AT&T: Keep access fees, we'll cut rates

Data base unit announced for IBM sites

By Phil Hirsch

WASHINGTON, D.C. — AT&T may increase its private-line rates only 7.8% overall — rather than the 15.3% originally planned — if the Federal Communications Commission implements its plan to charge users for access to the long-distance network. The company said it might also decrease Message Toll Service and WATS charges more than the 10.5% promised.

Both offers were included in comments AT&T submitted to the commission Jan. 6. They appear to be part of an intense lobbying campaign aimed at Congress; AT&T has also sent nearly two million brochures and letters to community leaders, shareholders and employees.

A bill passed by the U.S. House of Representatives, H.R. 4012, forbids the FCC from putting the access charge plan into effect. Similar legislation (S. 1660) is awaiting a final vote in the Senate.

The White House opposes these measures, as do many corporate communications users and telecommunications vendors. The latter two groups have formed an Alliance for Telephone Progress to seek changes in the legislation (story on page 5).

The original private-line increases and WATS decreases proposed by AT&T last Oct. 3 could be changed, AT&T said, because the company overestimated the access charges it would have to pay under the FCC's rule.

See RATES page 2

FVI

A fearless Fortran forecast: Redskins by six

By Bruce Heard

LOS ANGELES — There have been times in the past when fearless Fortran forecaster Bud Goode has equivocated when asked to pick the next Super Bowl champion.

"I don't believe the computer," he complained.

"It's a dismal science," he decried.

No more. The computer says Redskins by six over the Raiders in Super Bowl XVII, and that's good enough for Goode. The forthright forecaster was even willing to hazard a guess at the Jan. 22 final score: Washington Redskins: 21, L.A. Raiders: 17. Or 14. Something like that.

Goode's computer is a Spectra 701106 mainframe, and he uses it to compile a weekly 80-page readout that was sold to nine National Football League coaches and CBS commentator Dick Vermeil this past season. The software that drives the 1106 is based on a regression analysis that includes 130 variables covering virtually every phase of football.

Although not a betting man himself, Goode handicaps NFL games each week during the 16-week regular season for The New York Post and The Philadelphia Inquirer, among others. After experiencing stunning success against the line last year, he sank to two games below .500 against it this season.

"I expected to fall out of bed this year because of statistical variations," he noted matter-of-factly.

During the course of the season, several teams jockeyed for statistical supremacy in Goode's Super Bowl race. In the American Football Conference, the L.A. Raiders did not emerge as the favorite until the 12th week. Before that, San Diego — Goode's preseason pick —

Miami and Pittsburgh all enjoyed front-runner status. In the National Football Conference, Washington, the defending Super Bowl champion, supplanted Dallas as the favorite early in the season and stayed there.

In the Redskins-Raiders match, the Redskins are very strong statistically in ball control. According to Goode, the Super Bowl champions will typically run the ball 10 times per game more than their opponents during the regular season. The Redskins almost doubled that number, topping it to 17.

"It's a big edge because of the clock-eating ability," he pointed out.

Washington led the NFL in scoring with a 33.8 point average, a 40-percentage advantage over the Los Angeles defense, which relinquished a not-too- stingy 21.1 points per game.
**Alliance to monitor legislation**

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — "To ensure passage of legislation responsive to the legitimate concerns of business and protective of America's technological future," several corporate communications users groups and trade associations last week announced they have formed the Alliance for Telephone Progress (ATP).

The group's initial goal is to amend telecommunications legislation now before the U.S. Senate. Meanwhile, in related actions:

@ The Reagan administration has announced it will oppose the pending Senate legislation (S. 1660) which would bar the Federal Communications Commission from putting its proposed access charge plan into effect.

@ The Senate legislation (S. 1660) which would bar the Federal Communications Commission from putting its proposed access charge plan into effect. The Senate is likely to vote on S. 1660 next week.

The latest views of the Reagan administration regarding the pending legislation came in a statement made by a White House spokesman earlier this morning: "We support a deregulatory move as being in the best interest of the industry as well as individual consumers.

"We're concerned about individual consumer costs," he said, "but I think in the long term, those will iron themselves out.

@ AT&T offered to reduce its Message Toll Service/Wats rates beyond the levels promised last October and also offered to scale back increases in private-line rates proposed at that time (see story on page 1). The October announcement concerned a new interstate (between local access and transport areas) tariff, based on the PDC model.

@ An AT&T spokesman said the company mailed nearly two million announcements of the new offer to its shareholders and employees, local opinion molders and the general public.

@ A knowledgeable Washington, D.C., source said the FCC is "caught between a rock and a hard place." While Congress objects to the access surcharge, the carriers and business-communications users insist on it.

@ He believes Congress and the commission will decide to defer the access charge for several months despite objections from users, telephone carriers and possibly Federal District Court Judge Harold Greene, who presided over the AT&T divestiture.

This Thursday the commission may act on petitions for further reconsideration of its access charge decision.

A press release issued by the newly formed ATP last week estimated that if S. 1660 or a similar measure in the House of Representatives (H.R. 4102) is enacted, their members' communications bills will increase between 40% and 200%.

Members of ATP include the International Communications Association, Association of Data Processing Service Organizations, Corporate Telecommunications Users, National Association of Credit Counseling, Electronic Funds Transfer Association and Aeronautical Radio, Inc.

**Rates from page 1**

However, "if the access charge plan were to be modified, either by commission action or congressional mandate, to reduce or to eliminate the fixed monthly end-user fee or to increase the amount of the discount for other common carriers, AT&T's ability to offer any rate reductions would be jeopardized.

"In fact, such changes could eliminate the MTS and Wats rate reductions already proposed in the Oct. 3 filing."

**Key part of plan**

A key part of the FCC's access charge plan is a fixed monthly surcharge of $2 per month per line on the local telephone company's residential users and up to $5 per month per line on business users.

The plan also calls for reducing the differential between what AT&T and the other common carriers now pay for access to local telephone networks. Other common carriers are now charged far less for lower-quality interconnection, AT&T said.

AT&T said that, because of uncertainty concerning the FCC plan and the related access charges that local telephone companies will levy on AT&T and other long-distance carriers, it could not estimate how much more MTS/Wats rates might come down. But the company promised to pass on to customers all of the savings.

**Criticism rejected**

AT&T rejected criticisms from users that the rate reductions proposed last October represented only about half of what it would save in reduced costs stemming from the FCC decision.

**FCC asks AT&T to justify rates further**

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — AT&T last week received a 20-page letter from the Federal Communications Commission that asked for further justification of the post-divestiture rates the company proposed last October.

The pending tariff, scheduled to go into effect April 3, will "have a dramatic impact upon charges paid by subscribers," wrote Jack D. Smith, chief of the FCC's Common Carrier Bureau.

By next Monday, Jan. 23, Smith wanted AT&T to answer a number of questions that the bureau's staff raised after perusing last October's filing and questions that customers raised in comments submitted to the FCC.

For example, the American Library Association, together with two regional library network operators, charged that commissions for charges nating over regional bibliographic networks would go up 55% to 94%.

AT&T was asked to respond to these and all of the other customer complaints individually. In each case, the FCC wants a breakdown of present and proposed charges and a comparison of the Total Service and Transport Circuits Service options offered in the tariff.

Under the former option, AT&T would provide an end-to-end service, obtaining the customer's local access facilities from the appropriate local telephone company. Under the latter option, the customer would acquire his own local access facilities, obtain the interexchange circuit from AT&T and retain responsibility for end-to-end billing and maintenance.

As part of its response to each customer complaint, AT&T was asked to "fully explain and justify price differences between . . . alternatives by rate element."
Ladies and gentlemen...sort users...fellow Americans: As we stand before you today on this windswept Inaugural Platform, clutching our notes, we are both very proud and somewhat puzzled.

We're proud that SyncSort has again been re-elected to office as "America's No. 1 Sort Program." It's now used by a whopping 75% of America's major data processors, according to the latest IDC sort survey. Here's the final vote tally:

SORT
PROGRAMS
IN USE
IN THE U.S.*

But proud as we are of this achievement, we're puzzled, too. How come 25% of you are still procrastinating about SyncSort? You use the best hardware, and sooner or later you're going to want the best sort program to make that hardware work even better.

If you'll call, we'll prove to you that all three versions of SyncSort—OS, DOS and CMS—are clearly superior to their IBM counterparts in the three critical areas of sorting:

1. PERFORMANCE. Sorts have a built-in "Tammany Hall factor." If they run inefficiently, they can embezzle a great deal of your computer resources and corrupt your entire systems throughput.

SyncSort prevents this by keeping sorts honest. Because of the technological breakthroughs we pioneered—many of which are now patented—all three versions of SyncSort use far less computer resources than any of their IBM opposite numbers. Just how great the sort-performance gap has become can be seen by the charts at lower left.

2. PRODUCTIVITY. There's more to sorting than sorting. SyncSort is loaded with sophisticated features that make it easy to perform other important data-processing functions. Using these features, the time required for simple applications can often be reduced from five programmer days to one. Another reason why SyncSort has always carried the programmer vote!

3. SERVICE. We never forget who elected us to office. When you need sorting help, our Technical Service people will provide fast, accurate, courteous sorting advice. More than 85% of all customer inquiries are resolved within 24 hours.

To the 75% who cast their ballots for SyncSort, our warm thanks. And to the 25% who didn't, better call us today. Why postpone the inevitable?

*According to IDC's Seventh Annual Survey of Sort Programs Used in OS and OS/VS.
IBM adds one System/38, scraps three, cuts prices

By Tom Henkel
CW Staff

R VE BROOK, N.Y. — IBM last week scrapped three older members of its System/38 processor lineup, announced a mid-range System/38 processor and slashed prices on the remaining two processors in the line.

The highlights of the announcement include:

- The introduction of the System/36 Model 6, a mid-range processor that reportedly offers 2M to 4M bytes of main memory and the ability to connect up to 128 local workstations. The Model 6 replaces the older Model 5 and Model 7 processors, which IBM will no longer market. IBM said the Model 6 offers about 25% more internal performance than the Model 5, with a purchase price of about 8.9% less.

- The elimination from the System/38 family of the entry-level Model 3, a processor that many industry watchers maintained did not offer enough memory to fulfill users' needs. Most agreed the Model 3 was never a strong contender in the System/38 lineup.

- Decreases in the purchase prices of the remaining system members of the System/38 line by as much as $32,500 on the Model 8 and $17,500 on the Model 6. IBM also made some minor enhancements to those processors.

- The announcement of an electronic spreadsheet program, Worksheets/36, as part of IBM's Office/38 family.

Faster storage cycle time

The System/38 Model 6 features a control storage cycle time of 133 nsec, compared with 200 nsec on the older Model 5. Main memory cycle time on the processor is 400 nsec, compared with 600 nsec on the Model 5, IBM said.

The Model 6 is available in 2M-, 3M- and 4M-byte memory configurations. The Model 6 offered 1M, 1.5M and 2M bytes of main memory. In addition, the Model 6 can accommodate 13 more local workstations than the Model 5, IBM said.

The Model 6 processor will use 2M bytes of main memory, 794M bytes of disk storage, 20 workstations and a system printer costs $180,423. The unit costs $5,861/mo on a five-year lease plan. A similarly configured Model 5 processor formerly cost $168,452.

The Model 6 will be available in March, IBM said.

Models 4, 8 enhanced

Besides getting price cuts, the Model 4 and Model 8 processors also were enhanced. The Model 4, which was never a strong contender in the System/38 family, was eliminated from the line. The Model 4 processor can accommodate 12 additional local workstations, raising the maximum number of terminals from 20 to 32. The additional terminals can be attached without an expansion feature, IBM said.

The newly announced spreadsheet program, Worksheets/36, enables users to develop relational models for planning and budgeting applications. The package, which can access information stored in a System/38 data base, is available for a one-time charge of $2,700, an IBM spokesman said.

Last week's System/38 announcements were made through IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10573.

NCR uncovers terminal system to fit IBM's 3270, SNA/SDLC

DAYTON, Ohio — Citing its intention to offer communications compatibility with IBM, NCR Corp. last week announced a general-purpose cluster terminal system that is compatible with IBM's 3270 line of terminals and IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC).

The NCR 7950 terminal system is comprised of either 15-in. monochrome display terminals (green or amber) or 14-in. color display terminals and a 200 char./sec printer and a controller that can support up to 32 CRT terminals or printers. The controller is based on a Motorola, Inc. 68000 microprocessor.

NCR plans to market the unit to large corporations that have a need for heterogeneous CRT terminals that can communicate with a host processor in a 3270 SNA/SDLC environment. A single NCR 7950 terminal system can accommodate two controllers and two CRT controllers or printers. The controller is based on a Motorola, Inc. 68000 microprocessor.

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The introduction of the NCR 7950 marks the first time NCR has announced a 3270-compatible product, the spokesman added.

Features of the 7950 include a data field storage facility for commonly used word sets. The feature can be recalled on the screen as needed.

In addition, a printer buffer is available to store screen contents when the printer is busy.

Add-on features

The 7950 was designed to enable customers to buy entry-level configurations similar to the IBM 3178 CRT terminal introduced last year (CW, March 14). The 7950 accommodates add-on features, many of which are user installable and do not require users to replace CRT terminals, the vendor said.

Add-on features include a tilt-and-swivel display, 24 function keys and a 10-key numeric pad.

IBM doubles memory on System/36 to 1M byte; X.25 support also announced

R VE BROOK, N.Y. — Besides adding to and subtracting from its line of System/36 processors last week, IBM announced that it had increased from 512K to 1M byte the maximum main memory available on the smaller System/36.

In addition, the firm announced support for the X.25 communications protocol on the System/36 and introduced a remote cluster controller. All System/36 configurations are available with a main memory maximum of 1M byte. The main memory enhancement is available in 268K-byte increments, which cost $2,600.

Disk storage expanded

The maximum amount of disk storage for the System/36 has also been expanded, from 400M to 800M bytes. The disk storage expansion is available in 200M-byte increments, costing $17,500.

Both memory enhancements will be available in May. A System/36 processor with doubled main memory and disk storage is priced at $107,600.

Further System/36 enhancements announced last week include the ability to add six extra local workstations, bringing the maximum number of local workstations to 36. That means up to 100 local and remote workstations can be added to the System/36, the previous maximum was 94.

The System/36 can be used in an X.25 environment operating at 2,400, 4,800 or 9,600 bit/sec.

The remote cluster controller features a three-node modem adapter operating at 4,500 to 19.2K bit/sec, distributed data services operating between 2,400 and 9,600 bit/sec, and support for the X.21 and X.25 communications protocols. The unit costs $2,960 and will be available in May, according to the vendor.

More information is available from IBM's Information Systems Group, located at 900 King St., Rye Brook, N.Y. 10573.

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"CA-Executive" integrates software for IBM micro
Offers applications, mainframe link, multitasking, windowing

By Paul Gillin
CW Staff

JERICHO, N.Y. — Computer Associates International, Inc. last week announced a software product for the IBM Personal Computer that integrates a range of popular applications software, an intelligent link to IBM mainframes, multitasking capability and a window manager.

Called CA-Executive, the product will be geared toward Fortune 1,000 companies in which microcomputer users are buying too many different kinds of micro software, according to Charles Wang, Computer Associates president. In a departure from its traditional sales strategy, the company will sell CA-Executive to executive end users as well as to data processing personnel.

Computer Associates is providing discounts of nearly 50% for orders of more than 50 copies of the product, whose single-unit price is $1,295.

Slated for availability in April, CA-Executive includes a data base management system (DBMS) called CA-DBMS which incorporates a command structure virtually identical to that of CA-Universe, the company's mainframe relational DBMS.

Other programs in CA-Executive include a spreadsheet (CA-Calc), word processing (CA-Writer), editing (CA-Edit), graphics (CA-Graph), forms generation (CA-Form), mainframe linkage software (CA-Link) and on-line tutorial (CA-Tutor).

Windowing allows multiple programs to be displayed simultaneously; data can be transferred back and forth between windows.

The link to the mainframe offers on-line uploading and downloading, communications with other Personal Computers on a network and terminal emulation for performing functions on mainframe applications. The software includes an intelligent file transfer capability, IBM 3270 terminal emulation, access to any subset of a CA-Universe database and dumb terminal emulation for access to external data bases.

Security is administered by the data processing department, and in-

valid data cannot be transmitted via CA-Link, a spokesman said.

CA-DBMS is a relational DBMS that includes a report writer and security to the field level. CA-Writer is a version of Easywriter II from Information Unlimited Software, Inc., a Computer Associates subsidiary, that includes text and word processing, a spelling checker and electronic mail capability.

CA-Calc is an electronic spreadsheet that is integrated with CA-DBMS to allow data to be transferred between the components without reformatting. CA-Edit is a programmer-oriented tool that provides facilities for processing data, creating and editing files, writing and executing programs and generating reports.

CA-Form is a menu-driven screen painter designed primarily for creating screens, forms and reports. CA-Graph produces most standard graphs in full color. Graphs can be transferred into other windows for composite reports. CA-Tutor is an on-line tutorial that complements written documentation. PC-DOS lets any IBM PC-DO$ program execute within a CA-Executive window.

When used with CA-Universe on the mainframe, CA-Executive allows users to manipulate, update and access data within CA-Universe and download a subset of the data or a new table to the micro. The window manager reportedly can be manipulated by function keys or a mouse. Utility windows include a directory, print spool, clock, notepad and help functions.

CA-Executive is written in C on a Unix operating system with a PC-DOS translator that makes processing possible, according to Wang.

Computer Associates is at 125 Jericho Tpke., Jericho, N.Y. 11753.

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IBM micro gets Unix look-alike

RYE BROOK, N.Y. — IBM announced last week that it will offer an optimized version of Bell Laboratories, Inc.'s Unix operating system for its Personal Computer and Personal Computer XT microcomputers.

The operating system, called the Personal Computer Interactive Executive (PC/IX), was adapted for use on the IBM micro by Interactive Systems Corp., according to an IBM spokesman. She added that PC/IX can run virtually all Unix programs commercially available for microcomputers.

The operating system is available at a one-time license fee of $900 and will be marketed though IBM's National Accounts and National Marketing Divisions.

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IBM, NAS settle case
Suit over trade secrets theft

By Jeffery Beeler
CW West Coast Bureau

SAN JOSE, Calif. — A civil suit in which National Semiconductor Corp. and its National Advanced Systems, Inc. (NAS) subsidiary were accused of stealing IBM trade secrets was settled out of court last week.

In return for IBM's promise to drop all claims against the two defendants, National Semi agreed to pay all the industry giant's legal fees stemming from the 16-month-old suit. The fees total $3 million — a pitittance compared with the $760 million to $2.5 billion in damages that IBM threatened last Nov. 15 to demand from NAS and its parent company.

Last week's agreement also gave IBM the temporary right to scrutinize each of NAS' future products prior to introduction, a provision, which expires on Oct. 1, from which NAS and its parent company repeated a threat five days into NAS new processors and other systems modules.

In addition to providing an advance look at the products themselves, the settlement will require NAS to provide IBM with all NAS' accompanying systems specifications, users manuals, principles of operation and related materials, the affidavit said.

If the two sides disagree over whether a future NAS product incorporates proprietary IBM technology, the dispute will be referred to a three-member arbitration panel whose rulings will be binding. 

One additional provision of last week's settlement, National Semi and NAS have agreed to refrain, according to an affidavit filed in U.S. District Court. The purpose of the inspection provision, which goes into effect July 1, 1988, is to satisfy IBM that none of the company's allegedly stolen trade secrets have found their way into NAS new systems.

Interviews

'Ve're quite pleased'

Asked for his reaction to the Jan. 9 settlement, NAS President David Martin voice[d] that his company's long legal ordeal had finally ended. "We're quite pleased with the settlement," he said during a Jan. 10 interview. "The agreement bodied well for the firm's future and eliminated much of the fear, uncertainty and doubt" that IBM's suit had created, according to both market analysts and NAS' own customers, he said.

Although National Semi and NAS have steadfastly maintained their innocence in the trade-secrets theft case, they settled the suit anyway, because "nobody, not even the government, has the resources to compete with IBM's legal technology," Martin said.

Since its inception in September 1982, National Semi's legal wrangle with IBM had seriously tarnished its image in the eyes of certain stock analysts and potential investors, Martin said. The civil suit had also prompted at least a few otherwise promising sales prospects to question the Mountain View, Calif.-based firm's viability as a systems vendor.

Roots of the case

In many respects, last week's settlement was closely patterned after a related out-of-court agreement that IBM reached on Oct. 6 with National Semi's Tokyo-based processor supplier, Hitachi Ltd., another defendant in the Big Blue's civil suit. The complaint against Hitachi, NAS and National Semi stemmed from a widely publicized electronic espionage case in which two major Japanese electronics vendors were accused of stealing proprietary IBM systems technology.

To accompany the trade secrets, the conspirators reportedly paid a total of nearly $650,000 to Federal Bureau of Investigation undercover agents operating to steal electronic blueprints as well as proprietary software that IBM once owned.

Hitching later pleaded guilty to one count of conspiring to transport stolen property and received a maximum penalty under U.S. law.

In their Jan. 9 court filing, NAS and its parent company repeatedly emphasized their long-standing contention that neither organization had used the pilfered IBM technology, which included MIPS/SP Version 2 source code and hardware designs for the 3083 system.

All the IBM product information in the defendants' possession has already been returned to its owner, the papers added.

IBM stock plunges 25% in reaction to flat earnings

By John Gallant
CW East Coast Bureau

ATLANTA — Despite anticipated record revenues of $145 million in 1983, Management Science America (MSA), NAS' (NAS) stock plunged 25% last month, fueled largely by its announcement of flat per-share earnings and a marked decrease in the rate of profit growth in 1983.

While MSA's release of preliminary year-end figures showed that 1983 revenues would hit $145 million, up 44% over 1982, pretax profits are expected to increase only 38% and earnings to rise only 17%. That figure represents a sharp drop from the 90% per-share earnings growth reported the previous year.

The most significant announcement, however, was that MSA anticipates 1983 earnings per share to remain at 1982's 62-cent level. It was left to NAS to satisfy IBM that none of the semiconductor giant's legal fees.

Edelson also said MSA's flat earnings might have spurred profit-taking by NAS' own customers, he said.

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NB-S to serve Magnuson M80s

By Jeffery Beeler
CW West Coast Bureau

MOUNTAIN VIEW, Calif. — Customers who lease Magnuson Computer Systems, Inc.'s M80 series processors from Phoenix Leasing, Inc. will soon gain the option of having their hardware and software maintained by National Advanced Systems, Inc. (NAS).

In principle, NAS agreed early this month to serve as the third-party service representative for Phoenix Leasing's base of Magnuson mainframes which are plug-compatible with IBM's medium-scale CPUs. Announced Jan. 6, the arrangement marks NAS debut as a provider of third-party systems maintenance and support services, said NAS Director of Marketing Services Pat Case.

Under the proposed agreement, Phoenix Leasing's M80 users can request NAS optional Total Support Package, which covers user education software maintenance as well as service for any model of IBM or IBM-compatible processor or peripheral. Customers also may agree in stead to limit M80's Magnuson-related support activities to hardware maintenance alone.

The service agreement also calls for Phoenix Leasing's hands from Magnuson's UK subsidiary, which recently declared bankruptcy, said Frank Juliano, the leasing company's director of technical operations.

The agreement in principle is expected to take effect formally soon, probably by the end of the month, according to Alan Cade, NAS vice-president of strategic business services.

Juliano expects the association between Phoenix Leasing and NAS to be "based in part on the contracts with the leasing company's existing Magnuson users gradually expand to other hardware and software support activities, said NAS Director of Marketing Services Pat Case.

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One market that's not bustling

With its introduction last week of a data base machine for large IBM mainframe environments, Teradata Corp. set its sights on a potentially plentiful market that may also harbor serious dangers.

While many of the largest software firms have explored the feasibility of data base machines in recent years, the market is notable for its lack of activity.

From a cost-efficient standpoint, the technology just has not seemed attractive, according to Ron Ross, editor of the "Data Base Newsletter."

"The question is whether you can improve productivity enough to make up for the cost of the technology, and so far the answer has been No," Ross said in an interview last week. "Nobody wanted to get out there with a machine that would produce improvements for a year or two only to come up against improved price/performance ratios from the mainframe. IBM has kept that ratio improving so they don't come up against that kind of competition."

Invested $27 million

Teradata has invested $27 million and four years of development in the belief that data base machines are now viable, according to David Clements, Teradata's manager of product marketing.

Clements claimed the market has been weak because current data base machines "are targeted toward an area in which there's not a data base problem yet" because the data bases are relatively small.

Diminishing hardware costs and spiraling personnel expenses in recent years have underscored the importance of improving mainframe response times, Clements said. "With [IBM] IMS programmers making as much as $65,000 a year, hardware has become the cheapest concern."

"Linear improvement"

Teradata believes its data base machine will survive competition from improving mainframe technology by offering power that is based on low-cost microprocessors, which can be added as processing requirements expand. "Adding microprocessors results in a linear improvement of performance," Clements explained.

Ross said the use of a relational data base management system may make machines such as Teradata's DBC/1012 viable. "With relational systems, you're specifying a request for a whole table of data," he said. "This means the amount of communications between the data base machine and the mainframe is minimized."

A large machine of this kind could be useful to companies that are planning on distributing their data base processing, according to Ross.

DBC from page 1

spokesman said. The computer employs a relation-
al-model DBMS using the Teradata query language, Tequel, an IBM SQL-like language for data manipulation, query and control.

The Interactive Query Language (Tequel) is provided for non-technical users employing a terminal connected to the mainframe.

Relieved processing load

DBC/1012 attaches to the host on a block multiplexer channel and communicates source code with the mainframe.

In benchmark tests, according to the spokesman, the data base machine relieved the host of about 40% of the processing load in intensive data base applications.

DBC/1012 will be marketed to IBM MVs sites in very large companies with data bases that approach 1T byte, according to David Clements, Teradata's manager of product marketing.

"When you get to that kind of user, the magnitude of data base problems is tremendous," he said.

Available immediately, the basic DBC/1012 system is priced at $480,000. Add-on components are priced at approximately $60,000 per Mip and $87 per 1M byte of add-on disks, according to a spokesman for the vendor.

Additional information on the DBC/1012 can be obtained from Teradata, which is headquartered at 12845 Jefferson Blvd., Los Angeles, Calif. 90066.

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Innovation DATA PROCESSING
Lower cost, flexibility cited as CBT advantages

By Patricia Keefe

NEW YORK — Reduced costs and increased flexibility are the most frequently cited advantages of computer-based training (CBT), according to a survey conducted recently by RSA Information Designs, Inc., a communications and training consulting firm here. Moreover, IBM's hardware is the choice of many current and prospective CBT users, according to "The Market for Computer-Based Training in Business and Industry — 1983," the report on the survey's results. The report is based upon the responses of 74 people in 66 Fortune 500 firms and government agencies regarding their current and planned use of CBT. Fifty-three percent of the 74 work in DP and/or technical training, and 47% work in human resource training — predominantly in financial services, insurance and manufacturing. Although 60% of the 68 firms polled do not offer CBT, 46% of that group plan to introduce CBT within one year and 17% within two to five years. Of those organizations currently offering CBT, most use it primarily to provide training in DP and technical skills and in software application usage. However, they are considering using CBT to teach a wider range of topics, the study said.

For example, while product knowledge and management development topics make up about 4% of current coursework, they represent 30% of potential future offerings. Also, basic, clerical and selling skills coursework represents 8% of current offerings and 22% of possible future offerings.

Advantages and difficulties

Among the benefits anticipated from CBT are reduced costs as a result of reduced travel to take training courses, study respondents reported. Other participants pointed to the benefits of student self-pacing and open scheduling, which they said provide flexible, accessible training. Moreover, the study found that respondents credit CBT with fostering improved or faster learning and course-completion rates.

The greatest difficulty associated with CBT usage was focused on authoring or developing coursework (32%), the management of resources and facilities (22%) and cost (12%), according to the study. The study found that beyond the typical courses in DP or data entry, courses in use or in the planning stages range from equipment skills training to insurance or financial product knowledge to interviewing and marketing skills. Current coursework, however, appears to include few options, the study said. Color graphics is most frequently cited (35%), followed by voice input (25%). Future courses may be more interactive video; videotape (25%) followed by both video disk and color graphics (18% each) were most frequently cited as future options.

Of the available coursework, off-the-shelf programs were found to exceed in-house or custom-made products (32%), representing 56% of the current choices and 67% of the planned choices. "Nonusers are overwhelmingly interested in purchasing their coursework," the study said, adding that 74% of the 53 nonuser respondents expressed an interest in purchasing primarily off-the-shelf coursework, but would consider custom-made programs as well.

Conversely, current users are looking either to author their own courses or to contract for custom-made programs.

The study, created, these programs are most often run on microcomputers in general and IBM hardware in particular — both mainframes and minis. The study found that terminals connected to a mainframe are currently the primary CBT delivery system (51%), followed by micros (38%) and minis (11%). Micros, however, represent 56% of delivery systems under consideration for future use compared to 19% each for mainframes and minis.

Of the mainframe equipment in use today among study respondents for CBT delivery, the choice of the users polled was overwhelmingly IBM (90%). Current micro usage was found to be divided almost equally between IBM and Apple Computer, Inc. (45% each). As for possible future brand choices, IBM is the sole mainframe under consideration and the micro choice of more than half the organizations citing specific hardware (58%). "IBM, in fact, was cited by a few firms as their possible future choice without specifically stating whether mainframe or micro," the study said, adding that only 17% of the respondents were considering Apple micros.

Not only are CBT users favoring IBM hardware, but there appears to be a trend toward using IBM-compatible authoring systems to develop or implement coursework, the report continued. The most popular mainframe authoring system in use among survey respondents (96%) was IBM's Interactive Instructional System. It and Goal Systems International, Inc.'s Phoenix were the top choices under consideration for future use.

For microcomputers, the most popular authoring system in use is Bell & Howell Co.'s Pass for the Apple (45%), but IBM Personal Computer authoring systems such as McGraw-Hill's Interactive Authoring System (43%) or Computer Systems Research, Inc.-developed Trainer 3000 (29%) are among those considered for future use. Pass was not cited at all.

The report costs $185. RSA Information Designs is located at 201 E. 17th St., New York, N.Y. 10003.

Comtec meet set for Feb. 20-23

SAN JOSE, Calif. — Comtec, a nonprofit organization that supports the advancement of computer output micrographics (COM) technology, will hold its 14th annual conference Feb. 20-23 at the Westin Miyako Hotel in San Francisco.

A dozen speakers will address subjects related to COM. Arnold Keller of Hitchcock Publishing, the keynote speaker at the conference, will discuss "COM and Information Resource Management."

Other speakers include Kevin Fitzgerald of Bell & Howell Co., Karen Voigt of Minolta Corp., Dr. Terry Sonnontine of 3M Co. and Michael Hughes of Rio Grande Micrographics.

Sessions at which vendors present their products and services will also be featured at the conference, and the seventh Ed Rome Award will be presented for the most significant contribution to the COM field.

Cost for the three-day conference, including a Japanese Yomise St. Gala dinner on Feb. 22, is $500 before Jan. 20 and $520 after Jan. 20. One-day registration is $140.

Comtec can be reached at Suite 200, 100 N. Winchester Blvd., San Jose, Calif. 95128.
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- use your model DFD to create a system structure chart that breaks the system down into its logical functions
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- get the user to find analysis and design errors early, before the corrections get expensive
- create a program overview that tells what a program must do, but lets the programmer decide how to do it
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Now I know not everyone will reach Steve's level of productivity. There are just too many factors you can't control.

Still, I'm convinced you should give this method a try. After all, if it's true the average COBOL programmer produces less than 5,000 lines of tested code per year, what have you got to lose?

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Congressman: U.S. shouldn't plan tech development
But should foster high-tech innovations

By Peter Bartolik CW Staff

PALM SPRINGS, Calif. — The U.S. government should not get involved in planning technological development, but it should make things easier for private enterprises to develop new innovations, according to U.S. Rep. Ed Zschau (R-Calif.).

Speaking here at Infocorp's 1984 Strategic Issues Conference last week before a large group representing a wide segment of the information processing industry, the first-term congressman said heightened government interest in the development of high technology "is a mixed blessing."

While many good ideas have been suggested in Congress, "a lot of bum ideas get suggested, and some of them will pass."

