IBM moves AS/400 to high end

CISC-based IS shops face upgrade decision

By Tim Ouellette

IBM this year will stretch its AS/400 midrange system to the high end with plans for new multiprocessor systems and an upgraded operating system.

Sources close to the company said it will roll out RISC-based systems, tentatively dubbed the California Bar's David Jones is happy with current RISC models.

U.S. firms go offshore for cheap year 2000 fix

By Jaikumar Vijayan

Plenty of cheap foreign labor is driving more U.S. firms to hire overseas programming companies to do their year 2000 conversion work.

Exact figures aren't available, but experts who track the field said the number of firms hiring foreign programming shops to do year 2000 work could swell significantly during the next year as the countdown to 2000 begins in earnest.

One company that has committed to offshore outsourcing is Consolidated Edison Company of New York. It already has contracted — and successfully completed — two pilot projects with fixed-cost contract firms in India and Ireland. Con Edison now is on the verge of contracting all its 105 date-sensitive programs.

McAfee to push antivirus updates through the Web

By Mitch Wagner

McAfee Associates, Inc. today plans to announce a deal to distribute updates of its antivirus software automatically over the Internet, without human intervention.

The deal with BackWeb Technologies, Inc. was designed to be a huge labor-saver for information systems departments. 

Mill disaster fires up planned IS overhaul

By Matt Hamblen

LAWRENCE, Mass.

THE FIRE THAT engulfed the Malden Mills complex here in December 1995 — causing more than $300 million in damage — could have shut down the Polartec fabric maker for good.

Instead, it invigorated the mill's workers and accelerated a previously planned $10 million to $15 million information and automation systems overhaul.

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McAfee, page 12

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The distribution method McAfee, page 12

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The day after the fire, Aaron Feuerstein, president and co-owner of Malden Mills Industries, Inc., vowed observers by pledging to rebuild locally and promising to pay idled workers. His bold directive inspired his top managers, who immediately made the massive system redesign their top priority.

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The distribution method McAfee, page 12
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It's like a dream you might have had: one beautiful fluid motion, management dances/users share and collaborate and work together/ you (not needing to answer questions) now
Now Microsoft® Office 97 is here. It's smarter, friendlier and webbier. Every application has significant improvements—natural-language formulas in Microsoft Excel and "freehand" table drawing in Word, to name a few. There's also a new program, the Outlook® desktop information manager, that will thrill your control freaks and just plain organize everyone else. The friendlier part comes in the form of Office Assistants, intelligent critters who watch what your users do and offer suggestions, hints and walk-throughs (so you're less likely to be called, paged, or treed by a cranky mob). As for webbiness, not only can your people instantly link to Web sites from inside any app, they can insert hyperlinks from any one document or spreadsheet to any other. And they can save anything in HTML. All using what they already know. (Hello, intranet!) You'll be happy to know that 50% of Office 97 code is shared among apps. Plus, more housework is done at install. And the Network Installation Wizard is your friend. Now/ pinch yourself.
Better, not bigger

Microsoft arguably has the best software-testing organization in the world. Yet even Microsoft couldn't prevent a bug fix for Windows NT 4.0 from being released that was so buggy it crashed hundreds of users' servers (CW, Jan. 13).

This situation isn't unique. If you want to see an IS manager's face flush, ask about the state of software quality. The software industry continues to push bloated, buggy products packed with features that only a few people will use. Yet IS must dutifully go along with the endless upgrade cycle or risk losing consistency across an organization.

Software is getting worse because it's becoming impossible to test the stuff. Microsoft's new Office 97 is a 121M-byte monster. There's no way to find all the possible flaws in a product that big. And most users will run Office simultaneously with a fistful of other applications, utilities and Internet-sniffing background agents from vendors of all stripes. Is it any wonder some of the best-selling software in the past two years has been utilities that intercept and manage software errors?

At the same time, the pressure to get products to market is pushing vendors to test software in the field. New products are no longer shrouded in secrecy; early versions are posted on Web sites for users to download and test. Endless patches and bug fixes follow. No two desktops are the same anymore. It's chaos out there, and the mess invariably gets dropped in the lap of an ill-prepared and understaffed IS department.

The frustration building in IS organizations may crumple in widespread disinterest. Only about a quarter of Office users upgraded to Office 95. What if only a quarter of them took the leap to Office 97? Maybe that would send the industry a message: Bigger software isn't necessarily better. Focus on helping us manage what we've already got.

Paul Gillin, Editor
Internet: paul.gillin@cw.com

The Fifth Wave

By Rich Tennant

E-mail Rich Tennant at theswave@tiaconet

Computerworld January 20, 1997 (www.computerworld.com)

IS brings good things to GE

By Thomas Hoffman

WHEN GENERAL ELECTRIC Co. last week reported that it earned $7.28 billion last year, the news did more than illustrate the success of GE's year-old quality improvement push. It demonstrated just how valuable the company's information management group has been to GE's renaissance.

A commitment to quality and customer focus has been the linchpin of GE's success, but several key technology projects have also helped. One of those projects is GE's Trading Process Network, an Internet-based electronic commerce system that is expected to generate $1 billion in contract opportunities for global suppliers this year.

And GE's retail customers now can harness a GE Capital Corp. data warehouse that contains information on 12 million private-label and commercial credit-card customers.

That should help companies such as Casual Corner Group, Inc. It can identify its most profitable customers and target promotions designed to lure those customers to its stores, said Karen Tyson, director of strategic marketing at the 1,000-store chain in Enfield, Conn.

GE in the past has invested $200 million in quality training and systems that measure the program's effectiveness by capturing metrics, including frequency and type of manufacturing defects.

Most of Fairfield, Conn.-based GE's 12 business units broke even on their investments. This year, GE expects an additional $500 million quality investment to generate $450 million to $500 million in savings.

"Last year was the learning curve; this year we expect much bigger results," said Elizabeth Gallucci, leader of best practices at GE Capital in Dacula, Ga.

GE's Six Sigma quality program isn't unique — the company borrowed it from Motorola, Inc. But experts said GE's ability to successfully use information technology to measure its quality control progress and to tighten its ties with customers has been unparalleled.

"There tend to be hit-or-miss approaches to what constitutes good quality," said Stephen A. Bender, executive director at The Quality Connection, a management consultancy in Englewood, Colo. "That's the key difference between those who use IT effectively and those who don't."

GE Chairman John F. Welch's commitment to the quality program and his understanding of IT's role in it have helped separate GE from the rest of the pack, said Richard A. Henderson, a financial analyst at the Perishng, N.J., division of Donaldson, Lufkin & Jenrette Securities Corp.

Welch's choice of Gary M. Reiner, GE's chief information officer, to orchestrate the program demonstrated the key role IT would play.

By Mitch Wagner

FACED WITH multiple class-action lawsuits from upset customers, America Online, Inc. last week detailed steps it will take to ease congestion on its network.

Ever since the company began offering unlimited access for $19.95 per month, customers have been complaining that they have been unable to access the service. An independent study found the service was inaccessible more than three quarters of the time during peak usage periods soon after the company started the unlimited-price plan.

Calls to 24 AOL access points failed to connect 76% of the time during the period of 10 p.m. to 10:59 p.m., according to research conducted Dec. 23 to Jan. 2 by Inverse Network Technology, Inc. The figures showed AOL performance was nearly six times worse than the national average for Internet service providers.

"AOL has become absolutely dismal," said user Jean Achille, managing partner at The Devon Group, a management consultancy in Holmdel, N.J. "And as a small business, we just can't dial in anymore. It's particularly bad right after school, when the kids come home from school and they log in to the chat rooms right away."

America Online last week outlined several steps intended to ease network congestion — from spending more money on modern to scaling back efforts to attract members. Interestingly, America Online's move to curtail membership drives was announced on the same day it said membership had surpassed 8 million users.

The system improvement plan includes the following:

• Increasing investment in systems capacity. The company previously announced $250 million to $350 million.

• Increasing modem capacity by 75%. The company currently has 300,000 modems.

• The company will hire an additional 500 customer support representatives over the next six months, bringing the total to 4,500.

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Domain name deadbeats owe $21M to Internet fund

By Gary H. Antilles

A FUND SET UP 16 months ago for "the preservation and enhancement of the intellectual infrastructure of the Internet" is millions of dollars short because users have failed to pay fees for domain name registration.

The National Science Foundation (NSF) last week confirmed a report in The Washington Post that the fund was about $21 million in arrears.

And the NSF, which established the fund, has no idea what to do with the nearly $10 million it has.

Don Mitchell, a staff associate at the NSF, said some of the shortfall represents recent registrations by organizations that routinely stretch out payments 30 to 90 days.

"When we set this up, we didn't want to impede the growth of the Internet," Mitchell said. "So we continue to register first and pay later."

The funds are collected by Network Solutions, Inc. in Herndon, Va. The company runs the InterNIC Registry for North America and collects $100 for the registration of each Internet address of the type acme.com. Network Solutions pays 50% of the fees collected into the Internet improvement fund.

InterNIC is registering about 80,000 new domain names a month and, through November, $9.9 million has gone into the fund, according to the InterNIC World Wide Web site (rs.internic.net). But the funds that have been collected remain unused, because no one can agree on how to spend them.

Under terms of its agreement with the NSF, Network Solutions will devise a mechanism for spending the funds. But it has run into opposition over its role, Mitchell said. He said he expects the company to propose such a mechanism soon.

More work, less golf helps Unisys IS cut costs

By Thomas Hoffman

WHEN JOHN CARROW was the city of Philadelphia's chief information officer last year, he fell seven rounds short of his goal of playing 25 rounds of golf.

As the new CIO at Unisys Corp., he'll probably spend even less time on the links. "I set the same goal this year, but I don't know if I'll be able to meet that," Carrow said.

IS PROJECTS

Unisys in Blue Bell, Pa., constantly seeks ways to cut costs. A current project was designed to consolidate its six global electronic-mail systems into two systems: Microsoft Corp.'s Exchange and Lotus Notes.

But the company still struggles to find revenue opportunities. "From an IT function, we don't necessarily generate revenues, but we can provide enablers so that the businesses can," said Carrow, who will oversee 12,000-person information systems staff.

One of those enablers is an IS project to establish more electronic data interchange connections with key customers. That is expected to streamline the way Unisys customers gather information about equipment and services. Unisys also has rolled out an Oracle Corp.-based financial system to 150 of its 160 offices worldwide. By standardizing on a common reporting system, Unisys hopes to make its financial operations more efficient, Carrow said.

Unisys "is making progress, but it's tortuously slow," said Michael J. Geran, an analyst at the Pershing Division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J.

Support delays irk Oracle users

No support yet for vendor's client/server applications with Oracle7.3 database

By Craig Stedman and Randy Weston

ORACLE CORP. users are starting to chafe at the time it is taking the company to certify its client/server applications for use with the latest release of its database.

Oracle7.3 became available last February, but users who run their business on Oracle applications can't deploy the database because Oracle still hasn't given the thumbs-up sign to use the two products together. Meanwhile, rivals such as SAP AG and PeopleSoft, Inc. are starting to clear their applications for use with Oracle, 7 last year.

The database and applications have to be certified together before Oracle will support them. But the long certification process on Oracle7.3 is forcing users to bide their time while they upgrade the database, which offers features such as Windows-based management.

PERFORMANCE BOOST

The Windows capability is a "huge" improvement over the character-based interface on earlier databases, and it could reduce the need to buy third-party administration tools, said Hugh Allan, manager of information technology at Dunlop Tire Co. in Amherst, N.Y. But Dunlop doesn't expect to upgrade most of its servers to Oracle7.3 until next summer, he said.

Oracle's upgrade process is "very restrictive, and that really impacts on us," Allan said. The close ties between Oracle's database and applications boost performance and cut Dunlop's tuning workload, "but there is a trade-off," he said.

In comparison, Allen said, Dunlop can usually just go to a new database at will with the Lawson Software, Inc. applications it also uses.

Cliff Godwin, vice president of applications technology at Oracle, acknowledged that the approval process for Oracle Applications 10 for use with Oracle7.3 has been "one of our longer certifications."

Godwin said the combination will be cleared for Sun Microsystems, Inc.'s Solaris operating system this week or next. Other Unix platforms should be cleared by March. "We could be more aggressive, but we don't want to just assume that upward compatibility is there," he said.

Oracle's conservative approach may help protect its customers from charging forward with applications that blow up on them. "But it is definitely a blockade to the users," said David McGovern, president of Altenative Technologies, a consultancy in Boulder Creek, Calif.

Ron Hawkins, director of IT at Millipore Corp. in Bedford, Mass., is looking ahead to the Oracle8 database due to be released by midyear. But Hawkins said he doesn't expect to upgrade Millipore's 10 databases to Oracle7.3 until May.

Century command central

What's the best way to organize your year 2000 conversion project? Build it around a central office that can act as coach, manager, motivator and cheerleader, information systems executives say.

Learn what Rick Hunter and Katherine Schrump (right) at Kaiser Permanente Northern California — and other IT managers — are doing to make their software millennium compliant.
Software pivotal to big iron renaissance

By Tim Ouellette

Customers are putting far more emphasis on what software packages will run on the mainframe than on the mainframe itself. Mainframe vendors such as IBM, Amdahl Corp. and Hitachi Data Systems Corp. have worked the past few years to make the hardware practically a commodity, with cheaper and easier-to-maintain air-cooled systems and parallel sysplex, a clustering architecture.

CUSTOMER DEMAND

Although the improvements give mainframes the muscle to test all the new code for year 2000 conversions and run existing applications, the future looks less rosy unless more applications hit the streets.

"Customers are putting far more emphasis on what software packages will run on the mainframe," said John Young, an analyst at the The Clipper Group, Inc. in Wellesley, Mass.

Because the mainframe already hosts so much of corporate America's data, bringing the applications home is seen as a way to simplify overall management. "A lot of data we work with is on the S/390 already. So running applications where the data already is makes sense," said John Bevis, president of Share, an IBM mainframe user group based in Chicago.

But not everyone is pushing code back to the mainframe. The trend has been to off-load application development to Unix and Windows NT platforms.

"All new development for us is in client/server, though our bread-and-butter billing application to the S/390 platform, is nowhere near that of Windows NT, which will be the mainframe's greatest competitor," said Ed Carr, an analyst at Aberdeen Group, Inc. in Boston.
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NCR pushes migration to Unicenter

By Jalakumar Vijayan

There are some unexpected migrations ahead for users of NCR Corp.’s systems and network management platforms.

In a surprise announcement last week, NCR urged users to switch from Hewlett-Packard Co.’s OpenView to Computer Associates International, Inc.’s CA-Unicenter. The Next Generation (TNG).

This could result in some painful and complicated migrations for customers, analysts said. But analysts also believe that the actual number of such NCR users is fairly small.

NCR in Dayton, Ohio, has entered into an agreement with CA under which NCR will sell CA-Unicenter TNG as the management platform of choice for all NCR hardware. NCR will no longer sell or recommend HP’s OpenView management platform for NCR hardware, company officials said.

Previously, NCR relied on OpenView, a smattering of other management products and its own Operations Advantage package to help customers manage their systems.

NCR said it will work with CA to migrate users of these platforms to CA-Unicenter TNG. But the company will continue to support customers who want to continue with their existing management environment. NCR officials said.

Worthwhile Move

"It is going to be a little painful for us to migrate all our stuff over to Unicenter. But in the end, I think it is going to be worth it," said Roy Dodd, director of information systems at The Good Guys, a consumer electronic retailer based in Brea, Calif.

CA-Unicenter now manages the company’s mainframe and seven minicomputers. With this announcement, Good Guys will migrate its 80 NCR servers to the same management platform, Dodd said.

CA-Unicenter’s support for Windows NT also ties in closely with NCR’s Windows NT-centric strategy, analysts said.

"The reason this announcement was made is that OpenView seems to have been slow to get over to the NT platform," said Brandon Musler, an analyst at Illuminata, Inc. in Nashua, N.H.

HP’s enterprise edition of OpenView was in development when Windows NT was due last fall but may not be ready until next quarter.

"To that extent, this alliance is going to be useful for NCR users following NT," said Brian Murphy, an analyst at The Yankee Group in Boston.

"It is going to be a little painful for us to migrate all our stuff over to Unicenter," said Frank Murphy, an analyst at International Data Corp. (IDC) in Framingham, Mass.

"We would expect that on the server side, most vendors will phase out the Pentium by the end of 1997," said Susan Frankle, an analyst at International Data Corp. in Framingham, Mass.

She said phasing out Pentium-based machines for servers makes sense and predicted that the timing of the shift will depend on how quickly Intel moves to reduce Pentium Pro pricing, which will narrow the price gap between Pentium and Pentium Pro machines.

Sound Strategy

Users also said the strategy is sound, and many have already moved to Pentium Pro-based machines.

"Frank Delargy, information services manager at Waltham, Mass.-based Polaroid Corp., said he wouldn’t consider buying Pentium-based machines, because they aren’t suited for the Windows NT environment. He recently purchased Pentium Pro servers.

"NT Server 4.0 was written for Pentium Pro and works well as an infrastructure for our NT environment," Delargy said. Users can upgrade their Pentium-based Compaq servers, such as its ProLiant 1500, by swapping in new boards, the company said.

Still, there is a price differential to consider. Machines with Pentium Pro chips cost about 20% more than their older siblings, Frankle said.

Dell Computer Corp. is migrating to the Pentium Pro, but only on its higher-end server lines. Low-end servers will still run on the Pentium chip for now.

Bundled Software

Compaq’s new ProLiant 800 will feature 180-MHz or 200-MHz Pentium Pro processors and beefed-up server management software. It will serve as an upgrade to the company’s ProSignia.

Integrate Server software, which allows network managers to control and support a single server and replicate that configuration across multiple servers, with the ProLiant 800. Also standard are Insight Manager management software and SmartStart, which helps with server configuration issues.

Pricing and availability will be announced this week.

Correction

Due to a reporting error in the Dec. 23/Jan. 8 issue of Computerworld (page 8), Barry Adam, the director of information services at The Disney Store in Glendale, Calif., was misquoted. The story should have stated that Disney and the Disney store distribution center are “cross-docked” from the receiving docks to the outbound shipping docks.
Oracle7 has more features for data warehousing than any other RDBMS: parallel query, index and load; bit-mapped indexes; star queries; OLAP integration; and scalability across a range of SMP and MPP systems. It's no wonder that more organizations rely on Oracle, from their largest data warehouses to their smallest data marts. And, it's why more application developers build their data warehouse solutions on Oracle7. So, if fast, accurate decisions are important to your company's performance, call Oracle at 1-800-633-1071, ext. 10345, or find us on the Web at http://www.oracle.com
GMAC takes Fast Ethernet route to multimedia intranet

By Justin Hibbard

NIRAJ PATEL knows an opportunity when he sees one. The chief technology officer at GMAC Commercial Mortgage Corp. saw the stars align last year when the growing company decided to move to a bigger campus in Horsham, Pa. Patel had long wanted to roll out multimedia applications on the company's intranet and open parts of the network to outside customers. But GMAC's aging 16M bit/sec. shared Token Ring LAN couldn't support the load. So when management committed to relocating, Patel issued a request for proposals for a new network.

"We looked at [Asynchronous Transfer Mode] to the desktop and 100Base-T shared switched," Patel said. "It basically came from the added traffic. The increased bandwidth allowed Patel to begin building an extranet — a portion of the company's intranet that outside customers can access — without worrying about congestion from the added traffic.

Dubbed Investor Query, the service will let investors log in to GMAC's intranet through a World Wide Web page. "This will allow all our investors to go through the Internet and get loan-level detail on all the loans we service for them as well as occupancy rates, inspections and pictures of the properties," Patel said.

Investors will be able to request a property inspection by filling out an electronic form, which will be routed to GMAC's inspection contractors. After the inspection, the contractors will be able to log in to GMAC's intranet to report their findings in a form and upload digital photos. Investors will have access to the inspection results as soon as they are posted.

"Right now, using the paper system takes a week to file an inspection to investors. We're hoping this new process will take two days or less," Patel said.

"It would be enormously helpful to investors," said Deborah Seife, director at Fitch Investors Service LP, a mortgage securities credit rating firm in New York. "What underlies these transactions are these properties. The ability to have some feel for the quality of the properties is important."

Outside customers aren't the only ones who will benefit from GMAC's extra bandwidth. Employees will gain access to videotaped training and television broadcasts transmitted across the network by StarLight Networks, Inc.'s StarWorks media server.

"With our growth rates, we could never get people to take time off to get trained," Patel said. "Now we can say, 'When you have time, take five minutes here, five there.'"

Harry Fenik, an analyst at Zona Research, Inc. in Redwood City, Calif., said few companies have upgraded to 100M bit/sec. networks because of the high cost of installing new network interface cards on every desktop.

But GMAC's situation was unique in that the relocation provided an opportunity to upgrade.

FAA upgrades Chicago radar

The Federal Aviation Administration last week turned on a new radar data processor at the Chicago Air Route Traffic Control Center. Outmoded computers for radar data account for 87% of the unscheduled downtime at the nation's busiest air traffic control centers, the FAA said. The new Chicago system, a pair of IBM ES 9221 Model 170s, replaces an early-1990s IBM computer that was down 33 hours last year. Similar upgrades are scheduled this year at airports that serve New York, Cleveland, Washington and Fort Worth, Texas.

Compag gets into leasing

PC maker Compaq Computer Corp., trying to be more like the big systems vendors, plans to get into the computer leasing and financial business later this year. Compaq named Irving Rothman president of the venture, called Compaq Capital Corp. Rothman came from AT&T Capital and AT&T Credit Corp.

Apache posts security fixes

The Apache HTTP Server Project last week posted to its World Wide Web site patches for two security holes recently discovered in its Apache 1.3.1 Web server. One of the holes could allow intruders to gain access to files on servers. The other hole could let unauthorized users view the contents of a Web server directory. The server and the patches are available for free at www.apache.org.

