How to Shop for Your Information Center

MIS VIEWS THE VENDORS: A ROUNDTABLE

FUROR OVER TAXES FOR INDEPENDENT CONTRACTORS - SENATORS D'AMATO AND MOYNIHAN DEBATE 1706
FREEDOM OF EXPRESSION AT REVOLUTIONARY PRICES.

With the new CIE 3000 S Ion Deposition Printer, freedom of expression is yours at last. Now, it's easy to print electronic forms overlaid with your data, on-site. And at only 2 cents a page, it's affordable too.*

Flexible electronic forms. On demand. Printing invoices or statements—even multiple form sets in different sequences—is a snap. The CIE 3000 S can store up to six pages of electronic forms and print faster and cheaper than other methods.

By creating and modifying electronic forms, you virtually eliminate the high cost of stocking and keeping inventory of preprinted forms.

Not to mention being able to update and instantly print documents as you need them. Now, one small change won't mean your entire stock of forms ends up in the trash.

And with our array of multiple fonts and point sizes, plus proportional spacing, your company's documents will look like they were typeset and printed at great expense. But cost a great deal less.

Our printer manages up to 32 fonts on one page, with practically no limitation on font size. You can choose from 8 standard fonts—and add 24 optional ones—for your electronic forms and correspondence.

Express yourself. We give you a lot of artistic license. Our graphic arts features include line drawing, shading, reverse type and bit-mapped graphics—all the tools you need to print attractive forms. Even add logos and signatures for a personalized appearance.

Non-stop technology from C.Itoh. Ion deposition printing is durable and dependable. A revolutionary four-step printing process with few moving parts. This means very low monthly maintenance costs. In fact, about half what it takes to keep a laser printer going.

At a fast 30 pages-per-minute, it can print 20,000, 50,000 or as many as 150,000 pages a month, to keep you operating virtually non-stop.

The CIE 3000 S uses plain bond paper in letter and legal sizes and form lengths from 7 to 14 inches. What's more, the CIE 3000 S is fully compatible with IBM and DEC, as well as a variety of other host systems.

Of course, C.Itoh offers nationwide service, with several on-site service plans to choose from, as well as an end-user support staff.


Twx: 910-343-7446. 19300 So. Hamilton Ave., P.O. Box 9116, Torrance, CA 90508-9116.

*Includes amortization, maintenance, consumables and paper.

---

**HP LaserJet is a trademark of Hewlett-Packard Co.**

**Svote 9700 is a trademark of Xerox Corporation.**

**IBM is a registered trademark of International Business Machines, Inc.**

**DEC is a registered trademark of Digital Equipment Corporation.
Well Connected.

At WordPerfect Corporation, it's not enough to have the leading word processor for IBM® PCs and compatibles. In this exploding era of connectivity, WordPerfect is reaching far beyond PCs to offer power word processing for an entire network of computers and systems.

Network Connections.
WordPerfect Network gives local area network (LAN) users all the power of WordPerfect's stand-alone version with the added capability of network file sharing. Utilizing Novell's NetWare® Operating System Software, WordPerfect Network runs on nearly all major local area network systems. And it is fully compatible with a number of other LAN operating systems, including the IBM PC Network®, and Token Ring Network®, 3Com Etherseries® and AST-PCnet®.

Multiple Connections.
WordPerfect also offers versions for a host of other micro- and minicomputer systems, including Apple IIe®/IIc®/IIgs®, Data General®, VAX VMS® and DEC Rainbow®. Files from all of these versions can be interchanged to give you greater connectivity in a mixed-machine environment.

Plus, WordPerfect has announced versions for other machines as part of its strategy to support the major computer systems in the market. So no matter what hardware you choose, WordPerfect can be your standard of word processing software.

Get the well-connected word processor: WordPerfect. For more information, call or write WordPerfect Corporation, 288 West Center St., Orem, Utah 84057 (801) 225-5000.
9 **Look Ahead**
HP has revealed some of its follow-on Spectrum RISC system plans.

17 **Trade**
"Clash of Chip, Systems Vendors Led to Sanctions Compromise," but Jeff Moad sees no accord yet on price restrictions on 1Mb DRAMS.

19 **Exhibitions**
AFIPS is upbeat as "NCC Ready for Chicago, But Will the Show Survive?" That's the question Edith D. Myers hears.

20 **Mainframes**
Paul Tate reports that "Comparex Chooses Hitachi Over Fujitsu."

24 **Vertical Markets**
Gary McWilliams finds "NCR Pinning Banking Hopes on Key Software."

32 **Database Systems**
With its OLTP-based RDBMS, "Sybase Challenges Database Machines." Edith D. Myers reports.

40 **Workstations**
Workstation prices are going down, Susan Kerr reports, as "Micro, Workstation Vendors Butt Heads in Product Overlap."

44 **Benchmarks**
Ericsson wins competition to buy France's CGCT.