Formerly a professor at the Stanford Graduate School of Business before starting his own company, System Industries, in 1968, Zschau said there is a role for government to play in fostering innovations. But proposals to establish a national planning council to target tax dollars toward identified opportunities are "naive," he said.

Equally misguided, in Zschau's view, are suggestions "to put all the dollars into sunrise industries and forget about all those smokestack industries." While high tech will create millions of jobs, the number "is still relatively small," in comparison to the number of people employed in more traditional industries, he explained.

Doesn't ignore older industries

Older industries should not be ignored, and efforts should be made to apply the new technologies to make the others more efficient, Zschau suggested. Government should become involved in those new industries, he said, but not by targeting which new technologies should be fostered.

"What we should be doing, in my opinion, is targeting the process by which those innovations are created," he said.

Government's role should be to make sure a climate for innovation exists by implementing four prerequisites that would allow companies to develop new innovations, Zschau said. These prerequisites include:

■ A commitment to broad research, not just in the area of military applications. One method, he said, is to amend antitrust laws to permit corporations to pool "scarce" resources for R&D. "I think by the end of the year we will have changes that permit consortia . . . to enable us to compete in foreign countries with consortia that have long been encouraged."

■ Incentives for industry to take risks on new ideas. Zschau noted that restrictions in the federal capital gains tax have dramatically increased the availability of venture capital. He recommended expanding R&D tax credits to cover software and to implement "intellectual property protection" so companies expanding their markets can help . . . but government can give a nudge here, too."

■ The development of market opportunities. The government, Zschau said, must knock down foreign trade barriers and also ensure that U.S. export controls "are designed in a way so we can control, but we can also export."

There must also be a robust domestic market, Zschau said, adding that he thinks the increasing federal deficits must be brought under control to ensure the current recovery does not run out of steam. He said the issues of raising taxes and cutting spending must be dealt with.

Zschau concluded that it is not the government's responsibility to maintain technological leadership in world markets. "It is your responsibility," he told the audience of industry representatives.

BOWL from page 1

However, Washington gives up too many yards per pass attempt, a critical weakness in the forecaster's estimation.

"The Raiders are strong against both the running and passing games," he pointed out. Los Angeles gives up 5.4 yards per pass attempt as opposed to 6.3 for the Redskins. In Goodspeed statistics, that one-yard differential translates into a three-point edge for Los Angeles.

It all sounds very concise, but as Goode is quick to observe, "There's no way you can beat the line."

Hoard, a betting man, is editor of Computerworld on Communications.

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IBM multiuser micro forecast without Unix

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — IBM will probably bring out a multiuser microcomputer system sometime early this year, but it won’t use the Unix operating system.

That was the prediction delivered here last week to a large group of industry representatives attending Infocorp’s 1984 Strategic Issues Conference.

Infocorp President Richard J. Matlack predicted IBM will announce a multiuser system sometime during the beginning or middle of the year. "IBM is going to bring out an [Intel Corp.] 8086 microcomputer," he forecast. "It will be a proprietary operating system, a superset of [Microsoft, Inc.]’s MS-DOS.".

Unix is a great operating system for some uses, but not for commercial data processing, Matlack said. But it is notable that Unix was developed by AT&T, which could be IBM’s biggest competitor if it comes out with an expansive line of computer products, as many expect.

IBM may announce the anticipated multiuser micro earlier than the company would like in order to meet competitive pressures, according to Ralph A. Gilman, senior vice-president of Infocorp and head of the company’s Microsystem Analysis Group. "If I were IBM, I’d probably want to wait another year, but competitively, their hand might be forced," Gilman said.

Companies that have entered the multiuser battle scene experienced a disappointing year in 1983, according to Infocorp. "Clearly there is no leader in this market," Gilman said. "It’s ripe for a leader to step in — IBM, AT&T."

According to Infocorp, a lot of potential multiuser system buyers set up for microcomputers that could be linked together.

There is a lack of software standards and a lot of confusion among buyers, according to Gilman. "The market really hasn’t given us an indication where they are going to turn. Maybe IBM will."

Functionality needed

The criteria for spurring the market, in Gilman’s view, is "a data base/file server functionality." Users "want to attach dumb terminals to the system, but also to attach personal computers in a network."

The problem has been that "nobody really wants to take the lead in developing software to make this happen. Nobody wants to spend the money," Gilman said. "It might be an opportunity for some of the mini vendors who have the software to step in."

A number of strategic problems face micro vendors, Gilman said. One is the entry fee for bringing a new product into the market. The cost of doing that will again escalate this year, he said, costing from $50 million to $100 million.

Driving those costs are running hot lines to answer users’ questions, waging "warranty wars" to bolster confidence in products, operating product centers, providing training and service and purchasing national advertising that can run $20 million and up.

Another factor is the lack of shelf space. Computer stores presently have about 8,000 shelf slots to exhibit micros, but only 2,000 of those spaces are available to new products.

"A lot of people are taking a second look at direct sales, particularly for multiuser systems," Gilman said.

There is a similar lack of access to big business decision makers, he added. "The big market, the Fortune 1,000 corporate manager, more and more is going to the internal information center and trying things out. It’s a nontreating type of environment — they’re not looking over his shoulder."

Hotel fire prompts regulations

BOSTON — Four days after an electrical fire shut down both the regular and emergency power systems at the Westin Hotel here, a state panel passed regulations requiring isolated, fire-resistant emergency electrical and communications systems in new high-rise buildings.

The Mass. Board of Fire Prevention passed the emergency regulation, which could become permanent after a Feb. 3 public hearing. A Boston electrical inspector suggested the rule after the Jan. 2 fire disrupted the 37-story Westin’s emergency power and communications network. That outage left most of the hotel unlit and without a public address system as 120 guests and several hundred employees fled through smoke; 65 people were injured.

Although the Westin fire knocked out most power, the data processing department, equipped with a dedicated emergency power supply, lost electricity for just minutes (CW, Jan. 9).

The new regulation requires new buildings over 70 feet tall to isolate emergency cables from the primary cables by placing the emergency system in a separate shaft. That shaft and the cable coverings must be able to withstand fire for four hours.

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Atari founder heralds the unorthodox for innovation

By Peter Bartolik
CW Staff

PALM SPRINGS, Calif. — "If you really want your people to innovate, buy a science fiction book, take the cover off and tell them it's history," Atari, Inc. founder Nolan R. Bushnell declared here last week during a conference for information industry representatives.

Delivering the keynote address at Infocorp's 1984 Strategic Issues Conference, Bushnell praised the unorthodox and sparked much laughter from an audience of more than 200 people representing vendors, various entities in the product distribution chain, representatives of large end-user organizations and others.

Claiming, partly tongue in cheek, that innovation is another word for concealing sources, Bushnell said, "The future is not totally dependent on innovation. Most of the ideas are out there. Just read science fiction; most of the things they write about are going to come true."

Now chairman of Catalyst Technologies, a venture group that has "figured out a way to mass-produce small companies," Bushnell praised the potential for innovation among individuals and urged the participants to foster individual experimentation.

"To throw megatons [of people] at projects is the most oft-repeated mistake of American big business," he charged. Also, he said, "It's not axiomatic that a person who can see the future is necessarily articulate enough to explain his vision to you." Bushnell developed the Chuck E. Cheese's Pizza Time Theatre concept, which features robotized animal characters and which, he said, may develop into robotic delivery of pizzas by the end of the year. He expressed his feelings on robotics to illuminate his views on innovations.

Robots will 'do windows'
Many believe robots will eventually be a standard feature in homes, "yet, the amount of cynicism and skepticism is overwhelming." He continued, "Then the questions is, what will [robots] do? They do windows."

Bushnell noted that Americans in 1982 spent $8.2 billion on pet food alone and that there is potential for robotics to capture at least some of those dollars. "Fido . . . [is] basically an entertainment device. . . . It's easy to have them detect smoke and fire and take appropriate action."

The point, he said, is that technological innovators "must be willing to enter a novelty. There's nothing immoral, fattening or bad for you [in that]; not everything has to have utility." In the microcomputer area presently, he declared, there is little that is innovative and much that is merely further development, such as the Personal Computer-compatibles of the "commodity" that is the IBM Personal Computer. "Real innovation comes when you take marketplaces that have not previously existed and do something. Having a product that didn't exist means people aren't used to it, which means you might not have [an identifiable] use for it."

The information revolution has created the need for development of high-tech innovations in the leisure industry, as machines take over the roles of people, he said. He suggested that innovators should look to those areas: "Being willing to go after fun can be a really nice way of finding places to enter."

In addition to encouraging businesses to allow very small groups — one to three people — to work on projects, Bushnell also said he believes in setting time constraints and setting goals. "My theory is that 25% of the technological [gross national product] of the U.S. is created 24 hours before a trade show," he said. "The U.S. has more innovations than the Soviet bloc because of trade shows."

In a more serious vein, he declared that "the business of innovation is one of a philosophy of belief in the individual."

Report details mini purchases

CHERRY HILL, N.J. — Management Information Corp. (MIC) has published "How Small Businesses Use Computers," a report that describes minicomputer purchasing processes completed by 26 companies in various businesses, such as a nursing home, a furniture manufacturer and a trucking company.

MIC interviewed company officials responsible for recent minicomputer purchases. The report includes systems selected, purchasing criteria, financial considerations and system implementation, the publisher said.

The 87-page report is priced at $11. More information is available from MIC, 140 Barclay Center, Cherry Hill, N.J. 08034.
There's life after IBM: market researcher

By Peter Bartell

PALM SPRINGS, Calif. — Not only is there life under IBM for other computer vendors, there may even be life after IBM, according to a market researcher.

Richard J. Matlack, president of Infocorp and host of the company's 1984 Strategic Issues Conference, looked far beyond the five-year analyses promised to representatives of many industry segments. He warned participants that rapid innovations in the information processing industry would eliminate their present functions and inspire vast structural dislocations before the end of the century.

"I think companies like IBM that have been around for a long time will either voluntarily or involuntarily break themselves up into new relationships," Matlack predicted.

As the industry progresses from information processing to knowledge information processing, "the old rules" of doing business will no longer apply. "If machines can design hardware better than hardware designers, why do we need hardware designers?" he asked. "If machines can program signers, why do we need hardware programmers?"

While admittedly "crystal-ball ing," Matlack repeatedly said he believes the next stage of computer technology has already arrived. The industry has already started the shift from Mips — millions of instructions per second — to Lops — logical inferences per second, he said.

Companies like Digital Equipment Corp. and General Electric Co. have designed expert systems that "do better jobs than the individuals training them to do those jobs," he added.

Matlack warned industry players to look ahead and look beyond the obvious. "We're kind of like dinosaurs tiptoeing around the tar pits. I'm afraid we're going to fall in." The reason for that fear is that the present state of technology has made "too much information, but not much knowledge."

The delivery of knowledge to end users will be what drives the industry through the next 25 years, Matlack claimed. But the cost of bringing new products into the market has in the past year or two already become much more expensive, he said during a review of Infocorp's current five-year projections.

"Today, to get into the micro business, it takes $30 million to $50 million," Matlack said.

Microcomputers are where the action is now, he said. According to Infocorp's projections, "By 1988, this new industry, which is only seven years old, will actually generate the majority [dollar-value share] of systems shipped," according to Matlack.

Large computer systems, priced over $350,000, won't disappear, according to Matlack, and in fact should experience rapid technological development. "Eventually, large systems are going to link all your micro systems," he said.

"They are not going to go away, they just won't be as dominant as they once were," he added.

Small systems, priced from $25,000 to $350,000, have seen the market grow considerably, but there are still opportunities for innovative companies such as those presently selling fault-tolerances, computer-aided design and manufacturing and transaction processing, Matlack said.

Common conference set for April

CINCINNATI — Common, the organization of users of IBM equipment ranging from the Personal Computer to the 4300 series processors, plans to hold its spring '84 conference at the Convention and Exposition Center here April 1-5.

The conference will feature 200 seminars covering such topics as management, hardware and applications.

Among the scheduled seminars are "Performance Appraisal," "Dealing with Problem Employees," "Office Politics," "Job Stress and Burnout" and "How to Introduce New Technology into Your Firm."

The conference costs $100 for members who prepay, $130 for members who register the first day of the conference, $160 to nonmembers who pay before the conference and $180 for members registering on the first day.

Information can be obtained through Administrative Director, Common, Suite 1717, 435 N. Michigan Ave., Chicago, Ill. 60611.
Ada's year of reckoning
Insights offered by its chief designer

According to the Department of Defense (DOD), all mission-critical applications should now be developed in Ada. Is that actually the case?

We have no reason to believe the contrary. The important thing is that DOD is actually starting to design in Ada. They don't need a compiler to start with, but they need to be sure that they will be correct at the right time with an operating compiler.

They have at least one year available to them before they need an Ada compiler actually operating on these machines, a year and a half before they need a good compiler and probably two years until they need an excellent compiler.

Has there been the level of interest in Ada from the business community that you had expected to see?

I strongly believe that when we come up with the compilers, the language is so much better than anything else that the use of it will spread very fast. So it's no surprise to me at this stage that the business community is not crying out for compilers. Once they have them, they will use them.

The approach DOD is taking to promoting the language is beyond our wildest dreams. If you want a point of reference, in 1971 on PL/I, you had about three books available and that was for a language defined in 1964, with the first compiler available in 1968. On Ada you already have 50 to 60 books. It's a milieu of culture that's developing, in which a consensus creates a consensus and so on.

How do you respond to the argument that instead of Ada, we should standardize something we already know, like Cobol?

Languages like Cobol and Fortran are not bad languages, but they were good languages designed for a time when the cost of hardware was exceedingly high. We've come to a different time in which we know that we can describe many more tasks to the computer. For example, an Ada compiler is going to do a lot more checking than a Fortran compiler or a Cobol compiler.

We've also come to a culture where we're asking a lot more from computers. We are giving them tasks for which reliability is essential, and, therefore, we give much more value to program reliability. This is not something that we could achieve with previous language technology.

What impact do you think the Ada initiative will have on other DOD language development plans? Is it intended to be a complete language for DOD projects in the foreseeable future, or do you think it will be an evolutionary language?

I think within DOD they will use Ada and try to do other things with packages merged into Ada, rather than through new languages. Ada has a very powerful concept we call a "package." In the past, if you wanted to do work on matrices, there was no other way than having a special feature called "matrix" in your language. With Ada, if you want to define matrices, you don't have to change the language. You just define a package that you call "matrices," in which you define what is a matrix and what are the operations you want to do.

The beauty of these mechanisms is that they don't require any changes to the compiler.

How important to Ada's success is the issue of portability?

One important thing DOD has done that has given a lot of credibility to the Ada effort is ensure that Ada means the same things to all people using it. In the past, a language was defined, compilers were developed and several years later they started standardizing it, and then years later they thought about a validation facility. That was like shooting first, aiming after and thinking finally.

With Ada they've done the things in the right order. There was the language definition, then they developed the standard for the language, then they developed a validation facility and then compilers. It's the first time compilers have appeared that could be validated against a standard.

Another important thing is that they have to validate every year to be called Ada. You can't sell an Ada compiler unless it's validated.

How do you avoid a "Tower of Babel" effect created by many vendors implementing their own versions of the language?

Several companies, including our own, are using an approach that will simplify the portability of Ada compilers. We're restructuring our compiler in such a way that we can distinguish two main logical parts.

The part that we call the root is machine independent and represents about 80% of the work that needs to be done. Now, this part translates into an intermediate language. This is taken over by a code generator, and the code generator translates it to object code. It really means that when we are attaching another machine, we only need to do the 20% part that is machine-specific again. We don't need to do the root.

The primary criticisms that are leveled at Ada are that it's too complex and that it contains too many elegant features which are useful only in a limited sense. How do you respond to that criticism?

First of all, you can teach Ada by stages. For instance, if you don't need the real-time feature, you don't have to learn it. The second response is that this kind of complexity is very subjective.

The experience we've had is that once people learn Ada, they find it extremely easy to use.

Suppose someone provides you with a very small language, which is simple and solves a part of a problem, but leaves you needing other tools to solve the rest of the problem. Have they made your problem simpler? No.

Ada has taken a realistic attitude that our aim is to solve problems, not only one facet of the problem, and if we judge complexity, we should judge the complexity of the complete resolution of the problem.

A third line of response is that much of this complexity accusation has come from a certain part of the academic community. Their claim was based on the document that defined the language. Now let me use an analogy. If you had a theater and you saw the design documents for the theater, they show all the wiring, all the concrete and such. If these documents are not complex, the theater is not going to do its job.

I think the comparison applies well to Ada. We can teach it to professionals in a matter of days. Thereafter, if they use their intuition, they find the correct answers, very much as you don't need to remember the plans of the theater in order to find your seat.

What will it take in the end to convince the skeptics that Ada is here for the long term?

When our compilers are available on the [Intel Corp.] 8086 and the [Motorola, Inc.] 68000 [microprocessor], then people will be pressed to make a choice. If they have to do the applications, I don't see why they would do it in Pascal or C rather than in Ada.

The reason we're not expending any effort trying to convince skeptics is that they have the right to be skeptics until they get a compiler in hand. When they have a compiler that runs, the situation will be quite different.
French user gives ADE credit for new business

By Susan Stehney
Orly, France - The first commercial European user of the Data General Corp./Rolm Corp. Ada Development Environment (ADE) says it has won a string of new accounts since it implemented the system last fall.

ADE is comprised of Rolm's Ada software and DG's family of Eclipse superminis. The multiuser Ada Work Center systems are intended for developing, testing and debugging Ada applications (CW, May 9).

ADE's first European user is Informatique Internationale, which specializes in applications development for aerospace projects, nuclear energy and oil exploration. Informatique Internationale is a subsidiary of the major French software and systems house Groupe Clast.

Informatique Internationale's president, Guy Canevet, said ADE's been critical to getting new business. Until then, Informatique Internationale had used a system it had developed itself. "It was a top-down product," Canevet said. "We're still experimenting with it."

When asked if the new application development environment has visibly hiked productivity, Canevet said it is too early to tell. "We are now developing one part of a new ground station for a satellite using ADE. We're still experimenting with it."

As proof of its satisfaction, Canevet said, the company is upgrading its DG MV/4000 minicomputer to the DG MV/10000 superminicomputer in the first quarter of this year. "We need more sophisticated software engineering tools. The decision to go with Ada was made in June. Even though comparative shopping was not possible, Canevet said the combination of Ada with a high-quality development environment was very attractive."

"We would have liked to make an industrial comparison of products, but there were no other ones available," he lamented. "And as far as I know, it's still the only one out there."

Informatique Internationale sent two staff members to Rolm's Santa Clara, Calif., training center for a week. Upon their return, they trained the rest of the company's applications development team. The software was installed in September at company headquarters here on an eight-user DG Eclipse MV/4000 system configured with DG Dasher terminals.

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dataproducts Daisywheel Printers
The USS New Jersey joined American ships last month in the shelling of Syrian positions east of Beirut.

Battleship happy to stay analog
Gunfire system predates digital computers

By Peter Bartolli
CW Staff

This may be the era of Star Wars, computerized warfare, but when the recommissioned battleship USS New Jersey fired its massive 16-in. guns during naval bombardment operations off the coast of Lebanon last month, the devastating shells were directed by electromechanical systems that predate the first stored-memory computers.

According to a spokesman for the U.S. Navy, the gunfire support system aboard the New Jersey — the only active battleship and the largest active warship in service throughout the world — is a World War II-era analog system.

Although the New Jersey was twice taken out of mothballs for service "on the line" during the Korean and Vietnamese conflicts, and again recommissioned just over one year ago, the gunfire support system remains the same as installed for the original commissioning in May 1943, according to Lt. Dennis Sawyer of the Navy's information office.

The battleship was recommissioned by President Reagan on Dec. 28, 1982. During the legislative battle to fund the $326 million renovation project, supporters termed the vessel invincible because of armor protection up to 18 inches thick and its massive firepower. Critics termed it a dinosaur and said its 1,500-man crew and 60 officers would be sitting ducks in today's high-technology warfare.

Shells create craters

The shells fired in December against positions reportedly held by Druze Muslim fighters each carried 1,900 pounds of explosives that reportedly can create craters 50 yards across and 20 feet deep.

The New Jersey is one of four "Iowa-class" battleships built for World War II service. The USS Iowa is itself currently undergoing refurbishing and is scheduled for recommissioning on April 30, after which it will relieve the New Jersey in the Mediterranean.

According to John Reilly, a civilian historian with the Naval Historical Center in Washington, D.C., the components of the New Jersey's gunfire control system are still state of the art, even though they were developed prior to World War II. "No new system has been developed for heavy weapons," he said. "There has been no occasion to develop a new system. What they have on board works."

With the Iowa-class ships out of service as much as in service over the past four decades, he surmised, there has been no pressing need to spend millions to develop a modern computer system.

At the heart of the system controlling the nine 16-in. guns is a Mark 8 range finder, an electromechanical device that receives input from various sensors on target range and direction, along with the New Jersey's own motion, direction, speed and even wind speed.

Keeps guns on target

The range keeper keeps the guns pointed on target during movement by both the ship and target. The system was adapted from the Mark 34 system in use during the 1930s, Reilly said.

Another range-finder system, the Mark 1, directs the New Jersey's battery of 12 five-in. guns, which were also fired last month. The Mark 1, also developed during World War II, was the first system termed a computer by the Navy, according to Reilly.

There has been some modernization, Lt. Sawyer noted. In the latest recommissioning, 20 eight-in. guns were removed to make way for cruise missiles. The long-range Tomahawk is designed for anti-shippping attacks of 200-plus miles and land attacks in excess of 1,350 miles and is controlled by General Dynamics Corp.'s Tomahawk Control System and onboard Terrain Contour Matching microprocessor.

The short-range harpoon is designed for ship-to-ship operations up to 60 miles and is controlled by the AN/SWG-1 control system built by McDonnell-Douglas Corp. and Sperry Corp.
Scherin's cause has taken him to courtrooms, administrative chambers and statehouse rostrums across the country. There his single-minded dedication, fueled by a trauma that he said almost blotted out his professional and personal life, has been a key factor in several successful attempts to exempt custom software from state sales tax provisions.

"It's almost a religion with him; he'll go anywhere and do just about anything to press his fight," said one software industry executive familiar with Sherin's antitax campaign of the past seven years. "A lot of people disagree with the position he has taken over the years, myself included, but you'd have to say on the other hand that a lot of people are indebted to him, too."

Scherin has been retained as a special witness and conjunctive tax counsel on sales tax cases by professional organizations such as the Data Processing Managers Association and the Association of Professional organizations such as the Data Processing Service Organizations, Inc. He has at times bucked the legal establishment in advocating that sales tax rules be fought not in court but at administrative hearings, where the tax code itself is contested, not simply its application in individual cases.

If taking on the government hasn't been enough, Sherin has also butted heads with Data Processing Service Organizations, Inc. He has at times bucked the legal establishment in advocating that sales tax rules be fought not in court but at administrative hearings, where the tax code itself is contested, not simply its application in individual cases. Sherin said, "I feel I've been fighting for basic hope in the legal community, where lawyers informed him that the law was clear. So he turned what remained of his business over to associates and immersed himself in law books for the next year, spending each day in a local law library poring over case studies relating to taxation. At one point he studied at night by candlelight, until he was unable to pay his bills, his electricity was shut off.

He persuaded both the Miami Herald and the Florida Light and Power Co. to pay for some legal research into the matter and raised further funding with appeals to his customers for aid. But Sherin was to argue the case himself, and his day in court arrived in November 1976.

Sherin's attack went to the heart of the tax code, questioning the propriety of labeling a programmer's work as tangible while calling that of an accountant or lawyer intangible. The climax of the case came when he subpoenaed the state's director of systems and programming and, over the objections of state attorneys, got the director to state his opinion that software is a personal, and therefore intangible, service.

Scherin prevailed; the administrative examiner heard the case issued a directive that the tax rule applying to software was invalid. The state did not appeal.

His victory drew the attention and praise of industry groups, who began drawing upon his expertise to join the sales tax fight in several states, including Rhode Island, Ohio, Massachusetts, Michigan and Wisconsin. He also began writing voluminously on the subject for industry associations and journals, and he has piled up the publications.

Today, Sherin said he is continuing his antitax crusade, having an admittedly easier time building upon his past accomplishments than going it alone. He was involved in the recently concluded action in Michigan, where the high court upheld a ruling against the state tax department, differentiating between custom and canned software in the application of sales taxes [CW, Sept. 20]. He has been fun for me because I never really can become quite an expert on a narrow issue," Sherin said. "I feel I've been fighting for basic rights, improper taxation and the like. It's an honor to have been involved."

**Custom software sales tax meets its match**

Specter of personal ruin fuels one-man crusade

**By Bill Laderis**

MIAMI — When state revenue agents in 1976 told Bob Sherin that he owed $45,000 in unpaid sales taxes, about the only thing he was certain he told Bob Sherin that he owed $45,000 in unpaid sales taxes, about the only thing he was certain that a visit would nearly ruin his computer service business, strain his marriage to the breaking point and launch him on a crusade that today has made him a driving force behind abolishing state sales taxes on custom software.

Scherin's odyssey began in early 1976 shortly after Florida revenue officials examined the books of Nova Computing, and presented him with a bill for $45,000 in back taxes, interest and penalties. The state's actions seemed entirely proper, given a segment of the state tax code that extended the sales tax to punched data processing cards and coded magnetic tapes, labeling them "tangible ... and, therefore, taxable property."

Word of Sherin's assessment spread. A local bank demanded back half a $50,000 loan made to Sherin for hardware he'd purchased. To make good on the demand note, Sherin chewed into his savings, selling his books of Nova Computing and presented him after Florida revenue officials examined the books of Nova Computing and presented him with a bill for $45,000 in back taxes, interest and penalties. The state's actions seemed entirely proper, given a segment of the state tax code that extended the sales tax to punched data processing cards and coded magnetic tapes, labeling them "tangible ... and, therefore, taxable property."

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**State Sales Tax Regulations and De Facto Rules**

<table>
<thead>
<tr>
<th>STATE</th>
<th>SALES TAX RULE</th>
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</thead>
<tbody>
<tr>
<td>Ak</td>
<td>All software exempt</td>
</tr>
<tr>
<td>Ariz</td>
<td>Most custom software exempt, off-the-shelf packaged tax</td>
</tr>
<tr>
<td>Ariz.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Calif.</td>
<td>Custom programs and modifications exempt, prewritten programs taxed</td>
</tr>
<tr>
<td>Colo.</td>
<td>Exempts all programs except computer games</td>
</tr>
<tr>
<td>Conn.</td>
<td>All software taxable, including custom program transactions</td>
</tr>
<tr>
<td>D.C.</td>
<td>All software &quot;apparently&quot; exempt from taxation</td>
</tr>
<tr>
<td>Fla.</td>
<td>Exempts all software except that available in computer stores</td>
</tr>
<tr>
<td>Ga.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Hawaii</td>
<td>All software taxable</td>
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<tr>
<td>Idaho</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Ill.</td>
<td>Exempts all software except that available in computer stores</td>
</tr>
<tr>
<td>Ind.</td>
<td>Exempts all software except that available in computer stores</td>
</tr>
<tr>
<td>Iowa</td>
<td>Some custom software exempt, all other taxable</td>
</tr>
<tr>
<td>Kan.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Ky.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>La.</td>
<td>Exempts all software except custom software, taxes all prewritten packages</td>
</tr>
<tr>
<td>Mass.</td>
<td>Prewritten programs taxed, some custom software exempt</td>
</tr>
<tr>
<td>Md.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Me.</td>
<td>Custom and modified prewritten software exempt, all else taxable</td>
</tr>
<tr>
<td>Minn.</td>
<td>Unmodified, prewritten programs exempt, rule on remainder unclear</td>
</tr>
<tr>
<td>Miss.</td>
<td>Custom software exempt, prewritten taxed</td>
</tr>
<tr>
<td>Mo.</td>
<td>Custom software exempt, prewritten taxed</td>
</tr>
<tr>
<td>Neb.</td>
<td>Under, but apparently attempting to exempt all except game software</td>
</tr>
<tr>
<td>N.J.</td>
<td>Most mainframe software exempt, game software taxed</td>
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<tr>
<td>N.M.</td>
<td>Most mainframe software exempt, game software taxed</td>
</tr>
<tr>
<td>N.Y.</td>
<td>Most mainframe programs exempt; game, some prewritten software taxed</td>
</tr>
<tr>
<td>N.C.</td>
<td>Modified custom programs exempt; unmodified prewritten software taxed</td>
</tr>
<tr>
<td>N.D.</td>
<td>All software exempt except games</td>
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<tr>
<td>Ohio</td>
<td>All software taxable</td>
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<tr>
<td>Okla.</td>
<td>Somewhat vague, but some mainframe software apparently exempt</td>
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<tr>
<td>Penn.</td>
<td>All software taxed</td>
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<tr>
<td>R.I.</td>
<td>All software taxed</td>
</tr>
<tr>
<td>S.C.</td>
<td>Court ruling pending, but most software taxed at present</td>
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<tr>
<td>S.D.</td>
<td>All software taxable, including services</td>
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<tr>
<td>Tenn.</td>
<td>All software taxed</td>
</tr>
<tr>
<td>Texas</td>
<td>&quot;Most liberal state,&quot; exempt all including game software</td>
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<tr>
<td>Utah</td>
<td>Custom software exempt, prewritten programs taxable</td>
</tr>
<tr>
<td>Va.</td>
<td>Regarding essentially all software as taxable</td>
</tr>
<tr>
<td>Wash.</td>
<td>Custom programs exempt, prewritten programs taxable</td>
</tr>
<tr>
<td>W. Va.</td>
<td>All software taxable</td>
</tr>
<tr>
<td>Wisc.</td>
<td>Legislation pending, will probably exempt custom software</td>
</tr>
<tr>
<td>Wyo.</td>
<td>All software taxable</td>
</tr>
</tbody>
</table>

* The definition of a custom program varies considerably from state to state in those states with written regulations.
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Experts say Apple-Franklin issue undecided
Operating system copyrightability still 'on the table'

By David Myerz
Chronicle of Higher Education

NEW YORK — Franklin Computer Corp. abandoned its fight with micro- rival Apple Computer, Inc. two weeks ago, but the out-of-court settlement left unanswered the question of whether an operating system embodied in read-only memory (ROM) can be protected by copyright, legal experts said last week.

Franklin agreed to pay Apple $2.5 million and to accept the validity of Apple's copyright claims. The Cherry Hill, N.J.-based maker of Apple-compatible micros was given until April 1 to quit copying Apple's operating system code [CW, Jan. 9].

"Settlements don't affect the larger legal issues except for those between the parties involved," Daniel T. Brooks, staff attorney for the Computer Law Association, said from Springfield, Va. "The larger legal issues are still lying on the table."

Issues not addressed

The settlement "undercuts the ability of the Supreme Court to address the issues," Brooks lamented. "Somebody else now has to take it to that level."

A Philadelphia Appeals Court had ruled in favor of Apple's copyright claims last fall [CW, Sept. 12, 1983]. In announcing the settlement earlier this month, Franklin President Av- ram Miller said his company was ac- cepting the appeals court ruling "as law."

But Washington copyright attor- ney Jon A. Baumgarten, who was re- presented Franklin after the appeals court ruling, noted that "all the court said is that an operating system is not per se uncopyrightable." No high-level U.S. court has had the op- portunity "to examine any particular operating system," Baumgarten pointed out.

"The current state [of law] is that there are still large issues remaining to be resolved. All that has really been settled is the categorical ques- tion: Computer programs are a 'cate- gory' [protected by copyright] like books or pieces of music," Baumgar- ten said.

Apple lawyers disagree

Apple's attorneys disagree. "The case resolved quite a number of is- sues," maintained Jeffrey Blatt, a Beverly Hills, Calif., lawyer who re- presented Apple in the case. "I don't really think there's a question that object code is protected if it sits in ROM."

Blatt said that "it's always nice if the Supreme Court takes the case" to settle the issue for good, but even so "the law is much clearer now than when we started. [Franklin v. Apple] did its job. It has been cited, has al- ready been used as a precedent [in other cases]."

According to the lawyers who spoke to Computerworld, the legal is- sues still to be settled include what Baumgarten called "second-genera- tion questions," such as whether gate- arrays or even printed-circuit boards can be shielded by copyright legisla- tion.