Data warehouse training

Migration Software Solutions Ltd. in San Jose, Calif., and Global Knowledge Network, Inc. in Waltham, Mass., are teaming up to fill a big gap in the data warehousing field. Training. The companies this spring will begin offering a five-day course in which users build a data warehouse using multiple vendors' extraction, modeling and query tools. Cost of the courses taught at users' sites will range from $5,200 to $5,500.

HP bundles database

Howlett-Packard Co. officials said the company will bundle Informix Software, Inc.'s new Universal Server database with high-end models of its Domain Enterprise servers for Web applications. The Domain XE packages that will include the Informix database are scheduled to ship next summer. HP also will integrate other Web-related software from Informix, including its Universal Web Connect middleware.

Web group backs HTML 3.2

The World Wide Web Consortium last week endorsed the HyperText Markup Language (HTML) 3.2 specification, which it developed last year with several vendors. The specification adds features such as tables, applets, text flow around images, superscripts and subscripts. It is also backward-compatible with the current standard, HTML 2.0. The specification must be approved by the Internet Engineering Task Force to become a standard.

Internet spec for banks due

Microsoft Corp., Intuit, Inc. and CheckFree Corp. have announced plans to create a single, unified technical specification that would allow financial institutions to exchange financial data with customers over the Internet. A draft of the Open Financial Exchange is available this week at the vendors' Web sites. A final version of the specification will be published in mid-February.

Earnings wrap-up

Intel Corp. racked up revenue of $20.8 billion and earnings of $5.2 billion last year. Fourth-quarter revenues were $7.9 billion on revenue of $6.4 billion. Digital Equipment Corp. eked out a $12 million profit on revenue of $5.96 billion for its second quarter, ended Dec. 28. ... Sun Microsystems, Inc.'s earnings jumped 41% to $178.3 million on revenue of $1.08 billion for the quarter ended Dec. 29. ... NetFrame Systems, Inc. said it expects to report an operating loss for the quarter ended Dec. 28. ... Chip vendor Advanced Micro Devices, Inc. reported a net loss of $28.2 million for its fourth quarter.
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**Tools peer inside client/server apps**

* Rmon 2 standards are approved; first wave of products hits market

By Patrick Dryden

Remote monitoring (Rmon) standards were approved last week that pave the way for tools that give managers a clearer view of what is happening inside client/server applications. The first wave of compatible products hits the market this week with the introduction of software that monitors data collectors from multiple vendors.

Concord Communications, Inc. is launching an automated performance analyzer called Traffic Accountant, which can seek and interpret data supplied by compatible devices from 3Com Corp., Bay Networks, Inc., Frontier Software Development, Inc. and Hewlett-Packard Co.

And International Network Services, Inc. in Sunnyvale, Calif., opens up its World Wide Web-based performance monitoring service to support hardware from many vendors.

For the past two years, information systems managers could get reports about traffic at the application level only when hardware and software were provided by the same vendor.

But the enhanced remote network monitoring specification — Rmon 2 — approved by the Internet Engineering Task Force, promises a standard way to gather much of the same information.

"For a long time, we've wanted to see what applications run across our network and where users go on the Web, but we could never get inside the client/server transactions," said Joe Askins, director of data communications at Arizona State University (ASU) in Tempe.

ASU managers recently used Traffic Accountant to tap into diverse sources on their network to track performance and usage. They upgraded the management modules inside Bay Networks hubs and the firmware for stand-alone probes from Concord.

"For a long time ... we could never get inside the client/server transactions."

- Joe Askins,
  Arizona State University

"The beta paid off: We've already reduced our overall daytime Internet utilization the equivalent of two T1 connections," Askins said.

For another beta tester, before-and-after utilization graphs helped justify purchases of network upgrades.

"After installing new equipment, we could show the resulting bandwidth improvements, so the finance folks can't roll their eyes," said Ric Paluch, a senior telecommunications network analyst at Frontier Corp. in Rochester, N.Y.

But some observers see a slow start for standards-based application monitoring because Rmon 2 has gained only "modest acceptance so far," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

Right now, only Bay Networks and Concord can supply the upgrades needed to support Traffic Accountant, which ships this week for $15,000.

Other vendors should ship compatible gear — new stand-alone probes and modules that fit inside internetworking devices — by April, according to officials at Concord in Marlboro, Mass.

Probes and embedded modules not only must support the Rmon 2 data formats, but they also require more power and memory to do so. That means buyers must budget for new probes and upgrades.
The key feature of a universal database server is the ability to manage any type of data - tables, text, audio, video, etc. The key question is: if a large number of datatypes are not supported natively by the Universal Server, how easy and safe is it to extend that server with new datatypes?

<table>
<thead>
<tr>
<th>Oracle® Universal Server</th>
<th>Informix Universal Server</th>
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<tbody>
<tr>
<td>Tables</td>
<td>Native Support</td>
</tr>
<tr>
<td>Text</td>
<td>Native Support</td>
</tr>
<tr>
<td>Audio</td>
<td>Native Support</td>
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<td>Video</td>
<td>Native Support</td>
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<tr>
<td>Spatial</td>
<td>Native Support</td>
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Oracle® Universal Server® has powerful native support for most every datatype. In contrast, Informix requires you to program or buy third party developed datatypes that they call datablades. Amazingly, a mistake in the datablade code can "shut down the entire server" and may cause you to lose all your data, according to Michael Stonebraker, Chief Technology Officer at Informix. What? Are you kidding?

So if you're a gambler, call the Informix datablade casino in Vegas—1-800-GOOD-LUCK. Or, if you want to manage all types of data and keep it safe, call Oracle at 1-800-633-1071, ext. 11118, or find us on the Web at http://www.oracle.com

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Office 97 makes official debut

By Lisa Piccirile

AT A SOWHAT anticlimactic announcement, Microsoft Corp. last week formally rolled out Of-

Windows Word macros into Office 97's new Visual Basic for Appli-
native data on volume licenses, has predicted analyzing a slow

Office 97 is jam-packed with new features that include Out-

Some support

Still, the suite has won some praise. Reinaldo Moody, a de-

LOTs TO PROVE

But Dan Lavin, an analyst at Da-

Wise for collaboration and mes-

Corel snags Netscape client suite

By Justin Hidbard

CoREl CORP. last week said it has licensed Netscape Commu-

The distribution method is

security issues popped up Thursday at the International Virus Pre-

McAfee CONTINUED FROM PAGE 1

could also be a first baby-step in a transformation of the software

Security issues popped up Thursday at the International Virus Pre-

Virus squads

McAfee, like most antivirus ven-

Microsoft has taken some fea-

BackWeb's.

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In the McAfee deal, the distri-

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BackWeb's.
Monkey on your back #28:
How to turn your PCs into real Windows NT clients without really turning your PC users off.

What used to be a big issue is now a non-issue. Because instead of trying to force a PC into being a Windows NT enterprise client, you can get one that was born that way: Digital's new Celebris GL. It comes enterprise-ready—complete with integrated networking, support for Digital Clusters for Windows NT, plus system management tools like ClientWORKS.

Add Digital's Easy Network Set-Up and our unique tool-less enclosure designed for easy service and support, and your users are in for quite a turn-on. The new Windows NT-optimized Celebris GL. For your nearest reseller, call 1-800-DIGITAL, or visit www.windows.digital.com.
**DATABOLTS aim to drag surfers to Web sites**

By Mitch Wagner

**DEBUTING AT LOTUSPHERE**

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six new Java</td>
<td>Applets that may be dropped into browsers or Notes clients, including draw,</td>
</tr>
<tr>
<td>components</td>
<td>file viewing, spreadsheet and note taking</td>
</tr>
<tr>
<td>Notes Internet</td>
<td>New client for Domino and Notes that will integrate mail and calendaring</td>
</tr>
<tr>
<td>Mail client</td>
<td>functions in one interface</td>
</tr>
<tr>
<td>CC:Mail 8</td>
<td>Upgrade of LAN-based E-mail package with Web hooks</td>
</tr>
<tr>
<td>Domino.connect</td>
<td>An add-on to Domino for linking up with database applications</td>
</tr>
<tr>
<td>NotesPump 2.0</td>
<td>A data extraction tool that will gain additional directory synchronization</td>
</tr>
<tr>
<td></td>
<td>capabilities</td>
</tr>
</tbody>
</table>

**NEWS AND COMMERCE**

Other DataBolts will include the Profile, to allow developers to customize views of the content of a Web site based on user preferences; NewsTicker, which provides scrolling, real-time news; and Cryptolopes, IBM's bid to standardize technology for selling information and software over the Internet.

Cryptolopes is different from other sales methods because media-independent files that are "popped" using Cryptolopes can be distributed over the Internet, electronic mail, CD-ROM, diskette or any other medium.

And the buyer doesn't have to give a credit-card number to the seller or transfer the number over the Internet; IBM acts as middleman in the transaction.

**DATABOLTS BY THE DOZEN**

IBM plans to roll out about 60 different DataBolts by June. Each DataBolt will be represented by an icon on a palette in a development tool kit.

To add specific functionality to a site, the developer drags the icon for that DataBolt to the workspace portion of the tool set and then customizes the DataBolt as needed.

DataBolts are built using Java Beans or ActiveX, so they will run on multiple platforms, including Microsoft's Windows 95 and NT, IBM's OS/2, common Unix variants such as IBM's AIX, and Apple Computer, Inc.'s Macintosh.

**Lotus tears pages from its Notes pad**

By Barb Cole

AT ITS ANNUAL USER conference next week, Lotus Development Corp. plans to announce that it will make certain Notes clients and servers available over the Internet; IBM acts as middleman in the transaction. The Query & Retrieval DataBolt gives visitors access to documents on business, science and industry-specific information.

The DataBolt will give users the chance to stay at a site, rather than force them to go to another Web site to pick up that information, said Jeffrey Kay, a software architect at IBM.

**LOTUS PUBLICATIONS**

**MICROSOFT CHALLENGE**

With its new Internet Mail client, Lotus is targeting Microsoft Corp.'s Outlook, the next-generation client for Microsoft Exchange that offers similar capabilities. Outlook will appear in the Office 97 application suite and Exchange 5.0.

Kevin Codman, a Notes administrator at Joseph E. Seagram & Sons, Inc. in New York, said he may reconsider deploying Notes Mail to the company's 600 Notes users now that he knows about the Notes Internet Mail client. "Something like this sounds interesting and may be better for us," he said.

The attraction for users is an integrated desktop client that goes beyond the basic mail inbox that browsers provide.

The lack of such an offering from Lotus has already driven some users toward Microsoft.

"We run Notes on the back end but will probably move to Outlook when we install Office 97 at our site," said Patrick MacNamara, worldwide manager of messaging at EMJ Music in New York. MacNamara said the move wouldn't save much money but "would simplify the desktop."

Besides its client plans, Lotus will advance other key initiatives at the user meeting. The company will roll out an application for its Domino server, called Domino.connect, that will let users link to other databases.

Lotus also is expected to preview CC:Mail 8, a World Wide Web-enabled version of its LAN-based mail system, and Version 2.0 of its NotesPump tool with support for Novell, Inc.'s Novell Directory Services.

The application is expected to roll out by year's end.

**Domino server getting document management add-on**

Lotus next month will follow up its flurry of Lotusphere announcements by introducing a document management add-on for its Domino server, sources said.

Domino Document Manager is an application that allows the Domino messaging and Web server to manage shared documents that may be changed by multiple users.

Notes has long been a repository of documents within companies. It lacked some key capabilities, such as the ability to check documents in and out or store the pieces of a document in their native file formats.

Besides improving the document-handling capabilities of Domino, sources said, Domino Document Manager will keep the contents of Web servers up-to-date and weed out unnecessary documents.

The application is expected to roll out by year's end.

**Web-based groupware takes on Notes attributes**

By Barb Cole

A PIONEER in the World Wide Web-based groupware market is about to make its product a lot more like Lotus Notes.

Radnet, Inc., which sells WebShare groupware tools, last week announced it is enhancing its software with replication, a full-blown application builder and enhanced security. Those are the very features that helped to make Lotus Development Corp.'s Notes so popular.

"Replication has been a tough nut to crack, so if [WebShare] can do it, that's fantastic," said Robert Blau, director of sales at Thuridion and WebFlow Corp. generated excitement last year when it became clear companies wanted to deploy groupware on the Web. These standards-based offerings were even viewed as possible successors to Notes and other proprietary groupware.

But following aggressive moves by the leading messaging vendors to port their closed groupware platforms to the Web, products such as WebShare are seen as complementary to core messaging systems.

So although WebShare 2.0 can be run as a stand-alone groupware system, it also can be layered on top of Microsoft's BackOffice or Netscape Communications Corp.'s SuiteSpot. WebShare 2.0 also supports several Web servers, Notes, CC:Mail, Netscape Mail and several SQL databases.

The new version will be available later this quarter.
To create one of the most dynamic Web sites, HotWired clicked on Sybase.

There are cool places on the Internet. And then there are truly hot ones—like the HotWired Network (www.hotwired.com), serving over two million page views every day. What helps HotWired generate all this heat? Sybase. We provide the database and Internet solutions that run their site end-to-end. We make it dynamic. Personalized.

Internet Solutions

Different every time you see it. We even help track visitors’ browsing habits, so content is automatically updated with each visit. Which is why more of the top Internet sites run on Sybase than any other solution. For a more in-depth look at what we’ve done for HotWired, visit www.sybase.com/hotwired. Or call us at 1-800-8-SYBASE. It’s where the most dynamic Web sites begin.

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Mainframe middleware edges toward spotlight

Candle, Talarian offer new products

By Tim Ouellette

TALARIAN CORP. in Mountain View, Calif., last week released a mainframe middleware product — originally developed for scientific and defense contracts — that offers users an alternative to IBM's MQSeries.

Middleware is moving to the forefront of user concerns as they try to integrate different systems, so vendors are scurrying to keep up.

Last week, for example, Candle Corp. in Santa Monica, Calif., bolstered its line of MQSeries management packages by buying the MQView software module from Apertus Technologies, Inc.

Message-oriented middleware has been a big software that delivers secure data messages to applications running on multiple platforms. That way, users avoid the platform-specific communications programming normally required.

Talarian's SmartSockets 4.0 for MVS "pushes" data messages to clients who have "subscribed" to have certain data sent to them (see chart).

For example, telecommunications equipment maker Nortel, Inc. uses a Unix-based SmartSockets package to deliver new equipment maintenance data to different groups automatically, said John Dowling, senior software engineer at Nortel's Raleigh, N.C., office.

In contrast, IBM's MQSeries works on a "pull" model, in which users request certain data messages.

WEB WORKS
Analysis. Analysts said Talarian's approach, called publish/subscribe, works well in intranet or World Wide Web applications that automatically notify users of changes in Web pages, for example.

IBM moves AS/400

CONTINUED FROM PAGE 1

By Lisa Picarille

THE WAY Apple Computer, Inc. tells it, the firm is sitting on $1.8 billion in cash, which is enough to buy the company's continued viability and independence as well as drive its turnaround.

The Goo series will put even more distance between older -- originally developed for scientific and defense contracts -- and most of them are open the top end of their health system that runs an older RISC AS/400 model.

CISC AS/400s and RISC models that will force users to either stick with their existing boxes, known for their reliability, or move to new technology.

About 435,000 AS/400s are installed, and most of them are CISC-based. But IBM officials said the move to RISC is progressing faster than they expected.

"Sooner or later, there will be too much neat stuff that runs only on the RISC machine — including Internet and Windows 95 and NT server support — so that these users will make their decision to move," said Dave Peterson, president of Midrange Open Business Strategies in Rochester, Minn.

Kennebec Health System in Augusta, Maine, added a RISC-based AS/400 last year. But a pending merger with another health system that runs an older CISC AS/400 has Kennebec considering the eight- and 12-way systems to manage the combined computing needs, said Bill Terrell, Kennebec's chief information officer.

"It would be at least another six months before we could absorb a new operating system such as Version 4 Release 1," said David Jones, director of computer services at the State Bar of California in San Francisco, which has installed a RISC server.

"But we won't need to upgrade to their new high-end models" because the organization is happy with the regular Advanced Server Model 590 that IBM optimized for Internet-related projects, Jones said.

The 600 series will be based on the Apache processor, a single-chip PowerPC module that will replace the seven-chip PowerPC module found in RISC AS/400s. The single chip speeds up processing times and supports eight- and 12-way clusters.

Candle and Talarian will use MQView, a layer of software that provides a high-speed environment for running high-performance applications, said Johnn Dooley, senior software architect at Candle.

"That way, users avoid the platform-specific communications programming normally required," said Dooley.

"Middleware is moving to the forefront of user concerns as they try to integrate different systems, so vendors are scurrying to keep up. Last week, for example, Candle Corp. in Santa Monica, Calif., bolstered its line of MQSeries management packages by buying the MQView software module from Apertus Technologies, Inc. Message-oriented middleware has been a big software that delivers secure data messages to applications running on multiple platforms. That way, users avoid the platform-specific communications programming normally required. In contrast, IBM's MQSeries works on a "pull" model, in which users request certain data messages. A SmartSockets 4.0 basic configuration costs $50,000. Meanwhile, in the blossoming aftermarket of MQSeries-related management software, Candle reduced the number of players by buying Apertus' MQView software (CW, Dec. 2, 1996). It lets users centrally install, configure and monitor MQSeries. Candle will use the technology in its Command Center for MQSeries product line, which competes with similar offerings from Boole & Babbage, Inc. in San Jose, Calif.

Apple's cash crunch

Short-term debt

Estimated cost to acquire Next $400M
Loan due in the first half of 1997 $180M
Cash as collateral for letters of credit $777M
Fiscal Q1 loss $120M
Estimated Q1 restructuring charge to be taken Q2 $100M
Conservative projection of Q2 potential loss $50M
Total $1.03B

Long-term debt

Loans and convertible bonds due 2001 $661M
Loans and convertible bonds due 2004 $3M
Total $664M
Total debt $1.68B

"Apple is not in great shape in terms of real cash that is usable for all these great turnaround efforts because they have a high level of debt," said Jeff Matthews, general partner at Ram Partners LP, a Greenwich, Conn.-based investment firm. "They are just not generating enough cash flow."

"Apple is not in a good cash situation," added Charlie Wolf, an analyst at Credit Suisse First Boston Corp., a New York investment banking firm. "I'm not saying they are having a liquidity crisis, but it will be very difficult for them to survive as an independent entity with their current business model."

APPLE'S TAKE

During a teleconference with financial analysts last week, Apple Chief Financial Officer Fred Anderson called the company's liquidity "very solid." And at a briefing at Macworld Expo earlier this month, Marco Landi, Apple's executive vice president, said it would allow Apple to "make the investment to execute our strategy." But the financial community is more pessimistic.

Standard & Poor's, a major New York bond rating company, last week downgraded Apple's credit position to "adequate." S&P also lowered the company's corporate rating and issued a "negative" outlook on Apple. Earlier this month, the Cupertino, Calif., computer maker posted a $120 million loss for its first fiscal quarter of 1997, which ended Dec. 27, 1996. Apple also reported revenue of $2.1 billion, 32% lower than last year.

Anderson said Apple isn't expected to turn a profit until the end of the July-to-September quarter, rather than the current quarter as originally projected. That means it is likely to dip further into its cash reserves. "This is not a bottomless well," said Vadim Zlotnikov, an analyst at Sanford C. Bernstein & Co., a New York-based investment banking firm. "Cash is going to get really tight after the current quarter. The pressure is on Apple to hit sustainable levels of profitability."
Firms go offshore for cheap year 2000 fix

CONTINUED FROM PAGE 1.

Firms go offshore for cheap year 2000 fix

grams — representing about 24 million lines of code — to one of the companies. The company won't disclose what it spends on outsourcing but estimates it has saved at least 20% so far. Going forward, "we could continue to see significantly more savings," said Manuel Cancel, manager of the year 2000 project at Con Edison.

Once the decision was made to outsource, "we looked offshore because it was cheaper," said James Fox, director of information systems at Union Pacific Railroad in Omaha. The company recently outsourced a part of its conversion work to HCL America, Inc., a U.S. subsidiary of an Indian firm. The deal is valued at $50 million.

"We are definitely seeing this as a trend," said Howard Rubin, president of Rubin Systems, Inc., a market research firm in Seaford, N.Y.

"These outfits are like the Wal-Marts of software," Rubin said. "Whatever the reason people give for going there, it is the cost they went shopping for."

In quarterly surveys, Rubin's company tracks various aspects of information technology management and costs at 200 U.S. corporations. According to its estimates, about 15% of those companies are moving toward outsourcing their year 2000 work. Of those outsourcers, at least one in four is moving the work offshore, Rubin said.

Other analysts agreed. "About 10% of our clients are actively outsourcing right now. About 40% are planning to within the next year or so," most of them with offshore firms, said Capers Jones, chairman of Software Productivity Research, Inc. Driving them there are the lower costs and the relatively abundant availability of Cobol programmers overseas, he said.

In most countries where year 2000 work is done, the education systems — combined with government and private sector support — are producing large pools of low-level computer talent, analysts said.

Software Productivity Research in Burlington, Mass.-based handles year 2000 consultancy work for a dozen companies per month on average, Jones said.

DECREASE IN QUALIFIED LABOR

The decreasing availability of qualified labor in the U.S. and an unwillingness to divert scarce IS personnel from current tasks to year 2000 work also are cited by observers as reasons for the trend.

"We are in the middle of a merger with another railroad, and we need our IT employees working on that merger as much as possible," Fox said.

"We realized early on that if we addressed the conversion issue ourselves, any ongoing work we had would come to a complete halt," Cancel said.