49 **Behind the News**
Computer law specialist Esther Roditti Schachter explores the judicial and legislative history behind the ongoing state of "Software Protection in the Throes of a Legal Morass."

63 **Inflexible Manufacturing**
BY ROBERT POE
Japan's inflexible view of machines is creating blind spots to potential gains that can be achieved from the application of more sophisticated systems.

70 **How to Shop for Your Information Center**
BY JOHN N. OGLESBY
Clipping coupons simply won't do as a strategy for info center shopping. What will help is to know eight basic elements to build your shopping list around.

81 **Drawing the Graphics Line in Your Info Center**
BY NEIL KLEINMAN
An info center can't let itself become an informal graphics arts department if it's to do its job. Graphics support specialists must train users to fulfill their own needs and find the best tools to that end, with a keen eye on software.

89 **How Should Contractors Be Taxed? A Debate**
Senators Daniel Patrick Moynihan and Alfonse M. D'Amato offer their views on Section 1706 of the 1986 tax law, which affects the filing status of independent contractors such as systems analysts. Moynihan introduced 1706, D'Amato sponsors a bill to repeal it.

94 **Alliance For Progress: MIS Views Vendors**
In a DATAMATION roundtable discussion, MIS chiefs discuss vendors: they value honesty, are tired of being offered rehashes of yesterday's technology, and want suppliers to address specific company and industry needs.
A New Copyright Law Is Needed for Software

In January, the U.S. Supreme Court declined to review a copyright infringement case, Whelan Associates Inc. v. Jaslow Dental Laboratory Inc., in which the Third Circuit court held that "copyright protection of computer programs may extend beyond the programs’ literal code to their structure, sequence, and organization." The Supreme Court’s refusal was a blow to the information processing industry, for it had been hoped that the high court would finally clarify the inconsistent rulings concerning the extent and nature of software copyright protection.

The exact reason for the Court’s refusal may never be known, but strong among the possibilities is that it was saying that Congress hadn’t yet produced a complete and equitable law concerning software copyright protection. That, at any rate, is what we hope the Court meant, because from our view a modern and separate software copyright law is sorely needed in the United States.

As the well-known computer law expert Esther Roditti Schachter explains in “Software Protection In the Throes of a Legal Morass,” p. 49, the software industry in this country is currently operating under an unclear set of rules contained in a 1980 provision that added software protection to the 1976 copyright law. The courts—miserved by a poor legislative job that did not elaborate on the scope of software protection—have repeatedly made contradictory decisions regarding software protection.

Software is not a book or a newspaper. It is its own animal and must have its own copyright laws, separate and distinct from protections for information and entertainment. It is clear though that Congress needs a good deal of help in understanding this and why it is so. In many ways, the industry that has suffered most from the lack of a complete software protection law is guilty of contributing to the current mess by not taking a more active role in explaining and recommending solutions to lawmakers.

The United States needs a new law spelling out software protection and it needs it fast. The current situation, if allowed to continue much longer, will devastate both software producers and users. It is essential that industry professionals take the lead in forming this legislation, because only they truly understand what makes software tick.
Dressed to Kill

The article entitled “Dressed for Success” (March 1, p. 59) probably should have been entitled “IBM: Dressed to Kill.” The opening two paragraphs of your article paint a picture of a company that apparently will do anything for a database sale. If, as your article states, IBM did offer DB2 to customers “free for a six-month trial”; tell its customers “that DB2 would be closely coupled to its hardware in the years ahead”; discuss the unannounced product “Repository”; and spread the word that DB2 was now a “strategic offering,” then I believe IBM is not only doing a disservice to its customers but may be violating the law.

MARTIN A. GOETZ
Senior Vice President
Applied Data Research Inc.
Princeton, New Jersey

See Page 89

It’s hard to know who is worse served by Willie Schatz’s “Putting Their Heads on the Tax Block” (March 15, p. 32)—readers who know something about the new tax law, or those in ignorant bliss.

The fact is that—like all tax laws—this new tax law is very much a political product, as opposed to an economic code. And, like every other section of the code, it has its victims as well as those who will profit. To avoid these realities or move tactfully around them negates what should be the purpose of such an article, namely to inform readers—regardless of their prior knowledge level.

It’s easy to say that the victims of Section 1706 are consultants whose tax status may be changed to that of the W-4 wage earner from that of the freewheeling 1099 filer. It’s also easy to claim as the winner the greedy IRS and the federal government. But Section 1706’s true victims ultimately are U.S. consumers of consulting services, whether small corporations or multinational mammoths.

This is because the new regulations add to the cost of doing business for many consulting firms—costs that will be passed on to the client—and encourage the buyout of smaller, marginal consulting firms and job shops by their publicly traded big brothers, thus reducing the number of firms competing for consulting business and ultimately producing rate hikes.