Blatt pointed out that circuit boards are covered by copyright laws in Great Britain.

"My feeling is that what an electrician does to design a circuit is not copyrightable. But what a soft- ware programmer does is. He's pre- paring a work of authorship," Brooks said. Meanwhile, Franklin is preparing an operating system that it says will be able to run any Apple application program. Franklin computers run- ning on the new operating system will hit the market before April 1, Miller promised.

Third-party arbitrator

If Apple believes the new operat- ing system still infringes on its copy- right, a third-party arbitrator will settle the dispute. Blatt said that two micro vendors were in the process of choosing the arbitrator.

As for the $2.5 million settlement, which had been called low by some, Brooks said, "That's not bad for a royalty [payment]."

Franklin expects to have sold about 100,000 boxes with the Apple-compatible micros in Great Britain.

"The larger the number of bit vari- ations, the greater the potential that somebody sometime will discover a program which won't run on both," Baumgarten said.
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We sparked the revolution
AI-like package sends helicopter designer soaring

By Paul Quillen
CW Staff

CULVER CITY, Calif. — Can seven Army pilots with no programming knowledge teach a computer to think like a military commander in less than two days?

Analysts at Hughes Helicopters, Inc., a designer of helicopters for commercial and Department of Defense (DOD) use, think they can. As a result, the company became the first commercial user of an artificial intelligence-like software package that reportedly can be used for any application requiring an expert system.

Hughes uses The Intelligent Machine Model (Timm) from General Research Corp. of Santa Barbara, Calif., to simulate the decisions an enemy commander might make when faced with an air attack. The data is used to make design decisions for the helicopters Hughes builds for the DOD.

While Timm is rudimentary in many respects, the analysts have found that the decisions it makes closely parallel those of military experts, according to Bill George, an operations research analyst.

Unusual application

Hughes installed Timm on its Prime Computer, Inc. 400 processor three months ago after it found that no expert systems on the market were suitable for their unusual application. Hughes built its own expert data base by drawing on a group of seven army pilots from Fort Lewis, near Tacoma, Wash.

"We're not experts, so we wanted experts to input the criteria so we can make decisions based on expert knowledge," George said. The pilots spent two days presenting the scenario, the decision structure for the problem, the possible decisions and which factors were important to each decision.

The knowledge base can be built several ways, George explained. The software can randomly generate a scenario and present it to an expert who inputs the best decision under the circumstances. Factors can also be input manually and assigned a weight, or the software can generate a random case and a decision that is statistically the most valid.

The software is capable of making as many as 25 distinct decisions based upon up to 50 factors and 25 different values for each factor, he said. Whenever there is a split body of opinion on a decision, the software points out the inconsistency and makes the decision that is statistically the most valid.

All decisions can be rated on a 100-point scale by consistency, and a reliability estimate can also be provided. Timm is also capable of producing a list of the criteria it used to make a decision, George said. However, Timm does carry a price, George noted. Because the software is application-independent, it is crude as far as specialized expert systems go, he said. It also demands about 200 M bytes of virtual memory.

"It's hard to say if this is a true artificial intelligence model, but I don't know of anybody else who has one like it," he said.
Computer helps clients insure against Mother Nature

By James Connolly

JERICHO, N.Y. — A company bets against Mother Nature here, setting computer-economic lives depend on the insurance for businesses whose weather, and it does this by drawing on a data base of more than 200,000 bytes and a hard-copy library of weather reports going back 40 years from 7,000 weather stations.

For 25 years, Good Weather International, Inc. arranges insurance for businesses whose economic lives depend on the weather, and it does this by drawing on a data base of more than 200,000 bytes and a hard-copy library of weather reports going back 40 years from 7,000 weather stations.

By following MicroAge’s advice and marketing strategy when we started, "Both of us had technical backgrounds in computers but lacked the marketing expertise," said Good Weather President Henry Fox.

Good Weather simply determines whether precipitation is likely for a given time period by counting the number of times the National Weather Service has measured even one one-hundredth of an inch of precipitation for a site and date in the past 30 or 40 years.

Until the past few months, those calculations and checks of years’ worth of records were done by hand, with Good Weather’s staff leafing through weather service reports.

Moving up to a mainframe

Now, with companies like Toro and Republic marketing weather guarantees, Good Weather is experimenting with an IBM System/32 Data-master office system and hopes to move up to an IBM mainframe, either a Series/34 or a Series/36 next year.

"We have 200,000 bytes of information just on rain alone, so we are going to need a larger system," Fox said.

"What the computer will let us do is get deeper into what we call weather trend," he continued. "What we have been looking at is a 30- to 40-year history in and coming up with odds. What is more important is the trend."

Fox, who hired programmers to work in-house on the project, said his company’s accuracy rate is maintained. "We do have an excellent success rate because we are dealing strictly with the law of averages. We will pay some large losses. Some people will beat us, as the case may be. But with the law of averages, we usually come out ahead."

On the average, Good Weather — which writes policies on behalf of many of the 200 insurance companies that are subsidiaries of American International Group — sets premiums of 5% to 10% to insure single events, such as concerts, against rainouts or to offer swim suits guarantees against poor vacation seasons. Good Weather is managing general agent for the insurance group.

Toro spokeswoman Jane Cella declined to reveal what premiums Toro is paying for its promotion, in which the company offers full rebates to snow-thrower purchasers if the snowfall is less than 20% of the local norm and 50% rebates if the snowfall is 20% to 50% less than the norm.

Republic ticket holders that are subsidiaries of Republic in California, Florida and Arizona are guaranteed their money back if it rains between 11 a.m. and 4 p.m. on more than half of their vacation days.

"In Republic’s case, the premium costs the airline from 1% of the ticket price to 5%, depending upon the destination.

It is a promotion where Republic reportedly has little risk. A customer buys their original ticket, and if it rains on their vacation, the insurer pays for another round-trip ticket, also from Republic.

The promotions by both companies are being backed by insurance policies arranged through Good Weather International.

Those policies generally are simply worded, saying that the client can collect the amounts incurred if the weather service reports a specific amount of precipitation, or less than that amount, in the case of snow, for the dates in question.

Once the policy is written, Fox noted, the question of whether someone collects is determined by the weather service’s regular reports, not by Good Weather.

**IEEE forum set for D.C.**

WASHINGTON, D.C. — Keeping U.S. technology competitive in the world marketplace into the 21st century will be the focus of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) 1984 Conference of U.S. Technology Policy and Innovation: Challenges and Strategies.

The theme of the two-day conference is "Electrotechnology and Innovation: Challenges and Strategies." Dr. Simon Ramo of TRW, Inc.; Dr. George White, director of the White House Office of Science and Technology Policy; and Dr. Richard DeLauer, under secretary of defense for research and engineering, will open the conference.

Other congressional, industrial and academic figures will also make presentations.

The registration fee is $150 before Jan. 20 and $175 after that date. Registration forms are available from Lisa J. Ladaw at the IEEE Washington Office, Suite 608, 1111-19th St. N.W., Washington, D.C. 20036.

**Gould users to meet**

ANAHEIM, Calif. — The Gould Users Group will hold its general meeting Jan. 20-27 at the Sheraton-Anaheim Hotel here.

The agenda will include user presentations, workshops and discussions.

The advance registration fee is $30 per person; a $10 surcharge will be added to anyone registering the first day of the meeting. The registration fee includes all seminar materials as well as lunch on each day. More information is available from Eileen Lerner, Users Group Administrator, Gould, 6001 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310.
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RIO DE JANEIRO — Brazil’s Association of Informatics, Brazil’s financial sector is responsible for half the information processing equipment sold in this country. The banks here, which have installed 24-hour automatic teller machines, are reportedly appealing to the domestic computer industry for more diversification of products.

FRANCE

PARIS — The French Citibank has become the first user of Wang’s Wangnet, the first by IBM and Control Data Corp. for the joint development of microcomputers here. Sources said the IBM agreement calls for the translation of IBM documentation manuals; the CDC agreement covers software development, sources said.

RIO DE JANEIRO — Ac-

According to a recent report from the National Telecommunications Organization last month the signing of agreements with IBM and Control Data Corp.
On-line litigation library built for Baldwin-United case

DAYTON, Ohio — An on-line litigation information library or on-line data bank has been established to serve the interests of creditors and other interested parties in complicated bankruptcy cases in U.S. history.

Mead Data Central, a division of the Mead Corp., initiated the library in early January on both its Lexis and Nexis information retrieval services.

The library will document the Chapter 11 reorganization of the Baldwin-United Corp. of Cincinnati, U.S. Bankruptcy Court Judge Randall Newsome is overseeing the reorganization.


Several thousand creditors

There are several thousand creditors involved in the case, ranging from large banks to individuals who purchased annuities from Baldwin's insurance subsidiaries. The reorganization could take up to four years of court proceedings to accomplish, according to a spokesman for Mead Data Central.

Mead Data Central President Jack W. Simpson, in announcing the service, stated, "The Baldwin-United Litigation Library is being created to give debtors' and creditors' counsel [and] news media and other interested parties quick, easy access to the huge volume of material that will be generated by the impending litigation."

Mead Data Central has helped clients create their own private libraries since 1975, but the Baldwin-United library is the first such data base of litigation material on a single case to be open to the public.

The company said a member of one of the creditors' committees involved in the litigation will help prepare documents for inclusion in the data base. New documents will reportedly be available on-line within 10 days of filing with the court.

The library will reportedly contain transcripts of the trial and all public comments filed with the court since the original filing, including affidavits, motions and supporting memoranda, briefs and orders of the court. An on-line index of all documents filed with the court will be available to users of the two retrieval systems.

Nexis is available for a minimum monthly fee of $50, with no charge for the Lexis terminal. Lexis is available for a monthly library access fee of $100 and terminal rental fee of $66 from Mead Data Central, P.O. Box 933, 9333 Springboro Pike, Dayton, Ohio 45401.

Press office, cabinet tied

WASHINGTON, D.C. — A computer link was recently established between the White House press office and the public information office of the cabinet departments to help the flow of information on current issues.

Hooked into IT&T's Dialcom communications system, the press office utilizes an electronic mail system to communicate with the agencies and a news monitoring system to keep up with the wire services.

The purpose of the on-line system is to help advise the agencies about what we're saying on issues of interest to them and for them to advise us on background or to give us talking points on issues that might come up in one of our daily briefings," said Anson Franklin, assistant press secretary for the White House.

With IBM Displaywriters at work in the press office, the communications link has been successful so far, according to Franklin.

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FEBRUARY 2-3, ORLANDO, FLA. — Local Networking Strategies for Success. Contact: Computer Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424. Also being held Feb. 11-11 in Phoenix, March 23-23 in Washington, D.C., and Feb. 29-March 29 in Atlanta.


FEBRUARY 2-3, DENVER — Networking Personal Computers. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held Feb. 6-7 in St. Louis.

FEBRUARY 2-5, HOUSTON — IBM PC World Exposition. Contact: Mitch Ball Associates, P.O. Box 896, Westwood, Mass. 02090.


FEBRUARY 6-9, NEW YORK — Technical and Application. Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20853.


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Interesting deal

Until recently, IBM's information center has been a lot of bark without much bite. While the goals of the information center are well considered — to provide a means for end users to do their own computing — IBM had been reluctant to throw its weight behind any of the myriad software vendors now providing information center tools.

The most interesting aspect of the Comshare announcement was its language. While the deal clearly amounts to an endorsement of System W, IBM was emphatic in refusing to term it a joint marketing agreement. IBM sales representatives reportedly will not sell System W, but will be instructed to recommend it as the primary DSS for IBM environments. Comshare will still be charged with selling, supporting and providing end-user training for the software.

In addition, IBM has left itself a convenient "out" in case it takes a shine to a new piece of DSS software. While IBM sales reps are directed to pass along sales leads to Comshare, they are not embargoed from recommending alternative vendors if they so choose.

Therein lies the consolation for the DSS vendors that were passed up by Big Blue. Considering that System W has been available in package form for barely a year, it was a bold decision for IBM to choose it over such veteran players as Execucm Systems Corp.'s IFPS, Management Decision Systems Inc.'s Express and EPS, Inc.'s EPS. However, the agreement is hardly a repudiation of those vendors.

In fact, an IBM spokesman said the Comshare deal will be the first of "many announcements" of a similar nature. IBM also said it would continue to offer IFPS on its Information Network, an escape hatch allowing the compaq... to stop short of an all-out endorsement of System W.

At the risk of sounding trite, it is safe to say that users will be the big winners in this latest IBM marketing foray. By bringing Comshare under its wing, IBM has assured customers that System W software will always be in step with its hardware and operating system environment. In promising future agreements of the same nature, IBM also said it will continue to offer IFPS on its Information Network, an escape hatch allowing the compaq... to stop short of an all-out endorsement of System W.
Just what is quality, anyway?

Users, DPers should change micro views

Although sometimes it doesn't seem so, there truly is a far sighted segment of the personal computing data processing community that recognizes the personal computer in stand-alone mode offers solutions for a vast number of "smaller" information handling problems that are far too costly to implement on terminal-oriented mini and mainframes. These DPers also appreciate that the added processing overhead on the larger machines is only one factor that is eliminated when the micros off-load some of the work. Just as important, if not more so, is the relief accruing to the analysis and programming teams that can reduce the level of ongoing systems support to the smaller users and devote more of their energies to the solution of the "larger" business problems. The biggest reason end users and DPers alike benefit from the growth of personal computers. Processing power is decentralized in parcels appropriate to operational needs; general-purpose applications packages make the micros a lot easier to work with and faster to adapt to particular requirements; and organizational structures make adjustments in internal procedures to streamline the manual data-handling functions.

Broader scheme of things

But in the broader scheme of things, perhaps the most significant payoff of all is that many users become more knowledgeable about computerized systems, some even achieving high levels of operational independence and, in some cases, reduced frustration and increased productivity. As a result of the experience, enlightened DPers learn that it is in their best interests to support the micros and thereby, to relieve the burden of ongoing support.

Unfortunately, such knowledge falls short for a great many people in our industry who evolve distorted, if not widely exaggerated, claims about the role that personal computers should play in modern enterprise. For example, on the business side, there are those who believe that the lock of personal computers will eventually replace the mainframes because of their attractive operability, maintainability and economic factors. Yet, today, these notions are found on the DP side, generally involving the pooh-poohing of personal computers' capabilities and their downgrading to the level of being second-rate waste of money and the lack of power in user departments stemming from poor systems designs.

Role of the personal computer

Of course, the role of the personal computer is found in its generic name: personal computers are valuable and cost-effective for those information needs of a "personal" nature. One can spend months researching the computer that will fall into this category, or try my simplistic approach in which I loosely define "personal" applications as those that are solvable by the computing power you can acquire for $5,000 or somewhat arbitrary clip level, perhaps, but not an unreachable one in today's budgeting circumstances.

And these days, this investment buys computing components that are vastly improved over those of the first generation: a hard disk that at last, provides popularly priced storage for decent-size — megabyte — files: a vast amount of random-access memory — several hundred kilobytes — to aid the functionality of OS controls; 16-bit technology — edging rapidly into 32 — for speedier calculations; a wide selection of I/O devices for special needs; better-than-ever software to increase personal productivity; and, of course, communications facilities to allow terminal access to larger machines. The combination of these factors, and the leverage that those users and DPers give to outcomes or undertakings should moderate their views toward personal computers and accept the fact that it is a whole new world: another era: another set of applications available for the organization-wide automated information system. Nothing less and nothing more.

Bilingualism and the law

A serious language barrier separates many lawyers and computer users with their programs, especially with their lawyers' ever being aware of that fact or of its adverse impact on many lawyers' clients.

Lawyers are making the great mistake of taking the language of the industry, usually without knowing that it is inapplicable to them, except as they are customers in the marketplace. In handling legal matters, they talk "computerese" either to appear knowledgeable or because they don't know any better. They shirk their professional responsibilities to their clients. Their clients talk computerese to them, not realizing how their valuable legal interests suffering in the process.

Consider this regard the following actual, but camouflaged, example. In the acquisition agreement for an important six-page software program, a lawyer in a major Chicago law firm defined the term "product" to mean both the micro design and magnetic diskette and related other material for the program. He then provided that the seller could deliver the product for evaluation and that the manufacturer had an option to buy the product if it liked it. He failed to recognize that his client needed these tangible things in order to assess the marketability of the product, the client would have to buy the know-how and copyrights in the diskettes and written materials in order to have the right to make and sell the product.

The lawyer was taken in by the way his client described things in order to assess the marketability of the product, the client would have to buy the know-how and copyrights in the diskettes and written materials in order to have the right to make and sell the product. The lawyer was taken in by the way his client described things in order to assess the marketability of the product, the client would have to buy the know-how and copyrights in the diskettes and written materials in order to have the right to make and sell the product.

The valuable properties of many software houses and computer manufacturers will continue to be in jeopardy until their lawyers and executives become bilingual in their profession.
QUALITY from page 31

that requirement. In other words, can it be reliably tested?

The requirements document is the most critical user document produced. As such, it must be the final source of what the system must do. And, of course, it must be under stringent change control.

Finally, the user, project manager and information services management must all agree that this step is critical and not just a necessary evil before we can start programming.

If the required cultural changes can take place in this area, then an organization can begin to take advantage of the true productivity benefits associated with delivering systems and data that do the job right the first time.

The second roadblock is due largely to a failure on the part of information services (with a notable lack of help from the quality group, if one even exists) to quantify clearly in dollars and cents the very real, tangible and direct costs of quality in a data processing organization.

Three components

Quality costs can be thought of as consisting of three components:

- Prevention. The cost associated with establishing an environment that reduces the likelihood of flaws being introduced into a system, such as training and standards.
- Appraisal. The cost associated with identifying flaws during the process, such as reviews and testing.
- Failure. The cost associated with both internal and external systems failure, such as rework and lost business.

Failure costs are, by far, the largest of the three.

Very few managers understand this equation, nor do they fully understand the "physics" of building reliable software. It is becoming increasingly clear when one examines the wealth of data and experiences on systems development that application development projects fall into several broad classifications that exhibit similar characteristics.

Furthermore, there are built-in causal relationships that can be exploited. For example, if one wants to control a particular dimension of a development effort, then one must have a disciplined control system for monitoring, measuring and reporting on that dimension. The typical dimensions are: time, cost, functional and user satisfaction. Another, by now almost classic, characteristic is that defects are exponentially more expensive to correct as the life cycle advances or that time, cost and functionality (even as rudimentarily measured by means of lines of code) define a feasible (and a correspondingly unfeasible) region for project success. Further, these relationships are valid for most of what we refer to as maintenance efforts as well as for development.

Yet, there are hundreds of information services groups that every day start high-risk, high-user-expectation projects with no control systems, minimal disciplines and no true user or management commitment—projects that the "physics" would predict are going to be unsuccessful, high-cost, never-ending projects that won't fully meet the needs of the organization in any event.

To help companies compute the costs of quality related to information services, Guide, the IBM user organization, has established what may well be the single most significant effort related to quality costs in the industry via its recent Cost-Quality project. The results of this effort will be a substantial step toward not only changing senior management's beliefs and opinions regarding quality, but also in providing a process whereby quality costs can become an inherent and quantitative part of management's planning and decision making.

Quality is not only within our reach but, in many cases, well within our current capabilities. Further, quality data processing may be the best way for organizations to maintain (or even to raise) their profit margins without raising their prices. A quick assessment of failure costs in data processing can often uncover startling opportunities for cost reduction and profit improvement, to say nothing of improving customer relations and increasing business opportunities. The industry has matured now to the point where commitments to a quality information services organization are not only appropriate, but are essential if information services is to play any significant role in company management, direction and performance.

Smith is president, specializing in quality, at Applied Information Development, Inc. in Oak Brook, Ill.

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We understand how important it is to listen.
All I wanted was to buy a bag of groceries

The other day I wrote out a check to pay for groceries. The clerk told me, while looking over my check, that in the near future, the store was starting a new computerized check-approval system. I would have to make a new application if I wanted to keep paying for food with a check.

After over five years of bi-weekly or triweekly visits to this particular store, I didn't understand why I had to make out a brand-new application. But curious, I asked for a blank application.

The old system simply kept track of bad checks. If a person wanted to continue to cash checks, he had better not write checks he couldn't cover. It was simple. Apparently, it was too simple.

New form

The new application form demanded that I tell them my social security number (are they going to attach my old-age pension?), my driver's license number (which is the same), how old and fat I am, who is silly enough to employ me and where that silly employer does business — all of that in addition to the normal address and phone numbers.

Why, I asked, did I have to give out all this information just to continue to buy groceries as I have been doing for five years? “Because the old system didn’t work well enough,” the manager explained. I persisted a bit, though the manager looked increasingly uneasy and exasperated. “But why pick on me? I’ve never written a bad check?”

“You don’t seem to understand,” he said (this phrase became pretty familiar the more I pursued the matter). “The old system let too many bad check writers write bad checks.”

New check approval

Now that, of course, makes sense. Because of the normal float and other delays, unscrupulous or careless people can go on for a long time before their bad check records catch up with them. I’m sure that the new computerized check approval system will be more effective at catching bad checks than the old one was. All that data about how old and fat I am could be useful in tracking me down, if need be. And to store and retrieve that extra information only takes a few more fields on the computer record — pretty trivial, from the technical standpoint.

There is only one problem. It takes me — a person with an unblemished record of trustworthiness (at least from the standpoint of my checking account) — and presumption of guilt that seems to come with so many computerized applications. Why does a store clerk have to presume every customer is in the credit companies’ bad-credit listing, forcing me and all the other customers to wait while the clerk proves that is not so? In my case, I could have told him so if only he had asked me.

America is the world’s great melting pot. That’s a great concept, because it means that we take the best the rest of the world has to offer, put it all together and come out with something even better — or that’s what I thought it meant. But with the way that businesses are computerizing that melting pot, it seems as though something is changing, something quite important.

That’s not logical, I know. It won’t compute. But it bothers me. Steichen is president of New Perspectives Group, Ltd., a consulting firm based in Fairfax, Va.

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LAW from page 31

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Alleviating backlog
Normalization technique a solution

By Joseph Toccano
Special to CW

The applications backlog, which averages 2/4 years across the industry, has spawned the development of hundreds of new software products recently. Experts agree there are two ways to alleviate the problem. One is to increase the efficiency of DP professionals. The second is to provide end users with the capability of fulfilling their own requests. Either course requires that a manageable data storage and structure technique be provided.

Ideally, this technique would result in data arranged in the same logical and ordered format as it was prior to computerization, somewhat like a filing cabinet, but without the duplication of data across different departments.

This simple format is commonly referred to as a normalized data structure. Normalization is the process of un-bundling and decomposing data to reflect logical information requirements.

Data base management systems (DBMS)

'Monitor' update out for CICS

Landmark Systems Corp. has announced Release 6.0 of its Monitor performance monitor and reporting system for users of IBM's CICS Release 1.5 and higher.

According to Landmark, the new release features an Activity Data Collection facility that captures all transaction-level resource utilization information in a high-performance Vsm data set. Advanced file design is said to ensure high performance and flexibility, and batch facilities are provided, including a report writer plus a bridge which allows Transfer of Monitor data into IBM's Performance Analyzer II format.

The Online History Review is said to allow graphic or detail replay of CICS events and performance for any part of the day. A selection facility allows the user to look at the activity for specific transactions, programs, terminals and time periods.

The package's Supertrace feature reportedly provides a selective, on-line transaction monitoring capability that aids in a tuning applications or in problem determination.

Features file analysis

Release 6.0 also features File Analysis, which gathers performance information so that it provides an on-line display of activity by channel, control unit, volume or file. An Extended Task Analysis facility allows online analysis of problem events.

The permanent license fee for Release 6.0 of the Monitor for CICS is $13,500 for each file and DL/1 data base access and $6,500 for the DOS/VSE environment, according to a spokesman for the vendor.

Ada nearly ready
for IBM micro

In this age of the microprocessor, it seems nothing is legitimate unless you can run it on your IBM Personal Computer. The Ada programming language is no exception.

Alsys, Inc. of Waltham, Mass., plans to give Ada enthusiasts that capability later this year with two validated compilers for Intel Corp. 8086-based and Motorola, Inc. 68000-based microcomputers.

The company will also offer a file of computer-assisted instruction software and videotapes and a set of canned Ada routines that businesses can buy rather than build themselves.

Cramming the technically rich Ada language into a micro has presented problems, according to Charles C. Patrick, Alsys' vice-president of marketing. "Developers have pretty uniformly had difficulties with compile times," he admitted. "But we're expecting to learn a lot from running and improving the compiler. We also expect hardware to continue making breakthroughs."

What is most interesting about Alsys' plan is its approach to portability. A key strength of Ada, which was envisioned by the U.S. Department of Defense (DOD) for military applications, is standardization. In order to be called Ada, a compiler must undergo a rigorous series of DOD-administered tests that involve running over 2,000 Ada programs. In theory, any Ada program should run on any Ada compiler.

Alsys hopes to overcome the issue of machine incompatibility by creating a "root" or front-end compiler that makes up about 80% of the total compiler code. Individual vendors can license the root, which is called Alsykit, and add the other 20% to customize the software to their own machines.

Alsys said Alsykit can save a customer two-thirds of the cost and 80% of the time required to develop a validated Ada software package. The Ada compiler is said to require about 80% of the total compiler code.

Ada is said as Alsys can save a customer two-thirds of the cost and 80% of the time required to develop a validated Ada software package.
DATA from page 37

stores the data in clusters of related values. Each of these clusters is identified or accessed by means of a key. The key value is used to locate all other related data.

Prepared, maintained

Normalizing data does not mean that information processing throughout the data center has to be shut down to accommodate some exotic transformation process. Like a diet, it should be practiced and maintained for maximum effectiveness.

The steps involved in achieving normalized data are defined as levels or "normal forms." They are representations of the logical progressions required to reorganize the data. However, data does not have to proceed in a step-by-step order. It can be directly transformed from an unnormalized state to a normalized state. The third normal form is a tremendous benefit. It is more manageable, easier to access and more meaningful for users.

The most important rule of normalization is that every field (domain/column) within a record (tuple/row) is either part of the key or provides information about the key and only the key. The unnormalized file in Figure A contains a string of related information. In conventional file structures, data was organized in long strings associated with specific applications. There was little thought of multiple uses of each piece of data.

Using this unnormalized file, the system would have to process the complete record in its entirety into main storage to process it, a very I/O-intensive procedure. Every application that requires a single component of the record must process the complete record.

To normalize the data, four separate files should be created (see charts). Using normalized data, access of information is more efficient. Only the necessary information, related in significantly smaller blocks, is transferred, and the I/O rate is substantially decreased.

Normalized data model

The guidelines to follow to reach this normalized data model are:

- Decompose the data into its simplest form.
- Natural values in the fields can be different, but they must be the same type, such as fixed length.
- Only include logically related data within a single file.
- Use key data fields to identify non-key data fields.
- Be certain that all data within a file points to the key.
- Each field must provide only a single-valued fact about the key.
- Be certain that data fields are functionally dependent only on the key.

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Figure A: Unnormalized data structure

Customer | State | Zip | Policy
----------|------|----|-----
100 Bill Jones | NY | 10019 | 16900
200 Ed Wilson | NY | 10017 | 13500
300 Mary Smith | NY | 10010 | 19834
400 Bob Martin | NY | 10025 | 32153
500 Jill Benson | NY | 10026 | 32153

In the normalized data structures shown here, Figure B contains customer number, name, address, city, state. Zip Code where customer number is the key; Figure C contains customer number and policy number where customer number is the key; Figure D contains policy number, policy type, billing data, billing amount and where policy number is the key; and Figure E contains city and policy type and sales code where a composite key city/pokey is the key. In Figure E, since the salesman is functionally dependent on policy type in each city, a composite key is used.

Figure B

Figure C

Figure E

Figure D

Only include logically related data within a single file.
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- Be certain that data fields are functionally dependent only on the key.

Tucson is a systems programmer specializing in CA-Universe, a relational DBMS, at Computer Associates International, Inc.

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Choosing a micro-to-mainframe communications system is no game. If you make the wrong choice, the consequences can be very expensive.

So before you toy around with "easy" solutions, do yourself a favor and ask some serious questions. You might want to start with these:

- **Will this product support full IBM Terminal Emulation?**
  Make sure the system you choose offers full protocol emulation. It should be able to emulate remote batch and interactive IBM terminals and terminal systems.

- **Does the company offer a variety of products to solve my problem?**
  The manufacturer you select should be able to handle any operating environment. You should have your choice of stand-alone front-end processors, IBM PC or XT boards, or an OEM board. And make sure the products will run on the most popular operating systems, including CP/M, MS-DOS and UNIX.

- **Can I get fast answers to my questions?**
  Insist on toll-free access to qualified service personnel before and after the sale. A Product Support Group should be available during your normal business day.

- **What if I need a quick analysis of a problem?**
  If you run into a problem, you shouldn’t have to sit through a lengthy question-and-answer session over the phone. Ask if the manufacturer has a Communications Test Center that allows for product testing over public phone lines. And find out if the product has internal diagnostics that point out problem areas right on the screen.

- **Suppose something goes wrong with the unit?**
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Security system

Softsys CO, Inc. has announced its on-line security system for IBM CICS terminals and operators.
The system controls CICS access by operator and individual terminal, according to the vendor. For example, a CICS terminal in a payroll department cannot be accessed by a CICS operator in another department.
The security system consists of six modules: security manager, operator security, terminal security, conversion initiation, and terminal session module.

The system runs on CICS/VS Releases 1.4, 1.4.1, and 1.5. A one-time installation charge of $1,200 includes an installation tape, installation and system guide, and one year of maintenance. The annual maintenance fee is $120.

MICHAEHS, BOOS & COLE LTD.

Michaelis, Ross and Cole Ltd. has announced an enhanced version of its MRC-Dictionary, a data dictionary designed to allow non-technical users to employ relational data base management capabilities on the IBM System/38.

MRC-Dictionary Release 2.0 reportedly helps to drive other MRC-Query series modules, including MRC-Maintenance. The release is said to offer additional and faster editing capabilities as an adjunct to the System/38 data description specifications.
The dictionary module is priced at $1,140.

MICHAELS, ROSS & COLE LTD.

DataMetics System Corp. has announced Torch/PMS, a performance management system for Sperry Corp.

Torch/PMS helps identify and correct performance bottlenecks in early stages of the vendor's claimed. It reportedly highlights work load and utilization trends for capacity planning and model building and is useful when collecting data needed for new equipment justification. More than 100 scatter plot diagrams are included with the package, the vendor said.

Installation and one year of software maintenance support are included in the initial lease of Torch/PMS, which is priced at $5,000 per year, beginning in the second year.

DataMetics System, Suite 201, 5940 Main St., Fairfield, Vt. 05735.

PRODUCTIVITY AIDS

DAMETRICS SYSTEM CORP.

Torch/PMS

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DataMetics System, Suite 201, 5940 Main St., Fairfield, Vt. 05735.

Ada from page 37

Ada compiler. That is no small task, as the company claims 50 man-years of development went into the root compiler.

Hardware makers and systems developers can contact Alysys now to acquire Alykyti. The full compiler for the two microprocessors, called Alyky-comp, will not be available until the end of the year.

Also on the drawing boards at Alysys is a set of reusable Ada code that can replace programmers the hassle of writing their own canned routines. Alysys is a step toward the “software factory” concept for which Ada has been called the ideal language. Companies will be able to buy the routines they need and store them in a library for use in Ada programs. The routines will become available after the compiler is validated late this spring, Patrick said.

Alysys is betting its bankroll on the possibility that Ada will become one of the dominant programming languages of the 1980s and 1990s. Ada has inspired much controversy since development was undertaken in 1975. Critics say that it is too complex and that the learning curve is too high for Ada to replace Cobol. They also question the wisdom of spending the money to scrap millions of perfectly good business programs around the country in order to achieve the as-yet-unconfirmed benefits of Ada.

However, Ada proponents point to the fact that the language’s modularity makes it well-suited for reusability, a factor that becomes more important as application backlogs grow. They also say that Ada’s standardization eliminates the problem of maintaining old applications written in obscure languages and eases the burden of training new programmers in the quirks of a particular machine’s language implementation.

