," she added.
IBM Delivers CICS/ESA V3R21

Candle Immediately Supports CICS/ESA V3R21

IBM Offers IMS/ESA 3.1
HIPERSPACE® SPE Support

OMEGAMON® Supports IMS/ESA 3.1

IBM Releases VM/ESA 1.0

Candle Provides “Day One” Support for VM/ESA 1.0

The best way to keep your name in the headlines is to do something remarkable ...over and over again.

At Candle Corporation, that feat is called “IBM currency” - keeping pace with each new IBM release in every environment.

Matching IBM stride for stride is a costly undertaking. That’s why many of our competitors are reluctant to support new releases until the market is well-populated. But at Candle, we’ve always had a soft spot for pioneers - especially those data centers that can’t wait six months for today’s breakthroughs.

Our commitment begins with enormous R&D expenditures, but that’s only part of the story. We’ve also assembled teams of specialists in every environment - professionals who tap the full potential of the latest IBM technologies.

Candle’s quest for currency also carries over to technical support and education. Whether it’s on the phone or in a classroom, our people are specially trained to provide up-to-the-minute answers about Candle product support of new IBM releases.

At Candle, we believe in making headlines, not excuses. For the current news, contact your Candle account representative today or call (800) 843-3970 and ask for Department 607.

Copyright © 1991 Candle Corporation.

Making your systems perform.
Businessland master key to JWP's plan

BY MICHAEL FITZGERALD
CW STAFF
PURCHASE, N.Y. — JWP, Inc.'s pending $32 million purchase of ailing reseller Businessland, Inc. is key to a long-term strategy for JWP, which currently derives more revenue from its technical services group than its reselling branch.

Ultimately, JWP intends to have its resellers — all of which will eventually focus on the corporate market — also sell JWP's facilities services, such as electrical systems or control systems, according to Harold D. Copperman, president of JWP Businessland, Inc., which is the name of the combined unit.

"I think we can build some strategic relationships, do some cross-selling . . . and there's no reason why we couldn't refer- ence and cross-sell other systems JWP offers, such as environmental or security systems," said Copperman, a longtime IBM employee who was most recently president of Commodore Business Machines, Inc.

In the meantime, JWP will begin the task of merging the two companies. Copperman said JWP intends to "do this with no customer disruption."

10% to 20% cut

JWP Businessland will have 3,500 employees, but between the sale of the two, there will lose their jobs by Jan. 1, 1992. JWP said it expects to cut personnel largely from back-office and administrative functions, retaining most of the combined service and sales operations.

JWP has also said it will consolidate or close approximately 30 of the combined 100 sales and service offices.

According to a JWP spokesman, Copperman was chosen to head the integration in part because his history precludes a bias toward either company, thus resulting in his keeping the best people.

JWP Businessland will be headquartered in Canton, Mass. Robert J. Crowell, currently chairman and chief executive officer of JWP's Computer Systems Group, will hold the same positions in the new company. Businessland founder and Chairman David Norman is expected to serve in an advisory capacity for one year.

Turnaround possible

Although Businessland is in financial trouble, at least one competitor expects the combined entity to become a formidable rival.

"They'll probably be all right; they seem to have a reasonable plan to do [the merger]," said William Tauscher, chairman of Computerland Corp., the nation's largest reseller, with nearly $3 billion in sales.

"There is no question that if they can execute [in the new operations], we'll be two titans slugging it out," he added.

Tauscher, whose company is still working through last March's estimated $150 million acquisition of Nynex Business Systems, Inc., failed in a late bid for Businessland last month, after what he said was a year's worth of discussions.

He predicted JWP's acquisition will spark a move toward more combinations of resellers.

Copperman did not rule out another purchase in the future but suggested such purchases would probably involve smaller companies in vertical markets.

Elsewhere last week, resellers Valco, Inc. and Inacom Computer Centers, Inc. finalized their merger, creating Inacom Corp., a company with nearly $1 billion in sales.

Chairman Rick Inatome said the two firms expected to complete their merger by the first quarter of 1992. As far as other acquisitions are concerned, according to Bill Fairfield, president and CEO of the new company, "We'll leave [those] to Tauscher."
Now they're calling it a non-programmable terminal. Which might make you think technology has simply passed it by.

At SAS Institute, we see things a little differently. After all, your mainframe—and the thousands of terminals attached to it—are the backbone of your business. Not to mention your largest single investment in computing. And we just don't think you should have to replace that investment to enjoy the interactivity of a PC environment.

Just get the SAS System of software.

Bring the Individual Productivity of a PC to Your Mainframe.

Only the world's leading applications system could bring the look and feel of SAA/CUA to your mainframe...and breathe new life into your 3270 terminals. Just point and shoot to gain total control over your strategic data-driven tasks: data access, management, analysis, and presentation.

Pull-down menus and pop-up windows make it more intuitive than ever to take advantage of the SAS System's wide range of applications—from report writing and graphics to decision support and applications development.

Let the SAS System point the way to greater productivity on your mainframe...on your minicomputers and UNIX*-based workstations...and on your PCs running OS/2" and MS-DOS®. Wherever you choose to run the SAS System, you'll get fast-and-friendly software backed by expert technical support, consulting services, documentation, and training.

All from SAS Institute Inc., one of the world's most respected names in software. For a SAS System executive summary, plus details about how you can receive the SAS System for a free trial, give us a call at 919-677-8200. In Canada, call 416-443-9811.

SAS Institute Inc.
Software Sales Department
SAS Campus Drive □ Cary, NC 27513
Phone 919-677-8200 □ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. UNIX is a registered trademark of AT&T. SAA and OS/2 are registered trademarks of IBM Corp. MS-DOS is a registered trademark of Microsoft Corp.

*Computer Intelligence, La Jolla, CA.

Copyright © 1990 by SAS Institute Inc. Printed in the USA.
Thousands
Tens of thou
Millions?
How much can you save you
simply by using your preser
And how will you know un
Just ask your HP Consultant. We'll come in and see if you're really getting your money's worth from your systems. It's something our people do all the time. Because we know how important it is to squeeze the last dollar out of your computer investment. Before you spend another cent.
Our specialists from HP Professional Services will take a close look at your computing environment, then put together a program tailor-made for you. Whatever needs doing, we'll do it.
So call HP at 1-800-752-0900, Ext. 2540 for more information. You may ask yourself that million dollar question: why didn't I do it sooner?
Security pros looking for stamps of approval

BY MICHAEL ALEXANDER
CW STAFF

The second of two articles on recent developments in computer security.

A growing number of information systems security experts are calling for a seal of approval on their profession and eventually on secure software and hardware.

"I think that security is often thought of as a clerical function," said Sally Meglathery, director of information security at the New York Stock Exchange and former president of the Information Systems Security Association (ISSA).

The experts think that to get the recognition and credibility they deserve, they must certify security's practitioners, whether they are in corporate IS or security consulting firms.

"It reflects the maturation of the profession," said Dain Gary, manager of information security at Mellon Bank NA in Pittsburgh. "It says something definite about [a candidate's] experience and knowledge."

In recent years, there has been a "phenomenal" increase in security awareness by senior managers, Gary said. Management recognizes too well the liabilities of failing to adequately protect a corporation's information, he noted.

"Senior level managers are looking for a defensible position in the event of a problem," said Richard C. Koenig, president and chairman of the board of the International Information Systems Security Certification Consortium, Inc. (ISCC) and a security consultant. "They want the assurance that the person responsible for security knows what he is doing."

(ISCC) was founded by members of six well-regarded trade groups, including ISSA, the Data Processing Management Association and the International Federation for Information Processing.

Aug. 31 marks the end of the first phase in the group's bid to certify IS security professionals. From March to the end of this month, (ISCC) waived its formal examination process for security professionals who meet certain criteria, such as time in the profession and areas of expertise.

"Perhaps as many as 10,000 practitioners will be certified in the next few years," Koenig said. "We have been getting 15 applications a day as we approach the [phase one] deadline," Koenig said.

Starting in the first quarter of next year, security experts seeking certification will be required to take a lengthy examination that will test the candidates' expertise in computer security, business continuity planning, legal and regulatory issues, investigation, and several other related areas. There is a $250 fee to take the test.

The security experts said that the day products are formally evaluated and certified based on their security strengths is probably not far off.

The "Computers at Risk" report issued by the National Research Council earlier this year recommended establishing an IS security foundation that gives products a sort of security "Good Housekeeping Seal of Approval."

Some security practitioners already influence hardware and software purchases based on each product's security merits. "We're no longer looking at just price and performance but also how it fits into a security environment," Gary said.

Sun profit soars, competition looms

BY KIM S. NASH
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. ended fiscal year 1991 with a bang last week when it reported a 71% jump in profits for the year and a sales increase of 31% compared with figures from a year ago. Revenue reached $3.2 billion for 1991, and net profits registered at $190.3 million.

Buyers snapped up Sun's Sparcstation 2, a 40-MHz midlevel workstation priced at about $15,000, in record numbers during the quarter just ended, according to Sun. The firm sold 49,000 total units in its fourth fiscal quarter, ended June 30, with the quarter just ended, according to Sun. The firm sold 49,000 total units in its fourth fiscal quarter, ended June 30, with Sun's chief financial officer.

"Sun has continued to dominate the low- and midrange workstation market," said Jeff Canin, technology analyst at Montgomery Securities in San Francisco. Sun owns 30% to 35% of the entire workstation market, compared with market shares of 21% for Hewlett-Packard Co. and 16% for Digital Equipment Corp., Canin said.

He cautioned, however, that Sun's new Sparcstation IPX may eat into Sparcstation 2 sales in the near future because the IPX "has comparable performance, but it's cheaper, which will cut down on gross margins." He added: "Sun may also face price competition on the reduced instruction set computing front later this year, with IBM, HP and DEC expected to reduce prices on their comparable workstations, Canin said.

"Sun has continued to dominate the low- and midrange workstation market," said Jeff Canin, technology analyst at Montgomery Securities in San Francisco. Sun owns 30% to 35% of the entire workstation market, compared with market shares of 21% for Hewlett-Packard Co. and 16% for Digital Equipment Corp., Canin said.

He cautioned, however, that Sun's new Sparcstation IPX may eat into Sparcstation 2 sales in the near future because the IPX "has comparable performance, but it's cheaper, which will cut down on gross margins." He added: "Sun may also face price competition on the reduced instruction set computing front later this year, with IBM, HP and DEC expected to reduce prices on their comparable workstations, Canin said.

"Sun has continued to dominate the low- and midrange workstation market," said Jeff Canin, technology analyst at Montgomery Securities in San Francisco. Sun owns 30% to 35% of the entire workstation market, compared with market shares of 21% for Hewlett-Packard Co. and 16% for Digital Equipment Corp., Canin said.

He cautioned, however, that Sun's new Sparcstation IPX may eat into Sparcstation 2 sales in the near future because the IPX "has comparable performance, but it's cheaper, which will cut down on gross margins." He added: "Sun may also face price competition on the reduced instruction set computing front later this year, with IBM, HP and DEC expected to reduce prices on their comparable workstations, Canin said.
Borland ranked best
Quattro Pro beats Lotus 1-2-3

Two recent industry studies objectively confirm the facts: Customers rank Borland best among software companies, and Quattro Pro outperforms all Lotus spreadsheets.

Borland: The technology leader.

Buying software shouldn’t be an act of blind faith. Before purchasing your next spreadsheet, take a hard look at the company behind it. Bigger is not better!

Because Borland is smaller than our competitor, we work smarter, we try harder, and it’s paying off: Borland was just ranked “Best Application Software in Customer Satisfaction, in Small and Medium Sized Businesses,” in the prestigious J.D. Power and Associates survey.

Who would you rather buy your next spreadsheet from?

J.D. POWER AND ASSOCIATES
APPLICATION SOFTWARE
CUSTOMER SATISFACTION INDEX™
1. BORLAND
2. WORD PERFECT
3. CLARIS
4. ALDUS
5. MICROSOFT
6. LOTUS

Quattro Pro: The standard of excellence.

InfoWorld reviews confirm what more than one million PC users already know: Quattro Pro is the best DOS spreadsheet that money can buy. Better than any Lotus spreadsheet including their recently released version 2.3.

Just check out the InfoWorld review results below. Quattro Pro wins in comparison to Lotus 1-2-3 hands down in InfoWorld and with more than 1,000,000 enthusiastic users.

<table>
<thead>
<tr>
<th>Number of...</th>
<th>Quattro Pro</th>
<th>Lotus 1-2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Excellent&quot;</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>&quot;Very Good&quot;</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>&quot;Good&quot;</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>&quot;Satisfactory&quot;</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>&quot;Poor&quot;</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Overall score: Quattro Pro 6.6, Lotus 2.3

We don’t blame Lotus for trying to underplay ratings such as these, but clearly Quattro Pro is more powerful. It has better graphics, better capacity, better macros, better consolidation and linking, and much more!

Borland and Quattro Pro: The obvious choice.

Company for company, product for product, the choice is clear. Join more than a million users and upgrade to Borland’s Quattro Pro today! If you own any version of Lotus 1-2-3, for only $129 we’ll rush you your own copy of the best spreadsheet from the best company.

See your dealer or call 1-800-331-0877 now!
ES/9000 boost doesn't impress competitors

BY JEAN S. BOZMAN
CW STAFF

Mainframe comparison shoppers should not expect a quick response from plug-compatible manufacturers to IBM's plans to improve performance up to 17% on Enterprise System/9000 models [CW, Aug. 5].

Amdahl Corp. and Hitachi Data Systems Corp. (HDS) are prepared to compete, company executives said, based on the processors they are due to ship this fall.

"I think we are in excellent shape," said Henry Cassel, director of processor systems marketing at Amdahl in Sunnyvale, Calif. "I believe our three-way and four-way 5995 M series models compete very aggressively with IBM's Summit machines. So we don't feel we have to do anything to respond."

Amdahl's 50 million instructions per second (MIPS) uniprocessor makes its four-way machine run at 184 MIPS, in comparison with the six-processor IBM ES/9000 Model 900, which is rated by Gartner Group, Inc. at 235 MIPS. However, Amdahl's six-way machine, due to ship next year, is rated at 248 MIPS, while its eight-way machine is now rated at 310 MIPS.

Jim Cassell, vice president of Gartner Group's Large Computer Strategies Service, said all three mainframe brands were reevaluated in late June because all three vendors ran revised software benchmarks based on IBM's MVS/ESA environment.

HDS officials expressed little concern over IBM's latest performance statistics, even though the HDS machines had been rated to be roughly equivalent to IBM's models before the performance boost announcement.

Gartner Group rated the four-way HDS EX 420 at 152 MIPS, the five-way EX 520 at 184 MIPS and the six-way EX 620 at 214 MIPS, noting that the last two machines will not be shipped until June 1992.

However, industry analysts said the three-way race between the mainframe makers had tightened somewhat and had the potential of continuing a months-old pricing war [CW, July 8].

"What the IBM announcement did was to narrow the price/performance gap between its systems and those of its competitors," said Susan Gannon, a mainframe industry analyst at Technology Investment Strategies Corp., Framingham, Mass.-based market research firm. "We expect price competition to start to heat up in the first half of 1992, when Amdahl, IBM and HDS begin to ship these high-end machines in volume."

Avantek buyout expected to boost HP components

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. said last week it plans to acquire Avantek, Inc., a maker of communications equipment for the personal electronics market and the military. However, analysts said the $85 million merger should have little impact on current HP customers.

Components built by Santa Clara, Calif.-based Avantek will become part of HP's components group product line, which is sold through OEMs.

The components include high-speed computer-to-computer communications devices, such as transimpedance amplifiers for fiber-optic signals and those used for Fiber Distributed Data Interface, said Mark Chandler, industry marketing manager for HP's components group.

Avantek has been in financial trouble for some time. It laid off 10% of its employees in June and reported losses in 1989 and 1990.

History repeats itself?
The merger may not become an outstanding addition to HP's line if recent history with network companies is any indication.

In February 1989, HP bought 5% of 3Com Corp.'s outstanding stock and said it would resell 3Com's 3+ Open software and offer support services to users of 3Com's LAN Manager.

"It never amounted to anything," said Richard Kimball, an analyst at Montgomery Securities in San Francisco.

"They might sell a few [3+ Open packages], and there is no major service relationship with them," said Alan Kessler, vice president and general manager at 3Com's Network Service Division.

In August 1988, HP bought 10% of Octel Communications, Inc., a Milpitas, Calif., voice mail company. According to Kimball, HP was to take over Octel's European distribution. However, "it never amounted to anything either," he said.

An Octel spokeswoman said the two companies realized sales would need to be more customized than initially expected. As a result, Octel took back control of European distribution in June.
More Up-to-the-Minute News!

51 Issues for $48

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues. That's a savings of over $9.00 off the basic subscription rate.

First Name
MI
Last Name
Title
Company

City State Zip
Address Shown: Home Business New Renew Basic Rate: $48 per year

* U.S. Only. Canada $58.97, Central/South America $195, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

More In-Depth Reports!

51 Issues for $48

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues. That's a savings of over $9.00 off the basic subscription rate.

First Name
MI
Last Name
Title
Company

City State Zip
Address Shown: Home Business New Renew Basic Rate: $48 per year

* U.S. Only. Canada $58.97, Central/South America $195, Europe $195, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.
Multimedia suffers standards lack

Companies pushing different standards makes it hard to develop de facto standards

By Michael Alexander

Multimedia technology is an elegant melding of sight, sound and software on computer desktops. The multimedia industry, on the other hand, is a jumbled mess. The problems: A lack of standards that the industry sorely needs to move it into the mass market.

"Standards is a big topic these days," said Philip Dodds, compatibility project leader at the Interactive Multimedia Association in Ammapol, Md. His group, which comprises about 250 companies, was established to promote standards-setting efforts. "It's very painful to make the wrong decision because the [development] costs are high."

Four areas for standards

Multimedia experts at BIS Strategic Decision's Digital Multimedia Conference, held in Boston recently, said standards are needed in four key areas: application programming interface to multimedia hardware; file format for exchanging files across different platforms; compression algorithms for audio and video; and standards for still-image and full-motion video.

The price is wrong

High cost and the lack of many elements are preventing multimedia from taking off.

Cost

| Elements shown were rated on a scale of 1 to 10, where 10 is most important |
|------------------|------------------|------------------|------------------|------------------|------------------|
| 7.8               | 7.4               | 6.8               | 6.6               | 6.5               | 6.3               |
| Standard          | Application      | User educational | Integration      | Technology       | Distribution     |
| Multimedia experts at BIS Strategic Decision's Digital Multimedia Conference, held in Boston recently, said standards are needed in four key areas: application programming interface to multimedia hardware; file format for exchanging files across different platforms; compression algorithms for audio and video; and standards for still-image and full-motion video. |}

The result is no installed base of hardware and not enough applications. "The result is no installed base of hardware and not enough applications. Too high a price and too little incentive to develop applications. It is "extraordinarily difficult" for developers to decide which standards to provide product in, Machover said.

There are many incompatible techniques for compressing both still and moving video images, and each of those involve trade-offs among resolution (picture sharpness), compressed data rate and decoding cost, according to one expert.

With currently available compression techniques, full-motion video of at least VHS quality at an acceptable price is not yet available on desktop computers, according to Rick Stauffer, marketing manager at Intel Corp.'s Multimedia Production Operation in Princeton, N.J. "People have that expectation of VHS quality," Stauffer said. "Half a loaf is not enough to get us to multimillion-dollar-a-year stage."

"MPEG and JPEG are more settled, but there is still more chaos in the industry," Machover said. IBM, Apple, Computer, Inc., Microsoft Corp. and several other computer industry heavyweights are pushing standards in several directions. Since there is no dominant supplier, there is little chance that de facto standards will develop, Machover said.

"The recent pact between IBM and Apple to collaborate on desktop systems and software has left multimedia developers scratching their heads, wondering what happens next. That agreement also includes a plan to rely on a platform-independent multimedia environment. IBM has been an active supporter of Quicktime, an extension to System 7.0 software that would enable users to run applications that include animation, audio and video. Quicktime has a proprietary audio and video compression scheme that exceeds that of JPEG and MPEG, according to Vicki Vance, multimedia specialist at Apple. Microsoft has been working on its own standard for personal computers called Windows Multimedia Extension (MME). The draft MME specification includes a Resource Interchange File Format for exchanging files across different platforms, and a Media Control Interface, a standard software interface to multimedia hardware. The MME specifications reportedly will be released this week.

This fall, Philips Consumer Electronics Co., Sony Corp., and Matsushita Electric Industrial Co. will begin aggressively marketing yet another multimedia format called Compact Disc-Interactive. The companies have been funding the efforts of disc developers as a way to prime the market with applications. As long as the standards picture remains so muddled, developers are reluctant to start work on applications for fear of becoming caught in a new version of the Betamax vs. VHS videotape format battle. Some industry analysts see that hesitancy as contributing to a chicken-and-egg problem: Without applications, there is little incentive for prospective business customers and consumers to buy the hardware; and without an installed base of hardware, there is little incentive to develop applications. It is "extraordinarily difficult" for developers to decide which standards to provide product in, Machover said.

"Too high a price and too little incentive to develop applications. It is "extraordinarily difficult" for developers to decide which standards to provide product in, Machover said. The primary reason that multimedia has not taken off yet is that the technology is too costly (see chart), according to BIS Strategic Decisions and other experts. "To upgrade a personal computer to full multimedia capability costs several thousands of dollars," Stauffer said. "The result is a combination of bad hardware and not enough applications. We're seeing the slow emergence of an industry with a lot of expectations but not a lot of business.

The "magic price point" where sales can be expected to take off is in a big way is $1,000 for a playback machine and about $2,000 for a "creation station" that would allow users to create their own multimedia productions, Stauffer said.

source: BIS Strategic Decisions
Before you plunge into new technology, make

When your company invests in Computer-Aided Software Engineering (CASE), an experienced supplier is critical to your ability to move quickly and efficiently to full productivity. With over 50,000 products sold, KnowledgeWare is the industry leader. Our integrated, methodology-independent tools offer a full life-cycle solution from systems planning through automatic code generation. Our experienced support team can help
sure you know what lurks beneath the surface.

you successfully implement CASE. The bottom line is more rapid development of quality software applications, and easier ongoing maintenance of those applications as business requirements change. Call 1-800-338-4130 for more information. With a partner like KnowledgeWare, you can make the leap with perfect confidence.
EDITORIAL

The future is now

Imagine a day when you can run a corporation—a big company, say $600 million and growing fast—entirely on personal computers. Not a single bit of digital information is processed on anything other than a PC. That goes for data processed by accounting, human resources, R&D and the electronic mail network. And this is a very data-intensive company with a better than 1-to-1 ratio of PCs to employees.

This day is actually today, and the scenario is being played out not just at one company but at a growing number of big firms where a PC pedigree is synonymous with IS.

Granted, the pure PC-driven companies we're talking about here are, in fact, computer vendors. Their IS architectures, admittedly kludgy, serve as test beds for what they view as the IS world of the near future. But kludgey systems or not, these are fast-growing and forward-looking companies vying toward the $1 billion mark without the benefit of a minicomputer or a mainframe.

It was 10 years ago that IBM unveiled its PC. The business press wrote about IBM's "invasion" of the home computer market. Here at Computerworld, a debate raged as to whether the announcement should even be covered at all. The big-iron bigots lost, and we did end up running the story on the front page with the headline "IBM's personal computer paves new corporate path."

What an understatement. Ten years ago, there were few visionaries who foresaw the revolution that is being played out not just at one company but at a growing number of big firms where a PC pedigree is synonymous with IS.

The most innovative software thinking in the industry is going on at the desktop. And cheap PC power is spreading the benefits of information technology in the same way telephony revolutionized communications two generations ago.

Today, the visionaries are more plentiful, and the future they anticipate seems almost fantasylike: 100-MIPS PCs selling for $1,000 by the end of the decade; IS dominated by multimedia paradigms and keyboardless computing; and— is it possible?—the mainframeless corporation.

It's all possible, and increasingly likely, given the amazing advances of the last few years. It won't be an easy process to get there: Application down sizing is showing itself to be a multtheaded beast, and the real productivity benefits of desktop computing are still debatable. But the trend is inexorably in the direction of mainframe-like power in a desktop or portable package.

Imagine a world like this. Think back to the first time you saw Charlie Chaplin in an IBM advertisement. It doesn't seem that long ago, and it wasn't. What is probably unnerving is that this "imaginary" world is no further off in the future than that little tramp is an image in the past.
End isolationism in research

Technological cooperation with East and West is a must for U.S.

By William C. Norris

On a recent visit to the Soviet Union and Western Europe, I was startled by the enormous benefits to both East and West that could result from expanded technological cooperation.

This is a thought that has occurred to me on previous visits. The political and economic turmoil of the past 25 years, however, made me more certain than ever that something must be done to build up the efficiency of our own research efforts.

A second difference from past years is the historic and painful transition under way in the Soviet Union from socialism to a market economy.

The Soviets have a large research establishment that in many areas is comparable in scope and quality to our own. In the past, a high percentage of Soviet research and development was devoted to military applications, but the Soviets are now opening their defense R&D facilities to commercial research.

Consequently, a large number of highly competent Soviet scientists are available and willing to work with their U.S. counterparts. And since pay scales for Soviet scientists are about one-fourth those of U.S. scientists, substantial savings can be achieved in research costs.

The potential benefits from cooperation in research with Soviet scientists haven't gone unnoticed by other countries, especially the U.S., which is aggressively seeking such relationships.

A third noteworthy change is that from the past is the growth in cooperative research among organizations in Western Europe, which the European Community is encouraging by underwriting a substantial amount of the cost of such programs. While the main objective of these programs is to strengthen European high-technology companies, the programs also serve to create an environment conducive to cooperation, one that will be receptive to the initiatives of U.S. organizations.

The merits of domestic cooperation among U.S. companies, universities, and government laboratories are widely recognized as evidenced by the rapidly growing number of research consortia. Since the passage of the National Cooperative Research Act in 1984, more than 170 research consortia have been formed. More are being planned.

To this point, most U.S. research consortia have shunned foreign participation. This is understandable in view of the formidable managerial problems confronting most U.S. companies in recent years, which first had to address internal problems to achieve successful operation.

However, with most of those problems solved and given the urgent need for the U.S. to obtain technology to fuel industrial innovation, it would now be advisable to promote participation by foreign companies. This would also be to the benefit of many U.S. companies, which include incidental postsale services in their accounting practices. This is one of the ways the American Institute of Certified Public Accountants (AICPA) is trying to obtain the technology to fuel the necessary innovation. It is time for the nation to call upon its research consortia not only to help expand international technological cooperation but also to lead the way in demonstrating to the rest of the world how to perform research more efficiently and equitably through cooperation.

The U.S. is in a globalized economic contest. To win that contest and retain industrial leadership we must acquire and act globally. Anything less will undermine our economic and social well-being and, ultimately, our national security.

Norris is founder and chairman emeritus of the Boston-based directors of Central Data Corp. In 1983, he conceived and initiated the Microelectronics and Computer Technology Corp.

Accounting change may deny rookies a fair shot

By John Landry

In January, the American Institute of Certified Public Accountants (AICPA) issued a draft position statement proposing that software vendors recognize revenue from products or services upon their delivery instead of upon the signing of a contract. While the AICPA's goal is accounting consistency, its recommendations amount to something less than a fundamental change in traditional — and sound — industry practice.

In large part, the American Software Association (ASA) supports the proposed guidelines, but it does have concerns in the following areas where the AICPA is recommending pro rata or life-of-contract distribution of revenues:

• Termination agreements (licenses for products that run for a period of months or years), which include incidental postsale services in a single yearly or monthly fee.

• The maintenance revenue element of an initial license sale.

• Revenue from ongoing license renewal and maintenance contracts.

In a draft statement, the AICPA says vendors have the right to recognize revenue from products or services immediately upon delivery. But the AICPA concludes that such a policy would encourage many companies not to invest in research and development. The AICPA proposes a compromise that would allow revenues to be recognized on a pro rata basis over the life of a contract.

Historically, venture capital has played a vital role in helping these smaller companies bring their products to market. In today's economy, however, venture dollars are harder to come by and may be scarcer still for some of the most promising young companies under the new accounting regulations.

Small, fast-growing companies that could benefit most from the new guidelines would make software companies that incur significant front-end expenses for such items as customer support will hurt their performance on paper. Because companies must defer the major portion of their support revenue, it is likely that the cost of supporting new customers will exceed the associated revenue. This could have a negative impact on a company's bottom line, even if it is growing rapidly.

In addition, larger companies, with a far slower growth rate and a heavier recurring maintenance revenue, will find their balance sheets less affected by the new regulations because their well-established products require less support services.

The irony of the situation is that firms actively gaining new customers appear to have the greatest disparity between expenses and revenues under the proposed revisions, while many stagnant firms are able to maintain a better balance than ever before.

The ramifications of the inconsistency, unfortunately, go far beyond paper. The ASA believes that the AICPA's position is sound and will appreciate the issues behind the numbers and will simply ignore what should be the industry's most promising young companies or will seek a degree of ownership unacceptable to most entrepreneurs. Either scenario hurts the software industry.

Users will also suffer. Companies facing investor pressure to match expectations and reduced revenues will have to make cuts to accomplish the goal. Since sales and marketing expenses are essential to attracting new customers, they will more than likely survive intact. Development and support roles, however, which offer less immediate benefits, will likely be curtailed, to the detriment of the industry.

The ASA believes that the issue of revenue recognition merits further study and has formed a task force for that purpose. While the AICPA is striving for accounting consistency with its proposed changes, the new guidelines would make software companies the only ones required to defer revenues from what are essentially product warranties. The AICPA hopes to implement the planned revisions for the fiscal year following Dec. 15, 1991; the ASA hopes the AICPA will delay implementation until further examination.

Landry is executive vice president and chief technology officer of Dun & Bradstreet Software. He is also president of the Microelectronics and Computer Association, a division of Adapso, the computer software and services trade association.
Our 75,000 PVCS Users Include:

All Of The Top 10 Software Publishers.

97 Of Computerworld's Premiere 100.

And 426 Of The Fortune 500.

But Who's Counting?

With all these users, the PVCS Series is the undisputed market leader in Configuration Management software.

Now, given the Desktop Development megatrend, PVCS is even more critical. Because to venture into non-mainframe oriented development without our proven and comprehensive distributed Configuration Management product is dangerous.

After all, the PVCS Series is so flexible it can be used standalone or as components in an integrated Configuration Management strategy. PVCS is also designed to provide you with a strategy that covers all development objects—not just COBOL code. And it's the only solution that operates across PC-DOS, OS/2 and UNIX platforms.

Plus, like all our products—Excelerator Series for Analysis and Design, APS Series for Application Generation and Design Recovery Series for Re-Development—the PVCS Series works standalone, with all of the aforementioned INTERSOLV products, or can be "snapped" into your current culture.

Add to that our commitment to an open architecture and adherence to industry standards such as IBM's AD/Cycle, and you have a proven and comprehensive Configuration Management product that offers the control you need at the workstation.

Ask our users. They'll tell you how they've come to count on PVCS for taking development into the '90s.

For more information and a free management report entitled, "The PVCS Series: The Proven Solution For Distributed Configuration Management," write: INTERSOLV, 3200 Tower Oaks Boulevard, Rockville, Maryland 20852.

Or call, 1-800-547-4000 ext. 9101.

INTERSOLV

The CASE Company You've Been Waiting For.
Is AS/400 open? Anyone care?

BY MARYFRAN JOHNSON
CW STAFF

"I don't really have much need to port my applications around," said Jerry Burton, technical support manager at Costco Wholesale Corp., in Kirkland, Wash., which has two main-frame-class AS/400 D80 models. "When it comes to openness, our needs really are involved in networking that gives us better options."

Yet openness is the politically correct marketing stance these days, no matter how proprietary the system. That point is not lost on Robert LaBant, IBM vice president and general manager for Application Business Systems, the division that raked in $14 billion in AS/400 sales last year.

"We are trying to be responsive to what customers want, and that's portability of application programs and networking with multiple vendors," LaBant said recently. "If proprietary means that we write the operating system, then yes, the AS/400 is proprietary. If it means closed, then I totally disagree.

Yet IBM executives are careful to say they are "extending..."

Continued on page 26

Airline takes CASE path to frequent-flier system

ON SITE

BY ROSEMARY HAMILTON
CW STAFF

CALGARY, Alberta — With the help of a software template and a set of computer-aided software engineering (CASE) tools, Canadian Airlines International was able to create a new frequent-flier system in less than a year that now handles more than one million members.

The airline had been using its CASE-based Canadian Plus frequent-flier system since August 1990 and in that time has encountered no major technical problems, said Kevin Carroll, data resource manager. For the past year, the system has required "less than a half person-year" for maintenance.

Carroll said the airline set out to revamp its batch-oriented frequen-t-flier operation in the late 1980s and was certain that this job called for a whole new software system as opposed to re-engineering the old one.

The original system was designed to handle about 100,000 members but was soon overloaded by the mushrooming base of frequent fliers. By the late 1980s, the wait time to enroll a new member or change a current member’s profile could take up to six weeks, Carroll said. With the new system, enrollments and changes can be made in an average time of two minutes, he added.

The decision to change the frequent-flier system dovetailed with an overall corporate information systems upgrade program under way at the airline. One piece of the corporate initiative called for "consistent application development technologies," which meant an evaluation of CASE tools.

This search led to both Texas Instruments, Inc.’s Information Engineering Facility (IEF) and the software template, itself developed with IEF and offered by Trans World Airlines.

The template was essentially the model for TWA’s frequent-flier system. Canadian Airlines decided to license it and then use the IEF tools to tailor it to its own operation.

"It’s an opened-model approach that can be changed," Carroll said of the TWA template. "We took the model, tailored it to meet our business rules and then pressed the old button and out came the generated code.

Carroll said other CASE projects are under way at the airline now, in part because of the success with the frequent-flier system. He said a critical factor in its success was the "mind-set" of the team.

"There’s a mind-set that has to change in not only the front-line team but also in the support staff and technical people" affiliated with the project, he said. "Departmental strategies or work practices really have to be put to one side. Cherished notions really have to go into the melting pot, and you’ve got to focus on getting the application done."

An ‘open’ book

IBM is pushing the "openness" of its proprietary mid-range AS/400s through the following:

• Open Access/400, which offers new access to low-level system functions and application programming interfaces previously closed in the OS/400 operating system.
• Hardware interfaces through the IBM 5159 Programmable I/O Controller, which permits devices such as time clocks, badge readers and scanners to attach directly to the AS/400.
• Improved Advanced Peer-to-Peer Networking capabilities and products coming next year that will support the Open Systems Interconnect and Integrated Services Digital Network.
• Ability to communicate across other platforms using common communications standards, most recently Transmission Control Protocol/Internet Protocol.

MARTYFRAN JOHNSON

Treats Customers Write

NAPERSOFT® Automated Correspondence Software handles your written communications to customers quickly, accurately and professionally with:

• On-line or batch letter writing
• On-line notepads
• On-line letter history
• Full function word processor
• Spell checker
• Full printer support

With your IBM mainframe and NAPERSOFT software you can streamline your customers correspondence! NAPERSOFT... for businesses that treat customers write.
Building on DB2?

Regardless of where you are in DB2, you can count on BMC to deliver the products you need. BMC's utilities, administration, performance monitoring and DASD data compression products are designed for assured data integrity, advanced functionality and ease of use.

UNLOAD PLUS for DB2* is the newest addition to BMC Software's comprehensive product line. It unloads DB2 data four to eight times faster than conventional SQL-based applications and can also unload from image copies or DSN1COPYs with similar increased performance.

This new utility also offers added functionality including powerful selection criteria for unloading specific rows and columns using SELECT-like syntax and a comprehensive set of data type conversions.

Like UNLOAD PLUS, BMC's other utilities for DB2 offer increased speed and functionality. Depending on the product, they run 2 to 10 times faster than the IBM Utilities and include:

- LOADPLUS™
- REORG PLUS
- COPY PLUS

Each of BMC's administrative products are built to eliminate the complexity of DB2 management. These solution-oriented tools ease and speed the administration process for everyone from the new DB2 user to those with multiple production applications and multiple DB2 subsystems. MASTERMIND™ for DB2 products include:

- CATALOG MANAGER
- ALTER™
- DASD MANAGER

For meaningful, timely performance information, the point and shoot capabilities in ACTIVITY MONITOR are unparalleled. And, when saving DASD becomes important, DATA PACKER™ reduces DASD requirements for DB2 tables 30-80%.

Build with the leader

To help you build on DB2, BMC has developed a blueprint of the DB2 environment in an informative poster, "DB2 — The COMPLETE Picture." For a free poster, more information, or to start a 30-Day-Plus Free Trial of UNLOAD PLUS or any of BMC's other DB2 products, send your request by fax to 713 242-6523 or call BMC toll free at 1 800 841-2031.
Bank feels secure with IBM/Wang union

National Westminster optimistic that companies can resolve issues, benefit from tech knowledge

ON SITE

BY SALLY CUSACK

NEW YORK — It would seem that IBM and Wang Laboratories, Inc. equipment can coexist in a mutually beneficial capacity, given the right set of circumstances.

Jeff Speight, senior vice president for the communications division of National Westminster Bancorp, has been working with both computer vendors for almost 10 years. With 40 Wang VS minicomputers connected to several IBM 3000-class mainframes, the organization has been able to accommodate Wang systems.

"We have five office-automation managers that allow the VS to talk to the host. The other links are the 3270 pass-through type communications. All the minicomputer users sit on an X.25 network, which links branches throughout North America to London and Hong Kong. The parent company, National Westminster PLC in London, also uses VS technology connected to the network. Speight estimated that there are 10,000 currently on the worldwide directory — a heavy investment in Wang technology. "We have five office-automation analysts on the payroll, and most are former Wang employees," Speight said, adding that the company is fairly self-sufficient from a service and support standpoint.

He noted that Westminster "wouldn't panic if Wang went out of business tomorrow, as long as we could get the repair parts." The bank also has a little room to grow with the VS. Currently running on an older version of the operating systems, they are looking to install the most recent VS OS 730 upgrade. This will allow the financial firm to double current connectivity capacity.

Speight said the bank could "sell off" some of its Wang products were not upgraded or enhanced, but he was careful to mention that there is not a product available as good as Wang Office — the vendor's office-automation software system.

"People are realizing productivity gains from electronic mail. We looked at IBM's OfficeVision when it came out a couple of years ago, and as far as I know, it still lacks a centralized directory for an enterprise-wide kind of system," Speight said.

Because IBM is a primary vendor, Speight has noticed Wang's "superior office-automation" technology and imaging products. The bank uses the IBM mainframes for processing bank office and on-line applications.

National Westminster has the 40 VS systems located in several major centers throughout the organization. Originally installed to support word processing and electronic mail applications, the midrange systems now function as office automation servers to the IBM mainframes.

"Our entree for putting one terminal on the desk for all functions came five or six years ago when Wang announced 3270-emulation capabilities," Speight said, adding that the 3270-emulation software gave the bank the leverage it needed to maximize investments.

Linking the systems

VS systems are linked to the mainframe in several ways. Back office personnel and programmers use reverse log-in software products, a piece of mainframe-resident software that allows the VS to talk to the host. The other links are the 3270 pass-through type communications. All the minicomputers sit on an X.25 network, which links branches throughout the entire world.

Speight said he sees no reason for panic over the IBM/Wang alliance. "The worst thing that could happen is that the Wang logo may change," Speight said from the New York-based bank's corporate data center on Long Island.

However, he said there are some issues that still need to be resolved: Technology upgrades and service and support questions naturally arise when vendor alliances are announced.

Speight said he hopes that IBM will take advantage of Wang's "superior office-automation" technology and imaging products. The bank uses the IBM mainframes for processing bank office and on-line applications.

National Westminster has the 40 VS systems located in several major centers throughout the organization. Originally installed to support word processing and electronic mail applications, the midrange systems now function as office automation servers to the IBM mainframes.