WENDY VANDAME
Publisher
Consultants & Contractors’ Newsletter
Boonton, New Jersey

IBM, IPSE, and Acrophobia

With more than 20 years in computer application development and support, I heartily agree with David Morgan’s cry for an integrated set of development tools in the article on the Integrated Project Support Environment (IPSE) (“The Imminent IPSE,” April 1, p. 60). I have worked on “programmer” productivity in my own company and in national organizations for several years and was delighted to see IBM embrace the concept of integrated development tools with the announcement of Systems Application Architecture (SAA), promising common user access and a common programmer interface across operating systems and hardware.

I have several problems with the programs discussed by Mr. Morgan. First, I find three letters missing from his article: IBM. Obviously, I have an IBM bias, but while IBM often seems to work in a vacuum and certainly is trailing in this area, I find it incredible that anyone can imply that something will take over the data processing industry without indicating how the dominant player in the industry will be involved. (The next most important letters, DEC, finally appear on the last page of the article.) Great strides have been made by independent vendors in providing tools for developing and supporting systems on IBM hardware. Many large companies have spent millions providing and/or acquiring tools and integrating them. Tool makers are expanding their tools to encompass more tasks in the systems development life cycle and are thus improving the integration.

IBM has started to market third-party tools and now promises an open, integrated development environment. So the situation is improving.

A second point ignored by Mr. Morgan is that new tools tend to lack support for existing systems. The ubilical cannot be cut. Keeping existing systems running is more important than developing new ones—they are corporate lifeblood. The cutoff is even more apparent if a whole development “factory” is implanted than if individual life cycle task tools are adopted.

Finally, what a delight to find the multiplicity of acronyms in Mr. Morgan’s article: IPSE, APSE, PCTE, SSSF, STARS, etc. IBM inundates us with them, too. What we need is a Cross Acronym Consistency Architecture, or CACA.

RICHARD STROMBERG
Wilmington, Delaware
A SPLIT PERSONALITY HAS ITS ADVANTAGES.

Datasouth's CX Printers Are Plug-Compatible With Your Mainframe And Your PCs.

Face it.
You've got an identity crisis.
How can you get the output you need for your mainframe and your PCs from one printer? Stick with an old, slow, expensive 3287 printer, and depress your productivity? Or patch together some schizoid arrangement with an ASCII printer and a black box?
The answer to your problem is staring you right in the faces. Datasouth's CX3180 and CX3220 high performance matrix printers.
These true coaxial printers attach directly to a 3274/76 cluster controller or a 4331 Display Printer Adapter, without an external protocol converter. No behavior modification is required for them to work with PCs, either—both printers have parallel interfaces.

And no matter how you split their workload, these printers work like crazy. The CX3180 gives you draft text at 180 cps. The multimode CX3220 printer produces near-letter-quality text at 45 cps, and DP output at 220 cps. Both printers also generate high-resolution, dot-addressable graphics. And both are built for the kind of 100% duty cycle applications that make most printers crack under the strain.
So take advantage of your own split personality. Two heads may be better than one, but nothing beats Datasouth's single-minded dedication to high performance output. To find your nearest Datasouth distributor, call us at 1-800-222-4528.
Switching from computer letterhead is as simple as

Instructions:

1. Push
2. Pull

Push a button. Pull a lever. Push a button.
That's how easy it is to switch from computer paper to letterhead using a Fujitsu DX2000 series printer.

No other 9-wire dot matrix printer can handle paper so easily. There's no wrestling with continuous forms, fussing with optional tractors or wasting time loading and unloading paper. And for big jobs, automatic feeding of cut sheet paper is simple with the optional, single-bin sheet feeder.

New Printers Offer Faster Speeds.

You get four printers to choose from in the DX series, the DX2100 and DX2200, plus our new DX2300 and DX2400.

The new printers produce up to 135 lines of copy per minute. Or an average size memo in draft quality in just 11 seconds.
paper to
1...2...3.

Print speeds range from 44-54 characters per second in near-letter quality mode, to 220-324 cps in draft quality mode, depending on which model you choose.

Each printer can handle letters, spreadsheets, descriptive charts and professional graphs. Plus, you can get an easily-installed option for 7-color printing.

The DX2000 series makes you more efficient. More productive. And more professional.

Quiet, Reliable, Compatible.

The DX2000 printers are quiet. So you and your neighbor can think and talk comfortably even while printing lengthy reports.

What's more, they're rugged by design. And can give you about five years of trouble-free printing without asking for a holiday.

Which saves you time. Money. And lots of frustration.

That's not all. Each printer is compatible with the most popular software packages, using Epson® FX80, JX80, IBM® Graphics Printer® or IBM Proprinter® commands.

Plus, the entire Fujitsu DX2000 series is surprisingly affordable.

Call for more information and a demonstration of the DX2000 series or any of our complete line of daisywheel, dot matrix, band or laser printers.

Then find out how easy it is to make the switch.

A COMPANY WITH CHARACTER

FUJITSU

FUJITSU AMERICA
Computer Products Group

Epson FX80 and Epson JX80 are registered trademarks of Seiko Epson Corporation. IBM Graphics Printer and IBM Proprinter are registered trademarks of International Business Machines Corporation.