The trend has meant big business for programming shops in countries such as India, Ireland, Israel and the Ukraine.
Network Selection Guide

**Peripherals**
The most manageable and affordable network-ready Pentium processor-based PCs and large-volume LaserJet network printers, including the new HP LaserJet 5Si Mopier.

**Service and Support**
Fast, accurate resolution of questions for multi-vendor LAN environments, available around the clock and at an excellent value.

**Network Connectivity**
Comprehensive network solutions to fit any size network.
A complete range of high-performance switches, hubs, adapters and print servers.

**Management**
HP OpenView puts network managers ahead of their network.

**Storage**
HP SureStore Optical Products provide a full line of affordable storage products.

**Built To Fit Any Network**

Hewlett-Packard's Intel® Pentium® and Pentium Pro processor-based servers are sized for file servers, application servers and workgroups running Windows® NT. Naturally, we make everything go with our servers for your network. What else would you expect? We live and breathe network engineering. For detailed specs, visit http://www.hp.com/info/HP_LAN or call 1-800-533-1333, ext. 1614.
Yeah, we sell those ... let me check

> Internetworking mergers leave sales staff uninformed on their own products

By Bob Wallace

THE FRENZIED PACE of internetworking mergers is making it tough for information systems managers to find vendor sales staff and systems engineers who fully know their own product lines. "It's going to worsen as industry consolidation intensifies and affect users that buy anything beyond core products from their vendors," said Tom Stenson, a network manager at State Street Bank & Trust Co. in Boston.

The problem is particularly noticeable in the internetworking industry because of the pace of consolidation that market is undergoing, analysts said. For example, Cisco Systems, Inc. and 3Com Corp. each have acquired six companies since January 1995. "It wreaks havoc on future projects because it means I have to rethink what I'm planning and often start from scratch," said James Wiedel, director of networking at the University of Southern California in Los Angeles.

"I've run into a company where the router salesman doesn't know squat about any other product his company now sells. And I've run into a company where the remote access salesman doesn't know anything about remote access products his company goes through an acquisition," Wiedel said. "And we're not talking about a short duration, either. This goes on for a while, sometimes for more than a year."

Users also worry that resellers are being left in the dust. "One thing we look for is reseller systems engineers that are trained on the whole product line of the companies whose products they sell," said Barry Gillespie, network services coordinator at St. Jude's Children's Hospital in Memphis.

"It's going to worsen as industry consolidation intensifies and affect users that buy anything beyond core products from their vendors."

- Tom Stenson, State Street Bank

"But after the merger that formed Bay Networks and the 3Com/Chipcom merger, the resellers' sales representatives and systems engineers didn't even know ... model numbers. It was a pretty scary time," Gillespie said. "We try not to slam anyone, but these situations force us to deal direct with the vendors involved or look at another supplier."

Other users agreed. "We try not to use external sales channels because of this phenomenum," said Dave Meyer, a senior network engineer at the University of Oregon in Eugene. "We deal directly with Cisco. The problem is a pretty tough one around, especially for users looking to buy products from companies whose vendors acquire."

Internetworking vendors acknowledged the problem. "When companies use acquisitions to fill out their product lines and innovate, they create tension for users," said Jeff Thermond, vice president of system marketing at 3Com. "We've done 14 acquisitions, but I wouldn't portray that we have everything sewn up here because we learn something new with every one."
PeopleSoft's workflow-enabled applications route the right information to the right people at the right time in the right form. That can not only improve the productivity of your organization, but can also facilitate business process redesign, reduce paperwork, and automate administrative tasks. How's that for working hard?

PeopleSoft's workflow is open, so it can integrate with a variety of third-party products. You can use email for notifications, and electronic forms for turning around approvals. Or use internet forms and interactive voice response systems to communicate with PeopleSoft applications.

And, unlike some solutions, PeopleSoft's are flexible enough for you to define your own processes and procedures. In other words, PeopleSoft adapts to the way you work, not the other way around.

No wonder 1350 organizations worldwide have chosen PeopleSoft. For more information on how PeopleSoft's workflow solutions can help your organization, call 800-947-7753 and ask for our workflow white paper. Or visit us at workflow.peoplesoft.com. You'll discover we have the technology, the people, and the commitment it takes to help you increase your productivity. Without increasing your workload.
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Telecoms are fueling merger mania

By Kim Girard

THE MERGER MANIA of 1996 should continue throughout 1997 as telecommunications companies scramble to gain market share in an age of deregulation. Users should expect local service prices to dip slightly this year, mostly in urban areas where competition is the hottest. But long-distance companies that are protecting the terms of the Baby Bell invasion of their turf are slowing the process to a crawl.

While local carriers aren't expected to widely invade the $75 billion long-distance turf until next year, competition for a piece of the $90 billion local market has already begun.

To compete, long-distance giants and the regional Bell operating companies (RBOC) are working toward one-stop shopping for business customers, analysts said.

Doris Brewer, telecommunications manager at Bally's Park Place casino resort in Atlantic City, N.J., said telecommunications deregulation has proven to be a double-edged sword.

Lower prices are inevitable, she said, as Bell Atlantic Corp. and AT&T Corp. jockey for her business. The company recently renegotiated its long-distance contract with AT&T; knocking several cents off its per-minute rate for the next three years, Brewer said.

The downside in the new market, she said, is that many more second-tier providers are knocking down her door. "It becomes an annoyance," she said. These alternative carriers will become increasingly vulnerable under deregulation, where the mood is merge or die, analysts say.

MERGER MANIA

The following were the largest U.S. mergers and acquisitions last year:

- Bell Atlantic and Nynex $21.34B
- MCI and British Telecommunications $21.27B
- SBC Communications and Pacific Telesis $16.52B
- LDS WorldCom and MFS Communications $13.56B
- Boeing and McDonnell Douglas $13.34B

Source: Securities Data Co., Newark, N.J.

Teleport Communications Group, the largest of the alternative local phone service providers, is among the companies rumored to be a possible takeover candidate.

If acquired, Teleport would join a growing list of acquired companies, which was kicked off last year by the mergers of Bell Atlantic with Nynex Corp. and SBC Communications, Inc. with Pacific Telesis Group.

GTE Corp., the subject of merger rumors for months, explored a possible alliance with MCI Communications Corp. before the MCI/British Telecommunications PLC deal was announced. And there has been speculation surrounding a GTE/WorldCom Inc. partnership.

Users can expect more deals among the remaining independent RBOCs — US West Communications, Inc.; Ameritech Corp. and BellSouth Corp.

Utility companies — big players in the telecommunications market due to their ownership of rights of way — also may acquire a carrier or two, analysts said.

Raghu Ram, an analyst at Wheat First Butcher Singer, an investment bank in Richmond, Va., said this year companies will pull together merger strategies to provide bundling of all services.

"Three years from now you won't be calling me and asking, 'Who's your local provider?'" he said. "One company will do everything."
With SAS software's integrated data mining and decision support tools, you can uncover all the business "secrets" locked away in your massive databases... hidden patterns that can make your business more profitable, more competitive, and more responsive to customer needs.

Exploit your data by exploring it with the richest variety of data analysis and visualization techniques. Use OLAP, neural networks, tree-based models, churn analysis, and traditional statistics to improve customer retention, target key prospects, profile market segments, detect fraud, analyze response rates, and much more. And then empower decision makers to exploit and share this newfound information using the most sophisticated forecasting, reporting, and graphics tools.

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Remember when all the pieces fit together right out of the box?

Network solutions fro
Today's enterprise networks are such a complex maze of disparate parts that it can be difficult to keep the system running, let alone stay focused on the big picture. Wouldn't it be great to have a flexible, seamless solution that ensures what you buy today works with what you'll require tomorrow?

Enter Cabletron. We help you see the finished picture before another piece goes into place.

We believe in compatible migration for the life of your network, protecting investments even in the face of ever-changing business demands. Our vision remains sharp through the industry's strongest investment in R&D combined with select technology acquisitions that sensibly and seamlessly mesh with our product strategy. We're with you from the desktop to the data center, out to the wide area/remote access environment (ISDN, frame relay, ATM) and across the full spectrum of enterprise management software. And it's all backed by our legendary commitment to service and support, ensuring picture-perfect assistance—now and for the long run.

So whether you're laying out your company's strategic network puzzle or just piecing together this year's bandwidth needs, Cabletron truly does offer a simpler way to work.

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MALDEN MILLS: IS REBORN

High tech dominates new factory

> $130 million project showcases latest automation software, networking

By Matt Hamblen

NEXT MONTH, under an ambitious rebuilding program, Malden Mills will open a new 600,000-sq.ft. factory building at a cost of $130 million. It will be filled with dozens of new dye and finishing machines that will be PC-controlled via human/machine interface software — primarily InTouch and InTrack from Wonderware Corp. in Irvine, Calif.

InTouch is widely used for machine controls, such as how hot a fabric dryer is set or how quickly fabric is pulled along the line. InTrack will monitor larger processes for such things as how much fabric is produced.

PC-controlled automation software from Siscodata in Italy has been installed in some machines to help inspectors examine and digitally record fabric imperfections and weight. Eventually, the mill will be able to give retail customers, such as Lands’ End or L. L. Bean, Inc., a diskette that contains the digitally recorded inspection of each roll of fabric that can be loaded into a client’s PC-controlled cutting machine.

Machine-controlled PCs will be linked to a nerve center over a 100M bit/sec. Ethernet network. Robotics will be used to mix dyes and pipe them to vats where 50-yard-long bolts of fabric are automatically inserted, removed and dried.

SWITCHING TO SWITCHES

Technical services manager Dave Wimberley spent the past year planning for a new global enterprise network to connect the Massachusetts mill with ones in Maine and Germany, and with a customer service center in the Netherlands. The network will function on switches instead of routers, with new PCs that run Windows 95.

“We’ll completely eliminate the millennium problem because everything will be new,” Wimberley said. “The fire was a bit of a blessing for our move to new network technology.”

The mill has also signed a license with SSA, Inc. in Chicago for a business planning and control system, BPCS 6.0. It will help provide the company’s 700 customers in 50 countries up-to-the-minute information on their orders and monitor the efficiency of the manufacturing process.

The deal is also risky, performance problems with BPCS 6.0’s object-oriented design prompted some European customers to postpone purchasing decisions. But an SSA executive claims the product has been in use for nearly a year at 300 other companies. He claimed that once installed, the product should cut the supply chain cycle time in half.

Analysts William McSpadden and Bruce Richardson both said the Wonderware and SSA products, especially, will put Malden Mills at the forefront of information and automation technology. The improvements should enhance the company’s bottom line, they said.

Disaster sparks mill’s IS overhaul

CONTINUED FROM PAGE 1

planning and operations, got the call. He said the company hopes that using a top business manager instead of an IS manager to run the so-called Merri-mack project will “help give customers what they want: timely information about their orders and an ability to deal with the company electronically.”

Separately, automation experts were dispatched around the globe. Their mission was to find the best textile manufacturing innovations in the world (see related story, next page).

The goal was to replace aging information technology in order to gain better control of production, inventory and automation processes. The entire project is expected to be completed in the next 18 to 36 months.

William L. Baggeroer, Malden’s vice president of IS, hadn’t even reported for his first day of work when the fire hit. “The [11 p.m. news] report said Malden Mills just blew up, and I saw this blaze that looked like Hades and thought, ‘My God, it’s gone,’” he said.

When a worried Baggeroer called in, he was told to help set up a new IT system. The idea behind the system modernization plan was to fundamentally change the company “to make it more customer-focused instead of only manufacturing-focused,” he said.

A bold undertaking, to be sure. But Feuerstein and his financial managers expect a huge return on what could be a $15 million investment. “It will come back many times in coming years by having customers give us preference,” Feuerstein said. The investment is also expected to position the mill well ahead of its competitors.

The mill’s IT vision is even more impressive, considering that the company, which was already struggling to rebuild its physical structure, could have held off on the systems revamp. Although flames swept through three century-old mill buildings and seriously injured 12 workers, the IS infrastructure was mostly spared.

Indeed, the day after the fire, the Hewlett-Packard Co. HP 3000 mainframe system was running, churn ing out the next week’s payroll and staffing information. Only 10% of Malden’s systems were lost, but that included some irreplaceable screenprint patterns.

HANDS-ON RESCUE

At one point during the blaze, however, the wind shifted and put the data center at risk.

Data center manager Al Au-tieri Jr. recalled driving to work, ordering the center closed and sending the overnight IS workers home. He decided to rescue hundreds of data storage tapes himself. “I grabbed them up any way I could in a panic and loaded them into a van,” he said. He drove the van to his home until everything was settled several hours later.

As it turned out, the data center was spared, and it took hours to return the tapes to their proper order. Nearly all the vital corporate records were regularly backed up and stored by a contractor miles away, but “saving the most up-to-the-minute data somehow seemed vital at the
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   10. Manufacturer (other than computer)
   11. Other

2. TITLE/FUNCTION (Circle one)
   21. Dir/Mgr. MIS Services, Information Systems

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)
   (a) Internet software
   (b) Web authoring/development tools
   (c) Other

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
   (a) Intemet software
   (b) Web authoring/development tools
   (c) Other

5. Do you use the Internet? (Yes/No)

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5. Do you use the Internet? (Yes/No)
REINVENTING THE SHOP FLOOR
Search for innovations spans industries, globe

By Matt Hamblen

FOLLOWING THE devastating fire at Malden Mills in 1995, Mark Cristiano has raked up nearly 50,000 frequent-flier miles scouting out automation machinery controls and components as part of the rebuilding efforts at the mill.

Cristiano, the mill's automation manager, visited Germany, Italy and Switzerland to meet with machinery and control software vendors. Accompanying him was his boss, Michael Lev, manager of advanced manufacturing technology.

The two men, along with other mechanical and systems engineers, also flew to manufacturing plants, mainly in southern U.S., to see automation systems perform firsthand.

The transatlantic flurry of research was sparked by management's decision to standardize on machine-variable speed drives and programming logic controllers after the fire, which destroyed all or part of 100 textile machines and the PCs that controlled them.

“We were given a mission to create the most innovative manufacturing plant in the world,” said Cristiano, an eight-year veteran of Malden Mills. “It’s been the most exciting year of work I’ve experienced.”

GROUND ZERO

“We were on a trend before the fire toward computer automation,” Lev said. “The fire made it easy. Instead of converting machinery, we were able to start from ground zero and have it customized for us. We have the opportunity to use the best software in the world.”

“It’s best to see the technology firsthand,” Lev said. “That’s the way I’ve always done it. But after the fire, it was done in a more intense way.”

For example, Lev and his co-workers visited a cigarette maker and even competitors' mills, all to verify that systems worked for them. It might seem unlikely, but Cristiano and Lev said competitors didn’t mind sharing insights about automation technology.

Mark Cristiano, automation manager

“We were given a mission to create the most innovative manufacturing plant in the world. It’s been the most exciting year of work I’ve experienced.”

— Mark Cristiano, automation manager

The fire destroyed half a fiber-optic loop on the 29-acre campus, half the phones, about 100 PCs in remote locations, 160 printers and part or all of 500 large dye and finishing machines.

The company’s research and development and design studios lost some vital data that contained formulas and designs for printing fabric. Some of the fabric designs had to be recreated even though data backup procedures were in place. In one case, data backup tapes for designs were kept in a separate building, but both that building and the one that contained the design PCs were destroyed.

Some data was recovered, thanks to users who had taken PC floppy disks home.

One upside to the fire is that in the aftermath, managers seized the opportunity to reform business practices with technology as soon as Feuerstein decided to rebuild.

“To the credit of the executive group, they didn’t lose sight of long-term goals,” Baggeroer said. “They took advantage of the fire to speed up [these projects].” He was referring to the project its legs.

Merrimack "brings Malden Mills closer to a just-in-time production process," agreed Bruce Richardson, an analyst at Advanced Manufacturing Research in Boston. Such a change means fabric is manufactured to each customer's order instead of being placed in inventory at the mill's expense.

"Sometimes it takes a catastrophic event like a major fire to bring about profound change in an organization, and that's clearly what's working here," Richardson said. "Left to their own devices, people usually don't make such sweeping changes."

From left: Ai Autieri Jr., data center manager; Mark Cristiano, automation manager; William L. Baggeroer, vice president of IS; and Dave Wimberley, technical services manager
<table>
<thead>
<tr>
<th>Platform</th>
<th>Database/OS</th>
<th>Performance/$ per 1pmmC</th>
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<td>Compaq ProLiant 5000</td>
<td>Sybase/UnixWare 2.1</td>
<td>8311/$95</td>
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<td>Sybase/UNIX V3.2</td>
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Excuse us if our enthusiasm seems a little excessive. But the most recent TPC results confirm something we're rather proud of: among mid-range servers, the Compaq ProLiant 5000 offers a truly superior level of price:performance.

Just consider the numbers: the ProLiant 5000 was the first platform to break the $100/tpmC price:performance level; and it was the first Windows NT server to outperform the competition running all major databases from Microsoft, Oracle, Informix and Sybase. (Some would call this shameless chest beating. We call it stating the facts.)

Of course, the TPC benchmarks are only part of the reason why the ProLiant 5000 can deliver industry-standard solutions for your enterprise.

For starters, it comes with a range of industry-leading integration management tools like Insight Manager and SmartStart. With them and advanced enterprise systems management software, you can more easily deploy, monitor and proactively manage your entire distributed enterprise from a single console. And with our open business philosophy called Distributed Access — a new model of connecting people to people and people to information — you'll always be assured of best-of-breed solutions based on industry standards.

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A perfect example of this is our partnerships with SAP and Microsoft. Simply put, no one can offer our experience and expertise in providing superior integrated R/3/Windows NT solutions for your enterprise. Our R/3 platform was the first certified for the Windows NT environment, and now more of the world's top businesses run their SAP/Windows NT solutions on Compaq servers. (Hmm, what a coincidence.)

So what's the bottom line?

The ProLiant 5000 offers an unparalleled level of price:performance, reliability, expandability and manageability (sounds like a salesman). Which means better enterprise solutions at the lowest total cost of ownership (sounds like a CFO). Which means you could be setting some records of your own pretty soon.

To learn more about our enterprise solutions, visit us at [www.compaq.com](http://www.compaq.com).
Upgrade 97. Have you ever had one of those days when you had

one thing to get done but never got to it because more immediate tasks kept cropping up?

Humorist Patrick F. McManus, who had many of those days growing up in rural Idaho, believes there's a force in the universe that links otherwise unrelated chores into an unbreakable chain.

You want to go fishing, but first you have to dig a posthole for a broken fence. You loaned the posthole digger to the Millers, but the Jones' place is on the way, and you promised to return those tools you borrowed. Then the truck gets a flat. Soon it's too dark to fish.

That's the position you're in if you're thinking of upgrading to Microsoft's Office 97, the coolest desktop productivity, Internet-exploring, groupware suite in the universe.

It runs only on Windows 95 and Windows NT, so you have to come up with a desktop operating system strategy. Got one? Good. Did you standardize on one or mix them? Are the Macintosh and OS/2 users mad? Don't worry, they'll be happy.

OK, now upgrade that hardware — those Windows 3.1 machines don't have the horsepower to run Windows 95 or Windows NT.

Oops. You use several electronic-mail servers, but Office 97's cool collaborative features work best with Exchange servers. Better install some.

Wait, Exchange runs on NT Server and you run mainly Unix. Better buy some new servers.

OK, you've standardized on your favorite Microsoft operating system, upgraded systems, made Exchange your main E-mail system and added lots of NT Server software.

But wait. Your CEO wants you to cost-justify the upgrades, lay out a product road map and defend your dependence on Microsoft. Go back and do some more research.

McManus not only identified this situation — he even had a solution for it. Just go fishing.

Kevin Fogarty, Sections editor
Internet: kevin_fogarty@csu.com

Readers stoke the flames of the NC vs. PC debate

In the forecast editorial "NC vs. PC," CW, Dec. 30 (Jan. 5), one has to wonder what planet Maryfran Johnson is from.

She asserts that "80% of the business users out there feel more like power users — stymied in their work by buggy, bloated software and complex systems that crash for mysterious tech-wienie reasons." At that unbelievable 80% rate, businesses all over the U.S. should be screeching to a halt.

I have created PC-based network systems that deliver continued stability and reliability. It's when trinket-wienies (not tech-wienies) start slapped in cheap virus-detection junk, memory-hogging screen savers and pseudo-tools that everything goes haywire.

Johnson seems to unwittingly define the network computer to its own detriment with the use of the Star Trek example, calling the network computer "a single-function device that relies on a powerful network." That's the very thing users do not want in an age when even the single-function TV is becoming a multifunctional, interactive device. Who wants to be at the mercy of the "great network," especially when it goes down?

David S. Mohler
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Dayton, Ohio.
dmohler@clearlogic.com

As both a personal and a business user, I can definitely say that at work I'd really rather have a fully functional network computer. Why? Because I'm not paid to worry about managing and backing up all the crud on this outdated system. Who has the time? I need upgraded software. Do I ever get it in a timely manner? Of course not. The support techs are too busy pulling apart PCs, trying to figure out which hardware component went belly-up this time in offices around the building.

Despite what Paul Gillin writes, many of the trends that were the "latest fads" of the time did indeed impact our industry — and in a positive way. What are intranets but huge client/server systems? That gets to the biggest point I have with this debate.

Why is it "either/or" instead of "and?" I'm looking forward to the network personal computer.

It would store files locally for my personal stuff and pull applications and public files from the central server. I guess I'm not supposed to want the best of both worlds.

By Schwark
Basking Ridge, N.J.
r schwark@lucent.com

Maryfran Johnson is right on the money about the network computer. It's not just another Silicon Valley hype.