"Our entree for putting one terminal on the desk for all functions came five or six years ago when Wang announced 3270-emulation capabilities," Speight said, adding that the 3270-emulation software gave the bank the leverage it needed to maximize investments.

"People are realizing productivity gains from electronic mail. We looked at IBM's OfficeVision when it came out a couple of years ago, and as far as I know, it still lacks a centralized directory for an enterprise-wide kind of system," Speight said.

Because IBM is a primary vendor, Speight has noticed Wang's "superior office-automation" technology and imaging products. The bank uses the IBM mainframes for processing bank office and on-line applications.

National Westminster has the 40 VS systems located in several major centers throughout the organization. Originally installed to support word processing and electronic mail applications, the midrange systems now function as office automation servers to the IBM mainframes.

FOR MORE INFORMATION

Call Mr. Cary Schorr, Marketing Director. Toll Free 1-800-328-6755 PDT

$22/HR For CICS, IMS, DB2, COBOL & PC Application Systems Development

- Fixed Price or T&M Basis
- Free Cost/Time Estimates
- On-Site System Design/Implementation
- Off-Site Program Construction

CCD ONLINE Systems, Inc.
Open AS/400
CONTINUED FROM PAGE 23

the openness' of the AS/400. No sensible customer takes that to mean it will actually become an open system akin to a Unix-based machine.

In a research study IBM commissioned to study market segments for a more open AS/400, the customers had a compelling bottom line. The study claimed that extending interoperability with Unix, DOS and other operating systems would enable IBM to position the AS/400 to compete in a $100 billion segment of the global market by 1995. The biggest software chunk of that market — an area in which the AS/400 is already strong — is manufacturing and distribution, with an estimated $24 billion size by mid-decade.

LaBant said that IBM is already extending the system's hospitality by opening certain application programming interfaces to third parties, adding industry-standard Transmission Control Protocol/Internet Protocol networking and improving C language capabilities on the machine.

Yet just because a user can write an application in the C language on the AS/400, this does not mean it will skip merrily over to another platform without a tedious rewrite, analysts said.

"The AS/400 is probably the most proprietary system on the planet," said Peter Burris, an analyst at International Data Corp. in Framingham, Mass. "But IBM is definitely taking steps, such as Open Access/400, to make the machine instruction interface available to third parties and give people access to underlying resources like queues and buffers."

IBM is also making a high-profile effort to bring software vendors on as partners, Burris noted. New, albeit limited, connectivity between Novell, Inc.'s Netware and the AS/400 via an IBM Token Ring is another welcome sign, both analysts and users agreed.

Posix position
Also under investigation, LaBant said, is bringing Posix compliance to the OS/400 operating system. Posix, or Portable Operating System Interface, is a limited set of industry standards aimed at making applications portable across open systems environments.

"They have to do Posix because the U.S. government won't buy without it, but nobody in his right mind would use it on the AS/400," said Teresa Elms, president of San Diego-based Elms Technical Communications, a market research firm specializing in IBM midrange machines.

Elms said she views IBM's openness strategy on the AS/400 as a carefully monitored peek inside the machine for select vendors and users. "If a customer clubs IBM over the head hard enough, they will open up pieces of the operating system," she said. "But IBM will never fully and publicly document the operating system interfaces. They will never lose that control."

Then again, the average IBM midrange customer bought the machine because the last thing he wanted was Unix-style openness in the first place, Elms added. "These midrange customers do not want to think about technology. They want to think about their businesses," she said. "If they're techno-geeks, they don't buy the AS/400; they buy Unix."

HARDWARE SHORTS
Sequent, Price Waterhouse begin joint project

Sequent Computer Systems, Inc. recently announced an alliance with Price Waterhouse to provide joint consulting and testing in large-scale systems integration projects. Under an agreement that makes Sequent part of Price Waterhouse's Open and Relational Systems (ORS) consulting group, Sequent's Symmetry 2000 midrange line will be installed at all four ORS centers in Bethesda, Md., San Francisco, Denver and Chicago.

Primeservice, the service unit of Prime Computer, Inc., signed a five-year contract with Tatung Science and Technology, Inc. in San Jose, Calif., to provide support for Tatung's Scalable Processor Architecture-based machines. Natick, Mass.-based Prime said it will service Tatung products 24 hours a day, seven days a week at 330 locales worldwide.

XL/Datacomp, Inc. has announced availability of refurbished IBM Application System/400 Model B computers, claiming that they offer the performance specifications of the new Application System/400 Model D but cost 30% less. Included in the price is a one-year hardware warranty and one year of free telephone support. XL/Datacomp lost its IBM reseller status late last year and no longer markets new IBM systems.

Uniplex Business Software from Uniplex Integration Systems, Inc. will be marketed as the preferred office productivity software for Symmetry 2000 computers from Sequent Computer Systems. The contract, worth $5 million to Uniplex in the first three years, calls for both companies to sell the integrated office environment.

According to most UNIX® users,

Just this once, we’d like to lower your expectations of what a Sun** SPARCstation* can do. Slightly.

Because while nearly everyone knows Sun for high-end technical work, you may not think of us for your day-to-day business tasks.

A misunderstanding we’re trying to correct.

Let’s begin with Lotus 1-2-3*, dBASE IV* and WordPerfect*. They’re the most popular PC titles in their class, and they all run on Sun SPARCstations.

There’s also software for drawing, publishing, and presenting. For clip art, faxing, and office automation. More than 60 business programs available now, and dozens more on the way (CorelDRAW*, Ventura® Publisher, and Norton Utilities* among others). Okay, now that you’ve lowered your expectations, prepare to raise them again. Because you can actually be more productive on a SPARCstation than on any PC. Even using the same software.

SPARCstations are designed for multitasking; so you can prepare a set of overheads while your computer is recalculating spreadsheets and searching databases in the back-
this software does not exist.
Confused about the future of your dBASE® applications? The answer is Clipper 5.0.

THE FUTURE OF dBASE IS HERE TODAY
You don't have to wait to compile your dBASE applications, Clipper can do it now! But Clipper 5.0 also gives you a complete development system, including an open architecture language, compiler, dynamic overlay linker and an exclusive virtual memory manager that shatters barriers to bigger, more ambitious PC applications.

IT'S A MIXMASTER'S DREAM
Clipper 5.0 can integrate code from Clipper, C, Assembler, dBASE and Pascal. Applications can even access multiple data formats. And Clipper 5.0 is optimized to get things done! You get the simplicity of dBASE syntax without sacrificing the low-level functionality of C.

BLEND THE INGREDIENTS YOU NEED
Clipper 5.0's open architecture supports a thriving aftermarket, including problem-solving libraries that permit
Clipper applications to also manage SQL, Paradox and Btrieve data, today.

**SEE HOW IT GOES DOWN**

Clipper 5.0's development capabilities are undiluted to meet developers' needs, exclusively. So if the software industry's newest merger looks like a nightmare concoction to you, try Clipper 5.0.

For the name of your nearest reseller and a FREE copy of our white paper "Clipper 5.0 for dBASE Developers" call:

**800/521-1978 ext1010**

© 1991 Nantucket Corporation
NEW PRODUCTS - SOFTWARE

Development tools

Saber Software, Inc. has announced enhancements to its Saber-C programming environment for Unix workstation platforms.

Version 3.1 of Saber-C includes the ability to work with C language source code that provides preprocessed embedded statements of other types, such as SQL statements for Oracle Corp. andInformix Corp. databases. Fortran objects can also be imported into the Saber-C environment.

Saber-C is available on workstations from Sun Microsystems, Inc., Digital Equipment Corp. and Hewlett-Packard Co. The price is $2,995.

American Interface Computer, Inc. has ported its IF/Prolog Version 4.0.6 development environment to two new platforms. The software, used for developing expert systems and rule-based applications, is now available on Texas Instruments, Inc.'s TI-1500 minicomputer, running under Unix V.3. The cost is approximately $7,000.

Applications packages

Coda, Inc. has released the Integrated Accounting System (IAS) Version 6.0 for the Digital Equipment Corp. VAX.

IAS integrates standard accounting modules such as General Ledger and Accounts Payables and Receivables into a single relational database. According to the company, the integrated structure allows a single Report Writer to cover all dimensions of the systems and eliminates the need for batch updates or manual reconciliation in balancing. The new version adds a Fixed Assets module and a Report Scheduler. Pricing ranges from $35,000 to $350,000, depending on central processor.

NOT IN THE SAME LEAGUE.

No other application development software can measure up to the awesome power of PowerHouse® from Cognos®.

Because PowerHouse isn't just a standalone development tool. It's a complete application development solution, including integrated CASE. So it speeds every phase of the development cycle—from analysis and design, through 4GL coding, to end-user reporting and maintenance. With so much industrial-strength power, it turns the toughest applications into child's play.

Unlike patchwork solutions, PowerHouse is seamless. It eliminates bottlenecks. Integrates all phases of development. And yields higher productivity at every step. No wonder PowerHouse isn't just a standalone development tool. It's a complete application development solution, including integrated CASE. So it speeds every phase of the development cycle—from analysis and design, through 4GL coding, to end-user reporting and maintenance. With so much industrial-strength power, it turns the toughest applications into child's play.

Unlike patchwork solutions, PowerHouse is seamless. It eliminates bottlenecks. Integrates all phases of development. And yields higher productivity at every step. No wonder PowerHouse isn't just a standalone development tool. It's a complete application development solution, including integrated CASE. So it speeds every phase of the development cycle—from analysis and design, through 4GL coding, to end-user reporting and maintenance. With so much industrial-strength power, it turns the toughest applications into child's play.

© 1991, Cognos, Incorporated. Cognos and PowerHouse are registered trademarks of Cognos, Incorporated. The other trade names referenced are registered, trademarked or service marked by their respective manufacturers.
Microsoft quantifies Windows success

BY PATRICIA KEEFE
CW STAFF

Summer stock for Microsoft Corp. means hitting the road to play up substantial, and in some cases, costly statistics about the acceptance of MS-DOS 5.0 and Windows 3.0.

In addition, Steve Ballmer, Microsoft's senior vice president of systems software, revealed the results of an independent survey on Windows 3.0 users. It is no secret that Windows is a success, or that MS-DOS 5.0 has taken off like a shot. It is also clear that Microsoft is spending big bucks to underwrite that success. The road show's aim is to put that success into sharper focus.

Ballmer said the company has shipped 1 million MS-DOS 5.0 upgrades in the first 30 days of availability. The installed base tops 70 million, and Microsoft acknowledged as much in a recent trade show keynote address and in an internal memo to his executives.

"It is really embarrassing to have people have to wait so long on the phone to talk to us about problems in our products... We will spend what it takes to have the best support [without an 800 number]." I think we can cut the number of phone calls generated by our products to less than half of what it is today and use training and technology to cut the length of the phone calls," Gates said in the memo.

IBM graphics card to die but will live on in clones

BY MICHAEL FITZGERALD
CW STAFF

One could call IBM's decision to kill its 8514/A high-resolution graphics card as of Oct. 2 the death of an era that did not exist. When it was announced in 1987, the 8514/A, with its 1,024- by 768-pixel resolution, was hailed as the successor to IBM's graphics hardware standard, Video Graphics Array (VGA), which had 640- by 480-pixel resolution. But 8514/A was not backward-compatible with VGA and so would not run software written to work with VGA cards.

As a result, Jon Peddie Associates, an Oakland, Calif.-based graphics research firm, said only 116,000 boards have been shipped in its life, compared to 5 million VGA boards in 1990 alone.

So in 1990, when IBM introduced its Extended Graphics Array, which matched the 8514/A for resolution and offered an extendable architecture and backward compatibility with VGA, the 8514/A became a sort of orphaned product. However, third-party board makers such as Western Digital Corp., which had finished their own clones of the board, were adamant that the 8514/A would build momentum in the high-resolution market for at least two years.

The third-party vendors could still be right, but it will be in spite of IBM's absence.

One analyst called IBM's move "dumb."

"I think they just made another market for other people," said Jon Peddie, president of Jon Peddie Associates.

"From an internal strategic planning point of view for IBM, it would be logical [to cut the 8514/A]... but, if the only way IBM can get a customer to move from Product A to Product B is to make Product A not available, you have to wonder about its ability to market Product B," Peddie said.

Open Productivity

COBOL/2 Across Industry Standard Platforms Direct From Micro Focus

Micro Focus has met the needs of business application developers for 15 years and supported Open Systems since the beginning. Now, Micro Focus offers its industry-standard COBOL/2 for UNIX direct to users on a wide range of platforms from 386 and 486 PCs to high-performance systems from the industry's leading manufacturers. With Micro Focus COBOL/2 for UNIX, PC, networked, mini and mainframe applications may be targeted from a single UNIX development environment — all based on industry-standard, portable COBOL.

With Micro Focus, you can develop for Open Systems with:

- A high-performance, industry-standard COBOL/2 compiler
- A powerful developer's Toolbox
- A dedicated UNIX development solution

Call 800-872-6265 and learn how Micro Focus can bring Open Productivity to your site.
Sometimes sharing will slow you down.

Now there's a new LaserJet fast enough and smart enough to keep the whole group happy. The LaserJet III Si printer. A 17ppm powerhouse designed for high volume. And multiple users.

With the LaserJet III Si, your users are up to speed the moment they give the “print” command. HP's RISC-based formatter and the PCL5 printer language, with vector graphics and on-the-fly typeface scaling, yield fast results. Even on the most complex documents.

The LaserJet III Si meets the demands of your shared work groups with two 500-sheet input trays, an output capacity of 500 sheets, and a monthly duty cycle of 50,000 pages. HP includes a job offset feature, a tray-full sensor, and software-selectable language switching between PCL5 and optional Adobe PostScript.

For added versatility, you can choose an envelope feeder and two-sided printing. HP sets a new standard for I/O performance with optional Ethernet or Token Ring Interface cards that support Novell or

Adobe and PostScript are registered trademarks of Adobe Systems, Inc. in the U.S. and other countries.
And sometimes it'll get you there faster. Introducing the 17ppm LaserJet printer.

The HP LaserJet III Si printer.

3COM 3+OPEN. The LaserJet III Si comes with standard parallel and serial I/Os.

For all its capabilities, the fastest LaserJet printer is priced at just $5,495.* An exceptional value considering your users will also be getting the sharpest 300 dpi print quality yet. In fact, HP's revolutionary combination of Resolution Enhancement technology and new microfine toner challenges the print quality of many 600 dpi printers.

If you're ready to hook your users up without slowing them down, call 1-800-752-0900, Ext. 2134 for more information on the LaserJet III Si and the name of your nearest authorized HP dealer.

HP Peripherals
When it's important to you.

*Suggested U.S. list price. ©1991 Hewlett-Packard Company PE 12396
A Familiar Name, A Friendly Face

The SAS System helps UNIX do what UNIX does best. It's never been easier to exploit all the price/performance advantages of UNIX—or to connect UNIX with other systems throughout your organization. That's because the SAS System's powerful data access, management, analysis, and presentation tools work the same way on UNIX workstations as they do on host machines.

A menu-driven user interface takes you directly to the SAS System's most popular applications. We've also taken full advantage of UNIX native windowing. Plus, we've added new interactive capabilities for visual data analysis.

The Most Comforting Reason Yet to Choose UNIX.

The world's leading applications system has arrived on leading-edge UNIX workstations.* Bringing with it the same integrated applications that have made SAS software such an indispensable part of the corporate mainstream. And that's a very comforting thought if you're using or evaluating UNIX.

And a Risk-Free Offer

Let the SAS System be your link to strategic computing resources throughout your organization. Give us a call now at 919-677-8200 or fax us at 919-677-8123. We'll rush you a free SAS System executive summary, together with details about a no-risk software evaluation. In Canada, call 416-443-9811.


SAS Institute Inc.
Software Sales Department
SAS Campus Drive • Cary, NC 27513
Phone 919-677-8200 • Fax 919-677-8123

*From IBM, DEC, Sun, HP, and others.

The SAS System runs on mainframes, minicomputers, workstations, and personal computers. SAS is a registered trademark of SAS Institute Inc. UNIX is a registered trademark of AT&T.

Copyright © 1990 by SAS Institute Inc.
Add-in board lets IBM PCs run Macintosh software

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — The recent announcement by IBM of a personal computer add-on board that allows IBM PCs and compatibles to run Macintosh software.

The Andor One is a combination hardware and software package that allows PC users to insert a Macintosh disk into their 3½-in. disk drive and begin running thousands of Macintosh packages instantly, according to Motorola, Inc. 68HCO00 16-MHz chip as well as an on-board video controller and floppy controller. Users must separately purchase and install Apple 128K read-only memory chips as well as Apple's System and Finder software, all of which are available at many computer stores. The board, which runs at twice the speed of a Macintosh Classic, uses IBM standard peripherals such as mice, keyboards, hard disks and 3½-in. floppy drives. The Andor One works with all PCs ranging from IBM PC XT's through 486s with at least 512K of memory, an Enhanced Graphics Adapter or Video Graphics Array display card and monitor and an available full-time slot.

In March 1991, Bridgestone Tire executives told the information systems department to pilot a laptop project in development for two years among its lowest performers. The project was labeled a "go" when those salespeople became top performers after getting the laptops.

John Moore, manager of sales/marketing systems at Bridgestone Tire, said the company had considered giving more power to its field sales personnel for several years. The company decided two years ago to focus on the customer.

"We had a problem not unlike most companies: By the time we got information to remote sites, it was several days or several weeks old and not very timely for supporting direct sales or the direct sales call," Moore said.

The Bisnet project arose when the company moved its headquarters from Akron, Ohio, to Nashville, Mayes said. Bridgestone Tire interviewed the laptop project in development for feedback "very enthusiastically" about the computer interface. Moore said the dealers that Bridgestone Tire interviewed for feedback "were very enthusiastic" about the computer interface.

Laptops make sales force shine

BY MICHAEL FITZGERALD
CW STAFF

SAN JOSE, Calif. — The recent announcement by IBM of a personal computer add-on board that allows IBM PCs and compatibles to run Macintosh software.

The Andor One is a combination hardware and software package that allows PC users to insert a Macintosh disk into their 3½-in. disk drive and begin running thousands of Macintosh packages instantly, according to Motorola, Inc. 68HCO00 16-MHz chip as well as an on-board video controller and floppy controller. Users must separately purchase and install Apple 128K read-only memory chips as well as Apple's System and Finder software, all of which are available at many computer stores. The board, which runs at twice the speed of a Macintosh Classic, uses IBM standard peripherals such as mice, keyboards, hard disks and 3½-in. floppy drives. The Andor One works with all PCs ranging from IBM PC XT's through 486s with at least 512K of memory, an Enhanced Graphics Adapter or Video Graphics Array display card and monitor and an available full-time slot.

In March 1991, Bridgestone Tire executives told the information systems department to pilot a laptop project in development for two years among its lowest performers. The project was labeled a "go" when those salespeople became top performers after getting the laptops.

John Moore, manager of sales/marketing systems at Bridgestone Tire, said the company had considered giving more power to its field sales personnel for several years. The company decided two years ago to focus on the customer.

"We had a problem not unlike most companies: By the time we got information to remote sites, it was several days or several weeks old and not very timely for supporting direct sales or the direct sales call," Moore said.

The Bisnet project arose when the company moved its headquarters from Akron, Ohio, to Nashville, Mayes said. Bridgestone Tire looked at the critical issues of senior management, and empowering the sales force proved to be one of the issues that was most important to John Moore, vice president of sales and marketing. Moore said the dealers that Bridgestone Tire interviewed for feedback "were very enthusiastic" about the computer interface.

Bridgestone Tire's goal was to make its customer service and direct sales support the best in the industry, Mayes said.

Data at their fingertips

Sales representatives have the ability to call up data from a DB2 database residing on an Akron-based IBM 3090 mainframe that uses IBM's AS/400 query language. They also use several packages for processing data, including Lotus Development Corp.'s 1-2-3 and Lotus Development Corp.'s 1-2-3 Version 2.3 and Dynamic Microprocessor Associates, Inc.'s PC Anywhere for exchanging information and for troubleshooting.

Access to the database on the mainframe allows salespeople to provide specialized demographic information to the dealer on tire-buying preferences while the dealer is in the store. This means the dealer and the salesperson can tailor product lines and promotions to the dealer's region during the course of a visit.

The Bisnet project arose when the company moved its headquarters from Akron, Ohio, to Nashville, Mayes said. Bridgestone Tire looked at the critical issues of senior management, and empowering the sales force proved to be one of the issues that was most important to John Moore, vice president of sales and marketing. Moore said the project's modular design will allow Bridgestone Tire to expand it in the future, both on the mainframe and on the laptop.

Bridgestone Tire finished rolling out its Bisnet 1 of his sales personnel last month. The company expects to have all of its salespeople on-line with the mainframe by October. In the future, Bridgestone Tire may work with Firestone to develop a similar system for Firestone's sales force.

C-bus II pumps up power

Symmetric multiprocessing with Intel Corp. 1486-based systems received a power boost from Corollary, Inc. recently when the company unveiled C-bus II, a higher performance version of its C-bus multiprocessor personal computer bus architecture.

C-bus II reportedly supports fully symmetric multiprocessing. While the original C-bus supported CPU-to-CPU-memory symmetry, C-bus II adds support for direct memory access between the PC and Macintosh.

The bus can support up to 16 50-MHz 486 processors and address as many as 30 logical CPUs. Extended Industry Standard Architecture, AT bus and IBM Micro Channel Architecture buses can be used as companion I/O buses, the firm said.

Corollary said it will have three different OBM products: the C-bus II specification, a chip-level implementation of the bus and future board-level products. The specification will be available on Sept. 1, 1991 for $500.

XDB: DB2 Development on your PC

It Works.
If your application runs on XDB-Workbench it will run on DB2. No compromise. No expensive application recoding needed. DB2's syntax and DB2's performance make your application a complete DB2 application on your PC.

It's Proven.
Over 10,000 XDB-Workbench installations are offloading DB2 development to the PC. It works perfectly with both Micro Focus COBOL and IBM's COBOL. Call 800-622-0750 or 301-317-6800 and get the complete DB2 application development.

XDB Systems, Inc.

ON SITE

BY MICHAEL FITZGERALD
CW STAFF

SAN JOSE, Calif. — The recent announcement by IBM of a personal computer add-on board that allows IBM PCs and compatibles to run Macintosh software.

The Andor One is a combination hardware and software package that allows PC users to insert a Macintosh disk into their 3½-in. disk drive and begin running thousands of Macintosh packages instantly, according to Motorola, Inc. 68HCO00 16-MHz chip as well as an on-board video controller and floppy controller. Users must separately purchase and install Apple 128K read-only memory chips as well as Apple's System and Finder software, all of which are available at many computer stores. The board, which runs at twice the speed of a Macintosh Classic, uses IBM standard peripherals such as mice, keyboards, hard disks and 3½-in. floppy drives. The Andor One works with all PCs ranging from IBM PC XT's through 486s with at least 512K of memory, an Enhanced Graphics Adapter or Video Graphics Array display card and monitor and an available full-time slot.

In March 1991, Bridgestone Tire executives told the information systems department to pilot a laptop project in development for two years among its lowest performers. The project was labeled a "go" when those salespeople became top performers after getting the laptops.

John Moore, manager of sales/marketing systems at Bridgestone Tire, said the company had considered giving more power to its field sales personnel for several years. The company decided two years ago to focus on the customer.

"We had a problem not unlike most companies: By the time we got information to remote sites, it was several days or several weeks old and not very timely for supporting direct sales or the direct sales call," Moore said.

The Bisnet project arose when the company moved its headquarters from Akron, Ohio, to Nashville, Mayes said. Bridgestone Tire looked at the critical issues of senior management, and empowering the sales force proved to be one of the issues that was most important to John Moore, vice president of sales and marketing. Moore said the project's modular design will allow Bridgestone Tire to expand it in the future, both on the mainframe and on the laptop.

Bridgestone Tire finished rolling out its Bisnet 1 of his sales personnel last month. The company expects to have all of its salespeople on-line with the mainframe by October. In the future, Bridgestone Tire may work with Firestone to develop a similar system for Firestone's sales force.
Ballmer sings CONTINUED FROM PAGE 31

areas [CW, July 29]. In the case of Windows specifically, the company said it receives 2,500 calls a day, about 25% of its total support call volume. Of those 2,500 calls, only 15 to 25 are related to the dreaded Unexpected Application Error, Ballmer said.

For most, 95% of the Unexpected Application Error issues are solvable by helping the customer through deinstalling misfitted programs, fixing a disk problem with CHKDSK/F, updating printer drivers and removing unnecessary lines in CONFIG.SYS.

Most Windows calls typically focus on one of three areas: how to get the most out of Windows; setup and memory management; and how to run DOS programs.

Resource room
There are other sources of Windows information. For starters, Ballmer ticked off the following list: 82 Windows books, 57 Compuserve forums for Windows, seven specialized newsletters and journals, and at last count, 22 Windows user groups and special interest groups.

In addition, he said, there are more than 3,100 resellers with 6,000 storefronts, and with good reason. Ballmer claimed that resellers have sold more Windows 3.0 packaged product than any other microcomputer software in history, paving the way for a 79% increase in Microsoft reseller sales in fiscal year 1991 compared with fiscal 1990.

Field Research Corp. surveyed 11,000 random households in the March/April time frame to come up with 216 Windows users. On a scale of one to 10, 77% gave Windows a rating that fell between seven and 10. Novice users were found to be slightly more satisfied than advanced users. It follows then that the No. 1 benefit would be ease of use (46%).

The top two disadvantages were "none" (29%), followed by too much use of random-access memory (11%). "That surprised us. We thought people would be more comfortable buying more memory by now," said Ballmer, adding "Windows is [still] smaller than its erstwhile competition [OS/2]."

Voice of experience Perhaps most key to Microsoft, the longer the acquaintanceship with Windows, the more likely the user was to recommend the program's purchase, including 98% of users with six months or more experience [see chart page 31].

One-half of those users are running Windows on low-end machines, typically 20-MHz Intel Corp. 80286 or 80386SX, with 3M bytes of RAM. That is a little misleading because 66% said they are running on some form of a 386, and the more powerful the processor, the more RAM was used.

Most purchased Windows separately. A full 74% use Windows at work, and of that, 42%_tagged themselves as "advanced," 21% "intermediate" and 27% "novice."

The typical hardware/network configuration was further broken down as follows: 65% have monitors, primarily 2,400 bit/sec.; 86% use a mouse or pointing device; 95% are linked to printers; and 29% are connected to local-area networks, primarily to access files.

Word processor courts OS/2, Windows users

BY CAROL HILDEBRAND ON TAMP

Describe, Inc. made bedfellows of OS/2 and Windows when it announced plans to ship both versions of its word processing program in the same box.

Word Processor 3.0 is an upgrade of Describe's previous program for OS/2 Presentation Manager paired with the firm's new Windows word processor, currently in beta testing. Users register a chosen version. If they need to switch, they then reregister to the other version.

Alban Katzen, the company's president and chief executive officer, is targeting corporate offices using both platforms to bulk up the company's user base, which he said was currently around 10,000. The products, which he called nearly identical, offer cross-platform capabilities.

Ease of use was the paramount consideration in designing the program, Katzen said. "We tried to keep the screen as clean as possible," he said. For example, instead of using the ribbon that runs across the top of the screen of most graphically based word processors, such as Microsoft Corp.'s Word for Windows and Lotus Development Corp.'s Ami Pro, Describe uses a toolbox that can be placed anywhere on-screen. The firm also tried to minimize mouse use. Katzen said that although the mouse is a useful tool for familiarizing a user with a product, he believes word processors work better with a keyboard than a mouse orientation.

Paul Duncanson, head of PTD Consulting in Simi Valley, Calif., said that the ease of use was what sold him on Describe in the first place. A former Word user, Duncanson said he was able to figure out the program in a couple of hours without consulting the manual. He also praised the tool kit, saying that it was much more convenient for tasks such as changing font sizes and going from bold to italic.

Describe costs $495.
VGA disadvantages cited

BY ELLIS BOOKER
CС STAFF

A large-screen, high-resolution monitor is superior for prolonged reading tasks and causes fewer visual complaints than a comparably configured IBM Video Graphics Array (VGA) display, according to a study released late last month.

The study was commissioned by Cornerstone Technology, Inc., a San Jose, Calif., maker of high-resolution displays.

The study, which used Sherlock Holmes stories, found a 33% increase in reading speed when subjects used a 19-
in., dual-page Cornerstone monitor instead of a 14-in. standard VGA screen, according to study director and sometime Cornerstone consultant James E. Sheedy at the University of California's School of Optometry in Berkeley, Calif.

The Cornerstone monitor has a screen resolution of more than 2 million pixels, or 6.7 times that of the VGA display.

Deflecting some questions about his study's methodology, Sheedy maintained that visual complaints will decrease and productivity will increase "if we can improve the quality of the monitors people are looking at."

Keefe
CONTINUED FROM PAGE 31

Is there a problem? A source who wondered where the latest OS/2 beta-test version was logged on to an IBM OS/2 bulletin board, only to have a message pop up on the screen stating the beta-test versions were being delayed because of "a licensing dispute." An IBM spokeswoman was just as puzzled as we were. The user has since gotten a copy and doesn’t know the reason for the message either.

Don’t yeas dare. Sources close to IBM tell us that Microsoft was told two months ago to drop the OS/2 name from the portable version if it wasn’t going to include support for Presentation Manager.

Life goes on. After picking up rights to Lotus' CC:Mail, IBM recently announced that it would no longer resell Network Courier, owned by Microsoft subsidiary Consumer Software. Microsoft Senior Vice President Mike Maples said that the remarketing deal didn’t generate much new, so no IBM cancellation "doesn’t matter much."

As part of the original deal, Consumer Software was developing some technology for IBM as well. IBM executives were uncertain whether that part of the deal would be affected. Consumer Software did build a DOS client for Officevision, which was based in part on Network Courier code.

Maples said there is a contract for further modifications, including "considerable enhancements" for OS/2 2.0, and added that work will continue.

New user group. The inaugural meeting of the Network Courier Users Group will kick off Oct. 4 in Toronto. Attendees reportedly will include Cigna, J. P. Morgan, Chevron, American Airlines, the Royal Bank of Canada and Ontario Hydro.

More information is available by contacting George Oliver at the Toronto-based Royal Bank or Laura Jenning at Microsoft in Redmond, Wash.

Monkey see, monkey do. Word has it that IBM’s buddying up to Lotus’ Notes has not gone unnoticed at Microsoft. A source said that Microsoft’s Jeff Raikes has been talking about building both a mail engine and Notes-like groupware capabilities into the system software. We’d like to see that overhead!

What the . . . ? Dizzy from following successive waves of Windows strategy explanations? Well, hang in there for one more. If you’ve got 55 minutes and a videocassette recorder, Microsoft has put together a tape starring System Software Vice President Steve Ballmer, who will cover the finer points of what makes Windows so great now, and why it will be better in the future. And this time, they mean it.

“The reason you shouldn’t expect any more change is that we are not trying to walk a fine political line with IBM anymore,” Ballmer said. Nothing, so much so that Phillip Gordon, information center manager at Charles Schwab in San Francisco, quipped that Microsoft may end up pitching New Technology as “a better OS/2 than OS/2.”

Peeking through curtains. As the end of summer draws near, the thoughts of Lotus’ 1-2-3 users naturally turn in anticipation to the promised delivery of 1-2-3 for Windows. We’ve got two conflicting reports that we will share with you. On one hand, two sources say they’ve heard delivery has slipped into the fall — September or October. One source cites irregular problems with printing and data loss. Yet a third source says his latest beta-test version, which is a few weeks old, still has a few bugs.

An early fall ship would not surprise this user. Then again, a further source reports the shipping party is slated for the next few weeks.

Keefe is Computerworld’s senior editor, PCs and workstations.

Like all our products, Distribution Management 2000 leverages the advanced technology of the AS/400, as we’ve been dedicated to the IBM Midrange since day one. And our cooperative R&D relationship with IBM ensures that our products are designed to take full advantage of the AS/400’s expanding range of processing power. Take a closer look at the distribution management solution for the ’90s. Call Software 2000 today at (508) 778-2000.

The AS/400 Business Solution.
AT&T Safari NSX/20: Worth the expense

Technology Analysis — a roundup of expert opinions about new products. Summary written by free-lance writer Suzanne Wessel.

As its name implies, AT&T Information Systems' Safari NSX/20 80386SX notebook personal computer is a machine that takes on-the-go communications seriously.

Performance: The 20-MHz notebook PC comes with a 40M-byte hard drive and 2M bytes of random-access memory, upgradable to 6M bytes. Communications features include a built-in 2.4K bit/sec. modem and AT&T's Mail Access Plus for Windows, Microsoft Corp.'s Windows 3.0 and MS-DOS are preinstalled.

Ease of use: The 10-in. diagonal, backlit IBM Video Graphics Array LCD is easy to read. The 82-key keyboard is as close as a notebook can get to a desktop layout. Power features: The Safari uses a pair of nickel cadmium batteries.

Value: At $5,399, the Safari is expensive, but the combination of communications features and long battery life will be hard to find anywhere else in a notebook size.

---

AT&T's Safari NSX/20

<table>
<thead>
<tr>
<th>Reviews</th>
<th>Performance</th>
<th>Ease of use</th>
<th>Power supply</th>
<th>Design</th>
<th>Value</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte 8/31</td>
<td>Excellent</td>
<td>Very good</td>
<td>Top performer</td>
<td>Satisfactory</td>
<td>Good</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>InfoWorld 5/20/91</td>
<td>On par with IBM</td>
<td>Outstanding VGA display</td>
<td>Excellent</td>
<td>Very good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC Week 6/7/91</td>
<td>Satisfactory</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Users: Tony Romano, United Parcel Service, Inc.
Bobbi Bogar, Zing, Inc.

Analysts: Norman Weiner, Arthur D. Little, Inc.

Vendor financial ratings

<table>
<thead>
<tr>
<th>Analysts</th>
<th>Long-term stability</th>
<th>Short-term performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Wilkes, Brown Brothers Harriman &amp; Co.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craig Ellis, C. J. Lawrence, Morgan Grenfell, Inc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysts estimate AT&T's 1991 revenue will total $40.5 billion, compared with $37.5 billion in 1990. Net income after extraordinary items is estimated to be $2.8 million compared with $2.7 million in 1990.

Vendor financial ratings

<table>
<thead>
<tr>
<th>Analysts</th>
<th>Long-term stability</th>
<th>Short-term performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe McGlone, McGlone &amp; Co.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stuart Lande, Fidelity &amp; Co.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: Very good, Good, Fair, Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment. User analysis ratings are based on telephone survey. NC: No comment.

---

Tandon's 386SX-20: Power-packed potential

Tandon Corp.'s 386SX-20

<table>
<thead>
<tr>
<th>Reviews</th>
<th>Performance</th>
<th>Ease of use</th>
<th>Power supply</th>
<th>Design</th>
<th>Value</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>How</td>
<td>Unusually good expansion</td>
<td>Sharp display, typical keyboard</td>
<td>Has battery savers</td>
<td>Pretty satisfactory</td>
<td>Good price</td>
<td>Good performance</td>
</tr>
<tr>
<td>InfoWorld 5/15/91</td>
<td>Similar to TI notebook</td>
<td>Quick recharge</td>
<td>Simple</td>
<td>Good price</td>
<td>Combines price, power</td>
<td></td>
</tr>
<tr>
<td>PC Week 6/25/91</td>
<td>A poor man's LTE</td>
<td>Equivalent to Compaq's notebook</td>
<td>Satisfactory</td>
<td>Moderate price</td>
<td>Good performance</td>
<td></td>
</tr>
<tr>
<td>PC Computing 7/1</td>
<td>Easily expanded</td>
<td>Crisp keyboard</td>
<td>Standard</td>
<td>Antioxidant shield key</td>
<td>Top notch</td>
<td>Feature-packed, reasonable price</td>
</tr>
</tbody>
</table>

Users: Gary Murrish, Data Corp.
Paul Panosh, Nihon Kohden America, Inc.

Analysts: Norman Weiner, Arthur D. Little, Inc.

Key: Very good, Good, Fair, Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

<table>
<thead>
<tr>
<th>Analysts</th>
<th>Long-term stability</th>
<th>Short-term performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe McGlone, McGlone &amp; Co.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stuart Lande, Fidelity &amp; Co.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: Very good, Good, Fair, Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

---

AT&T responds

Bill McFadden, director of marketing for Safaris.

Performance: In October, we will release an 80M-byte model with a built-in, cellular-ready data/fax modem.

Value: This unit is for the mobile professional who needs to take his office with him on a daily basis. Yes, the list price is higher than those of other notebooks, but you get more with it.

---

Tandon responds

Tom Dickinson, director of technical marketing.

Ease of use: Because the unit is so small, we had to make decisions about where to place certain keys. The key placement meets the approval of most customers.

Power supply: The notebook is currently not be charged while it is running on AC power, but we may change that in the future.

---

Tandon Corp., a major PC vendor in Europe, is located in Moorpark, Calif. Financial ratings are based on telephone survey of analysts who follow the company.
Software applications packages

Gupta Technologies, Inc. has created Quest, a Microsoft Corp. Windows 3.0 environment tool for accessing SQL databases. Quest provides a point-and-click method of updating tables from multiple source databases, copying tables from one SQL database to another and transferring data between itself and other Windows applications via Dynamic Data Exchange.

The tool costs $495. Additional connectivity software is required for accessing some database formats.

Integrated Systems, Inc. has begun shipping Xmath, an object-oriented mathematical analysis and scripting language for the X Window System environment. Xmath offers an interactive method for producing optimized number-crunching algorithms. It also automatically generates plots, according to Integrated Systems.

The interface offers on-line Help, point-and-click graphics annotation and a source-level debugger.

The mathematical analysis and scripting language costs $2,495 for a single-user license. Universities can purchase a single-user license for Xmath for $250.

Integrated Systems
3260 Jay St.
Santa Clara, Calif. 95054
(408) 980-1500

Peripherals

The IBM 4226 Model 302 connects to IBM midrange computers and RISC System/6000 workstations

Lexmark International, Inc., a manufacturer of IBM printers, has introduced new models featuring straight paper paths to reduce paper jams.

The IBM 4226 Model 302 connects to IBM midrange computers and RISC System/6000 workstations with an ASCII attachment, as well as to personal computers. The printer costs $2,495, according to the company.

The IBM Personal Printer Series II dot-matrix printer offers narrow- and wide-carriage versions. It is a nine-wire printer, like the 4226. Pricing ranges from $499 to $699.

Both models allow users to tear off documents immediately upon completion and automatically return the paper to correct print position.

Lexmark International
740 New Circle Road
Lexington, Ky. 40511
(606) 232-7514

Macintosh products

Silicon Beach Software, Inc., an Aldus Corp. subsidiary, has announced SuperCard 1.6. SuperCard is a multimedia authoring application for the Apple Computer, Inc. Macintosh. Version 1.6 supports Apple's System 7.0 operating system, including Balloon Help and TrueType fonts; it also includes an Online Supertalk script-language Help system.

The product costs $299.

International Business Software
Suite 314
1270 Oakmead Pkwy.
Sunnyvale, Calif. 94086
(408) 522-8000

International Business Software has announced Dataclub 2.0, an enriched version of its file server software for the Apple Computer, Inc. Macintosh.

The new release will offer full support for Apple's System 7.0 operating system. Performance will also be significantly enhanced, according to the company.

The enhanced file server software, scheduled for shipment this month, is priced from $175 for a single-user license to $3,250 for a 50-user version. Upgrades from the previous release are free of charge.

International Business Software
Suite 314
1270 Oakmead Pkwy.
Sunnyvale, Calif. 94086
(408) 522-8000

Jump to a higher-performance network while keeping your budget firmly on the ground.

Network Systems now combines high network performance, standards, and media independence with very affordable prices.

With our new 6000 Series RISC-based bridge-routers, more people can hop onto the same network and share information and resources, no matter what or where their home LAN is.