© 1987 Fujitsu America, Inc.
Universal Data Systems, the company that developed the first 9600 bps dial-up modem, has now applied its special brand of craftsmanship to the CCITT V.32 specification. The result is a full-duplex 9600 bps device for the switched telephone network. When substandard line conditions are encountered, the device offers automatic fallback to 4800 bps, while maintaining the full-duplex communications capability.

As you expect from UDS, the device fully utilizes the latest in CMOS technology for low-noise performance and very low (less than 20W) power consumption. A new LCD control panel displays and configures modem set-up selections and displays outputs from the unit's comprehensive self-test regime. Auto-dial capability is also included.

If your system must accommodate periodic bursts of high-throughput, full-duplex communication, UDS craftsmanship and the V.32 standard provide a reliable, cost-effective solution. For complete technical details and quantity prices, contact Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35805. Telephone 205/721-8000; Telex 752602 UDS HTV.

Universal Data Systems

If your system must accommodate periodic bursts of high-throughput, full-duplex communication, UDS craftsmanship and the V.32 standard provide a reliable, cost-effective solution. For complete technical details and quantity prices, contact Universal Data Systems, 5000 Bradford Drive, Huntsville, AL 35805. Telephone 205/721-8000; Telex 752602 UDS HTV.

Universal Data Systems

Universal Data Systems

Universal Data Systems
<table>
<thead>
<tr>
<th>Look Ahead</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECTRUM'S FOLLOW-ON PLANS</strong></td>
</tr>
<tr>
<td>CUPERTINO, CALIF. -- Hewlett-Packard has been telling impatient users about a pair of follow-on Spectrum RISC systems under development. One project, based on HP’s NMOS-III technology, is aimed at twice the performance of the Spectrum 930 system. HP hopes to ship it sometime next year. Also under development, though possibly put on hold, according to sources, is a Spectrum follow-on based on ECL technology with three to four times the performance of the 930. Word is that it won’t get out until 1989 at the earliest. HP won’t confirm or clarify the existence or status of either follow-on development.</td>
</tr>
</tbody>
</table>

| NSA PACT TO APOLLO, SUN? |
| WASHINGTON, D.C. -- Apollo Computer Inc., Chelmsford, Mass., and Sun Microsystems Inc., Mountain View, Calif., continue to pull draws in their head-to-head battles for major contracts. Industry sources claim it’s likely that the pair will split a contract for 32-bit workstations due out from the National Security Agency this month. Last year, they split an EDS/General Motors workstation pact. Masscomp Corp., Westford, Mass., reportedly will receive a contract for data acquisition workstations under the same NSA bid. |

| NCR TO UNVEIL NETWORK PLANS |
| DAYTON, OHIO -- NCR this month is preparing to disclose a new local area and wide area networking strategy that will use OSI and SNA protocols to encompass its pcs and Tower, ITX, and VRX computers. The initial release of NCR Connect employs XNS protocols and Ethernet to link its pcs and Tower micros. The package has been in field tests at the office of the Assistant Secretary of the Navy in Washington, D.C., and at Fellsdata, a Norway dp service company and Tower user. |

| OLIVETTI READIES PS/2 RESPONSE |
| IVREA, ITALY -- It hasn’t taken Olivetti long to fight back after the IBM PS/2 launch. In late June, the Italian giant plans to announce a new group of computers that will compete with the IBM PS/2 line. The Olivetti products will mark the first response to IBM’s new system by a European computer manufacturer. |

| DEC EYES VM SYSTEMS... |
| MAYNARD, MASS. -- Digital Equipment Corp. is promising to take its IBM file transfer facility beyond the MVS environment to embrace VM systems. The company is strongly indicating to users that it will support VMS-to-VM file transfers as well as a VAX-to-IBM channel connection. For those who like to stay in the family, a file system interface is being developed, under the name Generic File System, to make access to local or remote VMS, Ultrix, or MS/DOS files uniform. |
MAYNARD, MASS. -- A redesign of the VAX 8700 and VAX 8800 employing faster components is planned in DEC's attempt to squeeze higher performance out of the two. Expected as early as next month, the enhanced versions will provide a better than 50% gain over existing models. The uniprocessor 8700 is expected to jump to about 10MIPS and the asymmetric VAX 8800 dual processor to about 20MIPS.

ST. PAUL -- ETA Systems is "a strong contender" in the procurement of a supercomputer at NASA Ames Research Center, say sources at NASA. The agency is looking for a machine that exceeds the performance of a Cray-2 by a magnitude of four. Cray is in the running, too.

WASHINGTON, D.C. -- Watch for a new set of regulations to come down the pike, possibly this year, that define what the government will classify as supercomputers. Sources say the Commerce, State, and Defense Departments are working on regulations that "clarify even more" what a supercomputer is, and what is thus non-exportable to certain countries. Manufacturers of minisupercomputers are keeping close watch on this development, since many are selling, or would like to sell, their products overseas.