Unlike the "personal digital playtoy," the network computer is a financial cost containment tool. The Intel/Microsoft push/shove strategy for software, memory and MIPS has run its course with the chief financial officers of the world. My cursory look at the typical corporate PC user finds frustration with the current PC/LAN complexity.

John O'Brien
Lawrence O'Brien, Inc.
Gaithersburg, Md.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9771, 500 Old Connecticut Path, Framingham, MA 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.
Be Careful What You Wish For
By Vaughan Merlyn and Sheila Smith

As IS executives, we're great at planning what we want to happen, but we rarely consider the possible unintended consequences of our plans. How can we uncover the unexpected?

Hopes were high that summer of '95, as the IS management team at a major financial services company created a new vision for planning projects and setting target dates. Collaboration would be key: Business and IS would work together to make the necessary trade-offs to reach solid, achievable target dates for new systems. Business requirements would drive the planning and the trade-offs to be reached around scheduling, cost, quality, scope and resources. Never again would a project be driven by arbitrary end dates. Never again would the delivery date be master and the IS professional be slave.

Six months later, disaster struck. The company failed to get a key Internet-based product to market in time to beat the competition. Why? The underlying information technology just wasn't ready. The new year began with little to celebrate.

With the new project-planning method, how did this happen? Like a villain kidnapping an innocent victim, something crept up on the project and blindfolded it from behind — an unintended consequence of a well-intentioned change.

Somewhere along the way, the message became garbled. What IS folks heard was, "No more date-driven projects," rather than, "Collaborate with your business partners to set the date based on business needs." And since collaboration wasn't being rewarded, the IS group felt the message was clear: Plan the project in detail, and tell the business side what the date would be. The discussions never happened; the trade-offs were never made. Had those discussions taken place, the people involved might have opted to get a basic product to market quickly and add more functionality incrementally, reaping the benefits of being "first to market."

Good intentions gone bad are an all-too-common surprise for IS managers. Although most of us are excellent at thinking about what we want to happen — the desired outcomes and the intended consequences — we rarely stop to consider what could happen — the possible unintended consequences. So, what's missing from our efforts that causes these unintended consequences?
Why didn't we think of that before?

The root of unintended consequences is a failure of thinking. We fail on multiple levels.

The first failure is assuming that IS projects are more logical, straightforward and free of political considerations than they actually are. We have been taught that the world is a simple, mechanistic place. So we plan and analyze under the assumption that there are simple cause-and-effect links between our actions and results.

In reality, the world — especially the IS world — is enormously complex. Subtle interrelationships, coupled with the natural IS engineering mind-set, become an albatross around IS' neck in terms of anticipating unintended consequences. The engineer designs a logical process that, when followed, is intended to lead to desired outcomes. We need, instead, to think more like ecologists, recognizing the inherent unpredictability of complex systems and looking at the whole environment as we plan and take action.

Take the case of a large oil company at which this "engineering approach" derailed efforts to implement an information technology architecture.

After creating a new IT architecture, the company's IS group established a unit to be the "keepers and enforcers" of the architecture. The unit reviewed all new IS projects to ensure conformance. Within six months, the "architecture police," as they came to be known, were a bottleneck that delayed projects and alienated both business managers and developers. Also, the architecture failed to prevent businesspeople from acquiring their own technologies, regardless of whether these conformed to the architecture. Within the year, the group disbanded.

The simplicity assumed by an engineering mind-set not only resulted in a failure to reach the architecture objectives, but also caused an unintended consequence of alienating IS customers and damaging relationships.

The second level of failure is often a matter of decision-making style and a lack of thought about the larger context. One CIO of a global manufacturing company admits the need for a co-pilot to help him think through and spot unintended consequences. "Once I make a decision, I tend never to look back. I need someone right there with me as I make choices, challenging me to think about what might happen. I always have time to manage; I must make the time to think." This decision-making style, which incorporates a bias for action with little post-action reflection, can make for embarrassing surprises, as described in the following scenario:

This particular CIO was faced with a problem familiar to many CIOs — dysfunctional relationships between IT and business. The solution:

Quickly form a group of senior IS professionals focused on building relationships by consulting with business units about IS needs and structuring projects to meet those needs. The relationships improved at record speed, as requests for IS projects came rushing in, a result of the group's hard work at mending fences. Great news! Finally, the businesspeople were talking to IT about how to enhance their processes using information technology.
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But bad news came fast on the heels of this burst of hope. Lacking a process for prioritizing IT investments, IS was left with a mountain of projects of varying business value and insufficient resources to carry them out. You guessed it: The best intentions of improving relationships actually worsened them when certain requests were denied or deferred. The bias-for-action style, coupled with a lack of thought given to defining the context in which the group would be deemed successful, caused this IS executive a serious embarrassment.

A final level on which we can fail involves our way of viewing technology, which can contribute to unintended consequences. A stark example of how a specific mind-set led to severe, unintended consequences appears in a particular division of a chemical manufacturer. For years, division executives viewed IT as a cost, not an investment. The goal: Minimize the percentage of revenue spent on IT. The IS group complied, reducing the level of spending to the lowest in the industry. New development was cut, hardware acquisition slowed, and key projects were deferred.

The unintended consequence of this cost minimization goal showed up rapidly and dramatically. Little investment was made to ensure that platforms were common and upgraded consistently. Without common platforms, communication among internal and external customers suffered, and without a proper infrastructure, business growth was hampered. Head count reduction produced lower costs in the IS organization, but business units started to hire their own IS people, resulting in hidden costs in the form of a shadow IS organization. Those good intentions born of a specific mind-set about IT costs inadvertently resulted in higher IS costs.

Uncovering the unexpected

N abbing unintended consequences before they nab you is the name of the game. A few simple techniques can help.

One is to analyze unintended consequences up front. Try the following quick exercise to help you think through what might happen in a given situation. (See "The 'What Could Happen' Test" on page 7 for how this exercise works for the project end-date example mentioned at the beginning of this article.)

First, clarify what you're really after. Start with how the desired situation is framed (in this case, from the perspective of the IS professional) and the intended result. Then ask yourself, "What could happen if the change is not handled properly?" Think about role confusion and likely misinterpretations.

This exercise will not only alert you to possible unintended consequences, but it may also

IS and the art of cooking pigs

"The reason IS management actions often lead to unintended consequences is a failure of theory. When managers see something that doesn't fit, they use a technique they are comfortable with — going after more data. We don't need more data, we need more thinking. Think, learn, examine. These are the tools to avoid unintended consequences."

So notes Barry Stein, president of Goodmeasure, Inc., a Cambridge, Mass.-based organizational change consulting firm. To highlight IS managers' tendency to react to symptoms without fully understanding underlying problems, Stein draws an analogy, relating an essay by 19th-century British writer Charles Lamb, in which Lamb imagined how humanity discovered cooking.

Millions of years ago, Lamb supposed, people lived in large extended families, with domestic animals, in crude houses built of wood and thatch. One day, a house caught fire; the only casualty was a neighborhood pig. When the residents returned, all that was left was a plume of smoke, a pile of ashes and a wonderful smell. Eventually, some of the people poked in the ashes and burned their fingers touching the carcass of the still hot, incinerated pig. When they put their burned fingers in their mouths to cool the burn, a delicious taste appeared. They had, Lamb said, discovered cooking.

Thereafter, when the people of the village wanted to celebrate, they picked out a house, put a pig inside it and burned the house down.

"The moral, according to Stein: "If you don't understand what's cooking the pig, you are going to waste an awful lot of houses."
uncover that the desired situation
as stated is not the one you want.

The financial services com-
pany mentioned in the example
did not really desire a state in
which "projects are no longer
driven by arbitrary target
dates," but rather one in which
"project target dates are estimat-
ed collaboratively by IS and the
business customer, based on
business requirements, a project
plan and a discussion of trade-
offs among schedule, cost, qual-
ity, scope and resources."

Once you're clear on what
you're after, examine the ele-
ments of what is desired (such as
collaboration, planning, open
discussions of trade-offs) and en-
sure that a common understand-
ing of these elements is shared by
those who must change. For IS's
internal customers, planning IS
projects may be a whole new ex-
perience. You must anticipate the
customers' confusion and address
it, or be ready for unintended
consequences.

Next, anticipate that people
will act according to incentives
and rewards. Naomi Bloom,
managing partner at Bloom and
Wallace, a consulting firm in
Fairfax, Va., that helps organiza-
tions re-engineer their human-re-
source business process, concurs.
"Even if people understand what
is expected, they only behave
that way if all the supporting
human-resource management el-
ements are in place," Bloom says.

Causal loop diagramming is
another technique that will help
you look at an issue holistically
and anticipate unintended conse-
quences.

### The "What Could Happen" Test

<table>
<thead>
<tr>
<th>Stated Desired Situation</th>
<th>Intended Result</th>
<th>Possible Unintended Consequences</th>
</tr>
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</table>
| Projects are no longer
driven by arbitrary target
dates. | More accurate, realistic estimating of projects. Projects more likely to be delivered on schedule. Less burnout of and stress on project teams. Balanced decision-making regarding end dates, resources, quality and scope. Increased business satisfaction with IT. | Business misses opportunities to get products to market in a timely, competitive manner. Project scope is larger than necessary: A Cadillac gets built when only a Chevette is needed. System is tested forever or trapped in analysis paralysis. |
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What if the PCs need to be upgraded as you open the box?

Will they quit without giving notice?

Will the manufacturer be around in, say, a month?
quences. This diagram was originated by MIT Professor Jay Forrester and popularized by Peter Senge, author of *The Fifth Discipline: The Art and Practice of the Learning Organization* (Doubleday, New York, 1990), and Pegasus Communications, Inc., a Cambridge, Mass., publisher of the *Systems Thinker* newsletter. This technique would have been invaluable for the CIO who was trying to mend relationships and ended up destroying them instead. (See chart above.)

Spotting unintended consequences in the making is like sending out scouts to see what lies ahead. It's also similar to looking for emerging scenarios in scenario planning, which anticipates different future business worlds. As Peter Schwartz advises in *The Art of the Long View* (Doubleday, New York, 1991), "In the real world, you don't know ahead of time which scenario will take place. But you prepare for several of them, and then train yourself to look for one or two small details so that you can recognize the full scenario before it happens."

We don't know which unintended consequence might happen, so we prepare for each, noting hints of trouble (see "Signs of Trouble," below). The chart shows an example of how the financial services company might have spotted a few unintended consequences in the making.
From anticipation to action

When you see an unintended consequence in the making, don't berate yourself. Instead, reflect briefly, then act fast. Here are some guidelines:

- Don't deny what's happening.
- Take time to revalidate what you intended to happen. Clarify the intended outcomes by describing them in terms of visible behaviors and day-to-day actions.
- Step back and see why the unintended consequence came about.
- See what opportunities exist for correction. For example, in the case of the manufacturing company CIO who generated more IS requests than could be handled, several opportunities existed for correction. He could have defined a prioritization process for all IT investments, added more IS resources to meet demand, opened discussions with specific users about their priorities, regulated the new group’s interaction with users or pursued some combination of these.
- Consider whether the corrective action will cause other unintended consequences.
- Act quickly!

In the manufacturing company example, the CIO realized that as demand built and could not be met, he should not rush off to get more resources, a step that might exacerbate the situation. Instead, after deeper reflection on what he originally intended — building better relationships — he found a way to both correct the unintended consequence and further develop relationships with the users. He used the golden opportunity of working with the business side on a process to set priorities for their IT investments.

Thinking through the issue to ensure you'll get what you want takes a bit of extra effort. The choice is yours. However, if you decide not to spend the time and energy thinking through the possible unintended consequences and how to manage them, be prepared. Who knows what you’ll get?

Read previous Leadership articles online. See Computerworld's Web site at www.computerworld.com/leadership.

About the Authors: Vaughan Merlyn and Sheila Smith are managing partners of Rosewell, Ga.-based Omega Point Consulting, where they help Fortune 500 companies increase the value derived from information technology. Merlyn and Smith collectively have 40 years of experience in the IS field. They can be reached on the Internet at vmerlyn@omegapt.com and ssmith@omegapt.com.
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Futile search for the fountain of reuse
Martin A. Goetz

A recent Computerworld article ["Reuse revealed," Oct. 14, 1996] correctly identified the risks of chasing the dream of object-oriented, reusable code. They include "analysis paralysis," high up-front investments in time and money and the chance that reuse will never spread across the organization.

But the article suggests these are just hurdles to be overcome. Not so. Attempts at reusing software objects have been failing for years. Reusability will never become widespread.

For starters, object-oriented programming (OOP) is difficult to learn. COBOL and PL/1 were successful largely because their English-like, procedural statements made them very easy to learn. Programmers could write application logic in a straightforward, easily understood and easily maintainable manner. By contrast, OOP demands that programmers and designers learn an entirely new and unnatural way of looking at the application as they search for reusable objects.

Don't be fooled by the steady stream of positive verbiage about the theoretical potential of OOP and reusable code. In the real IS world, reuse doesn't work. Study after study shows that most companies that tried OOP have abandoned it. And those that haven't have yet to develop a significant number of reusable objects.

Why? The simple truth is that trying to find and maintain reusable code for enterprise applications just isn't cost-effective or practical.

Trying to find and maintain reusable code just isn't cost-effective or practical

The problem of the changing embedded objects. They include "analysis paralysis," high up-front investments in time and money and the chance that reuse will never spread across the organization.

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Why? The simple truth is that trying to find and maintain reusable code for enterprise applications just isn't cost-effective or practical.

The seductive "benefits" of reusability may seem heaven-sent, but the devil is in the details.

Goetz, a software industry pioneer who received the first U.S. software patent (in 1968), is a management consultant in Tewksbury, Mass. His Internet address is jgantz@idresearch.com.

Handhelds hand IS new troubles
John Gantz

I got my first Windows CE device last month. I'm afraid to touch it. Not that I don't think I could be more efficient with an electronic phone book to carry around or an appointment schedule that doesn't need to be reprinted every few weeks. And I would love to have an electronic-mail terminal that weighs less than a pound.

But this thing is a real computer, and it scares me. What if it breaks? What if I screw up and wind up in the innards of the operating system, not knowing how to get out? What if I forget what those cryptic little messages and icons mean? What if I lose my stylus?

So I loaned it to my company's IS manager. He's scared of it, too.

At the moment, our IS department is feeling G-forces from the roller-coaster ride of trying to beef up our client/server infrastructure and security just when our army of mobile analysts wants remote access to those client/server networks. The way our road-warrior analysts want to open holes in the network to get files and swap information scares the bejesus out of our IS manager.

That got me thinking about Windows CE and the impact of doubling or tripling the computerized mobile workforce. We're talking about a mind-numbing array of personal digital assistants, organizers, tablets and smart phones hitting the market.

If all those handheld devices are used only for E-mail and personal organizing, then IS departments can cope with relative ease. But once the handhelds start acting as real remote-access terminals — and they will over time — they will be to IS departments what troubles were to the starship Enterprise.

I've mentioned the headaches of mobile computing before in this column. But I've also mentioned the incredible benefits from giving mobile and remote users laptop communications and processing. I have argued that it's a good tradeoff; the increased organizational productivity is worth the headaches.

But for handhelds, I wonder if they will really provide the kind of productivity boost that will make them worthwhile. Support effort, from the enterprise's point of view. I'm particularly concerned about what happens if the market rallies around Windows CE and these devices go from being personal organizers to communicating terminals, Web browsers and eventually mini-notebook computers. Will handhelds be manageable?

One of the reasons notebook computers are manageable is that they aren't as mobile as we think. The No. 1 location for using notebooks is in the home. But Windows CE devices will be mobile as a coat pocket. They'll be impossible to track and impossible to keep secure. They'll be impossible to service — but easy to replace. They come in all different flavors and configurations. To be useful, they'll need their own software. Yikes. We'll be adding a whole new hodgepodge of devices to evaluate. They'll require the development of training programs and new applications.

So I think my IS guy has the right idea. handheld devices that run Windows CE or any other operating system that ships in volume — and are capable of communicating with corporate systems will be deemed "computers." As such, they need to be factored into the total IS equation. And that's a fairly complex equation already.

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idresearch.com.
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Harness the Power—Today!
The NCR legacy lives

DAVID MOSCHELLA

NCR's REEMERGENCE as an independent public company passed quietly. If there was any reaction, it was mostly head shaking at yet another botched AT&T computer initiative. Former NCR CEO Chuck Exley was right. It never should have happened. However, despite its current low profile, NCR retains a special place in our industry's history. Allow me a few hundred words to make the case that National Cash Register Co. was one of the four most influential companies in the evolution of the IT industry, right up there with IBM, Intel and Microsoft.

Most of us know NCR was the dominant supplier of mechanical cash registers. What is largely forgotten is how it became so. As chronicled by Thomas De Lamarter, Robert Sobel and others, NCR founder John Patterson was one of our nation's most ruthless competitors. Predatory pricing, control of the used equipment market, frivolous lawsuits, payoffs, slander and even sabotage enabled NCR to grab 90% of the market. Indeed, NCR has the dubious distinction of being the first company ever prosecuted under U.S. antitrust law.

What is also often forgotten is that Thomas Watson Sr. spent 17 years at NCR, where he learned the Patterson system and rose through the sales ranks. In fact, in 1912, Patterson and Watson were found guilty of criminal conspiracy in restraint of trade. The charges were later dropped during the appeals process.

In 1914, Watson became general manager of a new company, the Computing-Tabulating-Recording Co. (C-T-R). Although he shunned Patterson's rough-and-tumble tactics, Watson adopted many of NCR's market-control techniques to make C-T-R the dominant supplier of accounting machinery. In 1924, Watson renamed the company International Business Machines. By 1935, IBM had more than 80% of the punch-card business. Government antitrust suits were launched against the company in 1932 and 1934.

You probably know the rest of the story. But isn’t it strange that nearly a century of computer-industry leadership can be traced back through a single lineage? Patterson showed Watson how to monopolize a market. Watson sanitized NCR's approach to control the emerging electromechanical data processing business. His son, Tom Watson Jr., preserved IBM's power through its huge transition into the Electronic Age. Then, in 1981, IBM's decision to outsource its critical PC components unwittingly passed the baton to Microsoft's Bill Gates and Intel's Andrew Grove. A trillion-dollar industry now wonders what happens next.

Perhaps we shouldn't be surprised that our technology-driven industry often overlooks the roles of individuals. But were it not for the lessons of Patterson and the immense drive of Tom Watson Sr., the computer industry's strange pattern of monopoly vendor leadership might never have emerged. If IBM hadn't been so dominant, Intel and Microsoft probably wouldn't be in the same position today. Who knows in what our industry might look like?

When this industry tries to understand why things are the way they are, John Patterson and NCR loom as large as anyone. Monopoly power remains our industry's defining competitive force.

Moschella is senior vice president of research at Computerworld, Inc. in Framingham, Mass. His Internet address is david_moschella@cw.com.

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“because they rock,” and other technical reasons why Netscape uses Silicon Graphics WebFORCE servers,

according to Webmaster Robert Andrews.

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See what's possible
briefs

New chip in Sun servers

Sun Microsystems, Inc., has re-" freshed its line of Ultra Enterprise SMP servers with models based on its new 520-MHz UltraSPARC chip. Users can upgrade by replacing their 167-MHz processor boards with cards that contain the chip.

Big iron speed, LAN cost

General Signal Networks in Shelton, Conn., is shipping SNA Link/5000 for Alpha-Server. The interface connects Digital Equipment Corp.'s AlphaServers to mainframes at mainframe I/O speeds of up to 1.57 Gb/sec.

Amdahl: New RAID

Amdahl Corp. is upgrading its 450-MHz RAID disk array by adding 3.5-in., 96-byte hard drives from Seagate Technology, Inc. Available Feb. 10, the new IKS 4500 will hold up to 96 Gb of data in an 8-inch-foot chassis. The cost will average less than $1 per megabyte of stored data.

RATING RAID

The RAID Advisory Board, comprised of 50 storage vendors that market RAID systems, has scrapped its old RAID 0 to 5 rating system. The new scheme has three classifications:

- Failure Resistant Disk Systems (FRDS)
- Failure Tolerant Disk Systems (FTDS)
- Disaster Tolerant Disk Systems (DTDS)

Vendors' new PC spec is a power play

By April Jacobs

MICROSOFT CORP., Intel Corp., and a third vendor have published a specification for PC power management designed to speed boot times and automate tasks such as shutting down peripherals.

The Advanced Configuration and Power Interface (ACPI) Version 1.0 specification will enable PCs to power up more quickly and perform some automated tasks, such as memory checks, after they are shut down in a low-power "sleeping" state. The third vendor, Toshiba America Information Systems, Inc., also published the specification.

The specification could be a boon not only to end users, but also to information systems managers who now have to configure shutdown processes on PCs for peripherals such as network adapter cards and hard drives.

Joe Pucciarelli, an analyst at Gartner Group, Inc. in Stamford, Conn., said the ACPI specification addresses a high-level issue for PC makers and a bottom-line issue for corporate IS managers.

Vendors such as Microsoft and Intel are using ACPI to make PCs more attractive in the Open systems storage market.

By Tim Ouellette

USERS WHO RUN a mix of servers are looking for a single storage system to handle them all. Such a system is a switch from server-specific disk storage devices and mainframe-only storage systems that exist in data centers around the world. But International Data Corp. in Framingham, Mass., expects the open systems storage market, where a disk system attaches to multiple server platforms, to account for 66% of the total storage market this year. Host-based mainframe and midrange storage will make up the rest.

"We needed to improve the availability of systems and move into a RAID-type environment, but we didn't want the performance penalties associated with host-based RAID," said Bill Martin, vice president of networking and telecommunications at Kelly Services, Inc.

Sun's RSM Array 2000, which will be announced this week, will be able to run off Microsoft Corp.'s Windows NT and Hewlett-Packard Co.'s HP-UX servers by midyear. The high-availability disk array has no single point of failure and will cost less than $1 per megabyte of data stored.