Network managers get a solid foundation for building networks—with connections from Cray and IBM channels to Ethernet to T3 to FDDI.

And the people who sign the checks get some of the best inter-networking price-performance in the business.

Give everyone on your network a performance boost without spending lots of money. Call us at 1-800-338-0122.
NAS CAN OPEN ANYTHING. EVEN SUN.

NAS FROM DIGITAL.
Sun® is already open, you say? That depends on how you define "open." If you define it in terms of SPARC®-based technology, then yes. If you limit your view to just one operating system, then yes again.

But if you define open in the true sense of the word - computers and applications working together across a wide range of operating environments and hardware platforms - then you might conclude Sun isn't quite open.

At least not without Network Application Support (NAS). Digital's approach to open computing that employs industry standards to integrate systems and applications from dozens of different vendors. Sun included.

By standards, we don't mean a handful of interfaces and protocols, but a comprehensive set of products and services implemented and refined over the course of years.

In networking, for example, we pioneered the development of Ethernet, and have implemented more standards than anyone, including FDDI, TCP/IP, OSI and the X family.

In software, Digital's technology is the basis for OSF's DCE and MOTIF®. We've implemented STDL, SQL, POSIX, X®Open, the list goes on. And in the widely heralded ACE initiative, we were instrumental in unifying over 20 companies behind a single set of new standards.

In support and service, we lead the market in delivering fully integrated multi-vendor solutions from desktop to data center. And with DECathena Services we offer the only multi-vendor distributed workstation management solution.

All of which means we're opening up a whole new world of possibilities for people who use Sun workstations. Now they can exploit the power of applications running on other platforms in your company, be they from IBM®, Apple®, Hewlett-Packard®, almost anyone. And they can keep on working the way they're used to working, because NAS accommodates the desktop interface they already understand.

It also accommodates the systems and applications in which you've already invested time and resources. While keeping your options open for whatever technologies you need to add later on. Even if they come from Sun.

To find out more, talk to a Digital representative.

THE OPEN ADVANTAGE.
Our standalone modems stand out in their class.

Our modem management system is in a class by itself.

Whether you're looking for a high performance modem to provide one-to-one dial-up access to computing resources, or a multiple terminal to mainframe modem management system, Microcom has what you need.

Take our QX/4232hs. It provides 38,400 bps throughput with up to 400% data compression and is fully compliant with all existing standards worldwide. That includes CCITT V.32, V.42 and V.42bis.

The QX/4232hs features MNP® 10, the most advanced version of the industry standard Microcom Networking Protocol. MNP 10 provides error free data transfer with Adverse Channel Enhancements (ACE™) to automatically adjust transfer rates up or down depending upon the line conditions.

Our HDMS™ is a chassis-based, data center solution that provides unprecedented dial-up network management capabilities as well as proven dial access security.

And it's all from Microcom. The head of its class in price/performance.

Call 1-800-822-8244 today for complete information. We'll send you your choice of Microcom's FREE technology guides on "Microcom Networking Protocol" or "Managing a Dial Up Network."

Please send me: □ "Microcom Networking Protocol" guide □ "Managing a Dial Up Network" guide

Name __________________________ Title __________________________
Company ________________________
Street __________________________
City ___________________________ State ________ Zip ____________
Telephone ________________________

MNP is a registered trademark and Microcom Networking Protocol, QX/4232hs, Adverse Channel Enhancements, ACE, and HDMS are trademarks of Microcom Systems, Inc. © Microcom, Inc., 1991. All rights reserved.
**LAN switches unsnag jammed nets**

**BY JOANIE M. WEXLER**

As companies continue to heap traffic onto local-area networks, their LANs are getting congested. Particularly clogged are heavily populated 10M bit/sec. Ethernet networks, which can have lower throughput than 4M bit/sec. Token Rings because of Ethernet's inherently less efficient network access method.

Among the options for keeping performance humming are emerging LAN switches, which create a virtual path between any two local network nodes with near-real-time throughput. Switches allow parallel network conversations among collocated LANs, overcoming the slowdown caused by Ethernet's network access method, under which each node on the network contends for transmission time.

Switching is serving as network Dramo for several companies wary of introducing more bottlenecks with bridges and routers and without the budget to install 100M bit/sec. Fiber Distributed Data Interface (FDDI). Bridges and routers, users pointed out, slow response time because they pause to examine address and/or protocol information.

One Ethernet switch user, however, said he will still implement a router at a "point of control, where you need to subnetwork or add filtering for restricting access."

Several firms using a product called Ethervesch from San Jose, Calif.-based Kalpana, Inc. have cited dynamic responsiveness as a concern. Jim Shearer, chief data communications engineer at Western Atlas International, Inc., an oil field services company in Houston, said that because of bandwidth-hungry computer-aided design (CAD) applications and growing numbers of personnel computers attaching to its network, his firm was recently seeing a 15% to 20% utilization of available bandwidth on the backbone with peaks in the 60% range.

**Continued on page 46**

**Networks**

---

**LAN switches unsnag jammed nets**

**BY JOANIE M. WEXLER**

As companies continue to heap traffic onto local-area networks, their LANs are getting congested. Particularly clogged are heavily populated 10M bit/sec. Ethernet networks, which can have lower throughput than 4M bit/sec. Token Rings because of Ethernet's inherently less efficient network access method.

Among the options for keeping performance humming are emerging LAN switches, which create a virtual path between any two local network nodes with near-real-time throughput. Switches allow parallel network conversations among collocated LANs, overcoming the slowdown caused by Ethernet's network access method, under which each node on the network contends for transmission time.

Switching is serving as network Dramo for several companies wary of introducing more bottlenecks with bridges and routers and without the budget to install 100M bit/sec. Fiber Distributed Data Interface (FDDI). Bridges and routers, users pointed out, slow response time because they pause to examine address and/or protocol information.

One Ethernet switch user, however, said he will still implement a router at a "point of control, where you need to subnetwork or add filtering for restricting access."

Several firms using a product called Ethervesch from San Jose, Calif.-based Kalpana, Inc. have cited dynamic responsiveness as a concern. Jim Shearer, chief data communications engineer at Western Atlas International, Inc., an oil field services company in Houston, said that because of bandwidth-hungry computer-aided design (CAD) applications and growing numbers of personnel computers attaching to its network, his firm was recently seeing a 15% to 20% utilization of available bandwidth on the backbone with peaks in the 60% range.

**Continued on page 46**

---

**Chemical maker opens DEC/IBM gateway**

**ON SITE**

**BY ELISABETH HORWITT**

RICHMOND, Va. — About 18 months ago, Albright and Wilson America, Inc. faced what is rapidly becoming a classic situation for manufacturing companies. The chemical maker wanted to establish bi-directional, reliable electronic links between engineering systems that run on Digital Equipment Corp. hosts and business systems that run on IBM hosts.

Project engineers need to look up the financial status of their projects on the business system, while purchasers need access to engineering drawings and equipment lists for such tasks as establishing bidding packages to suppliers, said Michael Thompson, formerly Albright's director of information systems and now a business analyst at the company's industrial chemicals group.

Moving both engineering and business systems to one type of host was out of the question because of the "best engineering department software" on a DEC VAX, while the best commercial system was on an IBM AS/400," Thompson said.

Albright started looking for a gateway that would allow users to exchange documents and messages between the two systems. After a multivendor evaluation process, the chemical firm chose the Forest Network Processor from Forest Computer, Inc. in Okemos, Mich.

Since then, Albright has migrated to Forest's newer gateway, the Connection System.

Without the gateway, "we would have had to have dual commercial systems: one to support engineers, one to support purchasers," said Abdul Chaudhary, director of IS at Foremost Insurance Co. in Grand Rapids, Mich. Chaudhary said users of LAN Manager-based systems want few differences between the OEM's versions.

Chaudhary said Foremost plans to downstate from its IBM 3090 Model 300S and is looking at its predominantly LAN Server networks. It has three or four Netware networks, he said, and will consider them as replacements for LAN Server. He, too, cited the uncertainty of IBM and Microsoft's future relationship as a factor.

---

**IBM/ Microsoft split rattles users' view of LAN Manager**

**BY JIM NASH**

Microsoft Corp. may have aimed at reducing user confusion two years ago when it entered into its first agreement with IBM. But beginning the drums about an IBM 3090 gateway on a common version of its LAN Manager based systems, those efforts have been met with mixed results.

Several managers of LAN Manager or LAN Manager-based systems contacted recently said they are less certain about their networking future. They cited IBM's backing away from Novell, Inc., maker of the Netware network operating system, IBM's own lack of direction for its LAN Server product and the strained relationship between Microsoft and IBM.

"We can't live on promises," said Tony Albright, director of information systems for two of the three operating units of holding company Simpson Investment Co. Promises are all Berger said he is getting from IBM as he works to ensure that LAN Server, based on Microsoft's LAN Manager, operates on Compaq Computer Corp. workstations and those of other IBM clone makers. LAN Manager does work with Compaq machines. He said IBM's OS/2 Extended Edition on LAN Server does not operate on Compaq machines. With Simpson planning to link a fifth remote site with its Seattle headquarters using Compaq machines, Berger said the company is deciding between LAN Manager and Netware.

A vote in favor of LAN Manager does not guarantee peace, said Jim Hicks, systems administrator at American Suzuki Motor Corp. in Brea, Calif. Microsoft has standardized on Server Message Block (SMB) as its interoperability protocol between servers, workstations and peripherals, he said, and Suzuki has followed suit.

IBM has not clearly indicated whether it will do the same, Hicks said. Added to that, he said, is the worry that LAN Manager could grow isolated, making SMB a less strategic option in heterogeneous environments.

Although Berger said the odds-on favorite now is LAN Manager, Nowell is a contender. Berger and other network managers said the Microsoft/IBM split is a concern. Microsoft recently said convergence of the two operating systems will stop short of user and network services and systems administration.

"From a philosophical point of view, [incomplete convergence] makes a difference to us," said Abdul Chaudhary, director of IS at Foremost Insurance Co. in Grand Rapids, Mich. Chaudhary said users of LAN Manager-based systems want few differences between the OEM's versions.

Chaudhary said Foremost plans to downstate from its IBM 3090 Model 300S and is looking at its predominantly LAN Server networks. It has three or four Netware networks, he said, and will consider them as replacements for LAN Server. He, too, cited the uncertainty of IBM and Microsoft's future relationship as a factor.

---

**Commentary**

Elisabeth Horwitt

That elusive gold thread

During a recent telephone conversation, Irwin Sitkin, the industry guru and former Aetna chief information officer, asked plaintively, "Where are the big blockbuster applications? Where's the next generation of the information system?"

When you think about it, that's a pretty serious indictment of the information systems and communications professions.

Seven or eight years ago, everybody was dazzled by the spectacle of certain savvy businesses successfully tying their customers to them via "golden threads." These were communications lines that delivered value-added services and information to the customer's terminal, giving a business that extra edge over its competitors — and ideally making it tough for the customer to switch to a competitor.

American Airlines was the first to win travel agents' gratitude — and business — by making it a lot easier for them to make reservations via an electronic system called Sabre. American Hospital Supply Corp. Promises are all Berger said he is getting from IBM as he works to ensure that LAN Server, based on Microsoft's LAN Manager, operates on Compaq Computer Corp. workstations and those of other IBM clone makers. LAN Manager does work with Compaq machines. He said IBM's OS/2 Extended Edition on LAN Server does not operate on Compaq machines. With Simpson planning to link a fifth remote site with its Seattle headquarters using Compaq machines, Berger said the company is deciding between LAN Manager and Netware.

A vote in favor of LAN Manager does not guarantee peace, said Jim Hicks, systems administrator at American Suzuki Motor Corp. in Brea, Calif. Microsoft has standardized on Server Message Block (SMB) as its interoperability protocol between servers, workstations and peripherals, he said, and Suzuki has followed suit.

IBM has not clearly indicated whether it will do the same, Hicks said. Added to that, he said, is the worry that LAN Manager could grow isolated, making SMB a less strategic option in heterogeneous environments.

Although Berger said the odds-on favorite now is LAN Manager, Nowell is a contender. Berger and other network managers said the Microsoft/IBM split is a concern. Microsoft recently said convergence of the two operating systems will stop short of user and network services and systems administration.

"From a philosophical point of view, [incomplete convergence] makes a difference to users," said Abdul Chaudhary, director of IS at Foremost Insurance Co. in Grand Rapids, Mich. Chaudhary said users of LAN Manager-based systems want few differences between the OEM's versions.

Chaudhary said Foremost plans to downstate from its IBM 3090 Model 300S and is looking at its predominantly LAN Server networks. It has three or four Netware networks, he said, and will consider them as replacements for LAN Server. He, too, cited the uncertainty of IBM and Microsoft's future relationship as a factor.
Macintosh steps into X Window System arena

BY JOANIE M. WEXLER CW STAFF

Developments in the X Window System arena have continued to thrive over the past month. Perhaps most significant, two companies — Cayman Systems, Inc. and Intercon Systems Corp. — have brought Apple Computer, Inc. Macintosh personal computers onto the X network.

X Window is public domain software installed on computers and intelligent terminals. X "server" software running on a PC, workstation or X display terminal allows users to access multiple application programs residing on many computers across a network running X "client" software. Users can view the various application programs in separate windows on one screen simultaneously.

With last month's announcements, the Macintosh becomes another X client resource for users running X servers. Amanda Walker, a project leader at Vi-six Software, Inc. in Reston, Va., has been testing Planet X to access documentation such as user manuals and technical references from her desk.

"It's a lot easier to look at program code and documentation on one screen," Walker said, adding that previously, users jounced to centrally located Macintoshes to access their resources.

"I know there is a lot of interest for X on the Mac," she said. "There are many things that are impossible or impractical to do on anything other than the Mac."

Walker has not yet committed to purchasing Planet X and said she still intends to test Cayman's $495 Xgator software, which allows network administrators to manage Macintosh networks and support users from an X server workstation. Both vendors said they plan to ship their software this month.

On the X display terminal front, Network Computing Devices, Inc. in Mountain View, Calif., recently announced a 19-in. color display based on the Motorola, Inc. 88100 reduced instruction set computing (RISC) processor.

According to Eileen O'Brien, manager of the terminals program at market research firm International Data Corp., based in Framingham, Mass., the Network Computing Devices move "is significant because NCD has not been able to compete in many bids because it has not had a 19-in. color product."

O'Brien said RISC processors "are likely to be on X shoppers' bid lists" because of the increased performance often resulting from RISC technology. However, Network Computing Devices competitor Tektronix, Inc. last month announced a non-RISC-based 19-in. XGA color X terminal that it said improves performance by 50%.

X terminal performance, measured in units called "X stones," has been cited by the following competing vendors for their 19-in. color models, according to O'Brien: Tektronix, 63,000 X stones; Hewlett-Packard Co., 59,000 X stones; and IBM, 38,000 X stones. Network Computing Devices is reportedly not making public X stone numbers on its new terminal.

IBM enhances Netview tool

BY ELISABETH HORWITT CW STAFF

WHITE PLAINS, N.Y. — IBM has enhanced a key piece of its Netview-based automated system management strategy with the announcement of IMS Automation Option/MVS (IMSAO).

Like its predecessor, the IMSAO for Automated Console Operations Solutionpac, the new product is said to allow an operator on a Netview terminal to control multiple IMS subsystems on one or more MVS systems.

Also like its predecessor, IMSAO/MVS is said to monitor IMS systems for errors and failures as well as automatically initiate recovery actions. Capabilities include automatic system start-up, shutdown, monitoring and Extended Recovery Facility surveillance/ takeover.

In addition, IMSAO/MVS is said to monitor and initiate error recovery automatically for Inter System Communication and Multiple Systems Coupling communications links.

The product is said to do the following:

- Start, stop and display IMS message regions.
- Schedule regular start-ups and shutdowns with service periods.
- Define initialization conditions that automatically trigger a start-up or shutdown.
- Display and obtain information about critical messages.
- Broadcast messages to subsystems.

The product runs as an application under IBM's systems automation product, Automated Operations Control/Multiple Virtual Systems Solutionpac. For new IMSAO/MVS users, the basic license costs $15,800, and the Distributed System License costs $11,850. For current IMSAO/MVS users, the basic license costs $7,200. It is available now.

Based on what our customers tell us, we made a list of some of the most important features to look for in data management software. Then we compared the new dBASE IV version 1.1 with two other database products.

As you can see, dBASE IV offers exclusive advantages in many categories. For instance, only dBASE IV lets you access all its functions from a single screen. Called the Control Center, this screen lets you manage existing data, and create new tables, queries, reports, forms and labels totally without programming.

When all the facts are on the table, it's easy to see which database software is best. Of course we aren't the only ones who have come to this particular conclusion.

SOFTWARE DIGEST rates dBASE IV version 1.1 the #1 Multiuser Database (Vol. 7 No. 13, Oct.'90).
AT&T exchanges make way for new switch

BY JOANIE M. WEXLER
CW STAFF

AT&T is quietly paring its private branch exchange (PBX) line and bringing out a new PBX-to-key telephone system liaison exchange (PBX) product that will replace the firm's low-end System 25 switch, according to consultants and analysts.

Technology Investment Strategies Corp. senior analyst Doreen Austin said the company is taking a $1.5 billion write-down on its low-end Merlin 2, Merlin Plus and System 25 and the midrange System 75 and 85 switches.

In addition, AT&T last week replaced the president of its low-end switch business unit, Jack Bucter, with Jerre L. Stead, former chairman of Palatine, Ill.-based electrical and electronic products manufacturer Square D Co.

AT&T spokeswoman Jane Multin acknowledged that the company is simplifying its PBX line and anticipates downsizing its staff. However, she said, "we haven't yet announced any new switch." Austin added, though, that she has brochures on the forthcoming low-end PBX — dubbed the Merlin Legend — and that it is already being marketed. She described the Merlin Legend, which hooks off to revamp its PBX product line. She said the move includes discontinuing the low-end Merlin 2, Merlin Plus and System 25 versions of the System 75 and 85 switches.

Another consultant, who asked not to be identified, confirmed that AT&T plans to hold a series of analyst briefings on the Merlin Legend as early as this week and supported Austin's statement that AT&T is marketing the product to some firms.

A possible reason AT&T has been closedmouthed about the product, the consultant said, is that the firm might have been "somewhat surprised" by competitor Northern Telecom, Inc.'s Meridian 1 Option 11, a low-end PBX that debuted at the International Communications Association conference in May. "AT&T might have delayed its announcement to see if the Merlin Legend was going to be competitive," the consultant said.

Austin said she interprets AT&T's PBX revamp as a strategy to help finance the AT&T Computer Systems/Packard Corp. merger. According to Austin, manufacturing has already ceased on Release 2 Version 2 and Release 2 Version 3 of both the System 75 and the System 85.

Multin said AT&T support will continue on all switches.

--

Gateway

CONTINUED FROM PAGE 43

support the business users," Thompson said. "That would have been $100,000 plus in application costs plus additional VAX hardware."

In addition, the ability to send historical cost information electronically from the IBM system to the engineering bid-support system helped Albright reduce its total bid generation cycle from three months to two days, Thompson said.

The gateways have also let Albright streamline its costing process. Costs developed in engineering applications can now be transferred electronically to Application System/400-based financial applications for tracking, Thompson said.

Among the features that Albright considered essential for its gateway was the ability to "run natively without having to add hardware or another layer of software to a VAX or IBM host," Thompson said.

Communicating via the gateway, "a VAX looks like an AS/400 to an AS/400, and an AS/400 looks like a VAX to a VAX," he added. The product also acts as a gateway between Albright's Decnet-Ethernet and IBM Token Ring local-area networks.

Another key feature was interactive communications, which, for example, allowed an engineer to update information on the IBM host from his DEC workstation. Thompson said. Also important was keyboard mapping between the wide variety of workstations used at Albright: "There is partial capability to 'run natively without having to add hardware or another layer of software to a VAX or IBM host," Thompson said.

Albright has completed implementation of Forest gateways to interconnect business systems at its headquarters here with both the corporate engineering group in Toronto and the U.S. engineering group in Charleston, S.C. Two months ago, the system also began supporting communications between the Toronto and Charleston engineering groups.

The latter link has supported some valuable synergies between the two groups, Thompson said. "There is particular engineering expertise in Toronto, which we need for plant design modifications in the U.S. Conversely, an engineer in Charleston may be familiar from past experience with the design to be used in a sodium chloride plant in Vancouver."

The phase now underway involves a job costing application that will let U.S. engineers monitor project expenditures and committed costs on the Richmond business system.
LAN switches
FROM PAGE 43

"I was getting calls from people who said downloading CAD files was taking 20 minutes," he said. "FDDI was an option, but it cost too much."

Shearer, who has been running the EtherSwitch for seven weeks and has committed to purchasing two seven-port EtherSwitches in March.

Kalpana co-founder and Vice President of Marketing Larry Blair explained that "for remote networking, we hook up to third-party products such as remote routers and bridges." He added that if two devices, such as powerful workstations, "can't move 10M bit/sec. between them, FDDI is the correct approach."

LAN software vendor Novell, Inc. decided last December that the Ethernet segment serving its technical support group was saturated and turned to the switching method to breathe more life into it. The company runs a Netware-based database with 150 users hooked into it.

"We hit about 60% utilization on that network segment; for Ethernet, that's not workable," explained John Stevenson, data communications administrator at the Provo, Utah-based firm. "The biggest advantage with the switch is that we can keep a large work group on one logical Ethernet segment. FDDI would probably give better performance, but the cost would be at least 10 times as much," Novell purchased two seven-port EtherSwitches in March.

Clarence Edmunds, MIS director at Laser Master Corp. in Eden Prairie, Minn., runs Ethernets that shifted from supporting 100 to 400 users during the past two years. "We've seen a 25% to 50% drop in backbone traffic and a 20% increase in file-transfer speed" since using the Kalpana switch, he said.

As an internetworking alternative, EtherSwitch raises the ante in the bridge/router market, said Marty Palka, senior networking industry analyst at San Jose's Dataquest, Inc. "There will always be people who buy strictly on performance, and the switch reduces transient delay inherent in bridges and routers."

The biggest advantage with the switch is that we can keep a large work group on one logical Ethernet segment."

JOHN STEVENSON NOVELL

A potential EtherSwitch competitor is under construction at Synertexics, Inc. in North Billerica, Mass. The firm's $24,250- and-up Lanplex products give each workstation its own 10M bit/sec. chunk of bandwidth and concentrate the traffic over three logical FDDI networks (300M bit/sec. worth of bandwidth) in a hub. Originally scheduled to ship in third-quarter 1991, the product has been delayed until first-quarter 1992, the firm said.

In addition, chip maker National Semiconductor Corp. said it is shipping chips that would-be Kalpana competitors could use in switching products.

On the Token Ring front, the Maestro Intelligent Switching Hub from ByteX Corp. in Southboro, Mass., is "complementary, not competitive" to the Kalpana box, said ByteX Director of LAN Marketing Joe Skorupa. Maestro allows users to reconfigure networks remotely without visiting the wiring closet, but the product "doesn't do any routing," according to Skorupa. Maestro is slated to support Ethernet by the end of the year.

Last month, Kalpana announced a $19,995 eight-to-15-port version of EtherSwitch with Simple Network Management Protocol support to complement its $12,995 seven-port version. Blair said the Kalpana customer base is currently at approximately 200.
Adventures In The New Europe
about IBM, as they get older their ing seems to be improving.”

“I run our company's data center, and I've known IBM since the punch card days. Back then, they would show up and I'd take notes. How different today. Now I go to their meetings and they take notes.

“If they're planning a new system or creating new software, they'll ask me what I think of it, and they don't fish for compliments.

“What a switch. Here I'd always planned around IBM. Now they're planning around me.”

The Solution. If IBM has one mission it's to help our customers solve problems. Which means we'd better know what their problems are, and that's why we have Customer Councils.

On a regular basis, we sit down with customers to talk about new directions and to hear whatever else they might have to say. As a result we've improved our products, our services and, in fact, ourselves. So when customers are happy with a new IBM system, there's good reason for it. They helped us design it.
While traveling through the UK on assignment for this report, one of our reporters chanced across a scene that is, in many ways, typical of Europe today. At Cambridge University, which dates back to the 13th century, installation work on a fiber-optic backbone network had unearthed the remains of some buildings demolished in the 1820s. A sign posted next to the construction trench explained the buildings demolished in the 1820s. A sign posted next to the construction trench explained the find and noted — perhaps humorously, but perhaps not — "It is unlikely the fiber-optic duct will reach medieval levels."

Old and new are constantly bumping up against each other like that, particularly as technical realities. What this report focuses on is how information systems managers are grappling with those contradictions and what challenges and opportunities lie ahead, as the business and technical landscape continues to change.

Because that, of course, is the other tricky aspect to Europe these days — the things that are changing are doing so very fast. Look away for a short while and the next time you turn back everything is different: There are half a dozen new European Community subgroups, several dozen new vendor alliances and Frankfurt’s Intercontinental hotel is serving up Japanese-style breakfasts.

We won’t pretend that this report provides a comprehensive picture of either Europe or IS operations there. Trying to do that would be, as the Italians say, "making a hole in water" — in other words, impossible. We do hope, though, that some of the information in the pastiche of facts, figures, anecdotes, impressions and experiences collected here will make planning for your first, or next, stage of European expansion a bit easier.

On-site reporting for this special section was handled by a team of senior Computerworld staff members: Elisabeth Horwitt, senior editor, networking; Michael Alexander, senior editor, advanced technology; and Ellis Booker, Midwest bureau chief. They spent time in the UK, Belgium, Germany, Switzerland, France and Italy, collecting information from both European and U.S. companies, as well as a wide assortment of other experts. As is fitting for a report on a part of the world where the byword of the day is unification, most of the articles that follow are team constructions compiled and written by one or two people from the contents of multiple notebooks.

— Joanne Kelleher
There's a question that Gordon Monro, general manager of information technology at DHL Systems, Inc. in Brussels, asks his vendors, and it says a lot about the way in which the European landscape has changed and is changing.

What Monro wants to know when potential suppliers come calling is, “Can you support me in Reykjavik, [Iceland], Athens and Brussels?”

As Monro’s question indicates, Europe is a more sprawling expanse these days than the mental image many of us carry around would suggest. Furthermore, the geographic term is open to multiple definitions, depending upon whether it is being discussed in the context of the official European Community (EC), post-Cold War border openings or the span of a particular business.

The EC, which is in the process of creating a unified market with common trading rules and open borders under the administration of the European Commission, currently consists of 12 countries — Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the UK. Existing cheek by jowl with the EC, however, is a whole other roster of European nations not officially bound by EC rulings and directives but nonetheless impacted by its activities. These include both the member national of the European Free Trade Association — Austria, Finland, Iceland, Norway, Sweden and Switzerland — and a number of Eastern European nations that are participants in the wave of democratization and westernization sweeping the continent.

For U.S.-based corporations, these changing definitions and conditions spell both opportunity and challenge. Clearly, there are massive new markets emerging as a fragmented Europe begins to reassemble itself into a more unified entity. Just as clearly, however, tapping into these emerging markets will require a whole new organizational and technical game plan.

Jeremy Frank, a program manag-
er at Gartner Group, Inc., compares the current situation in Europe with the period of post-Civil War expansionism in the U.S. "I imagine," he says, "that it is like being in the U.S. around 1870, when everyone was poised on the Appalachians, ready to run for the Pacific." The difference is that in Europe, the rush is moving in many directions, not just one.

Frank is speaking mostly in the context of the telecommunications market, but his analogy works in a much broader sense.

U.S.-based corporations anxious to stake a broad claim on the market opportunities taking shape are facing a confusing jumble, fraught with contradictions.

To begin with, there can be disconcerting lags between EC proclamations of change and actual changes on the ground.

As Len Elfenbein, president of Little Falls, N.J.-based telecommunications consulting firm Lynx Technologies, Inc., explains, "The EC has growing clout, but that clout is not really legislative or legal — it's more in the nature of public pressure."

Most of the statements the EC issues are recommendations, he says, not binding regulations, and many are subject to wide interpretation.

As a result, "some countries comply right away, while other administrations say they need time to study the issues."

Thus, it can still be very difficult, even within EC member countries, to construct and manage communications connections among facilities in several nations. When you try to add business partners and customers to the mix, it can get even worse.

For example, although a European standard does exist for electronic data interchange (EDI), its use is sporadic at best, since many companies use either industry or country standards for EDI (see story page 21). An even more basic problem is the fact that, right now, EDI is essentially a localized phenomenon. According to Michael C. Chesher, European marketing manager of business communications and core systems at General Electric Information Services Ltd. in London, only 20% to 25% of current EDI traffic in Europe crosses any country borders.

Then there is the problem of standardizing the work methods and data handling practices of information systems organizations across Europe. As Mario Pimentel, an analyst at Nolan, Norton & Co. in Germany, observes, companies often come into European markets by acquiring companies, and then they find it is hard to bring the IS operations of the acquisitions into their fold.

"U.S. companies need to give [information technology] organizations abroad the same freedom they give business ventures — to be accountable for decisions," Pimentel says. "They must likewise not lose sight of the individual needs of these departments for the greater 'good' of having a common core of applications and procedures."

That can be a tough prescription to follow, however, when there is a pressing need to get a full picture of how well the company is doing across Europe and it must try to reconcile not only input from disparate systems but also different bookkeeping methods and data definitions. Furthermore, as Terry Osborne, System Software Associates, Inc.'s London-based vice president for Europe, points out, the im-

**Likely Locales**

Are there any spots that seem like particularly good locales for information systems operations?

Mel Horwitch, dean of Theseus Institute, an MBA school in the south of France, favors a southerly direction. Horwitch sees a great deal of promise in a land arc bordering the Mediterranean, "stretching from Barcelona through Marseilles to Sophia Antipolis and Nice, all the way to Milan," he says. Sophia Antipolis is a sprawling research and development complex near Nice and Cannes, where a number of European and U.S. companies have set up lab facilities. Although a mixture of vendors can be found there, the population leans toward telecommunications types.

Certain parts of England are also hotbeds of research activity and pretty good sites for firms that want to be in touch with what's going on, Horwitch says. The areas west of Heathrow and up toward Cambridge are good alternatives to London. Southern Germany and the area around Geneva are also worth a look, he says, as well as "parts of Northern Italy and Spain."

Kirtland Mead, a vice president at CSC Index, Inc. in London, suggests the Low Countries and the UK because they are the places where it is easiest to build a team. "What the Low Countries have going for them," he says, "are language skills and centrality." Tom Moore, director of European operations at the consulting firm DMR Group, Inc., picked Gouda, the Netherlands, as his headquarters site not only because of the central location but also because of the "easy communications and transportation and small overhead."

Actually, IS operations can be almost anywhere, as long as you can attract staff, Mead and Horwitch say.

However, they differ on the southern tier. Some areas of it that Horwitch sees as promising, Mead rejects out of hand. "No one is going to put a central IS facility in Italy . . . or Spain or Portugal," Mead says. "These just aren't international environments. They want to go to places that are cosmopolitan. Brussels, London, Geneva, Frankfurt and Nice are all logical spots.

Mead offers another selection method: If you're looking for locales rich in potential IS staffs, he says, check out the locations of government-sponsored vendors in France. Some of these firms may be bleeding money, but they are excellent breeding grounds for talent. — Joanne Kelleher
pending arrival of 1992 is prompting many companies to rethink their manufacturing, logistics and distribution arrangements.

Up to this point, Osborne says, many companies tackled manufacturing on a country by country basis and allowed each country manager to select whatever systems seemed most suitable for the specific location. But, he says, this kind of arrangement “doesn’t make sense in single market.” Instead, companies are moving to fewer “centers of excellence” and standardizing on “core systems” — a strategy that makes it easier to share both data and staff across multiple locations.

Long way to go

This move toward organizational structures that basically mimic the emerging supranational economic structure of Europe has been going on quietly for a few years, but there is still a considerable distance to travel.

For one thing, it can be very difficult to find or create software that satisfies all of the operating requirements of sites in various countries. Furthermore, locating the programmers required to handle necessary alterations can be a problem, since competition for skilled IS talent is extremely high.

There are, however, an increasing number of service providers able and anxious to help with integration of complex systems. A number of European service companies are aggressively moving to expand their base of operations across Western Europe, and there are already several large U.S.-based service providers with a strong presence across the region.

In addition, joint ventures and collaborative agreements between European and U.S. companies in services and software hold out the promise of easier times to come in reconciliation of systems and systems practices. IBM, for example, has reportedly spent several hundred million dollars over the last couple of years on investments in local software and services companies.

Mel Horwitch, dean of management at Theseus Institute, an MBA-level business school in the south of France, says he believes that collaborations of this type are the positive counterbalance to some of the difficult situations that are prevailing in Europe right now.

For example, Horwitch says, the need to build a modern infrastructure for Eastern Europe certainly has the potential to derail some of the progress being made, particularly in Western Germany. But despite the drain on resources, he says, the challenge actually seems to be having an energizing and unifying effect.

“The impact of Eastern Europe is now being discussed a lot because it is costing more than people ever realized,” he says. “But if you look at what is taking place, it is actually causing companies to come together and join forces. For example, France Telecom and Ameritech have a joint venture in Poland.” Furthermore, some of the Eastern European countries are progressing much faster than expected. In some cases, he says, “they aren’t just developing; they are leapfrogging.”

Both Theseus Institute and the area in which it is located — a huge science park called Sophia Antipolis — are indicative of the positive synergy currently taking place in Europe.

Theseus, which enrolled its first MBA class two years ago, is heavily sponsored by France Telecom, but it also draws support from companies across Europe. Both its faculty and its student body are international in composition. And the degree it grants is an MBA in “innovation, business strategy and information technology.”

Sophia Antipolis, located about 25 minutes from the Nice-Cote d’Azur airport, is a sprawling development heavily populated with research facilities, standards bodies and networking facilities. IBM has operations there, as do Digital Equipment Corp., Texas Instruments, Inc. and a host of other U.S. vendors. The European Telecommunications Standards Institute has offices there, and Air France runs its reservations system out of a center in the area.

“In the States,” Horwitch says, “there is the danger of underestimating what is going on elsewhere.”

It would be a mistake to underestimate the extent of progress and innovation going on in Europe, he says, because for U.S. companies, Europe offers “a new geographic platform for doing some things differently, and maybe even better, than they’ve been done before.” — Compiled and written by Joanne Kelleher

STAYING IN TOUCH

Events in Europe are progressing faster and in greater numbers as the clock rolls toward 1992. In order to make it easier to stay on top of the situation, we are providing contact information for key groups:

- The European Strategic Program for Research and Development in Information Technology (Esprit) has launched more than 650 projects since its formation in 1984. For further information about work in progress, contact the Esprit Information Desk, Commission of the European Communities, telephone (011-32) 2-235-1603; fax (011-32) 2-235-3821.

- The German National Research Center for Computer Science (GMD) maintains offices in Washington, D.C., and Berkeley, Calif., to assist in U.S./German scientific cooperation. GMD initiated the foundation of the International Computer Science Institute in Berkeley. Its research is particularly strong in the fields of software engineering, parallel computing, communications systems and expert systems. To contact the Washington, D.C., office, call (202) 466-2808.

- The European Research Consortium for Informatics and Mathematics (ERCIM) is a research consortium formed in April 1988. Its members are Germany’s GMD (see contact information above); the Netherlands’ Centrum voor Wiskunde en Informatica, telephone (011-31) 20-592-4092; France’s Institut National de Recherche en Informatique et en Automatique, telephone (011-33) 13-963-5511; and the UK’s Rutherford Appleton Laboratory, telephone (011-44) 23-544-5894.

- Office for the Official Publications of the European Communities is reachable via European Communication Information Services, telephone (202) 862-9500.
When the world is your market and you have data centers peppered across the European countryside, to say nothing of even more far-flung spots, what kinds of problems could you have? Aside from jet lag, all you really have to wrestle with are systems incompatibilities, cultural and procedural inconsistencies and the occasional local staff insurrection.

Actually, figuring out how to structure an information systems operation in Europe has never been particularly easy, and now it's getting harder, with almost all companies feeling some pressure to get country operations marching to a tune that everyone can follow.

A few companies, looking at the way the international market is starting to heat up, are thinking in even grander terms, such as borrowing a leaf from the European Community and erasing all boundaries to create an IS structure that has more to do with functional requirements than geography.

That's the next big issue, says Adam Crescenzi, executive vice president and managing director at CSC Index, Inc. in Europe — "how to move away from the country-by-country focus and create multi-country organizations supported by systems in key locations."

The way Crescenzi and Kirtland Mead, a vice president working with Crescenzi out of the London office, sketch it, this organizational model sounds like a Houdini trick. What it's about, they say, is creating the illusion of national operations with an international control structure.

What do you do, for example, if you have a German operation with no IS support? You provide IS support for it, but not necessarily out of Germany. Put the IS support wherever it makes sense in terms of cost or the ability to attract good people.

Some companies are starting to move in this direction. Mead mentions Monsanto Corp.'s multicountry invoicing center in Brussels. And David Eggleton, UK director of the Butler Cox Foundation, says he's also noticed the beginnings of a trend, at
least among multinational corporations. He sees them distributing functions, including systems projects, across several countries.

"You get the units with the best skills to develop systems for each other," he says. "The Germans build the financial systems; the French build the retail [systems] and so on."

Few people would argue that this organizational model makes sense for the future, but right now, most companies are having a hard enough time trying to figure out how to keep existing country operations moving in the same direction.

Martin Cutler, divisional director of information services at UK retailer WH Smith Ltd., has grappled with this question in connection with his company's acquisitions in the U.S. — a line of airport and hotel gift shops and a Philadelphia chain of record stores.

At first, Cutler says, he tried to deal with these remote operations by dedicating information technology account managers within the centralized IS department to deal with those units. "But at the end of the day, you're still two different organizational entities," he says. Now, IS operations for the two U.S.-based businesses are run out of a single department in Philadelphia, and the U.S. staff is allowed a controlled measure of self-determination.

Cutler says this kind of decentralization, which he is also pursuing within the UK, seems to work much better, although it's not easy to find the right balance between freedom and control or between the roles of "guide" and "policeman."

Schindler Holding Ltd. in Hergiswil, Switzerland, has been trying to manage the same kind of balancing act since it acquired Westinghouse Electric Corp.'s elevator company in January 1989. When Schindler bought the elevator operation, it also picked up an IS department and a manager of computers and communications — Edward Hodgson, who is a man with a mission.

A major user advocate for Integrated Services Digital Network (ISDN) services in the U.S., Hodgson has made a strong push for setting up ISDN links between Schindler Elevator Co. in the U.S. and various Schindler sites in Europe. Back in Switzerland, however, the company's IS subsidiary, Schindler Informatik AG, while conceding the value of ISDN's high-speed, switched overseas connections, is less certain the technology is needed throughout the firm.

"The U.S. is much more technically driven than we are," says Schindler Informatik IS manager Peter Eschenmoser. "People like Ed are always talking fancy tech, possibly because they have earlier, better
supported and documented technology," Hodgson, for his part, claims that Europeans "have no urgency about getting things done. The Swiss and the Germans are technically expert, but they stand around and kick things."

Hyatt Hotels Corp. has managed to avoid such conflict by dividing itself into pieces. While the friendly service at the front desks at the Hyatt International hotel in London and the Hyatt in Chicago may be identical, the IS departments supporting the two are quite distinct.

"The international division of Hyatt is totally separate, with separate vice presidents and presidents, and it's the same with information systems," says Alex Lee, director of electronic data processing at Hyatt International, a sister company of Hyatt Hotels.

Even though his IS-person IS team, which oversees Hyatt's 34 overseas properties, is based in Chicago, Lee says, the international IS operation is much more egalitarian than the domestic one. This group cannot make unilateral decisions for the field, according to Lee. Standards are set in Chicago, but area and divisional offices and one or two data processing managers in each hotel have decision-making authority within those guidelines.