CUPERTINO, CALIF. -- Tandem Computers Inc. is scheduled this week to announce plans to market a write-once optical disk library subsystem that should allow users of its NonStop systems to put massive amounts of data on-line. The new 5200 Optical Storage Facility includes two drives, a formatter, and an automatic changer supporting up to 32 disks of 2.6GB. Tandem says the subsystem allows data retrieval in an average of 17 seconds. The subsystem starts shipping in October at a cost of about $160,000, including software.

PRINCETON, N.J. -- The first release of the microcomputer/local area network version of Applied Data Research's fourth generation language Ideal is expected to hit the streets later this month. Called Ideal Escort, the product, a result of technology acquired by ADR two years ago from Data Language Corp., Billerica, Mass., is priced at $1,500 per copy. Ideal Escort supports the IBM token ring and PC network. The only hitch in the product is that it is only 95% compatible with Ideal on the mainframe. A user could not download Ideal mainframe applications to a micro, but ADR sources say the future direction is to enhance the

(continued on p. 12)
Double-digit budget increases are gone. And with them the options of hiring new people or installing a new "box" to meet growing information needs. Today's MIS Directors are challenged to get the most from the people and the computers they have.

And some are. Like the MIS Directors at the BASF Corp., The Southland Corp., the Fremont Indemnity Company and the thousands of others who have learned how to unlock the potential with ADR® Performance Software.

Fremont Indemnity has a DP staff with only 13 development people. Yet they're able to support more than 600 users as well as a database of over 50 million records that grows by more than 10 million records each year. They've dramatically increased the effectiveness of their DP staff by installing ADR/ DATACOM/DB®, our high performance relational DBMS.

ADR also has the people to help you get the most from your computers. From pre-installation consulting to training to a worldwide support network that solves most problems in less than 15 minutes.

ADR can unlock the potential of your people by unlocking the potential hidden in your computers. To learn how, call 1-800-ADR-WARE.

ADR PERFORMANCE SOFTWARE.
Unlock the potential.
Look Ahead

TEAMING UP FOR SERVICES

STOCKHOLM, SWEDEN -- IBM users in Scandinavia will get their first taste of value-added data services in September, when a new joint venture company created by Ericsson Data Systems, Volvo Data Systems, and Scandinavian Airline Systems starts operations. Called Scandinavian Infolink AB and backed to the tune of $3.2 million, the company's service will link the Memo electronic mail systems, already installed at 80% of Scandinavia's large IBM sites. Memo is supplied by Veremation, a Volvo and Ericsson joint venture.

SWEET SMELL OF SUCCESS

PARIS -- AT&T-Philips (APT) is determined to take a significant share of the European telecommunications market, despite its failure to win control of France's public switch maker Compagnie Générale de Constructions Téléphoniques (CGCT). The Belgian PTT is expected to be the next to award a major contract. In Italy, meanwhile, Ericsson looks set to win a partnership deal with Telit, the Italtel/Fiat Telettra joint venture telecom company. The results won't be known until the fall, when Telit is formally established.

TAKE A LETTER, MR. POSTMAN

TUSTIN, CALIF. -- A fledgling company, OAZ Communications Inc., hopes to popularize the term D-Mail (Document Mail) with the introduction this week of its first product, a single coprocessing board for the personal computer that adds facsimile function to the pc, usable in the background while a user performs other functions in the foreground. The OAZ product integrates data communication and facsimile communication on one board, which also contains an SCSI (Small Computer Systems Interface) interface for a scanner.

RUMORS AND RAW RANDOM DATA

Britain's ICL will deliver its first 80386-based system at the end of this year. ... Australia's biggest computer group, Computer People, and the U.K.'s Harwell Scientific Research Center have joined forces to create a new company called Harwell Computer to sell software tools, including a text retrieval system, developed by Harwell. ... Digitalk Inc., Los Angeles, is developing a portable Smalltalk product for mainframes and VAXs that it expects to introduce later this year. ... Cincom Systems, Cincinnati, has completed version 1.3 of its Supra relational database management system for IBM MVS systems and has one beta test installation. Work is nearing completion on a version for DOS/VSE environments.
PARADYNE'S 3400 SERIES HIGH-SPEED MODEMS

Paradyne combines the most advanced modem features and service offerings to bring you the best results... unprecedented performance and Guaranteed Network Availability.

ADVANCED TECHNOLOGY FOR EFFICIENCY

The new 3400 Series of high-speed modems incorporate Paradyne's field-proven custom VLSI design with a new digital signal processing architecture. This revolutionary Universal Signal Processor provides the highest online performance available.

NETWORK CONTROL FOR RELIABILITY

The deluxe diagnostic front panel allows operators to configure, monitor and test local and remote modems while the unique AUTO-SCAN feature continuously monitors hardware and line conditions. The 3400 Series are also fully compatible with Paradyne's ANALYSIS network management system.