Sun's current SPARCArray disk systems run off Solaris servers only.

"Long term, this may work for us, as we are looking to open our server environment," Martin said.

Other users are already at that point.

For example, Kredietbank in Belgium recently bought $40 million worth of Storage Technology Corp.'s Openstorage Disk Subsystems. Kredietbank uses HP 9000 servers. Although it bought internal disk systems from HP, the bank decided to improve performance and flexibility with an external system.

HP teamed with StorageTek to provide the latter's open systems storage products. System...
TEXAS MICROSYSTEMS, INC. has announced the SP5500, a server that supports as many as four Pentium processors running at up to 200 MHz.

According to the Houston company, the server accommodates up to 768M bytes of main memory using two plug-in modules.

The SP5500 costs $5,650.

CYGNET STORAGE SOLUTIONS, INC. has announced Infinidisc Robotic Compact Disc Library, with room for up to 500 discs and four CD drives.

According to the San Jose, Calif., company, Infinidisc provides storage costs for as little as 4.2 cents per megabyte in a two-drive, 500-disc unit and up to 8.7 cents per megabyte in an eight-drive, 250-disc unit.

A four-drive, 500-disc unit costs $14,895.

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MICROBOARDS TECHNOLOGY, INC. has announced a compact disc duplicator, the CD Blaster II.

According to the Chanhassen, Minn., company, when a user loads a CD in the multiformat CD duplicator and presses a button, the system delivers an exact duplicate within a few minutes.

Pricing starts at $2,995.

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FREEING UP STORAGE SPACE

Users are seeking storage products that aren't tied to one server vendor. The sales figures below show that the trend is expected to double the sales of open storage systems in the next three years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Internal Storage</th>
<th>External Open Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>$22.8M</td>
<td>$3.9M</td>
</tr>
<tr>
<td>1996</td>
<td>$23.9M</td>
<td>$5M</td>
</tr>
<tr>
<td>1997*</td>
<td>$27M</td>
<td>$7.9M</td>
</tr>
</tbody>
</table>

*Projected


Open systems data storage

CONTINUED FROM PAGE 39

will be installed at Kredietbank's 745 branches, with capacities ranging from 4G to 48G bytes, according to Carl Tilk-Fransens, the bank's director.

StorageTek's competition in the open systems arena is significant because the Louisville, Colo., company lets IBM resell its Iceberg mainframe disk storage products.

Other plans by vendors to boost their open systems offerings include the following:

- EMC Corp. in Hopkinton, Mass. — the open systems storage market leader — has cranked up the backplane bus speed of its Symmetrix open systems models from 200M to 500M byte/sec. and added new high-density 3.5-in. 9G-byte drives [CW, Jan. 13].
- Amdahl Corp. in Sunnyvale, Calif., is adding the same 3.5-in. drives to its LVS 4500 systems, which will be available in February.
- Although IBM's popular 7133 systems, based on Serial Storage Architecture, are aimed at R5/6000 servers, analysts said the rollout of Peripheral Component Interconnect adapters could let the 7133 attach to other midrange Unix servers. And IBM is also trying to resell the 7133 into other server environments.
- Digital Equipment Corp. is shipping the StorageWorks RAID Array 450, which supports Unix, Novell, Inc.'s NetWare and Windows NT platforms and can scale to up to 10T bytes of data.
New PC spec is a power play

CONTINUED FROM PAGE 39

face of competition from lower-cost net-
work computers, Pucciarelli said. Corpo-
rate IS staff, meanwhile, will get systems
management features that will let them
take a more hands-off approach to PCs — which translates into less labor and
time managing their desktops.
ACPI, introduced last year in draft
form, will be supported by Intel in its
next version of desktop and mobile chip
sets and in future processors and OEM
system products. Santa Clara, Calif-
based Intel plans to ship the processors
later this year, but the company hasn’t
given details about those products.
The specification defines a hardware
interface that lets designers put power
management features into a PC, includ-
ing its hardware, operating system and
application software.
Microsoft, in Redmond, Wash., plans
to integrate the ACPI specification into
its Windows operating systems, includ-
ing Windows NT and future versions of
Windows 95.
More than 70 vendors, including Dell
Computer Corp. in Austin, Texas; Com-
paq Computer Corp. in Houston; and
Digital Equipment Corp. in Maynard,
Mass., have said they will support the
ACPI specification.

SMP servers

CONTINUED FROM PAGE 39

that boosts performance of traditional
symmetrical multiprocessing (SMP) sys-
tems by accessing main memory much
faster than SMP systems. Companies in-
cluding Data General Corp. and Sequent
Computer Systems, Inc. have used the
technique to build highly scalable SMP
servers.
Pyramid’s new servers, based on its
Reliant Unix operating system, are aimed
at markets such as online transaction
processing, data warehousing and deci-
sion-support applications. Users of Nile
systems can move up without having to
rewrite their applications.
“By dropping the MIPS 10000 into
their SMP line, and by combining some
of the techniques of NUMA, [Pyramid]
has come out with a solid SMP product,”
said Rich Partridge, an analyst at D. H.
Brown & Associates in Port Chester, N.Y.

BIG BOOSTERS

Major performance boosters on the new
servers include a two-level bus architec-
ture with throughput of more than 1 G
byte/sec., a high-performance I/O sub-
system and support for up to 207 bytes
of external RAID storage.
One Pyramid user welcomed the an-
nouncement but saw little need for the
new servers immediately.
“Right now, we have enough horse-
power to run our applications,” said Ed-
ward Hottat, information systems man-
ger at Columbus Lines USA, Inc., a
shipping company in Jersey City, N.J.
The company runs its shipping manage-
m ent applications on two older RM600
systems that are based on 150-MHz
CPUs and support about 12G bytes
of storage.
“If we make any enhancements to our
application, we might look for the greater
capabilities that are offered on the new
servers,” Hottat said.
The Pyramid servers are “something
we are definitely looking at” for data
warehousing applications, said Rod Mer-
r y, vice president of IS at Damark Inter-
national, Inc., a direct marketing com-
pany in Minneapolis.
“We are going to be comparing larger
SMP systems and [massively parallel]
systems,” Merry said. The RM600 server
would replace Damark’s two older eight-
way Pyramid servers.
Also significant, from a performance
scalability point of view, is that the new
servers can be integrated with Pyramid’s
RM6000 cluster server, making them
among the few that combine SMP and
massively parallel servers in one cluster,
Partridge said.
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Java gets missing link

> Database connectivity enhances business use

By Craig Stedman

JAVA APPLICATIONS are starting to get direct access to databases, a capability that prospective users said is needed to make the Java language more viable for business processing.

The direct Java links that are becoming available from database vendors allow end users to avoid having to go through bridges and other performance-throttling middleware to get to corporate data.

Some of the database links also will run entirely at the server level, eliminating the need to install database access code on the desktop.

Those kinds of thin-client promises are just what McKesson Corp., wanted to hear, said Charles Nettles, director of technology at the Information Technologies Division of the San Francisco-based pharmaceuticals distributor.

Late this year, McKesson plans to start swapping in Java-based network computers for some of the 5,000 PCs that its pharmacy customers use to place and track orders, Nettles said. McKesson hopes that will make the Java language more viable at the desktop.

By Lisa Picarille

APPLE COMPUTER, INC.'S operating system in-cludes a microkernel, I/O architecture and an advanced file system.

Earlier this month at Macworld in August, the Cupertino, Calif., company will replace its advanced file system with technology at the Information Technologies Division of the San Francisco-based pharmaceuticals distributor.

Late this year, McKesson plans to start swapping in Java-based network computers for some of the 5,000 PCs that its pharmacy customers use to place and track orders, Nettles said. McKesson hopes that will make the Java language more viable at the desktop.

By Howard Millman

MICROSOFT CORP.'S Visual C++ development tool reigns in the popular C++ arena, but two companies are in hot pursuit.

Sun Microsystems, Inc., Borland International, Inc. and Microsoft are all coming out with new versions of their C++ products. And it is a lucrative market — more than 40% of client/server development is done in C++.

This wave of tools based on C++ is part of the language's evolution into a key standard, according to Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass.

"People are spending a lot more development effort in the C++ arena than they did three years ago," Hurwitz said.

"It's continuing on the course of more visualization, more ease of use."

Hurwitz said users are impressed with Borland's C++ Builder, which is expected to ship in early March. Borland's development tool takes the visual aspects of its popular Delphi and attaches it to a C++ tool.

C++Builder is part of Borland's move to bring the firm back into the forefront of the application development industry.
Tempo, which will include the Finder desktop environment natively running on the PowerPC. That will enable users to execute multiple tasks such as launching and copying files simultaneously.

Tempo will update some of the Macintosh user interface to look more three-dimensional, while fully integrating Apple's Cyberdog Internet browser technology.

Tempo also is slated to include the runtime version of Mac OS for Java and a personal Web-sharing feature that will let Macintosh users set up their desktops as Internet servers. Apple plans to follow up Tempo next January with a Mac OS version called Allegro and support for the Sun Microsystems SPARC architecture. Apple officials said they sought to demonstrate a commitment to future development on Mac OS. Developers are following IBM, which in December included JDBC support in a release of its DB2 software that becomes available in March. Oracle also has promised a first-quarter beta release of software that translates SQL commands into JDBC calls. A thin-client JDBC driver will follow in the year, Oracle officials said. Independent software vendors will get a Rhapsody developer release this spring, but the final version of the Rhapsody operating system isn't due until mid-1997.

Apple Computer reportedly spent more than $500 million on its now-defunct Copland next-generation operating system.

Java gets missing link

reduce the $500 monthly tab for support and upgrading each PC, he said.

But server-driven direct access to McKesson's Oracle Corp. databases is "certainly one of the primary keys" to making Java workable, Nettles said. Otherwise, the clients wouldn't be as thin as desired, and McKesson would have to continue maintaining a mix of middleware to connect them to the databases.

Vendors are providing direct access to data via drivers that hew to the Java Database Connectivity (JDBC) specification, which Java inventor Sun Microsystems, Inc. released last year. JDBC is a new rival to Microsoft Corp.'s ActiveX-oriented OLE DB data access interface.

Sybase, Inc. in late December started beta testing software called JDBCConnect with its SQL Server database. The JDBC driver is due to ship this quarter and will support Sybase databases when used with Sybase's OmniConnect middleware, the vendor said. Informix Software, Inc. said it expects to start limited shipments of a JDBC driver for its databases in March. Oracle also has promised a first-quarter beta release of software that translates SQL commands into JDBC calls. A thin-client JDBC driver will follow in the year, Oracle officials said.

The big three of Unix databases are following IBM, which included JDBC support in a release of its DB2 software that became available in December. IBM's driver includes code that has to be installed on client machines, a trade-off that IBM officials said was made to get better performance.

The McCarter Theatre in Princeton, N.J., runs a network for itself and 10 other arts organizations, is testing Sybase's JDBCConnect for use with upcoming Java-based decision-support applications.

"It's been easy database access up to now, so we've sort of been sitting on the sidelines and waiting," said Alan Levine, director of information services at the theater. Levine said he wanted to go the thin-client route to cut software installation costs for the 300 PCs on his network. But direct JDBC links are critical for performance's sake because the product's graphical interface appears through traditional C++ environments. Developers new to C++ get a bonus because the product's graphical interface can help them learn the language quicker than traditional text-based C++ development tools.

The late beta edition I tested seemed stable, intelligent and easy to work with — again proving that Borland knows how to make reliable products that reflect how developers work.

C++Builder applications start with the familiar Forms window and an Object Inspector that manages the inventory of controls resident in the current form. A developer can open a window where you enter C++ code for the objects.

Instead of a separate tool box for visual objects, C++Builder uses a tabbed control, called the Component Palette, to group components by functions.

KEEP CUSTOMERS HAPPY

"We don't want our customers waiting on hold to buy tickets any longer than they have to," Levine said. The theater also eventually wants to enable customers to buy tickets via the World Wide Web, which would put even more of a load on the database, he said.

Java-based network computing "would certainly simplify our environment," said Hugh Allan, manager of information technology at Dunlop Tire Co., an Oracle user in Amherst, N.Y. He said a planned upgrade to graphical versions of Oracle's applications was put on hold because "it put even more memory at Dunlop's PCs."

Borland offers C++Builder

The comprehensive C++Builder offers good performance and is easy to use.

C++Builder, the Grid has a Cells property based on a two-dimensional array of strings. That allows simpler and more straightforward coding when loading the Grid.

Informix, the other major database vendor also required some getting used to. The process temporarily got ahead of me until I discovered the "Trace to the Terminal Line" command in the menu.

To help understand these and other differences, online help proved valuable. For example, it fully describes each control with property lists, method lists and examples.

Overall, Borland has blended the visual metaphor that Basic programmers have had with the C++ language to make a robust and comprehensive environment. It lets developers quickly build scalable projects by taking advantage of C++'s efficiency and organization.

The C++Builder beta seems stable. But it has to prove that it can overcome Borland's reputation for not always working out all the bugs.

Millman operates the Data System Services Group, a consultancy in Croton, N.Y. You can reach him at hmillman@mcimail.com.
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Microsoft has challengers in C++ market

Continued from page 43

After a financial and mind-share slip, Borland is looking to work its way back with a series of product announcements, said Diane Rogers, Borland's group product manager for Delphi and C++.

Rogers said a new version of Delphi is slated for early in the second quarter, and JBuilder, Borland's Java development tool, is expected later this year. IntraBuilder, a point-and-click JavaScript tool for World Wide Web applications, was released in December.

SUN'S PRODUCT
On the Sun front, Visual WorkShop for C++ Version 3.0 is shipping for Unix environments. That version was redesigned to make it faster and easier to use, said Joe Keller, director of marketing and support at Sun's WorkShop product group.

And that redesign is working, according to Han Tunca, a programmer at TradeLink LLC, a Chicago-based futures and options trader.

“It's a really nice tool. It's easy to use and fast,” said Tunca, who noted that TradeLink is adopting the tool after beta-testing it. “This is really professional. The interface is nice to use. It seems to be logically laid out, and that's not something you always find.”

Keller said Version 3.0 of Sun's C++ tool is editor-centric. “The editor used to just be one of the tools. Now it's at the center,” he said. “All of the tools will be displayed within the editor, and that will save a lot of time.”

Visual WorkShop for C++ also sports a new visualization tool that allows developers to drop in information and a three-dimensional display that can be rotated and magnified for a better view.

A spokesman for Microsoft declined to say what features Visual C++ will have. It is set to be unveiled at Microsoft's Developers Day March 19.

Microsoft has challengers in C++ market

Candidates for the Flat Earth Society

FRANK HAYES

Once — just once — I'd like to hear someone in this business acknowledge that computer technology doesn't improve productivity.

We've all heard about the studies that show, despite the buckets of money companies have poured into IT since the dawn of desktop computers, how corporate productivity has barely inched up at all.

But we don't believe it. We insist that the studies are wrong (they aren't), that something else is siphoning away the increased productivity (it isn't), that there's a new "statistically invisible" productivity that justifies our IT investment (there isn't).

This amazing, blind faith has made IT departments the Flat Earth Society of the corporate world. We've seen the pictures from space: we just can't believe it's true.

That flat-Earth faith has also brought plenty of grief down on IS staffers — from the CIO on down — when they don't deliver on their promises of a return from that IT investment. Budget cuts, downsizing, outsourcing and housecleaning are what happens when that faith goes unfilled.

Part of the problem is that we're competing with the past. Factory automation made workers hugely more productive earlier this century. We want to believe that we can get the same results with office automation.

But remember what productivity is: the total output divided by the total number of workers. A leather-cutting machine in a shoe factory lets one worker do the work of a dozen human leather cutters. How many typists can a single word processor replace? Probably not more than two. Letters and memos aren't stamped out like mass-produced shoes. In most cases, they're custom-made.

But we don't believe it. We insist that something else is siphoning away the increased productivity (it isn't), that there's a new "statistically invisible" productivity that justifies our IT investment (there isn't).

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Gun dealers get a shot in the arm

By Kim Girard

Firearms dealers in California are going paperless with an automated system that ships buyer registration information to the state's Department of Justice for criminal cross-checks.

In California, a handgun or rifle owner must register the weapon through a licensed gun dealer.

Dealers throughout the state currently send sales information — called a record of sale — to the state's Justice Department through postal mail, a process that can take up to 20 days.

But a new automated front-end system provided by MCI Communications Corp. that links dealers to the Justice Department is expected to knock days off the approval process, enabling the department to complete it within a newly mandated 10-day waiting period on all firearms sales.

Gun deals, page 51

HOW THE SYSTEM WORKS

1. A dealer's record of sale, which includes information about the applicant, is forwarded via modem or voice line to an attendant or is sent directly to the MCI database.

2. MCI validates the dealer's license to sell firearms and the applicant's information, which includes name, address and 58 other pieces of data.

3. The California Department of Justice cross-checks the information against databases that track outstanding warrants, criminal records and department of motor vehicle records. The Department of Justice issues a ruling for the approval process, enabling the department to complete it within a newly mandated 10-day waiting period on all firearms sales.

Expected costs crept in when systems managers at Goldman, Sachs extended Web tools to remote users.

- Michael Tardif, vice president

Disk fragmentation hounds power NT users

By Laura DiDio

Disk fragmentation, an old problem dating back to the early days of MS-DOS, is back again. This time, it's plaguing Windows NT users who assumed they were immune to the problem because of the advanced NT File System (NTFS).

Disk fragmentation is a condition in which files are broken up and scattered into pieces on the hard disk. The degree of disk fragmentation increases with the number and size of the files stored on the hard disk, said Jonathan Eunice, an analyst at Illuminata, Inc., a consulting firm in Nashua, N.H. Hard disks that have significant fragmentation — 50% or higher — are likely to degrade overall system performance and in a worst-case scenario, crash the system.

"Fragmentation is an unavoidable problem associated with storing data on your hard NT users, page 52

Unusually high costs can get expensive when more of us try to get in from home," said Michael Tardif, vice president of enterprise technology for operations and systems management at Goldman, Sachs & Co.

Performance was acceptable while accessing these tools from powerful PCs or workstations in the office, Tardif said. But they dragged for users working from home on less

Web tools show seamy side

Users stumble on hidden costs, requirements

By Patrick Dryden

Early users of Web-enabled management software are reporting some general problems caused by the otherwise beneficial access enhancement to their regular tools.

Specifically, users said they had uncovered some hidden costs, surprise requirements and potential embarrassments.

Reaching across the World Wide Web or a corporate intranet to maintain systems and networks demands bandwidth and performance beyond everyday browsing. And sensitive information may be revealed for the first time inside and outside the organization.

But information systems managers have shrugged off these issues as growing pains to get Web tools into the mainstream. They are glad support staffers no longer have to vie for a few central consoles or distribute management information throughout the organization. Through browsers, technicians can work anywhere on the network or remotely, and savvy users can check availability and answer many questions themselves.

But while such access is "quite popular within the building, it

The Enterprise Network

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Advantages, page 51

DATA MINING

Utilities find advantages in automation

By Mindy Blodgett

The days when utilities basked in their monopolies and counted on customers who have been replaced by a deregulated world where utilities compete fiercely for business.

That calls for sales and marketing techniques, such as using sales force automation software, that can mine customer data for opportunities.

But the electric company began using sales force automation software from CallBack Software, Inc. in Burlington, Mass., to keep better track of corporate customers

Utah State's Ed Young

Disk fragmentation made the university's Windows NT machines "horribly slow"

Web tools, page 51
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Web tools' seamy side

CONTINUED FROM PAGE 49

capable PCs and from a remote site over a modem instead of the company network.

Graphics display and performance aren't as good on a browser as they are at a console dedicated to displaying management data, and operators must remember to hit reload to see the latest information, said Jeff Leggett, webmaster and network services manager at Mitsubishi Consumer Electronic America in Norcross, Ga.

TAKING RESPONSIBILITY

Supporting Web-enabled management tools adds a new load to an IS group because "now someone has to be responsible for a Web site," said Steve Tindall, technical specialist at Allegheny Healthcare Corp. in McGaw Park, Ill.

"That's something we took on without a lot of expertise, and it required a heck of a learning curve," Tindall said.

For Tindall and other administrators, opening up management information raises security concerns that demand attention.

"Someone inside the company might change program parameters so we lose a week's worth of valuable performance data before we know it," Tindall said. "Externally, we don't want to reveal the IP addresses of our routers." So administrators must remember to assign access privileges, if possible, and update firewall software.

CLOSE WATCH

After security is ship-shape, though, Tindall says managers find they can't fudge on their responsibilities.

That's because superiors and watchdogs within the organization can easily monitor network availability, systems performance and overall service provided to end users.

For example, anyone with the 335-store chain of Long's Drug Stores of California, Inc. call headquarters in Walnut Creek, Calif., to complain about slow response in processing insurance claims or clearing checks there. Such information is vital to drug stores because they have 60 days to keep records on their laptops, said Mike Broderick, firearms data communications.

"As a dealer who has to deal with a lot of paperwork, I find this to be a very strong move forward," said Bob Posner, co-owner of the San Francisco Gun Exchange.

"A lot of local and state government desperately want to get away from the paper," Humphrey said. But, he added, "it's very difficult to re-engineer systems and get away from that. Insurance companies are the best example of this."
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HARD LESSONS

Also, many users mistakenly believe the robust NTFS, which replaced the File Allocation Table (FAT) system used in other Windows versions, makes the Windows NT operating system immune to hard disk fragmentation.

Several unsuspecting Windows NT power users have found out the hard way about what happens when their hard disks are highly fragmented.

Ed Young, network manager at Utah State University's Research Foundation in Logan, said performance on his Windows NT machines was horrifyingly slow. “It took 15 minutes to load a single graphical design drawing. Later, we found that the performance degradation was caused by our 70% disk fragmentation,” he said.