The standards used internationally are not the same as those used by the U.S. arm of Hyatt. For example, while the domestic operation has moved strongly toward Unix, switching its central reservations system from an IBM 4381 mainframe and proprietary software to AT&T Unix processors and a relational database from Informix Corp., the international operation uses the Pick operating system.

Even their network schemes are different. A year ago, Hyatt's U.S. operation moved from IBM Systems Network Architecture to Transmission Control Protocol/Internet Protocol, while the international operations continue to use X.25 packet networking. Both groups, however, share the Unix-based central reservations system in Oakbrook, Ill., connecting it to over a mixture of X.25, private-line and dial-up facilities.

Despite all of these differences, Lee says he believes the relationship between the two IS groups works well. "We consider what Hyatt domestic does, and we keep an open mind," he says.

Many companies have found a solution somewhere in the middle. Benetton S.p.A., an Italian clothing manufacturer, solicits

from its units in 75 countries input about issues such as hardware investments but sets strategy and develops 90% of the applications at its central headquarters.

Local data processing managers are hired by the local units, although IS director Bruno Zuccaro has influence over this hiring process, he says. Certainly, he has a hand in shaping those hired. Managers are brought to Italy and "instructed in the rules and logic of the company," he says.

The ISDN debate aside, Schindler is making progress toward operational uniformity. Central IS has laid out a five-year direction, called Computer Integrated Enterprise, that defines the company's hardware platform, software platform, key applications projects and the way it manages IS. So far, this has allowed the company to achieve one key goal — compatibility of corporate data financial reporting. Production planning and control is handled autonomously by each division because customer needs in different countries differ so widely, Eschenmoser says. Furthermore, "You can't get compatibility of all business procedures" across different countries, he adds. — Compiled and written by Joanne Kelleher and Elisabeth Horwitt.

Managing European Operations From The States

Global commodities trader Transammonia, Inc. has decided to ignore conventional wisdom, which says you need a local presence to manage information systems in Europe.

"There is no formal local support, no IS" to keep these systems up and running, says James C. Shroads, director of MIS at the New York-based firm. Instead, the company depends on vendors and "a couple of good users" at each site for support and maintenance.

European sites are equipped with personalized computer-based local-area networks and communications gateways, which link traders with their colleagues around the world as well as to the corporate data center in Tampa, Fla. Applications development is handled in the U.S.

This strategy is workable, in part because Transammonia's overseas operations are small and standardized. The largest sites have 35 to 40 staff members and "look the same from an operations standpoint," Shroads says.

While keeping systems management on this side of the Atlantic has saved Transammonia the headaches and expense of maintaining overseas IS centers, it has also required some accommodations. IS staff members must all be prepared to answer calls from European users at home and at any hour. And in order to ensure reliable support for its overseas sites, the company has limited itself to one network service vendor, British Telecommunications PLC, and one systems vendor, Digital Equipment Corp.

Perhaps the biggest challenge, however, is making overseas personnel feel like participants in systems decisions. If you "appear to leave them no option or input," users will respond with passive resistance, says Christopher Rapseik, manager of corporate systems. "They'll find some reason not to use the system."

— Elisabeth Horwitt
Europeans say:

'WALK, DON'T RUN'

Pcs Multiply But Seldom Do the Big Jobs

Europeans have been buying personal computers with abandon in recent years, but there is considerable growth potential left, according to local market research firms.

For example, Inteco Corp., a market research and consulting firm in Surrey, England, is forecasting that mainframes, which now represent 22% of equipment shipments in Western Europe, will drop back to 18% by 1995. The company expects that midrange systems, currently the top-selling equipment category, will hold steady at 46% of the total market, suggesting that much of the surge in PCs and Unix workstations, which it sees as the real comers, will be at the expense of mainframe vendors.

Despite their hot sales profile, PCs still tend to be used mostly in stand-alone mode across Europe and mostly by lower level personnel. According to Inteco, only 25% of managers in Western Europe have a PC or workstation on their desks, as opposed to more than 50% in the U.S.

Mainframes and minicomputers continue to be the center of information systems and are used to run applications critical to business, according to several European and American information systems managers. In most parts of Europe, companies are more cautious about setting up local-area networks to handle critical applications.

Swissair AG is starting to interconnect workstations, IBM Application System/400s and IBM Personal System/2s for a distributed financial applications project but plans to take things slowly, says Waldo Hasler, general manager of computer centers.

"We're doing distributed processing slowly, if it Continued on page 12

Packaged Software Gains Acceptance

Homemade and custom-developed software is still the rule inside European companies, and some degree of bias against applications "not invented here" persists in most countries, according to users and analysts familiar with the region. But this tradition is changing, largely because of the need for speedier deployment of systems in the increasingly competitive and volatile European marketplace.

European companies are moving toward ready-made applications, and, according to UK research and consulting firm Inteco Corp., the emerging appetite for applications is decidedly international, with sales for general-purpose applications dominated by companies such as Microsoft Corp., Lotus Development Corp., Borland International, Inc., Oracle Corp., Informix Corp., Computer Associates International, Inc. and Dun and Bradstreet Software. IBM and Digital Equipment Corp., which claim lions' shares of mainframe and midrange equipment sales, are also strong suppliers of software.

There are also some Europe-based international players with considerable sales across Europe. Software AG is one. Another is SAP AG of Walkdorf, Germany, which has long been the premier vendor of integrated, multilingual software for multinational manufacturers with IBM mainframes. In addition, Inteco says, many small software vendors provide vertical and niche applications for local country markets.

Interest in computer-aided software engineering (CASE) tools is also on the upswing, although actual implementation is progressing slowly.

Estimates vary as to the actual Continued on page 12
makes sense, not for its own sake," Hasler says. "You always hear about cheap MIPS [with distributed PCs], but if you put it all together and add skills and administration, it is not so cheap."

This attitude of caution is pervasive. In fact, even in countries where LANs are common, the systems are primarily used to run routine office automation applications and for sharing peripherals.

Tom Koehler, a consultant at Andersen Consulting in Germany, estimates that 75% of the top 3,000 German companies have set up PC LANs, although not necessarily at all sites. "But they still use the mainframes for critical applications," Koehler explained.

One factor inhibiting the widespread adoption of networked PCs for substantive applications may be that providers of technology — LAN software and PCs — often view Europe as second in importance to the U.S. market, says Al Hyland, director of worldwide systems at Polaroid Corp. in Cambridge, Mass. "They don't introduce the technology there until they have penetrated the U.S.," he says, and even when vendors do get around to Europe, they sometimes "don't seem to have the same level of technical support lined up as they do in the U.S."

Part of the reluctance to set up LANs also stems from a shortage of talent to administer and maintain them.

**Spending profiles**

Investments in packaged software vs. applications development differ considerably across Western Europe. Italians spend the most on packages, relative to in-house development ($3 billion). The gap is much wider in the UK and Western Germany.

<table>
<thead>
<tr>
<th>Applications development</th>
<th>Hardware and packaged software</th>
<th>Other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations, personnel and outside services</td>
<td>$10</td>
<td>$19</td>
</tr>
<tr>
<td>Hardware and packaged software</td>
<td>$14</td>
<td>$27</td>
</tr>
<tr>
<td>Italy $27</td>
<td>France $37</td>
<td>UK $39</td>
</tr>
</tbody>
</table>

Source: Ledgeway/Dataquest

**PACKAGED SOFTWARE**

Continued from page 11

level of current CASE usage. Rob Baldock, partner in charge of the business development management group at Andersen Consulting's London office, puts the figure at somewhere between 30% and 40% of all companies, while Russell Jones, the late editor of The Software Development Monitor, a CASE journal in the UK, saw the incidence as much lower. "The great unwashed — 80% to 90% — are doing absolutely nothing," he said in an interview shortly before his death.

If things seem to be moving slowly, the reasons may have more to do with general philosophy and style than any particular misgivings about the technology. Many Europeans observe that European companies are not generally as fast off the mark as their U.S. counterparts in making new technology investments. Furthermore, many European companies have long preferred working with contract programming houses to handling their own systems development.

**A mix of vendors**

The CASE tools that are in use today come from a mixture of U.S. and domestic vendors, with a slight bias in individual countries toward well-established local products.

One key difference between CASE in Europe and CASE in the U.S. is the preferred platform. According to Andrew Milner, director of a membership research program on systems development at UK consultancy Butler Cox, most CASE development work in Europe is done on the mainframe.

Internal software development and the use of CASE tools may surge as a result of some efforts under way to develop a Pan-European systems development style. Two major initiatives are at work for Pan-European CASE and Common Application Environment.

The first is the European Community-sponsored "Euromethod," which is seeking to combine CASE methodologies developed by the French and UK governments.

Meanwhile, a commercial initiative is under way as part of the Eureka Software Factory (ESF). ESF, which claims some 14 companies and institutes among its members, is investigating a range of advanced technologies, including CASE.

The organization, which is headquartered in Berlin, is working with a $400 million budget to produce a software development environment capable of transcending platform language and procedural differences.

Commercial case tools are expected by 1994. Last year, ESF demonstrated its first prototypes. — Ellis Booker
Crossing Europe

with

VAN TRANSPORT

Ask almost any information systems manager to name the biggest obstacle to a truly open European market and the answer will be immediate: the closed state of European telecommunications.

Things aren't as bad as they once were. For example, it is now often possible to use the same type of telecommunications equipment in several countries. And, in some places, it is no longer necessary to go through the Postal Telephone and Telegraph authorities (PTT) when ordering data links out of the country. But the fact remains that there's a lot of work still to be done.

Not surprisingly, multinational corporations — many of them U.S.-based — are applying the greatest pressure for change. What these users want, according to George McKendrick, executive director of the International Telecommunications Users Group (Intug), is primarily good-quality private circuits, bandwidth on demand and the ability to connect their choice of equipment to the public network. But another common complaint is that the speed and quality of circuits and services varies enormously.

European PTTs' international T1 rates differ widely (see chart page 15). And the European telecommunications users group, Eurolug, recently concluded that various PTTs levy "arbitrary" tariffs on their X.25 packet-switched network services. Furthermore, trans-European networking standards are still the stuff of dreams.

For instance, X.25 public networks, which supposedly employ the same standard protocol, do not interoperate well, according to Intug's McKendrick.

Rather than have to deal with a gaggle of individual PTTs, a growing number of multinationals have been turning to international value-added network (VAN) providers.

The Italian apparel company, Benetton S.p.A., for example, decided six years ago to replace a collection of lines leased from various PTTs with General Electric Information Services' (GEIS) VAN service. For a 75-country communications system that runs critical applications such as sales support, cash clearing and product distribution control, "We needed worldwide support..."
and quick response," says Bruno Zuccaro, Benetton's director of IS. "We can't wait months to connect our new companies."

Transammonia, Inc., a New York-based commodities trader, chose BT Tymsnet, Inc. to both operate and manage its global network, according to James Shroads, the New York-based international commodities trader's director of IS. "You want a single-source and a single point of contact," rather than a collection of PTT X.25 services roughly glued together, Shroads says. At a previous job, Shroads had to manage such a disparate network, "and it was no fun."

Although direct dealings with PTTs can still be difficult, progress is being made on a number of fronts. The EC and other regulatory bodies have produced a steady stream of initiatives during the last couple of years aimed at improving the state of European networking (see story below). Installation of fiber-optic cable, which offers much greater reliability and capacity than copper-based wiring, has shifted into high gear across the continent. Even the ferociously independent PTTs are starting to come around.

Not all PTTs are coming around at the same pace, but most are signaling some recognition of the need for change (see story page 15).

### Playing the circuits

**Monthly rental charges (in U.S. dollars)**

<table>
<thead>
<tr>
<th>Country</th>
<th>64K bit/sec.</th>
<th>2M bit/sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>$4,041</td>
<td>$49,087</td>
</tr>
<tr>
<td>France</td>
<td>$4,373</td>
<td>$52,618</td>
</tr>
<tr>
<td>Germany</td>
<td>$6,198</td>
<td>$58,576</td>
</tr>
<tr>
<td>Italy</td>
<td>$9,252</td>
<td>$92,518</td>
</tr>
<tr>
<td>Netherlands</td>
<td>$4,505</td>
<td>$49,451</td>
</tr>
<tr>
<td>Switzerland</td>
<td>$4,452</td>
<td>$51,189</td>
</tr>
<tr>
<td>UK (BT*)</td>
<td>$4,440</td>
<td>$54,766</td>
</tr>
<tr>
<td>UK (MCL*)</td>
<td>$3,863</td>
<td>$47,714</td>
</tr>
</tbody>
</table>

*(Based on the most commonly used trans-Atlantic cable connection)*

*BT is British Telecommunications PLC; MCL is Mercury Communications Ltd.*

Source: Tarifica Service/Logica UK

One of the most significant changes has been a new willingness to consider alliances that could make life easier for companies requiring multicountry networks. Last May, for example, AT&T, British Telecom PLC, France Telecom and Kokusan Denshin Denwa, the Japanese carrier, announced an alliance that allows users to order transglobal equipment and services from any one of the four.

Actually, the first instance of PTT collaboration was engineered by General Electric Co. two years ago, when the company hired BT, France Telecom and AT&T to jointly build and operate its international network. According to Stanley Welland, GE's manager of corporate telecommunications, the resulting network transformed a hodgepodge of European links into a coordinated private T1 network spanning 25 countries and linked to the U.S. via trans-Atlantic cable lines terminating in France and the UK.

Ultimately, the real key to transparent and dependable pan-European communications will be Integrated Services Digital Network (ISDN), a standard for exchanging voice, data and image over both packet- and circuit-switched lines. That however, is still a distant ideal in most places.

Although all of the major European PTTs have committed to ISDN, only France and the UK have anything approaching widespread ISDN domestic services. Each country still has its own flavor of ISDN, with no guarantee of interoperability. — Compiled and written by Elisabeth Horwitt.
Will the rest of Western Europe follow Great Britain's lead and establish free markets in telecommunications? Don't hold your breath.

Most of the Postal Telephone and Telegraph authorities (PTT) have no objection at all to competition, as long as it's not on their turf.

France, for example, plans to sell packet switching services in the UK through its subsidiary Transpac. France recently passed laws to make it easier for value-added network (VAN) vendors to provide services linking the country to the rest of the world. Recently, however, the minister of posts, telecommunications and space reiterated that the government sees no call to end France Telecom's monopoly of regular phone lines.

France, it should be noted, is at the more liberal and progressive end of the scale. Germany reportedly lags behind most of the major industrial countries when it comes to telecom liberalization. Deutsche Bundespost, levies some of the highest international leased-line rates in Europe. While VAN vendors were recently allowed to offer services directly to German customers, competition is still kept under tight control. The situation in Switzerland is even worse. Local leased-line rates are high, and users must order all of their telecommunications equipment and network services through the PTT.

The good news is that even the more recalcitrant PTTs are reportedly eager to improve their records. In Spain, which like Italy is the target of many complaints about line quality and service delays, Telefonica installed 1.6 million lines last year and is promising to deploy switched 56K and 64K bit/sec. and Integrated Services Digital Network (ISDN) services by year's end. And at Deutsche Bundespost, rate cuts and major network upgrades, including ISDN implementations, are reportedly in the cards and only being held up by the PTT's obligation to upgrade eastern Germany's telecom infrastructure.

The PTTs are also showing new willingness to bargain. For example, a group of Fortune 500 companies are working with Belgium's PTT on a plan for volume discounting.

— Elisabeth Horwitt

The state of European connections

<table>
<thead>
<tr>
<th>PTT name, country</th>
<th>What year does the PTT say it will offer ISDN throughout its country?</th>
<th>What is current or planned availability of digital services as a percentage of local and trunk lines?</th>
<th>How has the PTT moved to lower its tariffs for private T1/E1 lines?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generaldirektion der Schweizer PTT, Switzerland</td>
<td>End of 1992</td>
<td>85% of trunk by 1992</td>
<td>No change nationally. Reduced by 32% per month to U.S. on March 1, 1991. Similar reductions effected for other overseas destinations.</td>
</tr>
<tr>
<td>France Telecom, Inc., France</td>
<td>Available now</td>
<td>100% of local completed now, 95% of trunk by 1995</td>
<td>No change nationally. Reduced by approximately 10% to U.S. on July 1, 1990. Circuit costs to UK and Ireland also reduced by 12% per month.</td>
</tr>
<tr>
<td>British Telecom PLC, Britain</td>
<td>End of 1992</td>
<td>45% of local and 100% of trunk completed now</td>
<td>Increased nationally. No recent change in circuit costs to U.S., but circuit charges to European destinations, Australia and Singapore have been reduced.</td>
</tr>
<tr>
<td>RTT, Belgium</td>
<td>Available now</td>
<td>39% of local and 51% of trunk available now</td>
<td>Decreased nationally on March 1, 1990. Reduced on May 1, 1991, 4% for 2M- and 20% for 1.5M bit/sec. to U.S. Similar reduction effected for European destinations.</td>
</tr>
<tr>
<td>DBP Telekom, Inc., Germany</td>
<td>1991 for Western Germany, 1997 for entire country</td>
<td>95% of local and 70%-80% of trunk available now</td>
<td>No change nationally at present. Reduced international costs by 30% in September 1989. Reduced costs for analog circuits to U.S. by 25%.</td>
</tr>
<tr>
<td>Telefonica, Spain</td>
<td>End of 1992</td>
<td>20% of local and 50% of trunk available now, 75% of trunk by 1992</td>
<td>Increased nationally. No recent international change. Proposed reductions are currently awaiting government approval.</td>
</tr>
<tr>
<td>SIP and ASST (national), Italcable (international), Italy</td>
<td>End of 1992/1993</td>
<td>50% of local and 75% of trunk available now</td>
<td>Increased nationally. Reduced approximately 18% to all international destinations on Jan. 16, 1991.</td>
</tr>
</tbody>
</table>

Source: Tarifica Service/Logica UK

AUGUST 12, 1991 • COMPUTERWORLD
Budgets get cut. Demands

Tradition has it that if you want something done for less, you do it yourself. So once again, the computer world defies tradition.

IS departments are discovering that many “in-house” functions can be handled more economically, and better, by outside specialists. Which is why, as belts tighten, outsourcing has become a hot topic.

It’s also why IBM has dramatically expanded our range of services, to provide whatever kinds of support you need, to save you the most money.

For example, we can run your whole
data center (as we're now doing for several large customers) or we can take responsibility for selected areas:

From disaster recovery, to network management, to application development and engineering, to training your people and helping end users, to installing fiber optics, to multivendor integration and maintenance, to name a few.

If you like, we can begin by analyzing your operation to see where, or if, we can help you. If you don't need us, we'll say so. But if we can save you money, we'll show you how, up front.

We'll also put you in touch with similar customers so you can share their experience.

The idea is for IBM to lighten your IS burden, to free your resources so you can focus on your core business. After all, our core business is IS. We're already geared for just about any problem you're likely to face. So our economies of scale can mean economy for you, too.

To learn more about how IBM services can help you meet both your needs and your budget, call us at 1 800 IBM-6676, ext. 881.
Ou Sont LES TECHIES?

Hiring the right person for any job can be tricky, but in some European countries, information systems managers are finding it impossible to hire anyone at all.

"The demand in France is high for [IS] professionals," says Alain Diriberry, senior manager of information technology at National Westminster Bank SA in Paris. "We're lacking 20% of the workers needed to fill jobs."

"The market in Germany is empty," says Uwe Renald Mueller at Robert Bosch GmbH, a maker of automotive equipment. "It's very hard to get experienced specialists. The growth rate of [information technology] usage within the industry has been very high for the last 10 years, and universities cannot educate enough people."

The problem is not so much an absolute shortage of data processing professionals, but rather, a high demand for a limited number of people with particular skills, says Richard Wonder, national director of the IS division at Menlo Park, Calif.-based Robert Half International, Inc. "Often, there are local people available, but like the U.S., the people with the most high-tech skills, such as Application System/400 or Unix, are more in demand."

People who have older DP skills such as Cobol are in large supply, he says, but companies aren't anxious to hire them.

The economic unification of Europe has put a particular premium on some specialties, Wonder observes. "People who have EDI and connectivity skills are in short supply and high demand. Manufacturers as a whole are upgrading to CAD/CAM and CIM systems, so those people are in demand. Retailers are developing regional centers, so communications experts who know retailing are in demand."

Shortages like these are driving up salaries in many places. In England, for example, the average data processing salary has increased by 12% to 13% per year in recent years, Wonder says.

Once they find people to hire, employers usually don't have too hard a time keeping them. Europeans do not tend to be job hoppers. Turnover is lower in most European countries than in the U.S.

Some companies are turning to outside services as one way to get the technical help they require (see story next page). This actually is not a new idea for European companies, says Tom Moore, president of the European division of Montreal-based consulting firm DMR Group, Inc. Contract programming firms have long been a very big business in Europe. And, Moore adds, a lot of European companies prefer working with "body shops" for a variety of reasons, including the length of time it can take to make a hire even after you have found a good prospect "often three months, sometimes six" and the "extremely high social and benefit
costs" for employees in many countries.
Finding talent is also not a simple question of matching skill requirements with skill supplies.
Language can also be an important factor, particularly for companies with operations in a number of countries. While it is true that English is the language of business in Europe, most day-to-day communications are conducted in the local language, Moore says. And that means it is very difficult to operate in Europe unless you speak at least two languages.
Mobility or, more precisely, the lack of it can also be a difficult issue, especially if a company wants to use staff rotation to replicate skills in several countries or to create a multinational staff for an IS facility that supports business functions in a number of countries. Legal restrictions on hiring foreigners over domestic workers still exist, even though the European Community has plans to open up that situation. For the most part, however, it is not law but culture that represents the real barrier.
"The law says you have to prove you can't get someone with the right skills in the country," says Francois Charrier, a consultant at Andersen Consulting in Switzerland. "But," he adds, "that is not too tough to prove with EDP" because of the shortage of technical talent there.
Willingness to relocate varies from place to place and person to person, but it certainly can't be assumed.
"We have tried to bring people from other countries, but it is not easy. The European mentality is to stay local." — Uwe Renald Mueller

Outsourcing Seed Planted, Ready To Grow In Europe

If you can't find enough locals to staff a European operation, or if you just need some help getting by while you figure out how to assemble a team, don't worry. There's plenty of help available on a contract basis, and a lot of it even has an American twang. U.S. service providers are setting up beachheads all over Europe. Familiar names such as Electronic Data Systems Corp., CSC, Inc. and Andersen Consulting are cropping up alongside established European service providers such as Sema Group and Cap Gemini Sogeti.

So far, outsourcing — or facilities management as it is more commonly known in Europe — has not made as big a splash as it has in the U.S. Most of the European players still derive the bulk of their revenue from contract programming, which is much more heavily used in Europe as a whole than in the U.S.

Many observers feel, however, that increasing demand for sophisticated systems and complex networks, when combined with talent shortages, will make the idea of outsourcing more attractive for both European companies and foreigners operating in Europe.

Cap Gemini Sogeti certainly believes that. It launched a Pan-European facilities management group in May, shortly after it cinched a deal to handle computing and networking for the UK arm of H. J. Heinz Co. through its recently acquired Hoskyns facilities management operation.

In the meantime, both European and U.S. computer vendors are crowding into the field.

German automotive equipment maker Robert Bosch GmbH handed part of a major data center near Stuttgart, Germany, over to Digital Equipment Corp. to run. Bosch had several reasons for partnering with DEC to run its data center operations, according to Uwe Renald Mueller, who heads up data processing at the center. Operational costs were increasing rapidly, he says, and the data center had been growing by about 100% per year for the past four to five years. If that weren't enough, he adds, "We have a more complex work flow and very expensive [information technology] specialists, and it is very hard to get experienced specialists — for VMS or anything." — Michael Alexander and Joanne Kelleher
Centuries of proximity with often incompatible neighbors have taught Europeans patience and the fine art of compromise. These are lessons that many firms operating in Europe are now finding they must apply to the intricate process of linking systems and software in a meaningful way across the whole span of their business.

Europe is commonly believed to be far ahead of the U.S. when it comes to standards implementation, but many local sources say perception is considerably exaggerated.

At this point, U.S. companies operating in European countries are actually pushing standards in Europe as hard as or harder than the Europeans are, according to Ken Meates, managing director of Team Focused Design Ltd., a Berkshire, UK-based open systems consultancy.

"There is a good deal of skepticism [in Europe] regarding open systems because of the slow process of developing the upper level standards" for the Open Systems Interconnect (OSI) model, Meates says.

One reason for this skepticism is the fact that many vendors are not moving toward full OSI support any faster in Europe than in the U.S. "We will have standards when IBM pushes them, but IBM only says SNA," says Gerhard Ohring, an information technology department manager at FAG Kugelfischer Georg Schaefer KGAA.

Ohring adds that IBM recently tried to discourage the German manufacturer from connecting its IBM Systems Network Architecture (SNA) systems over an OSI-compliant packet-switching service offered by Infonet Services Corp., saying that such links are far less efficient than the traditional SNA leased-line connections.

Another potential barrier to OSI's spread in Europe is the widespread implementation of de facto standards (see story page 21). However, such protocols may act as stopgaps until OSI matures. "All OSI standards that we can implement, we will use," says Uwe Mueller, a data processing manager at Robert Bosch GmbH.

Unix implementation is also proceeding slowly. Many users say they see Unix as the future operating platform but won't move to it just for the sake of moving.

There are exceptions, of course. For example, DHL Systems, Inc., the Brussels-based package express company, has made a large-scale commitment to Unix, primarily because of the scalability and portability of applications that it offers, says Gordon Monro, general manager of information technology. The size of DHL's offices, located in 185 countries, varies enormously, Monro explains. While some offices process just 20
Monro, whose region is comprised of 73 countries and 20 support organizations, is now in the process of migrating from an IBM System/36-based architecture to an open systems (Unix) one, using three platforms.

Such notable exceptions aside, however, standards are moving incrementally. Many European firms have precluded the need for a move to Unix and sidestepped the gap in networking standards — at least for intracompany communications — by imposing internal standards that limit hardware platforms and ensure uniformity of software and formats for applications such as sales and financial reporting and inventory control.

Credit Suisse, for example, "relies on application integration for all banking issues" to keep its various sites worldwide in touch, according to information systems manager Oscar Gemsch. "We have one database for all applications. On the hardware side, the Zurich-based firm has standardized on IBM in its home country of Switzerland but allows its New York, London and Luxembourg sites to use Digital Equipment Corp. systems. "As long as you have one architecture per destination, you can link via gateway," Gemsch says.

The trend toward more standardized business and database applications is extending to U.S.-based multinational companies with subsidiaries in Europe.

"Various countries are coming together under the European concept of trade, and if we want to play an important role in the future, we need to work on a European basis," says Hugo Gansemer, a business project manager at Information Systems International, a wholly owned unit of Mars, Inc.

In order to ensure a more Pan-European approach to doing business, Mars is centralizing applications development: 80% of applications are now initiated by central IS, whereas two years ago, 90% were developed locally.

Mars is also moving toward a three-platform common hardware strategy, Gansemer says, and the firm is "developing a database that will run across various systems" at various Mars sites in Europe, he adds.

Mars' European IS operation expects to start implementing OSI internally and electronic data interchange links with its partners within the next few years, Gansemer says. — Compiled and written by Elisabeth Horwitt and Ellis Booker.

---

**Unstandardized Standards**

European firms realized some time ago that they needed some standardized means of communicating with business partners. As a result, the continent is peppered with industry-specific — and in some cases, country-specific — "standards" that may prove a detriment to the widespread implementation of global standards such as OSI or even Europewide standards such as the electronic data interchange (EDI) standard, Edifact.

For example, most European banks have made a commitment to the SWIFT (Society for Worldwide Interbank Financial Telecommunications) protocol, while automobile companies and food producers often use country- and/or industry-specific versions of standard protocols for EDI.

In Europe, as in the U.S., OSI acceptance has suffered because a number of crucial higher level OSI protocols, such as the X.500 directory, have yet to be finalized. Rather than wait, industry groups have standardized on other widely used networking architectures such as Transmission Control Protocol/Internet Protocol (TCP/IP), IBM's SNA and Decnet.

"There is no question we have to go to OSI as a way to link our IBM and DEC systems," said Peter Eschenmoser, director of Schindler Informatik AG. "However, we now use TCP/IP and don't see a need to migrate to OSI for about five years."

— Elisabeth Horwitt
To compete in the '90s, you need...

open communications using TCP/IP, OSI, ISDN,
data transparency across IBM, Apple, DEC, HP
network management that's easy, reliable and rich
advanced applications like image, telephony and
an extensive growth path that protects your investment
a high-function server that makes cooperative pr
SNA, Ethernet and Novell®

and other platforms

hly developed

computer-based FAX

ments in software and hardware

cessing a reality

...an IBM AS/400®
Educational/Research centers: Imperial College in London is a major technical institute, and research activities at Cambridge University have drawn many companies into the surrounding area.

Systems climate: Although most user organizations are still cautious about making the leap, the British government has been promoting open systems for about three years through its Department of Trade and Industry. Use of packaged software has increased substantially in recent years.

Worth noting: There are more headquarters organizations in the UK than in any other country.

Educational/Research centers: There are 14 universities in the country. Among MBA-granting schools, the Rotterdam School of Management at Erasmus University is a standout. It offers an international MBA program with a concentration in business information systems. Three of the nine state universities are devoted to technology: Eindhoven, Delft and Twente.

Systems climate: U.S. businesses located here report that the communications infrastructure is excellent. PTT Telecom, the Dutch phone company, is one of only a few national telephone companies in Europe offering 800-number service (called "green line"). The country was also recently named "European EDI Champion" by Electronic Trader, a European magazine that covers electronic data interchange (EDI).

Worth noting: The Netherlands currently houses 300 of the 2,000 European distribution centers operated by U.S. companies.

Educational/Research centers: Both Barcelona and Madrid have well-respected technical institutes. The Technology Institute of Madrid is a participant in a recently opened technology development center, designed to assist small and medium-size businesses with information systems use.

Systems climate: Spain has been importing large amounts of telecommunications and computer equipment from the U.S. and working aggressively to improve telecommunications services. IBM mid-range systems are reportedly very strong here.

Worth noting: Andersen Consulting is building a center for software development and facilities management in Madrid at a reported cost of $15.7 million.

Cost of living
U.S. companies moving employees and families to Europe can expect to spend heavily almost everywhere, although the Low Countries and Germany are relative bargains.

<table>
<thead>
<tr>
<th>Location</th>
<th>Annual cost of living (Based on housing, transportation and goods and services for a family of four)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paris</td>
<td>$116,434</td>
</tr>
<tr>
<td>Madrid</td>
<td>$111,493</td>
</tr>
<tr>
<td>London</td>
<td>$107,621</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>$105,928</td>
</tr>
<tr>
<td>Milan</td>
<td>$101,161</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>$89,152</td>
</tr>
<tr>
<td>Brussels</td>
<td>$86,070</td>
</tr>
<tr>
<td>Amsterdam</td>
<td>$85,676</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Annual cost of living (Based on housing, transportation and goods and services for a family of four)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Germany</td>
<td>40</td>
</tr>
<tr>
<td>Belgium</td>
<td>38.5</td>
</tr>
<tr>
<td>Austria</td>
<td>38</td>
</tr>
<tr>
<td>Spain</td>
<td>38</td>
</tr>
<tr>
<td>Finland</td>
<td>32</td>
</tr>
<tr>
<td>Norway</td>
<td>31</td>
</tr>
<tr>
<td>UK</td>
<td>31</td>
</tr>
<tr>
<td>Ireland</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: European Industrial Relations Services

Parlez-vous Français? Sprechen Sie Deutsch?
Residents of the Low Countries probably do. As a group, they speak more languages than any other Europeans.

<table>
<thead>
<tr>
<th>Country/Language</th>
<th>Number of languages</th>
<th>Percentage that can follow a conversation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>Denmark</td>
<td>30%</td>
<td>25%</td>
</tr>
<tr>
<td>Belgium (Walloon)</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>Belgium (Flemish)</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>Western Germany</td>
<td>33%</td>
<td>6%</td>
</tr>
<tr>
<td>France</td>
<td>26%</td>
<td>6%</td>
</tr>
<tr>
<td>Spain</td>
<td>26%</td>
<td>5%</td>
</tr>
<tr>
<td>UK</td>
<td>20%</td>
<td>5%</td>
</tr>
<tr>
<td>Italy</td>
<td>19%</td>
<td>5%</td>
</tr>
</tbody>
</table>

(Percentage of population able to speak a foreign language sufficient to follow a conversation)

Source: The European Community
Educational/Research centers: The Technical University of Munich is reportedly one of the leading European centers for parallel computing. The German National Research Center for Computer Science is an independent, nonprofit research organization that operates under the auspices of the German Federal Ministry for Research and Technology. Its headquarters are at Sankt Augustin, near Bonn.

Systems climate: In manufacturing, integration of plant-level computers and business mainframes is becoming a priority. Graphically oriented PC packages, such as Windows, are popular.

Worth noting: According to Computerwoche, an International Data Group German publication, a recent study of IS concluded that top management involvement with and use of information systems is extremely low.

Computer density

<table>
<thead>
<tr>
<th>Country</th>
<th>Computer density (Computers in use per 1,000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>202</td>
</tr>
<tr>
<td>UK</td>
<td>114</td>
</tr>
<tr>
<td>Norway</td>
<td>103</td>
</tr>
<tr>
<td>Switzerland</td>
<td>92</td>
</tr>
<tr>
<td>Denmark</td>
<td>89</td>
</tr>
<tr>
<td>Western Germany</td>
<td>82</td>
</tr>
<tr>
<td>Belgium</td>
<td>70</td>
</tr>
<tr>
<td>France</td>
<td>68</td>
</tr>
<tr>
<td>Italy</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: 1991 Computer Industry Almanac

Busy hands, free hands

Unemployment highs and lows among major European countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Unemployment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>April '91</td>
</tr>
<tr>
<td>Spain</td>
<td>15.2%</td>
</tr>
<tr>
<td>Italy</td>
<td>9.7%</td>
</tr>
<tr>
<td>France</td>
<td>9.4%</td>
</tr>
<tr>
<td>Belgium</td>
<td>8.5%</td>
</tr>
<tr>
<td>UK</td>
<td>7.6%</td>
</tr>
<tr>
<td>Western Germany</td>
<td>6.2%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4.7%</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.1%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Source: The Economist

Educational/Research centers: The University of Pisa, which offers a master’s degree in computer science, is involved in a research effort with Hewlett-Packard.

Systems climate: Hardware expenditures have been relatively flat, except for the personal computer category, according to International Data Corp. PCs are widely installed but reportedly underutilized. Telecommunications services in Italy are considered weak. There has been some discussion of privatizing the domestic telecommunications agency.

Worth noting: Although Italian IS managers have traditionally formed strong and lasting ties with computer manufacturers, observers say users are now exhibiting more independence.

Educational/Research centers: France boasts an excellent business school in INSEAD, located at Fontainebleau. The country’s system of Grand Ecoles includes a number of excellent professional/technical institutes specializing in IS and telecommunications. Top breeding grounds for IS types are Ecole Polytechnique, Ecole Centrale and Ecole de Points.

Systems climate: IBM and Compagnie des Machines Bull together claim 86% of installed mainframes in France, according to Computer Intelligence. IBM and DEC each claim 31% of the minicomputer/workstation market.

Worth noting: The telecommunications infrastructure is generally regarded as very good, although some users complain that cost-tracking is difficult because of France Telecom’s practice of lump-sum billing.

Paying at the pump

Fuel prices all over Europe are high, but the five cities below are particularly hard on commuter pocketbooks

<table>
<thead>
<tr>
<th>Location</th>
<th>Fuel price per gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amsterdam</td>
<td>$3.94</td>
</tr>
<tr>
<td>Brussels</td>
<td>$3.56</td>
</tr>
<tr>
<td>Copenhagen</td>
<td>$3.90</td>
</tr>
<tr>
<td>Milan</td>
<td>$4.73</td>
</tr>
<tr>
<td>Paris</td>
<td>$4.24</td>
</tr>
</tbody>
</table>

Source: Runzheimer Intl.  CW Charts and Graphics: Marie Haines
In a unified European community, what will be good for business may be even better for computer crime.

"Computer crimes may well increase as a consequence of the single European market," says Sanford Sherizen, security expert and president of Data Systems Security, Inc. in Natick, Mass. "Banks will more than likely be major targets, and the losses could be extremely high."

European unification alone will not increase the opportunities for computer crime, Sherizen says, but it may loosen some existing controls and restrictions as well as create new conditions for which controls and restrictions do not exist.

European computer security managers are already grappling with the same security problems as their North American counterparts. Personal computers and local-area networks are putting more data on desktops, where it cannot be easily protected.

Data is also being put into the hands of end users, who are often not adequately schooled in security. Computer viruses are proliferating in all European countries, as they are in the U.S.

Unification will add to the security woes because the push for electronic data interchange and telecommunications standards — which are needed to link companies' operations across several countries — will also increase the number of entry points into computer systems and could help the spread of computer viruses.

Computer crime laws and the willingness of law enforcers to combat computer crime also vary widely now from one European country to another, which makes it difficult to prosecute computer crime offenders. Unification will help only if every country decides to adopt similar laws, and that is unlikely.

Denmark, Germany, Finland, France, Norway, Sweden, Switzerland and the UK have passed laws aimed specifically at curtailing unauthorized computer hacking, for example. However, Italy, Belgium, Spain, Portugal, Greece and the Netherlands have not. Some law enforcers fear that those countries without specific laws could become "hacker havens."

To help remedy the problem, the Council of Ministers, one of seven European Community (EC) institutions, has published guidelines that member states have been asked to consider when reviewing their computer crime legislation. The guidelines, which are based on a consensus of European security experts, include definitions of computer-related fraud, unauthorized access and other
The European Commission, the executive organization of the EC, has also been actively looking into the feasibility of uniform computer crime laws. For example, the commission is proposing a single privacy law that would restrict the transborder flow of data (see story below).

European security managers, like their U.S. colleagues, say they worry that law enforcers are not up to the task of investigating computer crimes and prosecuting those who are caught in the act. "There is a lack of ability to investigate computer crimes by law enforcement agencies," says Andrea Gilardoni, a professor at Universita Commerciale Luigi Bocconi in Milan, Italy.

As in the U.S., the preponderance of crimes are committed by insiders, Gilardoni says. It is more difficult to protect computer systems from deliberate attacks by insiders, particularly if they are higher level managers.

Sergio Suni, coordinator for Guide, an international auditors association, complains that technology is often "glued like a stamp" on European companies, without regard for its security implications. Another problem, he says, is the lack of management concern. "That is the No. 1 security problem: no managerial culture" for security.

This is not, by any means, true of all European countries. Information systems managers in the UK actually allocate more of their IS budgets for training, software and other security-related expenditures than their counterparts in the U.S. do. Research by the UK consulting firm Butler Cox PLC shows that top banks and multinationals in the UK allocate 5% to 8% of their IS budgets to security. By comparison, recent estimates place the average for Fortune 1,000 companies in the U.S. at about 3%.

In addition, Butler Cox reports that corporations in the UK are starting to adopt the idea of appointing a corporate "software policeman." What this person does, according to Butler Cox security analyst David Cult, is "look at in-house-developed systems, as well as commercial packages like spreadsheets and word processors, to make sure they conform to a firm's overall security standards."

--- Compiled and written by Michael Alexander

**DATA TRANSFERS NOT TAKEN LIGHTLY**

Privacy laws vary widely in Europe, and that worries some members of the European Community. The European Commission has been circulating a proposal that would regulate European databases and restrict the flow of personal data among many European countries and perhaps the U.S.

The so-called Privacy Directive, which was drawn up in September 1990 and is now being passed around for discussion, is intended both to make privacy laws uniform within the 12 nations of the EC and to restrict the flow of information to nations without adequate privacy laws.

Companies on both sides of the Atlantic say they are concerned that the proposed new rules would make it impossible to carry out even the most routine business activities. However, some privacy experts say the suggested measures are warranted and that U.S. companies operating in Europe need to be curbed as much as anyone.