APPLICATION FLEXIBILITY

The wide array of standard features include a 2-channel multiplexer, Auto-Call Auto-Answer dial restoral and expansion slots for future options and custom applications. Options include 8-channel statistical or time-division multiplexers.

GUARANTEED NETWORK AVAILABILITY

Paradyne's Guaranteed Network Availability and Service Response program provides for 99.5 percent network availability, or we'll credit your account.

So get the industry's best high-speed modem and let Paradyne guarantee the results.

For details, call 1-800-482-3333.
In Florida, call 1-800-342-1140.

paradyne

Nothing is quite as good as the best
HP Networking.
We connect offices, cities or countries.
Like clockwork.

An integrated business system is only as good as its connections. To other departments or offices. Or branch offices. Or even international offices.

At Hewlett-Packard, we’ve spent ten years designing and supporting a wide variety of local-area, wide-area and office networking solutions. All connectible to SNA-based systems. All high-performance and cost-effective. All based on OSI industry standards—so they’re all compatible with other vendors. And they’ll grow as you grow.

When you consider also that these solutions come from the company that never stops asking “What if…”, you may wish to make a connection with us. At 1 800 367-4772, Dept. 275R.
NO MATTER WHAT LANGUAGE OR DATA BASE PRODUCT YOU ARE USING — IF IT ISN'T CLARION, YOUR APPLICATIONS ARE TAKING TOO MUCH TIME TO WRITE.

CLARION:
- saves development time
- increases programmer productivity
- lowers development costs
- yields better, richer applications for single users or a network of users

TADITIONAL APPLICATION DEVELOPMENT TIME

CLARION TIME

POWERFUL MODERN LANGUAGE
ADVANCED DATA BASE MANAGEMENT
SCREEN and REPORT GENERATORS
FAST COMPIL3 and TEST
INTEGRATED FAMILY of UTILITIES

THE CLARION ADVANTAGE

IF... your commercial microcomputer applications are written in Assembler, BASIC, C, COBOL, Pascal or any of the data base languages...
AND... you have simply run out of time... or programmers... or money...
THEN... you owe it to yourself and to those who depend on your professional skills — to make the easy move to CLARION...
ELSE... you'll miss out on the CLARION advantage.

CLARION is priced at $395 plus shipping. It runs on any IBM PC, XT, AT or true compatible with 320KB of memory and a hard disk drive.

To order CLARION or to get our free 16-page brochure and the Sample Program diskette, simply call TOLL FREE...

1-800/354-5444

CLARION is a registered trademark of Barrington Systems, Inc. Copyright 1986 Barrington Systems
News in Perspective

TRADE

Clash of Chip, Systems Vendors Led to Sanctions Compromise

But the issue of fair market price restrictions on 1Mb DRAMs is still alive, and two key industry groups have yet to iron out their positions.

BY JEFF MOAD

Last year, when U.S. semiconductor manufacturers entered into the secret antidumping agreement, which recently led to $300 million in trade sanctions against Japanese electronics producers, they suddenly found themselves fighting battles on two fronts, not just one. Of course, Japanese semiconductor makers, against whom the sanctions were eventually directed, protested their innocence and looked for ways to retaliate. The domestic chip makers expected that. But what they were less prepared for was the strong reaction that came from a potentially even more troublesome source: their customers.

Computer systems vendors and other big semiconductor users came down hard on the U.S. chip makers for seeking dumping charges and sanctions, which increased by up to eight times the market prices on key semiconductors, such as DRAM memories. They criticized the chip makers for failing to consider the impact of their secret antidumping agreement on systems vendors. They also blamed them for using the U.S. Department of Commerce’s (DOC) Trade Act of 1974 in an attempt to force Japanese compliance.

Commerce, said the systems vendors, knew nothing about the U.S. electronics industry and would probably do more harm than good. Some important systems vendors threatened to undermine key aspects of the agreement by creating fair market value price floors for DRAMS, a move which could have created deep divisions in the U.S. electronics industry.

“The systems guys were worried,” says Joseph Parkinson, chairman and chief executive of Micron Technology, a Boise, Idaho, semiconductor manufacturer. Micron got the antidumping ball rolling in 1985 by filing a complaint involving 64Kb DRAMS.

While it remains to be seen if the sanctions and the anticipated follow-up negotiations between Washington and Tokyo can end alleged unfair competition from Japanese chip makers, the process used to arrive at the sanctions seems to have increased understanding between chip and systems vendors and even to have improved understanding of the electronics industry in Washington.

HENRIQUES: The CBEMA president is happy the final sanctions list took out most items that directly affected the industry.

"DRAMs are like oxygen to these systems people. We're talking vital signs. They reacted like anybody else would when that was threatened."

Some Differences Resolved

But after that rocky start, U.S. chip makers and their systems vendor customers have managed, at least for the time being, to smooth over many of their differences. Enough so that in mid-April the Department of Commerce and its U.S. Trade Representative (USTR) were able to settle on $300 million in trade sanctions, which actually pleased many of the chip vendors and avoided harming systems vendors that remain dependent not only on Japanese DRAMS but also on Japanese OEM products such as monitors, disk drives, and mainframes.