Users such as Young have two options when they suspect their hard disks have become highly fragmented. They can elect to do a complete backup and restore of the disk, which is time-consuming and impractical on a regular basis, or they can use a disk defragmenter, which rearranges files on a disk so they are contiguous as possible.

Like Young, Samuel said he was dismayed to find his systems had 70% fragmentation. “Performance noticeably improved and access times increased dramatically when we installed Diskkeeper,” he said.

Raging price war promises Arizona State’s Joe Askins

Windows NT power users are often caught unaware.

Many have no idea they have a fragmentation problem until the system performance is severely degraded or the system crashes. And currently there is only one third-party utility — Diskkeeper from Executive Software, Inc. in Glendale, Calif. — that can “defrag” the hard disk.

OPERATING SYSTEMS

Even sophisticated Microsoft Corp. Windows NT power users are often caught unaware.

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IS tries to keep insanity out of intranets

By Justin Hibbard

A LITTLE WEB knowledge is a dangerous thing. Just ask information systems managers at companies where end users manage their own intranet sites. Those managers are learning that they must strike a balance between letting users publish freely and imposing standards that keep the network from becoming a jungle. Most companies get by with a loose set of publishing policies, but some aren't ready to give users the keys to their own World Wide Web servers.

Diane Silver, vice president of information strategies at American President Lines in Oakland, Calif., said her company has avoided intranet chaos so far by setting light restrictions.

"We wanted to put together training wheels for beginners (or publishing) that weren't going to constrain use of the intranet," Silver said.

All changes to the intranet at American President Lines require the approval of a content owner — usually an IS administrator assigned to a particular department or office. Approved content is then sent to a central administrator, who tests the files on a staging server before forwarding them to a remote service provider that hosts the company's content on its servers.

Silver supports decentralized content authoring, but she has resistance efforts to decentralize hosting because she fears the disorder that would ensue.

"Everyone thinks they want their own server," she said. "We're not doing that."

"Users at B.C. Hydro in Vancouver aren't ready to give users the keys to their own World Wide Web sites, similar to bookmarks. But they are scheduling meetings. They will have to wait for future releases of Exchange and the company's Internet Explorer Web browser for tight integration with the 'net."

Outlook, Microsoft's next-generation client for Exchange, includes calendaring and scheduling. It also lets users embed links to World Wide Web sites inside those schedules to help them point colleagues to specific sites or information when they are scheduling meetings.

Outlook users, like users of the Exchange client, will be able to swap electronic mail with Internet messaging systems that use an Exchange server-based gateway. Outlook also lets users store a folder of favorite Web sites, similar to bookmarks. But Outlook users will have to wait for new versions of graphical HTML editors that would give programmers a one-button operation. Users still say they need to write HTML code by hand and you're working on a HTML tools, page 58
Outlook lacks ‘net features
CONTINUED FROM PAGE 57

until later this year for Hyper- text Markup Language (HTML) support, which will let them embed Web pages in messages.

“Outlook is a bit nicer than the Exchange client [in terms of Internet hooks], but the improvements are mostly cosmetic,” said Erik Iversen, director of application development services at Nabisco, Inc. in Parsippany, N.J. The company will install Outlook on the desktops of 8,000 Exchange users.

Information systems managers at several of the early adopters of Exchange, including Nabisco, the Kentucky Department of Education and Texaco, Inc., said they plan to move to Outlook for its groupware hooks and integration with Microsoft’s Office 97 suite.

Outlook shipped last week with Office 97 and will be bundled with Exchange 5.0 later this quarter. It will also be sold separately.

Bob Perkins, senior vice president of technology at Starwave Corp. in Bellevue, Wash., which produces the ESPNet SportsZone and Mr. Showbiz Web sites.

Moreover, the WYSIWYG view is just an approximation because different browsers will interpret code in slightly different ways. That forces webmasters to tweak the code to make it look best in their favorite browsers.

“At TicketMaster Group, Inc. in West Hollywood, Calif., designers use Web Weaver, a Macintosh-based HTML editor. Their skill set is in art or graphic design,” said Bob Perkins, vice president of online services. That gives them plenty of familiarity with graphical design tools but little experience with text-based programming languages.

And even technical users who have to work quickly need tools that are easy to use. “I do understand the technology and I don’t have the time to do all my coding by hand,” said Adam Karp, online producer at Century 21 Real Estate Corp. in Parsippany, N.J.

Many advanced sites aren’t producing much HTML written manually. To keep data up to date, many sites store information in a database and then put a button on their pages that can automatically generate queries.

“We don’t use HTML editors much, currently,” said Bill Rolinson, vice president of marketing at Internet Shopping Network in Palo Alto, Calif. “A lot of our stuff is generated on the fly by scripts.”

Managing the site

Graphical HTML editing tools are the most junior members in a family of product types designed to help automate the creative processes of building a Web site.

HTML editors let users create only one page at a time. More sophisticated tools range from those that manage the relationship among several pages to those that include project management features designed to support large sites with many programmers.

One step above HTML editors in sophistication is a set of tools to manage the relationships among the individual Web pages that make up a site. Some HTML editors, such as FrontPage, include that functionality. Other times, users must go to a specialized tool, such as NetObject, Inc.’s Fusion.

Really big sites require teams of designers and a tool such as Valley Software, Inc.’s BuildIT or Vignette Corp.’s StoryBuilder and StoryServer to manage version control and coordinate the work of multiple users. And Microsoft is beta-testing a competing collaboration product, Visual InterDev. — Mitch Wagner
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Director, Research and Education
Data Warehousing Institute

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**DYMALAB, INC.** has announced GlobalSurf, a multilingual communications tool for Internet users.

According to the Santa Clara, Calif., company, the software lets users explore the Internet in 25 languages. It is being distributed electronically in the U.S. by CyberSource Corp.

GlobalSurf costs $59.

**Dynamalab**
(408) 490-4734
www.dynamalab.com

**FLAT CONNECTIONS** has announced Sumba, the first in a series of Flatware products to enhance the speed and security of Web-based communications.

According to the Fremont, Calif., company, Sumba provides a personal firewall that delivers encryption, highly secure electronic mail and real-time virus checking for Internet communications. It includes Java processor-based software that splits the security and antivirus processing tasks between the PC's CPU and the Java coprocessor.

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**Flat Connections**
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**CLARITY SOFTWARE, INC.** has announced MagicFax, software for the Web that sends faxes anywhere in the world for free.

According to the Mountain View, Calif., company, MagicFax routes a fax to the MagicFax Web Server that is closest to the recipient to avoid long-distance charges.

The software can be downloaded for free at www.magicfax.com.

**Clarity Software**
(415) 964-4683
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**TYPANI DEVELOPMENT, INC.** has announced NetAttache Enterprise Solution, a Windows NT-based software package to simplify the gathering and dissemination of Web data over corporate intranets.

According to the Sunnyvale, Calif., company, the system allows organizations to easily update needed data from frequently visited Web sites.

The product costs $550 for 10 seats.

**Tympani Development**
(408) 735-9555
www.tympani.com

**AMZI, INC.** has announced WebLS 2.0, a tool for embedding rules-based expertise in Web pages.

According to the Stow, Mass., company, WebLS 2.0 includes a class of application known as the product or service adviser. The applications gather information from the user through Web pages and then make product or service recommendations such as for a new car or career opportunity.

A freeware version is available at www.amzi.com.

**Amzi**
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www.amzi.com

**INTERSE CORP.** has announced Interse Market Focus 3.0, a new version of the software for integrating, managing and examining Internet user behavior data.

According to the Sunnyvale, Calif., company, new features include a Metadata module for comparing site usage data with other data to provide a comprehensive visitor profile.

Developers’ editions start at $5,495 for the Microsoft Corp. Access-compatible edition.

**Interse**
(408) 733-0932
www.interse.com

**SARATOGA SYSTEMS, INC.** has introduced SPS WebPort, a World Wide Web interface capability for the company’s SPS, a sales automation system.

According to the Campbell, Calif., company, SPS WebPort links the corporate sales process with the Web. Hyper-text Markup Language-based online forms can be customized with color, logos and other graphics.

SPS WebPort costs $4,900 as an add-on module.

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They'll do anything to lure tech talent

By Julia King

Amy Naples was browsing around a Barnes & Noble bookstore in Princeton, N.J., when she noticed a knot of young men flipping through Java and C++ books in the computer section. Naples did what any good technical recruiter would do. She passed out plenty of business cards and chatted up open software developer positions at her employer, Bluescape Software, Inc. in Mount Laurel, N.J.

"It's just become part of my life. There isn't a technical person I meet who I don't ask whether they know of another high-level technical person looking for a job," Naples said. "I've even taken to putting my cards in books." Naples isn't alone. In today's exorbitantly tight information systems job market, recruiters will do just about anything to drum up prospects and ultimately reel in technical talent.

GIVE 'EM THE WORLD
It isn't at all uncommon for headhunters and company recruiters to offer prospects everything from free lunches to signing bonuses of $10,000 and more. But for Naples, giving up her business cards was a small price to pay in exchange for a kind of instant credibility that can make all the difference in the competitive technical job market.

"We have lots and lots of creative people. The key is getting them comfortable working in this medium," said Naples.

Tribune Co. trains 'net pros in-house

By Julia King

With no end in sight to the IS skills crunch, some companies are finding new ways around it. One is The Tribune Co., where finding technically savvy Internet developers with keen creative skills has been one of the biggest problems.

The Chicago-based publishing and broadcasting company has stopped looking for information systems skills solely in the open market. Instead, it is training its staff of print artists and page designers in Hypertext Markup Language (HTML) and other Internet skills.

"Rather than take the approach of looking for a few qualified people to get projects done, everybody in the company has to be able to have some competency in electronic publishing," said Jeff Scherb, senior vice president and chief technology officer at the company.

In the past two months, Tribune staffers from various departments have published more than 100 pages on the company's TribTech World Wide Web site. The in-house site showcases employees' electronic publishing projects and gives workers a place to practice their HTML skills.

It also is used as an intranet for Tribune employees to share information about Web-based projects at the company.

CLIENT/SERVER SHIFT

Maine drives Medicaid reform with decision-support system

By Thomas Hoffman

The state of Maine is throwing information technology — $5 million worth in little more than a year — at the problem of rising Medicaid costs, a long-time budget-buster for states across the nation. Maine has invested in new client/server administrative systems, including a decision-support system to be implemented next month, to support the state's shift to a managed health care model.

Instead of processing individual claims from elderly and poor citizens covered by Medicaid, Maine wants to cut waste and fraud by tracking patients' health and seeking ways to prevent costly illnesses before they occur.

Maine's systems are expected to help the state reduce its Medicaid costs by $3.5 million annually starting this year, said Jim Gorman, deputy director of Maine's Bureau of Medical Services in Augusta.

Like other states around the U.S., Maine is under intense financial pressure to shift its Medicaid program to a managed care model for its 160,000 recipients. The state's Medicaid costs account for one-fourth of the state's $1.1 billion medical services expenditures, and those costs have been spiraling upward at 15% per year since the early 1990s.

The cost-savings from the new systems will be achieved partly by providing administrators easier access to information about Maine Medicaid expenditures.
IS bounty hunters dig deep to draw technical talent into the fold

**CONTINUED FROM PAGE 67**

more. For employees who refer qualified friends and family members for interviews, there are dinners at fine restaurants, theater tickets and referral bonuses - sometimes in the thousands of dollars.

The U.S. Department of Labor is projecting a 90% growth in jobs for systems analysts and computer engineers between 1995 and 2005.

Meanwhile, colleges and universities are graduating 45% fewer computer science majors. And new technologies are being introduced at warp speed, which is only exacerbating the skills crunch.

In 1996, software companies increased their employee base by an average of 34%, according to a Coopers & Lybrand survey of 500 firms. The average salary increase was 8%.

"Just throwing an ad in the paper now is not cutting it," said Ken Lieberman, a recruiter at GEC-Marconi Hazeltine, a defense contracting firm in Wayne, N.J.

As a result, the firm advertises on the Internet, recruits at job fairs and is considering running radio spots at a cost of about $2,000 for a 30-second announcement.

Software engineers who join GEC-Marconi get a signing bonus of between $5,000 and $10,000, which they receive "when they walk through the door," Lieberman said.

**SEEK THEM OUT**

Sanché, a banking services software firm. Flanigan's is patronized mostly by young people who work at the corporate center. Qualified candidates who bring a coaster to an interview at Sanché will receive a certificate for a free meal.

Sanché currently is looking for 20 to 25 programmers, said Debbie Mikulak, vice president of human resources at the company.

Hank Delavati, chief information officer at Quantum Corp., a disk manufacturer in Milpitas, Calif., advertises in the newspapers and on the Internet, and, less frequently, hires an outside agency to recruit qualified IS workers.

"Their fee is usually higher, but when you really need someone for a project, you've got to pay what you've got to pay," he said.

**FINDERS' FEES**

Delavati also just increased the bonus - from $1,000 to $5,000 - that Quantum pays employees for referring qualified professionals who come to work at the company.

"My personal experience is that bonuses don't encourage job-hopping," Delavati said. Still, he said, "My highest priority is not just acquiring employees, but retaining them with good job content and training. From my perspective, shame on me if I were losing people just because a friend of theirs gets a couple of thousand dollars to recruit them [for] another company."

Still, recruiters will try - anywhere and anytime - to win new hires.

Gerry Hussey and Michael White, both recruiters at Sapti-ent Corp., in Cambridge, Mass., were out with dates at an Arnold Schwarzenegger movie when they spotted a guy in a Sybase T-shirt sitting a few rows in front of them.

They immediately went to work on recruiting him for the systems integration firm.

"As a recruiter, you have to turn every rock over. You can't rely on a single source," Hussey said.

**Panel urges free telecom trade**

By Marc Ferranti

New York

By turns pleading and threatening, industry and govern ment representatives from around the globe are seeking to put the World Trade Organization (WTO) negotiators on the path to a successful conclusion in their telecommunications talks.

WTO telecom talks reopened last week. Talks were suspended last April when some countries declined to put offers on the table and negotiators from the most industrialized countries reached an impasse on issues related to national-market access for foreign companies. The new deadline for the talks is Feb. 15.

Massive private investments are needed to build the telecom infrastructure for networks such as the Internet that form the underpinnings of today's global economy, according to a panel of private sector leaders and representatives from developing countries that convened last week. But companies won't invest without an agreement that lays down the rules for a stable, open global market, the panelists said.

Gorman, who oversees the supporting technology initiative, said his biggest challenge has been finding distributed systems technicians who will work for less than what they can get in the private sector.

**JOBS OPENINGS**

Gorman has already hired a team leader and a Unix systems administrator. But he's still eight people short of filling his distributed systems staff, which includes openings for a Visual Basic programmer and two midlevel specialists - one who is fluent in Object Management Group's Common Object Request Broker Architecture and one who knows BEA Systems, Inc.'s Tuxedo.

"If you want a nice place to live and work, it's a lifestyle position," said Gorman, who along with the rest of his 19-person information systems staff works in Augusta. "But the government doesn't pay as much as the private sector, so we're still having trouble finding people," he said.

Gorman and his staff have managed to keep the technology project on course by hiring Cambridge, Mass.-based Sapi-ent Corp. and Hewlett-Packard Co. to help with the hardware and software installations.

The software, which Maine officials developed with Sapient, a technology and product/service management firm called the Maine Managed Care Enrollment and Capitation System (MECAPS), which went live last July, was designed to help 80 health benefits advisers at the Bureau of Medical Services enroll Medicaid recipients into health maintenance organizations and monitor and update their Medicaid eligibility.

The state has enrolled 15,000 Medicaid recipients into the state-run Primicare managed care plan and wants to put the 15,000 recipients online by the end of May, Maine DHHS Commissioner William Harcourt said.

That goal is a stiff challenge for Maine and other states that are struggling to reform their Medicaid programs. Most Medicaid recipients aren't familiar with managed care, "so there's a lot of work [for the states] to get recipients to sign up and understand the new policies and procedures that it brings," said Jane Metzger, a consultant at First Consulting Group, Inc. in Waltham, Mass.

**Maine**

**CONTINUED FROM PAGE 67**

formation about Medicaid recipients. Administrators can use that information to identify pre-existing conditions, said Gorman. From my perspective, shame on me if I were losing people just because a friend of theirs gets a couple of thousand dollars to recruit them [for] another company.

Still, recruiters will try - anywhere and anytime - to win new hires.

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"As a recruiter, you have to turn every rock over. You can't rely on a single source," Hussey said.

"The opening of the markets in telecommunications should produce a springboard for the rest of the revolution to occur, which is the global information revolution," said Bowman Cott-er, managing director of invest ment firm E. M. Warburg, Pin- cus and Co.

The investment required to upgrade global networks and create infrastructure in developing countries is estimated to be between $200 billion and $500 billion, Bowman said.

Ferranti is an IDG News Service correspondent in New York.

**Tribune Co. grows its own**

**CONTINUED FROM PAGE 67**

The site is managed by webmaster Jackie Harn, who until a few months ago worked at the company exclusively as an administrative assistant.

"HTML training is what I took," Harn said. "Plus, I'm surrounded by a lot of people who know a lot. Every day is a learning experience, and technology is definitely the hot place to be."

As webmaster, Harn is responsible for putting up new HTML pages on the site and overseeing its general content.

"We want to get to a point where people don't think twice about Web publishing. We have a lot of awards for graphic design. We're trying to get these people immersed in this, as well as on the theory that those skills are transferable," Scherb said.

As a newspaper and as a broadcasting company, we have lots and lots of creative people. The key is getting them comfortable working in this medium," he said.
How do you organize your year 2000 project?

Create a central office that can act as coach, manager, motivator and cheerleader, IS executives say.

The problem isn't that year 2000 work requires exotic new project management skills. It's that the work demands more of the traditional project management skills than most information systems managers have. Observers say that's why it's so important to concentrate the money, expertise and clout in one strong program-management office, which can then advise and coordinate individual project managers.

"It's a very, very demanding, time-boxed project that has thousands of variables," says Bob Adkinson, director of computer services at Dayton Hudson Corp. in Minneapolis. "You need a project manager who can handle lots of stress and pressure, who can handle 24-by-7 [all day, every day] project management and resolve conflicts."

For example, "one large airline is looking for 500 people to do their year 2000 conversion," says Richard Saulsgiver, a senior technical manager at Computer Management Consultants, Inc., a consulting firm in Tampa, Fla. "How many project managers do you know, other than CEOs or CIOs, who have ever managed more than 50 or 100 people?"

Many IS managers fail in basic project management skills.
such as tracking the actual start and finish dates of tasks to identify problems before they balloon out of control, says Laura Leitzinger, a senior manager at Deloitte Touche Consulting Group in Chicago.

**HIGHLY KNOWLEDGEABLE**

Rick Hunter, a project manager at Kaiser Permanente Northern California, is about halfway through the conversion of about 15 million lines of code. Hunter's staff, part of the IS organization at the helical center organization, is running the work itself rather than leaving it up to each business unit. "It's important to quickly come up with a set of (standards and a methodology) ... so that each time you go through it, you're doing the same thing, the changes are uniform throughout your application suite and there's a common denominator," he says.

"Centralize this under one IS executive," Adkinson recommends. "If you turn your enter IS staff into a year 2000 (team), the first project and the only project they do have will be errors and bugs in it. The fewer players you have [learning how to do the work], the higher the quality at the end of the project."

Having started in mid-1994, Adkinson is finishing year 2000 work for Dayton Hudson's 700-plus Target stores. He says he hopes he can avoid similar conversion efforts for Dayton Hudson's namesake department stores and its Mervyn's stores by developing common applications for all three divisions.

"The people closest to the applications have to do the [actual conversion] work," says Bruce Hall, a research director at Gartner Group, Inc. in Westboro, Mass. "When you can centralize it is enterprise-wide, you can get it completely in coordination and concentrating on areas that should have less development support people who would need to coordinate year 2000 work. "It's always better to communicate than not to communicate," she says.

For Sproch, overcommunicating extends to sending informational memos and electronic mail, even to managers who don't think they are affected. Sometimes, she says, they'll pass messages on to other managers and, "I discover there's this whole new business going on that I didn't know about. And by golly, we need to keep them in the loop."

**HIGHLY VISIBLE**

"Like Big Brother, a year 2000 program office has to be constantly visible, drumming the work itself rather than leaving it up to each business unit. "It's important to quickly come up with a set of (standards and a methodology) ... so that each time you go through it, you're doing the same thing, the changes are uniform throughout your application suite and there's a common denominator," he says.

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For Sproch, overcommunicating extends to sending informational memos and electronic mail, even to managers who don't think they are affected. Sometimes, she says, they'll pass messages on to other managers and, "I discover there's this whole new business going on that I didn't know about. And by golly, we need to keep them in the loop."

**FINDING BIG BROTHER**

As Clint Eastwood said, a man has to know his limitations. "One thing we see consistently is the best technical managers don't necessarily make the best project managers," says Mark Wakelin, a vice president at The Constell Group, Inc., a management consulting firm in Elmsford, N.Y.

If an IS manager knows he lacks the skills to manage a year 2000 project, Adkinson recommends seeking help. He adds that your top IS staff should expect the same thing. He says, "If you can't do it yourself, find someone who can.

Schuler is Computerworld's senior editor, management.
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An occasional series on year 2000 trends, issues and statistics

The law – on your side

If you're bringing together executives to discuss your company's year 2000 problem, you should bring a corporate lawyer.

Bringing in lawyers will help illustrate the exposure a company's directors and officers could face if noncompliant software causes a company, or part of it, to fail. Peraino advised.