Softtek, Inc. predicted that the Ada market will reach nearly $750 million by 1986. Patrick noted that as many as 300 military projects could be programmed in Ada by that time. Alysys President Roy A. Finney added that, despite the controversy, several dozen books have already been published on Ada.

According to some, companies like Alysys will be worth watching in the future.

It’s such a large market that it’s very difficult to quantify,” Patrick said.

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We suggest the Tandem NonStop II system. The second most powerful on-line computer in business today. The cost effective solution for medium to large corporations.

What if your company is somewhere between a NonStop II and a TXP?
No problem. They can be combined. They can share the same data and programs. In fact, NonStop II and TXP processors can coexist in the same cabinets.

And what if your company needs even a smaller computer? We make a smaller computer. The Tandem NonStop 1+ system. Perfect for those low-volume sites where less processing power is needed.

Tandem literally wrote the book on NonStop transaction processing. That's because we introduced the first NonStop system.

Over eight years ago.
And for over eight straight years, despite attempts by others, we've continued to lead the industry.

Learn all about TXP, ASAP.
For complete literature, contact your local Tandem Sales Office.
Or write Tandem Computers Incorporated, 19333 Vallco Parkway, Cupertino, California 95014.
Or call us, toll-free. (800) 482-6336.

TXP is the most powerful on-line computer in business today.
Without question.
Continued from page 42

APPLICATION PACKAGES

DECISION SYSTEMS

Worksheet

Decision Systems, a division of Interactive Data Corp., has announced Worksheet, said to be a mainframe reporting and data management system with built-in links to most microcomputer spreadsheet packages.

In addition to its mainframe reporting and data management capabilities, Worksheet enables users to transfer user-defined computations and formats from mainframe to micro with simple key commands, a spokesman said. The package also has the capability to transfer the substance of a work sheet as well as its numerical data.

The package was designed to work with the IBM Personal Computer and mainframes utilizing IBM's VM/CMS operating system. It reportedly operates in conjunction with Xmin, Interactive Data's applications software system. A permanent license for Worksheet costs between $20,000 and $30,000.


THE MEGA GROUP, INC.

Megaf ile

The Mega Group, Inc. has announced a filing system with relational data base functions and multiple spreadsheet capability for IBM mainframe users with little or no programming background.

Megaf ile is designed for systems using IBM 3270-type terminals and for integration with The Mega Group's Megacalc and Megalink software, which provide access to the IBM mainframe's memory.

The product's three-dimensional matrix permits the simultaneous access, manipulation and merging of data from more than 30 individual spreadsheets, according to the company. Data reportedly can be accessed in a variety of ways, including individual cells, a range of cells, a record and an assigned block of cells. Spreadsheets and data bases created in Megaf ile can be downloaded to personal computers, including the IBM Personal Computer, Personal Computer XT and PCjr, according to the company.

Megaf ile is available now for IBM MVS/TSO environments and will be available for IBM VM/CMS environments during the first quarter of 1984.

The price for Megaf ile is $5,000 on the IBM 30 series and $4,000 for the IBM 4300 series.

The Mega Group, 2091 Business Center Drive, Irvine, Calif. 92715.

DATA BASE MANAGEMENT SYSTEMS

TOM NY, INC.

Data Base Plus

Tominy, Inc. has announced that its Data Base Plus application development system is now available for use with the IBM System/36.

According to the vendor, Data Base Plus is a family of software development tools, including a data base management system (DBMS) and a high-level programming language, that reportedly allows users to develop business application systems. With component modules, users can define logical file structures, establish interrelationships between files, automatically store and retrieve data, access standard information and print formats and inquire against the data base for reporting purposes.

The components of Data Base Plus are the DBMS, screen handler, print handler, utilities, query/report writer and the Data Base Plus Programming Language. In addition to the System/36, the components may be run with the IBM Personal Computer, System/34, Series/1 and the 4300, 30 series and 370 mainframes.

The vendor said that applications projects can be moved from one hardware system to another without code changes or program modifications. Data Base Plus for the IBM System/36 is compatible with the IBM's SSB operating system and is priced at $19,500 for a one-time development license and an additional $4,000 for the Data Base Plus Programming Language.

Tominy, 4221 Malabary Road, Cincinnati, Ohio 45242.

SOFTWARE & SERVICES

COMPUTER RESOURCES, INC.

Application Builder

Computer Resources, Inc. (CRI) has introduced Application Builder, an enhancement to its Business Builder relational data base management system for Hewlett-Packard Co. HP 3000 computers.

Builder is a fourth-generation system that permits screen-based applications to be developed quickly, according to the vendor. Builder applications are developed using a standard screen editor that simplifies data base and testing. Screen definitions and Builder commands are placed in a single file.

A debugging facility is included to assist the application developer in isolating and correcting problems, reducing debugging and maintenance time.

A built-in testing capability can automatically test files for the user. Builder directly interfaces with Relate's graphics system and report writer, a spokesman said. It also supports the use of function keys and can call subroutines.

Builder is available for $9,900; Retail: $11,500. Lease plans are available.

CRI, 5833 Betsy Ross Drive, Santa Clara, Calif. 95054.

COMPUTER ASSOCIATES INTERNATIONAL, INC.

Normalization: Guidelines for Practical Data Base Design

Computer Associates International, Inc. has announced a video training course intended to help data base users understand the normalization process of organizing a data base.

"Normalization: Guidelines for Practical Data Base Design," reportedly provides a brief historical perspective of data base management and a step-by-step tutorial approach to normalization. It is designed to help the data center understand the benefits of normalization and to provide the ability to design and manage data bases.

Continued on page 50
Introducing MARK V™ for CICS users: a unique, 4th generation non-procedural application development system that saves you time and money at every stage of your application life cycle. See it at a free seminar near you!

Informatics just broke the productivity barrier with MARK V, an extraordinary timesaving application development system. But, MARK V is not for everyone. It may be for you if:

- You need help in reducing your backlog of medium to complex CICS applications.
- You use CICS with IBM-supported data access such as VSAM or DL/I.
- Your CICS system demands highly efficient application execution.

Then, MARK V can help you produce efficient compiled applications that rival the execution of well-written COBOL—in less than half the development time!

**Easy application development and maintenance is just the beginning!**

MARK V improves productivity throughout the application development and maintenance cycle—not just in the coding—by providing:

- Interactive application design and simulation
- Easy to use, menu-driven specification language for development and maintenance
- Transparent and complete data access/communications control
- Automatically produced application documentation

That means, with MARK V your programmer need only specify the solution. MARK V generates the complete application. This methodology allows you to solve more complex problems more efficiently using less highly trained personnel—and that saves you money!

**Reserve your place at a free Seminar on MARK V—the simple new way to develop and maintain your medium to complex CICS applications.**

As a data processing professional, you're also a professional skeptic. But the simplicity, versatility and timesaving capabilities of MARK V are easy to see—and prove. To do so, simply mail the coupon below or call toll free. We'll reserve your place at a free MARK V Seminar in a city near you. But attendance is limited.

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I want to learn more about how MARK V can make my medium to complex CICS applications development and maintenance both fast and easy.

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- Philadelphia February 18
- Washington, DC February 20
- Atlanta February 22
- San Francisco February 24
- Chicago February 26
- Los Angeles February 28

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P.O. Box 1452, Canoga Park, CA 91304
For years, Digital's VT100 terminal has been the CRT to choose if you want the most out of your computer. It has become the industry standard for reliability and ease of use. Not to mention the largest-selling ASCII terminal in the world. Now Digital advances this standard with the VT200 family.

Three new terminals that embody everything Digital has learned about how to make people comfortable with computers. They offer non-glare screens that can be positioned for the best viewing angle. Keys that are so well arranged on our low-profile keyboard that you increase productivity and convenience. Fifteen programmable function keys eliminate keystrokes to speed up tasks. Plain-language setup commands to easily tailor the screen to each user. Plus, a built-in printer port for hardcopy convenience.
We've even included our most advanced video capabilities—like smooth scrolling and 132-column display—as standard features. All packaged in our sleek new design that fits conveniently on your desk. And all supported by Digital's worldwide service organization.

But the best news is yet to come. Because despite all the advances, the VT200 family is very competitively priced.

Simply stated, Digital has advanced the standard. Once again.

For the full story, call 1-800-DIGITAL, extension 700.
**The Data Center is under your command.**

But is it under your control?

Value Computing's systems management software automates the critical tasks of production forecasting and scheduling, capacity planning, and resource allocation and accounting, and brings those tasks under centralized control. Your control. The effects on data center operations are immediate:

- a more stable production environment ... faster turnaround ... fewer manual procedures ...
- shorter night processing times ... fewer mistakes, misunderstandings, re-runs ... less management dependency on operations personnel.

In short, a smoother running, better performing data center; a center where managers get the most intensive use of all resources. Without making a major capital investment in additional CPUs or peripherals. We don't believe there's a more cost-effective way to improve the performance of your data center or the value of its position in your company.

Call us and find out why more than 1,500 users agree.

**INFORMATION MANAGEMENT, INC.**

Quantitative Software Management, Inc. has announced the Slim service, a software development bid-evaluation service for software development managers.

Quantitative Software Management personnel utilize the Slim technique to evaluate an organization's key criteria for cost, man-hours and time in software development projects. On a consulting basis, the Slim service is priced at $75,000, based on three software development bidders. The Slim software can also be obtained on annual license for $25,000. It is compatible with the Hewlett-Packard Co. HP 80 series desktop computers, the HP 8800 series desktop computers and the Digital Equipment Corp. Decsystem 2060 mainframe.


**Remote Computing Services**

**INFORMATICS GENERAL CORP.**

Informail's security procedure allows each user to read only mail sent to his mailbox. All files are automatically duplicated to prevent accidental loss of a message, according to the vendor. The mail system includes a step-by-step list of options and on-line help screens for an inexperienced user, the vendor said.

Informail costs 5 cents per message and $25 per hour for users who meet the standard monthly minimum charge of $300.

**Announcing Spring Courses**

Offerings

- IMS, CICS, VSAM and FOCUS* Course
- Data Base Management, Inc.
- Data Center Operations
- Data Base Management, Inc.
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- Data Base Management, Inc.
We've added a little polish to our Series II family of protocol converters. The result is the Series II Plus, a complete line of SNA/SDLC and Bisync protocol converters. If you've become accustomed to the performance of KMW 3270, 3770, HASP and 2780/3780 protocol converters, you're going to appreciate the Plus.

**Pluses**

+ **Diagnostics**
The KMW Series II Plus provides three levels of extensive on-board diagnostics for troubleshooting without ever opening the unit. Level one testing includes PROM and RAM tests as well as confidence tests of most system components. Level two testing is a much more comprehensive test of system components including I/O circuits. Level three is controlled via the system console and includes the ability to move data files to each of the supported peripheral devices.

+ **Programmability**
Host session and asynchronous device parameters are programmable via the setup mode on the system console. Programmable host session parameters include:
  - log on information
  - buffer size
  - input mode
  - output mode
  - data rate

Programmable asynchronous device parameters include:
  - device type
  - character framing
  - data flow control
  - device address
  - data rate

Setup data can be permanently held in EEPROM even when the Series II Plus is powered off.

+ **Speed**
Featuring a Z80A processor, the Series II Plus is capable of data rates up to 19.2 Kbps or, with optional Z80B processor and DMA, up to 56 Kbps as well as concurrent operation of up to 8 input/output devices at equivalent rates.

+ **Code Compliance**
The Series II Plus converters meet the FCC emissions requirements and are designed to satisfy those requirements when included in subsystems. The Series II Plus is also UL and CSA listed.

+ **Fluency**
The Series II Plus provides fluent communications in IBM SNA and Bisync protocols including 3770, 3270, HASP and 2780/3780. All Series II Plus converters support a multitude of input and output devices and are available with up to 8 ports (3 in 2780/3780 converters). You can count on the Series II Plus for fluent IBM to ASCII communications.

+ **Hardware Design**
Another Series II Plus advantage is the efficient hardware design of the unit. The sleek exterior lines give way to a plug-in modular interior which provides for maximum flexibility, a high degree of reliability and ease of maintenance. KMW's unique hardware design allows for a series of plug-in modules to provide device interfaces. Standard interface modules include Data Products 8 bit Parallel Printer interfaces, Documentation Parallel Card Reader and RS-232 Serial General Purpose interfaces.

The reliability of the Series II Plus design is exemplified by an impressive mean time between failure of over 13,000 hours. That's a real plus.

With a mean time to repair of only 30 minutes, down time is always at a minimum.

The Series II Plus is engineered for performance and the proof is in the package.

**A Special Plus**
The Series II Plus is available in synchronous-to-synchronous configurations including 3770 to 2780/3780 or HASP to 2780/3780. If your applications require something special, check with KMW.

Add a little polish to your communication. The Series II Plus . . .

Fluent communications from a polished performer.
The CPT Solution that talks with mainframes in an important new way:

CPT solves the costly, cumbersome problem of separate data terminals and word processors at individual workstations. An exclusive software breakthrough enables one CPT system to perform both functions. On the same screen. At the same time. We call it the CPT Interactive Display Emulator (IDE).

With this new CPT solution, an operator can transfer data processing information from a host computer (top window) directly to a word processing document-in-progress (middle window). Or vice versa. With just two keystrokes.

In addition, an optional CPT SNA communications controller can link up to 7 CPT systems together as part of an IBM 3270 network.

A few toll-free keystrokes on your telephone will bring you more information. And open some important new windows on the future.

Interactive Communications Window
A full 24-line by 80-column screen that displays information direct from a host computer.

Independent CPT Word Processing Window
A half-page display of the same CPT word processing that's earned a place on the Datapro Honor Roll for the last three years.

Word Processing Preview
Another standard CPT word processing feature. It lets you preview other pages in a document, or scan an entirely different document, without interrupting work in progress.

Call or write for our FREE 28-page booklet, How to Automate Your Office – One Step at a Time™ Mail to CPT Information Service, P.O. Box 3900, Peoria, Illinois 61614. Or call

Name ____________________________
Title ____________________________
Company _________________________
Address __________________________
Phone ____________________________

Specifications are subject to change at the discretion of CPT Corporation.
Hughes proposes satellite system

A satellite communications system that will enable users to communicate at 1.5M bit/sec through low-cost, small-diameter dish antennas was proposed by Hughes Aircraft Co. in a thick prospectus submitted to the Federal Communications Commission last month here in the nation's capital.

The company wants permission to launch two satellites which would operate in the 20- to 30-GHz (Ka) band. This is a good deal higher than all previously announced commercial satellites that operate at either 4 to 6 GHz (C band) or 12 to 14 GHz (Ku band).

Satellite channels

Each of the new Hughes Galaxy satellites would provide a total of 3,072 one-way 1.5M bit/sec (T-1) channels through 32 transponders. The earth stations would employ a two-meter antenna and a 1W solid-state transmitter. Hughes expects the total cost of the ground terminal to be less than $50,000.

The system will support private and shared-use voice, video and data networks, the company added. Hughes intends to sell the transponders outright or lease them, although it may offer other terms.

Teleconferencing, high-speed document transfer, remote printing and other data transfer services will be the principal applications of the new system, Hughes said.

Growing demand

"A recent study indicates that the demand for teleconferencing will grow at an annual rate of 59%, reaching annual sales of $430 million by 1987," Hughes "anticipates that the advent of low-cost customer terminals and ancillary equipment made possible by the

See HUGHES page 54

Campus net passes test

Runs first year without major gliche

By Robert Batt

SATURDAY, NOVEMBER 16, 1984

SAN DIEGO — One of the country's first local-area networks linking an entire university campus has been up and running here for almost a year with no major hiccups.

Before San Diego State University took the plunge with a local-area network, it considered a number of options that would allow it to expand communications facilities for its 33,000 students. Some of those options, according to Robert Swanson, manager of technical support at the university's computer center, were quite exotic.

• A citizens band radio facility.
• An on-campus microwave system.
• A communications system based on optical-fiber technology.
• Twisted-pair cable techniques that would require going point-to-point with all the terminals in the network.

"When you want your machines to have the ability to talk with one another, it is essential to have everything on a single wire, so in the end, we chose a coaxial cable approach," Swanson contended. The advantage to this approach was that the essential technology was available off the shelf.

"Technology was simple"

"The technology was simple, and the bandwidth for communications amazed us in its capabilities and range of capacity compared with other devices we had looked at," Swanson said.

The university chose Sytek, Inc., a San Jose, Calif.-based manufacturer of broadband computer and telecommunications equipment to supply the interface to the network. Xerox Corp.'s Ethernet was also considered, "but we did not want to have point-to-point baseband technology, which was all that was available at the time," Swanson

See NET page 54

DEC introduces KCT32 for VAX

MAYNARD, Mass. — Digital Equipment Corp. has announced the introduction of a board-level, front-end communications processor, the KCT32, that is reportedly designed for networking and custom communications applications on DEC VAX minicomputers.

Usable in most computer-to-computer and computer-to-terminal environments, the KCT32 has supporting software that allows it to run under the VAX/VMS operating system, according to a spokesman for VAX/VMS.

KTC32 has 65K bytes of programmable memory and implements DEC PDP-11 instructions, according to a vendor spokesperson.

Special software can be developed on a VAX systems by using the VAX/VMS software support tools, according to the spokesman.

Single boards

The processor employs a single hex-width board and can be initialized by line, for either synchronous or asynchronous data transmission and reception, the DEC spokesman said. It supports two lines at 64K bit/sec per line or a single line at 130K bit/sec, in full duplex mode, the DEC spokesman said.

The processor is priced from $6,900 to $7,400 with deliveries in the spring, according to DEC.

HUGHES from page 53

A new satellite system will accelerate industry and government use of teleconferencing," a company spokesman said.

And since the 1.5M bit/sec channels to be provided by the new Galaxay satellites will be subdividable, the system will also provide "customized switched data circuits for private networks," according to a Hughes spokesman.

"Tremendous benefits"

Hughes added that the new system would "provide tremendous benefits for firms whose businesses involve information retrieval and manipulation."

Hughes said that demand for satellites will grow Ku and C band capacity by 1990.

It cited a recent Western Union Corp. report to the FCC which concluded that "available C and Ku band transponders will fall short of need by up to 315 transponders in 1980 and up to 1605 transponders in 2000."

The first of the two new satellites is scheduled to be launched in the fourth quarter of 1988, and the second one will be launched a year later. Each will serve the nation's 16 largest cities.

Time of experimentation

The Hughes application comes at a time when Japan and several European countries are experimenting with Ka band satellites.

If the new Galaxy system is approved, it probably will be the first one developed by a U.S. company for commercial service.

Hughes Communications Galaxy, Inc., a subsidiary of the aerospace firm, plans to operate the two new Ka band satellites.

Formerly known as Hughes Communications, Inc., the subsidiary already operates two communications satellites and is making plans for the future to launch two more in the lower bands.

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IBM 3270 Users.

Before

IB...
Great ideas, plus hard work, business sense and commitment to customer satisfaction. That's what it takes to be a value-added marketer for IBM.

IBM is looking for business people with specialized industry experience. For companies that can successfully merge our systems with applications software. For those to whom quality is fundamental.

Put IBM to work for your customers.

To begin with, IBM wants qualified VARs to have the broadest choice of systems and software: the IBM Personal Computer, Displaywriter, Datanet, CS-9000, 4300 systems, System/36 and Series/1 with its new enhancements.

These products carry IBM's reputation for quality. Equally important, all have access to IBM's worldwide service.

That means VARs who work with IBM have more to offer their customers. But that's only part of what IBM can offer to its VARs.

Put IBM to work for you.

IBM also provides VARs with tools to assist them in marketing to their customers and prospects.
Communications Technology Corp. (CTC) has announced the release of its C-9424 RS-232/HP-IL Link. The Cmos C-9424 is compatible with National Semiconductor Corp.'s Cmos Industrial Microcomputer Bus (Cimbus) serial I/O board, with the capability for RS-232C-controlled asynchronous data transfer between a Cimbus Series/800 system and any compatible peripheral.

According to the vendor, it also contains all the circuitry for communications over the Hewlett-Packard Co. Interface Loop (HP-IL). In addition to the two serial communications channels, the C-9424 has provisions for 4K or 8K bytes of read-only memory (ROM), addressable on 4K-byte boundaries. There are 15 possible software-selectable bit/sec rates, ranging from 50 to 19,200.

The C-9424 comes with firmware in a single erasable programmable ROM, which provides an interface driver for the HP-IL, initialization routines and rudimentary debugging tools. The C-9424 is available immediately for $390, and quantity discounts are available.

Innovative Electronics, Inc. has announced the MC-80/690-1 communications processor. Emulating an IBM 3774-51C communications controller running configuration support level A, this device converts a Digital Equipment Corp. VT100-compatible terminal into an IBM 3277-2, 3277-1, 3278-1 or 3278-2 terminal communicating with the IBM host using the Echidna Binary Synchronous Communications protocol.

The product provides up to 16K bytes of read-only memory, 16K bytes of random-access memory and two serial communications ports. The price for the basic unit is $1,495.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

Cableshare, Inc. has announced X.29 functionality on its LSI-X.25 Front-End Processor, which reportedly allows remote terminals to communicate with host computers over a packet-switched network as if they were local terminals.

The X.29 support is said to provide host applications control over the functions and operational characteristics exhibited by a remote terminal.
MULTIPLEXERS/
MODEMS

VISIONARY ELECTRONICS, INC.

Visionary 1200

Visionary Electronics, Inc.

has introduced the Visionary 1200, a 1,200 bit/sec intelligent stand-alone modem that contains up to 48K bytes of memory for sending, receiving and storing messages, including telex and TWX.

The unit features automatic logon and automatic data capture and retrieval, as well as an internal clock/calendar and on-board software that allows it to send and receive messages automatically, even if the host computer is turned off. The Visionary 1200 transmits at either 1,200 or 300 bit/sec, has memory expandable to 48K bytes and includes two serial ports.

The Visionary 1200 is composed of a Bell 212A modem and an Intel Corp. 8086 microprocessor, while the unit's Cmos memory features full battery backup of all files. Additional automatic features include autodial, autoredial on busy or no answer and answerback. The price of the Visionary 1200 ranges from $1,250 to $1,095, depending on memory size.

Visionary Electronics, 141 Parker Ave., San Francisco, Calif. 94118.

LOCAL-AREA NETWORKS

DIGITAL RESEARCH, INC.

DR Soft/Net package

A software package that reportedly link microcomputers running its CP/M operating system via any local-area network was announced here by Digital Research, Inc.

Introducing its new DR Soft/Net package, the company claimed the product enables offices to tie together diverse personal computer workstations using local-area networks such as Xerox

Continued on page 58

Personal Queries
And Reports
On IBM/38?

FUSION 4/38, the first full information retrieval and presentation system for the non-technical user.

FUSION 4/38
FUSION 4/38
6016 443-4740
PO Box Fusion
Fusion USA, San Diego, CA 92109
Telex 150999 FUSION

Continued from page 54

tics exhibited by a remote X.25 packet assembler/dissembler.

The front-end processor is designed for use on Digital Equipment Corp. PDP-ll and VAX-11 processors. It is said to handle all X.25 protocol internally.

It is supported for use on DEC's RSTS/E, RSX-11M (M-Plus) and VAX/VMS operating systems. The LSI-X.25 Front-End Processor is priced at $13,000.


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MODEMS

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Continued on page 58

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6016 443-4740
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Telex 150999 FUSION
Corp.'s Ethernet, Datapoint Corp.'s Arenet and Corvus Systems, Inc.'s Omninet.

Digital's CP/M, CP/M 86 and Concurrency micros running any version of Digital's CP/M operating systems. The product will be sold for $1,000. Digital Research also announced a new compiler design, which it claimed will increase the transportability of applications software.

The first example of the technology, a compiler for Fortran-77, will be released in January, the company said.

The Fortran-77 compiler, priced at $500, will be the first of five new compilers to use the technology and will run on Concurrent CP/M and CP/M 86 operating systems, a spokesman for Digital said.

According to Digital, it will offer IBM PC-DOS and Microsoft, Inc. MS-DOS capability. Compilers for Pascal, C, PL/I and C Basic programming languages will follow, the vendor added.

DIGITAL RESEARCH, 160 Central Ave., Pacific Grove, Calif. 93950.

TEST EQUIPMENT

TELECOMMUNICATIONS TECHNIQUES CORP.

Enhancements

Telecommunications Techniques Corp. (TTC) has added two enhancements—a remote control option and an interface module—to its data error analyzer, according to the vendor.

The remote control option is designed for remote access to a long-distance analyzer, according to the vendor. The remote control option is designed for remote access to a long-distance analyzer, according to the vendor.

The DS1 interface module for Fireberd 1500 and 2000 series analyzers acts as data terminal equipment and exchanges a return-to-zero bipolar data signal, a spokesman for the vendor said.

It operates in terminated or bridging mode and allows the measurement and injection of bit errors and bipolar violations, according to the vendor spokesman.

Adding the remote control option to an existing Fireberd 2000 costs $875; adding the DS1 interface costs $875.

TTC, 444 N. Frederick Ave., Gaithersburg, Md. 20877.

AUXILIARY EQUIPMENT

INTERNATIONAL DATA CORP.

Communications Technology Service

International Data Corp. has announced its Communications Technology Service (CTS) to provide business managers and government officials with information about technological advances, as well as the divesture of AT&T.

Key elements of CTS are said to be a semimonthly bulletin reporting on and analyzing developments in the communications field and quarterly research reports covering industry issues, according to a spokesman for the vendor.

The service is available now at a charter rate of $10,000 per year until April 30 and at a rate of $16,000 thereafter.


WESTERN TELEMATIC, INC.

DB-1

Western Telematic, Inc. has introduced its DB-1, a data booster that doubles cable transmission distance, according to the vendor.

DB-1 acts as a line conditioner and signal booster for data and handshake signals.

The data booster plugs into a cable transmission line, receives signals, filters noise, improves electrical characteristics and boosts signal strength, the vendor said. The data booster also reportedly retransmits a signal downline.

DB-1 is priced at $95, according to the vendor.

Western Telematic, 2435 S. Anne St., Santa Ana, Calif. 92704.

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In summary, IDMS/R was designed to satisfy the requirements of the IBM 4300 user who wants to develop both production and end user applications faster and easier.

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IDMS/R Seminar Cities and Dates

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Lessons from the best-sellers

A three-part series

By J. Daniel Couger

For the first time since best-seller lists have been compiled, the top three in the nonfiction category are management-oriented books. Over the past six months, among the top three sellers have been 1) *In Search of Excellence*, 2) *The One-Minute Manager* and 3) *Megatrends*. Far down the list are the traditional top sellers: cookbooks, physical fitness advice and the sex manuals.

One can speculate on the reason: 1) the state of the economy, 2) the lack of quality in competing books or 3) the turn to seriousness resulting from worldwide crises. I favor a different explanation: The three books simply offer especially meaningful content.

These books would appear to be of interest primarily to boards of directors, chief executives and their immediate subordinates. Not so. They are also important to management at all levels within data processing. Granted, the reader must translate the general principles to the DP experience, and some appear to be only remotely related. But, with a little interpolation and almost no extrapolation, the guidelines in the three books have direct bearing on improving DP management.

I've taken on the task of translating — to DP circumstances — the key points of the three books. *In Search of Excellence* is analyzed here. Future issues will interpret the other two books.

The makings of success

With well over one million copies in print, *In Search of Excellence* is in a category attained by very few books. "It is not a book that is being bought solely by people in the hard-core business community," according to Dan Harvey, Harper & Row publicity director. "It is being bought by people who want to know how to run very small businesses, too."

Authors Thomas J. Peters and Robert H. Waterman Jr. report the results of a 2½-year research project on the key ingredients to success — not just a modicum level of success, but extraordinary success. Sustaining success is another selection criteria. For example, leading the Fortune 500 list this year was North American Coal Co., with an...
The researchers did not look extensively at small companies. "Our major concern," they said, "was and is with how big companies stay alive, well and innovative." Therefore, few firms in the sample had annual sales of less than $1 billion or histories shorter than 20 years.

Not all industries were covered. Included were:
1. High-technology companies, such as Digital Equipment Corp., Hewlett-Packard Co., Intel Corp. and Texas Instruments, Inc.
2. Consumer goods companies, such as Proctor & Gamble Co., Chesbrough-Pond's Inc. and Johnson & Johnson.
3. General industrial goods companies, which included Caterpillar Tractor Co., Dana Corp. and 3M (Minnesota Mining and Manufacturing Co.).
4. Service companies, such as Delta Air Lines, Inc., Marriott Corp., McDonald's Corp. and Disney Productions.
5. Project management companies, such as Bechtel Group, Inc. and Fluor Corp.
6. Resource-based companies, such as Atlantic Richfield Co. (Arco), Dow Chemical Co. and Exxon Corp.

The researchers did not look extensively at small companies. "Our major concern," they said, "was and is with how big companies stay alive, well and innovative." Therefore, few firms in the sample had annual sales of less than $1 billion or histories shorter than 20 years.

The researchers chose six measures of long-term superiority. Three are measures of growth and long-term wealth creation over a 20-year period. Three are measures of return on capital and sales. The six areas:
3. The average ratio of market value to book value.

To qualify as a top performer, a company must have been in the top half of its industry in at least four out of six measures over the full 20-year period. (In fact, of the 36 companies that qualified, 17 ranked in the top half on all six measures, and another six ranked in the top half on five measures.) Thus, any top performer must have scored well over the long haul on both growth and absolute measures of economic health.

As a last screen, the researchers applied a "measure of innovativeness." They asked selected industry experts (for example, businessmen from within the industry) to rate the companies' 20-year record of innovation, defined as a continuous flow of industry bellwether products and services and general rapidness of response to changing markets or other external dynamics.

Characteristics of excellence

The researchers concluded that "the excellent companies were, above all, brilliant on the basics. Tools didn't substitute for thinking. Intellect didn't overpower wisdom. Analysis didn't impede action. Rather, these companies worked hard to keep things simple in a complex world. They persisted. They insisted on top quality. They fawned on their customers. They listened to their employees and treated them like adults. They allowed their innovative products and service 'champions' to walk and tinker. They allowed some chaos in return for quick action and regular experimentation."

Eight attributes emerged as the most characteristic of excellent companies:
1. A bias for action. "Although analytical in their approach to decision making, the excellent companies are not paralyzed by that fact."
The authors found that successful companies are a "hive" of champions. A champion is not an intellectual giant or blue-sky dreamer, but a pragmatic person who takes someone else's theoretical construct, if necessary, and bullheadedness pushes it to fruition.

These companies make sure the acquisition size is manageable enough to allow early, painless integration.

7. Simple form, lean staff. "Making an organization work has everything to do with keeping things understandable for the tens of thousands who must make things happen. The excellent companies keep things simple."

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other corporations.

8. Simultaneous loose-tight properties. "The eighth item is mostly a summary point. It is the coexistence of firm central direction and maximum individual autonomy."

- The excellent companies push autonomy down to the shop floor or product development team, but are fanatic centralists around the few core values they hold dear.
- Cost control and efficiency follow from the emphasis on quality, service, innovativeness, result sharing, participation, excitement and a problem-solving focus that is tailored to the customer.
- The nature of the rules is crucial here. The rules in the excellent companies have a positive cast. They deal with quality, service, innovation and experimentation. Their focus is on building, expanding, the opposite of restraining; whereas most companies concentrate on controlling, limiting, constraint.

Excellence in DP management

1. Proactive instead of reactive.
   - Opportunistic: The system plan is oriented toward under-girding the objective of the firm — it is not just a consolidation of user requests for applications.
   - Innovative: Systems are designed to give the firm a competitive advantage, not just efficiency. An example is the order system of American Hospital Supply Corp. where the service is so comprehensive that the firm gained a major share of the business.
   - Prototypic: Do it, try it, fix it.
   - Listening to the user — laterly and regularly.
   - Openness: Avoiding the attitude that users don't know enough about the technology to make creative contributions to design.
   - Joint venture: Eliminating the "we/they" atmosphere. Cooperatively creating a "Maytag," resulting in the "lonely repairman" environment.
   - Service orientation: "When our customer looks good, so do we." Top executives who were previously DP managers believe that peer evaluations significantly affected their promotion.

2. Concurrence in objectives, freedom in design.
   - Avoiding myopia: Not limiting design alternatives in hopes of expediting system development. Assurance that the best solution is attained can occur with only 5% of the project budget devoted to this phase of the life cycle.
   - Designing presidents: Once the project objectives are clarified, letting the leader be "president of his company" — with considerable autonomy in meeting objectives.
   - Nourishing champions: "A new idea either finds a champion or dies" — Edward Schon.