Price Increase Was a Shock

When the agreement was revealed last July, U.S. computer vendors were suddenly shocked to learn that it would significantly increase prices on most Japanese semiconductors. According to Stephen Schmidt, vice president of operations at Tandem Computers Inc. in Cupertino, Calif., “We were aware that there had been a couple of dumping suits filed, but that all is suddenly peaches and cream between U.S. chip manufacturers and systems vendors. Several issues which have been raised during the three-year-old antidumping campaign have yet to be resolved and could still spark additional intra-industry battles. For example, many large U.S. systems vendors continue to push hard for the removal of next generation 1Mb DRAM components from the list of chips covered by fair market value (FMV) price restrictions. Semiconductor makers refused to do so, saying such a move would hand the DRAM business over to the Japanese, once and for all.

But for now, at least, relations between chip makers and systems vendors are a lot better than they were a year ago in the wake of the chip industry’s secret agreement with Japan. That agreement, which was engineered by chip makers such as Intel Corp. of Santa Clara and the small but aggressive Palo Alto-based Semiconductor Industry Association (SIA), called for the pricing of Japanese semiconductors in the U.S. and third-party countries to be tied to DOC-generated FMV levels and for a slow, steady opening of the Japanese chip market to U.S. producers.

DATA MATION © JUNE 1, 1987 17
News in Perspective

but we were not well informed that the overall trade arrangement was being negotiated. The first indication Tandem had was when some of our suppliers said DRAM prices were going to go up by two, three, four, or in some cases eight times.

Tandem and other systems vendors quickly got in contact with the largest systems-oriented trade association, the 3,200-member American Electronics Association in Palo Alto, and the AEA formed a 37-member semiconductor task force with Schmidt as vice chairman. But the AEA and its task force already were too late to head off what they saw as some major problems with the secret agreement. One particular problem they cited was a faulty system for setting FMVs, which produced pricing guidelines that were outdated by three to six months. That meant the FMVs and prices on Japanese semiconductors in the U.S. were often higher than they should have been.

Some systems vendors blamed the SIA for not considering the agreement’s impact on semiconductor users, as well as vendors. They also blamed DOC and USTR officials for not understanding the potential impact of the agreement on systems vendors and for not involving them in the negotiations. “It was a very intense, focused message that the government was hearing, and it was all on the survival of the semiconductor companies,” says Schmidt.

Assumptions Prove Wrong

Of course, there are other explanations for why the AEA and its members seemed to be in the dark until after the antidumping agreement was in place and for why the government was hearing from only one part of the U.S. electronics industry. “We did keep the user community informed,” insists SIA vice president Sheila Sandow. “But I think they assumed that nothing was going to happen. Then, users woke up one morning, and they realized that prices had gone up.”

Immediately after the antidumping agreement, opinions among systems vendors within the AEA varied, from the hard line to the conciliatory. Sources on the AEA’s semiconductor task force say some systems vendors had no sympathy for the chip makers and wanted to do everything possible to undermine the agreement. Specifically, some systems vendors wanted all DRAMS excluded from the agreement, arguing that U.S. chip vendors had already lost the memory market. Others, such as DEC, while wanting to protect their source of inexpensive Japanese components, also saw the value in helping to save the U.S. chip industry.

IBM seemed to come down somewhere in between, supporting the chip makers’ needs for wider market access, but fearing that sanctions could lead to rounds of trade reprisals which would affect IBM’s substantial overseas business.

But criticism of the secret antidumping agreement by systems vendors was often public and loud, and many observers say that it was that criticism which contributed to the eventual collapse of the agreement. Japanese chip makers may have been encouraged to continue dumping in third-party countries when some U.S. systems vendors complained about the agreement and the higher prices they were forced to pay. “The Japanese may have made a miscalculation based on the noise from the systems manufacturers,” says Carl Everett, marketing director of Intel’s memory components division.

When DOC called for sanctions in November, charging that the Japanese had violated the antidumping agreement by continuing to sell below FMV levels in third-party countries, the U.S. semiconductor and systems industries were still far apart. Chip makers such as Intel were advocating that major Japanese systems products such as disk drives and large systems be covered by the 100% tariffs. And many systems companies, including Apple Computer Inc., were still advocating changes in the basic antidumping agreement to exclude most DRAMS.

In several rounds of meetings between DOC and semiconductor and systems officials, however, positions began to soften. DOC agreed to change its FMV methodology and to hire 15 staffers to monitor the FMVs. The AEA decided on limited support for sanctions and to negotiate with the SIA to get some semiconductors exempted from the FMVs.

In his statement to the USTR, AEA semiconductor task force vice chairman Edwin Lee, like representatives of other groups such as the Computer and Communications Industry Association and the Computer Business Equipment Manufacturers Association, focused on minimizing the impact from sanctions on systems vendors.