And the best way to sound the alarm to upper-level managers may be on the golf course or over lunch rather than via internal memo. Peraino said. Leaving a paper trail of warnings could make you more vulnerable on the witness stand if your company is taken to court because of a failure in its year 2000 fix.

As for the legal profession and the year 2000, "the lawyers are circling like sharks," author and software methodologist Ken Orr said in another address at the conference. "I tell my kids to know their Cobol and go to law school after." He said.

Growing awareness

If you think there's increased awareness and alarm over the year 2000 date problem, look no further than the numbers of attendees and exhibitors at last year's three Year 2000 Issues and Answers conferences sponsored by Digital Consulting:

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<tr>
<th>JULY</th>
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<td>San Jose, Calif.</td>
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Seeking action in D.C.

With the 105th Congress seated and President Clinton being sworn in to a second term today, key Democratic lawmakers are pushing for more government action on the year 2000 problem, the Information Technology Association of America (ITAA) reports.

Sen. Daniel P. Moynihan of New York plans to reintroduce a bill that would create a federal commission to study millennium compliance, analyze costs and provide immediate recommendations and requirements to the president, Congress and the Defense Department. (In a recent Computerworld report, critics charged Clinton, Congress and top Pentagon leaders with not moving aggressively enough to avoid serious problems at Defense.)

Moynihan, the ITAA reports, is particularly interested in how compliant the government's finance agencies are.

Also, according to the ITAA, Rep. John Dingell of Michigan has asked the Securities and Exchange Commission (SEC) to provide annual compliance status reports on the SEC and the entities it regulates, such as the stock markets. Dingell says the year 2000 problem could harm individual investors because trades and interest may not be properly credited.

Outside help

If the lawyers can't drive home the millennium message to the upper brass, whoever audits your company's books might do the job for you.

Representatives of two of the Big Six accounting firms — Price Waterhouse and Ernst & Young — say the firms' auditors may discuss the issue with their clients during the course of their work.

Randy Fletcher at Ernst & Young says his firm is making sure the top levels of a company are aware of the problem, if not attacking it. And if a company has a problem, he says, "we'll want to monitor that in the next few years."

And Dave Kaplan, a partner at Price Waterhouse, says, "Companies need to consider as soon as possible" what they should be doing to make their software year 2000-compliant. — Rick Saia

The right fit

Dave Bettinger discovered that starting a sideline business can help him make a mark in the world.

Bettinger, who by day is a senior technical writer for his company's year 2000 conversion project, joined a millennium consultant Peter de Jager's Internet mailing list last year. Some people on the list said they ought to have their own T-shirts to highlight century date conversion work.

So Bettinger, who lives in Brunswick, Maine, formed Project 2000, Inc. (www.clinic.net/users/project2000/project2k.htm), which prints T-shirts, sweatshirts, polo shirts and baseball caps for conversion project teams and year 2000 service providers around the world.

The logo on the clothing consists of a globe-like sphere with "Year 2000" stretched halfway around it.

Bettinger's customers come from the U.S., Europe, Canada and Australia. They tell him the shirts and hats are gimmicks that "draw some identity to the [year 2000] team and sort of makes them stand out a little bit."

"It's not going to be a morale booster, but it's certainly going to make it more fun," Bettinger says. "It gets visibility throughout the company." — Rick Saia

Talk back

Do you have any tips, suggestions or ideas on the year 2000 problem? Send them along to Rick Saia, associate editor, Managing (rick_saia@computerworld.com).

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**Remote Control**

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Charles de Gaulle once said he had lived an honorable and useful life but could truthfully say he never saw a problem solved. That may be the epitaph for many IS managers.

During the past 30 years, IS has tried repeatedly to resolve the same basic set of problems that at times have threatened its very identity, credibility and even existence. These are “classic” problems in that they have no final or single solution.

The problems include the relationship between designer and user of systems, the trade-offs in design between completeness and timeliness, the nature of effective design, the relative priority of investments in applications and infrastructures and, above all, the balance between central coordination of the enterprise IT resource and decentralized autonomy in decision-making and use.

Just about every large company faces a mix of these classic problems. Senior business executives keep looking for the answer. What if there isn’t one? What if the underlying problems are part of a fundamental tension that is like a swinging pendulum?

The swing of the pendulum in the business use of IT has long been, is and will continue to be from innovation to discipline, from innovation and back, again and again. It’s this swing that makes IT such a political issue. When does the organization need a strong, central IS group for governance and oversight? When must it loosen central coordination and encourage local invention, case-by-case prioritization and matching of applications to fast-moving business demands? There really isn’t one answer.

If you look at the history of IS, it’s been a constant balancing of answers. In the 1970s, IS got stuck in the mode of overdiscipline and central control. The PC was the force that liberated local units from the iron hand of data-processing bureaucracies. The swing of the pendulum brought a wave of innovations first and then the erosion of IS identity and authority in many firms.

The pendulum continued to swing. The firms that best established a real dialogue between business and technology recognized the need for a blueprint for integration, an enterprise architecture backed by corporate-wide standards and policies. The very same LANs that emerged to provide local autonomy in the use of computers as a business tool were seen as needing standards to ensure heterogeneous LAN/WAN/LAN interoperability. Help desks, economies of central expertise and network management tools contributed to much of the recent centralization of distributed computing — distributed technologically, organizationally and in terms of authority and responsibility.

Now, intranets and multimedia are part of the next swing. Corporate IS will once again be seen as an impediment in many instances. Then, as the threat of even more multitechnology chaos becomes apparent — well, to quote de Gaulle’s contemporary, Yogi Berra, it will be deja vu all over again.

The rise of the CIO was seen as the classic answer to all the classic problems. Now, even the CIO is seen as part of the pendulum. A recent roundtable of executives and IS experts published in the Harvard Business Review determined that what’s going wrong is that CIOs still lack business credibility and understanding. The panel concluded that the next replacement should be someone who is a true businessperson, that won’t work for long, either. Overseeing the design, implementation and operation of the enterprise multimedia network demands a true technology officer.

What the constant swing of the pendulum means is that a plurality of business managers is almost always dissatisfied with IS. Worse, top managers see IS as a recurring problem rather than understanding that IS lives with the pendulum problem. No matter how well-suited IS or organization, activities and strategies are today, tomorrow is almost here. There are answers, but not the answer.

The main points for solving the new IS generation, though, has to be to give up the search for the answer. The challenges for IS in 2007 and 2017 will be fundamentally those of 1967, 1977, 1987 and 1997. And the solutions in each of those periods will create the next problems.
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NORTON AND WINDOWS 95: AN ODD, BUT USEFUL, COUPLE

By Jeffrey Gordon Angus

A year and a half after the debut of Windows 95, a second generation of operating system-enhancing utilities has arrived.

More people will pay attention to Symantec Corp.'s Norton Utilities 2.0 for Windows 95 than the other packages because of Norton's pedigree.

Version 2.0 for Windows 95 is a clever package that offers more than its competitors. But the product has its drawbacks.

First, it still seems to carry a world view more appropriate to its DOS roots than to Windows 95. Second, it's still a pile of programs clumped under one product. The original Norton Utilities package was an early DOS offering and included a host of barely related tools with programmer-head names such as "SI." It required a pretty good comfort level with the dreaded DOS command line.

While later versions added a somewhat insulating shell to the potpourri, Norton Utilities was a favorite of power users and not something to be deployed to the masses. Every iteration made the product bigger and required improvements in the interface and documentation to maintain an ease-of-use balance.

Norton Utilities is still a boatload of programs tenuously tied together under one product. Apparently, Symantec is content to just add functions and ease-of-use features without examining the basic assumptions of such a utility package — who the users are and how they think.

Symantec has taken this approach despite Microsoft Corp.'s effort to make Windows 95 an easy-to-use operating system and Windows 95's deep penetration into the home-user and low-tech users markets. For those low-tech users in your organization, Norton provides more functions and complexity than they need or can handle.

Norton Utilities 2.0 for Windows 95 has some useful new tools. Most important to advanced Windows 95 users are the two registry utilities: Registry Editor and Registry Tracker. From a systems support perspective, the Registry is the key difference between Windows 95 and its Windows predecessors. It replaces the host of .INI files with a hierarchical, single-source file for configuration information. There's some good news in that change, but the bad news is that the relatively simple statements in an .INI file are replaced with a C-like language, nothing you'd let even an intermediate end-user mess with. And the solution to most problems that Windows 95 itself can't solve are centered, more often than not, right in the Registry.

While Windows 95 has an intrinsic registry editor, the Norton version is better. It includes multiple tabs in an additional window. One tab is sort of an online glossary that defines the folder that the cursor is on. When there is a definition available, it's pretty informative, but only if you already know about the registry. If you don't know much about the registry, this is no way to learn — you can still do dangerous things, such as delete needed entries, if you're not careful.

The Registry Tracker works much like an uninstall program and audits each change to the registry made by each installation program. If your system buys the farm after you install a new program, you can back out of the transactions and revive your computer. It also has a function for tracking elements installed by programs but no longer needed.

On my system, the function identified a gaggle of entries made by Norton Utilities itself. Those lines either were needed and incorrectly identified or weren't needed but were left by the Norton installer. Ideally, you could remove the extraneous entries, but it wouldn't pay to guess. Either way, Norton Utilities was culpable.

Another bug was in the installer. I suspect. After it made a clever automatic telephone call to Norton's bulletin board system with registration information, it locked up the modem by convincing Windows 95 that another program was using the modem. Cold boots, removing all start-up programs except Norton Utilities and going into DOS and re-initializing the modem all failed to cure this problem. And technical support was no help. My 25 calls to Symantec over a three-day period yielded nothing but busy signals.

Norton File Compare is another utility new to this version, and it's a good idea. But its implementation is a revision away from being truly useful. The idea is to be able to look at multiple versions of files.

WINDOWS 95 UPGRADE REDUCES WASTED DISK SPACE

By Chris DeVoney

If you've purchased new PCs in the past few months, you may be running a new release of Windows 95 without knowing it. But you should know about the upgrade because you can take advantage of some neat new features. Many computer manufacturers have hidden the second OEM service release (OSR2) of Microsoft Corp.'s Windows 95 under the covers since its fall introduction.

You can tell whether you are running OSR2, designated as Version 4.00.950B, by checking the System applet in Windows 95's Control Panel. The new release is a series of patches, upgrades, add-ons and changes to the original Windows 95 product. The changes include support for the multimedia functions of the upcoming Intel Corp. MMX-based computers, improved wizards for installing new drivers and new versions of Internet and multimedia add-ons.

The most important change is support for FAT32, a new disk directory scheme that supports disk partitions of up to 8G bytes and significantly reduces wasted disk space. Using 32-bit entries in a disk's File Allocation Table (FAT), Windows reduces the size of a disk's clusters (the smallest area the operating system allocates to a file) from 32K to 4K bytes.

For systems with many small files, FAT32 is a godsend. Because most single-page documents, electronic-mail messages and World Wide Web browser cache pages take 16K bytes or less, you can store several more files in the same amount of disk space under the new scheme.

The scheme tested well with most disk operations, running 10% to 15% faster, although disk defragmenting takes significantly more time. The downside is that you must use updated disk utilities, such as Symantec Corp.'s Norton Utilities 2.0 for Windows 95, with the new desk layout.

Microsoft's Windows NT can't read FAT32 volumes, so the new release is undesirable on dual-Window ships. Microsoft hasn't stated when FAT32 support will be added to NT.

OSR2 also supports varied disk formats, such as 120M-byte optical discs, Iomega Zip drives, CD-changers and Windows 95.
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(j) Mining/Construction/Petroleum/Refining/Agriculture  
(k) Systems Integrators, VARs, Computer Service Bureau, Software Planning & Consulting Services  
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(b) Computer/Peripheral Dealer/Distributor, Wholesale  
(c) Computer/Peripheral Dealer/Distributor, Other  
(d) IS/MIS/Operational Management  
(e) President, Owner/Partner, General Manager  
(f) President, Owner/Partner, General Manager  
(g) Vice President, Assistant Vice President  
(h) Treasurer, Controller, Financial Officer  
(i) Corporate Management  
(j) Sales & Marketing Management  
(k) Other Professional Management  
(l) Information Centers/Libraries, Educators, Journalists, Students  
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)  
(a) Operating Systems  
(b) Engineering, Scientific, R&D, Tech Management  
(c) Systems Integration/ VAR/Consulting Management  
(d) Corporate Management  
(e) Sales & Marketing Management  
(f) Technology/ICT Products  
(g) Internet/Intranet Products  
(h) Other Professional Management  
(i) Computer/Peripheral Dealer/Distributor, Retailer  
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4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply)  
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(d) Sales & Marketing Management  
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(f) Internet/Intranet Products  
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(h) Information Centers/Libraries, Educators, Journalists, Students  
5. Do you use the Internet?  

SAVE OVER 73%
**Product Review**

**Norton and Windows 95: An Odd, But Useful, Couple**

Continued from Page 79

(say SYSTEM.INI and SYSTEM.001) and compare them line by line, with indications of which lines were added, deleted or moved.

In principle, this is a fine utility, but this version incorrectly identified lines that moved as having been deleted, probably because the text in one was all upper-case and the other (identical in content) was all lowercase.

The Norton System Genie is the final new utility, and it also has some virtue, although future versions will be more useful. The Genie is a browser-based interface (specifically Mi-

**Windows 95**

Upgrade Reduces Wasted Disk Space

Continued from Page 79

Power users and people who’ve been using Norton Utilities for years will certainly want to use this product. Intermediate and low-end users may find it a worthwhile addition to their collection of tools.

In the end, the saving grace of Norton Utilities is the written documentation. Unlike the product itself, which is a jumble of programs, the manual is task- and solution-oriented.

The manual organizes the programs by function — prevention, recovery, performance and information — and then details each program the reasons to use it and the circumstance under which you should use it.

The documentation almost makes this a coherent product instead of a messy tool box full of very useful items. If the program designers would follow the intelligent path the documentation folk have beaten for them, this product’s strengths could be unleashed to the general masses of Windows 95 users, instead of only experienced users.

Angus is project director at The Data Works Ltd. in Seattle.

**My Opinion**

It should have been my idea

ROSS M. GREENBERG

I feel stupid. The next best idea since the original Sidekick comes along, and it wasn’t mine. It means, it’s a simple idea, solving a need we’ve all experienced with a solution we all wish had been our own. I know I did. Instead, start-up company Mirabilis Ltd. in Tel Aviv (but with a New York site served by a T1 line) had it first.

So what is it, already?

ICQ (I Seek You) is easier to use than to explain, but here goes:

It’s an Internetworkwide ability to pass simple notes to other ICQ users. And to chat or page them. It can pass files or favorite uniform resource locators (URL) to other users, too. You can watch members of your contact list are online anywhere in the world.

Take a gander at the ICQ product, downloadable from the Mirabilis World Wide Web page at www.mirabilis.com. Don’t waste your time looking for a price tag, though — there isn’t one yet. And conversations with Mirabitilis business personnel indicate there probably will always be a free version available. Only beta code is available now — but I’ve used production code of other companies’ released products that crashes more frequently, taking out entire city blocks, or at least one of my disk partitions.

And consider this: Mirabilis has garnered 30,000 users so far, with no advertising at all, merely word of mouth. This is for a product only available — and initially advertised — for the past four weeks or so.

I found the company’s Web page and product by mistake, and later one of my fellow systems operators on The Microsoft Network (MSN) independently discovered it. Paul Mayer, who runs the shareware forum on MSN, posted a note to other systems operators saying “This is a cool product!” He was right — it suits our needs perfectly.

Every ICQ user registers (currently for free) and gets a personal number, called a UIN in ICQ parlance. That also comes with a free Web-pager page.

After you’re registered, people who have you on their contact list will be advised when you’re online and when you’re offline. I had a corporate chat I had to attend, and in the dead time between each scintillating comment, for which I waited with bated breath, another member of the corporate audience and I were having an ICQ chat. Another ICQ user was sending me pop-up electronic-mail messages, and I was able to call somebody on a voice line to remind them to log on, because I could see the person was offline (having slept through an alarm — by five hours).

ICQ is smart enough to record the current URL you’re viewing in Internet Explorer or Netscape Navigator, and it allows you to easily send that URL to another ICQ user. That user receives it immediately if logged on and, with a single keystroke, their browser is brought up and that URL is displayed. Nifty.

You can set up a portion of your home page with some HTML tagging to allow others to add you to their contact books with a single keystroke. You can have private chats with one person or open chats with multiple people — or by-invitation chats, if you wish.

Currently, all though-the-server needs, such as Web-paging, go through the Mirabilis server. Intranet users have nothing to fear — ICQ knows all about how to use firewalls properly, and a special intranet-only server version is being worked on, full of even more features. And it never strays past your firewall.

There’s a “user away from their desk” feature that you can turn on or let your screen saver turn on for you. When someone tries to contact an “away” user, they get a configurable message instead.

It’s really a simple idea, done very well. It should have been mine, damn it. Mirabilis is close to releasing, and it’s busy trying to figure out which of a plethora of OEM deals is the best. This is a better mousetrap, for sure.

Greenberg is a software developer in Lynx, N.Y., who specializes in Internet and security products. He can be reached at greenber @ramnet.com.
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AGENDA

8:45-11:50 MORNING SESSIONS
- Introduction
- Capturing the Top 10 IT Growth Opportunities
  Frank Gens, Senior Vice President, Research
- Will the Telcos Own the Internet? IT Opportunities and Impact
  Gigi Wang, Senior Vice President, Communications Industry Research
- Outlook for New Internet Technologies
  John Gantz, Senior Vice President, Personal Systems and Services Research
- Software Economics Beyond Microsoft: What Works?
  Tony Picardi, Group Vice President, Software Research

Session A
1:15 - 2:00
- Internet Technologies: Opportunities & Challenges
  Ted Schlein
- The Web in One Hour: HTML
  Russ Quinn

Session B
2:15 - 3:00
- Semiconductors: What's Next?
  Frank Gens
- The Internet: What's New and What Works?
  Tom Ashbrook

Session C
3:25 - 4:00
- Software Economics Beyond Microsoft: What Works?
  Tony Picardi
- Network Management: Adding Value to the Package
  Nick Villas

TRACK 1: Internet Hot Spots
- Plugging In the Trainer Internet Software Outlook: The Information Appliance Marketplace
  Frank Gens
- New Media: Is It Really for Printers?
  Bill Adobe

TRACK 2: PCs for the Next Millennium
- The Application-Centric Data Warehouse: What's New, What's Not?
  Mark Barlow
- Internet Applications... Is the End Near?
  Oliver Kala, Michael Held

TRACK 3: Winning Software Strategies
- NT Adoption: How Fast Will It Happen?
  David P. Velante
- IT Services and Clients: Building Winning Strategies
  Jay Bremann

TRACK 4: NT in the Enterprise
- NT Server: What's New in 1998?
  Bill Adobe
- NT: Unix Killer or New Market Growth?
  Dan Kusnetzky

TRACK 5: LAN/WAN Dynamics
- Next Generation LANs: Trends and Issues
  Mark Lowry
- Network Management: Adding Value to the Package
  Nick Villas

TRACK 6: Market Spotlight
- The Battle for the Home: Global Prospects for New Media Products and Services
  Richard Twidell
- Japan and Asia/Pacific Market Outlook
  Philippe d'Heurle

4:05-4:50 Keynote Address
Dr. Robert M. Metcalfe, Vice President of Technology, IDG

4:50 Cocktail Reception
Artifacts may prove scarce as competing technology museums become

Archival Rivals

By Lisa Picarille

Pick anything considered to have some cultural significance — even if it’s debatable — and somewhere there’s a museum paying homage to it. Barbie dolls, toasters, automobiles, dinosaurs, television — even Spam is thus enshrined.

Meanwhile, art museums are everywhere; civic pride dictates that any major city feature at least one.

But somehow, the number of museums dedicated to preserving, archiving and showcasing the historical and social relevance of computers has been minimal.

There’s the Computer Museum in Boston. It’s been around for 14 years, and its history proves one man’s junk is another man’s treasure. The museum was started from a collection of old Digital Equipment Corp. mainframes that were headed for the junkyard. Legend has it that a truckload of Digital machines was actually on its way to the dump when the driver received radio instructions to turn back.

But beyond Boston’s Computer Museum and its West Coast branch — the Computer Museum History Center (CMHC) in Silicon Valley, which opened in October — there have been few serious efforts to create a computer museum on a large scale. The Smithsonian Institution has a standing exhibit titled The Information Age, but because the Washington national museum has a lending agreement with the CMHC, it’s not interested in collecting computer artifacts.

Still, there’s growing interest in preserv-
Archival Rivals

Continued from Page 83

by Lisa Picarille

The one that got away

Computerworld January 20, 1997 (www.computerworld.com)

The best computer exhibit in the world is vibrant, forward-looking and interactive. It’s also 4,000 miles and one ocean away.

The fact that such a center is in Linz, Austria, rather than Silicon Valley or along Route 128 in Massachusetts, ought to make the U.S. technology community blush.

Set smack on the Danube River in the third-largest city in Austria, the aggressively avant-garde Ars Electronica Center (www.aec.at) calls itself the “museum of the future.” Visitors get a hands-on, interactive technology experience.

Horst Hortner, technical director of the center, says he wanted people to see the “true technology, not curtains and specialists.”

In that spirit, little is hidden at the center. Much of the cabling is visible, and most displays’ servers are displayed proudly.

Visitors who crash (it happens) are assisted by one of Hortner’s information systems staffers. There are 10 full-time IS workers and more than 60 volunteers. They do a bit of everything, from writing C++ code (Hortner is preparing at least one Java application) to tinkering with PC drives right on the museum floor.

A visitor immerses herself in the CAVE, a virtual-reality installation. The Ars Electronica Center also features a virtual reality display in which the mayor of Madrid once got stuck — a worst-case demo scenario.