3. People are our most important resource.
   - Grab a grizzly: Originated by Hewlett-Packard, this concept means that people will tackle almost impossible tasks when they believe they have personal impact on a worthwhile project.

4. Feedback: Which one of us does not have almost instant recall on positive feedback, regardless of its remoteness? For example, we still remember the positive strokes from elementary teachers, coaches and counselors. Creative managers think of dozens of ways to encourage their people.

5. Demonstrating the value of values.
   - Value clarity: Translating the company's "guiding beliefs" into tangible entities. For example, identifying how system specifications can include provisions to enable a user department to achieve its quantitative objectives.
   - Value application: Making sure that the company's "guiding beliefs" are really guiding DP management actions.
   - Interaction: Managers who are also leaders are out interacting with their people — not to monitor performance but to encourage and share ideas and ideals.

   - Concentrating on lifestream systems: Ensuring the efficacy of those systems key to the life and

m3278/SPF puts micros on-line to mainfra
Is it possible for a DP department to reach the plateau of excellence within a company that itself is not on the Peters/Waterman list? The answer is yes, unequivocally.

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A limited number of programmers have mainframe access at any given time. m3278/SPF can help.

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Matrixless: Allowing undulating boundaries so teams can continuously interact and share ideas.

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Centralist values: When values are central, implemented in people-oriented programs, desired results in areas like standard-compliance and performance (both quality and quantity) follow naturally.

Microcosm excellence possible

Is it possible for a DP department to reach the plateau of excellence within a company that itself is not on the Peters/Waterman list? The answer is yes, unequivocally.

Delta President Tom Beebe describes an open-door policy for everyone from pilots to flight attendants. No one — not the chairman, president or vice president — has an administrative assistant whose job is to screen such visitors. Hewlett-Packard's Bill Hewlett relates his conviction that employees want to do a good job, a creative job, and will do so if given the proper environment.

Key here is treating workers with consideration and respect.

The following statement by Peters and Waterman not only summarizes the main factors which identify the excellent companies, it also serves well as the set of guiding beliefs for a DP department aspiring to excellence: "These companies are simultaneously externally focused and internally focused — externally in that they are truly driven by their desire to provide service, quality and innovative problem-solving in support of their customers; internally in that quality control, for example, is put on the back of the individual line worker, not primarily in the lap of the quality control department. Service standards likewise are substantially self-monitored. The organization thrives on internal competition. And it thrives on intense communication, on the family feeling, on open door policies, on informality, on fluidity and flexibility, on nonpolitical shifts of resources. This constitutes the crucial internal focus: the focus on people."

About the Author

J. Daniel Cooper, Jr., is Distinguished Professor of Computer and Management Science at the University of Colorado, Colorado Springs. He has lectured in more than 50 countries and written 15 books and more than 60 papers.

Prior to his academic appointment, Cooper served as a manager in the computer department. In 1973, he was selected as U.S. Computer Science Man of the Year.
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How to keep employees from telling company secrets

Negotiating, drafting, executing and enforcing employment contracts

By Tobey B. Marzouk

Firms operating in the high-technology marketplace often commit a crucial business error: They fail to provide an employment contract that limits employees' ability to divulge confidential information and compete with or otherwise damage the employer.

Since the employment contract will ultimately govern relations between employer and employee, it is essential for any firm working in the high-tech area to establish careful procedures for negotiating the agreement. Failure to comply with certain procedural and legal requirements before executing a contract may nullify its effect or preclude its enforcement. A firm engaged in contract negotiations with prospective employees should observe the following guidelines.

1. Watch what you say during contract negotiations. Company representatives should be extremely careful in what they say to prospective employees. Even though a contract may be drafted to prevent an employee from enforcing oral commitments not embodied in that contract, a court may, in certain circumstances, rely on oral statements made by the employer to determine the meaning and intent of the parties.

In Weiner vs. McGraw-Hill, Inc., which was decided in New York in 1982, a prospective employee was assured by a company representative that the firm's policy was to terminate employees only for "just cause," and that employment at the company had the advantage of job security. The employment contract also referenced the employer's personnel handbook, which represented that "the company will resort to dismissal for just and sufficient cause only."

After several years of employment, the employee was dismissed for "lack of application." He subsequently brought suit against his employer for wrongful dismissal. The New York Court of Appeals held that the employee could sue his former employer based on the oral representations and assurances made to him prior to his employment, as confirmed by the statement of policy set forth in the firm's personnel manual.

Clearly, an employer should not make any gratuitous oral promises during contract negotiations. If relied upon by the
prospective employee, those promises may come back to haunt the employer later. 2. Carefully draft personnel policy manuals. In addition to oral assurances made by the employer during contract negotiations, written statements in office handbooks or personnel manuals may be used to expand an employee's rights under a contract. In several recent court cases, employees have been able to enforce personnel policy manuals as supplements to their employment contracts and thereby bind their employers beyond the specific terms of the individual contracts.

While a personnel manual serves the useful function of informing employees of company policies, a firm must exercise extreme caution in drafting the manual. A statement should be included that the manual is not intended to constitute any type of contract between the company and the employees. Indeed, words to the effect that the policies set forth in the manual, particularly those involving employee terminations, are meant only as guidelines, not rigid standards. This disclaimer should not, however, be used as a substitute for careful drafting of the manual's contents. Where the disclaimer contradicts other expectations raised by the contents of the manual, the ambiguity in the manual will be construed against the employer. In addition, the manual should not include unnecessary details about termination policies. The more specific the standards and procedures for termination, the more likely an employee will claim substantive and procedural rights arising from the manual and the more likely a particular termination will violate the standards set forth in the manual.

In short, a personnel or office manual may be used against an employer, particularly if the employer should make every effort to limit the binding effect of the manual to avoid unforeseen liabilities to employees.

3. Give the employee ample opportunity to review the contract. Personnel and high-tech firms present a proposed employment contract to a new employee on his first day of work, thereby giving him no meaningful opportunity to review the contract or negotiate specific terms. As a matter of policy, however, the firm should provide the prospective employee a copy of the employment contract before he starts work. Following this procedure will guard against any allegation that the employee was placed at a disadvantage relative to the employer.

An employer who fails to give a prospective employee this opportunity to review the proposed contract may be unable to enforce it, particularly if a court concludes that the employee was not given a fair chance to negotiate the terms of his employment. In Pemco Corp. vs. Rose (decided in 1979), the defendant was offered and accepted employment with an engineering firm in West Virginia. Thereafter, the defendant canceled his housing lease in Washington, D.C., signed a contract to purchase a home in West Virginia and moved all his personal belongings to his new place of residence. When the defendant arrived at his employer's offices for the first day of work, he was asked to sign an "agreement" restricting his right to compete with his employer should he leave the firm.

Having already moved to West Virginia, the defendant had no choice but to sign the contract. In an action by the former employer to prevent the defendant from working for one of the employer's competitors, the court concluded: "Under the circumstances which deprived the employee found himself, it is beyond cavil that his ability to negotiate with respect to the postemployment restraint was markedly diminished. At the very least, the employee was not as freely able to bargain concerning the provision he was at the time [he received the offer of employment]. The overreaching nature of the contract renders it a freely bargained-for term or condition of employment, but rather was a term or condition of employment extracted from or imposed upon an employee under circumstances which deprived him of any fair ability to negotiate." Failure to provide the prospective employee with a
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TOO MANY COMPUTERS, TOO FEW CHOICES.

With the personal computer shakeout at hand, people are beginning to ask some hard questions about personal computer companies.

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How many can provide in-depth sales and maintenance training to dealers? How many have actually done so?

How many have thousands of qualified field engineers in place throughout the nation? How many can back up their commitments to technical advancement with truly significant R&D budgets?

How many will even be making personal computers a few years from now, much less sustaining their commitment to their customers beyond 1990?

Companies that can answer those questions positively are the only real choices the personal computer user really has. There aren't many. And they're getting fewer all the time.

THE NCR PERSONAL COMPUTER.

That's why we developed the NCR Personal Computer. By all these criteria, it's the best choice for PC users.

For over 100 years, we've been helping businesspeople solve their problems. As a result, they believe in our products and they trust our support before and after the sale.

They're not surprised to hear that NCR builds a dual 8/16-bit Personal Computer with up to 512K that runs CP/M* and MS DOS.* They expect it from NCR.

Nor are they surprised by our Personal Computer's other advanced features. Like superior color graphics. 20 programmable function keys. Windowing capabilities. Expansion slots for quick, in-the-field upgrades. A remarkable plug-in diagnostic module.

All in a box smaller than those of its leading competitors. Plus a software library that includes the majority of the most widely used packages.

They expect nothing less from NCR. And neither should you.
A personal computer can become an even more effective business tool if it offers facilities for exchanging ideas and data between departments and offices.

The NCR File Sharer lets our PC do just that. It can connect up to 64 PCs, from most major manufacturers, with the latest local area network technology.

PCs in the network can access databases and share files, records and peripherals. That helps every member of an organization work together, with the same common information, at the lowest possible cost.

The File Sharer offers system storage from 10-32MB, enough for most applications. Because some corporate data is not meant to be shared, extensive security features are available to protect individual files from unauthorized access.

Despite its advanced capabilities, our Personal Computer network is easy to install. Right in your customer's office.

More PCs can be added to the network at any time.

And upgrades are available to expand its capabilities even further.

Impressive?

Yes. But by now that should come as no surprise.
SOMETIMES IT'S BETTER TO BUY RETAIL.

THE NCR PERSONAL RETAIL COMPUTER.

No other company is better qualified to build a Personal Retail Computer than NCR. We pioneered the cash register, back in 1884. Since then, we've continually enhanced new retail management technology. From small point-of-sale terminals to state-of-the-art, multi-user inventory management systems.

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HOW TO SELL RETAIL.

It's easy.

The NCR name is a quick foot in the door. And from there on, the Personal Retail Computer's advanced features sell themselves.

The PRC comes with 256K of memory, expandable to 512K with a plug-in cartridge. An electronic cash drawer and a choice of a receipt or an 80-column report printer, or both, complete the hardware package.

But it's the PRC's retail management capabilities that make it such an easy sell.

First of all, it's easy to use. Really easy! 9 dedicated function keys handle standard transaction sequences with a single keystroke. Keying errors are easily corrected, eliminating time-consuming voiding procedures. Helpful screen messages, in plain English, guide clerks step-by-step through each transaction.

Commands are in plain English, too, so clerks don't have to be trained to remember confusing codes. And with an optional bar code reader, sales data can be fed into the system automatically.

The system is secure, as well as easy to use. Access is granted or denied by an I.D. number verification routine. And sensitive sales information can be password-protected, field by field.

And of course sales reports can be automatically generated by salesperson and item at any time during or after the business day. So users can keep better control of their business.

To extend that control even further, our optional Inventory Management software can store up to 19 separate facts about as many as 32,000 unique inventory items.

Inventory levels are then automatically displayed and adjusted during each sale, giving store managers a clear picture of what they have on hand at what prices. A CPA-recommended profitability index is an integral part of the package.

To make our retail management system into a complete company management system, our retail software can be interfaced with general accounting packages. All at a price far lower than a traditional retail management system.

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COMPUTER COMPANY
HAS BEEN UP
AND RUNNING SO LONG.

EST. 1884
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A dependable, stable company with 100 years of experience delivering innovative products to help businesses solve their problems.

$3.1 billion strong.
We're the second largest supplier of business information systems in the world. We'll be around after the personal computer share.

65,000 employees worldwide.
Including 18,000 service personnel in hundreds of service locations, we're dedicated to serving the unique needs and requirements of computer companies that can't make good.

A steady record of technical innovation.
and a proven production line of VCL mainstream

Commitment to quality.
Every step we take, from design to manufacturing to training, service, and support.

GOOD NEWS FOR DEALERS - SOFTWARE DEVELOPERS AND COMPUTER ENTREPRENEURS.

Until now, computer dealers like you have been at the mercy of one or two major suppliers. And a couple hundred companies who'd like you to believe they're going to make it big.

Now you and your customers have a choice. A company that's a strong traditional force in computers. One that's financially capable of playing the game for years to come. One with a name that first-time buyers know and trust.

To find out how to become an Authorized NCR Personal Computer Dealer, just call or write us today.

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And we want you to fight on our team.
Because we're committed to the future of the NCR Personal Computer and future generations to come.

We're committed to supporting our products. And doing so on a scale no upstart start-up can begin to match.

Which is just what you'd expect from NCR.
NCR PERSONAL COMPUTER

Feature Highlights
- Integrated design with small footprint
- VLSI technology
- Dual processors (8/16-bit)
- Customer installable
- Monochrome or color display
- Customer upgradable
- Fully illustrated self-training documentation
- Industry standard I/O interfaces
- Expandable memory and disk storage
- Detachable low profile keyboard
- Easy-to-use diagnostic cartridge
- Industry standard operating systems
- Powerful graphic processor
- Windowing capabilities

Central Processor
- Z-80A* 8-bit (4 MHz)
- 8088 16-bit (5 MHz)

Memory
- RAM—64K
- Upgradeable to 512K
- ROM—4K

Graphic Processor Memory
- 32K (monochrome)
- 96K (color)

Video Display
- 12" monochrome green/black or color
- 24 lines
- 80 characters/line
- 640 x 400 dot addressable

Keyboard
- Detachable low profile
- Alphanumeric + numeric key pad
- 20 programmable function keys

Disk Drives
- Configured with two flex disks or one flex disk and one Winchester disk

Flex Disk
- 5½-inch integrated
- Double density, double sided
- 500 KB each unformatted
- 320 KB each formatted

Winchester Disk
- 5¼-inch
- 10 MB integrated or 50 MB external

Peripheral Adapter
- Centronics parallel interface
- RS232C serial interface

Communications Adapter
- RS232C serial interface (async.)
- NCR local area network interface

Operating System
- CP/M® MS-DOS®

Physical Dimensions
- Processor: 14.9 in. Height, 18.1 in. Width, 14.6 in. Depth
- Keyboard: 52.9 lbs Weight
- Environmental: 50-95°F Operating Temperature, 20-80% Relative Humidity

PERSONAL RETAIL COMPUTER

Memory
- 256K

Retail Management Software
- RS-232C Interface
- Electronic Cash Drawer
- Centronics Interface

Choice of Receipt or 80 Column Printers (option)

NCR LOCAL AREA NETWORK

Transmission Rate
- 1 megabit per second

Transmission Link
- Twisted pair cable, up to 4000 feet in length

Network Access Technique
- CSMA

FILE SHARER

I/O Processor
- On-board RAM and controlware

Fixed Disk
- 10-32MBytes

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**MS-DOS® is a registered trademark of Microsoft Corporation
*Z-80° is a registered trademark of Zilog Corporation
Products for delivery in the USA will comply with appropriate FCC rules.
Given the frequency of job changes among professional employees at high-tech firms, an employer should know whether a prospective employee is bound by a contract with a former employer that restricts the scope of the employee's work.
To ensure complete protection of its trade secrets, a firm should require its nontechnical support personnel, as well as its technical employees, to sign confidentiality and nondisclosure agreements. Nontechnical or lower-level employees often have access to considerable proprietary data.

To preserve the confidentiality of such information, the firm should also require these individuals to sign confidentiality and nondisclosure agreements.

Such agreements, when carefully enforced, serve to place employees and other affected parties on notice that their jobs might involve trade secrets. The employee is therefore more likely to be "secrecy conscious" and to exercise prudence with respect to confidential matters entrusted to him. Confidentiality and nondisclosure agreements can also assist the firm in convincing its existing and potential clients that confidential information submitted to it will be protected from disclosure. The firm is therefore advised to require all prospective employees and independent contractors, as well as visitors with access to confidential information, to sign such agreements.

2. Protect trade secrets and confidential information through covenants not to compete. In addition to disclosing trade secrets to any new employer who might be in competition with the old employer, (b) to prevent other firms from "buying" confidential information by hiring employees of a competitor and (c) to prevent the employee from appropriating confidential information to start his own business.

8. Make sure the employment contract transfers to the employer the rights to all works by the employee. Under the Copyright Act of 1976, a computer program or other work prepared by an employee within the scope of his employment is a "work made for hire," and the employer or other person for whom the work was prepared is considered the author and owns all rights in the copyright.

Accordingly, absent an
employment contract that provides otherwise, copyright in all the works produced by an employee in fulfilling his duties vests with the employer. Some question, however, might arise as to whether an individual is an "employee" — under the direct control and supervision of the employer — or an independent contractor and whether work performed by an employee is within the scope of his employment. To avert any misunderstanding or confusion between the employer and the employee on these questions, the employment contract should include the following provisions, tailored to fit each employer's needs:

(i) All work by the employee or independent contractor is deemed to be a "work made for hire" to which copyright vests with the employer.

(ii) To the extent any work performed by the employee or independent contractor is not a "work made for hire," copyright in the work is assigned and transferred to the employer.

(iii) Copyright in any work performed during work hours (including lunch), on the employer's premises, or using the employer's facilities or money vests with and is transferred to the employer.

(iv) The employee must disclose, assign and transfer to the employer all patent and trademark rights to any ideas or inventions developed during the course of employment that involve the employer's business and products.

4. Include family members in the employment contract. Too often, computer firms fail to place any contractual restrictions on the employer's family. To prevent the improper or unauthorized use of trade secrets and confidential information by the employee and his family members, firms should include a provision in all employment contracts restricting the employee, directly or indirectly through a family member or other person acting on his behalf, from serving as an officer, director or employee of another company without prior approval of the employer.

The courts have held that such contractual provisions are reasonable and not in violation of antitrust laws. In Moore vs. Honeywell Information Systems, Inc., for example, a federal district court upheld a policy restricting employees and their family members from working for or owning an interest in a computer firm's competitors. The court reasoned that where one family member, a spouse, is engaged in a competing business, "it would be perfectly reasonable to conclude that the interests of both parties will eventually intertwine, since the success of the spouse's competing business will be of a real and direct benefit to both spouses."

The court went on to note that in the computer industry, a company policy restricting family members is both reasonable and essential: "Honeywell [the employer] is undoubtedly in possession of valuable trade secrets, such as software programs, marketing techniques, market studies and other valuable information developed perhaps at great cost to the company. The employment policy here seems to be a reasonable means to prevent the improper and unauthorized use of such information by persons or businesses which may unjufully benefit themselves with such information."

To avert any conflict of interest, therefore, a computer firm is well advised to place restrictions on family members of its employees.

5. Make sure the contract identifies a jurisdiction or forum whose law will govern.

The law governing employment and contractual relations varies from state to state. Accordingly, a firm should specify in the employment contract the jurisdiction or forum whose law will control the
The use of arbitration to resolve contract disputes between an employer and an employee is usually less expensive and more speedy than court litigation and should be considered seriously by the employer.

Interpretation and enforceability of the contract. The selection of a jurisdiction should be made in consultation with counsel, based upon such factors as whether the employer and employee have sufficient contacts with the particular state and whether the governing state law is favorable to the employer. The contract should also require the employee to consent to jurisdiction in the appropriate state(s) most convenient to the employer. In this way, if legal action must be initiated against an employee to enforce the terms of an employment contract, the employer will not be required to litigate his case in a distant jurisdiction. Courts, however, will not enforce such provisions when they are so burdensome as to be unconscionable. Finally, the employer might wish to require employees to submit certain contractual disputes to an arbitration board pursuant to standards set forth in the employment contract. The use of arbitration to resolve contract disputes between an employer and an employee is usually less expensive and more speedy than court litigation and should be considered seriously by the employer.

6. Include a severability clause in the employment contract. A severability clause should be included in every employment contract. Such a clause states that every paragraph or condition in the contract is considered a separate entity and may be enforced separately, regardless of the validity of the remainder of the contract. If a contract lacks a severability clause, a decision by a court to strike one contract provision could void the entire contract. A severability clause therefore ensures that if one paragraph in the contract is declared invalid, the other paragraphs will remain enforceable.

7. Include an integration clause in the employment contract. Another provision that should be in every employment contract is an integration clause. This clause reflects the intention of the parties that the written contract is an integration of the entire agreement and constitutes the sole evidence of such an agreement. A typical integration clause reads: "The employee agrees that this contract is the complete and exclusive statement of the agreement between the parties, which supersedes all proposals or prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement."

The purpose of an integration clause is to prevent both parties from relying upon statements made prior to, during or after contract negotiations. In the absence of an integration clause, a court may be inclined to expand the contract terms by looking to the general subject matter of and the circumstances surrounding the contract, particularly if the contract is fragmentary, ambiguous or uncertain. To guard against allegations by the employee that the employer made various promises and assurances not embodied in the contract, an integration clause should be included as a standard provision.

8. Remind the employee of the legally binding effect of the employment contract. Every employment contract should end with a statement that the employee acknowledges that he has read the agreement and agrees to abide by its terms. In addition, the contract should state that it is legally

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binding and that the employee has the right to consult with legal counsel concerning the contract terms. Such a provision will (i) stress to the employee the importance of the contract and the employer's intent to enforce it and (ii) place the employee on notice that an attorney may be necessary to review the contract.

Executing the contract

Execution of the contract is largely a formal, uncomplicated procedure. The employer, however, should adhere to the following guidelines.

1. Have the employee sign each page and initial important paragraphs of the contract. As a matter of policy, the employee should sign every page and initial all important paragraphs, particularly paragraphs involving confidentiality and nondisclosure agreements and covenants not to compete. This procedure will guard against any allegation that the pages of the contract were replaced. In addition, it will highlight significant clauses of the contract, thereby undercutting any claim by the employee that he did not read or was told to ignore certain important paragraphs.

2. Be careful with employment contracts with existing employees. Many high-tech firms begin as a small group efforts with "technically oriented" personnel who view attorneys as intruders in the firms' technical or business domain. This attitude has led to rude awakenings when, several years into operations, those firms realize they have no formal confidentiality agreements and covenants from their employees not to compete. The prime objective then becomes to secure such agreements at the least possible cost.

Before executing employment contracts with an existing employee, the firm should consult with legal counsel to determine whether the governing law requires that additional consideration be provided to the employee. Consideration is, in effect, something of value given in exchange for a promise. For a prospective employee, the consideration is that he will be employed and will receive a given salary and certain benefits in exchange for signing the contract and agreeing to be bound by its terms.

An existing employee who executes an employment contract, however, already has a job. Some jurisdictions have held that continued employment alone is not adequate consideration for an existing employee who is required to sign an employment contract containing restrictive covenants.

If an employment contract with an existing employee is governed by a jurisdiction that requires additional consideration, the employer should provide some benefit to the employee in exchange for signing the contract. The benefit could be a small cash bonus, a salary increase or a job change. To ensure that no additional sums are spent, the firm could require existing employees to execute contracts prior to annual salary adjustments and treat this increase in salary as consideration for the contract.

Enforcing the contract

Most employees will abide by the restrictions in their employment contracts. In some instances, however, the firm will be required to enforce its contracts to ensure compliance by its employees. In this regard, a firm must be willing to take legal action when necessary and to implement certain in-house procedures to protect its interests.

1. Make sure the departing employee submits to an exit interview. Whenever an employee terminates his employment, an exit interview should be held to remind the employee of his obligations under the contract. Specifically, the interview should stress the importance of maintaining the firm's confidential information and trade secrets and should remind the employee of any covenants not to compete against the employer.

The employer also should require the departing employee to execute a termination agreement acknowledging obligations and restrictions set forth in the employment contract. Naturally, an employee's unwillingness to sign such an agreement will cast serious doubt as to whether he will preserve the employer's trade secrets and otherwise comply with the employment contract.

2. Establish in-house policies regarding the use and disclosure of trade secrets. As discussed above, trade-secret protection for business information is available only if the employer makes efforts to maintain such information as secret. Accord-
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Since 1977, hundreds of companies all over the world including Bell Labs, Citicorp, ITT, Litton, Westinghouse—have used Local Data products to make IBM communications easy and inexpensive. We believe that DataLynx™ 3274 is the best price/performance 3270 protocol converter on the market.

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ING Gallery
The law of the industry, 1984

By Richard Raysman

The more well-known computer-related lawsuits of recent years have been analyzed at length — Glovatorium vs. NCR Corp., a user/vendor case; Apple Computer, Inc. vs. Franklin Computer Corp., a test of software copyright protection; and Computer Systems Engineering, Inc. vs. Qantel Corp., a distributor/vendor dispute.

But many other legal decisions in the industry were overlooked by the national press in the past year. The dollar amounts involved may have been relatively small or the trial locations far from the legal limelight of New York, California, Illinois and Washington, D.C. Nevertheless, these decisions can set precedents, thus influencing the way companies must do business.

The most common computer-related lawsuits involve a dissatisfied user filing suit against a vendor. The frequency of such suits has increased along with industry expansion and systems expenditures.

Cases in which one vendor sues another are becoming more common and may overtake
Honeywell computers help Trailways move over 20 million people a year at the touch of a button.

Trailways faced a challenge recently. They wanted to improve cash management, the accuracy of pricing and scheduling, and the efficiency of their terminal operations.

So they came to Honeywell, and together we worked out a solution based on our microSystem 6/10. Now, at the touch of a button, ticket agents can see schedules, routes and rates for thousands of Trailways' destinations. The possibility of error is all but eliminated. The system even prints the tickets automatically.

Trailways' managers will benefit by having faster access to data. For example, the system facilitates interline accounting and furnishes feedback on marketing campaigns—a critical edge in a newly deregulated environment.

What's more, the microSystem 6/10 is easy to use, easy to program, and compatible with the Honeywell minicomputer and mainframe host at Trailways' home office. (Only Honeywell has total instructional set compatibility for micros, minis and mainframes.)

The microSystem 6/10 has 512K of memory. More than enough to handle the vast amounts of rate/schedule data Trailways must store, as well as information on daily transactions.

And the system is a snap to install, reliable, and backed up by Honeywell's nationwide service organization.

Information control. That's what keeps Big Red rolling.

For more information on the microSystem 6/10 and the advantages of full-line compatibility, call 800-328-5111, ext. 2708 (In Minnesota, call collect 612-870-2142, ext. 2708) or write Honeywell Inquiry Center, 200 Smith Street (MS 440), Waltham, MA 02154.

Together, we can find the answers.

Honeywell
user/vendor lawsuits in importance. Usually, more money is involved in vendor/vendor litigation, and a small vendor's business may be at stake. A user typically sues a vendor over a specific transaction. Its business may also be at risk in cases where it must endure extreme delays or systems malfunctions resulting from actions of the vendor.

The lawsuit of Burroughs Corp. vs. Century Steel, Inc., is a good example of the troubles that can occur when a buyer of computer goods and services negotiates with the primary manufacturer but then finances the purchase of the equipment through a third-party leasing company. If difficulties subsequently transpire, the primary manufacturer will often claim that there was no "privity" of contract.

Without privity of contract, the primary manufacturer takes the position that the purchaser had no direct contractual relationship with the primary manufacturer, and therefore the primary manufacturer has no legal obligation toward the purchaser. If the legal concept of privity of contract is upheld by the courts, the primary manufacturer effectively insulates itself from legal obligations in any situation where a computer purchaser has financed the equipment through a third-party lessor.

Century Steel negotiated the purchase from Burroughs of a minicomputer and accompanying software. Burroughs agreed to deliver and install a workable software system to Century Steel. Since the buyer required financing, it negotiated a lease of the equipment for 60 months from a leasing company. In less than a year after the lease agreement was signed, it became apparent that Burroughs was unable to install the computer and software. Century Steel thus moved the Burroughs equipment out of its office to a warehouse and had another installed.

Subsequently, the leasing company filed a lawsuit against Century Steel for nonpayment of rent. Century Steel then cross-claimed against Burroughs, setting forth the legal position that if the leasing company were successful in its complaint against Century Steel, then Burroughs should be responsible for paying the judgment to the leasing company. The trial court's decision, which was subsequently upheld in appeals court, determined that Century Steel was entitled to recover from Burroughs all of the rental payments paid by Century Steel to the leasing company.

The legal position of Burroughs, which was not upheld by the court, was that there was no privity of contract between Burroughs and Century Steel. Burroughs claimed that the equipment was sold to the leasing company, which, in turn, leased the equipment to Century Steel, and that Burroughs and Century Steel had no legal relationship. However, there were two equipment sales contracts signed by Burroughs and Century Steel, and those contracts were subsequently sold by Burroughs to the leasing company.

In making its decision, the trial court took into consideration that the leasing company did not make any representations or warranties with respect to the condition of the equipment and did not assume any liability for loss or damage resulting from delays of delivery or installation of the equipment.

Further, in the lease agreement, Century Steel received the benefit of any of the Burroughs warranties with respect to the agreement. The equipment was shipped and installed by Burroughs. Technical employees of Burroughs worked on the installation of the software at Century Steel's location.

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Just to be sure, though, you can invoke the COMPARE function to ensure that the backup tape contains exactly the same data as the disk.

FAVER/XP beats IDCAMS

In benchmark tests where an OS/VS installation runs backup & restore routines using IDCAMS and FAVOR/XP, FAVOR/XP completes the tasks required in half the time.

These figures are taken from actual timings made by product managers at Goal Systems International, the authors of FAVOR/XP. They cover 100 product installations spanning five years of operation.

"The difference in speed is due to a systems design that combines the speed of a physical dump/restore with the design philosophy of logical file access," said Theodore Pepper, Chief Developer at Goal.

Works with VSAM/AD/XP for total VSAM management

Goal Systems International has revealed that they have an interface between the FAVOR/XP Backup & Restore system and the VSAM/AD/XP system which creates the only complete VSAM dataset management system available today.

During backup, the FAVOR/XP interface creates a historical file, which may then be used by VSAM/AD/XP to create a recommendation report. The report tells resource managers how to man-

age VSAM datasets for optimum space utilization. VSAM/AD/XP recommendations may be implemented with one command through the FAVOR/XP Auto-Delete Define facility.

FAVER/XP and VSAM/AD/XP are great news for OS/VS installations. They are two of the Extended Productivity Systems from Goal Systems International. Both are available for a free trial. Call Goal Systems toll free today.

800-848-4640
The trial court also found that the equipment sales contract had been signed between Burroughs and Century Steel had not been abandoned or rescinded by mutual agreement and, thus, there was privity of contract between the two. The appeals court recognized that there was substantial evidence and support of the finding that Burroughs failed to deliver properly and install a workable software system.

The award in favor of Century Steel was upheld. But Century Steel had to endure litigation for more than five years.

When third-party financing is involved, a computer user can help to avoid claims of no privity of contract by making sure that there is a signed agreement directly with the primary manufacturer of hardware or the primary supplier of software. Then, if the system is not properly installed, the primary supplier cannot claim at a later date that there was no legal relationship with the end user.

Claims of fraud

Fraud claims have always been a serious threat to computer vendors because of the risk of substantial punitive damages associated with the final swan. In Dunn Appraisal vs. Honeywell Information Systems, Inc., a trial with a judge and no jury, the judge awarded not only compensatory damages but also punitive damages plus attorneys' fees. This decision was unusual in that most often, punitive damages are awarded in jury decisions.

Dunn Appraisal was engaged in the automobile damage appraisal business. In 1976, Dunn was using an older Honeywell model computer and desired to upgrade its equipment. Over a period of almost one year, two sales representatives from Honeywell persuaded Dunn executives to upgrade to a newer model Honeywell computer.

One of the main issues in the discussions between Dunn and Honeywell was that of program conversion. Approximately 400 programs were involved. Honeywell representatives understood that a successful conversion effort would take two to four man-years to complete.

Nevertheless, Honeywell sold the system to Dunn, assuring the company that Honeywell would convert all of the programs at no charge. Although there were 400 programs, the Honeywell representatives specified only 250 programs in the written agreement, assuring Dunn orally that the lower number was inserted simply to satisfy the Honeywell front office and that Honeywell would, in fact, convert all programs.

The trial court found that a relationship of trust and confidence existed between the parties. The Dunn situation is a pattern for a fraud claim: Dunn representatives were relatively unfamiliar with computers and relied primarily on Honeywell representatives for advice and guidance.

The trial court found that from the beginning, the conversion project was an "unmitigated disaster." After a period of time, Honeywell informed Dunn that it would not use its new computer to conduct business.