"American multinational industries are used to transferring personal information from one country to another with reckless abandon," says David H. Flaherty, a privacy expert at the University of Western Ontario.

The proposal's strongest proponents, mainly France and Germany, say the rules are needed to prevent abuses in countries without privacy laws. Belgium, Greece, Italy, Portugal and Spain are among the countries that need stronger laws, according to the EC.

Even without a directive, some countries have been pursuing a course of independent enforcement. In 1989, for example, the French government temporarily stopped Italian auto maker Fiat S.p.A. from transferring its French personnel records to Italy because privacy laws there were not up to French standards. Fiat later signed an agreement with the French government, vowing to adhere to French law in its handling of the records.

It is uncertain whether U.S. privacy laws are up to European standards. Last year, the Commission National d'Informatique et Liberte, the French government's privacy protection agency, contacted IBM after the company said it was planning to transfer personnel records from France to the U.S. IBM is still holding talks with the agency.

U.S. privacy laws enacted in 1974 to protect citizens from government snooping do not extend to businesses. Congress is now considering a bill that would set up a Data Protection Board to advise the public and private sectors on privacy issues, but this proposed board would not have regulatory powers.

The Privacy Directive, if passed as drafted, would be written into law at the beginning of 1993. In addition to prohibiting the transfer of data to certain countries, where security laws are not deemed adequate, the proposal would: require companies to register databases containing personal information, require that the subjects of files be informed when data is used and give their consent, mandate that data be protected against unauthorized access and provide for minimum security standards.

--- Michael Alexander
Ideas that **TRAVEL**
and some that don't

**Does this sound familiar?**
Andrew Milner at the London-based consultancy Butler Cox PLC says UK companies have been pushing more functions out to the business units, but some companies are now reverting to a centralized structure with IS go-betweens posted in business units.

**Telecom and elevator repair**
In Switzerland, telecom is still frequently considered part of building maintenance.

**Sometimes stereotypes can work for you**
Are Americans sometimes insensitive to the subtle national differences in Europe? Yes, says Vernon Ellis, managing partner for Europe at Andersen Consulting's London office. But he hastens to add that this isn't necessarily a bad thing. "The advantage is, they can cut through and get things done in one consistent way."

Other local observers agree and suggest that Americans can get away with more in terms of

---

**EUROPEAN KNOW-HOW**

- **Approachable technology**
  Adam Crescenzi, executive vice president and managing director at CSC Index, Inc. in Europe, says U.S. companies could learn a thing or two from Europe in terms of the human engineering of systems. Europe is far superior in this area, he says, and France is the leader. All banks there have home banking arms, and all systems have videotext built into them.

  Another example of this ability to make technology look and feel familiar can be seen at Eurocontrol, the official European organization for air navigation security. The highly specialized digital radar terminals at Eurocontrol's air control center in Mastricht, Holland, simulate the familiar look of a World War II-vintage analog radar screen.

- **Simplicity of design**
  Leonard Cohn, vice president of information services at Monsanto Co., says Europeans are far more careful about adding complexities to things because they've lived with multiple languages, multiple currencies and multiple sets of laws for so long. "When Europeans design systems," he says, "they try to minimize the complexity, because they understand better what it's like to live with complex systems."

---

**Tech specialties**
Europe is a leader in a number of technology areas:

1. Installing and using massively parallel computer systems.
2. HDTV. Vision 1250 (for 1250 scanning lines, double the current number on European television screens) is a high-definition project launched last year.
3. Research in machine translation systems and computations linguistics to permit easy exchange of information across multiple languages.

---

Tom Moore, president of DMR Group, Inc.'s European division, headquartered in Gouda, the Netherlands.

Advice on blending in: Do not call people by their first names. Do not depend on being able to do as much by phone. "Europeans do not have our sense of informality and often prefer to see things in writing." And do not give someone the title of "manager" if you want him to play a hands-on role. In many parts of Europe, "managers don't do things; they stay in their offices and manage."

---

sidestepping or ignoring local customs than any European ever could because the locals just assume Americans don't know any better.
Horsepower—firepower:
Particularly in Germany, but also in some other places, the car is considered a measure of the man, according to DMR's Tom Moore. If you want to be taken seriously as a manager, he recommends, don't drive an inexpensive car.

Furthermore, he warns, any company staffing a European operation should be prepared for the possibility that "all the senior people, and maybe even all the people" will expect to be provided with a car, without having it counted as part of compensation.

W. J. Griffith, a group director at the National Centre for Information Technology, a London-based membership organization that includes 2,600 data processing managers and IS directors in the UK.

On what Europeans could learn from the U.S.: "Here, there's not that close relationship between the universities and business community," Griffith says, adding that much of his information on strategic IS has been gleaned from work coming out of the Harvard Business School and MIT's Sloan School. British schools have a strong tradition of independence, he explains, and the idea of business-sponsored research is just beginning to be accepted.

On what U.S. IS managers could learn from Europe: "You tend to throw money at a problem, and research in a more limited way... we are less cavalier and tend to study problems a bit more."

The Customer Is Always What?
Users may have to get used to longer waits and less service from computer systems vendors in Europe. That's just the way things are across the pond, says CSC Index, Inc.'s Adam Crescenzi: "Customer service is not considered any kind of priority in Europe. There's only one place where you get good service and that's in restaurants — where you pay well for it. Barclay's Bank, for example, has terrible service and really long lines, even though it makes more money than any other retail bank."

Maneuvering room
Bruno Zuccaro, director of IS at Benetton SpA, thinks American IS managers are too narrowly defined in their concentration on technology. In his experience, Zuccaro says, his U.S. counterparts are very "sector bordered," he says, while his responsibilities involve the whole business.

Projects to watch
Esprit (the European Strategic Program for Research and Development in Information Technology), a program sponsored by the EC and more than 1,600 participating organizations, is now moving into a second phase, which will see funding for basic research double. More stress will be put on user participation and technology transfer and acquisition.

Part of this new round of activities is a European Software and Systems Initiative aimed at improving the productivity and quality of software-intensive systems.

Another major Esprit effort just getting under way is the Open Microprocessor Initiative (OMI). This project is expected to last about five years and cost about $397 million. OMI will focus on designing a 100 million-transistor processor that supports Unix.

Weights and measures differ
In Europe, the IS manager is seldom a business heavyweight. As a result, the concept of chief information officer does not translate well. Europeans know what it means but almost never have a position that corresponds to that title. Hans Brunner, a consultant at Andersen Consulting in Switzerland, says an IS manager is often considered part of the logistics function and frequently reports to finance and accounting.

Habits they'd rather not pick up:
- Fast cycling of employees — There's a widespread perception in Europe that U.S. companies hire and fire too much.
- Short-term mentality — They say U.S. companies give up on projects that don't have immediate payback.
The body of

The heart and

The people of the United States, in order to form a more perfect union, establish justice, ensure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.
INTRODUCING A PS/2 LAPTOP THAT'S FULL OF FEATURES, NOT COMPROMISES.

Making a computer light enough to take anywhere and small enough to sit on a lap isn't enough. Making it perform like one that sits on a desk is the true challenge. That's why IBM has created a computer that delivers true portability without sacrificing true performance—the Personal System/2® Laptop 40 SX. At just 7.7 pounds it's clearly a lightweight computer. But it certainly doesn't act like one.

DESKTOP PERFORMANCE, WITHOUT THE DESK.

The PS/2® Laptop looks great from the outside. But its true beauty lies inside, where you'll find uncompromised computing power. It has the same 386SX®/20 MHz processor found in best-selling desktop models. A 3.5" 1.44MB disk drive and 2.5" 60MB fixed disk provide fast access to programs and data, and standard 2MB RAM is expandable to 8MB.

Instead of compromising comfort by altering the keyboard, the PS/2 Laptop has a full-size keyboard spaced and arranged the same way as a desktop PS/2's. And instead of squeezing information onto a pint-size screen, it has a sideldit LCD that offers a 10" diagonal viewing area. It delivers sharp, clear text and graphics with VGA quality in 32 shades of gray. With so much to offer, the PS/2 Laptop succeeds at being small, without being small-minded.

THE PS/2 LAPTOP IS ONE LAPTOP NOT TO BE TAKEN LIGHTLY.

IBM knows it's not how small you make it—it's how you make it small. The PS/2 Laptop has system status icons that monitor assorted functions and battery life. Extensive power management controls include the ability to change batteries in the middle of an application without exiting and a special feature that suspends power when the screen is closed, then returns to full power when reopened, resuming applications where they were left off without the need to save to the hard drive.

Of course, it comes with an AC adapter, and a 2400 BPS Data Modem/9600 BPS Fax Modem is available, as well as a special mouse that doubles as a trackball when turned over. And the PS/2 Laptop comes with something no laptop should be without—an international warranty* backed by thousands of Authorized Remarketers worldwide, so service and support are never far away.

To find out more, contact your IBM Authorized Remarketer or IBM marketing representative. You'll see why with the new PS/2 Laptop, you don't need a whole lot of room to get a whole lot of computer.

How're you going to do it? PS/2 it!

*Available only in the countries in which this product is sold by IBM and IBM Authorized Remarketers. Subject to the terms of the limited warranty provided when purchased. Proof of original purchase may be required.

IBM, Personal System/2 and PS/2 are registered trademarks of International Business Machines Corporation. 386SX is a trademark of Intel Corp. © 1991 IBM Corp.
The IBM LaserPrinter.

Other than being 25% faster,
with a smaller footprint,
and powerful options like
3 paper input sources,
3½ times the paper capacity,
5 times the envelope capacity,
and automatic collating,
it's a lot like the
HP LaserJet III.

There are lots of features that distinguish us from our competition.
See the IBM LaserPrinter at your dealer, soon. You may find the price to be the most distinctive feature of all. For the dealer nearest you, call 1 800 IBM-2468, ext. 874.

Suddenly, nothing else measures up.
Horwitt
FROM PAGE 43

faster reordering for the customer; higher sales for American Horwitt rushed to come up with similar edge with such systems by using the pioneers had a clear edge. And companies can still get an new value-added services.

So what kind of breakthrough ideas have people been implementing lately? One promising development is the electronic "preferred shopper" card. The card provides the shopper with an electronic payment system, along with automatic discounts or rebates. And it automatically records everything a given shopper buys. It could revolutionize the checkout process and take targeted marketing to new heights.

Most major packaged goods companies are participating in pilot tests of this technology — indeed, the system will work only if a lot of major brands participate. That means the competitive edge will come not from the system itself but from the way a given company uses the information it collects.

For example, some companies are already using the system to counteract the consumer's purchase of a rival brand, right at the cash register. If you buy Pepsi, the system automatically issues a coupon toward the purchase of a six-pack of Coke.

A more creative, long-term application for the system is to use the checkout data to compile a list of consumers who regularly buy a particular type of product — such as sale items or low-fat or sugar-free brands — and target these people with value-added mailings that offer recipes, shopping guides and discounts on the company's own low-fat or sugar-free brands.

The communications carriers are also working on some electronic ties that bind — this time in the network management area. Fortune 500 companies have long demanded more control and a better view of their particular circuits on a carrier's network. All three major long-distance carriers, along with a few leading-edge Bell operating companies, have been introducing services to allow customers to monitor and reconfigure their own circuits more quickly, in order to respond to disasters and sudden traffic spikes.

What customers would like, however, is a system that manages the typical large corporation's hybrid network, which combines local and long-distance carriers, public lines and private telecom equipment. The big three long-distance companies have all promised services of that type but are still a long way from practical application. AT&T's Accumaster, particularly with its tie to IBM's Netview, is a strong front-runner here.

Sooner or later all the major players will provide something along the above lines; and again, the competitive edge will go to whoever comes up with the best value-added services and information. For example, smart carriers already provide network traffic reports that identify trouble spots in terms of response time or outages. To this could be added "what-if" scenarios that analyze the cost vs. response time of upgrading or reconfiguring the network in various ways.

A savvy carrier might even include its competitors' tariffs among the options offered. This might lose revenue over the short haul but could generate a much higher degree of customer loyalty in the long run. Anyone else got some good ways to wind that golden thread?

Horwitt is a Computerworld senior editor, networking.
**NEW PRODUCTS**

**Customer premises equipment**

Digital Link Corp. has devised the DL200 SMDS converter. The converter connects local-area networks to T1 Switched Multimegabit Data Service wide-area networks via V.35 and RS-449 interfaces. The DL200 is based on the SMDS Data Exchange Interface, or DXI. The DL200 SMDS converter is priced at $6,195.

Digital Link
252 Humboldt Court
Sunnyvale, Calif. 94089
(408) 745-6200

Watch Hill Research, Inc. has announced data compressors for high-speed T1 and fractional T1 lines. The Time Machine T1/E1 can be added to installed data service unit/channel service units and provides compression rates from 2.1 to 6.1. The product also compresses data over backup switched lines in the event of a T1 failure. RS-422 and V.35 interfaces are supported. The Time Machine T1/E1 costs $11,495 for a 120-V version and $11,995 for a 220-V version. The CFT-1 version for fractional T1 communications costs $9,495 or $9,995, depending on voltage.

Watch Hill Research
204 Spencer Ave.
East Greenwich, R.I. 02818
(401) 885-8600

**PANEL OF EXPERTS**

MultiMux™ Statistical Multiplexers

Expect substantial savings in your data communication costs when you replace p lines with a pair of MultiMux statistical multiplexers and one or two leased lines. You’ll simplify your asynchronous communications while adding new levels of network security.

And save on equipment cost, too. Take advantage of MultiMux flexibility in linking remote user groups to LANs, without establishing expensive separate LAN systems for each distant location.

All the features and support you require. Multi-Tech’s statistical multiplexers are available in 4 to 32 channel models with 9600 or 14,400 bps internal modems. Simple to install and easy to use. Plus, every MultiMux has a built-in command modem which links your MultiMux to Multi-Tech’s Support Center where remote diagnostics can be performed should problems occur. And there’s a toll-free helpline to get assistance whenever you need it.

Multi-Tech Systems. For twenty years, your expert data communications resource for modems, multiplexers, LAN systems and 3270 emulators.

Multi-Tech Systems
2205 Wooddale Drive
Mound View, Minnesota 55112 U.S.A.
(612) 785-3500 (800) 328-9717
U.S. FAX (612) 785-9874
International Telex 4998372 MLTTC
International FAX (612) 331-3180

**Radio Frequency Network Systems, Inc.** has introduced a software product providing data compression on both private and public networks. RF/Compress utilizes an algorithm assigning the shortest bit pattern to the most frequently used character in the information being transmitted. The company reported an average resulting compression rate of 40%.

The software can be utilized by any system supporting C language routines. A Motorola, Inc. KDT-840 radio frequency device is required on the receiving end.

Pricing for the software averages approximately $150,000.

**Radio Frequency Network Systems**

75 S. Madison St.
Hinsdale, Ill. 60521
(708) 325-9300

Kentrox Industries, Inc., a subsidiary of ADC Telecommunications, Inc., has announced a device that incorporates the functions of multiple digital transmission devices.

The Multi-Data DDS-II Data Service Unit Model 300 supports data transmission speeds from 2.4K bits/sec. to 56K bits/sec. and AT&T's Dataphone Digital Service. It features automatic rate and service selection, an optional IBM Netview management system interface and a time division multiplexer.

The stand-alone Model 300 costs $795. A rack-mount card version is priced at $745. The Netview option costs $775.

Kentrox Industries
14375 N.W. Science Park Drive
Portland, Ore. 97229
(503) 643-1661

Verilink Corp. has announced the ConnectT1 Plus, an addition to the company’s Connect T1 data service unit/channel service unit (DSU/CSU) product line.

The ConnectT1 Plus provides performance monitoring and remote management for T1 telecommunications lines using the company’s Verinet 2 Management System. The product supports connection of devices such as local-area networks, videoconferencing equipment and mainframes at data speeds ranging from 56K bits/sec. to over 1.5M bits/sec.

Modular configurations supporting up to two T1 lines and six DSU application ports are available. The standard configuration of one T1 line and two application ports costs $4,365.

Verilink
145 Baytech Drive
San Jose, Calif. 95134
(408) 945-1199

**Wide-area networking software**

Radio Frequency Network Systems, Inc. has introduced a software product providing data compression on both private and public networks.

RF/Compress utilizes an algorithm assigning the shortest bit pattern to the most frequently used character in the information being transmitted. The company reported an average resulting compression rate of 40%.

The software can be utilized by any system supporting C language routines. A Motorola, Inc. KDT-940 radio frequency device is required on the receiving end.

Pricing for the software averages approximately $150,000.

Radio Frequency Network Systems
75 S. Madison St.
Hinsdale, Ill. 60521
(708) 325-9300
**IS eases public sector crisis**

Public agencies use systems to deliver service despite budget cuts and layoffs

**INDUSTRY ROUNDUP**

**IS in State and Local Government**

**BY SUZANNE WEIXEL**

Budget cuts. The need to do more with less people. A day in the life of your typical Fortune 1,000 corporation.

**ONE MORE CASE IN POINT**

**IS uses information technology to overcome budget limitations," says Sheldon Cohen, a vice president at MMA Consulting Group, Inc. in Boston.**

In Texas, state agencies started 1991 with a 1.5% budget reduction. The state is also facing a projected revenue shortfall that will require agencies to operate at 90% of their current budgets. The outlook for 1992 is bleak. For Jim Brandes, director of information and human services at the Alamo Area Council of Governments in San Antonio — one of 24 regional planning commissions in the state — it's been good for a while.

**Alamo Area Council of Governments in San Antonio — one of 24 regional planning commissions — the fiscal news hasn't been good for a while.**

For example, a Reagan-era decision in the early 1980s to eliminate a federal community planning assistance program left the Alamo Area Council $180,000 short but still responsi-

**bly by Texas law for reviewing and commenting on community assistance applications in its county. Without the money, the state could no longer afford to pay the four full-time employees administering that program.**

To continue its application work, Brandes says, the council implemented an office automation system based on a Prime Computer, Inc. superminicomputer running Unix. This system automated basic data functions.

New, he estimates, administering the review and comment process takes only a few hours each month at a cost of about $18,000 per year.

Also in Texas, a centralized database is helping the state's Rehabilitation Commission (which helps disabled Texans return to the work force) keep up with a 20% increase in the number of applications received over the last four years. That's important, says Kay Arnold, director of the commission's Software Development Center, because budget restrictions mean that time has decreased staff by 3%.

The centralized database lets counselors access client background information and program financial information. Automation of such clerical functions as application entry and report generation has reduced the amount of time a counselor spends on an application and report from at least 2 ½ hours to at most 1½ hours. This improved efficiency has enabled the commission to serve more people while remaining at its 1989 staffing levels.

Continued on page 50

**Resume writers knocking on the wrong door**

By Clinton Wilder

O n billboards all around the country, flashy tennis star Andre Agassi is hawking cameras by proclaiming, "Image is everything." How-

**ever, a major of job-seeking information systems executives still project the wrong image in their resumes and job interviews, according to IS placement experts.**

Too many IS job seekers still tout specific technical skills instead of the business value they have brought to their companies. "It's not unusual to see resumes with the whole litany of hardware and software platforms that are out there, instead of business accomplishments," noted Richard Wender, national director of the IS division at Robert Half International, Inc. in New York.

Such "mislabeling" can take its toll.

**New York IS search firm John J. Davis & Associates, Inc. estimated that a laid-off IS executive takes six weeks longer to find a new job than does his counterpart in other functions.**

"We see many high-quality information services people who are woefully unprepared to face the rigors of a job search," company President John J. Davis said. "And compared to those in other functions, executives in information services do not know how to network effectively," he said.

**Major roles on resumes**

Another resume problem, according to Davis, is the listing of projects in which the executives have been involved — without adequately explaining their role or how they made a difference in the project's success.

"Corporate downsizing to smaller platforms is creating a new category of managers in business units," Wonder pointed out. However, packaging is key. If you're mispackaged, you won't be a candidate for those positions."
Public crisis
FROM PAGE 49
levels, Arnold says.
The state of Kansas’ Office of Vital Statistics went through a budget and staffing crisis of its own in 1987 when changes in federal laws requiring proof of citizenship and so on caused the demand for birth certificates to increase by more than 6,000 requests each month. Unable to obtain funding for new staff members and desperate to maintain service levels, the agency automated the collection, storage, retrieval, and dissemination of vital records.
The project, implemented three years ago, entailed updating mainframe-based accounting and indexing systems, implementing an electronic birth certificate system and linking them with an optical storage system.
Lorne A. Phillips, the state registrar and director of the Division of Information Systems for the Department of Health and Environment, says the system has improved overall efficiency despite the loss of 105 local registrars. It cut turnaround time on a request for a record from five to six weeks to a few minutes, he says.
He adds that the increased efficiency and increased revenue resulting from the completion of a greater number of paid-for records requests will more than make up for the $1 million cost of the system in a five-year period.
Phillips claims the office would not be functioning at all right now without the system.

States in crisis
Personnel constraints have hit the East hardest
A June 1991 newsletter from the National Association of State Personnel Executives delineates the 50 states’ and Puerto Rico’s plans for their staff. Thirty-two states are not laying off staff, but of these, 11 are implementing plans for hiring freezes. Only one state, Nevada, plans to add positions.

Following are the hardest hit states:

> California: Tentatively, expects 21,500 employees to be laid off. Implemented plans for across-the-board cuts, hiring freeze.
> Connecticut: Expects to lay off approximately 1,000 employees. Has implemented plans for hiring freeze.
> Illinois: Expects to lay off approximately 1,400 employees.
> Massachusetts: Expects to lay off 7,000 employees total. Has plans for across-the-board cuts, more layoffs, hiring freeze.
> Michigan: From January to March, there were 1,120 layoffs. Plans for across-the-board cuts, hiring freeze.
> New Jersey: May lay off 1,000 employees in fiscal 1991. Has implemented plans for across-the-board cuts, layoffs, hiring freeze.
> New York: So far, has laid off approximately 3,000. Goal is to lay off 18,000 by 1992.
> Pennsylvania: In February, 1,360 employees were laid off. A hiring freeze has been in place for three years.

The state of Kansas’ Office of Vital Statistics went through a budget and staffing crisis of its own in 1987 when changes in federal laws requiring proof of citizenship and so on caused the demand for birth certificates to increase by more than 6,000 requests each month. Unable to obtain funding for new staff members and desperate to maintain service levels, the agency automated the collection, storage, retrieval, and dissemination of vital records.
The project, implemented three years ago, entailed updating mainframe-based accounting and indexing systems, implementing an electronic birth certificate system and linking them with an optical storage system.
Lorne A. Phillips, the state registrar and director of the Division of Information Systems for the Department of Health and Environment, says the system has improved overall efficiency despite the loss of 105 local registrars. It cut turnaround time on a request for a record from five to six weeks to a few minutes, he says.
He adds that the increased efficiency and increased revenue resulting from the completion of a greater number of paid-for records requests will more than make up for the $1 million cost of the system in a five-year period.
Phillips claims the office would not be functioning at all right now without the system.

Department budgets have been falling by up to 11% a year, and across the board budget cuts to state agencies are expected to start at 2% in fiscal year 1992.
The state of California faces a $14 billion deficit for fiscal year 1992 and is forecasting layoffs of 21,900 employees. In response, the Los Angeles Municipal Court system is ready to expand to six other courts a traffic records optical disc imaging system piloted in the Los Angeles metropolitan and Van Nuys, Calif., branch courts in 1989. The pilot program saved the county $501,298 and approximately 16 clerical positions.
In addition, the project has enabled the state to collect $62,000 in fines each week that would have been lost with the old manual system due to the time-consuming and error-prone process of matching warrants with the original citation before issuing them.
Even while departments and agencies are looking to technology to keep them providing services, they are mindful of how much technology they need and how to keep associated costs down. Data centralization and information sharing are in.
For example, New York state’s $22.7 billion budget for fiscal 1992 includes $1.6 billion in service cuts and a projected 10,000 government job eliminations. Anticipating cuts in aid to cities and towns, Sal Salamone, director of computer plans and controls at the New York City Mayor’s Office, helped plan for consolidating the city’s 11 data centers into two.

Everyday tech help
Not all cost containment measures require major computer systems. State and local agencies are turning to some everyday technologies in an effort to conserve funds for use in direct service to the public. For following are some examples:

- Electronic mail can cut down on telephone costs and time.
- Automated message systems and voice mail can free up support staff and improve efficiency of message delivery.
- Facsimile machines can cut down on postage, paper and handling costs.
- Teleconferencing can reduce travel expenses.
- Desktop publishing can reduce production costs for brochures, reports and other printed materials.

SUZANNE WEIXEL
In January 1991, a pilot consolidation of one data center into another took place. Salamone estimates that the merger will result in $7 million in savings and a cost avoidance of 60 full-time data center employees over three years.

Filling the personnel void with technology can be an effective stopgap in difficult times, according to Robert Graves, executive director at the Government Technology Conferences in Sacramento, Calif.

Kansas' Phillips has taken this advice to heart. He anticipates a $70,000 to $80,000 shortfall in state fund allocations in 1993. However, that is when the automation of his vital statistics system will be complete and his planning will pay off, he says. If necessary, six full-time IS positions can be eliminated.

Filling the personnel void with technology can be an effective stopgap in difficult times, according to Robert Graves, executive director at the Government Technology Conferences in Sacramento, Calif. Phillips is a free-lance writer based in Framingham, Mass.

**System reduces fraud**

Some by-products of more efficient, cost-conscious government agencies are a reduction in fraud and the costs associated with it.

Lorne A. Phillips, Kansas state registrar and director of the Division of Information Systems at the Department of Health and Environment, says that before the state's Office of Vital Statistics was automated, a full-time IS staff member was dedicated to uncovering fraudulent requests for important papers. Now, the time spent on that task has been reduced by 60%.

Phillips explains that birth and death records were never matched in the manual system; therefore, it was relatively easy to obtain fraudulent birth records. Now, the system automatically cross-references those records and puts requests through built-in security checks.

In the past six months, the Office of Vital Statistics has uncovered six false requests. Phillips brags that con artists "can't get away with it in Kansas anymore."

**Manager's Journal**

**Apache opts for outsourcing**

Apache Corp., a Denver-based independent oil and gas producer, has signed a five-year outsourcing contract with Power Computing Co. in Dallas. Specific terms of the multimillion-dollar pact were not disclosed.

Power Computing will provide hardware, software, systems programming, capacity planning, data storage and telecommunications to Apache's offices in Denver, Houston and Tulsa, Okla. Apache's information systems department will retain responsibility for applications development and support, database administration, job scheduling, disaster recovery, data security and personal computer/local-area network support. Apache considered outsourcing after its May acquisition of an Amoco Corp. oil production subsidiary expanded its processing needs.

The International Association of Knowledge Engineers has expanded its certification program for artificial intelligence professionals outside the U.S. In the coming months, the Rockville, Md.-based association will offer its Certificate in Knowledge Engineering examination in Canada, Spain, Japan, the UK, Mexico, the Netherlands and France.

In addition, the association has set up an electronic job bank for AI professionals. The fee schedule for participation is $25 for association members and $50 for nonmembers.

Infomart has announced a new service that assists IS executives with meeting planning and technology evaluation. Called CIO Services, the program offers meeting facilities at Infomart in Dallas. Participants can also schedule technology demonstrations from Infomart's resident technology firms, including IBM, AT&T, Novell, Inc., NCR Corp. and Apple Computer Inc.

Gemini Consulting, the firm recently formed by the merger of United Research Co. and The MAC Group, has acquired a minority interest in Parmplace Systems, a Mountain View, Calif.-based supplier of object-oriented applications development environments.

Thomas Madison, senior vice president at Gemini Consulting, has been elected to the Parmplace board of directors.

**Stardent Computer, Inc.**

Stardent Computer, Inc. named three recipients of its Better World Awards at the recent Siggraph '91 show in Las Vegas.

The oceanography section of the National Center for Atmospheric Research won in the environment category for its visualization application that accurately predicts the long-term evolution of global climates.

The Wistar Institute won in the health and medicine category for the first three-dimensional representation of the deadly adenovirus.

The human safety category's award was won by the Lawrence Berkeley Laboratory for an application that can determine the effects of radioactive contamination. Picker International won the John William Poduska Award for its medical diagnostic imaging equipment.

The Automotive Industry Action Group in Southfield, Mich., has formed four new work groups to address emerging trends in computer-aided design and manufacturing technology impacting the automotive industry.

More information on the groups is available by calling Associate Director Henry Veldman at (313) 358-3570.

**For the price of one AViiON 7000 you can save $4,000,000 (now that's a lot of pizza!)**

Compared to a huge $4,100,000 mainframe, the new AViiON 7000 Open System gives you 117 MIPS of mainframe power—for a starting price of less than $100,000. That saves you a lot of dough! How did we do it? We created a system that has a brain you can fit in a pizza box! But you get major mainframe power.

And our new disk array technology can offer you up to 48 gigabytes of cost-effective, fault tolerant storage. These terrific UNIX-based systems support the leading databases, business applications and communications software.

So if you want to go easy on your budget, call 1-800-DATA GEN and then order a pizza—you deserve it!
Avoid Modem V.Obsolescence

V.32bis modems are now Vobsolete. That's right, just when you thought it was safe to standardize on V.32s, the CCITT officially approved the standard for a greatly improved product, the V.32bis. So before you make a V.investment, read on.

The Courier V.32bis, HST and HST Dual Standard modems are all available in internal, external and rackmount models.

V.Fast

V.32bis is 14,400 bps full duplex. It's 50% faster than a V.32, and 6 times faster than V.2400 bps modems. When you add CCITT-standard V.42bis data compression, as in our Courier Dual Standard™ and V.32bis modems, you get true 38,400 bps throughput. And that's V.woohoo. With regular V.32 modems, real throughput is less than 30,000 bps.

V.High Performance

ASL™ is U.S. Robotics' Adaptive Speed Leveling. All modems slow down for line noise. But two high speed Couriers working together will speed up again when line conditions improve. Other modems leave you stuck in "low." That can turn a $1 call into a $10 call. And that's V.robust for V.savings.

V.Forgettable

U.S. Robotics pioneered V.32bis. In fact, we've been shipping V.32bis products since last year to some of the largest companies in the world, including DuPont, Kodak, U.S. West, and CompuServe. With U.S. Robotics modems, these companies can V.forget about the hassles of high speed data communications, forget about line noise, and forget about resending data. In addition, they can forget about investing in V.Obsolescence. And so can you.

When you need to move up to high speed modems, insist on V.32bis and U.S. Robotics. 1-800-DIAL-USR. In Canada: 1-800-267-5787.

Sears, Roebuck and Co., Kmart Corp. and The Gap, Inc.

The keynote speaker is Stephen E. Watson, president of Dayton Hudson Corp. Sessions will feature IS and business executives from many leading retailers, including Sears, Roebuck and Co., Kmart Corp. and The Gap, Inc.

The 33rd annual Retail Information Systems Conference will be held Sept. 29-Oct. 2 at the Hyatt Regency Hotel in Chicago.

For more information or to register, contact the National Retail Federation, Inc., New York, N.Y. (212) 563-5113.

SEPT. 1-7


V.60 Large Data Bases (VLDB). Barcelona, Spain, Sept. 2-6 — Contact: VLDB '91-Difusora de la Informatica, 08036 Barcelona, Spain. (341) 346-418-8007.

10th Annual International Conference on Enterprise-wide Information Management. St. Louis, Mo. Sept. 4-6 — Contact: Washington University Center for the Study of Processing, St. Louis, Mo. (314) 935-5380.


Print '91. Chicago, Sept. 4-11 — Contact: Graphic Arts Show Co., Boston, MA, (617) 264-7800.

SEPT. 8-14

Development Center Institutes Conference. San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.

Managing the Move to Workstation-Based Development — The Wave of the '90s. San Diego, Sept. 8-11 — Contact: Development Center Institute, Inc., Indianapolis, Ind. (317) 846-2753.


Disaster Recovery Symposium and Expo. Atlanta, Sept. 9-11 — Contact: Disaster Recovery Journal, St. Louis, Mo. (314) 864-1001.


Data Storage Interface & Technology Conference IX. Sunnyvale, Calif., Sept. 9-13 — Contact: Technology Forum, Menlo Park, Minn. (651) 934-1415.


Data Storage. San Jose, Calif. Sept. 10-12 — Contact: Paragon Management, Cartagene and Associates, San Jose, Calif. (408) 564-6344.


ABCD: The Microcomputer Industry Association's Broadworld '91 Conference. Atlanta, Ga., Sept. 11-13 — Contact: Deborah Kenting, ABCD, Ridgefield, Md. (301) 977-9303.


SEPT. 15-21


Network and Distributed Systems Management '91. Washington, D.C., Sept. 19-20 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8005.


COMPUTERWORLD AUGUST 12, 1991
New technology: Taming the bull

ew stand-alone technology is about as desirable as a loose bull in the data center. Sure, it might be exciting and powerful, but a technology that cannot be tamed and tethered to other computer, network and system applications is an unwelcome intruder.

Many computer companies, especially in artificial intelligence and imaging, have realized the importance of fitting into the whole organization and are quickly putting free-standing systems out to pasture.

Many information systems organizations, eager to gain the benefits of cutting-edge information tools, are also hard at work integrating the latest advances, from voice technology to computer-aided software engineering, network document management and other emerging technologies.

Because companies and technologies differ widely, there are few rules about the best ways of integrating the two.

So, instead of focusing on general and not-too-helpful guidelines, Computerworld decided to ask leading-edge users about their specific efforts to integrate new and emerging technologies. Their stories follow.

The technologies that leading-edge users are taking advantage of fall into two categories: those in which various polls indicate there is a high interest, such as EDI and portable computers, and those that are still novel but fast-emerging, such as networked faxes and wireless local-area networks.

As the stories on the following pages show, the companies that have successfully deployed these emerging technologies and their applications are as varied as the tools themselves:

- Kmart Corp. uses bar coding to gather up-to-the-minute sales information for its buyers (see story below). Kmart, the No. 2 retailer in the U.S., also uses videoconferencing to improve field communications (see story page 60).
- Networked faxes have caught on at Dow Jones & Co. and many others (see story page 54). These innovators are using server-based faxes to save thousands of dollars and hours while replacing nonnetworked fax devices.
- Field engineers employed by Aetna Life and Casualty Co. are linked to LANs via portable personal computers (see story page 56).
- The Travelers Corp. integrates infrared LANs with mainstream operations (see story page 56).

Kmart’s $1 billion bar-code bet

The nation’s second largest retailer uses a nationwide system to track more than 100,000 items in each store

pressing need to know “what sold yesterday” convinced Kmart Corp. that a $1 billion investment in bar coding was the retailer’s key to success tomorrow.

Late last year, the nation’s second largest retail chain finished installing a nationwide bar-coding system that tracks the 100,000 or so items carried in each Kmart store. The idea was to provide historical sales information, which could help corporate merchandise managers better select the billions of dollars in goods purchased by the chain each year.

All 2,250 Kmart outlets in the U.S. were equipped with networked IBM Personal Computer AT-based systems. These feed updated daily sales information via satellite into headquarters databases on Amdahl Corp. Models 5990 and 5995 mainframes and an IBM 3090 600S.

The result? During the Christmas season, markdowns on slow-moving merchandise were $87 million less than two years before, when only half the stores could scan, according to David Carlson, senior vice president of corporate IS.

During the past seven years, Carlson says, Kmart, which posted annual sales of about $32 billion last year, has spent more than $1 billion on the bar-coding project.

Although Carlson says it’s difficult to estimate how much the technology has boosted corporate profits, he notes that “our big investment in scanning is paying off faster than other investments in information handling. Kmart profits are up 7% so far this year. Because of scanning,” he continues, “we don’t have to sacrifice profits to move merchandise.”

The decision to bar code was made in 1982, but the project was not begun until 1984. A big boost was the creation of an internal Retail Automation Committee.

Composed of 30 to 40 people representing all involved departments, the group met every Monday to ensure that all members knew project status and to avoid any surprises.

Electronic Data Systems Corp. in Dallas joined the project in 1986 and has worked on it since.

Planners decided to put two PC-based controllers in each store. These are linked via an IBM Token Ring local-area network to cash registers from Fujitsu Ltd., IBM or NCR Corp. Each of the 24 or so cash registers has an IBM 9022 8000 with main memory wired into a bar-code wand made by Metrologic Instruments, Inc. in Bellmawr, N.J., or Symbol Technologies, Inc. in Boneksi, N.Y.

Wireless handheld terminals from Continued on page 55
Network faxes well-received

By JULIA KING
SPECIAL TUCW

Twice a week, 52 weeks a year, Vie de France Corp. used to divert one of its well-paid sales professionals from generating profits to feeding a fax machine for 20 hours. That's how long it took to send price quotes to the 250 restaurants that buy the McLean, Va., company's line of imported fruits, fish and vegetables.

Today, the sales department's stand-alone fax machine stands idle most of the time. Instead, price quotes and other fax documents are sent directly from a $3,000 local-area network-based fax server that information systems director Warren Fay says paid for itself in six weeks.

At Cummins and Information Services Co., it took a little longer - three months - for a fax server tied to a network of mainframe-connected terminals to pay for itself. Since its installation, Cummins, a Grand Prairie, Texas, transportation services company, has pulled the plug on the 70 stand-alone fax machines it had used to send 8,000 truck permits a day.

"If a truck is sitting still, it isn't generating profits to feeding a fax machine," explains Thomas Cook Travel's director of network operations. "Using the system, the fax permit is delivered in 10 to 15 seconds, because outbound server-based faxes are sent directly from PCs. Print quality is also better, Fay says. "Readability is key because if a customer can't read our price list, they're not going to buy from us," he explains.

Because network-based servers can be directed to send faxes at specified times, many businesses using them have substantially cut transmission costs by sending time-insensitive documents after business hours, when telephone rates are lower.

At The Falconwood Corp., a New York-based commodities trading firm, systems manager David Mace says sending customer statements from a LAN-based fax server during the night has saved the firm more than $30,000 in transmission costs.

Mace estimates he saved another $25,000 or so by integrating a Gammalink fax server with the company's IBM Application System/400 midrange system. The solution involved writing software that converts ASCII text files to fax format, he explains. These files are then downloaded to the LAN on which the Gammalink sits and are faxed out in the middle of the night.

"Once I saw how [IBM was] doing it, I said, 'I can do this myself with Gammalink for $3,000 instead of $30,000.'"

New opportunities

Initially less obvious than cost savings, IS executives say, are the new business opportunities possible when existing applications are integrated with either privately owned or public network fax technology.

For example, Princeton, N.J.-based Dow Jones & Co.'s Facts Delivery service was born when the firm's on-line news retrieval database was integrated with MCI Communications Corp.'s fax and electronic mail network services.

Customers can call Dow Jones at a toll-free number and get a report containing stock quotes, earnings estimates, income statements and other news about publicly traded companies. Within four hours, this information—often amounting to dozens of pages—is available for pickup either at a fax number or at their MCI electronic mailbox.

"The end result is that we are expanding our customer base beyond regular on-line subscribers," says Mark Feffer, editor of database development at Dow Jones.

Feffer says Dow Jones looked at developing its own fax capabilities in-house but opted to use MCI's fax and e-mail networks "so we could stick to our knitting terms of publishing and products," he says. Work done by in-house programmers was limited to writing file transfer and fax formatting software that links the news retrieval database to MCI, he explains. The program resides on PCs used by Dow Jones' 21 customer service representatives.

Thomas Cook Travel, a nationwide business travel company based in Cambridge, Mass., has gone a step further, integrating network fax with voice technology.

Introduced in March 1990, the fax-based service, called Thomas Cook Express, lets customers use a Touch Tone phone to interact with a voice processing system — rather than a customer service representative — to receive a fax copy of flight and fare information within minutes of placing a call, says Chris Churchill, director of the express service.

Previously, Cook's customers could spend hours gathering flight information, presenting it to executives and then calling back with changes, Churchill says. Now, they receive a fax listing the best possible flights and fares one minute after calling.

Limits remain

Experts maintain that few technical limitations stand in the way of combining fax with other technologies and existing applications.