The center’s star attraction is the Computer-Aided Visual Environment (CAVE), a virtual-reality theater. It accommodates up to 12 people, led by one “masterguide” who controls the group’s movements through cyberscapes that range from mathematical equations to virtual universes. The CAVE runs off more than $5 million worth of Onyx servers donated by Silicon Graphics, Inc.

One exhibit showcases haptic technology, or virtual touch, from Cambridge, Mass.-based Sensable Technologies, Inc. Visitors balance and toss virtual shapes up and down and marvel at the illusion of mass.

But that version of the product is more than a year old. When Hortner is told that a more recent demo is available, he is clearly nonplussed. This is a difficult time to be in the futurist business.

Nevertheless, business is good. The Ars Electronica Center hopes to attract 50,000 visitors in its first year of operation; it reached that goal in three months.
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IT Careers

J. D. Edwards' Nancy Becker was diagnosed seven years ago with degenerating joints, but she refuses to give up doing the work she loves.

Repetitive strain injuries are permanently altering the way some IS professionals work. Industry reporter Rochelle Garner explores the harsh reality she knows only too well.

I realize I shouldn't be writing. My wrists burn and ache. My fingers tingle. But I have to earn a living. So despite having repetitive strain injuries (RSI) in both wrists, I marshal on, trying my best not to join the ranks of the permanently disabled.

Which is why, when I first recognized my symptoms last March, I wrangled a referral to an occupational therapist's office. There, in the heart of Silicon Valley, I discovered that these injuries aren't the exclusive domain of writers. Alongside me sat the white-collar professionals who helped build the computer industry.

By Rochelle Garner
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together, we strapped on electrodes, plunged our arms

LESSONS

the exact amount of money paid out each

juries is never discussed: the low-grade

have to work on the computer so much," Becker says.

COMPUTER PROFESSIONAL.

that disability claims are filed only by people who re-

ibility to make a lifetime of change.

This raises a painful moral: No amount of ergonomic

such as positioning, lighting and the impor-

tance of stretching.

The product does an ex-

selves in how to adjust your chair, keyboard

and monitor, and more

and use what is available. The Department

of Labor estimates that about half the na-

tion’s workforce will suffer some sort of cumulative

trauma disorder by 2000. In 1993, the last year for

which information is available, the Labor Department

reported 302,400 cases of RSI injuries. That’s up from

23,000 in 1981.

Already, estimates of total annual disability claims

range from $565 million to $4.4 billion. Bear in mind

that disability claims are filed only by people who re-

quire major medical intervention — people who have

had to find new ways of working and even new fields

in which to work. They are all well off now. I am. And yet,

I have seen my productivity and my income drop to a

quarter of what it was last year.

That hasn’t happened to Becker, partly because her

new role in management reduces her time at the key-

board. And partly because she has health insurance that

covers seven years of physical therapy. (My insurance

permitted a whopping nine visits to a therapist.) And

partly because she works at an understanding company.

Although Becker’s new role in management had

nothing to do with her RSI. J. D. Edwards has set aside

positions in quality assurance, sales and consulting for

injured programmers.

we anticipated a worst-case scenario where people

might have to shift careers to accommodate their inju-

ries,” says Greg Dixon, director of human resources.

“So far, though, no one has asked for that kind of help.”

Becker hasn’t because she refuses to give up. “I had a
doctor tell me to quit, and I said, ‘There’s no way in

hell,’ ” she says, explaining her regimen of frequent

breaks, exercise and meetings.

This raises another key issue when dealing with RSI:

I’ve assigned articles — and had articles assigned to me — on RSI.

And yet, I blithely typed away for eight hours at a stretch with no breaks. — Rochelle Garner

Ergonomics made painful

Training product offers tips for preventing injuries

By Jeffrey Gordon Angus

Training people who work with

computers on how to avoid inju-

ries is always a good investment.

The exact amount of money paid out each

year by companies in lost work time and

increased worker’s compensation isn’t

known — estimates vary considerably,

from a half-million dollars to $2 billion an-

nually.

But the biggest cost of technological inju-

ries is never discussed: the low-grade

attitude. Specifically, you can’t expect someone else to

make you better. Sure, surgeons can cut. But people
typically lose about 20% of their strength and mobility

after such surgery. And although physical therapy helps,

all physical therapists will tell you that any improvement

you make will depend on what you do on your own time.

“It’s one thing to solve all of the equipment issues,

but I have found that the crucial component in both pre-

venting and getting over RSI is behavioral modifica-

tion,” says Dennis Mattinson, health and safety officer

at Sun in Mountain View, Calif.

By behavioral changes, Mattinson means stretching,

exercising, adopting better posture and taking frequent

breaks. In fact, if you don’t take frequent breaks now —
say every hour — you could end up like me and thou-

ands like me.

But no one wants to change their routine. Take breaks

every hour? That’s for wimps. Sit up straight, with feet

square on the floor? Get real.

“It’s difficult to motivate someone who isn’t injured,”

Mattinson says.

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FADE TO FLAT

Individual's stock dropped and flattened following management changes. A stockholder class-action suit is pending.

INDUSTRY ALMANAC

An Individual matter

individual, Inc. was founded in 1989 with the idea of making it easy for executives to stay up-to-date via fax on news that is important to their business.

Today, it gathers news from more than 700 sources daily and distributes customized news feeds through electronic mail, fax, groupware, and intranet servers.

But the Individual, Inc. company has had a difficult relationship with some investors following its initial public offering (IPO) in March 1996. The stock, which had ranged from $14 per share to more than $20, fell to about $6 in July after founder and CEO Yosi Amram resigned amid disagreements regarding timesharing and news-gathering work. "It brings a lot of news from Individual, for which it pays $1,200 per year. "I can get 95% of what I'm now getting for free," Takata says. Despite the lawsuit, "I think the stock is very attractive at these levels," says James J. Pettit, an analyst at Hambrecht & Quist in San Francisco. He says Individual has $30 million in cash and has been able to attract corporate clients with its customized financial research services.

This information is based on sources believed to be reliable, and while extensive efforts are made to assure the accuracy, no guarantees can be made. Nordby International Inc., Boulder, Colorado
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(Then reject that idea, chuckle heartily to yourself and come visit our Web site.)

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Retailers score big time

CONTINUED FROM PAGE 1

that make up the $10 billion li-
enced sports industry busi-
ness, it's the latter. They win
whether it is Bill Parcells or
Mike Holmgren who is carried
off the field as the victorious
coach after Super Bowl XXXI
in New Orleans Sunday night.

Just as the New England Patri-
oots and Green Bay Packers have
worked to build Super Bowl teams,
merchandisers Lids, Pro Player
Corp. and others have
toiled to build the infrastructure
that allows them to compete at
the top level.

SPEED IS EVERYTHING

"Fans are sucking champion-
ship hats out of our stores," said
Peter Ross, MIS director at Lids,
a Westwood, Mass.-based chain
that has 106 stores in 23 states,
including the Super Bowl team
states of Massachusetts and
Wisconsin. "In this business,
you win by having hats available
as soon after a game as is hu-
manly possible."

That is accomplished by build-
ing information systems that
are truly flexible in a market
that defines just-in-time manu-
facturing. Most retailers cover
their bets by placing orders for
Super Bowl championship gear
for both teams.

But some retailers want only
gear for the eventual Super
Bowl champions. The same
goes for the cottage industry
of sports gear resellers that pops
up after the championship
games (see photo at right).

"Flexibility in this case is the
key to supporting merchandis-
ers' ability to bring products to
the masses more quickly and
less expensively," said Matthew
Giannini, an analyst at G2 Re-
search, Inc. in Mountain View,
 Calif. "Lots of merchandisers
find it tough to plan until the
last minute, which isn't really
planning. That delays product
delivery."

Charlie Gallo outlined Pro
Player's game plan.

Retailers are notified in De-
cember by the Hudson, N.H.,
supplier to either call in orders
or visit warehouses near the
four championship teams.

There, they can view a variety
of color shirt designs on laptops.

The retailers also can call
up Pro Player's World Wide
Web site (www.proplayer.com)
and view a subset of the designs.

The company doesn't display
all the designs for fear they
will be copied by unlicensed
competitors.

Orders are entered on the lap-
tops and travel over regular ana-
log dial-up lines to Pro Player's
IBM AS/400, which tabulates
them and sends back an esti-
mate of when shirts will be
ready.

The orders are then sent
back to the printing presses at
the warehouses.

"We predict that if the Patri-
oots win the Super Bowl, retailers will have vans backed up here at
midnight Sunday so they can
have the shirts in their stores
Monday morning," said Gallo.

vice president of MIS, customer
service and production/schedul-
ing at Pro Player. "If Green Bay
wins, that'll happen in Wiscon-
sin."

Lids' game plan relies on PCs
with special point-of-sale soft-
ware in each of its stores. The
PCs are used to create and send
orders over dial-up lines to an
IBM R5/6600 at its headquar-
ters, which runs an automated
merchandising system from
Richer Systems, Inc. in New
York.

"It's a differentiator that we
use PCs in stores instead of a
proprietary cash register config-
uration because it lets us send
urgent E-mail messages to the
stores that couldn't be displayed
on regular registers," Ross said.

Lids is considering running
Microsoft Corp. and Lotus De-
velopment Corp. applications
on the PCs.

CD-ROM Super Bowl simulations show Cheeseheads rule

> Three leading games back up the oddsmakers

By Rick Suia

NO MATTER WHICH way you look at Super Bowl XXXI, the ex-
erts seem pretty smart — at
least when it comes to some
leading computer games play-
ing out the Packers/Patriots
matchup.

After Green Bay and New En-
gland advanced to the big game
in New Orleans, I took three
CD-ROM games and played a
Packers/Patriots simulation on
each.

The overwhelming conclu-
sions: The Pack is back.

Green Bay quarterback Brett
Favre knows how to throw
touchdown passes.

New England quarterback Drew Bledsoe, meanwhile, has
trouble moving the ball down
the field.

The sports apparel industry demands flexible information systems to get merchandise for win-
ting teams on display as soon as possible after a big game

Continued on page 4

NEW ORLEANS, LOUISIANA
SUPERDOME

SIMULATION 1
Front Page Sports Football Pro '97
Sierra On-line Inc., Bellevue, Wash.
www.sierra.com

Green Bay 14, New England 6
I clicked on Quick Start for a
New England/Green Bay game in
Green Bay (the Packers are
technically the Super Bowl's
"home" team). Luckily, the giv-
en weather conditions were sunny
with a slight breeze.

As for the game (the comput-
cer called all plays), both de-
fensive defenses dominated.

Green Bay scored first in the
second quarter after the Packers
stopped Patriot running back
Curtis Martin on fourth-and-
one from the New England 39.

Two plays later, the Packers
scored on a Favre touchdown
pass to take a 2-0 lead. New En-
gland closed it to 2-7 before half-
time on an Adam Vinatieri field
goal.

In the fourth quarter, Vinat-
ieri kicked another, making it a
one-point game. But the Pack-
ers, on the ensuing drive, drove
75 yards in 11 plays, all on
the ground, and ate up more than
seven minutes. Edgar Bennett
ran in from the Patriots' 6 for
the second touchdown.

SIMULATION 2
 Madden '97
 Electronic Arts, San Mateo, Calif.
www.easports.com

Green Bay 44, New England 15
With a PC calling the plays,
the game moved quicker than
a typical NFL contest. It took the
players no more than three
seconds in the huddle before
scouring up to the line of scrim-
mage.

I stopped the
game midway through the third
quarter, after the
Patriots had cut
the Packers
goal.

Lead

44-6 to

44-15 (for Patriots fans, shades
of Super Bowl XX). The
Packer's offense domi-
nated. Favre passed for more
than 400 yards despite throw-
ing three interceptions.

SIMULATION 3
NFL Quarterback Club '97
Acclaim Entertainment, Inc.
Glen Cove, N.Y.
www.acclaim.com

Green Bay 22, New England 0
In this game, simulated in a
domed stadium with
artificial
turf, I played for the
Pats and a
colleague called the
Packers' plays.

Needless to say, nothing worked for New En-
gland here. The Packers sacked
Bledsoe for a safety in the first
quarter. The offense scored the
rest of the points (two on Favre
passes) in the second quarter.
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Commentary

How Apple can win
David Coursey

Don't you just love a good story? I do, and I'm convinced that's what Apple needs right now: a new story to usher in a new operating system to a cynical world.

I'm a big believer in stories as a way of explaining who and what we are. Companies are just like people in that regard. The proper story helped propel Apple to greatness, and now a new story is needed to explain the "new" Apple. Ideally, the story would attract Computerworld readers to Apple's next-generation operating system, code-named Rhapsody. At the very least, it must prevent them and their IS brethren from turning up their noses, effectively making Rhapsody uncool or even dead on arrival.

And because Apple will generate a story whether it wants to or not, I'd like to suggest the following one:

Rhapsody should be "the operating system for the intranet," specifically designed to host Web-based applications on Intel, RISC and PowerPC platforms, with the same binaries able to run on all three.

That's the short version—a positioning statement of sorts—but it needs support. Anybody can make such a statement; how can Apple make it come true?

Well, it can't—at least not alone. To be the operating system for the intranet, Apple will need help from companies that already are the intranet. That means vendors such as Netscape, Oracle, JavaSoft and a few others need to think of Rhapsody the same way everyone at Microsoft thinks of Windows 95 and Windows NT: It's ours, and we bend it to do what we need done.

Popularizing Rhapsody won't be easy. Apple should probably send some megabucks to Netscape to help hire programmers to port SuiteSpot to Rhapsody. Oracle might need help getting its databases to run on the new operating system, as databases and tools are essential to intranet developers. And Rhapsody has to make Java look really good, especially for developing server applications.

Software from three companies doesn't a platform make, though it's generally agreed that desktop publishing—early versions of Adobe's PageMaker, specifically—kept the Macintosh alive in its early days. If Netscape and Apple put their minds to it, the Rhapsody version of SuiteSpot—coupled with Oracle—could be an excellent intranet and client/server application platform. Both companies have big customer bases. And Next Software, Apple's new acquisition, has the building blocks for a great system.

At the same time, Rhapsody must be easier to install and maintain, and it must have a cost-of-ownership advantage over Windows NT. Putting the Macintosh interface atop Rhapsody can achieve some of that, but packaging and pricing will contribute as well.

Who will buy Rhapsody? It depends, of course, on what Apple can accomplish and in what period of time. There are a reasonable number of people looking for an NT alternative that isn't Unix. And NT customers themselves will benefit from the innovation and lower pricing that competition brings.

If Apple can accomplish this—and it's a tall order—then Rhapsody gets a story that at least some corporate customers will listen to. Whether they'll buy it is another story. But without a good story, Apple loses all hope of a happy ending.

Coursey wrote this column while he was sick with the flu. If it doesn't make sense to you, please blame the cold medication and not Coursey. He is accepting get-well E-mail at dave@coursey.com. When he recovers, David will return to editing his newsletters and being his usual charming self. But until then, watch out!

What's the cost of not learning?
Charles Babcock

Learning may be something you thought you left behind once you escaped from calculus class. But not so fast. We are now all functioning in a world where learning is a continuous process—not just a classroom experience.

Technology and the Internet are creating a modern-day gold rush of opportunity. Those who learn quickly gain immense advantages over those who don't. And learning quickly may have as much to do with your habits in using technology as with your IQ. In narrowly decided races, the aid to learning provided by the desktop PC can be a deciding factor. If your technology habits reinforce your learning habits, a whole new element enters into the valuation of the cost of ownership of desktop technology.

And a new challenge arises inside the organization. How does it maximize technology tools for learning? When are they an aid vs. a distraction? We need to understand how our organization learns collectively and whether it learns any faster when more workers are equipped with PCs. My intuitive sense is that active PC users, with their electronic mail, Web browsers and collaborative groupware, are learning faster than those who aren't similarly equipped. But I haven't seen any figures from the Sloan Review. Some organizations encourage it by the way they are structured; others miss the boat. The article cites these points:

- It matters whether knowledge in an organization is viewed as a possession of individuals or something to be shared and made public. Does top management exemplify information sharing or information hoarding?

- Is there a constant dialogue going on within the organization over the quality of its product and the nature of its customers, or is that left to specialized fiefdoms that brook no challenge?

I look at my co-workers and realize that one of them learns very quickly about the external world by going on a daily jaunt on the Web. Much of his picture of the world depends on what he sees there, and that picture is very much up-to-date.

I like reading everything on a topic in a single day, so I'm more likely to visit Computerworld's library of publications or turn to the indexed online services that give me a long reference list. The Web is part of this, but my method is more like hanging out in the stacks than going Web-waltzing.

Another co-worker gravitates to the online chat sessions where technical self-help sessions are under way. And she frequently joins in.

I see no particular merit to my way of learning over the others, and I don't hesitate to pick the brains of others, knowing their strengths. I do see our desktop computers extending our strengths and allowing us to make use of them in different ways. We take it for granted that we can find out what we want to know because the computer has done such an impressive job of extending our reach.

Attitudes within your organization toward experimentation and risk-taking are also important. If someone tries a new way of doing things and it fails, is he congratulated or excoriated? Is doing things a new way viewed as a learning vehicle in itself? It should be.

Too often, learning is seen as a formal process; one party imparts learning to another. "The mere presence of traditional training isn't sufficient; it must be accomplished by a palpable sense that one is never finished learning," according to the Sloan Review.

In this new information nation, it isn't the PC itself that is key, but it has been key to giving us the sense that we can learn what we need to know. Cultivating that belief is today's difference between success and failure.
**Tired talk**

Wordsmiths at Lake Superior State University in Sault Ste. Marie, Mich., are, like, getting irritated. The school has released its 21st annual list of words and phrases that should be banished because they're misunderstood, overused or useless — and the news isn't good for the high-tech community. "Multitasking" should be banned, said a teacher in Perry, Mich., who claimed that "doing several things at once" is sufficient. "Downtime" is fine for computers, but not humans, ruled one English professor. Meanwhile, "outsourcing" and its cousin "downsizing" were ridiculed.

**Virus scum**

Sci-fi writer and digeria member Bruce Sterling acknowledges he's a hacker-sympathizer. But he draws the line at virus writers, whom he calls "antisocial moron kids" in an article for IBM's antivirus website (www.av.ibm.com), "The thing that truly disgusts me about virus writers is their weirdly gratuitous meanness," he writes. "They poison the digital rivers."

**Digital archives**

TEN YEARS AGO (JANUARY 1987)

- Apple unveils the override AppleShare file server, a sign that it's serious about the corporate market.
- The Intel 80386 chip is described as "lightning fast."
- Headline: "Windows to play role as 386 tool."
- Ross Perot invests $20 million in Steve Jobs' start-up, Next Software.
- Alabama bans PCs from its legislative chamber because of the annoying "tap, tap, tap."
- Headline: "Stumbling in DP, Wang will post loss; cuts salaries, jobs."
- Enrollment in college computer science programs is dropping because students are disillusioned by the computer industry slump and the demanding nature of the field.

**Citizen Jobs**

Gene Gable, publisher of Publish magazine, says the parallels between auteurs Steve Jobs and Orson Welles are many.

Apple Macintosh

Masterpiece: "Citizen Kane"

**CHANGE YOUR IMAGE**

Don't have an in-house graphics wizard? Send your images to the Imaging Machine (www.vrli.com), which will transform them using a variety of graphics-editing techniques and filters that you select. The tricks include defining edges, embossing, flopping, blurring, high-contrast making, negatives and combining images. The Web-based service is free from Visioneering Research Laboratory in Las Cruces, N.M.

**HP slashes Unix workstation prices**

Call it the Wintel effect, or maybe it's a reaction to similar price cuts by other RISC vendors. But Hewlett-Packard today will roll back prices across its Unix technical workstation lineup by up to 60%. For example, the price of an entry-level B-class workstation will be reduced by 37%, from $12,700 to $8,000. Similarly, the price of a midlevel C-class workstation has been knocked back 36%, from $33,000 to $21,000.

**Time files when you're cracking code**

PCCrypto, a desktop encryption product from McAfee Network Security and Management in Santa Clara, Calif., was promoted in a recent news release as follows: "PCCrypto's encryption is so powerful, McAfee estimates it would take a trillion supercomputers, which could each test a trillion keys per second, about 463 trillion centuries to break a PCCrypto code."

**Walk this way, surf this way**

Perhaps this is a reflection of just how hip the 'net is. Keith Garde, a 20-year entertainment industry veteran who was most recently co-manager for the band Aerosmith, has been appointed executive vice president in charge of strategic marketing and new business development at Patxi Entertainment Network. The Guilford, Conn.-based celebrity Internet service's holdings include Supermodel.com and Superstars.com.

**Reusable templates**

Some technology pros dabble in journalism, but one IS manager is taking it a step further. John Williams, who was most recently director of IT architecture and standards in the IT services department at Carolina Power and Light, is joining Object Magazine in New York as chief technology writer. Williams is also the author of What Every Software Manager Must Know To Succeed With Object Technology.

**Welcome to the Web**

Internet newbies who visit the Internet Society's Web site at www.isoc.org click on a button labeled, "What is the Internet?" Last week, that led to a long delay followed by the message: "There was no response. The server could be down or not responding." Yup, that's the Internet.

**Apples and cookies**

The beta version of Apple's Cyberdog 2.0 Web browser, available at cybergod.apple.com, adds support for cookies — the files that Web sites can use to store data on your hard disk drive — and includes commands to block or erase cookies. The erase command's name? Toss Cookies.

**IBM to launch 'life' laptops**

Word has it that IBM will shortly release a no-frills notebook aimed at road warriors who aren't interested in the power and fancy multimedia that's been recently released. Sources say IBM will position its new low-end notebooks for those users who are simply interested in getting and receiving data and in being connected to the office vs. having the capability to give high-powered sales presentations.
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