The judge in the trial court awarded Dunn $61,573 in compensatory damages plus attorneys' fees of $24,628. This award was upheld on appeal.

The Dunn result illustrates emerging trends in user/vendor litigation. Punitive damages were awarded and upheld, even though there was no jury involved; attorneys' fees were awarded by the court; and the court allowed compensatory damages for lost executive time. The trial court found numerous items of misrepresentation and good-faith reliance by the purchaser upon false and misleading statements made by the vendor.

Conversely, now that many computer purchasers are becoming more sophisticated in their knowledge, claims of fraud may not be as believable since the users are not relying as significantly on the vendor's representations as they have in the past. Many users are retaining independent consultants. Where users retain competent technical assistance, a fraud claim would be much more difficult for them to prove.

OEM/manufacturer relations

Not infrequently, small OEMs have difficulty entering into volume discount arrangements with primary manufacturers. The manufacturers
FQS allows end-users to query the computer for every information request, instantly.

No more burdening the DP department with programming of ad hoc reports. No more need to learn higher level languages which are still gibberish to an end-user.

FQS is the only CICS or SHADOW-based information retrieval system designed to be on-line from day one. It contains all of the best facilities for sorting, selecting, and printing contained in EASYTRIEVE/on-line, SQL and other batch systems. But FQS is instant, a true on-line query system, menu-driven to allow anyone to get information quickly. Security procedures allow you to control access to valuable corporate information.

Surely, you've outgrown that old batch report writer by now. Isn't it time you moved beyond batch reports and into the simplified world of on-line queries?

Your users will get exactly the information they need because they define it. They will have results in mere seconds. And, your programming staff will be freed to spend their time more effectively.

Call today for complete details on FQS, the Friendly Query System. Go on-line. Go Altergo.

*Silver service not included with product.
sometimes are understandably reluc-
tant to become involved with OEMs who
to become involved with manufacturers who
desire the opportunity to enjoy a
profitable relationship with the primary manufacturers.

An example of an initial relation-
ship that developed amicably is.

There were numerous discussions
between representatives of
Computer Dimensions and Basic Four. The
only signed written agreements were
purchase orders signed by Computer
Dimensions on oral rep-
resentations. When a dispute arose between Computer Dimensions and Basic Four, there was a sub-
sequent supplemental agreement
where Computer Dimensions agreed to
pay Basic Four $10,000 in ex-
change for releasing Basic Four from
any liability and delivery by Basic Four to Computer Dimensions of cer-
tain computer equipment.

There were also volume discount purchase orders signed by Computer Dimensions and Basic Four, thus, not mutually agreed written agreements. Basic Four sued Computer Dimensions for payment, and Computer Dimensions counter-
claimed that Basic Four had fraudu-

cently induced it to sign the settle-
ment agreement. Computer
Dimensions claimed that Basic Four had given oral assurances that after signing the settlement agreement, Computer Dimensions would become a Basic Four OEM dealer and could immediately start selling the Basic Four systems.

The court held that any reliance by Computer Dimensions on oral rep-
resentations was unreasonable when the settlement agreement expressly
released Basic Four from any liability
and that Computer Dimensions was not prevented from reading the con-
tact. The court seemed to take a rather impatient view of the claims
by Computer Dimensions that in this vendor/vendor arm's-length negotia-
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As a result, in a lengthy opinion, the court dismissed the Computer Di-


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January 16, 1984

IN DEPTH/LAW, 1984

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Video games

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tect their products. Most of the
right infringement claims against
companies that have developed imi-
tators to such video games as Pac-
Man.

One of the more recent video game
lawsuits, Atari, Inc. vs. JS&A Group,
Involves a dispute other than a

game imitation. Atari game car-
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ditional works of authorship.

JS&A is a retailer of electronic
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Primary lithium carbonate in your

Prolong your effective contact time as long as

the difficulty that manufacturers
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The Consolidated lawsuit is indicative of the serious difficulties that can occur between a manufacturer of computer equipment and its distributors. The maturing computer industry is experiencing the manufacturer-distributor difficulties long common in other industries.

Thursday, February 2, 1984
User Sessions:
The Anatomy of the IBM PC
Defining Levels of Compatibility Between Systems
Overview of Compatibles: Desktops and Portables
Word Processing Software
Database Management Software
Business Graphics Software
Analyzing Your Software Requirements
Overview of Major Business Applications Software
Integrated Software Solutions

Quite simply, the PC World Exposition is the biggest event in Texas for the most important computer in history. Don't miss it.

FEBRUARY, ALL EYES IN TO THE IBM PC

P
Plus, we'll present personal computer experts from around the nation in an up-to-the-minute conference program. You'll learn how to choose and how to use the technology and equipment surrounding the PC family of microcomputers. Here's a partial listing of the conference sessions:

Wednesday, February 1, 1984
User Sessions:
The Benefits of the IBM PC for Small Businesses
Financing Options and Tax Advantages
Available Add-Ons and Peripherals
Software: What's Available and How to Find It

What Do the Compatibles Have To Offer?
How I Became Compatible With My IBM PC
Medical/Dental Applications for the PC
The PC in the Law Office
PC's and Real Estate
Manufacturing Resource Planning with the PC
Invention Software for the PC
CPA Software: The Bottom Line
Software for Insurance Applications
Distributed Control Software for the PC

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FREE ADMISSION to one Conference Session of your choice. Just present this coupon at the Registration Desk any day of the Show, pay the regular $10 exhibits only admission and choose any one Conference Session free of charge. One coupon per person.

The PC World Exposition
Houston
February 1-3, 1984, Astro Hall

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IT'S WHAT THE WORLD IS COMING TO.
of warranty with respect to the CRT terminals.

Regardless of the outcome of the Consolidated lawsuit, it is indicative of the serious difficulties that can occur between a manufacturer of computer equipment and its distributors. The maturing computer industry is now experiencing the manufacturer-distributor difficulties long common in other industries.

There have been a number of recent lawsuits addressing the issue of adequate protection of confidential technological information. A particularly good example of protection of sophisticated technology for purposes of protecting lead time was set forth in Textron, Inc. vs. Teleoperator Systems Corp. The Textron case dealt with the issue of an independent contractor, sophisticated in industrial robotics technology, providing confidential services for a valuable consideration.

Textron was in the business of making and selling machine tools and became interested in volume production of robots for industrial uses, such as in the automotive industry. Teleoperator had a reputation as an expert in the design of manipulators and robots. As a result of Textron's requirements, Textron and Teleoperator entered into an understanding that Teleoperator would develop an industrial robot designed for the benefit of Textron.

Although there was no formal contract, correspondence between the parties made it clear that Teleoperator would be permitted to utilize the resulting robot design in a noncompetitive manner with respect to Textron. For the design phase, Textron paid more than $800,000 in fees to Teleoperator.

After the development effort and in contravention of their basic understanding, Teleoperator claimed the design as its own and indicated an intention to enter into competitive applications of the technology.

As a result, Textron brought an action for injunctive relief, which was granted after a four-day hearing.

The court observed that to permit Textron to utilize the technology which would thrust it into a competitive position it should not rightfully enjoy would inflict severe damages on Textron. The court further stated that the damage would be inflicted by virtue of a ruinous competition between the parties that their agreement did not contemplate; it was expected that Teleoperator would only be given rights to noncompetitive applications of the sophisticated technology.

The Textron result shows the difficulties companies face when they must resort to retaining independent contractors to perform sophisticated and highly technological procedures. Having developed the technology, a consultant often wants to market the work to other organizations.

About the Author
Richard Raysman, an attorney with the New York City law firm of Brown, Raysman & Milleston, is chairman of the New York State Bar Association Computer Law Subcommitte. He coauthors a monthly column on computer law for the New York Law Journal. Raysman specializes in contract negotiation, litigation, protection of proprietary rights and other computer-related legal areas. He is coauthor of "Don't Rush To Court If Your Computer Fails," which appears in this month's Harvard Business Review.
Who's in control here?

By Jack Rahaim

The issue of micros in large organizations starts with the charter (real or perceived) of the DP department. In the past, there was no need to separate the role of information management — defining, processing, transmitting and storing information — from the equipment and applications that supported it. The DP department was the only show in town. Computer equipment was prohibitively expensive and complex for local organizational units or individuals.

But with the price and use barriers gone, suddenly the issue of charter becomes problematic: Who owns information management and who should own the equipment and applications that support information management?

There are a few alternatives for drawing up the DP charter:

- Define the charter to include both information management and the equipment.
- Define it as primarily information management and develop standards by which users can access and contribute to the organization’s information.
- Be silent or unclear about the DP charter and deal with the issues on an ad hoc basis.

What follows is an attempt to clarify the issue of charter by examining the risks and opportunities that emerge from the use of micros locally.

Risky situation

Many DP professionals, although reluctant to admit it, have had virtually no experience with micros and their applications. They have developed a number of elitist attitudes about the equipment and the ability of users to do anything meaningful with it. The thought of unsophisticated users selecting, installing and applying micros is enough to cause sleepless nights for seasoned DP veterans.

Much has been written about the loss of control that DP suffers when users purchase and operate their own micros. This loss of control includes the risk that micro users will begin pressuring DP for more and better applications using centralized and local data bases, designed with the same type of human interfaces that are currently available in some of the good micro software packages. In addition, users will demand that new applications be developed more quickly and at a lower cost than DP has been able to deliver in
An optical fiber that survives baking, stretching, and radiation promises to find many important military uses. The aluminum-coated fiber, developed by Hughes Aircraft Company scientists, was subjected to severe environmental testing. It withstood temperatures up to 400°C, high strain (2%) at temperatures to 400°C, and a heavy (1 megard) dose of cobalt radiation. The metal-coated fibers would have melted, snapped, and lost their ability to transmit light. The metal-coated fibers will replace electrical wiring in many avionic and seaborne systems.

The new Telstar 3 communications satellite carries solid-state power amplifiers to boost its ability to carry TV, radio, voice, and high-speed data transmission services. Telstar 3, owned and operated by American Telephone and Telegraph Co., is the first Hughes satellite to use solid-state amplifiers. When combined with advanced signal transmission techniques, these devices allow the spacecraft to carry nearly four times as many telephone calls as other satellites in service. Current satellites almost exclusively use traveling-wave tube amplifiers. While these tubes use the satellite's solar-generated power more efficiently, the solid-state amplifiers are more reliable and will last longer.

Approximately 2900 U.S. and foreign patents have been granted to Hughes inventors in the last 15 years. To honor its best and brightest talent, the company each year presents the Lawrence A. Hyland Patent Award to a handful of its outstanding inventors. The award, which includes an honorarium, is named for the company's retired chairman of the board. A leading electronics inventor and radar pioneer, Mr. Hyland was granted nearly 40 patents. Among his earliest was the one for the first shielded spark plug that permitted radio equipment to be used effectively aboard aircraft. To date 104 inventors have received the Hyland award.

A new computer system promises to reduce scrap and rework, thereby helping one Hughes group slash costs by an estimated $1.2 million annually. The Quality Information System (QIS), now under development, will compile and analyze data on how defects happen and how they are corrected. Information will be made available to manufacturing employees for immediate feedback and for use during production. Data will also be kept in a central historical file for future reference. QIS is expected to improve quality by spotting problems that stem from faulty design, poor supplier quality, and improper manufacturing methods. In addition, by keeping track of how often certain hardware needs replacing, the system will help pinpoint problems with components or their applications.

An ultramodern facility spanning 1.75 million square feet is the showcase where outstanding Hughes engineers combine advanced manufacturing techniques and production processes. Our complex is complete, so we're looking for experienced and graduating engineers to work on such programs as: infrared thermal imaging systems, laser rangefinders and designators, and missile launching and guidance systems. Send your resume to Hughes Electro-Optical and Data Systems Group, Professional Employment, P.O. Box 913, E9/M101, Dept. SE, El Segundo, CA 90245. Equal opportunity employer.

One of the most common complaints by DP managers in the past is that users lack systems understanding and appreciation. This lack of understanding has made it extremely difficult for both DP and the users to share ideas and language relating to business needs and the contribution automation could make.

The proliferation of micros (and good software) could, if managed properly, develop a new constituency of computer-literate users who are better able to articulate their needs and will have a better understanding of both user and systems issues which emerge from changing automation. Providing DP department support and expertise to the teams as they choose, purchase, install and begin using micros offers the opportunity to develop relationships which will benefit both the user and DP in the future.

One excellent way to support users and develop good DP/user relationships is through the learning center. In its basic form, the learning center is a one-stop combination of hardware, software, resource people and instruction designed to introduce new users to the world of micros. Most successful learning centers, however, gradually migrate into more than just places to learn how to use micros. The learning center can become the focal point for piloting new applications as well as supplying information and expertise on personal computer issues ranging from how to choose the right computer to how to use one productively on the job.

If the learning center is used properly, users will become productive and use different equipment, the capabilities and limitations of each, as well as the applications software available. In addition, the user can be taught the importance of dealing with data consistently and the advantage of being able to share data across applications. At the same time, the DP group will gain insight into the users' needs and the kinds of support that will be required on an ongoing basis.

In this environment, DP can begin to win the cooperation and understanding of users and begin developing the ability to influence users. If DP positions itself as being supportive to micro users, users will naturally look to DP for advice and support. This situation will allow the development of a strategy to give both DP and the users the optimum combination of access and control to the data.

If, on the other hand, users perceive DP as standing in their way in terms of
cro use in order to preserve DP's historical turf, the user will resist any attempts by DP to be involved with the issue of micros. DP departments will not have many opportunities to develop strong relationships with users. The way in which DP assumes a leadership position (as opposed to an autocratic one) will determine the success or failure of both the users and DP. It is strongly recommended that a strategy be developed to provide strong DP support and leadership for the user. Do it now or run the risk of losing the users as allies.

The equipment

The approach most users are being advised to follow is:

- Decide what you want to do with the computer.
- Choose the software that will allow you to do what you want.
- Choose the hardware that will best run the software you have chosen.

Although this approach appears valid, it assumes that the user will be using the equipment in a stand-alone or stovepipeder environment as opposed to an integrated work environment. Many micros were designed to be used as stand-alone applications machines. The reality of business, however, requires that information be shared and commonly understood.

It should be the role of DP to provide the expertise to assist users in choosing equipment that will satisfy their individual needs and integrate local (individual) applications with department-level data and applications and ultimately with corporate wide data and applications. As individual users, they will need the ability to integrate data between applications (data base to spreadsheet to word processing and graphics, for example).

Admittedly, most users will not understand the importance of this integrative approach. If they do not, credibility and influence become critical. If DP has positioned itself properly, the user will accept the notion of integration without really understanding it.

The opportunity is clear: to develop standards by which micros are purchased and interconnected. These standards, if handled appropriately, will be perceived as enabling by the users, and the result will be a network of computers that are truly integrated.

In a short time, the difference between micros and minicomputers will become harder to define. They are rapidly approaching each other in terms of functions, multiuser capabilities and price.

In DEPTH/WHO’S IN CONTROL?

As users begin understanding the value in integrating individual with department and department with corporate for both data and applications, the minicomputer becomes the logical choice at the department level to implement the integration. It becomes the place where individual and department meet corporate from the point of view of data, applications and standards.

The road to minis

There are several reasons that the use of micros leads to minicomputers. In a very short time, the difference between micros and minicomputers will become harder to define. They are rapidly approaching each other in terms of functions, multiuser capabilities and price.

68000 based computers are springing up all over the world. But, if you need a high performance microcomputer with performance to rival even the largest minicomputers, then you need the IBC Ensign. It outperforms them all.

The Ensign is a high performance 16 bit microcomputer employing the most advanced VLSI techniques available along with the ultimate in expandability. The system features support for up to 32 users, up to 64k bytes of memory, a double bit ECC memory, over 1.024M bytes of SMD disk capacity, both cartridge and 9 track magnetic tape support, and operating system support for UNIX and OS/VS-12.

The above features along with our exclusive multi/slove microprocessor architecture, make the Ensign a super microcomputer. The system utilizes two slave micros with a 4k byte buffer to handle all I/O. A third slave controls all disk and tape I/O. Another micro provides memory management with capabilities and speed significantly beyond standard UNIX™ circuits. This leaves the 68000 CPU free to process at its full instruction speed without any wait states. The result is a microcomputer that rivals the minicomputer in performance and expandability.

OEM's system integrators and dealer's! To find out more about the IBC microcomputer that outperforms them all and the best discount schedule and dealer plan in the industry, please call or write.

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Apollo recognizes the fact that there are two sides to every professional.

There's a part of a professional that involves their profession.

Then there's the part that goes to meetings, makes presentations, does budget, prepares documents.
According to recent reports, people who work with computers spend some 30% of their day working in their chosen profession. And 70% of their day just getting things done.

So we’re announcing some ways for making better use of both sides of their day.

For starters, we’ve set some new standards in high performance workstations. By introducing a new set of Apollo computational nodes so fast you don’t have to wait for them to figure out anything. Even when you’re working on Solids Modeling, Image Analysis, Finite Element Analysis, and VLSI Design.

The Apollo DN 660 and DN 460.

Inside you’ll find up to 4 MB of main memory with full 32-bit architecture and an integrated hardware floating point unit. And enough power to handle up to 24 concurrent processes, each with up to 256 MB of virtual address space. Plus high resolution bit map graphics that among other things, can do area fills at up to 320 million bits per second.

In other words, they’ve got all the power of a high performance supermini like the VAX 11/780* except that they sit at a desk. And go for a fourth of the price.

But even more important, each DN 660 and 460 workstation node you add to the Apollo DOMAIN network adds power instead of taking it away. Because each is a 32-bit workstation with network wide virtual memory that lets all Apollo nodes share data, software, programs, and peripherals transparently across the network.

But we’ve also introduced software that helps professionals work with the other side of their work: DOMAIN Professional Support Services. With Document, Mail, Calc, Calendar and File. All based on the more complex needs of the professional. And fully integrated with your application programs. So you can do all your work on the same system.

All of which should come as a very welcome development to every professional. Because we at Apollo are not simply making computers. We’re making workstations that work for professionals.

For more information call or write Marketing Services Director, Dept. Jl, Apollo Computer, 15 Elizabeth Drive, Chelmsford, Massachusetts 01824 (617) 256-6600, ext. 6608.

*VAX 11/780 is a trademark of Digital Equipment Corporation.
1983 was a very good year.

NCR introduced more major data processing products than any other high tech company.

NCR closes out its first century with one of its most impressive technological achievements, the NCR 9300. It's the first full 32-bit VLSI mainframe designed for business applications. The 9300 delivers the power of a mainframe at the price of a mini.

New computers for 1983 included the UNIX-based Tower, a microprocessor with the power of traditional minicomputers. NCR also added new multiprocessors to our top-of-the-line 8600 mainframe series.

We introduced the NCR Personal Computer specifically designed for the business/professional market. It provides dual processor capabilities to enhance performance, and is the first personal computer designed with networking in mind. It can function as an offline computer, an online terminal to your mainframe, or networked with other NCR Personal Computers and other popular PCs.

We strengthened our position as the world's leading supplier of retail point-of-sale terminals by introducing a wide range of new products. Included is a terminal that looks up the prices of over 14,800 items stored in its own internal bubble memory.

Our number one position in automated bank teller machines produced the technology for self-service airline, ski lift and service station terminals. We are the leader in electronic banking networks and electronic funds transfer.

Why did NCR introduce all these high technology products in 1983? We wanted to get a good start on our second hundred years. For more information, call 1-800-CALL-NCR. In Ohio, 1-800-543-4470.

And 1984 will be even better.

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Celebrating the future

UNIX is a trademark of Bell Laboratories.
People Express, one of America's fastest-growing airlines, chose an NCR 8600 series computer system to handle online reservations. NCR is the leader in online transaction processing equipment, communications and system software.
The Tower microprocessor packs a lot of computer power in a 29" x 27" x 7" package. Up to 16 operators, local or remote, can access the Tower at one time.
Debit cards and Electronic Funds Transfer became a reality in 1983. NCR is the leader in EFT technology today!
Bubble memory technology provides resident mass memory in the terminal for automatic price look-up for supermarkets and other retail stores.
The new NCR Personal Computer offers unsurpassed monochrome or color graphics. Industry standards are used throughout so the application programs you need are available now.
The NCR 9300, a roomful of computer power in a 50-pound box, was a big breakthrough in 1983. Add the 32-bit VLSI mainframe for a complete system price of less than $46,000!
Many managers are philosophically conservative when it comes to sharing data with middle managers and supervisors or across organizational lines. They will have to be convinced that sharing data offers more opportunities for productive use of information than it does risk for abuse.

It is just a matter of time until the new cliche about DP is how they are reacting to the explosion of minicomputers at the departmental level. The use of minicomputers makes it all the more critical that DP appropriately handle users during the micro explosion. The cost and control implications will be significantly more serious for minicomputers than they are for micros.

Such issues as upward and downward compatibility, record-level security (that is, the ability to allocate by record who is allowed to access any data) as well as communications capability need to be understood and worked out early in the process in order to assure integration between the user and the rest of the DP environment.

The architectural considerations concerning distributed data bases, ownership of records, location and integration of applications programs and communications strategies will all become critical as more users demand and expect access to their data.

The data

Perhaps the first place where users and DP will understand the implications of systems integration will be in the area of data. Access, security, quality, integrity and synchronization of data will determine the success or failure of DP's strategy for dealing with microcomputers.

For many organizations, the issues of data base management have been few and fairly easy to manage so far. A finite number of data bases were managed and controlled by very few technicians. Suddenly the concept of data access for multiple users opens a rat's nest of problems:

Data definitions: If users are to share data across organizations, systems and applications, a data dictionary approach will be required to manage the process. The data dictionary will need to contain data elements, who owns (and therefore updates) those elements, the commonly accepted definition(s) for those elements, the business rules and edits that apply, where they are used and in what environments (nodes, machines and so on) the elements are required. Without this commonality of understanding about data elements, there is little or no hope of ever being able to integrate data needs.

Data security: Users will quickly become unhappy with having to re-enter data that exists somewhere else in the organization.

Depending on the nature of the data, the security issues may in fact impede true data integration until organizational privacy issues are resolved. Many managers are philosophically conservative when it comes to sharing data with middle managers and supervisors or across organizational lines. They will have to be convinced that sharing data offers more opportunities for productive use of information than it does risk for abuse.

Once the organizational issues are resolved, the technical issues regarding access and update will keep the DP department busy for some time. As mentioned, record-level security is desired for minicomputers to be used in an integrated environment. Managers obviously have a need to access data from numerous data sources.
As the pace of technology keeps changing, even seasoned staffs find their skills are falling behind. Meanwhile, applications backlogs are skyrocketing. And in most companies, there's no time. Clearly, this is one of the more difficult challenges the DP department will face in managing the micro environment.

bases, and this need can hardly ever be neatly defined by the same groups of records for each application. For example, the view a user may need to have for on-line inventory may not (and probably does not) match the view the user should have for employee data. This variability will cause problems for the data base manager in terms of providing secure data partitions.


data integrity: Most well-designed microcomputers provide the capability of down-line loading data to local disks. When this happens, it essentially cuts the user loose from the controlled environment that DP has created. And, if not managed properly, it can result in the user's data being terribly out of synch with the rest of the organization.

The other issue of concern is the ability for more than one user to update data.

The only safe way to deal with both of these issues is through control: controlling the data base so that it is always in synch with itself by developing strict update rules about when and how data changes. In some environments, such as payroll/personnel, a weekly view can be used, while in others, such as inventory control, strict update responsibilities will help with the data integrity.

The user will have to be taught the significance of data and its relationship to time. Clearly, this is one of the more difficult challenges that the DP department will face in managing the micro environment.

Administration: For many years, organizations have tried to ignore the relationship between automation and administration. In reality, an organization cannot successfully implement an automated solution to any problem that is not well-defined from an administrative point of view. The processes that users will invoke to do their work will have a major impact on the timeliness and usability of the resultant data.

More than likely, coordinating the administrative processes with the system will require close teamwork between the organizational entities responsible for each. In many cases, this interface will be new. Groups that are not used to working with each other or taking into account each other's needs will now have to learn how to integrate each other's needs. And, of course, automation may offer new opportunities for improving effectiveness and productivity of administrative processes.

The issue of charter appears to resolve itself best when DP plays the role of manager of information as a resource. "Data resource management" is the catchphrase of the day. DP will define what information, with what business rules, operating environment and administration. In reality, an organization cannot successfully implement an automated solution to any problem that is not well-defined from an administrative point of view. The processes that users will invoke to do their work will have a major impact on the timeliness and usability of the resultant data.

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SIT supermini systems debut
Use multiple microprocessor technology

By Patricia Keefe

SAN DIEGO — Syte Information Technology, Inc. (SIT) has announced its first product, a line of 32-bit networked engineering supermicrocomputer systems said to use multiple microprocessor technology.

Called the Syte Series 3000 Micromainframe, the product line reportedly offers the processing power of a mainframe in a desktop system.

“We intend to prove that multiple, tightly coupled microcomputers with state-of-the-art software technology are superior in performance and price to superminis like the Digital Equipment Corp.'s VAX-11/770 and the Intel 8081 low-end mainframes like the IBM 4300 series,” Dr. El J. Shaw, president and chief executive officer at SIT, said.

Virtually all software, including applications such as word processing, numeric calculations, graphics, text, and database management, run on SIT's supermicros. They are connected via Ethernet networking and cost up to $21,900. The Model 300 (32-bit) is available now, with the other models planned for the first six months of 1984, according to Shaw.

SIT, at 11339 Sorrento Valley Road, San Diego, Calif. 92121.

Fifth generation poses challenge

By Patricia Keefe

BLUES BELL, Pa. — Sperry Corp. has expanded its UTS 4000 family of communications software by adding a programmable terminal with color graphics capabilities. The new unit was designed with a wide range of ergonomic features and reportedly can function as a personal computer, using Digital Research, Inc.'s CP/M 68K operating system.

Called the UTS 60, the unit comes with eight standard colors and another eight colors optional. The graphics capabilities can be used either on-line to a Sperry Syllabus 1100 mainframe or as a stand-alone computer. On-line capabilities are provided as part of the Sperry Mapper application. Hard copies can be obtained on any of three optional printers. When operating in a stand-alone capacity, the dot graphics features can be added for drawing lines, polygons, arcs, sectors, rectangles and circles in any of the 16 colors. It is said to deliver 51 dot per second in both horizontally and vertically and runs in conjunction with BGI 512.

The UTS 60 features the 16/32-bit Motorola, Inc. 68000 microprocessor as its CPU and Zilog, Inc.'s 280 as a secondary processor to control peripherals and the video section of the system. Other features include a low-profile keyboard; improved focus; a standard memory of 128K bytes, expandable to 32M bytes; error-correcting code memory; a CRT with a 14-inch diagonal screen; a 96K/80 double-density diskette file utility; diskette file utility ($1,200); diskette file utility ($3,900) and a character set utility ($1,200).

The UTS 60 includes two other utilities — the TTY Communications Utility ($50) and the Unequip Communications Utility ($50) for the CP/M 68K operating system.

Optional peripherals

Optional peripherals for the UTS 60 include the Model 3100 high-speed accuracy-quality printer ($2,025, plus $20/year for maintenance); the Model 35 matrix printer with optional color and/or character features ($3,000, plus $40/year maintenance); the Model 3541 mass storage subsystem ($3,840, plus $44/year maintenance). The UTS 60 costs $5,668, which includes delivery, installation, and training.

Sperry, P.O. Box 500, Blue Bell, Pa. 19424.
TURNKEY SYSTEMS

ANN ARBOR TERMINALS, INC.
Guru

Ann Arbor Terminals, Inc. recently announced a full-page-display model of its Guru text editing terminal with 286 bytes of display memory, a user-definable display of up to 60 lines of 70 col. and memory of as many as 250 col.

The portrait-display Guru includes a variety of editing commands, including erase character, area, field, line and display; insert or delete character or line; push or pop line; insertion and replacement modes; and set editing extent, a company spokesman said.

A "zoom" feature reportedly allows users at a keyboard to move data on or off the screen for trade-off in character size and amount of data displayed. The terminal memory can be bidirectionally scrolled through as one large file or divided into software-defined pages, the spokesman said.

According to the company, the portrait-display option features a 15-in. CRT housed vertically to give the display the appearance of an 8%-by-11-in. page, and a Digital Equipment Corp. mode option permits the Guru to be used with standard DEC VT100 and VT52 terminal software.

The portrait-display model is priced the same as the standard Guru model at $3,395; delivery takes 30 days.

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TURNKEY SYSTEMS

ANN ARBOR TERMINALS, INC.
Guru

Signal Processing Systems, Inc. (SPS) has unveiled a data flow multiprocessor said to interface multiple processors and I/O devices through a smart memory. It also provides an overall control structure for high-speed, real-time applications, the vendor said.

Programmed in Fortran, the SPS-1000 reportedly can achieve computation rates to 1G operation/sec.

The SPS-1000 data flow configuration, including block diagram compiler, is priced from $70,000, depending upon configuration.

SPS, 225 Crescent St., Waltham, Mass. 02154.

AUTOCONTROL, INC.

Autocontrol

Autocontrol, Inc. recently announced a multifuser computer system that uses the Intel Corp. 8085 microprocessor and that reportedly allows a network of up to 256 addressable workstations.

Each workstation in the Autolan system may access disks and printers on all other workstations or may have its own disk storage system and printer, a company spokesman said.

Using a transmission rate of 945K bit/sec, the system allows disk space to be shared or assigned exclusively as desired, the spokesman said.

A basic system includes a Kadak, Inc. display processor with 80K bytes of memory, 10M-byte hard disk drive, 51/4-in. double-sided floppy disk drive with 770K bytes of storage, two serial ports and Autolan software in programmable read-only memory. The basic system is priced at $4,995, with additional workstations available for $1,796 each.

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TELERAY, INC.

Model 72

Teleray, Inc. has announced an emulating terminal that is said to be fully software-compatible with both Digital Equipment Corp.'s VT100 and VT52 terminal software.

The Model 72 was developed to provide a single terminal for installations that run both DEC and DG CPUs, the vendor said.

Either of the Model 72's resident emulations can be called from its VT100/200-compatible keyboard. Also, 32 (64, shifted) of the keys reportedly can be defined, with up to 8-char. sequences, to meet specific applications needs or user preferences.

The Model 72's two- (optionally four-) page display memory, either volatile or nonvolatile, can be reformatted by the user or processor to accommodate spreadsheets, tab listings or text, varying from a single page of

Computerworld/Mexico talks to computer people south of the border.

There are currently 15,000 installed computers on 12,000 sites in Mexico. These include mainframes, medium and small computers as well as personal computers. Experts forecast the sale of small, medium and large computers to grow at an average annual increase of 20% during the 1980s, despite Mexico's current economic problems. Maincomputers will be in great demand since they are small, affordable and efficient. U.S. manufacturers have maintained a 50% market share for the past three years with sales of over $182 million. Computerworld/Mexico can bring your message to 10,000 key decision makers in the Mexican computer community. Published on alternate Mondays, Computerworld/Mexico covers all the latest developments in hardware, software and terminals in addition to data processing and computer related subjects. Its goal is to provide useful information to data processing professionals throughout Mexico and Central America.

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processors, but that market is made up of government agencies, many of which are top secret. There are few, if any, commercial firms waiting for someone to develop a fifth-generation processor.

After all, what is the average DP executive going to do with very fast, artificially intelligent processors? The machines are going to be outrageously expensive, and they are not going to do accounts payable and receivable. The powers promised by fifth-generation technology may someday benefit commercial computer users, but initially they will be used to design weapons and manage missile guidance systems.

So guess who is pumping the most money into fifth-generation research projects? Government organizations like the Defense Research Projects Agency, which admits its primary interest in new technologies, particularly those employing artificial intelligence, is to build better defense systems.

Why not let the most likely users of fifth-generation processors foot the bill for their development? In theory that sounds fine. But it also marks a major change in the way U.S. companies do business. The government has always played a big role in research projects, while at the same time there has always been a separation between government and business. But in the case of fifth-generation technologies, it appears the government is orchestrating many projects.

What happens if the lure of government fifth-generation funding becomes more appealing? Will the government, in effect, have control over the computer market? And what happens if the government money suddenly dries up? Not only will lots of researchers be left out in the cold, there will be many research projects which do not offer an immediate application in the commercial sector.