Judith Pirani, an analyst at BIS Strategic Decisions, a market research firm in Norwell, Mass., says the number of combination services may be limited only by users' imaginations. "Facsimile... works with all sorts of things," Pirani says. "It's a matter of putting the fax application on top of whatever computer and network technologies evolve."

While network fax servers have boosted the speed and efficiency with which users can send faxes, problems remain, particularly with inbound network fax traffic.

"There is no simple way of directing [the document] to the one in hundreds of users who may be on the LAN," notes Keith King, assistant director of International Resource Development.

For now, businesses using network-based fax service must continue to rely on stand-alone units for incoming documents. However, vendors are beginning to roll out enhanced servers capable of automated routing.
Norand Corp. in Cedar Rapids, Iowa, and Symbol Technologies are used by store managers and department heads to check prices when bar-code tags are missing from merchandise. The devices are tied into each LAN. Sales information, standardized via point-of-sale software from Post Software International, Inc. in Raleigh, N.C., is sent to headquarters each night. The controllers also receive and store revised price information for headquarters.

Initially, sales data was sent from individual stores to headquarters via phone lines in dial-up mode. But this required the automatic dialing of about 5,000 phone calls nightly. So in 1987, management approved the use of satellite communications as an alternative. A 50-store pilot employing a geostationary satellite and dish antennae at each store was a success and was eventually expanded chainwide.

Initially, a big problem was coping with the huge volume of data, Carlson says. Amdahl 8080-class machines were replaced with more powerful new IBM and Amdahl systems. New communications front ends from NCR Corp. and a 300G-byte unit from Teradata Corp. in El Segundo, Calif., were also added to speed up access. The software needed to transfer and structure the batched sales information was written by Kmart's programming staff. Besides providing item-by-item reports to merchandise managers, programs were also written to generate "Task" reports of the previous day's gross sales for top management.

Local fine-tuning

Headquarters programmers also constructed demographic models to account for regional and special variations. For instance, all stores in and near college towns use a model that tracks when the schools are in session and what types of apparel students buy. To keep these models up to date, Carlson adds, 20 demographers roam the U.S., checking on the metamorphosis of store neighborhoods.

Ironically, Carlson says, the main problem in integrating the global scanning effort had nothing to do with technology. Instead, the biggest headache was the reluctance or inability of some vendors to attach proper bar-code labels to the merchandise they shipped to Kmart.

To cope with the problem, Kmart is "putting more and more heat on deficient vendors" in the U.S. and abroad, Carlson says. Company officials say much of the benefit of the bar-coding system comes from Carlson. First, bar-coding speeds checkout by about 25%, which is especially important during busy holiday seasons. Second, it ensures that desirable seasonal items will be in stock because merchandise managers know what is selling early enough to reorder.

Right now, some 1,750 other Kmart units — Canadian Kmarts, Waldenbooks, Pay Less Drugstores Northwest, Inc., Builders Square, The Sports Authority discount chain and other smaller retail chains — are not mandated to adopt the bar-coding system. However, Carlson says that because of Kmart Chief Executive Officer Joseph E. Antonini's enthusiasm for the technology, he expects the other independently managed units will follow suit.

Payoff: Fewer merchandise markdowns, faster customer checkout, better control of inventory.

Close-up

**Organization:** Kmart Corp.

**Goal:** Provide merchandise buyers with up-to-the-minute sales information.

**Strategy:** Invest nearly $1 billion in equipping more than 2,200 Kmart stores with bar-coding systems. Deliver current information via satellite to corporate IBM and Amdahl Corp. mainframes.

**Payoff:** Fewer merchandise markdowns, faster customer checkout, better control of inventory.

In a world where most моделі are created equal, something unique has just arrived...
INTEGRATING PORTABLES

Aetna Life and Casualty Co.

BY MICHAEL FITZGERALD

W hen Aetna Life and Casualty Co. downsized to local-area networks through much of its operation, it decided to give its field engineers laptop computers that linked into the LANs.

Faster communications and work turnaround are the main benefits, says Ramon Padron, director of field operations for Aetna's field engineer groups. "We have cut several days — as many as six to seven — out of the information loop between underwriters and engineers," he says.

Aetna's 500 field engineers are responsible for working with the Hartford, Conn.-based company's insurance customers to develop safer work environments and to collect information to allow Aetna to underwrite accidents more effectively.

The engineers work mostly out of their homes, although each spends some time in one of the 45 domestic offices. In the past, handwriting and mailing reports caused delays. Aetna decided to take advantage of its shift to Novell, Inc. Netware 386 networks in late 1989 by automating field engineers with laptop computers.

"We had a network moving toward completion, and the biggest challenge was to make it work, which took six months. Since then, the engineers have taken to the computer system "like fish to water," Padron says. "They are now all highly computer literate and making applications of their own and telling us what we should be doing."

One immediate benefit is that paper has been entirely eliminated for the engineers, Padron says. Field engineers now file reports electronically by typing into Aetna's custom-developed Mechanized Engineering Reporting System running on 1520 and 1530 laptops from Fremont, Calif.-based Grid Systems Corp.

Custom information

The laptops also hold customized databases, such as one with 400 basic safety recommendations. Information is entered into a template program developed to meet the underwriters' needs, then uploaded via Relay Communications, Inc.'s Relay Gold to several different brands of file servers in one of the 45 corporate offices, where it is accessed by underwriters.

For security reasons, anything sent from the field first goes to the local engineering unit before being forwarded to the LAN. If engineers are in an Aetna office, they use one of several desks set up with a Grid docking card, which fits in place of the portable's battery. They are then attached to the network and can simply plug in the computer.

Another benefit is that engineers have eased the programming burden.

Aetna links laptops and LANs for field engineers

© integrate wireless local-area network technology with existing systems and applications, installers at the Travelers Corp. need three hours. When Aetna Life and Casualty Co. downsized, the Travelers Corp. needed to link engineers into the LANs when time and money dictated, Blazensky says.

Each LAN can accommodate between four and six users. Currently, about 50 Travelers employees, representing every department, are using the systems.

Blazensky notes that because there are no integration problems, Infralan has "no impact whatsoever" on Travelers' applications or users. "It goes right across our board" of applications, he says.

Installation involves linking bar graphs on the base unit with optical nodes; two optical nodes interface a six-port base unit with associated PC.

While cabling a high-end IBM Token Ring network costs Travelers as much as $100 per workstation per month, implementing an Infralan configuration costs about $10.

Because a wireless LAN is a reusable resource, Blazensky says, Infralan's costs, amortized over five years, amount to between 30% and 60% of those costs associated with copper. In fact, it was the cost of employee mobility — the money saved — that case, he says, is three hours for four base units.

Travelers, which has an installed base of about 35,000 personal computers and about 10,000 employees on LANs, says it does not intend to replace IBM Token Ring LANs with wireless Infralans. Instead, it will use them in addition to or in lieu of cabled LANs when time and money dictate, Blazensky says.

Travelers' Blazensky: Integrating wireless LANs with existing systems was fast, easy and inexpensive

One immediate benefit is that paper has been all but eliminated for the engineers, Padron says. Field engineers now file reports electronically by typing into Aetna's custom-developed Mechanized Engineering Reporting System running on 1520 and 1530 laptops from Fremont, Calif.-based Grid Systems Corp.

Custom information

The laptops also hold customized databases, such as one with 400 basic safety recommendations. Information is entered into a template program developed to meet the underwriters' needs, then uploaded via Relay Communications, Inc.'s Relay Gold to several different brands of file servers in one of the 45 corporate offices, where it is accessed by underwriters.

For security reasons, anything sent from the field first goes to the local engineering unit before being forwarded to the LAN. If engineers are in an Aetna office, they use one of several desks set up with a Grid docking card, which fits in place of the portable's battery. They are then attached to the network and can simply plug in the computer.

Another benefit is that engineers have eased the programming burden.
prompted Travelers to seek an alternative to cabled LANs. Workers who need ready access to LAN capabilities constantly move in and out of remote sites, which are often leased facilities.

Previously, if those field offices were not cabled, Travelers had to negotiate then find qualified electricians to pull, terminate and test the cables.

"Much of the gain from a new LAN is getting it in a timely fashion so you can get the return in cash flow, the bottom line," Blazensky says. "If we had to wait five months when we wanted it within one month, that’s four months of real bottom-line dollars, in many cases. Once that installation time is gone, you can’t recoup it."

**Cutting the cable**

The big move to wireless started two years ago. In 1989, the company realized that of the 140 new LAN installations planned for 1990, 100 of those would be going into buildings with no cabling.

The expected costs were unacceptable, so Travelers began to look for a technological way out.

**Close-up**

**Organization:** The Travelers Corp.

**Goals:** Speed up LAN installation; reduce costs of ripping out old coaxial cable from leased buildings.

**Strategy:** Install Token Ring-compatible infrared LANs in high-mobility locations.

**Payoffs:** Savings of $90 a month per workstation in costs; installation time reduced from between 30 and 150 days to just a few hours.

The three major criteria for the eventual solution were Token Ring compatibility; an equal, preferably favorable, economic comparison with copper; and simple, speedy installation.

Blazensky says Travelers had actually begun to consider alternatives to cabled LANs as early as 1986, including LED and laser-driven LAN technologies. The company rejected those systems because at the time, not only were they not completely IEEE 802.5 compatible, but they also cost up to $30,000 per node pair.

"We looked at some products that used in-house electrical wiring to do some resource sharing," he says. Those systems, however, required extra hardware and software and could not be integrated into a Token Ring network, Blazensky says.

Then, in 1988, Travelers was invited to look at an infrared-based Ethernet system installed at Worcester Polytechnic Institute in Worcester, Mass. The system was the forerunner of BICC Communications' current Infralan.

"When we saw it, we said, 'OK, that's Ethernet-compatible. What can you do for Token Ring' A few months later, we were presented with a prototype," Blazensky recalls.

To ensure reliability, Blazensky suggested that the developers reconfigure the system from its original "sun satellite" arrangement to a true ring's optical node-to-optical node design.

Travelers liked what it saw but told the vendor that instead of a "sun satellite" arrangement, it wanted a true ring's optical node-to-optical node design. In effect, the company wanted the primary path running clockwise and the backup path running counterclockwise.

Thus, any signal interruption would prompt the base units "to do a wrap to the backup path, and everything would stay intact," Blazensky explains.

BICC succeeded in implementing the design, Blazensky says, and the rest was "history."

**Improved speed**

Travelers says it has not experienced any of the slowdown and poor performance problems that sometimes hamper spread spectrum, microwave and other wireless LAN technologies.

"In fact, the Infralan goes just a tad faster than the copper equivalent because it takes the actual digital signal and converts it directly to infrared signals with no buffering," Blazensky says. "The direct one-for-one conversion means there is no speed loss."

Travelers is using Infralan at 4M bit/sec. right now and says it expects a 16M bit/sec. system to be available by the end of this year.

Blazensky says he also anticipates future enhancements such as speeds of up to 50M bit/sec. Fiber Distributed Data Interface capability and a 1km version.

The latter is needed "so we can go across public rights of way between buildings," he explains. •
Contrary to its name, Caterpillar, Inc. wants and needs to move faster to beat nimble worldwide rivals, especially Japanese firms. Peoria-based Caterpillar, the world's largest maker of earth-moving equipment, relies on a huge, worldwide Caterpillar inventory and a reduction of 16 accounts payable clerks. $10 million savings in parts inventory, says payoffs so far include Caterpillar's Processing Network Division work to link its suppliers around the globe. Moreover, Nack adds, documents that previously were rekeyed several times are now entered only once, with far fewer errors.

Integrated EDI is a key part of a huge, worldwide Caterpillar program known as "Extended Enterprise Communications," which encompasses many other technologies.

The objective, according to Nack, a 39-year company veteran, is to make it easier for vendors, customers and others to do business with the firm.

Today, 950 of Caterpillar's largest suppliers — which deliver more than half of all purchased parts and 80% of documents — are connected via a value-added network (VAN) from General Electric Information Services (GEIS) in Rockville, Md. Data resides on 10 IBM 3090s at Caterpillar's Peoria data center.

In fact, the EDI project has worked so well that Caterpillar will begin offering EDI service on its own IBM Systems Network Architecture (SNA) network later this year, according to Nack. Just in time

The move into EDI was pushed initially by Robert Dryden, then the company's vice president of purchasing. At his urging, a six-member task force was recruited, including one person from Caterpillar's information systems department, which now has 875 employees. In 1984, Caterpillar adopted the Japanese-inspired just-in-time manufacturing approach, which depends on fast information exchange with suppliers around the globe. Sixteen of Caterpillar's 36 plants are overseas, and nearly 58% of Caterpillar's sales are generated outside the U.S., so easy communication is key.

Early on, Nack says, Caterpillar faced a major decision: to set up EDI on its own global IBM SNA network or to use a VAN.

Close-up

Organization: Caterpillar, Inc.

Goal: Create fast communications to support just-in-time manufacturing.

Strategy: Link more than 950 suppliers worldwide via an X.25-based EDI network.

Payoff: $10 million in inventory savings, elimination of 16 accounts payable clerks, reduction in rekeying errors.

EDI speeds Caterpillar's global march

Worldwide network links 950 big suppliers; expansion onto internal SNA network planned for later this year.

Caterpillar's Nack says EDI has cut the firm's parts inventory by $10 million worldwide. The first firms connected were Caterpillar's major suppliers. Then came the Herculean task of tying in some 2,100 of the company's smaller suppliers, many of whom Nack says were "computer illiterate." Even though IS dispatched professionals to train suppliers in EDI procedures, most small suppliers still communicate with Caterpillar via postal mail and fax.

However, because no one has asked for electronic fund transfer, Nack explains, it's difficult to directly credit EDI with financial gain at Caterpillar because global downturns in construction have hurt Caterpillar's and many other companies' earnings, says Karen Ubelhart, an analyst at Shearson Lehman Brothers, Inc., a New York brokerage house.

As a result, the translation software to transfer batch files gathered by GEIS to the appropriate mainframe databases was fairly simple and was written by Caterpillar's own programmers.

Global glitches

About the only serious problem encountered was in making some overseas connections. However, dealing with foreign communications protocols was a familiar chore, Nack notes, because some years earlier, Caterpillar had set up a company electronic mail system serving 35,000 locations worldwide.

About that time, Caterpillar plans to move into the second phase of its EDI plans: shifting electronic documents movement to the company's busy SNA network. A pilot program is underway in four locations, Nack says. The switch from public to private network is expected to be completed by late 1992, he says. When it's done, Caterpillar will still rely on VANs to reach remote overseas locations not serviced by the company network.

The added burden on the proprietary network is not likely to require more computer power, Nack says, because the firm's IBM 3090s can handle the extra load. Nack declined to specify how much the project will cost. Caterpillar has already purchased software for its proprietary network from Sterling Software, Inc.
FREE GUI SEMINAR SERIES!
Call 1-800-395-3525 today!

“Downsizing for the '90s and Beyond: Developing Advanced Windows Applications for Client/Server Computing”
PowerBuilder™ and Microsoft® SQL Server Seminars (September 24-November 14)
Atlanta • Baltimore • Boston • Calgary • Chicago • Cleveland • Dallas • Denver • Detroit
Hartford • Houston • Long Island • Los Angeles • Minneapolis • New York • Orange County
Philadelphia • Phoenix • Pittsburgh • Raleigh • San Francisco • Seattle • St. Louis
Toronto • Vancouver • Washington, D.C.

Please fill in the information below:
Name: ________________________
Title: ________________________
Company: ____________________
Address: _____________________
City: _______________________ State: _______ ZIP: __________
Business Phone: (______)_______ ext __________
Type of Business: _____________

Current RDBMS (Check one):
□ SQL Server
□ ORACLE SERVER
□ ALLBASE/SQL
□ Other: _____________________

Current GUI (Check one):
□ Presentation Mgr.
□ UNIX/MOTIF
□ UNIX/OpenLook
□ Other: _____________________

Powersoft.  Microsoft®
This kind

It's easy to see why MIS managers are going

of power

GUI. Or gaga. PowerBuilder is a uniquely
could make

powerful yet easy-to-use environment for

you go

building industrial-strength client-server ap-

plications. It couples an easy, intuitive graphic-

all over.

user interface with your powerful server-based

relational (SQL) database. PowerBuilder actually lets you paint applications. It combines the

best characteristics of traditional systems with

the best features of the new Windows-oriented,

PC-based client/server architecture.

Can't wait to go GUI? See PowerBuilder in

action at one of our free upcoming seminars.

For details, call 1-800-395-3325 today.
Hello to video, goodbye to dog and pony shows

Once a necessary evil, traveling dog and pony shows are history for retailing giant Kmart Corp., thanks to a multimillion dollar investment in videoconferencing technology.

Completed last year, the company's videoconferencing system was integrated into a $55 million, enterprisewide satellite network that links company computers around the country.

The payoff of videoconferencing is twofold, says Walt Bzdok, senior director of network that links company computers around the country.

The next thing he knew, management picked that option, which cost several million dollars, without any more justification than wanting better communications with the field.

GTE Spacenet served as a "semi-network systems integrator," Bzdok says, stressing that Kmart kept tight control, which included choosing the "amalgam of vendors" that would supply the videoconferencing systems.

Kmart held daily conference calls with GTE Spacenet, overseeing every aspect of the installation "because of the size of the investment and because our careers were on the line," he says half jokingly.

Already, Bzdok adds, the network has proved its worth, although he hesitates to make a direct correlation between the network and the firm's bottom line.

PNMS - The Only Help Desk Solution With All Three Winning Qualities

1. POWER
PNMS gives you the power to resolve network management problems quickly and efficiently. Keep track of equipment and service costs, provide end-user support, and measure the impact of system changes.

2. INTEGRATION
PNMS seamlessly integrates problem, inventory, change, and financial management applications. And with automated operations for trouble ticketing, you focus on solving problems, not entering them.

3. FLEXIBILITY
PNMS provides you with the flexibility to customize any screen, any field, any file, any application — at any time to meet your specific network requirements today and tomorrow.

PNMS: The Leader in Problem, Change, and Inventory/Configuration Management

PNMS - The Only Help Desk Solution With All Three Winning Qualities

INTEGRATING VIDEO-CONFERENCING

Kmart Corp.

BY MAISIE MCADOO

PNMS - The Only Help Desk Solution With All Three Winning Qualities

Peregrine Systems, Inc.

1950 PALOMAR OAKS WAY
CARLSBAD, CA 92011
800-351-2340

Call for information or free trial.
1-800-638-5231

60 COMPUTERWORLD AUGUST 9, 1991
The sociology of software measurement

You’ve figured out how and what to measure from a technical standpoint. But have you stopped to gauge staff reaction to a measurement program?

BY CAPERS JONES

Establishing an applied measurement program for software requires sensitivity to cultural and social issues. The normal reaction to a measurement program by both project management and staff is apprehension. Only when it is shown that the data will be used for beneficial purposes rather than punitive purposes will the apprehension subside.

The sociology of measurement implies a need for high-level corporate sponsorship of the measurement program when the program is first begun because the normal reactions of subordinate managers whose projects will actually be measured are dismay, resistance and apprehension.

Normally, either the chief executive officer or an executive vice president would be the overall measurement sponsor and would delegate responsibilities for specific kinds of measures to those lower down in the hierarchy.

In the beginning

Indeed, at such companies as IBM in the 1960s, ITT in the 1970s and Hewlett-Packard Co. in the 1980s, it was the demand for accurate measures from the CEO level that started the corporate measurement programs in the first place.

In a well-designed applied measurement program, staff and management apprehension or opposition is very transitory and lasts for only a month or so prior to startup, after which the real value of accurate measures makes the system expand spontaneously.

At Hewlett-Packard, for example, a small experimentation in software project measurement was so useful and so successful that over a period of several years, it expanded on a voluntary basis into a major international study including virtually all of Hewlett-Packard’s software development laboratories.

Indeed, the internal measurements have proved to be so valuable that in 1989, Hewlett-Packard began to offer the same kind of software measurement services to its customers.

What causes the transition from apprehension to enthusiasm is that a well-designed applied measurement program is not used for punitive purposes and will quickly begin to bring chronic problems to the surface in a way that leads to problem solution.

For example, excessive schedule pressures, inadequate office space and insufficient computer turnaround may have been chronic problems for years and yet may have been more or less invisible. But a good measurement program can spot the impact of such problems and quantify the benefits of solving them.

The sociology of data confidentiality

In many companies, corporate politics has such prominence that project managers and some executives will be afraid to submit their data to a corporate measurement group unless that group guarantees the confidentiality of their data. That is, each manager will want to find out personally how his data compares to the corporate or group average but will not want that data distributed to other project groups or to “rival” managers.

Although it is sometimes necessary for reasons of corporate culture to start a measurement program on a confidential basis, the approach is both sociologically and technically unsound.

A branch sales manager, for example, could hardly insist on the confidentiality of the branch’s quarterly profit-and-loss data. Group, divisional and corporate executives should receive productivity and quality reports on all projects and units within their scope of responsibility, just as they receive profit-and-loss reports or normal financial reports.

A well-designed software measurement program will not be a punitive weapon; it will identify all weaknesses that need correction.

Continued on page 62

- Fight dismay, resistance and apprehension
- The skills needed for a measurement team
- Where to place the measurement group

AUGUST 12, 1991
COMPUTERWORLD
The sociology of using data for staff performance targets

Once a company begins to collect software productivity and quality data, there is a natural tendency to want to use the data to set staff performance targets. That, of course, is one of the reasons for apprehension in the first place.

Leading-edge companies such as IBM and Hewlett-Packard do set performance targets, but for sociological and business reasons, the targets are set for executives at the director and vice president level rather than for the technical staff. Executives are in a much better position to have the changes necessary to achieve targets than are technical staff members or first-line managers.

Not only is management for subordinate managers is authorized to purchase better tools and workstations, stop work and receive necessary education or introduce new practices such as full design and code inspections. Executives, on the other hand, can do all those things.

A secondary reason for establishing executive targets is likely to become more and more important in the future: Corporate officers have a legal and fiduciary duty to achieve professional levels of software quality, and if they do not, both their companies and themselves may find themselves embroiled in expensive lawsuits and perhaps even consequential damages in their futures.

Perhaps the single event that, more than any other, made IBM do in software quality for many years was the establishment in 1973 of numeric targets for software-execution time or the inclusion of those targets in their performance and bonus plans. Prior to that time, IBM, like many other companies, talked noiseily about software quality, but when the pressure of business caused a choice between opting for high quality or skipping something like inspections to try to shorten delivery dates, quality seldom won.

Once IBM's vice presidents and directors had quality goals in their performance plans, however, quality was no longer just being given lip service but became a true corporate incentive.

The sociology of measuring one-person projects

More than half of all software projects in the world are small projects that are carried out by a single programmer or project manager. This is significant special handling because it is obvious that all data collected on one-person projects can easily be used for appraisal purposes. Measuring one-person projects is an especially sensitive issue in Europe, where some countries prohibit the measurement of an individual worker's performance either because of national law, as in Sweden, or because the software staffs are unionized and such measurements may violate union agreements, as in Germany.

The normal solution to this problem in large companies such as IBM and ITT can be one or more of several alternatives. The basic alternative is to establish a cutoff point of perhaps two person-years and simply not measure any project that is smaller. This solution tends to concentrate the measurements on the larger and more costly projects where, indeed, the value of measurement is greatest.

A second solution is to collect one-person project data on a voluntary basis because many programmers are perfectly willing to have their work measured. It is, however, tactful to ask for volunteers.

A third solution, possible only in very large companies, is to aggregate all small, one-person projects and then create an overall set of small-project statistics that does not drop below the division or laboratory level.

Of course, it is also possible to bite the bullet and measure one-person projects for appraisal purposes, and some companies indeed do that. It is, however, very likely to lead to morale problems of a significant nature and perhaps even to lawsuits by indignant staff members who may challenge the measurements in court.

The sociology of MIS vs. systems software

Many large high-technology corporations produce both MIS systems and systems software, such as operating systems or telecommunications systems. Some also produce other kinds of software as well—process control, scientific, mathematical analysis and so on.

Currently speaking, the MIS staffs and the systems software staffs have such difficulty communicating and sharing technical ideas that they might as well inhabit different universes.

The dichotomy will affect measurement programs, too, especially because systems software productivity is naturally somewhat lower than MIS productivity because of the larger number of tasks performed and the effect of the soft factors.

The natural reaction by the MIS software groups to this fact is to assert that systems software is much more complex than MIS applications.

Indeed, many systems software producers have rejected function-based metrics for two reasons: Function points originated in the MIS domain, and many MIS projects normally have higher productivity rates. This kind of dispute occurs so often that companies should plan remedial action when beginning their measurement programs.

There are several possible solutions, but the most pragmatic one is to segregate the measurement groups and to consider MIS projects primarily with other MIS projects and systems software primarily with other systems software.

A more recent solution is to adopt the feature point metric for systems software productivity measures because the built-in assumptions of feature points about algorithmic complexity tend to generate higher totals for systems software than for MIS projects.

Whatever solution a company decides on, the problem of needing to be sensitive to the varying software cultures needs attention right from the start.

How to organize measure unit

Measurement of software productivity, quality and user satisfaction works best with a dedicated staff of professionals, just as cost accounting and financial measurement works best with a dedicated staff of professionals.

Leading-edge companies that recognize this fact will normally establish a corporate measurement focal point under an executive at approximately the level of a director or third-line manager.

This focal point will often report to someone at the level of a vice president, executive vice president or chief information officer. The corporate measurement group will coordinate overall measurement responsibilities and will usually produce the annual productivity report.

As with finance and cost accounting, the larger units and subordinate organizations within the corporation may have their own local measurement departments as well.

The raw data collected from tracking systems, surveys, questionnaires, interviews and other sources should be validated at the source prior to being sent forward for aggregation and statistical analysis. However, some wrong data always seems to slip by, so the corporate group must ensure that all incoming data is screened and questionable or incorrect information is corrected. The raw data can either be collected by local personnel on the scene, by traveling data collection specialists from the unit or corporate measurement function or even by outside consultants, if the enterprise is just getting started with measurement.

If the corporation has a formal quality assurance (QA) function, the defect-related data will normally be collected by QA personnel. Quality assurance, of course, be reported separately by the QA staff, but it should also be consolidated as part of the overall corporate reporting system.

User satisfaction data from commercial software houses and computer companies is often collected by the sales and marketing organization, unless the company has a human factors organization. Here, too, the data can be reported separately by QA, but it should be consolidated as part of the overall corporate reporting system.

The right measure skills

Most universities and academic institutions have no courses at all in the measurement of software quality, productivity or user satisfaction, so it is seldom possible to hire entry-level personnel with anything like an adequate academic background for the work at hand.

Pepperdine University, ITT and AT&T have schools and MBA programs are also deficient in these topics, so most companies are forced to substitute on-the-job training and industry experience in software management for formal credentials.

Some of the skills available in measurement teams such as those at IBM, AT&T, Du Pont Co., HP and ITT include the following:

- A good knowledge of statistics and multivariate analysis.
- A thorough grounding in literature of software engineering and software project management.
- A knowledge of software planning and estimating methods and the more powerful of the available tools.
- A knowledge of forms design.
- A knowledge of survey design.
- A knowledge of quality control methods, including reviews, walk-throughs, inspections and all standard forms of testing.
- A knowledge of the pros and cons of all software metrics, including the new function-based metrics.
- A knowledge of accounting principles.

The special skills and knowledge needed to build a full measurement program are so scarce in the U.S. that many companies begin their measurement programs by bringing in management consultants who specialize in such tasks. Once the consulting group assists in the start-up phase, the corporate measurement team takes over the future studies and measurements.
GIVE ME 30 DAYS FREE WITH MACMAINFRAME.

[ ] Yes, call me to arrange for my free 30-day trial of MacMainFrame.
[ ] I'd like to learn more about using the Macintosh as an IBM terminal.
   Please send me more information about the MacMainFrame Series.

NAME ________________________________
TITLE ________________________________
COMPANY ________________________________
ADDRESS ________________________________
CITY/TOWN ________________________________
STATE __________________ ZIP __________
BUSINESS PHONE __________________

Avatar
Replacing your 3270 terminals with a Macintosh looks more attractive than ever. Especially with Avatar's special offer on MacMainFrame for the affordable, high performance Macintosh LC.

MacMainFrame is the Mac-to-mainframe connectivity product that combines the best of the Macintosh with the IBM mainframe for Coax, Token Ring and SDLC networks. Shipping now for THE 30-DAY MACMAINFRAME FREE TRIAL OFFER. 1-800-AVA-3270.

Put this next to your IBM terminal and see how good our MacMainFrame offer looks.

The Macintosh LC, MacMainFrame has features like terminal emulation, file transfer, copy and paste, 3287 printing, keyboard remapping and support for multiple sessions.

The offer? We will send you MacMainFrame free for 30 days so you can evaluate it yourself. When you do, we'll give you a coupon good for $50 off the purchase of MacMainFrame Coax Workstation or Gateway for the new Macintosh LC.

It's easy, too. Simply unplug your terminal and plug in your MacMainFrame equipped Macintosh LC, and you'll be connected to your mainframe as if you had a terminal. Except you'll have MacMainFrame and a Macintosh LC. And wouldn't you rather have that instead?

Call 1-800-AVA-3270 today to take advantage of our 30-day MacMainFrame free trial offer. Or send in the attached reply card. You'll see that replacing your terminal with MacMainFrame and a Macintosh LC has never looked better.

THE 30-DAY MACMAINFRAME FREE TRIAL OFFER. 1-800-AVA-3270.
In business, faster response means reduced costs and happier customers. Kodak offers a range of optical disk solutions for safe storage and fast, transparent access to large volumes of information... with unquestionable cost savings.

Designed for easy integration into your application, versatile Kodak optical disk systems, coupled with software solutions from our systems integrator associates, can safely store from 35 gigabytes to over a terabyte of digital information. In from three to twenty-two square feet of floorspace.

Kodak systems can locate any file in seconds, and come with two other unique features: the exceptional service and support you expect from Kodak. Don’t let your questions go unanswered. Call for a complete package of information and knowledgeable follow-up. FAX 1716 781-9748, or call 1800 445-6325, Ext.993D.
**U.S. firms leery of South Africa**

BY J. A. SAVAGE and JIM NASH

Despite the removal of federal trade sanctions against South Africa last month, U.S. computer firms — fearing they are more likely to step onto land mines than diamond mines — are not rushing to re-establish business there.

Companies such as AT&T, IBM, Unisys Corp. and Wang Laboratories, Inc., which once sold computers and other equipment directly to South Africa, are not yet ready to reconsider business as usual with that country. Dell Computer Corp. appears to be the only company interested in resurrecting direct business ties.

**Lack of venture capital deters start-ups**

BY NELL MARGOLIS

Industry observers in search of an upside to the massive computer company layoffs of recent months have noted that the exit of the old crop of entrepreneurial start-ups. The dynamics — hordes of unemployed talent at a time of quantum change — are there. Unfortunately, for would-be computer firm founders, venture capital is elsewhere.

The funding alternative that fueled a large proportion of the last decade's technology startups will underwrite far fewer of tomorrow's new efforts, according to the institutions that track finance alternatives. In 1990, New York-based market research firm Technology Partners said, only 26 seed deals were done, for a total investment of $23 million. This underwhelming count, said the firm's president, Richard A. Shaffer, represented a 15% drop in the number of deals and a 52% falloff in dollars invested.

In contrast, even though venture investing as a whole shrank appreciably last year (see chart at right), the $388 million invested in later stage financings marked a 19% increase over the $334 million of venture capital comparably invested in 1989. Shaffer said venture capital firms are shying away from seedling technology firms for a long list of reasons: weak stock market fluctuations, worldwide economic slowdowns, rethinking fiscal conservatism, wrenching changes in every aspect of the computer industry and rampant consolidation of the venture capital industry. They all add up to a heaping portion of the thing "risk-averse venture capitalists" like the least uncertainty.

"A venture capitalist's most critical resource is time, and seed financings take a lot of it," said Ray Boberg, an associate at Venrock in New York. If you add all the other risks that cloud the investor's chances of realizing on a start-up investment and factor in the low probability of seeing that return near-term, he said, "seeds are fairly hard to justify."

And it is not getting better.

Shaffer, who several months ago speculated that 1990 would be recalled as "the year the Great American Venture Capital Machine began to slow down," reported an early 1991 uptick in technology-directed venture spending — except for seeds. Sparked by unexpected rallies in the public markets and particularly by a stampede of computer firms making initial public offerings, venture deals in general picked up notably in the first quarter, he said.

However, Technology Partners tracked only six seed deals, totaling $3.1 million, between Jan. 1 and March 31 — "the lowest quarterly total we've seen in at least three years for this earliest stage of venture investing," Shaffer said.

Continued on page 68
DIGITAL’S LONG LINE OF AWARD-WINNING TERMINALS JUST GOT EXTENDED
The VT"420 has won Digital Review's 1991 Target Award for best text terminal based on functionality and ergonomic design. With four generations of leadership terminals, Digital has consistently set the standards for excellence and reliability.

The VT420 features text windowing capabilities that let applications display and manipulate information on screen and in local memory more efficiently. Forms management, pop-up menus and help messages enhance the interface and response times for improved productivity. The VT420 also offers single-wire, dual-session functionality for using two applications simultaneously. Information can be "copied and pasted" within or between sessions. Additionally, the VT420's six pages of off-screen memory, local macros, communications speeds to 38.4K baud rate, and international languages make it a world-wide leadership terminal.

Six fonts, all displayed at a flicker-free 70hz refresh rate, up to 48 display lines, overscan, and a new keyboard provide the award-winning ergonomics that increase user productivity and comfort.

All this at a very competitive price.

Outstanding performance. Exceptional ergonomics. The VT420 continues the tradition. To learn more about Digital's award-winning VT420 text terminal, call 1-800-343-4040, ext. 407. Or call your Digital Authorized Distributor.
Versys names Wardell president, COO

Versys, Inc., a Westwood, Mass.-based supplier of computer hardware, software and services to small and midsize companies, recently named Thomas Wardell to the position of chairman of the board. Frankel succeeds Andrew De Mari, former chairman and CEO of Retix and a founder of the firm.

New York-based telecommunications specialist World Communications, Inc. has appointed David Hardwick as managing director of its UK operations, known as Worldcom International Ltd. Hardwick was general manager of customer systems at British Telecom.

Sequoiac Systems, Inc. announced last month the resignation of its COO, Michael Bruce, who leaves the Marlboro, Mass.-based fault-tolerant computer vendor to pursue outside interests.

De Mari, former chairman and CEO of Retix and a founder of the firm.

COMPUTER INDUSTRY

The World's Premier International Trade Show

For Computer Distribution Professionals

MARK YOUR CALENDAR NOW TO BE IN LAS VEGAS, OCTOBER 21-25, 1991, FOR THE 13TH PRESENTATION OF COMDEX/Fall. FOR RESIDENTS AND OTHER VOLUME BUYERS, COMDEX IS YOUR MOST ESSENTIAL APPOINTMENT FOR KEEPING YOUR BUSINESS ON THE LEADING EDGE AND PROVIDING YOU WITH A WOULD OF UNPARALLELED OPPORTUNITIES.

- **Evaluate** the hottest new products, and learn about the newest dealer support programs and services from more than 1800 domestic and international exhibitors.

- **See** networking solutions in action at the all-new COMDEX Network Computing Showcase, supported by Novell, Inc., featuring North America's largest concentration of network computing products. Complementing the Showcase will be a dedicated Network Computing Conference program, supported by Novell, Inc. and sponsored by Network World.

- **Prepare** for tomorrow's profit opportunities today at the all-new COMDEX Multimedia Showcase. Visit the companies producing the latest multimedia products and meet the developers making this exciting technology possible. This Showcase, as well as a dedicated Multimedia Conference program, is supported by IBM in cooperation with the Interactive Multimedia Association.

- **Network** with your colleagues, renew professional relationships and make important new business contacts.

- **Meet** international exhibitors and establish worldwide trade relationships at the U.S. Department of Commerce Foreign Buyer Program's most important trade event.

- **COMDEX/Fall '91** is your most important appointment of the year. To learn about special savings on airfare, hotels and car rentals, mail or fax this coupon today.

**COMDEX/Fall '91**

The International Trade Show for Computer Distribution Professionals

**OCTOBER 21–25, 1991**

**Las Vegas, Nevada USA**

**YES! I'm ready for new opportunities at COMDEX/Fall '91, October 21-25, 1991, in Las Vegas, Nevada USA**

Please send information about exhibiting.

**SUBMIT**

Mail to: COMDEX/Fall '91, 300 First Avenue, New York, NY 10010-4722

Fax: (617) 448-2674, Tele: 174273

COMPUTER INDUSTRY

CONTINUED FROM PAGE 65

man, for example, said the company has more economically pressing issues to handle. In the U.S., the South African subsidiary to a South African firm in 1988. It claimed that the subsidiary accounted for approximately 1% of its revenue at the time.

IBM, which currently has indirect ties to a former subsidiary sold to a trust controlled by South Africans, receives less than 1% of its income from business done through the trust.

If the spoils of doing business in South Africa have been meager, the problems have proved major. In addition to the federal sanctions, a steady stream of protest from consumers and stockholders who have ethical objections to supporting the South African government has worn the shine off of an investment that was not financially gainful to begin with.

Activists claim that even when federal sanctions were extant, companies found them easy to circumvent. "No affirmative-action moves could exempt a company," said Jerry Herman, Southern African-program coordinator for the American Friends Service Committee in Philadelphia. "For instance, adding a certain number of blacks to your board could get a company around the no-new-investment provision."

For companies that have grown tired of battling obstacles to claim a questionable reward, Washington's new view may not change the scenario appreciably. Although federal prohibitions are gone, companies still face a gamut of U.S. local and state sanctions. There is little sign that those will be rescinded. To the contrary, Herman said that recent revelations of secret South African government funding of the Inkatha Freedom Party — the primary native opponent to the African National Congress — could fuel more vigorous enforcement of the remaining laws.

Local sanctions have already affected computer companies. In October 1990, Dell stopped doing business through Incorporated Data Systems, a black-owned South African company, when the state of Michigan, the county of Los Angeles and the city of Pasadena, Calif., canceled their accounts with the personal computer vendor on grounds of the South African link. "Since then, we've been actively pursuing ways of doing business in accordance with state and local government restrictions," a spokesman said.

Despite the lack of enthusiasm for immediate resumption of full-scale South Africa operations, however, some computer companies have not entirely written the option out of their agendas. Wang and AT&T, for instance, are monitoring the political situation for future moves.

"Our presumption is that there is no need to resume business. At the same time, there's no denying that progress has been made in South Africa," an AT&T spokesman said.

"There are a number of significant and encouraging changes in South Africa, which we are watching closely," a Wang spokesman stated. Wang was found to be exporting to South Africa through a Florida firm in 1985 and 1986, despite a public claim that it had severed all ties to the country. Its current corporate policy forbids both exporting and selling to other companies that export to South Africa. "
Yes, I want $7,500 in free long distance service.


Return this coupon or call AT&T direct at: 1 800 247-1212, ext. 379.

Or fax this card to: 1 800 248-2492.
If we can't convince you to try AT&T MEGACOM WATS, maybe these guys can.

Your savings on AT&T MEGACOM WATS outbound long distance service can really add up.

Sign up before September 2, 1991 and you can get $7,500 (or seven Clevelands and a McKinley) in free long distance service.

We'll also waive about $2,100 (a couple of Clevelands and Grants) in installation and start-up costs.*

And after that, you'll keep on seeing more and more of these guys.

Because if your business spends $3,800 or more a month in outbound long distance, AT&T MEGACOM WATS gives you AT&T's biggest WATS savings over basic long distance rates.

Usage Volume discounts, Term Plans and Multi-Location WATS Calling Plans are available to save you even more.

And these savings are just part of the story. AT&T MEGACOM WATS gives you the advanced technology of digital access. Plus all the advantages of the AT&T network.