This may account for why many computer makers have steered away from developing fifth-generation projects. The investments required are very high, and while there is potential for developing very important commercial products from military projects, the payback appears to be better than 10, possibly 20, years off.

Continued from page 62
256-col. lines to 28 pages of 10-col. lines, or any other line/page combination within memory capacity. Other features include a 256-char. input buffer; two bidirectional, buffered RS-232 ports; five display attributes, seven area qualifiers, 224 displayable characters and a nonvolatile memory function, the vendor said.

Available in three CRT sizes (9, 12 and 15 in.) and three phosphors (white, amber and green), the Model 72 costs $1,535 in the 12-in. model.

Teleray, 6425 Flying Cloud Drive, Eden Prairie, Minn. 55344.

PARADISE SYSTEMS, INC.

Convertible
Paradise Systems, Inc. has introduced the Convertible, a device that converts any ASCII asynchronous terminal into a personal microcomputer.

The Convertible has a built-in 256K-byte random-access memory (RAM) disk that, according to the vendor, delivers up to 10 times the speed of regular microcomputers. The user of Convertible then has access to productivity software available for microcomputers using Digital Research, Inc.'s CP/M operating system, converting data formats from one personal computer to another. Convertible is reportedly able to read 5¼-in. diskettes formatted for a variety of personal computers.

Two RS-232C serial ports and one bidirectional Centronics Data Computer Corp. parallel port enable Convertible to connect to printers and other devices using the standard industry interfaces. Single-sided, double-den-
TIS™ is truly a remarkable software system. With TIS operating at both the Strategic and Tactical levels of our organization, we now have a sophisticated software system capable of evolving as the needs of the company evolve. As far as I'm concerned, TIS is giving Best Western International the kind of next generation technology we need. —Keith Barlow

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**POWER SUPPLIES**

BITS POWER SYSTEMS, INC.

Model UPS 200, 400

Bits Power Systems, Inc. has announced two uninterruptible power supplies that it says can be permanently online for small system users. Model UPS 200 and Model UPS 400 are said to provide dedicated, continuous and isolated electrical power by using utility line power to maintain a full charge on internal gel-type batteries.

The units reportedly have visual, audible and remote alarm functions and a standard battery monitor. Standard full-load back-up time is said to be 10 minutes, although external 12-volt batteries may be plugged into the units for extended back-up time, the vendor said.

The Model UPS 200, a 200W unit, is priced at $785. The Model UPS 600, a 600W unit, is priced at $995.

**SAFT AMERICA, INC.**

AC line conditioner; electromagnetic interference filter; transient voltage surge suppressor

The Electronic Systems Division of Saft America, Inc. has introduced a line conditioner to correct high- and low-outage spikes, an electromagnetic interference filter and a surge suppressor for minis and microcomputers.

The Saft AC Line Conditioner reportedly provides power line isolation and regulation while suppressing high-voltage pulse noise and medium-to-high-frequency spikes which could cause the system to lose memory.

The unit is rated at 500Vac and features a 3% harmonic distortion maximum for a resistive load, the vendor said.

The Saft Electromagnetic Interference Filter is said to suppress high-voltage pulse noise and medium- to high-frequency noise. It reportedly has a normal-mode attenuation of 40db-plus and a common-mode attenuation of 35db, the vendor said.

The Saft Transient Voltage Surge Suppressor is said to be a two-stage, high-energy clamping protector for equipment operated off a power line.

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As an added plus for CN '84 attendees you'll have a chance to win a DEC Rainbow 100 + Computer System. COMMUNICATION NETWORKS '84, will take place at the Washington Convention Center in Washington, D.C., the telecom capitol. It will be held on January 31 - February 2, 1984.

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**COMPUTERWORLD**

**BOARD-LEVEL DEVICES**

ADVANCED MICRO DEVICES, INC.

Am89/5222

Advanced Micro Devices, Inc. recently announced a memory expansion and 1/0 expansion board said to be compatible with Intel Corp.'s Muli-

The Am89/5222 provides sockets for up to 256K bytes of erasable programmable read-only memory (Eeprom), 128K bytes of random access memory or 52K bytes of electrically Erasable Programmable Read-Only Memory (Eprocm), a 1/0 port, and an audible and remote alarm functions.

The 400W unit, is priced at $995. The Model UPS 400, the second in a family of turn-key computer-aided design (CAD) systems said to be closely tailo-

er to the needs of printed-circuit board designers. The multitasking Model 200 uses software developed by PTU's Swiss affiliate, EIE. The system reportedly is built around a 20-MHz Digital Equipment Corp. LSI-11/33 minicomputer with an independent 16-bit proprietary graphics processor. It of-

fers 256K bytes of memory, enabling the user to design complex boards that measure up to 32-in. by 32-in. and contain as many as 500 equivalent integrated circuits and 64 layers.

The interactive Model 200 includes a 19-in., high-resolution 64-

color display with pan and zoom features, a 2048-byte Winchester disk drive for archival storage and an 8-in. floppy disk drive, the vendor said. A separate video display con-

sole permits data entry and system control, while a desktop printer can be used to produce documents required for manufacturing.

The Model 200, which includes PCD II, printed-circuit design software, a line printer and a factory course training, costs $50,950.

**PARAGON TECHNOLOGY CORP.**

Paragon Model 200

Paragon Technology Corp. (PTC) has introduced the Paragon Model 200, the second in a family of turn-

key electronics design and I/O expansion board said to be compatible with Intel Corp.'s Mul-

ithus.

The Am89/5222 provides sockets for up to 256K bytes of erasable programmable read-only memory (Eeprom), 128K bytes of random access memory or 52K bytes of electrically Erasable Programmable Read-Only Memory (Eprocm), a 1/0 port, and an audible and remote alarm functions.

The 400W unit, is priced at $995. The Model UPS 400, the second in a family of turn-key computer-aided design (CAD) systems said to be closely tailo-

er to the needs of printed-circuit board designers. The multitasking Model 200 uses software developed by PTU's Swiss affiliate, EIE. The system reportedly is built around a 20-MHz Digital Equipment Corp. LSI-11/33 minicomputer with an independent 16-bit proprietary graphics processor. It of-

fers 256K bytes of memory, enabling the user to design complex boards that measure up to 32-in. by 32-in. and contain as many as 500 equivalent integrated circuits and 64 layers.

The interactive Model 200 includes a 19-in., high-resolution 64-

color display with pan and zoom features, a 2048-byte Winchester disk drive for archival storage and an 8-in. floppy disk drive, the vendor said. A separate video display con-

sole permits data entry and system control, while a desktop printer can be used to produce documents required for manufacturing.

The Model 200, which includes PCD II, printed-circuit design software, a line printer and a factory training course, costs $50,950.

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[Computerworld]
Communications
lacking in micros

By Anthony J. Paoni
Special to CW

Microcomputer communications programs abound — unfortunately most of them are inadequate for long-term use in large organizations.

The demands made on microcomputer communications are different for organizations than for individuals, and little of the difference is reflected in the many terminal programs available for almost any currently produced microcomputer. A discrepancy exists between software manufacturers and hardware manufacturers in the audiences being targeted for micro communications. The perception of software manufacturers is undoubtedly that the primary market for communications programs lies in the personal (read: home) computer market. The major micro manufacturers, however, have clearly targeted large organizations as their primary market.

There also seems to be something of a problem revolving around the computing experiences of those designing microcomputer communications software. Many managers/analysts seem to have had experience only on micros, or at best, on minis such as Digital Equipment Corp.'s VAX-11/700 series machines. The result of such experience (or inexperience) is a misperception of the needs for communications in large organizations and the production of communications software with an inability to communicate adequately with large IBM or IBM-compatible mainframes.

Many micros require some communications with IBM-style systems and many also require communications. See MICRO page 70

Software packages seen pivotal to micro training

By Anthony J. Paoni
Special to CW
Second in a Two-Part Series

Contrary to popular belief, there is no need, when conducting a training seminar on personal computers, to dive deep into hardware for the benefit of the management audience. The need to explain the attributes of read-only memory, random-access memory, erasable programmable read-only memory and so on only confuses the purpose of the seminar.

A pivotal point to be stressed in the discussion is the role of the software package. Perhaps this section deserves some special attention with regard to what software is available today and how it is used to personal computers. There is a great deal of difference between using a personal computer and knowing how to program a personal computer in BASIC.

The software discussion should touch on the cost-effectiveness of purchasing packages vs. paying for the development of custom software. At this point, there is an excellent opportunity to describe the function of the in-house support staff that management information systems (MIS) has assembled to address the needs of its personal computer users.

An overview of each of the functions that software can perform should be included in this section. By most managers the function for highest use in the software is the function that performs the function of spreadsheet analysis or electronic work sheets, generally referred to as modeling.

There are very few aspects of an organization that cannot be modeled. The decision-making process is not binary; it is iterative in nature. This fact and the availability of spreadsheets make the function and task that the personal computer brings to management's desk.

It is a simple tool for a simple but repetitive task. Managers who use modeling can demonstrate its time-saving capacity by showing examples of tasks that can be done faster and more efficiently using a personal computer with modeling software.

The education process is a matter of condensing experience and relating it to the use of personal computers via description of the concept in actual practice.

Surveys showing that one out of ten executives is afraid of computers because he thinks he will be unable to adapt to the new technology, it is obvious why management does not immediately gravitate to micros. Yet when management is properly educated, it is amazed at the potential of these typewriter-television machines.

The ability to take columnar information and turn it into meaningful graphics was used by more than half of the presenters at the seminars I attended. Yet when management is properly educated, it is amazed at the potential of these typewriter-television machines.

In reality, man is a visual animal. Approximately 87% of all information taken in is stored visually — that is, graphically.

As the management seminar begins to approach the three-quarter mark, the subject of connecting to the big computer surfaces. The obvious opportunity to save the step of keying in the information to be used in the model is to have the host computer send the information to the personal computer via a telephone connection.

For years, the management participants have approved MIS budgets. The education process is a matter of condensing experience and relating it to the use of personal computers via description of the concept in actual practice.

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For years, the management participants have approved MIS budgets.
Can you answer these questions on local area networks the way you would have two years ago?

1. Is broad versus base band still an important issue?
2. Will local area networks and PBXs co-exist, be mutually exclusive or will one be subservient to the other?
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4. What are the standards?
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It even looks like it was made for the IBM. Now, as good as the Spinwriter 3550 is, we recognize that a single printer can’t take care of every business or professional office need. So we’ve added another IBM PC compatible Spinwriter: The 2050.

The new 2050 has a printing speed of 200 words per minute. And while it costs less, the print quality is still impeccable. So if low-volume letter-quality printing is what you need, the 2050 is your answer. 60 different print thimbles let your IBM PC look its best.

One of the things that gives our Spinwriter capabilities you can’t even get on other printers is our unique "thimble." Each thimble holds up to 128 characters. You can even have two different type faces on one thimble or print multiple languages from a single thimble. Think of how handy...
that would be if your business is international.
On the other hand if you have special printing needs, you can opt for a full alphabet plus numbers, sub- and superscript and scientific and arithmetic symbols.
Incidentally, for all their versatility, our inexpensive

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help you put your communications in better shape. It can use any of our nine interchangeable forms handling options. And they can all be easily installed and changed by the operator.
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You can switch to amber characters in your screen dump by using the AT-1 Video Attribute Card. The AT-1, priced at $149.95, while the GR-1 is $179.95. IBM Personal Computers can also purchase the GR-1 Graphics Upgrade Card, which is priced at $40. Quantity discounts are available.

On the other hand if you have special printing needs, you can opt for a full alphabet plus numbers, sub- and superscript and scientific and arithmetic symbols.

Incidentally, for all their versatility, our inexpensive

NEC-trained professionals all around the country. It's also quick. Because of our modular design, normal repairs take less than 20 minutes.

To offer the best service, we have a large group of NEC-trained professionals all around the country. It's also quick. Because of our modular design, normal repairs take less than 20 minutes.

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Incidentally, for all their versatility, our inexpensive

NEC-trained professionals all around the country. It's also quick. Because of our modular design, normal repairs take less than 20 minutes.
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Continued from page 73

The tubes, which utilize European
amber phosphor, an etched antiglare
faceplate and lead/nitrogen-impreg-
nated glass to block X rays, are said
to be direct electrical and mechanical
replacements for the original IBM
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The Soft-View CRT tube replace-
ment costs $80.05.

Langley-St. Clair Instrumentation
Systems, 132 W. 24th St., New York,
N.Y. 10011.

NETWORX

Wire Tree

Networx, a division of North
American Philips Corp., has an-
nounced a four-outlet filtered power
source for personal computers that
reportedly protects against voltage
surges, spikes and radio frequency
interference.

The Wire Tree power source pro-
vides surge-limiting, solid-state cir-
cuitry in four grounded outlets, ac-
cording to a Networx spokesman.
The product includes a 6-ft power
cord and four peripheral power cords
and is priced at $60.05.

Networx, 203 Harrison Place,
Brooklyn, N.Y. 11237.

DIALOGUE SYSTEMS, INC.

Personal Computers: An Executive
Self-Study Program

A self-study course designed for
executives about the business appli-
cations of microcomputers has been
developed by Dialogue Systems, Inc.
in conjunction with Peat, Marwick,
Mitchell & Co.

Called "Personal Computers: An
Executive Self-Study Program," the
course is divided into 12 modules,
each of which requires 20 minutes of
listening to audio cassettes.

In addition, an accompanying 150-
page, self-study guide provides in-
depth information about topics cov-
ered on the cassettes, unit
summaries and a glossary of comput-
er-related terms, according to Dia-
glogue Systems.

The course is available for $275
from the DE Micro Training Catalog.
Dialogue Systems, 770 Broadway,
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TOP CORPORATIONS
WANT TO CONTROL
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Not so long ago, most com-
panies believed that any in-
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by adding another computer.

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Inevitably, the legacy of that
approach has been astronomical
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executives all had the same
response.

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Working with top people in
each department, we helped
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model of the organization. We
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designing and implementing a
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Systems Planning™ product may
complement BSM™ and similar
methodologies, it goes much fur-
ther. By combining appropriate
software, education and method,
SSP allows companies to prioritize
and control data and information
systems development. Often for
the first time.

If you're interested in making
information more manageable,
call Tony Comazzi, Vice President,
at 313/995-9595.

Again, this is a chance to educate
management on the fundamentals of
communications networks.

This topic lends itself to a discus-
sion of the company's technology
plan as it relates to the use of person-

cal computers as management tools.

Under this umbrella topic, the aspect
of data management can be covered
to show the value in controlling a set
of information that is applicable to
the person or the function that is us-
ing the system.

When discussing data manage-
ment, it is appropriate to set guide-
lines for the organization. It gives
the participants a feeling for the in-
bounds and out-of-bounds areas for
the personal computer. Such func-
tions as word processing fit comfort-
ably within the capabilities of the
system. However, typical uses of this
capability show that draft memo
writing, back slips, sensitive commu-
nications and so on are more appro-
priate for management use.

Those typewriter-televisions are
taking on more and more critical
roles in organizations every day. The
need to educate management on their
potential is vital to the success of any
plan for the implementation of per-
sonal computers in corporate busi-
ness operations.

Soon, elementary schools in every
state will have personal computers
every classroom via any one of the
current bills before the U.S. Con-
gress.

Introduction of H.R. 5673 started
a national drive for education on the
subject of computer literacy using
personal computers.

There is no reason why intelligent,
mature adults in the management
community cannot also take advan-
tage of this powerful new method of
processing their organization's most
valuable asset — its information.

A well-planned management edu-
cation seminar on the subject of per-
sonal computers will go a long way in
answering the question: "What are
those typewriter-televisions any-
way?".

Paoni is president of Personal
Computer Management, Inc. of
Wheaton, Ill., a consulting firm that
provides seminars on personal com-
puters for managers.

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The 8010 professional workstation has always been known as a computer of dazzling capabilities, especially in its graphics, information processing and document preparation.

But what some people may not know is that the 8010 is also the key element in Team Xerox, a system of office machines designed to work together like a team. When part of an Ethernet network, the 8010 can work with a wide array of word processors, mainframes, personal and business computers, printers, electronic mail and file services, facsimile terminals, communicating Memorywriters, other networks and, of course, other 8010s. It also provides 3270 and TTY emulation.

Its full 17" bit-mapped screen lets you view two full pages simultaneously and open up to six documents at a time without covering up a previous document. It's also the only workstation that can create and print documents in more than a dozen languages, including Russian and, for the first time, Japanese (Katakana, Hiragana and Kanji).

While other workstations may use Xerox innovations like the mouse, icons, windows, property sheets and combined text and graphics, the 8010 simply does more with them.

For example, the 8010's extensive software is fully integrated, to allow you to work with text and graphics simultaneously. You can draw a flowchart right in the middle of a full page of text without having to resort to a separate program and limited buffer "scratchpad" or "clipboard." In terms of capabilities, ease of use and overall value, the 8010 would be considered the stellar workstation in the industry.

For more information, call 800-527-1922 (in Texas, 800-442-0152), or send in the coupon. Or ask anyone who's ever used the 8010.
users to monitor projects and activities through the total development life cycle, collect historical performance and cost data at various levels, provide critical path and project variance reporting, display forecast information graphically and forecast and monitor personnel performance.

A company spokesman said the package eliminates the need for technical know-how or knowledge of computer terminology and affords the user menu-driven, command-line and soft-function key control. The package requires two floppy disk drives, with a minimum of 320K bytes of memory each, or one 320K-byte floppy disk drive and one 5M-byte minimum internal memory of 138K bytes; and DOS 1.1 or 2.0 from IBM Personal Software, Inc.'s MS-DOS or Fujitsu's E-35 operating system.

The package is priced at $3,500, which includes one-time license and installation and training.

The Personnel and Activity Management System (Pams) reportedly enables users of IBM Personal Computers as well as Fujitsu Microelectronics, Inc. machines. The Personnel and Activity Management System (Pams) reportedly enables

The package is priced at $3,500, which includes one-time license and installation and training.

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DEC: The revolving door
Personnel turnover significant

By Peter Bartoli
CW Staff

MAYNARD, Mass. — While Digital Equipment Corp. was going through some major financial changes during the past year, it was also experiencing significant personnel changes.

Since the beginning of 1983, DEC has officially announced the departure of six of its 28 vice-presidents, and DEC watchers claim the company has also experienced a large turnover rate at lower management levels.

The most notable changes were the midsummer departures of C. Gordon Bell, vice-president of engineering, to entrepreneur Prime Computer, Inc. Chief Executive Officer Kenneth G. Fisher at his new venture, Encore Computer, Inc. and the fall departures of Andrew C. Knowles III, vice-president of group management and considered to be the boss behind DEC's personal computer line, who left to take the presidency of Lexidata Corp. According to a DEC spokesman, Bell's duties were absorbed by Jack Smith, vice-president of manufacturing; splitting some of Knowles' duties were Joel Schwartz, vice-president and group manager of personal computers, and Edward Kramer, vice-president of corporate marketing.

Other departures from DEC included Robert Puffer, vice-president of storage manufacturing, who went to Encore and whose duties were added to those already assigned F. Grant Saviers, vice-president of systems engineering. Departing from responsibilities "unique to their own backgrounds and experiences" and not being replaced, according to the spokesman, were Richard Jack Smith, vice-president of manufacturing; splitting some of Knowles' duties were Joel Schwartz, vice-president and group manager of personal computers, and Edward Kramer, vice-president of corporate marketing.

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Commerce sees boom coming

By John Kinneer
CW Washington Bureau

WASHINGTON, D.C. — The U.S. computer manufacturing industry will rebound strongly from a sluggish 1983 to see a real growth rate of 18% this year, and the software and services sector will do even better, according to the U.S. Department of Commerce.

Commerce statistics, prepared for the department's upcoming 1984 U.S. outlook report, show that the computing equipment industry, measured from the office equipment sector, shipped $41 billion worth of processors and peripherals last year, a 15% hike over 1982 figures.

"Assuming continued moderate recoveries in the U.S. and European economies during 1984," Commerce said, "U.S. computer industry shipments should increase by 18% after adjusting for inflation. Shipments would then exceed $48 billion."

Reporting on international computer trade, the department said the strong dollar, combined with weak foreign economies, held the increase in exports to a mere 5%, for a total sales volume of $10.3 billion reports, however, rose by nearly 40% — to $4.1 billion — with Japanese imports showing a 113% jump.

In 1984, "exports will increase by 20% to more than $12 billion," Commerce said. "Assuming continued strong growth in imports from Far East suppliers, imports should register an increase of almost 60% [to $6.5 billion], resulting in the erosion of another $4 billion in the U.S. industry trade balance."

Taking into account U.S. production, ex-

DEC settlement no surprise

By Bill Laberis
CW Staff

With hopes buoyed by a generally bullish view of the economy in 1984, three of the top five non-IBM-compatible mainframers have predicted fatter bottom lines in both 1984 and 1983.

The companies — Sperry Corp., NCR Corp. and Honeywell, Inc. — predicted further costs in 1983, but展望ed of losing on bottom lines in both sales and profit over the next 12 months.

The companies — Sperry Corp., NCR Corp. and Honeywell, Inc. — president of Honeywell, Inc. — predicted further costs in 1984 and 1983, but expected of losing on bottom lines in both sales and profit over the next 12 months.

Looking at the computer's bottom line, Honeywell, too, has had the least in common success in 1983 of the noncompatible mainframers, which include itself, Sperry, NCR, Burroughs Corp. and Control Data Corp. — the so-called "Bunch."

While Honeywell managed to get back on a growth track in terms of sales and profit, most of the growth came from its noncomputer operations, such as manufacturing and process control and instrumentation. The company's information systems wing contributed 30% of the total revenues, but only 20% of the profit. In its most recent quarter, the company's Honeywell's profits climbed 35% on a modest 5% revenue gain to $1.4 billion.

Remarkably on Honeywell's computer operations, Spencer said the point of view hopes to cash in on cost-cutting measures instituted in the past 18 months, including two major layoffs. Honeywell also expects to begin volume shipments of its DPP 88, its largest mainframe, sometime this year. Baring a strong performance it registered — in 1984, Charles E. Exley Jr., NCR president and chief executive officer, said, "It is our goal . . . to make our 32-bit chip set one of the standard 32-bit microprocessors used by other system builders in the industry."

Sperry parlayed stepped-up cost cutting with sizable government contracts to get its Computer Systems Division back on track in 1983. However, as with other Bunch companies such as Honeywell and Burroughs that rely heavily on their installed mainframe base to market new products, Sperry's future performance remains a question. Most analysts, however, concede that 1984 will be a kind year to most See SPERRY page 80
DG users group calls for papers

WESTBORO, Mass. — The North American Data General Users Group has issued a call for papers from users, independent software vendors and OEMs. The papers will be considered for presentation at the Data General Corp. group's 1984 conference, which is slated for Aug. 27-30 in San Diego.

According to a spokesman for the group, topics for papers can include new discoveries, unique concepts or special knowledge in the areas of computer technology, management or marketing. Presentations will be based on an abstract of the paper. Abstracts are due before Feb. 27, the spokesman said. 

Data General, 4400 Computer Drive, Westboro, Mass. 01580.

Southern Bells tie Intecom knot

ALLEN, Texas — Intecom, Inc. has inked a $75 million manufacturing and distribution agreement with South Central Bell and Southern Bell, allowing the communications companies to market Intecom's family of private branch exchanges (PBX) to their business customers in nine states.

Under the terms of the manufacturing and distribution agreement, Intecom will manufacture its PBX product line at its facility here, with the system then marketed by the Advanced Systems Division of Bell South, which is a holding company for Southern and South Central Bell.

Intecom will support initial installations of the PBX for Advanced Systems Division customers, while providing training and documentation for the operating divisions.
McDonnell Douglas acquires time-sharing firm

GETS COMPUTER SHARING SERVICES IN $70 MILLION DEAL

ST. LOUIS — Less than a month after its attempt to acquire Tymshare, Inc. fell through, McDonnell Douglas Corp. announced the recent acquisition of another computer time-sharing firm, Computer Sharing Services, Inc. (CSS).

Robert A. Flacher, McAuto president, said that Jerry Kilema will continue as CSS president.

The nearly $70 million deal, far smaller than the $370 million that cash-rich McDonnell Douglas tried to assemble for Tymshare, will result in CSS being incorporated as a subsidiary of McAuto, the firm's computer services division.

Our sharp, 8-color graphics give your display even more visual impact.

Robert A. Flacher, McAuto president, said that Jerry Kilema will continue as CSS president. Flacher said that 100 technical workers from McAuto's communications industry business unit and 85 marketing representatives will be assigned to CSS. CSS, which had revenues in fiscal 1983 of $27 million, provides computer and data processing services to telephone companies as well as other commercial or business customers. The company employs 275 people and operates a Honeywell, Inc.-based mainframe shop at its Denver headquarters.

Unions sue on wage law

WASHINGTON, D.C. — The computer industry's long-running battle against a federal law setting wages for government services contracts moved into federal court recently when labor unions sued to stop the Labor Department from granting high-technology firms an exemption from the wage law.

Earlier, the department had exempted from the provisions of the 1966 Service Contract Act agreements between private firms and government agencies for maintenance and repair of DP equipment, office systems and high-technology scientific and medical equipment.

Companies in those industries and their representatives here argued that the law, designed to prevent "wage busting" by firms seeking government contracts, should not apply to them because their service workers are highly paid and perform the same work at the same wages for government as they do for private organizations.

Labor agrees

Labor decided that applying the law to this type of work was unjustified.

A Labor Dept. with Congress' General Accounting Office, which said the exemption was warranted and that without it agencies might have difficulty obtaining services because providers would refuse government work rather than accept the regulated wage scheme.

Immediately after the exemption was finalized, the APL/CIO and affiliated unions asked the District Court here to overturn the decision.

Unions upset

The unions called the Labor Department decision "arbitrary, capricious [and] an abuse of discretion."

The department is being supported in the suit by groups in favor of the exemption.

Those groups include the Computer and Business Equipment Manufacturers Association and the Computer and Communications Industry Association, which have filed amicus curiae backing the exemption.

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It's no wonder critics have called it "the optimum personal computer." Popular Computing, October, 1983.

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Texas Instruments has developed forward-looking programs to bring you innovative, easy-to-use technology. One such package is NaturalLink™. TI's exclusive natural language interface program. NaturalLink lets you access information from subscription database inquiry services, such as the Dow Jones News/Retrieval® service, in plain English. So you don't have to memorize special codes to get the outside information your business depends on.

TI's revolutionary development of speech recognition is another way TI helps you get the most from your software. Leading third-party software suppliers are developing new programs to take advantage of TI's speech technology. In early 1984, with Speech Command™ you'll be able to say things like, "Inventory analysis, please," and have a spreadsheet displayed instantly on your monitor. Voice-operation will make the TI Professional Computer easier to use than ever before.

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Initially, four applications are available: Visi On Word™, Visi On Calc™, Visi On Graph™ and Visi On Query™. Totally redefined for the Visi On environment, each application includes features and functions that have dramatically improved performance.

Even more impressive, their strength is actually boosted when these applications are combined. Making maximum use of multiple electronic windows and a mouse, Visi On instantly transfers data between applications, demonstrating depth of integration to an unprecedented degree. Instead of doing just one job at a time, the user may move from project to project, backed up always by the full power of the machine.

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You were, after all, the one who recommended Visi On.
Cbema, Adapso groups to study technology's effects

By John Kirchner
CW Houston Bureau

WASHINGTON, D.C. — Two computer industry trade groups headquartered here are completing plans for separate but similar organizations to study the societal effects of information technologies.

The Information Age Institute, a privately organized and supported entity representing manufacturers, users, professional societies and academia, will be announced soon by the Computer Business and Equipment Manufacturers Association (Cbema). And the Association of Data Processing Service Organizations, Inc. (Adapso) is completing work with members of Congress on legislation setting up a government commission on high-technology issues.

"Very good response"

Cbema spokeswoman Charlotte LeGates said the plan has been "presented to a large number of associations and other interested organizations, and we have gotten very good response."

Because commitments to the institute are incomplete, Cbema has not released the names of organizations interested in joining. But members could come from the computer and telecommunications industries, organizations representing attorneys and engineers and the banking, insurance and air travel industries, she said.

LeGates said the institute, to be based here, will be formally announced sometime during the first quarter of this year. The size and makeup of the institute's board of directors and staff will depend on how many join the effort, she said. She indicated the organization eventually may become affiliated with a university.

According to LeGates, the institute is necessary because "the ignorance of facts surrounding the introduction of technology ... produces fantasies and fears that discourage people from using technology with the potential to help them."

Cbema hopes an independent, widely representative organization can provide credible information on this topic. "We can't wait around for the government to have 20,000 committees and think about it," she added.

Adapso, also concerned that these subjects are not being properly addressed in a public forum, is, however, taking a different approach. The association hopes to have a bill introduced in Congress soon to set up a blue-ribbon panel representing industry, government and academia.

"To look at all the issues relating to technology and its impact on society at large." Congressional supporters of the idea have persuaded the association that the commission should be financed by the government and not the private sector in order to ensure it is nonpartisan, Sturtevant pointed out.

Although plans for the commission are not complete, he suggested it could last three or four years and cost about $2 million a year. According to present, thinking, the panel would direct a small staff in collecting information and sponsoring studies on various high-technology issues, Sturtevant said.

Having established "a body of knowledge" on these issues, the commission would most likely issue a report indicating problems and concerns requiring government attention, he said.

Saying "everybody is talking about these problems in very general terms," Sturtevant said the association is "frustrated" it has not been able to get the commission legislation introduced earlier. Nevertheless, he said, Adapso is confident the bill will appear within the next few months.
Computer Industry

Net facilitates data exchange among execs

By Robert Batt
CW West Coast Bureau

LOS ANGELES — In an age when access to relevant information can make the difference between success and failure for a high-technology company, a group of senior Southern California industry figures are trying to facilitate cooperation and exchange of information among key decision makers.

Focusing solely on the information needs of chief executives, the Southern California Technology Executives Network (Socalten) was founded last year on the principle that greater cooperation and exchange among chief executives will enable both the Socalten members and the high-tech community at large to gain greater competitive advantage.

“Our objective is to improve the caliber of chief executive officers [CEO] by increasing their overall management capabilities and practices. As a secondary consideration, we also want to gain some more recognition for Southern California as a region of high technology,” explained Walter Bauer, president of mainframe software maker Informatix, Inc. and chairman of Socalten.

Since its incorporation, the network has signed on 73 chief executives, each paying a $1,000 annual fee. Other chief executives involved in Socalten include Thomas Ringer of Fujitsu Systems of America, Inc.; Gary Liebl of Microdata Corp.; and Richard Cortese of Alpha Microsystems, Inc.

According to Bauer, about 80% of the companies that have joined the network to date are computer companies, with about three-quarters of these being software companies.

Critical success factors

Socalten is the brainchild of Steve Panzer and Jeff Weiss, partners in the Los Angeles-based management consulting firm of Panzer, Swarts, Weiss & Co. The idea, Panzer explained, arose from a study the firm conducted of critical success factors in 25 Calif.-based emerging high-tech companies, including Ashton-Tate, Corona Data Systems, Inc. and Ryan-McFarland, Inc.

“Our research confirmed that the key to an organization’s success is the CEO’s performance in charting the company’s strategic course, developing the management team and securing needed resources,” Panzer added. “However, when we began speaking with these executives, we sensed that most of them in Southern California experienced terrible isolation. They didn’t feel they had the same network of support of their counterparts in the Silicon Valley or the Boston area,” Panzer added. In an attempt to fill this need, So- calten focuses on four key activities as a way of providing core information to its members.

■ CEO round tables, comprising groups of 12 to 14 CEOs who meet once a month for all-day sessions focusing on topics such as marketing, strategic planning, management development and finance.

■ “The Executive Report,” a monthly publication intended to provide a concise overview of relevant information from several key management, technical and market sources.

■ Network conferences and seminars, in which industry leaders and experts participate. For example, the next full-day conference, titled “In Search of Excellence in the Management of High Technology,” will concentrate on major industry trends, including the role of IBM.

■ Membership Resource Directory, providing a description of each CEO member and his company.

Crownitek, Inc. has bought a 55% interest in Waterloo Microsystems, Inc. and is launching an integrated office automation system utilizing IBM Personal Computers and the Waterloo Port software.