Still not convinced? Then use at least $2,500 a month in AT&T MEGACOM WATS Long Distance Service for six months. If you're not happy, we'll pay** to switch you back to whatever long distance service you're using now.

So call 1 800 267-1212, ext. 379. Or return the coupon.

And keep more of these guys right where you want them. In your pocket.

*Service must be installed by 11/1/91. Applies to new or increased Term Plan usage.

**To take place within 30 days after the 6-month usage requirement is fulfilled.
We’ve already sold more computers than most computer companies, installed more networks than most networking companies, and serviced more systems than most service companies.
On August 5, 1991, JWP Information Systems and Businessland made an announcement that will change the world of business computing. For the better.

Quite simply, they announced that they will join forces.

And two of the leading computer resellers, each with a profound dedication to customer satisfaction, will become one.

Namely, JWP Businessland.

It will be, by a wide margin, the world's largest company-owned provider of personal computer products, networks and support services.

One of the world's premier IBM Business Partners, JWP Businessland will deliver a broader range of quality products, a greater depth of technical expertise and a higher level of service and support than ever before. And given its size and influence, it will deliver better value than any of its competitors.

Moreover, JWP Businessland will be the strongest, most stable company in the business. It is a part of JWP INC., the world's largest technical services company, with $3 billion in sales and over 22,000 employees.

JWP Businessland.

If business computing is your business, we urge you to call us at 1-800-423-3414.

You'll find your future looks a great deal better than it did the day before yesterday.
Ross Systems buys into process manufacturing

BY NELL MARGOLIS CW STAFF

(REDAW CITY, Calif. — Ross Systems, Inc.’s acquisition of UK-based Pioneer Computer Group Ltd. early this month advanced the business software vendor’s expansion strategy on two key fronts.

Geographically, the $8.3 million stock swap gives Ross Systems a foothold in Europe.

Technologically, it vaults Ross Systems into the promising and thus far underpopulated process manufacturing software market.

Process manufacturers are looking to integrate control and process information with business and manufacturing planning functions, said Ross Systems Chief Executive Officer Dennis Vohs. Their search will fuel the process manufacturing software and services business to an estimated $4.7 billion by 1992, according to Mountain View, Calif.-based market research firm Input.

Pioneer’s Promix line, a targeted process manufacturing application series, is widely used among the company’s 300 customers. The product line is concentrated in the UK, New Zealand and Australia, but it is a newcomer to the U.S.

Pioneer’s Promix line, a targeted process manufacturing application series, is widely used among the company’s 300 customers. The product line is concentrated in the UK, New Zealand and Australia, but it is a newcomer to the U.S.

For Ross Systems, however, privately owned Pioneer, which Vohs said Ross Systems was able to pick up at “a reasonable price” in the recession-battered UK software market, has added appeal: Like its buyer, the British firm designs and markets software exclusively for the Digital Equipment Corp. platform. Both Promix and Pioneer’s Gembase relational fourth-generation language are specifically tailored to take advantage of DEC’s VAX and RDB, its relational database.

The Pioneer deal, which is expected to close by the end of this month, is Ross Systems’ third acquisition in the two years since it announced its intention to cut a swath across the DEC applications software market by acquisition as well as by internal development.

In 1989, Ross Systems bought distribution software provider Cardinal Data; in 1990, it added Argonaut Information Systems, which offers a suite of human resources applications.

Another First From Kelly.

If you have frequent, multiple or long-term requirements for data entry temporaries, our new Kelly® Customizer is ideal for meeting your needs.

By encrypting samples of your data entry screen and data entry forms on our proprietary Kelly Customizer training software, we can now assign you Kelly temporaries pretrained to handle your specific data entry formats.

Your Kelly data entry temporaries arrive on the job ready to work, not just ready to learn.

Call your local Kelly office for details.

INTERNATIONAL BRIEFS

Compaq attack

Compaq Computer Corp.’s recently established Japanese subsidiary, Compaq K.K., will begin to market its parent’s products in Japan during the first half of 1992. Compaq announced earlier this month the machines reportedly will incorporate dominant world standards and, therefore, will be IBM-compatible.

Analysts said they view the move as part of a multifaceted Compaq attack on Japan’s NEC Corp., which has stockpiled approximately half of the Japanese personal computer market with non-IBM-compatible computers.

ICL takes Soviet bet

International Computers Ltd. (ICL) has established a joint venture with Soviet mainframe manufacturer Kazan Manufacturing Enterprise of Computer Systems to market British-made computers in the Soviet Union. ICL reportedly has committed $1.7 million to capitalize the 100-employee venture, in which it will take a 60% stake.

Unix fix

The way to a German employer’s payroll these days is more likely to lie in Unix know-how than in abilities with MS-DOS, OS/2 or MVS, according to the Control Data Institute. Control Data, which studies job placement ads to assess demand, evaluated four German newspapers. Among its findings were a fall in information systems job placement ads — the first in four years — a rise in demand for Unix and a broad hint that data processing specialists who want work in Germany should be familiar with at least two programming languages, preferably Cobol and C.

Buy in Britain

Ottawa-based systems integration firm SHL Systemhouse, Inc. last week expanded its UK systems integration base with the acquisition of Camberly, Surrey-based network integrator Computer Marketing PLC. The purchase of the $60 million, 120-employee firm for an undisclosed sum is Systemhouse’s second UK buy. It is also recently appointed Chief Executive Officer John Oltman’s first marker on the European expansion trail he has stated will be an earmark of his administration.
BY JULIA KING

In 1985, former controller Dave Barany was quietly minding the debts and credits of Chicago-based Household International, Inc. when he was "drafted" to pinch-hit for the financial service company's departing senior vice president of technology.

"They wanted someone to watch the shop for six months until they could find a replacement," Barany recalls.

What was then a temporary assignment has evolved into a new career for Barany, who was appointed Household's corporate vice president and chief information officer a year ago.

Barany is just one of a growing number of professionals landing top information systems slots, thanks to academic credentials and on-the-job experience in corporate finance. These promotions demonstrate that a strong financial background coupled with a well-grounded understanding of a company's way of doing business often take precedence over technical skills.

To understand this shift, one need only consider the kinds of decisions facing today's IS executives. Issues such as outsourcing, re-engineering and downsizing all have huge financial implications.

Increasingly, it is these dollars-and-cents implications — rather than bits and bytes — that are of paramount concern to senior management.

"It executives have to know how to do more with less," says Benjamin Porter, a director at DMR Group, Inc., a Boston firm that specializes in measuring the value of IS investments. "There are fewer financial resources available to be spent on technology, so a financial background is absolutely critical for IS managers."

Add to this the growing numbers of technologically sophisticated company presidents and chief executive officers, Barany says, and it becomes virtually impossible for IS executives to function in their jobs without a firm base of financial knowledge.

"It used to be that the IS community could fend off senior management's requests for hard numbers about IS investments through technology subterfuge. IS managers would say they couldn't predict or estimate costs and benefits," Porter notes. "Now, by contrast, senior management, which is becoming increasingly computer literate, is demanding the same kind of rigorous financial accountability from IS organizations as it does from all other departments."

At Lucas Aerospace, Inc. in Cleveland, IS director Eric Hollenbach confirms this trend. Hollenbach's original IS budget of $3.5 million has already been returned to him twice, the last time with directions to pare it by another $600,000, and bring it in at an even $2 million.

"Every project I do is scrutinized, and there's a need to present tangible dollars-and-cents benefits — soft, subjective benefits such as improved productivity," Hollenbach says. "The pressure is there to understand the value of IS and to justify it."

While the IS community generally agrees that IS executives must possess financial acumen, one point that technology professionals have to go about acquiring the expertise crucial to a company's success.

Barany, a self-educated technologist with a business degree and a certified public accountant, had no background in technology, so he became virtually impossible to do business often take precedence over technical skills.

"As a banker, people in the DP department were always telling me they couldn't do things when I thought they could. Finally, they said, 'If you think you're so good at this, why don't you do it yourself?'

Now at Kemper's IS division for almost 10 years, Diaz maintains that the key to an IS executive's success lies in recognizing the relationships between IS and finance. "Because you are making capital expenditure decisions, you have to look at the life span of equipment, the impact on the balance sheet and whether you are better off leasing or buying," Diaz says.

Another way to acquire financial perspective is to rotate either through various departments of a firm or through different firms within the same industry, as did Sidney Diamond, vice president of worldwide information services at Black & Decker Corp. in Towson, Md.

Diamond, who holds degrees in accounting, marketing and business, began his career more than 20 years ago in marketing and product planning positions in the pharmaceutical industry. From these, he moved over to IS, eventually serving as IS director of the international group at Bristol-Myers Co. From Bristol-Myers, he was recruited three years ago to Black & Decker, which, like the pharmaceutical companies he worked for previously, is in the consumer goods business.

But overall, Diamond says, "There's no need to major in financial background coupled with a well-grounded understanding of a company's way of doing business often take precedence over technical skills."

The key to this success, he says, is that of technology.

"You have to have an understanding of return on investment and cash flow to help present your ideas."

Few, if any, companies strictly require that a senior IS executive hold a formal degree in either finance or computer science, according to Gary LaFave, manager of IS recruitment at Winter, Wyman & Co. in Boston.

However, during interviews, senior executives can expect to be quizzed on what savings they have put in place in the past, how they intend to track IS costs and how they will prepare IS budgets.

As a software consulting company, you can expect interviews within a team-oriented atmosphere. Our current hiring priorities include:

BUSINESS SOFTWARE PROFESSIONALS: (MILWAUKEE, MADISON, GREEN BAY AND APPLETON OPPORTUNITIES)
- SYNON + IMS DB/DC + DB2 + TELON

At CPU, you can expect a highly competitive salary and a superb benefits package which includes relocation assistance. Candidates interested in our Milwaukee, Madison, Green Bay and Appleton locations, send your resume in confidence or call: Bill Rdick or Julie Endrich at (414) 225-4000 or 1-800-527-4949. Computer People Unlimited, Dept. CW136, 744 N. 4th St., Milwaukee, WI 53203. An equal opportunity employer. No entry level positions available.

A STRONG FINANCIAL background coupled with a well-grounded understanding of a company's way of doing business often take precedence over technical skills.

To succeed in our business - you have to create long-term career advancement for your people. And to do that, you have to get to know them individually - and understand how to match their talents with a particular task. At Computer People Unlimited, Wisconsin's largest locally-owned software consulting company, you can expect individual recognition within a team-oriented atmosphere. Our current hiring priorities include:

BUSINESS SOFTWARE PROFESSIONALS: (MILWAUKEE, MADISON, GREEN BAY AND APPLETON OPPORTUNITIES)
- SYNON + IMS DB/DC + DB2 + TELON

At CPU, you can expect a highly competitive salary and a superb benefits package which includes relocation assistance. Candidates interested in our Milwaukee, Madison, Green Bay and Appleton locations, send your resume in confidence or call: Bill Ridd or Julie Endrich at (414) 225-4000 or 1-800-527-4949. Computer People Unlimited, Dept. CW136, 744 N. 4th St., Milwaukee, WI 53203. An equal opportunity employer. No entry level positions available.
Sharpen skills before you leap

Fast Track is a twice-monthly column dedicated to answering questions on career directions.

BY MAX MESSMER

I have a bachelor of arts degree in marketing and communications and have been employed for five years in a small supermarket chain in a point-of-sale function. How can I transfer my skills out of the retail area into an information systems department at a large firm?

W. B. Torrington, Conn.

If you want to move into a corporate environment, your best bet is to start developing the skills that are in demand there, mainly word processing, desktop publishing and office automation. This skill set is not available from your company, investigate the courses in your community at local junior colleges and vocational schools.

I'm Korean and do not know any English. I'd like to find an employer in the U.S. that will sponsor me. I speak English, French, Korean, Japanese and Chinese. I can handle financial analysis as well as IS-related work. Any suggestions?

Initials and town withheld

A People with a broad range of language skills are in high demand as companies expand internationally. Your problem is that few recruiting budgets can accommodate someone who just arrived in the U.S. that will sponsor you. Being bilingual can significantly increase your marketability. Your best bet is to start developing the skills that you will need in order to be interviewed by companies.

I have a seven-year veteran of IS with a master's degree in artificial intelligence. It seems to have problems in selling IS ideas, such as cost-benefit proposals, to my supervisors. What kind of position can I get where I'll be given the chance to cost-justify an idea?

G. H. Annandale, Va.

If you're not being recognized as a problem solver, you may not be presenting your ideas properly. It's much easier to sell your ideas when you can articulate the costs and benefits at the same time. The moment you identify a problem and a possible solution, spend some of your own time working through the options, costs, risks and benefits. When you propose the idea, present the rationale behind your suggestion and the results you expect to achieve.

If you decide to move on, be clear in your job search that you are seeking a position where you can be involved in problem solving and carrying out solutions.

Fast Track CAREER ADVICE FOR THE '90s

Q I'm employed by the U.S. Department of Defense and have a master's degree in computer information systems. I'd like to make a transition to software engineering or IS management at an international company. What's the best plan of action?

W. C. APO New York

Changing your location, your industry or your specialty can be difficult. It's often best to approach major change in a series of steps, perhaps changing specialties first, then getting to the right location and then changing industries as opportunity arises. Since there's still a large DOD presence in much of the world, you might first consider a transfer within the DOD in a position similar to ones you seek in the private sector.

Q I am employed by the U. S. Department of Defense and have a master's degree in artificial intelligence. It seems to have problems in selling IS ideas, such as cost-benefit proposals, to my supervisors. What kind of position can I get where I'll be given the chance to cost-justify an idea?

G. H. Annandale, Va.

A If you're not being recognized as a problem solver, you may not be presenting your ideas properly. It's much easier to sell your ideas when you can articulate the costs and benefits at the same time. The moment you identify a problem and a possible solution, spend some of your own time working through the options, costs, risks and benefits. When you propose the idea, present the rationale behind your suggestion and the results you expect to achieve.

If you decide to move on, be clear in your job search that you are seeking a position where you can be involved in problem solving and carrying out solutions.

Messner is chairman of Robert Half International, Inc.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 575 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-2001. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.

CA & AZ CONTRACTS

TANGEM CONTRACTING GROUP, 2 Paseo del Bosque, C. B. 42, 25010 COLOMBIA

TANGEM CONTRACTING GROUP

Call Irwin Whelan (718) 823-5522, ext. 20

Call Irwin, ext. 20

Call 212-616-4200

Call 212-616-4200

Call 212-616-4200

Computerworld, One Corporate Place, Box 221739, Attn: Rick Young, C.P.C.

Sunbelt Opportunities

TEURURIPRINCeIR.

KENTUCKY

Now is the time to enhance your career. Our clients have new and exciting openings for the following positions:

- DDB — Data Modelers & DBAs
- DBO — Application Programmers and Designers
- M/P — Application Programmers

FOR WINNERS ONLY!

Software Opportunities

Mechanical Computer Aided Engineer (MCAE) responsible for process and tooling development.

Job Snapshot is a monthly column identifying key attributes of information systems career positions.

Q JOB REQUIREMENTS: Ada employers — largely found in Department of Defense divisions — want as much technical depth and recent experience as they can get. In many ways, they are looking for the same skills that define general software engineers in general: Ada programmers need to be both methodical and able to step back and abstract the essence of a problem so that it can be reused in other applications. Practically, employers want knowledge of object-oriented methodologies, current tool sets, cost-estimation models and documentation standards for large-scale complex systems.

Q CAREER PLUSES: Those involved in the Ada field maintain there's a much greater sense of accomplishment to programming in Ada than in other languages because of the richness of the language: An Ada programmer can come back after six months and understand what's been written. Programmers also tend to gain a better knowledge of software engineering with Ada than with other languages. Reportedly, most programmers who switch to Ada don't want to go back to any other language.

Q BEST JOB OPPORTUNITIES: Ada programmers will have the best luck in regions of the country that have concentrated areas of Ada employers (a mix of DOD and commercial), such as Washington, D.C., and California, followed by the Southwest and the Northeast. Jobs with the government may mean better security and benefits but also more regimentation and less prestige and money. Non-DOD choices include the following: NASA and the Federal Aviation Administration, both with new projects starting up; Motorola, Inc. (in cellular phones); Xerox Corp. (in embedded software for copiers); Shell Oil Co.; and Wells Fargo & Co.

We welcome your questions. Send them to Cathy Duffy, CAREERS Fast Track, COMPUTERWORLD, 575 Cochituate Road, Framingham, Mass. 01701, or fax them to (508) 875-2001. Letters may be edited for brevity and clarity. Your initials and town will be printed unless you request otherwise.

SPECIAL TO CW

Adventures in Ada Programming

Ada programmers are involved in contract work for the Department of Defense, Wilson said, in such capacity as simulation, contractor support and research.

Ada is a general-purpose programming language developed by a working group of nations under the aegis of the European computer industry association, London. Ada is a superset of the programming language Pascal and a subset of the programming language C. Ada is the current successor to the programming language FORTRAN.

Ada offers a number of advantages over Pascal, C and other programming languages. Ada supports data abstraction, a concept that allows the programmer to define a package that hides the underlying implementation details of a system. Ada is also a statically typed language, which means that the compiler checks the data types of variables in the code and can detect errors such as an integer being added to a character.

Wilson said Ada is an attractive computer language because it is a multithreaded language, which means that it can be used to create programs that perform more than one thing at a time.

Ada also offers the programmer a number of tools for debugging and testing programs, including the Ada Development Environment (ADE), which is a user-friendly debugging and testing tool. ADE provides a graphical user interface that allows the programmer to step through the code and examine the state of the program.

Ada also offers a number of tools for debugging and testing programs, including the Ada Development Environment (ADE), which is a user-friendly debugging and testing tool. ADE provides a graphical user interface that allows the programmer to step through the code and examine the state of the program.

Ada offers a number of advantages over Pascal, C and other programming languages. Ada supports data abstraction, a concept that allows the programmer to define a package that hides the underlying implementation details of a system. Ada is also a statically typed language, which means that the compiler checks the data types of variables in the code and can detect errors such as an integer being added to a character.

Wilson said Ada is an attractive computer language because it is a multithreaded language, which means that it can be used to create programs that perform more than one thing at a time.

Ada also offers the programmer a number of tools for debugging and testing programs, including the Ada Development Environment (ADE), which is a user-friendly debugging and testing tool. ADE provides a graphical user interface that allows the programmer to step through the code and examine the state of the program.

Ada offers a number of advantages over Pascal, C and other programming languages. Ada supports data abstraction, a concept that allows the programmer to define a package that hides the underlying implementation details of a system. Ada is also a statically typed language, which means that the compiler checks the data types of variables in the code and can detect errors such as an integer being added to a character.

Wilson said Ada is an attractive computer language because it is a multithreaded language, which means that it can be used to create programs that perform more than one thing at a time.

Ada also offers the programmer a number of tools for debugging and testing programs, including the Ada Development Environment (ADE), which is a user-friendly debugging and testing tool. ADE provides a graphical user interface that allows the programmer to step through the code and examine the state of the program.
Computerworld gives its readers the most pertinent and frequent computer career information available in America. To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

When you compare costs and the people reached, Computerworld is the best newspaper for recruiting qualified computer professionals.

Place your call today!
Call toll-free 800-343-6474

Or in Mass 508/879-0700

ALLEGHENY HEALTH SERVICES INC.

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

Computerworld gives its readers important updates on today's computer skills and employment issues.

And it does this through special Computer Careers editorial that anchors Computerworld's recruitment advertising section every week. Whether it's informing IBM professionals on their career paths, or updating UNIX experts on what's ahead with their careers, Computerworld delivers the most pertinent and frequent computer career information available in America.

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD

Where qualified candidates look. Every week.

AUGUST 12, 1991
“...We must target our advertising dollars in top-quality publications. That makes Computerworld’s Campus Edition the right choice for AT&T.”

While its roots as a telecommunications company date back to the days of Alexander Graham Bell, AT&T, as it’s known today, is a state-of-the-art information management and movement company focusing on the integration of many forms of communication. Headquartered in New York City, this industry giant has branch offices in over 40 countries, sales offices in every state, and 273,600+ employees worldwide.

Typically ranking within the top five employers of new graduates every year, AT&T is a major force in college recruitment on campuses all across the country. As Gale Varma, Staff Manager/College Recruiting and University Relations, explains, “Computerworld’s Campus Recruitment Edition, with its underlying strength among college students, is a good bet for realizing top benefits for our advertising dollars.”

“Virtually every AT&T employee interfaces with a computer every day in some aspect of our diverse business. While we also look for students with liberal arts and business backgrounds, a sizeable number of our college intakes are for computer-related positions specifically. So we’re particularly interested in finding qualified computer science and engineering graduates trained as software developers, business programmers, systems analysts, computer technicians, and systems engineers, as well as hardware and software account executives. Given the current shortage of computer career students, Computerworld’s Campus Edition is a very viable way to reach quality people with specific computer education.”

“For us, the Annual Campus Edition Student Survey also serves as a valuable competitive benchmark. By showing the positive attributes of AT&T in relation to those of our competitors, we get a good sense of how AT&T is positioned with the student population. This feedback proves extremely helpful when assessing and developing our ongoing campus strategy.”

“The overall quality of Computerworld’s Campus Edition—its content, format, and distribution—tells us that Computerworld knows its student customer. Computerworld has clearly taken the time to identify key MIS/DP, computer science, engineering and placement faculty and staff at the best colleges and universities, both large and small, to ensure maximum reach to all the top computer career students.”

“Like all companies, we must target our advertising dollars in top-quality publications where our message gets read. That makes Computerworld’s Campus Edition the right choice for AT&T.”

Computerworld’s Campus Recruitment Edition. On October 31, 1991, this exclusive edition delivers your recruitment advertising message to 135,000 top students enrolled in top programs at leading colleges and universities. It’s a viable advertising vehicle for Gale Varma at AT&T. And it’s your best way to recruit America’s best computer career students. For all the facts, call John Corrigan, Vice President/Advertising Director, at 1-800-343-6474 (in MA, 508-879-0700).
More Special Reports!
51 Issues for $48

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues. That's a savings of over $9.00 off the basic subscription rate.

First Name
MI
Last Name
Title
Company
Address
City
State
Zip

--------------------------------------------------------

Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

BUSINESS/INDUSTRY (Circle one)
...

TITLE/FUNCTION (Circle one)
...

OTHER PROFESSIONALS
...

Computer Industry
...

COMPUTER INVOLVEMENT (Circle all that apply)
...

OTHER COMPANY MANAGEMENT
...

Please specify:
...

E4132-X

More Executive Reports!
51 Issues for $48

Yes, I want more. I accept your offer of $38.95 for 51 weekly issues. That's a savings of over $9.00 off the basic subscription rate.

First Name
MI
Last Name
Title
Company
Address
City
State
Zip

--------------------------------------------------------

Foreign orders must be prepaid in U.S. dollars.

Please complete the information below to qualify for this special rate.

BUSINESS/INDUSTRY (Circle one)
...

TITLE/FUNCTION (Circle one)
...

OTHER PROFESSIONALS
...

Computer Industry
...

COMPUTER INVOLVEMENT (Circle all that apply)
...

OTHER COMPANY MANAGEMENT
...

Please specify:
...

E4132-X
SAUDI ARAMCO

WHY ARE MORE PEOPLE INTERESTED IN WORKING FOR SAUDI ARAMCO NOW THAN EVER BEFORE?

The Saudi Arabian Oil Company (SAUDI ARAMCO) continues to provide challenging professional opportunities and a comfortable expatriate life for North Americans and their families. Never before has the interest in working for SAUDI ARAMCO been greater. We attribute this to a strengthening of the traditionally solid U.S./Saudi relationship since the recent Gulf Crisis, and to the publicity associated with jobs in the Middle East. When people research these positions, they discover that the benefits and expatriate lifestyle provided by SAUDI ARAMCO are second to none. That's why more people are interested in working for SAUDI ARAMCO now than ever before!

MESSAGE SYSTEM SWITCHING ANALYST

Requires a Bachelor's degree and 7 years' programming and networking experience with DEC/VAX products. Extensive working knowledge of store and forward Telnet messaging switching environments also required.

BUSINESS SYSTEMS ANALYST

Requires a Bachelor's in Electronics or Computer Science and 10 years' experience in programming/systems analysis and systems management of DEC PDP computers using RSX I M operating systems and DEC/VAX computing using VMS operating systems. Experience with VAX, Fortran, Oracle relational databases and VAX DEC/C also required. Extensive knowledge of data communications handlers and experience with VAXC and VAX macro desired.

The following positions require a Bachelor's in Physical Science, Computer Science, Engineering, Mathematics or Business Administration and experience on IBM 3090 hardware:

DATA BASE ANALYST

Requires a minimum of 7 years' experience in IMS, CICS, DBRC, ADF II and IBM DB2 Dictionary. Extensive knowledge in DBD and PSB control block generation, database design and database backup/restore using DBRC essential. Excellent technical writing skills desired.

SOFTWARE ENGNERED

Design and implement integrated geological data systems to support offshore drilling operations. Participate in data collection efforts, define data representations, implement systems analysis and design, define software architecture, design and implement application programs, analyze, evaluate and monitor performance of existing systems. Must have a B.S. degree in Computer Science, Geology, or related field and at least 5 years experience in computer software development. Salary up to $55,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

BUSINESS SYSTEMS ANALYST

Requires a minimum of 7 years' experience in IMS, CICS, DBRC, ADF II and IBM DB2 Dictionary. Extensive knowledge in DBD and PSB control block generation, database design and database backup/restore using DBRC essential. Excellent technical writing skills desired.

SOFTWARE ENGINEER

Design and implement integrated geological data systems to support offshore drilling operations. Participate in data collection efforts, define data representations, implement systems analysis and design, define software architecture, design and implement application programs, analyze, evaluate and monitor performance of existing systems. Must have a B.S. degree in Computer Science, Geology, or related field and at least 5 years experience in computer software development. Salary up to $55,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.

UNIX PROGRAMMER

Projects involves interface to computer systems and understanding of computer hardware and networks. Work will be primarily in a PDP 11/40 or other operating system environment. Develop, modify, and maintain programs and subroutines. Requires a B.S. degree in Computer Science, Mathematics, or equivalent plus 5 years experience in software development. Salary range is $35,000-$45,000. Please forward resumes to: Saudi Arabian Oil Company, Employment Department, P.O. Box 4530, Houston, Texas 77210-4530.
PHOTONICS COMPANIES — A survey of 378 small and medium-size high-tech firms involved in photonics finds that approximately one-fifth of them are experiencing employment growth.

Definitely a sophisticated DP HOGAN environment.

In data processing, there is no such thing as a permanent solution. Our technology and capabilities are constantly evolving. We need DP professionals, who enjoy working in a highly advanced DATA CENTER and can participate in keeping us on top. Our reputation as a financial leader depends on it.

HOGAN Programmer Analyst

You will maintain and support the Hogan systems. This will involve providing technical support in the analysis, design and development of documentation and developing complex programs using COBOL.

Position requires:
- 3-5 years Hogan experience with Deposits and/or the on-line Delivery system.
- Strong logical and structured analytical techniques and IMS skills.
- Strong COBOL programming skills.
- Knowledge of OS/390, VSAM, IBM Utilities, TSP1SF or ROSCOE.

Opportunity to learn:
- Great Western's Hogan environment.
- Testing Tools: Data Xpert and Xpeditor.
- Cross train on other systems within the section.
- Other in-house training opportunities.

Great Western offers competitive salaries, a great working environment and an excellent benefits package, including medical, dental, vision care, tax-saver accounts, retirement plans, saving incentive plans, loan discounts and more. For immediate consideration, please send your resume, with salary history, to: Great Western Employment Office, 19850 Plummer Street, 1st Floor, Chatsworth, CA 91311, Attn: Code: TH/HO. Equal Opportunity Employer.

Reputation is Everything.

Every week Computerworld delivers more qualified job candidates than any other newspaper.

That's why more companies place more recruitment advertising in Computerworld than in any other specialized business newspaper.

To place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).


An IDG Communications Publication
Career Opportunities for Data Processing Professionals

Basic American Medical, Inc., a publicly held chain of acute care hospitals, has several outstanding career opportunities immediately available in our centrally managed Hospital Data Processing Division in Ft. Myers, Florida.

- We are seeking the following Data Processing Professionals to direct and implement an aggressive conversion of TDS Healthcare Systems applications and McCormack & Dodge applications on a 3904 CPU supporting VM/ESA and VSE/SP. In addition, we are seeking individuals to support our current production 4300 CPUs supporting VM/SP and VSE. 1.35 during our conversion to an ES9000.

  **Systems Programmers**
  - 3904 - VMS/ESA, VSE/SP, VSE/VTAM, VM/VTAM, Dynamic/T and Raps
  - 3904 - VMS/ESA, VSE/ESA VTAM, CICS, Dynamic/T and Raps
  - ES9000 - VM/ESA, VSE/ESA/VTAM, CICS, Dynamic/T and Raps

- Personal Computer Technicians

  Previous hospital experience is preferred. We offer excellent potential to contribute and advance in our expanded data center facility along with excellent salary and benefits. Applicants for all positions should forward resume with salary history to Basic American Medical, Inc., Hospital Data Processing Division, Human Resources, 3955 Fowler Street, Ft. Myers, FL 33901-2694, (239) 939-5211.

- Administrator of Operations

  Programmer Analyst
  - 3431 with CICS, COBOL, VSAM, DOS JCL, VM, XEDIT

- Systems Programmers
  - 3904 - VMS/ESA, VSE/SP, VSE/VTAM, VM/VTAM, Dynamic/T and Raps
  - 3904 - VMS/ESA, VSE/ESA VTAM, CICS, Dynamic/T and Raps
  - ES9000 - VM/ESA, VSE/ESA/VTAM, CICS, Dynamic/T and Raps

- Personal Computer Technicians

  Previous hospital experience is preferred. We offer excellent potential to contribute and advance in our expanded data center facility along with excellent salary and benefits. Applicants for all positions should forward resume with salary history to Basic American Medical, Inc., Hospital Data Processing Division, Human Resources, 3955 Fowler Street, Ft. Myers, FL 33901-2694, (239) 939-5211.

**Systems & Computer Technology**

- The national leader in providing computing management services and applications software to clients in local government and higher education. We offer openings across the country for professionals with the following backgrounds:

  **DATA CENTER DIRECTORS**
  - Must have 5+ years experience with local government or higher education applications.

  **SYSTEMS PROGRAMMERS**
  - IBM Mainframe, MVS/ESA, VSE/SP, VSE/VTAM, VM/VTAM

  **DATABASE ADMINISTRATORS**
  - Oracle/SQL

  **SYSTEMS ANALYST**
  - Excellent interpersonal and written communication skills are essential, and JAD facilitation skills are highly desirable. Some task or project management experience is also desirable. A four-year degree is preferred.

**DATA COMMUNICATIONS ANALYST**

- Requires 1+ years experience in networking and data communications (e.g. network design, network management, and traffic analysis, etc.) in a multi-protocol environment (SNA, Token Ring, Ethernet). At least 2+ years experience in project management is also required. Must possess strong verbal and written communication skills. A four-year degree is preferred.

**LAN APPLICATIONS DEVELOPMENT**

- Requires 5+ years of experience in applications development or direct client support. At least 2+ years of experience in a multi-user PC-LAN environment. Working knowledge of 1 or more systems development methodologies is also required. Experience with database product evaluation and familiarity with database front-end development tools such as DBASE, FOXPRO, Q&A, SAS, FOCUS, ARTEMIS, DB2, and SQL Server(s) is desirable. Candidates must possess strong verbal and written communication skills. A four-year degree is preferred.

**SYSTEMS ANALYST**

- Requires 5+ years of experience in applications development or direct client support. At least 2+ years of experience in a multi-user PC-LAN environment. Working knowledge of 1 or more systems development methodologies is also required. Experience with database product evaluation and familiarity with database front-end development tools such as DBASE, FOXPRO, Q&A, SAS, FOCUS, ARTEMIS, DB2, and SQL Server(s) is desirable. Candidates must possess strong verbal and written communication skills. A four-year degree is preferred.

There are few areas in the country as attractive as the Carolinas. The landscape is famous for its rolling hills and magnificent fall colors. The capital city of Raleigh, location of our headquarters, is known for its nationally recognized university programs, sports and proximity to both beach and mountain resorts. Despite its growth, the region has maintained a moderate cost-of-living and its southern charm.

CP&L offers competitive salaries, excellent benefits, and opportunities to advance. If you’re interested in becoming part of our important team of professionals, send resume with salary requirements to: Mary Anne Lynch, Senior Recruitment Representative, Dept. CW1291, CAROLINA POWER & LIGHT COMPANY, P.O. Box 1561, Raleigh, NC 27602. An Equal Opportunity/Affirmative Action Employer.

**ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS**

For over two decades, Computerworld has delivered qualified job candidates to America’s employers.

And ever since Computerworld’s first weekly issue in 1967, America’s companies have relied on Computerworld to target America’s most qualified computer job candidates.

To place your ad regionally or nationally, call John Corri, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).
Leasing lesson: Think 'future'

Be sure to review leases periodically and check for flexibility factor

BY SUZANNE WEIXEL
SPECIAL TO CW

If information systems managers had crystal balls, leasing computer systems would be easy. They could forecast precisely which equipment they would need two years down the road, which applications they would be supporting and where they would be located. Then they could write a leasing contract with clauses for every addition and upgrade.

Unfortunately, without such magic, IS professionals are forced to rely on good planning and flexible leasing contracts.

A lease is a legal document, not something you can sign today and back out of in a year if your needs change, says Thomas J. Donovan, director of Technology Investment Strategies Inc., a consulting firm in Framingham, Mass. Building in as much flexibility as possible up front is the surest way to mitigate problems when changes do occur, Donovan advises. Also, knowing what is in the contract and reviewing it frequently should be part of every business’ planning, he says.

Eric Hollenbach, director of MIS at Lucas Aerospace Corp. in Cleveland, says he is frustrated by the six-month termination notice required by his leasing contract. He must decide whether to upgrade communications controllers and pay an early termination penalty or provide the notice and postpone the upgrade.

Hollenbach admits that if he had been more familiar with the specific terms of the contract or had reviewed it more regularly, he might not be in this position. He says he hopes in the future to keep the cancellation notice to no more than 30 days.

Less obvious changes should also prompt a contract review, Donovan says. For instance, if the data center is going to be relocated, the lease should be reviewed. Some leases have clauses that nullify the contract or charge penalties if the equipment is housed anywhere other than at the original address.

If there is a change in personnel at the executive level in information services, the new manager should immediately familiarize himself with the terms of the lease. Donovan claims he knows of companies where new managers have come in and sold off systems, never even knowing that they were leased.

Look over the lease

With most leasing contracts requiring anywhere from 30 to 120 days’ notice for changes or cancellations, the safest review policy would be every six months.

Penalties for missing a notification date range from preset penalty fees to a change in rates. At the end of the term of the lease, if a company fails to notify the lessor that the lease will be either extended or terminated, the lessor will probably assess an extension for an additional term. "If you’re not careful, you’ll end up in a new lease for another term without having the chance to renegotiate," Donovan says.

Continuance is the word Henry Weber, vice president of Schwarz Paper Co. in Morton Grove, Ill., uses to describe his contract review procedure. He says the company’s operations manager knows the lease inside and out, and every quarter, changes are made to make sure the contract fits the company’s business plan.

“We may be upgrading units, we may be swapping peripherals, but there is always something to adjust,” Weber says.

Many times, IS departments assume that someone else, either a finance department or a legal department, is monitoring the contract. Although it is important that both of those areas be involved in the lease arrangement, IS professionals should realize that those departments will most likely focus on costs and legality. It is up to IS to look out for the technology.

Weixel is a free-lance writer based in Framingham, Mass.

Contract clarity

A paperweight on the desk of Edward Barrows, director of the corporate data center at Occidental Petroleum Corp. in Tulsa, Okla., states: If it isn’t in the lease, it’s not in the deal.

That’s a warning IS directors would do well to heed when it comes to leasing computer systems. Here are some of the key terms and conditions to watch for in leasing contracts:

- Term, or length, of the contract.
- How much notice must be given to terminate the contract.
- How much notice must be given before changing equipment.
- The dollar amount of penalties for early termination.
- Restrictions on the manufacturer of parts or equipment.
- Option to sublease equipment.
- Option to change equipment.
- Option to change location.
- The ability to lock in a lease rate for future purchases.

Suzanne Weixel
The BoCoEx index on used computers
Closing prices report for the week ending August 2, 1991

<table>
<thead>
<tr>
<th>Closing price</th>
<th>Ask</th>
<th>Bid</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM PC Model 176</td>
<td>$200</td>
<td>$200</td>
</tr>
<tr>
<td>XT Model 680</td>
<td>$350</td>
<td>$350</td>
</tr>
<tr>
<td>AT Model 999</td>
<td>$600</td>
<td>$600</td>
</tr>
<tr>
<td>AT Model 239</td>
<td>$625</td>
<td>$625</td>
</tr>
<tr>
<td>AT Model 339</td>
<td>$775</td>
<td>$775</td>
</tr>
<tr>
<td>PS/2 Model 30-286</td>
<td>$1,150</td>
<td>$1,150</td>
</tr>
<tr>
<td>PS/2 Model 60</td>
<td>$1,150</td>
<td>$1,150</td>
</tr>
<tr>
<td>PS/2 Model 70P</td>
<td>$3,400</td>
<td>$3,400</td>
</tr>
<tr>
<td>Compaq Portable II</td>
<td>$700</td>
<td>$700</td>
</tr>
<tr>
<td>Portable 286</td>
<td>$1,100</td>
<td>$1,100</td>
</tr>
<tr>
<td>SLT 286</td>
<td>$1,700</td>
<td>$1,700</td>
</tr>
<tr>
<td>Portable 386</td>
<td>$1,900</td>
<td>$1,900</td>
</tr>
<tr>
<td>LITE 286</td>
<td>$1,900</td>
<td>$1,900</td>
</tr>
<tr>
<td>Deskpro 286</td>
<td>$600</td>
<td>$600</td>
</tr>
<tr>
<td>Deskpro 386/20</td>
<td>$2,150</td>
<td>$2,150</td>
</tr>
<tr>
<td>Apple Macintosh Plus</td>
<td>$750</td>
<td>$750</td>
</tr>
<tr>
<td>SE</td>
<td>$1,100</td>
<td>$1,100</td>
</tr>
<tr>
<td>IDX</td>
<td>$3,550</td>
<td>$3,550</td>
</tr>
<tr>
<td>ICI</td>
<td>$3,750</td>
<td>$3,750</td>
</tr>
<tr>
<td>IIPX</td>
<td>$5,300</td>
<td>$5,300</td>
</tr>
</tbody>
</table>
IBM AS/400 Automated Backup

SIMPLE - INTEGRATED - UNATTENDED
Integrated AS/400 media management, backup, and restore with Magna's OZONE: Menu-driven software in simple English (no extensive CL knowledge needed)
Unattended, automatic backup
On-line data-base tracks what, when, and where to restore
Full media management and tracking
CALL FOR FREE 14-DAY DEMO
Magna's OZONE Backup Software from:

 roulette software
1-800-223-9264
Authorized Magna Dealer

IBM AS/400

CLASSIFIED MARKETPLACE

WE BUY

- Data General
- Sun
- Data Products
- CDC
- PC Equipment

(617) 982-9664
FAX
(617) 871-4456

Classified Marketplace

needs only 3
days notice
to run your ad!
Call:

(800) 343-6474
(In MA. 508/879-0700)

To place your ad, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

Computerworld's Classified Marketplace penetrates computer using companies in all key industries. Because Computerworld's total audience blankets key vertical markets that are major users - and major buyers - of computer products and services.