Emulex Corp. has announced an agreement in principle to acquire Personal Systems Technology, Inc. (Persyst), a maker of memory, graphies and communications hardware and software products for IBM and IBM-compatible personal computers. Basic terms of the acquisition call for Emulex to purchase 100% of Per- syst’s outstanding stock for 480,000 shares of Emulex.

Computer Corp. has entered into a definitive agreement with Litton Indus- tries, Inc. to acquire an 80% in- terest in Monroe Systems for Business, Inc., a Litton division.

United Telecommunications, Inc. has acquired GTE Companies Ser- vice from GTE Corp. for an undis- closed amount of cash.

Computer Horizons Corp. has ac- quired certain assets of Cognitronics Applied Software, Inc. of Florence, Ky., for an undisclosed cash amount.

Valid Logic Systems, Inc. has signed an agreement in principle to acquire RISD-isofrm of New Jersey in exchange for stock valued at $6.5 million.

Recognition Equipment, Inc. (REI) has completed the purchase of all outstanding shares of stock of Consolidated Computer Interna- tional, Inc. (CCI) for $2.7 million. In connection with this transaction, REI has entered into an agreement to manage the U.S. installed base of Flitec International. For a share of the sale revenue, CCI and Finecomp are U.S. subsidiaries of Nabu Manufac- turing Corp. of Ottawa.
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CHANGES from page 79

J. Clayton, vice-president of manufacturing technology, now vice-president at Thinking Machines, Inc.; Lawrence J. Portner, vice-president of corporate planning, who joined Apollo Computer, Inc.; and Roger Cady, vice-president of manufacturing distribution control product group, who did not announce his plans.

DEC has promoted two group managers to positions of vice-president and group manager: Samuel H. Fuller, who formerly headed corporate research and architecture, and Jeffrey C. Kalb, who headed the large-scale integration semiconductor group and is now vice-president over that group. Additionally, in January, DEC announced the appointment of Robert W. Taylor to head a new systems research center in Palo Alto, Calif.; Taylor formerly spent 12 years with Xerox Corp. in Palo Alto and previously managed the research programs at the U.S. Defense Advanced Research Projects Agency, which developed the Arpanet network.

Provide opportunity

In a recent interview, DEC President Kenneth H. Olsen said the turnover “gives the opportunity for the bright, young grade of people to move in and take these jobs.” One DEC watcher, and sometimes critic, who agrees the changes are positive is Sonny Monosson, publisher of the newsletter “Monosson on DEC.” “Any company that has grown as fast as [DEC] has probably stretched their people to the limit,” he said in a recent interview with Computerworld. Monosson said he believes change is good for any firm and that the turnover gives DEC an opportunity to bring in new people.

Peter Lowber, who follows the company for The Yankee Group, Inc., disagreed: “I don’t see how it could be good,” he said. “They need the same engineering expertise they have in the past.”

Similar problems

Lowber believes all the established minicomputer companies are experiencing similar problems. “They’re all running off to start-ups,” Lowber said he thinks DEC does need new blood in the area of marketing, however.

Aaron Goldberg, DEC watcher with International Data Corp., said he was concerned with the “ Exodus” of people from the company. Both Lowber and Monosson agreed. “They have left, too, but nowhere near to the same at the lower level,” Monosson said.

None of the DEC watchers believe DEC is in any imminent danger as a result of the financial and personnel changes suffered in the past year. “There will be a solid in 1986,” Monosson’s newsletter declared recently, “but a DEC confined to the technology it can command.” Lowber added, “I think DEC will hang in there; they will try to turn it around in 1984. I think they will be able to turn it around, but in a longer time frame than that.”

COMMERCE from page 79

ports and imports, Commerce estimated the U.S. market for computer equipment will total about $4 billion in 1984, almost 25% more than in 1983. Imports will rise to 16% of that market, with the Japanese accounting for 10% of the market.

The government also reported employment in the computer industry increased 8.3% last year, from 396,000 to 348,000, and should climb another 4% this year, to 362,000.

Long-term prospects

Looking at the long-term prospects for this industrial sector, the department said: “The U.S. computer industry grew at an inflation-adjusted compound annual rate of about 19% from 1973 to 1981, when the recession lowered this average slightly. Several influences will act to depress the annual average to 17% a year through 1988, where the imports could increase an average of 35% a year.”

One of the negative factors, the department said, is the continued movement of production from the U.S. to foreign sites. This will be partly counterbalanced by lower levels of automated production in the U.S., the continued introduction of high-value products, particularly those stemming from relationships with the semiconductor and telecommunications industries, and the rate at which foreign firms set up production facilities in the U.S.

“Foreign competition could act to restrain U.S. exports, keeping average increases at the 15% to 20% level rather than the 30-plus percent rates of previous years,” according to Commerce.

Turning to the computer software and services industry, Commerce estimated that 1883 domestic revenues increased 20% to $31.6 billion. This was a slight improvement over the 18.5% increase the year before.

The U.S. Bureau of Labor Statistics’ figures that suggested hiring in this industry expanded slowly during 1983 following a year in which declining demand in the U.S. and other countries held employment growth well below the 12% annual average from 1974 to 1981. In 1984, assuming continued moderate economic recovery in the U.S., the domestic revenues of this industry should grow at a rate slightly below the historic average of 25%, and foreign revenues might improve only gradually because of the slow pace of recovery in major markets, the department said.

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Sunnyvale California Opportunities

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Database Analyst
You should have 5 years' experience in Data Processing, with 3 years in data base applications. Design and implementation of commercial applications also required. Data administration stewardship is a must. Respond to opportunity #010.

Network Control Operator
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Albuquerque New Mexico Opportunities

Sr. Systems Analyst
BA or BS in Computer Science or Business. Should have played a major role in systems development. Strong written and verbal communication skills are desired. Familiarity with structured methodology (such as SDM/70) is a plus. Successful candidate will implement financial, manufacturing or marketing systems and interface with other user groups. Response to opportunity #009.

Computer Operations Shift Supervisor
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Sr. Programmer/Analyst
BA or BS in Computer Science or Business and 44 years' experience in analysis/programming in an IBM MVS/JES2 environment are desired. Strong COBOL coding and debugging skills are necessary. Familiarity with IMS DB/DC is a strong plus. Openings are in finance, manufacturing and marketing applications. Respond to opportunity #008.

New Directions
Do you feel "terminally ill" in your present position?

If all you do all day is "talk" to machines, maybe it's time to make a change... to cga

Cure your problem with an exciting new career at CGA. If you're comfortable working with people and enjoy the challenges of systems software development, please read on.

CGA Software Products Group is one of the largest systems software companies in the U.S. We're dedicated to the development and support of state-of-the-art systems software products. Work directly with our clients, in product support and assist them with any problems or questions that may arise. A minimum of 2 years experience with MVS BCP is essential as is good telecommunications skills and the ability to deal professionally with people of all levels. Knowledge of multiple CPU related software, preferably MIS, MDM or GDD would be a major asset. Some travel to SHARE, CMS and GUIDE meetings is also necessary.

You will find that being a member of our team is highly rewarding. We offer a superior salary and benefit packages including profit sharing, major medical/life/health/dental insurance, tuition reimbursement, and relocation assistance.

Why waste time? Call Chris Blum collect at (203) 946-7500 to arrange an immediate interview, or send him your resume in complete confidence.

Systems Programmer

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You will find that being a member of our team is highly rewarding. We offer a superior salary and benefit packages including profit sharing, major medical/life/health/dental insurance, tuition reimbursement, and relocation assistance.

Why waste time? Call Chris Blum collect at (203) 946-7500 to arrange an immediate interview, or send him your resume in complete confidence.

Systems Programmer

JANUARY 16, 1984

BROWN UNIVERSITY

Manager of New Services

Brown University is involved in a major effort to bring state-of-the-art computing tools to the entire university of faculty, staff, and students. The last few years have seen the installation of the largest academic broad-band network in the world, the Brown University Network, connecting over a thousand terminals to more than a dozen mainframes. A $50 million project combining industry and University resources is currently developing workstations environments which allow for sharing and distributing information. The Computer Center, operating an IBM 3081 running VM/CMS, is looking for professionals to help provide services to users in this rapidly growing environment.

Manager of New Services

Share supervision of the technical staff of the Computer Center and manage the development of all NEW services to be delivered by the Center. Primary responsibilities include: technical planning for hardware and systems software, managing the development of new hardware and software facilities, and the integration of new facilities into existing support services.

Applicants should have 1 year's experience managing a technical development group, a broad background in the current uses of computing, and experience integrating operating systems and applications software into cohesive facilities.

Excellent interpersonal and communications skills and familiarity with the facilities and limitations of VM/CMS are also required. Experience connecting ASCII terminals and workstations to mainframes is highly desirable.

Systems Programmer

Will participate in system maintenance and the design and development of changes to the VM/CMS operating system and various systems software, install applications packages, and assist in the efforts to improve communication between the 3081, the LAN, and workstations.

Applicants should have 3 years' experience maintaining and modifying the CP portion of VM/CMS, experience with non-SNA communications protocols in a heterogeneous environment and strong interpersonal and communications skills.

Interested persons should send their resume to: Michael Brennan, Brown University, P.O. Box 1879, Providence, RI 02912.

ARE YOU A SPERRY UNIVAC 1100 PROFESSIONAL?

If the answer is yes, TRANS AMERICA AIRLINES, a major international carrier, has a place for you in our Oakland, California headquarters office. We have immediate openings for experienced professionals.

MANAGER OF PROGRAMMING

SUPERVISOR - APPLICATIONS PROGRAMMING

SR. SYSTEMS ANALYST

DATA BASE PROGRAMMER

SR. SYSTEMS SUPPORT PROGRAMMER

We offer competitive salaries and excellent benefits including liberal flight privileges. Please send resume AND salary history to:

M.J. O'Dell

Trans America Airlines

P.O. Box 2504, Airport Station

Oakland, California 94628

An Equal Opportunity Employer M/F

Energy Management Application Engineer

Education Requirement: Graduate in an engineering curriculum of not less than a Bachelor's degree in electrical engineering or any science related program from an accredited college or institute.

Experience Requirement: 2 years experience in electric utility energy management with experience in a data processing environment and in interfacing information systems with software and hardware.

Applicants should have three years' experience in the fields of energy management systems and applications software. Experience in the design and development of energy management systems and applications software is highly desirable.

Interested persons should send their resume to:

Oglethorpe Power Corp.

4020 Williamsburg Court

Fairfax, Virginia, 22032

(703) 385-0440.

CRC Systems, Inc.

4020 Williamsburg Court

Fairfax, Virginia, 22032

CRC, a high-tech telecommunications systems and data base software firm, is seeking Analysts and Programmers to work on a major new system. Positions are for both subcontracts and direct hire.

Interested persons should contact: Jim Lloyd, Vice President

(703) 386-0440.
NEW HAMPSHIRE

Where life and living is more than just work. As one of the most respected names in electronics, electro-optics and instrumentation, Kolisman is one of the largest employers in New Hampshire. We presently have excellent opportunities in our modern Data Processing Center with state-of-the-art EDP equipment.

SYSTEMS PROGRAMMER: will design programs and maintain Honeywell DPS-6 computer software. Experience with GCOS-6 most important. DEF-I1 and FMS a plus.

PROGRAMMERS: will evaluate specifications, design, code and modify programs and perform testing. Must have a minimum of one year programming experience with COBOL, OS/JCL on IBM equipment.

COMPUTER OPERATOR/2nd Shift: will be responsible for the operation of an IBM 4341 OS/VS1 computer with associated peripheral equipment. Must have 2-4 years related experience.

For consideration of any of these openings please send your resume, in confidence, to: Koliman Instrument Company, Division of Sun Chemical Corporation, Attn: Dave Osgood, Technical Recruiter, Box CW116, 220 D.W. Highway South, Merrimack, NH 03054.

AUBURN UNIVERSITY

SYSTEMS SUPPORT SPECIALIST I

Systems Support Specialist I needed to maintain the general instructions of the system control program that controls the entire computer system. Will make changes to instruction sets. Provides installation, checkout and maintenance of all peripheral equipment. Must have 2-4 years related experience. Experienced with GCOS-6 in lieu of course. Must be familiar with COBOL, OS/JCL, and the use of IBM equipment. Interested applicants should send resumes to Dave Leckel, AEDB, P.O. Box 2234, Opelika, Alabama 36803-2234 or apply in person at any Alabama State Employment Service. Job Order No. 027744, E.E.O.

HOW TO MAKE OVER $80,000.00 A YEAR ON CICS COMMAND LEVEL PROGRAMMING

Acquire one of the most demanded & rewarding programming skills in months instead of years. A complete self-study text based on CICS version 1.5, written in COBOL and with special emphasis on VSAM. It covers virtually every CICS technique you will need. Fifteen sample programs address all CICS main applications. Over 150 ready-to-use examples. Sample programs include: Menu, Add, Delete, Browse, Print 24x80, Print 66x132, Print Any Size Report, Message./ive, Screen Refreshing, and fault handling. Each program comes with a detailed text and explanation of all instructions. It is hard to believe the learning can be so easy until you try it. In hours, you can start to create your own BMS maps; in days, you can start to write your own pseudo conversational CICS programs. Some of the techniques are especially hard. When you are stuck for the technical problems, you'll be thankful you have this book. Moonlighting on CICS projects is very rewarding. A typical 10-screen system can mean $15,000 cold cash. This book also tells you how to market your services, locate the contracts, write a proposal, make a presentation, quote the right price & draw a contract agreement without a lawyer.

But act now. Send $34.95 (plus $2.00 for ship. & handl.) or $32.00 ea. for 2, $30.00 for 3, $28.00 for 4, and over (ship. & handl. inc.) check or money order to: CCD ONLINE SYSTEMS, INC., P.O. BOX 795759, DALLAS, TX 75339. Allow 1 to 2 weeks for delivery. Full refund within 10 days if not satisfied.

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Computer and Information Science

Advance your career in information systems through Dartmouth's distinctive professional program. Our two-year program is designed to equip you to take a leading role in planning, designing, and developing effective business solutions to business problems. In the CSS Program, you will study current methodologies for planning, analyzing, and designing strategies and issues in the management of information systems, business organization, project management, database systems, networks and distributed computing, communications. Learn from guest lecturers by practicing managers of information systems, case studies, and professionals in residence. An internship is required of each student.

If you have previous experience in the computer field but want to be equipped to assume more responsibility and leadership, consider joining us next year. For more information, write: Program in Computer and Information Science, Dept. C, Nathan Smith Building, Hanover, NH 03755.
The Department of Computer at King Saud University, Abha Branch has available the two following positions for the Academic Year 1983/84 which starts February 1984.

A. COMPUTER SERVICE MANAGER

QUALIFICATIONS REQUIRED:
- Full knowledge of Arabic language (reading and speaking)
- Bachelor degree in Computer Science
- Several years of working experience in computer center
- Ability to recruit and train new staff
- Knowledge of MUS.

JOB DESCRIPTION:
- Managing the Computer Center
- Teaching some computer courses
- Training personnel for the computer center
- Improving computing facilities
- Developing computer programs for the University Branch Administration and the College.

B. PROGRAMMER

QUALIFICATIONS REQUIRED:
- Bachelor degree in Computer Science
- Minimum of two years relevant experience
- Arabic knowledge will be an advantage but not conditional

JOB DESCRIPTION:
- To assist in Programming Courses
- To assist in Training personnel
- To contribute the development of administrative system and scientific programs.

THE BENEFITS OFFERED BY THE UNIVERSITY FOR THE TWO POSITIONS ARE:
- Free roundtrip airline tickets annually for the employee and his family
- Furnished accommodation or housing and furnishing allowance
- Monthly transportation allowance
- Retirement allowance
- End of service gratuity
- Free Medical and Dental care covering family
- Contribution by the University to cover tuition fees for non-Arabic-speaking children

Interested Applicants are kindly requested to send their application letters indicating the position applied for together with photocopies (non-returnable) of their academic diplomas and specialized experience certificates, and an updated resume to the following address:

KING SAUD UNIVERSITY
ABHA BRANCH
COMPUTER CENTER
P.O. BOX 428
ABHA - SAUDI ARABIA

A second copy of the above mentioned information should also be mailed to:

KING SAUD UNIVERSITY OFFICE
4000 S. TAMIAI TRAIL, S-515
HOUSTON, TEXAS 77027

Attention: Ms. Nikky Amin

The benefits offered by the University for the two positions are:

- Free roundtrip airline tickets annually for the employee and his family
- Furnished accommodation or housing and furnishing allowance
- Monthly transportation allowance
- End of service gratuity
- Free Medical and Dental care covering family
- Contribution by the University to cover tuition fees for non-Arabic-speaking children

Qualified candidates should furnish their correct addresses and telephone numbers where they can be reached for notification of place and date of scheduled interview.

Applications will be held in strict confidence.

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We are a relatively new organization in South Dakota having been established in February, 1981. Because of our success, our current staff is being significantly expanded in 1984. To meet this expansion, we are searching for experienced candidates who are seeking excellent career advancement opportunities.

Under an O/E MVS/IBM environment, the following positions are available:

- APPLICATION PROGRAMMING ANALYSTS
- MSYS & CICS SYSTEMS PROGRAMMING ANALYSTS
- OPERATIONS TECHNICAL SUPPORT ANALYSTS
- TELECOMMUNICATIONS NETWORK OPERATIONS ANALYSTS
- PROJECT MANAGERS
- PROGRAMMING MANAGERS

We are seeking programming experience in both the batch and CICS areas with knowledge of either Automatic Teller Machines, Logon, Time Deposits, Demand Deposit Accounts, Automatic Clearing House, Hogan or Direct Mail.

If you are an aggressive professional seeking challenging work and satisfying rewards, we are what you have been looking for. We offer competitive salaries and benefits including relocation assistance. If you are interested, contact us at:

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(502) 378-7171
Permissible Correspondence

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FACULTY POSITION IN COMPUTER SCIENCE

KING SAUD UNIVERSITY
ABHA BRANCH
COMPUTER CENTER
P.O. BOX 428
ABHA - SAUDI ARABIA

The University of Tenni at Martin
DEPT. OF MATH AND COMPUTER
SCIENCE
MARTIN, TENN. 38238

Assistant or Associate Professor of Computer Science, begin Aug. 15, 1984. Ph.D. Required, Ph.D. in Computer Science or related area.

Salary competitive. T3 or T4, alternate assignments available. Send resume and three letters of recommendation to Dr. R. W. Wilson, Chair, Mathematics Department, Martin University, Martin, TN 38238.

Free roundtrip airline tickets annually for the employee and his family

End of service gratuity

Free Medical and Dental care covering family

Contribution by the University to cover tuition fees for non-Arabic-speaking children

To teach undergraduate Computer Systems Engineering Technology courses in a 4-year accredited college. M.S. Required in Computer Systems, Electronics or related field. Industrial experience desirable. Send resume for application by March 2, 1984. Send resume to: Dr. Donald Thouless, Affirmative Action Officer, Oregon Institute of Technology, Onotech Branch Post Office, Klamath Falls, OR 97601.

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Where can you be responsible for a complete, automated system?

With the folks who do it right!

Many KFC Franchise Operations.

Major responsibility will be the development and integration of hardware and software for KFC franchisees. This includes business analysis, training user groups, and providing constant daily support. You will also be responsible for keeping abreast of technological advances and how they can affect operations.

We require a minimum of 3 years' strong accounting/auditing experience, as well as a technical background with micro-computers and/or small business computers. Degree in Accounting, Business or Computer Science and excellent communications ability essential. Travel will be required.

We offer an excellent salary and a comprehensive benefits package. If you would like to take on this challenge and become part of our fast moving company, please send your resume, complete with salary history and requirements, to: Ms. K. Brittain, Employment Specialist, Kentucky Fried Chicken, P.O. Box 6000, Framingham, MA 01701.
New 1984 Salary Data

No doubt, during 1983, you knew that many firms took a hard line on awarding salary increases—or, in some cases, even enacted across-the-board cuts. Yet, on the other hand, did you know that salaries for computer professionals soared right through the uncertain business outlook?

Computer salaries are up.

Therefore, during 1984, you knew that many firms took a hard line on awarding salary increases—or, in some cases, even enacted across-the-board cuts. Yet, on the other hand, did you know that salaries for computer professionals soared right through the uncertain business outlook?

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MARKET RESEARCH PROFESSIONALS

Bringing Your Creative Talents and Expertise To

ITT Telecom

And Become An Important Part Of Our Telecommunications TM

The ITT Telecommunications TM is a pledge to ourselves and to our customers that we are committed to achieving the highest level of technical excellence and leadership in fulfilling customer telecommunication requirements for voice, data, and information transmission.

At ITT TELECOM, in Raleigh, North Carolina, our Telecommunications TM philosophy is backed by some of the most creative and talented professionals in the industry, a team dedicated to meeting the challenges of a fast-changing industry. If you feel your highly accomplished skills match our long-range goals, look into the positions offered with our BUSINESS and CONSUMER COMMUNICATIONS DIVISION and become an integral member of the number one team in telecommunications.

MANAGER MARKET RESEARCH

Responsibilities will include managing customer needs and competitor analysis. Required is experience in office automation, integration of data/voice, advanced terminal features and local/private wide-area networking. Familiarity with commercial specification requirements is highly desirable. MBA preferred along with 6-10 years experience of which 5 years should be in the data systems industry.

MARKET RESEARCH SPECIALIST

Specializing in the advanced voice/data terminal area identifying customer needs and performing competitive analysis, you will be required to analyze competitive product information, product pricing, evaluate new and/or competitive technologies and recommend related market strategies. MBA Degree desired along with at least 3 years experience preferably with a data industry systems manufacturer. Voice experience would be a plus. Familiarity with commercial specifications requirements desirable.

MARKET RESEARCH SPECIALIST

Supporting our MANAGER, Market Planning, in analyzing our current telecommunications products/data needs/enhancements for residential, key systems and PBX markets, you will be required to generate studies and analysis and maintain source documentation for current product nonvoice enhancements and competitive strengths as well as acting as a back-up to our manager regarding customer and competitive analysis for future voice related requirements. Along with a proven ability to interface effectively with middle and top management personnel, an MBA Degree and at least 3 years experience with a data industry systems manufacturer is desired. Voice experience would be a plus; familiarity with commercial specifications requirements highly desirable.

In addition to excellent salaries, comprehensive benefits, and ample room for career development, our location will make your move to ITT Telecom complete. In Raleigh, you will find a bountiful collection of cultural, educational and recreational pleasures all designed to meet the personal preferences of the community. Relocation assistance will be provided; a full-time Relocation Coordinator is on staff to assist with your relocation from BEGINNING to END.

Please send a detailed resume, indicating position of interest and including salary history in strict confidence to: Senior Technical Recruiter, Department CW-116. ITT Telecom, Business and Consumer Communications Division, 2712 Wake Forest Road, Raleigh, North Carolina 27611. An Equal Opportunity Employer M/F/H/V.
Explore New Dimensions in Software Technology

With Sperry you will find challenging career opportunities while you work on the latest software technology with high-caliber professionals like yourself. Across the nation, our Technical Services Division is providing expertise in the design and development of major scientific, commercial, and defense software systems. Whether you're a MICROPROCESSOR SYSTEM DESIGN ENGINEER, A REAL-TIME SCIENTIFIC PROGRAMMER, AN OPERATING SYSTEM INTERNALIST, OR ONE OF MANY OTHER TYPES OF SOFTWARE SPECIALISTS YOU'LL FIND EXCITEMENT AND REWARD IN A NUMBER OF MAJOR AREAS:

- DEC and Univac real-time programming efforts for NASA Communications and Satellite Control Centers (Riverdale, MD)
- Univac 1100 System internalist, data base design, and application programmers for complex financial and communications packages (Wash. D.C., Harrisburg, PA and Newport, RI)
- Microprocessing System Engineering for the Navy's tactical Advanced Combat Direction System (San Diego, CA)
- Communications programming for real-time military communications efforts - AUTODIN, AMME, LDMX experience a plus. (Phoenix, AZ)

These are just some of the many fulfilling positions awaiting you at Sperry. Complementing these dynamic openings, Sperry offers a highly competitive compensation and benefits program. To learn more, direct your resume to our Eastern and Western representatives. U.S. Citizenship required. Principals only. An equal opportunity employer M/F/V/H.

EAST
Sperry Corporation, Computer Systems, Technical Services Division, B. Glover, (Dept. CW), 1901 N. Moore St., Arlington, VA 22209

WEST
Sperry Corporation, Computer Systems, Technical Services Division, B. Elmer, PO Box 43825, St. Paul, MN 55164-0525

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Welcome to a world of high expectations. The complex design criteria for the IMS system Carole is working on are enough to discourage most Programmer/Analysts. But Carole is a KNAUER Consultant. She has years of technical background, project experience and product knowledge. She thrives on meeting the high expectations to qualify for the substantial rewards of working as an MIS consultant for KNAUER.

KNAUER's clients include IBM mainframe environments of top Fortune 500 corporations and banks in California and Hawaii. Call or write about our full-time staff consulting openings in San Francisco and Los Angeles for Senior Analysts and Programmer/Analysts whose skills may include:

- IMS/DBDC
- PL/I, COBOL, FOCUS.
- UNIX/C

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44 Montgomery Street, Suite 1300
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For consideration forward your resume or call Gary Johnson, (201) 874-8600.

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You'll use your skills in module problem determination and recommendation for our Network Services section. Working out of a day-to-day operations mode, you will use your knowledge of BASIC, VTAM, IMS or CICS in an OS/MVS system to tune up our telecommunications network. You'll also apply your knowledge of communication protocols to prepare programs for line transmission.

If you have several years of systems programming background in a telecommunications environment, and ideally have a B.S. in Computer Science or a related discipline, this new position will be highly rewarding.

Due to our size and scope of operations, we offer access for advancement, career stability and an excellent salary with major benefits. For more information, call our number below, or apply directly send your confidential resume now to Richard Jackson or Byron Heath, MIDDLE SOUTH SERVICES, INC., P.O. BOX 61000, NEW ORLEANS, LOUISIANA, 70181.

1-800-231-4481

In Louisiana, call collect (504) 588-4282.

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tes opening in the San Francisco Bay area and in Sacramento and the San Joaquin Valley. Specific needs for programs and packages for Y2K, Lotus, and mainframe experience.

Send resume to: DBT

Burmbo/Banking

Project leaders and programmers needed to fill several temporary positions in the Fort Lauderdale area. Immediate opening in the San Francisco Bay area and in Sacramento and the San Joaquin Valley. Specific needs for programs and packages for Y2K, Lotus, and mainframe experience.

Send resume to: DBT

NORTHERN CALIFORNIA

Let us help you explore the many career opportunities in Data Processing & Software Engineering. Immediate openings in the San Francisco Bay area and in Sacramento and the San Joaquin Valley. Specific needs for programs and packages for Y2K, Lotus, and mainframe experience.

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JANUARY 16, 1984

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The following positions require U.S. citizenship, and extensive background investigations may be conducted:

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An exciting career opportunity exists for an individual experienced in software quality assurance. We seek a person with strong leadership skills to develop and head our software Q.A. function. Experience with real-time software specifications, design, development and documentation desired. Experience with software Q.A. standards required. This individual will develop and implement a Q.A. program for our software products. A BSSE or BSCE or applicable experience preferred.

SOFTWARE SPECIALISTS

Positions require experience in the design and implementation of large scale real-time systems utilizing structured methodology. Experience with VAC-11, RSX-11M or VMS operation systems and assembly language/FORTRAN required. Knowledge of signal processing, graphics, data base implementation or large scale nested computer systems is highly desirable. Project leader position requires prior experience with proposal generation and cost estimating.

Fairchild Weston offers top compensation, liberal fringe benefits, relocation assistance, and a casual but challenging work environment.

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For confidential consideration, please submit your resume, including salary history, to Tom Salmon, Manager, Professional Employment.

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Rainier Bank, one of the most progressive financial institutions in the Pacific Northwest, is currently seeking a Senior Database Analyst.

You will need 3 years of system programming or application experience, and must be able to design, code and debug programs using COBOL and/or Assembler. In addition, you should have expertise in database management structures and should have extensive experience using appropriate IMS (C6/C) utilities.

You will assist in the design, development, implementation and maintenance of database systems which includes consulting with technical personnel to resolve performance issues with physical database designs and applications and preparing backup, restart and recovery procedures.

Qualified applicants should address their resumes to: Lisa Toliver, Rainier Bank, P.O. Box 3996, Seattle, WA 98124.

Your initiative to contact us personally will be weighed more heavily than third party representation. We are pleased to be a leading Pacific Northwest equal opportunity employer.

IT LOOKS LIKE ANOTHER BIG YEAR!

1983 was a year filled with accomplishments at Northrop Data Processing. We completed a major reorganization along divisional lines to enhance our responsiveness to a wide variety of needs. New Data Centers utilizing IBM's latest mainframes and operating systems were established. We introduced our first Information Service Center at the Aircraft Division and provided continued support to Engineering, Manufacturing and Financial functions.

1983 was a big year. As a service organization we can't rest on the success of last year. We must continue evaluating future needs and plan accordingly.

1984 promises to be a year of continued growth for both the divisions we service and ourselves. We will continue applications programming support to a full range of functional organizations and take on new challenges. In 1984, we will create additional Information Service Centers and establish the Applications Development Center as an aid to programmers. Continuing improvements to our network systems will include integration of personal computers into the framework of software services.

1984 looks like another big year for Northrop's data processing professionals. How does it look for you? If you don't see diversified challenge, success and reward coming with the new year, perhaps you should consider our broad range of opportunities.

Software Project/Product Management
Computer Systems Planning
Operating Systems Software Support Including Performance Tuning
IMS Systems Software & Data Base Administration
Graphics & Aeronautics Support Programming
Manufacturing & Financial Applications Programming

If you're experienced in any of these areas, we'll welcome your inquiry. For immediate and confidential consideration, send us your resume and, Happy New Year!

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Sacramento California company seeking a strong and self-motivated individual with large systems development experience. Minimum of 5 years experience and a Bachelor’s degree in Computer Science or equivalent. Excellent communication skills are mandatory. A background in group insurance industry would be a plus. Computer experience with COBOL, DBASE and a desire to work under pressure. Salary negotiable. Principals only. Send resume and salary history to: D.F. Sturgis, Fleming Companies Inc., P.O. Box 26647, Sacramento, CA 95844.

SYSTEMS PROGRAMMER
4 years experience with 1-2 years systems programming environment. Desired skills include COBOL, generation and maintenance. Minimum 350 CICS, VSAM, RACF and JCL 4311 hardware. MSA or INFORMEX experience a plus for certain positions. Salary negotiable to work 25%.

Benefits Package
Fleming offers one of the best in the industry, including company paid medical, dental and life insurance, profit sharing, pension and stock purchase plans as well as our new “Stock Share” and 401K “Savings Plus” plans.

Call now! Join a company with a dynamic past and promising future. To schedule an interview, call Greg Belsheim, COLLECT (405) 840-7308. We are open weekdays, Tuesday and Thursday until 8pm. If you are unable to call, send your resume with salary history to Greg Belsheim, Fleming Companies Inc., P.O. Box 26647, Oklahoma City, OK 73126.
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Australia: Alan Power, Computer world Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395133. Telex: AX24752 CONWAR.


Mexico: Richard Small, Computerworld of Mexico, Casa X 21, Colonia Roma, Mexico City 7 0 4 0 . Phone: (52) 514-6306. Teles: 1771030 ACNAME, 1777800 ACNAME.


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Sweden: Bengt Mariett, Computerworld/ Sweden, Nova Media AB, Vatetagen 55, 11538 Stockholm. Phone: 8105999 NOACON.


Italy: Daniele Comboni, Gruppo Editoriale Jackson, s.r.1, via Rosellini 12, 20124 Milano.


Norway: Mr. Per Berntsen, Editor, CW Norge A/S. Box 2602. 02477 Oslo 6. Phone: 2517725. Telex: (856) 74674.

Singapore: Mr. David Haidu, General Manager, Asia Computerworld, Pte. Ltd., 1-11/11/1-10 Goldhill Plaza, Newton Road, Singapore. Phone: 250-444. Telex: (798) RS 3700.

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<td>423.98</td>
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<td>CWY</td>
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*All statistics compiled, computed and assembled by TRADE-STATS, INC. Cambridge, Mass. 02138*
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