Computerworld's Total Audience by Industry

<table>
<thead>
<tr>
<th>Category</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing Technology</td>
<td>76,021</td>
</tr>
<tr>
<td>Finance, Insurance, Real Estate</td>
<td>71,739</td>
</tr>
<tr>
<td>Education</td>
<td>56,145</td>
</tr>
<tr>
<td>Wholesale &amp; Retail Trade</td>
<td>38,827</td>
</tr>
<tr>
<td>Business Services (including ED)</td>
<td>45,526</td>
</tr>
<tr>
<td>Communications</td>
<td>42,761</td>
</tr>
<tr>
<td>Utilities</td>
<td>58,551</td>
</tr>
<tr>
<td>Construction, Petroleum &amp; Mining</td>
<td>17,568</td>
</tr>
<tr>
<td>Manufacturing of Computers &amp; peripherals</td>
<td>65,600</td>
</tr>
<tr>
<td>Business Services and Consulting</td>
<td>100,673</td>
</tr>
<tr>
<td>Computer Design, Electronic</td>
<td>18,699</td>
</tr>
<tr>
<td>Other</td>
<td>36,513</td>
</tr>
<tr>
<td>Total</td>
<td>639,204</td>
</tr>
</tbody>
</table>


Computerworld goes shopping in... classified marketplace

Go Shopping in... classified marketplace

It's the classified marketplace
Reach computer professionals where they shop for:

- Buy/Sell/Lease
- Conversions
- PC Rentals
- Software
- Peripherals/Supplies
- Communications
- Graphics/Display
- Publishing
- Time/Services
- Bids/Proposals/Real Estate
- Business Opportunity

629,000 IS/DP Professionals see the classified marketplace each week.

Call for advertising information:

(800) 343-6474 (In MA. 508/879-0700)
The Genix Group

At The Genix Group, we provide mainframe computer outsourcing solutions to major international clients. With computer facilities that are among the finest in the country, your data is secure, yet readily available to you. Our high-quality, cost-effective services include:

- Computer operations 7 days a week, 24 hours a day
- Network Management
- Electronic Printing

State-of-the-art

IBM compatibility:

- MVS/ESA * VM/XA * TSO/E
- RACF * CICS * IMS
- IDMS/R * DB2 * OM/TP
- PROFS

Programmer productivity aids:

- FILE-AID * CICS PLAYBACK
- ABAP-AD * ABEND-AID
- CICS ABEND-AID

(Preceding products are registered trademarks of Compuware Corporation.)

For more information, please call:

The Genix Group
5285 Auto Club Drive
Dearborn, Michigan 48126

1-800-521-0444

COST-EFFECTIVE COMPUTING SERVICES FOR TODAY AND.... TOMORROW

COMDISCO COMPUTING SERVICES CORP.

Provides you with REMOTE COMPUTER OUTSOURCING FACILITY MANAGEMENT.

Featuring:

- IBM® CPUs and Peripherals
- Systems Software: MVS/ESA, MVS/XA, TSO/E, ISPF/PDF, CICS, VM/XA, VM/SP, DOS/VSE, HPO, CMS
- Application Software: Database Management, Application Development, 4/6s, Graphics, Statistical Analysis
- Multiple Communications Methods
- Technical/Operations/Production Support
- Automated Tape Handling
- ULTRA-Secure Data Center
- Advanced Laser Printing
- Disaster Recovery Services

Call: Robert Marino
201-896-3011

4350 Gottlieb Parkway, Carlstadt, NJ 07072

Remote Computing

Go Shopping in... Computerworld's CLASSIFIED MARKETPLACE

Call for all the details

(800) 343-6474

In MA, (508) 879-0700

AUGUST 12, 1991
Spectrum Concepts, Inc. has grown over the past decade from a New York City based software consulting firm, to a leading supplier of communications software solutions worldwide. Its XCOM 6.2 software product set new standards for the industry when introduced in 1987, and continues to lead the way in LU 6.2 connectivity.

According to founder and president Alec Gindis, XCOM 6.2 provides off-the-shelf LU 6.2 communications among the industry’s widest range of platforms -- mainframes, minis, and PCs -- from such manufacturers as IBM, DEC, Data General, Sun, Stratus, Apple, and others.

"Rapidly increasing sales have shown us that both large and small organizations can benefit from our communications expertise. We offer them far-reaching solutions for applications like file transfer, task sharing, software distribution, transaction processing, automated backup, and more. Efficiently reaching prospects who have these needs has been essential to our growth.

"We value the way Computerworld Direct Response Cards help us focus on the people most likely to purchase our products: those with advanced, multi-platform data transfer needs. The cards give us the broadest reach to all the major players in the information systems industry.

"And Computerworld Direct Response Cards consistently have provided the lowest cost per lead of any of the media we’ve used. In fact, we receive hundreds of high-quality leads from every card we run. With very measurable results, Computerworld Direct Response Cards provide substantial lead generation for direct use by our sales force.

"Unlike many other cards, Computerworld Direct Response Cards also offer the opportunity to do ‘split testing.’ They allow us to test alternative marketing strategies scientifically, or validate approaches we already use."

Computerworld Direct Response Cards give you a cost-effective way to reach Computerworld’s powerful buying audience of over 135,000 computer professionals. Every month. They’re working for Spectrum Concepts, Inc. -- and they can work for you. Call Norma Tamburino, National Account Manager, Computerworld Direct Response Card, at 201/587-0050 to reserve your space today.

--Alec Gindis
President
Spectrum Concepts, Inc.
ADVERTISERS INDEX

Anacomp..................................................................................46
Ashland-Tate........................................................................44-45
AT&T Business Communications Services..........................69-70
AT&T Telecommunications..............................................55-57
Avater Corp...........................................................................63

BMC Software.........................................................................24

Candle Corp............................................................................9

CND On-Line Systems..........................................................25

Cognos Corp...........................................................................30

Data General..........................................................................50-51

DCA.......................................................................................C

Digital Equipment Corp......................................................40-41, 66-67

Eastman Kodak........................................................................64

Goal Systems..........................................................................10

Harris Corp.............................................................................14

 Hewlett-Packard....................................................................13-13, 32-33

IDC-IDG..................................................................................47

Informix...................................................................................C4

Interface Group.......................................................................68

Intersolv..................................................................................22

IS in Europe Supplement/IBM............................................46-47

Kelly Services..........................................................................72

Knowledgeware......................................................................18-19

Micro Focus............................................................................31

Microsoft................................................................................42

Microcom................................................................................42

MultiTech Systems..................................................................48

Nantucket..............................................................................29

Napersoft................................................................................23

Network Systems.....................................................................39

New Generation Software....................................................58

Oracle Corp...............................................................................5

Peregine Systems.....................................................................60

PowerSoft................................................................................59

SAS Institute...........................................................................11, 34

Softline...................................................................................36-37

Sun Microsystems....................................................................26-27

Sybase, Inc................................................................................7

Synconcept..............................................................................22

Universal Data Systems..........................................................16

U.S. Robotics...........................................................................10

XDR.........................................................................................35

Have A Problem With Your Subscription?
We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:
COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help
us by attaching your magazine label here, or copy your name, address, and coded line it appears
on your label. Send this along with your correspondence.

Address Changes or Other Changes to
Your Subscription
All address changes, title changes, etc. should be accompanied by your address label, if possible,
or by a copy of the information which appears
on the label, including the coded line. Please
allow six weeks for processing time.

Your New Address Goes Here

Name

Company

City

State

Zip

Address shown: Days Home  Business

Other Questions and Problems
It is better to write us questions or problems about your magazine and include the magazine
label. Also, address changes are handled more efficiently by mail. However, you
should try to reach us quickly the following toll-free number is available:
1-800-669-1002

Outside U.S. call (617) 362-3032

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.
INDUSTRY ALMANAC

RECOMMENDATION CHANGES
DOWNGRADED FROM HOLD TO SELL: Mips Computer Systems, Inc. (Prudential Securities, Inc.). Company has taken a necessary first step in a financial overhaul by announcing a restructuring charge along with its recent quarterly earnings; earnings will be weak for several quarters.

DOWNGRADED FROM STRONG BUY TO BUY: Convex Computer Corp. (Alex. Brown & Sons, Inc.). Transition from C2 to new C3 series supercomputers is taking longer than anticipated, which has cut into expected sales; next quarter will likely be a loss. However, Convex has overcome the technical deficiency issues it once faced and now must only secure enough BiCMOS and gallium arsenide parts to ramp up production.

UPGRADED FROM BUY TO STRONG BUY: Pictetcorp. (Alex. Brown). Company's 41% leap in quarterly sales proves the videoconferencing market is quite attractive. Pictetcorp's market share has increased and low prices will continue to stimulate demand into 1992; just announced low-end products should do especially well.

UPGRADED FROM OUTPERFORM TO BUY: Xinlinx, Inc. (Shearson Lehman Brothers, Inc.). Chip stocks are on the verge of a big rally, and Xinlinx should be a core holding. While other semiconductor makers specialize — and are therefore more at risk in a down market — Xinlinx sells programmable gate arrays, which are essentially blank chips that other companies customize. Xinlinx stock currently trades in the mid-20s but could zoom to 35 within 18 months.

UPGRADED FROM MARKET PERFORMER TO OUTPERFORM: Octel Communications Corp. (Montgomery Securities). Fiscal fourth-quarter sales surpassed estimates, driven by well-planned year-end promotions for computer equipment and strong sales in Octel's telephone equipment division. A new voice-mail utility, which incorporates interactive voice response, fax and electronic mail functions, generated much customer interest and should bring in significant revenue in fiscal 1992.

GUEST SPEAKER
Jeff Canin, analyst at Montgomery Securities in San Francisco, on Sun Microsystems, Inc.:

Note: Sun reported fiscal fourth-quarter sales of $342.5 million, up 35% from $250 million for the corresponding period last year; net income for the quarter also increased 35%, to $66.4 million from $49 million.

"Sun's financials beat our estimates slightly. The most pleasant surprise was that gross margins improved on those posted in the prior two quarters.

"The company stated that the seasonality of the computer business might take a toll in the next quarter. I think the going might get a little tough if Hewlett-Packard Co. and other competitors lower prices on their RISC machines. But it's hard for me to envision Sun losing its No. 1 position in the workstation market anytime soon.

"Sun has a bulletproof balance sheet. We currently rate the stock a 'buy.' We are cautious right now, though, and might lower it to 'neutral' if the stock really runs up after these good financial results come out. That reduction would be purely a matter of valuation and not a reflection on the company itself."

KIM S. NASH

STOCKS

STOCK TRADING INDEX

CLOSING PRICES FRIDAY, AUGUST 9, 1991

UPGRADED FROM BUY TO STRONG BUY:

- Dell Computer Corp.
- Delphi Computer Corp.
- Digital Equipment Corp.

DOWNGRADED FROM STRONG BUY TO BUY:

- American Software Inc.
- Broadview Technology Corp.
- Convex Computer Corp.
- Delphi Computer Corp.
- Integrated Systems, Inc.

RECOMMENDATION CHANGES

- Advanced Micro Devices Inc.
- Altera Corp.
- American Robotics, Inc.
- Apple Computer, Inc.
- Avantek, Inc.
- Axiom Computer Systems, Inc.
- Compaq Computer Corp.
- Convex Computer Corp.
- Digital Equipment Corp.
- Ethix, Inc.
- Fujitsu Technology Commn.
- Gateway 2000, Inc.
- IBM Corp.
- Intel Corp.
- Inmos Corp.
- International Business Machines Corp.
- Integrated Systems, Inc.
- Lincoln Electric, Inc.
- Matra Datacom, Inc.
- Phoenix Technologies, Ltd.
- Radionics, Inc.
- Rockwell International Corp.
- Storage Technology Corp.
- Sykes Technology Corp.
- Texas Instruments
- Unisys Corp.
- Unisys Computer Systems
- Wang Labs, Inc.
- Western Digital Corp.
- Xerox Corp.

STOCK TRADING INDEX

TOP PERCENT GAINERS

- Digital Equipment Corp.
- American Software Inc.
- Compaq Computer Corp.
- Convex Computer Corp.
- Integrated Systems, Inc.

TOP PERCENT LOSERS

- Automatic Data Processing
- BBS Systems Inc.
- Boss Software Inc.
- Data General Corp.
- Digital Equipment Corp.
- Lotus Development Corp.
- Matsushita Electronics Corp.
- Microsoft Corp.
- Nixdorf Computer Corp.
- Sun Microsystems Inc.
- Sykes Technology Corp.

STOCK TRADING INDEX

TOP GAINER

- Digital Equipment Corp.
- American Software Inc.
- Compaq Computer Corp.
- Convex Computer Corp.
- Integrated Systems, Inc.

TOP LOSER

- Automatic Data Processing
- BBS Systems Inc.
- Boss Software Inc.
- Data General Corp.
- Digital Equipment Corp.
- Lotus Development Corp.
- Matsushita Electronics Corp.
- Microsoft Corp.
- Nixdorf Computer Corp.
- Sun Microsystems Inc.
- Sykes Technology Corp.

STOCKS

CLOSING PRICES FRIDAY, AUGUST 9, 1991

S&P 500

STOCK TRADING INDEX

GUEST SPEAKER

This information is obtained from sources believed to be reliable, but cannot be guaranteed to be completely accurate. The stock values are subject to change without notice.
IBM's outsourcing unit scores

BY CLINTON WILDER
CW STAFF

TARRYTOWN, N.Y. — IBM's outsourcing subsidiary scored three impressive victories last week, helping to rebuild its momentum as an outsourcing player to be reckoned with after a slow 1990.

In the most extensive of three deals that an IBM spokesman said are worth "several hundred million dollars," IBM's Integrated Systems Solutions Corp. (ISSC) will provide extensive applications development work as well as mainframe processing to Supermarkets General Corp. of Woodbridge, N.J.

Software development has long been the province of outsourcing competitors Electronic Data Systems Corp. and Andersen Consulting, but the spin-off of IBM's outsourcing business into ISSC in May freed IBM to offer services. Before that, IBM said such services might have run afoul of the 1956 Consent Decree imposing limits on IBM's business.

The other two contracts call for ISSC to provide processing and disaster-recovery services to Dallas-based grocery and drug store chain Cullum Cos. and San Francisco-based shipping firm Matson Navigation Co. In all three deals, the customer will shut down its mainframes and run data at a remote ISSC site.

"We're pretty confident in this decision," said James Dawson, senior vice president of administration and systems at Cullum. "I don't know why, but you just get a little more confidence with IBM."

ISSC will hire 150 of Supermarkets General's 175 information systems employees, its largest employee transfer since the landmark IBM/Esriksen Koeki Co. contract of 1989. The other 25 employees will remain at Supermarkets General.

The wide-ranging contract with Supermarkets General calls for ISSC to develop business, purchase, and mainframe processing and in-store applications; revamp point-of-sale and scanning technologies; and provide electronic data interchange links with suppliers.

"We know what we need, but [ISSC] knows how to write code and get it down to implementable form," said Harvey Gutman, president of retail development at Supermarkets General.

The $6 billion grocery chain, owner of Pathmark and other stores, will shut down its 3084Q and 3081K mainframes in Woodbridge and transfer processing to an ISSC data center in Dayton, N.J. A source close to the company said EIS had bid for the contract.

Under the 10-year contract, Cullum will also upgrade its systems, scrapping its 4381 running DOS/VSE under VM to run its applications on an Enterprise System/39000 at an ISSC data center in Lexington, Ky.

Matson Navigation will move processing from its 3090 Model 180S in San Francisco to ISSC's data center in Boulder, Colo. "We just don't consider processing to be strategic, so we were looking for a more cost-effective approach with a third party," said Dale Hendler, vice president of corporate development.

No Matson employees will go to ISSC, but the firm eliminated approximately 12 positions by outsourcing, a spokesman said.

ISSC deals

SUPERMARKETS GENERAL CORP.
Woodbridge, N.J.-based grocery store chain
1990 revenues: $6.1 billion.
Terms: Processing transferred to Dayton, N.J.; ISSC to hire 150 IS employees; provide operations, applications development and other services.

CULLUM COS.
Dallas-based grocery/drug store chain
1990 revenues: $1 billion.
Terms: Processing transferred to Lexington, Ky.; ISSC to provide operations, disaster recovery and order-entry support.

MATSON NAVIGATION CO.
San Francisco-based shipping firm
1990 revenues: $550 million.
Terms: Processing transferred to Boulder, Colo.; ISSC to provide operations, network support and disaster recovery.

Moves stir speculation on Prime's future

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — A cloud of unrest hanging over Prime Computer, Inc. for several weeks took some shape last week. Prime announced high-level management changes that insiders say will lead to an imminent separation of the Computervision unit from the company and from the traditional Prime minicomputer division.

Richard B. Snyder, president of Prime's Computervision Systems Business Unit, was replaced by Neil McMullan, formerly managing director of Swiss-Belley. Sidiary. Snyder will take on more of a development-oriented role involving the 50 series processors, on which McMullan is likely to focus on improving customer relations.

In a change of command occurs a time when the financially troubled company is the subject of industry speculation about a possible merger or acquisition. Analysts have also suggested that the privately held company may be preparing to go public.

Prime is owned by venture capitalist J. H. Whitney, which rescued it in 1989 from a hostile takeover attempt by MAI Basic Four, Inc.

Bruce Jenkins, vice president at Dartech, Inc., a Cambridge, Mass.-based consulting firm, said the change may have been discussed by Whitney's Whiskey River. Jenkins added that he was surprised at the appointment of Prime's new executive vice president, Neil McMullan.

"I'm here to do some things with the European and Asian marketplace to put more focus on Prime customers," McMullan said. "That's my ultimate choice was to take the company public again."

McMullan denied speculation that his appointment was a prelude to scale-down of operations in Europe and Asia.

"We're pretty confident in this decision," said James Dawson, senior vice president of administration and systems at Cullum. "I don't know why, but you just get a little more confidence with IBM."

ISSC will hire 150 of Supermarkets General's 175 information systems employees, its largest employee transfer since the landmark IBM/Esriksen Koeki Co. contract of 1989. The other 25 employees will remain at Supermarkets General.

The wide-ranging contract with Supermarkets General calls for ISSC to develop business, purchase, and mainframe processing and in-store applications; revamp point-of-sale and scanning technologies; and provide electronic data interchange links with suppliers.

"We know what we need, but [ISSC] knows how to write code and get it down to implementable form," said Harvey Gutman, president of retail development at Supermarkets General.

The $6 billion grocery chain, owner of Pathmark and other stores, will shut down its 3084Q and 3081K mainframes in Woodbridge and transfer processing to an ISSC data center in Dayton, N.J. A source close to the company said EIS had bid for the contract.

Under the 10-year contract, Cullum will also upgrade its systems, scrapping its 4381 running DOS/VSE under VM to run its applications on an Enterprise System/39000 at an ISSC data center in Lexington, Ky.

Matson Navigation will move processing from its 3090 Model 180S in San Francisco to ISSC's data center in Boulder, Colo. "We just don't consider processing to be strategic, so we were looking for a more cost-effective approach with a third party," said Dale Hendler, vice president of corporate development.

No Matson employees will go to ISSC, but the firm eliminated approximately 12 positions by outsourcing, a spokesman said.

ISSC deals

SUPERMARKETS GENERAL CORP.
Woodbridge, N.J.-based grocery store chain
1990 revenues: $6.1 billion.
Terms: Processing transferred to Dayton, N.J.; ISSC to hire 150 IS employees; provide operations, applications development and other services.

CULLUM COS.
Dallas-based grocery/drug store chain
1990 revenues: $1 billion.
Terms: Processing transferred to Lexington, Ky.; ISSC to provide operations, disaster recovery and order-entry support.

MATSON NAVIGATION CO.
San Francisco-based shipping firm
1990 revenues: $550 million.
Terms: Processing transferred to Boulder, Colo.; ISSC to provide operations, network support and disaster recovery.

NEWS SHORTS

Intel networking splash due

Intel Corp. is getting serious about networking. A source within the company said Intel will introduce 23 communications products — hardware and software — on Sept. 4. Another source expects a lot of leading-edge and aggressively priced products. Other sources briefed by Intel said the emphasis is being placed on network management down to the client level, with the ability to pinpoint problems. Also expected by some is a sort of dual-purpose board, featuring either support for No.

D&B Software adds groupware

Continuing on its charted course to provide client/server products to its customers by year's end, Dun & Bradstreet Software announced last week that it has acquired the rights to the Wijt user-enabling groupware. The technology will be incorporated into the D&B Software client/server products, and it will enable users to automate front-office functions. The Wijt application was developed by John Landry, D&B Software's Executive Vice President, prior to his joining the company. He developed the application in conjunction with Thomas Malone, a professor at MIT.

Keeping information handy

Atlanta's space shuttle astronauts circling the globe last week were assisted by Wristmacs, digital wristwatches that store and display mission information that has been downloaded from Apple Computer, Inc. Macintosh computers. The watches, which were programmed prior to launching, alert the crew to Earth observation photo opportunities. They can also be updated during the flight by radio link to a portable Macintosh on the shuttle. Wristmacs are produced by New York-based Ex Machina, Inc.

Staff cut at Software Publishing

Software Publishing Corp. has announced a 6% cut in its worldwide workforce. Approximately 45 employees were released last week from the Mountain View, Calif., personal computer software vendor. The cut was made because of a recent corporate reorganization and unexpectedly slow revenue growth, according to the company.

Airline price-fixing suit expanded

A major antitrust suit, which alleges that nine U.S. airlines have used an electronic tariff database to engage in price-fixing, got even bigger last week. U.S. District Judge Marvin H. Shoob in Atlanta agreed to turn the 1990 suit filed by some 40 individuals and businesses into a class-action suit that covers approximately 12.5 million airline passengers. Edward Kragman, an attorney for Delta Airlines, Inc., said that the action makes the suit "unmanageable as well as unfounded." So far, the United States Department of Justice's study of possible price-signaling on the tariff database has reached no conclusions [CW, June 9].

Equitable's loss is Macmillan's gain

Louis B. Hughes, formerly senior vice president for information technology at the Equitable Insurance Cos. in New York, has joined The Macmillan Co., a New York-based publishing and information services concern. Among Macmillan's products is the Official Airline Guide. "It was an outstanding opportunity," said Hughes, who works at Macmillan's executive offices in Greenwich, Conn.

BIS names Bear as new chief

BIS Strategic Decisions will be working in a perpetual bear market with the appointment of John P. Bear as president and chief executive officer. Bear will take over from Charles A. Pesko Jr., who founded the Norwell, Mass.-based research firm in 1979. Pesko will continue as a member of the board of directors.
Communications Processors and the open systems emphasis

Unisys opens net management

Unisys opens out on Open Systems Initiative... but still strings networking.

networking. In its first release, Common Network Management System (CNMS) Release 1 will be able to control Unisys' proprietary DCA protocol. A version able to manage TCP/IP networks will be announced in December.

Two in the bag

I t was a welcome week of good news for Unisys. The struggling company won both a $275 million contract with the Federal Aviation Administration to upgrade air traffic control systems at FAA sites nationwide and an award to supply Kmart Corp. with 1,500 Unix servers.

The FAA deal, signed with a part of Unisys' Defense Systems Group, is an extension of the $45 million contract signed with the FAA in September 1989 for the Automated Radar Terminal System, or ARTS IIIA.

Unisys Defense Systems also won an $87.7 million contract with the FAA to place upgraded air traffic control systems at 130 small and midsize airports.

At Troy, Mich.-based Kmart, Unisys retained its role as supplier of the retail giant's in-store Unix processors for its Kmart Information Network II, known as KIN II. KIN II is already deployed nearly 600 of the initial 1,000 systems it bought from Unisys last year. Unisys will install up to 2,000 of its U6000/655 multiprocessor systems by the end of 1992.

Elliott Booker

SQL rewrite FROM PAGE 1

SQL*Net product faces beta tests at user sites. However, one person who has not done much effort said the original plan was for a mid-September debut.

Users at some large Oracle shops have been expecting the revised SQL*Net code to arrive before Oracle Version 7.0 starts to ship. However, the new version would have to support Version 7.0's distributed database architecture. The same users said they expect Oracle to announce that Version 7.0 has entered the beta-test phase at the National Oracle User Group meeting in Miami, which starts Sept. 29. Oracle spokespeople would not comment on the SQL*Net announcement.

SQL*Net allows multiple copies of the Oracle relational database to communicate over enterprise-wide networks, even connecting Oracle databases that run on different types of computer hardware. Users said that when SQL*Net is working well, it can be like flipping a light switch. When it does not work well, users said, it can drag system performance down noticeably.

One user is particularly interested in talking about SQL*Net. Chicago Syslink, run by Bruce's Bar and Grill, in Littleton, Colo. He estimated that near-ly all of his 300 to 400 registered users make toll calls to receive Grateful Dead tour information and discuss Deadhead topics.

People often graduate to using small bulletin boards after cutting their teeth on large systems such as Prodigy and CompuServe. Rickard said. Then, too, there is the cost. "The classic is the House of Flyin' Bites and Hops on Compuserve, and there's a fight on the front home board. They move to bulletin board systems," he said.

As hardware prices drop, setting up a board will become less expensive, which should encourage the creation of even more boards. Even now, a board can be up and running on as little as an IBM PC XT-compatible, a 2,400 bit/sec modem, a phone line and some bulletin board software — all of which could be purchased for $600 or less.

-1-

Grateful Dead information

Treasure hunting, metal detecting

Bird-watchers

Magazine, Littleton

Currents in Bulletin board names

-1-

CNMS Release 1 will be available in December. A typical system configuration costs approximately $144,000, plus about the same for both hardware and software. Release 2, which adds Simple Network Management Protocol support, is set to be announced in 1992.

Elliott Booker

Software upgrade provides 1100/2200 with native OSI, TCP/IP support

BY ELLIS BOOKER CW STAFF

BLUE BELL, Pa. — Pressed by a Federal Aviation Administration decision and the open systems emphasis of its own enterprise-wide computing architecture outlined last year, Unisys is providing more incentive for delivering innovative open systems.

Last week, the topic was networking.

Unisys unveiled software that brings native Open Systems Interconnect (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) support to its 1100/2200 series mainframes and communications processors.

The company also announced a Unix-based network management system that complies with the OSI model.

While Unisys' Distributed Communications Protocols (DCP) have supported TCP/IP for some time, they have done so through gateways, converting between open protocols and Unisys' proprietary Distributed Communications Architecture (DCA) networking scheme. The new version eliminates that extra processing.

Significantly for users, the OSI TCP/IP dca protocols DCA sessions can share a single physical channel. In addition, a new communications product for Unisys' DCAs enables them to act as X.25 packet switches, with other X.25 devices attached to them.

Both pieces of communications software will be included in the basic software on the 2200 mainframe and the DCP. Previously, such enhancements were sold as separate products. However, the X.25 product is still extra, priced at $2,630 to $7,970.

SQL rewrite FROM PAGE 1

SQL*Net product faces beta tests at user sites. However, one person who has not done much effort said the original plan was for a mid-September debut.

Users at some large Oracle shops have been expecting the revised SQL*Net code to arrive before Oracle Version 7.0 starts to ship. However, the new version would have to support Version 7.0's distributed database architecture. The same users said they expect Oracle to announce that Version 7.0 has entered the beta-test phase at the National Oracle User Group meeting in Miami, which starts Sept. 29. Oracle spokespeople would not comment on the SQL*Net announcement.

SQL*Net allows multiple copies of the Oracle relational database to communicate over enterprise-wide networks, even connecting Oracle databases that run on different types of computer hardware. Users said that when SQL*Net is working well, it can be like flipping a light switch. When it does not work well, users said, it can drag system performance down noticeably.

One user is particularly interested in talking about SQL*Net. Chicago Syslink, run by Bruce's Bar and Grill, in Littleton, Colo. He estimated that nearly all of his 300 to 400 registered users make toll calls to receive Grateful Dead tour information and discuss Deadhead topics.

People often graduate to using small bulletin boards after cutting their teeth on large systems such as Prodigy and CompuServe. Rickard said. Then, too, there is the cost. "The classic is the House of Flyin' Bites and Hops on CompuServe, and there's a fight on the front home board. They move to bulletin board systems," he said.

As hardware prices drop, setting up a board will become less expensive, which should encourage the creation of even more boards. Even now, a board can be up and running on as little as an IBM PC XT-compatible, a 2,400 bit/sec modem, a phone line and some bulletin board software — all of which could be purchased for $600 or less.

-1-

Grateful Dead information

Treasure hunting, metal detecting

Bird-watchers

Magazine, Littleton
Healthy Storage Tek buys into midrange

BY ELLIS BOOKER
CW STAFF

LOUISVILLE, Colo. — Storage Technology Corp., seemingly

July 22.

Healthy Storage Tek buys into midrange

million in stock.

atives said. Recently, the 19-

made abundantly clear its desire

form of a trained 120-person

et into the midrange.

18 months, Storage Tek execu-

lion IBM midrange market in the

mediate presence in the $20 bil-

turn to financial health.

resellers said.

DEC war

FROM PAGE 1

resellers said.

"What used to be a reason-

able path for upgrade is now

iced at a premium," said Andy

Minnetonka, Minn.

lowed us to operate," said C. D.

"We have kept the minimum

federal bankruptcy court here
decides which of several reorga-
nization plans submitted by Pan

is best for the failing compa-

ny, he added.

“There’s no guarantee Delta

will take on those people,” Law-

rence said. The court and a com-

mittee of Pan Am’s creditors are
expected to decide today which
plan to accept.

Pan Am filed for Chapter 11

base in late January. Since then,

company has accepted prelimi-
nary agreements with United Air-

tines, a di-

meter of Delta’s long-haul

ogative contract that was

n to keep its network above water.

would be bid off by

to sell various foreign and
domestic flight routes.

on a Pan Am-sponsored job fair
to be held at company headquar-
ters here Wednesday, according
to Lawrence. He acknowledged
the participation companies.

In East Greenwich, R.I., was

one who ran afoul of Pan Am’s

by upgrading through a third part-

rather than DEC, "We had a big

up of all 22,000 workers. Accord-

ing to Lawrence, personnel were

fied under charge for an upgrad-

VMS license on used ma-

Jim S. Nash

CFW STAFF

NEW YORK — Although Pan

American World Airways laid off

more than 60% of its 500-person

information systems work force

last week, daily operations at the

tanostrated airline will not be

during the five-month-old Pan

vice president of IS.

"We have kept the minimum

people to continue smooth op-

ations," Lawrence said.

Under a business plan an-

last week, Pan Am cut

approximately 25% of its total

staff of 22,000 workers. Accord-

ing to Lawrence, personnel were

fied under charge for an upgrad-

VMS license on used ma-

"We believe there will be a

proper DEC licensing

paperwork — a process that is

uppose to take two weeks.

DEC officials responded last week

that such delays were rare and

were sometimes the fault of the
dealers as well.

In the $25 billion used-equip-

ment market for all computer

vendors, DEC goods account for

a 2.7% segment worth about

$2.4 billion, according to figures

compiled by Gartner Group, Inc.

and the Computer Dealers and

Lessor Association. Annually, the

trading activity in used DEC equip-

ment is worth about $700 million, Gartner esti-

ated.

When a customer upgrades
directly through DEC, as the ma-

jority of users still do, the up-

grade price bundles the hard-

ware and operating system cost.

Only customers upgrading through

the secondary market would pay

DEC the VMS up-

grade prices posted on the Elec-

tronic Store.

The plummeting value of

used VAX 6000s is a "com-

bination of aggressive discounting

by DEC and upgrade prices that

make it unattractive to upgrade

via the secondary market," said

Karl Knily, an analyst at

Technology Investment Strate-

gies Corp., in Framingham, Mass. "For users trying to un-

load equipment, that’s bad

news."

For those in the market to

buy, however, the story

changes.

"This value decline is pure

good news for users, particularly

for those who are committed to

DEC platforms for the long-
term," said Mark Specker, a se-

ior research analyst at Stan-

ford, said, "We are in fact cov-

erting our formed in a code-named

"Iceberg," which will include

a complementary version for

midrange environments, a Stor-

age Tek spokesman said.

A Storage Tek spokesman

said the deal moves the com-

pany forward in the networking

market, in which it has no

C/1/Datacomp has a presence.

Spokesman David Reid said

Storage Tek is looking at "con-

necting midrange and host sys-

tems for enterprise computing"

and is busy developing a new

strategy for the future.

"You don’t think of them in

connection with networking,"

Katz said. "You may have another

strategic alliance in mind."

financially strapped C/1/Datacomp, a merger seemed

inevitable, analysts said.

Once the biggest reseller of

Application System/400s (be-

hind IBM), C/1/Datacomp has

faced sharply declining revenue

since 1987 and then it ceased to

be an IBM industry remark-

eter and so lost its access to dis-

counts for new IBM systems.

In an agreement that was

unanimously approved by the

boards of both companies last

week, Storage Tek will becom-

es a Storage Tek subsidiary

and will continue to operate un-

der its current management.

Restructuring leaves Pan Am staff at gate

Second-class postage paid at Framingham, Mass., and additional mailing offices.

Computerworld (ISSN 0360-4962) is printed weekly in a single combined issue for the last week in December and the first


Copyright © 1991, Computerworld, Inc. All rights reserved.

Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor,

Mich. 48106. Microfilms are also available through the Serials Section of the Library of Congress.

Reprints: Minimum charge for reprints is the cost of 500 copies plus $5 per page. Reprints can be ordered directly from CW


For information on reprints or microform please consult the address below. All requests for reprints or microform copies of specific

clients is granted by CW Publishing, Inc./for libraries and other users registered with the Copyright Clearance Center, CCC, provided

that the base fee of $2.00 per copy of the article, plus $.50 per page is paid to directly to Copyright Awareness Center, 27 Congress

Street, Salem, MA 01970, 508-744-3000.

Reprints: Minimum charge for reprints is the cost of 500 copies plus $5 per page. Reprints can be ordered directly from CW


Second-class postage paid at Framingham, Mass. Permit No. 399.

POSTMARKER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marlton, N.J. 08056.

AUGUST 12, 1991

COMPUTERWORLD 89
Although these Hitachi Data Systems Corp. midrange systems offer better price per millions of instructions per second (MIPS), comparable IBM machines are expected to hold their value better.

<table>
<thead>
<tr>
<th>Model</th>
<th>Announced</th>
<th>Configured list price</th>
<th>Projected retail residual value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDS EX-27</td>
<td>11/90</td>
<td>$454,000</td>
<td>New* $147,150 $70,850</td>
</tr>
<tr>
<td>IBM 9121-190</td>
<td>9/90</td>
<td>$592,273</td>
<td>New* $325,750 $183,605</td>
</tr>
<tr>
<td>HDS EX-44</td>
<td>3/90</td>
<td>$1,424,000</td>
<td>$640,800 $455,680 $256,320</td>
</tr>
<tr>
<td>IBM 9121-320</td>
<td>9/90</td>
<td>$1,487,273</td>
<td>New* $862,618 $505,673</td>
</tr>
</tbody>
</table>

EX-27 9121-190 EX-44 9121-320

Number of MIPS 8.2 7.52 21.0 20.21
Price per MIPS $66,463 $78,760 $67,810 $73,591

The equipment is being marketed by the manufacturer and/or other distributors as new, at the manufacturer's list price or at a discount to that list price.


**N E X T  W E E K**

**TREND**

**IBM Residuals**

**INSIDE LINES**

**The 1-2-3 for Windows watch**

As the end of summer draws near, the thoughts of Lotus' 1-2-3 users turn to the promised delivery of a Windows version. We've got two conflicting reports: Two sources say they've heard scheduled delivery dates have slipped into September or October. One of them cites irregularities involving printing and data loss. Yet a third source says his latest beta-test version, which is a few weeks old, still has a few bugs. An early fall shipment would not surprise this user. Then again, another source reports that the shipping party is slated for sometime during the next few weeks, which means the product should be on its way into manufacturing and out the door by the end of the month.

**Tool kit on the way**

Microsoft will soon ship most of the software tool designed to ease users out of 3Com's 3+ Open network operating system and into Microsoft's LAN Manager. A source says "roughly 85%" of what is required to connect all 3+ Open systems to Microsoft's Version 2.1 LAN Manager will be delivered this month. Version 2.1 is scheduled for delivery this year. 3+ Open, which was officially discontinued about eight months ago, is based on LAN Manager. The source says an unusually large beta-test program — involving "at least 100 users" — is being conducted on the first tool kit.

**Men in glass houses**

William Tauscher, chairman of Computerland, couldn't resist a bit of gloating over Businessland's 3% years ago, its survival was in question, and Businessland's Dave Norman was one of those who publicly crowed about his success at Computerland's expense.

**Vendor giveth and vendor taketh away**

True to its word, Wang will be delivering new technology to its VS user base as early as next week, when it rolls out the VS 6000. The machine is a low-end system positioned for users wishing to upgrade from a VS 5000 but not quite ready for the VS 8000. On the downside, Wang's next-generation high-end VS computer, code-named Mercury, will not go into beta testing this month, as originally promised. Sources say delivery of the box may be pushed back beyond the anticipated early 1992 announcement.

**High noon on the Electronic Frontier**

False to its word, Wang will be delivering new technology to its VS user base as early as next week, when it rolls out the VS 6000. The machine is a low-end system positioned for users wishing to upgrade from a VS 5000 but not quite ready for the VS 8000. On the downside, Wang's next-generation high-end VS computer, code-named Mercury, will not go into beta testing this month, as originally promised. Sources say delivery of the box may be pushed back beyond the anticipated early 1992 announcement.

**We have seen the future, and it is pens**

Almost unnoticed at Pen Computing 1991 late last month were several Grid Systems prototypes. One was running a special flash memory drive with a 4M-byte flash card from Sun Technologies. Two other Grid boxes sported radio frequency technologies. Two other Grid systems prototypes. One was running a special flash memory drive with a 4M-byte flash card from Sun Technologies. Two other Grid boxes sported radio frequency capabilities.

A few weeks back, we noted that a recent issue of a West Coast computer magazine contained an advertisement by a Los Angeles firm that was selling copies of the Jerusalem virus for about $30 apiece. Since then, several readers have called to express outrage at what they said is an irresponsible way to make a buck. Last week, a caller from Intel said the firm's legal department is mulling over ways to force the virus marketer to stop. If you have other tales of creative entrepreneurship or simply a good tip to pass along, get in touch with Executive Editor Paul Gillin toll-free at (500) 955-6544, fax it to (500) 955-6831 or Compuserve it to 76537,2413.
Instead of products that are fat-free, salt-free, or cholesterol-free, wouldn't you just prefer plain old free?

GET A FREE TOKEN-RING BOARD IN THE GRAND LANPLANN.

Right now you can get a free token-ring board from DCA®, hassle-free.

Just call us and we'll send you an IRMAtrac® or MacIRMAtrac® evaluation unit for a 45-day trial period.

Our flexible design allows IRMAtrac to adapt in a variety of ways. It's convertible to support ISA, EISA and Micro Channel® Architectures, handle shielded and unshielded twisted pair, and work at both 4Mbps and 16Mbps.

We've even carried this unparalleled flexibility to the Mac® with MacIRMAtrac. And because the RIMs are interchangeable between boards, you now have a single source for support and upgrades.

Plus, you also get compatibility with the leading network operating systems.

Finally, you can keep the trial unit when you buy 12 from your reseller. Or get it at a healthy 45% savings for $495.

So call 1-800-348-DCA-1, ext.79E! Even the call is free.

*Offer good in U.S. and Canada only. ©1991 Digital Communications Associates, Inc. All rights reserved. DCA is a registered trademark and MacIRMAtrac and IRMAtrac are trademarks of Digital Communications Associates, Inc. All other brand or product names are trademarks or registered trademarks of their respective owners.
Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

Informix.

Within the past five months, every one of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

New TPC Benchmarks Used
In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

The Number 1 Choice for UNIX OLTP
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at more than twice as many multi-user UNIX sites as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

A Decade of Innovation
Informix has been a UNIX RDBMS technology leader for over 10 years. Continuous innovation has resulted in advanced application development languages, distributed client/server computing, gateways to other computing environments, and multimedia flexibility you can take advantage of today.

Find Out More
We'd like to send you benchmark specifics—and information about how Informix products can meet your data management needs. Call us toll free: 1-800-688-IFMX, ext.2.