“We’re sorry we had to do this against such a valued trading partner as Japan,” CREMA president Vico Henryques says. “But we’re happy the final sanctions list took out most items that directly affected the industry. Now maybe we can work out the disagreements over the semiconductor arrangement and get trading back to normal.”

The SIA softened its stand on which Japanese products should be hit by sanctions. In his testimony before the USTR, SIA president Andrew Procassini dropped any mention of products that chip makers specifically wanted hit by sanctions and repeated the SIA’s hope that “enforcement actions should be designed to avoid adverse effects on semiconductor users.”

The result was sanctions on $300 million worth of Japanese products, which fail to hit key Japanese chip vendors such as Hitachi Ltd. and Fujitsu Ltd., but which also avoid hurting most U.S. systems vendors. Most U.S. chip makers, while acknowledging that the sanctions weren’t nearly as tough as they could be, say they are satisfied. “Which products were put on the sanctions list and their value were not as important as the
Trouble Is Brewing

Although Krist says the AEA so far has raised the 1Mb DRAM issue only as a subject for discussion, sources say the group’s semiconductor task force voted unanimously to push for removal of 1Mb DRAMS from FMV coverage and feels very strongly about the issue. That could be a problem: the chip makers don’t seem willing to budge.

Micron’s Parkinson calls the AEA’s suggestion “outrageous” and, as one of the few U.S. 1Mb producers, threatens to file another dumping action if 1Mb FMVs are lifted.

“He’s a very emotional issue among our members,” says the SIA’s Sandow. “They feel that, just because the Japanese have driven them out of the business through predatory pricing, they shouldn’t be rewarded for it. We’ll have meetings with the AEA on this, but obviously it’s potentially a very divisive issue.”

BY EDITH D. MYERS

On June 15, the 15th annual National Computer Conference begins a four-day run in Chicago’s McCormick Place. Many will be watching that run closely. What was once the premier trade show in the information processing industry is now a mere shadow of its former self, prompting many to wonder if its epitaph will be written in the Windy City.

How did NCC decline?

Last year in Las Vegas, attendance struggled to reach 42,000, a sharp drop from the 80,000 recorded in 1984. This year, the sponsor, the American Federation of Information Processing Societies (AFIPS), expects only 40,000 attendees. The number of confirmed exhibitors as of early May was only 150, shockingly fewer than the 400 at the same time last year.

But the statistics only tell part of a complex story. Much of NCC’s difficulty may be owed to external factors such as the industry’s slump and consolidation among vendor companies. Another important factor is the emergence of smaller, vertically oriented exhibitions that vendors say provide them with more focus.

Carol Purcell, president of Purcell & Associates, a trade show consultancy in San Juan Capistrano, Calif., says she won’t recommend NCC to her clients because of the show’s orientation.

A spokesman for Control Data comments, “The type of prospects we’re looking for for data storage products has been diminishing [at NCC] and we can’t economically justify participation. We’re going into more vertical industry shows and small, OEM-related shows.”

Adds a Unisys spokesman, “We’re looking more to vertical shows for the markets in which we do business—shows like the American Bankers Association’s National Operations and Automation and Uniforum.”

By Edith D. Myers

On June 15, the 15th annual National Computer Conference begins a four-day run in Chicago’s McCormick Place. Many will be watching that run closely. What was once the premier trade show in the information processing industry is now a mere shadow of its former self, prompting many to wonder if its epitaph will be written in the Windy City.

How did NCC decline?

Last year in Las Vegas, attendance struggled to reach 42,000, a sharp drop from the 80,000 recorded in 1984. This year, the sponsor, the American Federation of Information Processing Societies (AFIPS), expects only 40,000 attendees. The number of confirmed exhibitors as of early May was only 150, shockingly fewer than the 400 at the same time last year.

But the statistics only tell part of a complex story. Much of NCC’s difficulty may be owed to external factors such as the industry’s slump and consolidation among vendor companies. Another important factor is the emergence of smaller, vertically oriented exhibitions that vendors say provide them with more focus.

Carol Purcell, president of Purcell & Associates, a trade show consultancy in San Juan Capistrano, Calif., says she won’t recommend NCC to her clients because of the show’s orientation.

A spokesman for Control Data comments, “The type of prospects we’re looking for for data storage products has been diminishing [at NCC] and we can’t economically justify participation. We’re going into more vertical industry shows and small, OEM-related shows.”

Adds a Unisys spokesman, “We’re looking more to vertical shows for the markets in which we do business—shows like the American Bankers Association’s National Operations and Automation and Uniforum.”

BY EDITH D. MYERS

On June 15, the 15th annual National Computer Conference begins a four-day run in Chicago’s McCormick Place. Many will be watching that run closely. What was once the premier trade show in the information processing industry is now a mere shadow of its former self, prompting many to wonder if its epitaph will be written in the Windy City.

How did NCC decline?

Last year in Las Vegas, attendance struggled to reach 42,000, a sharp drop from the 80,000 recorded in 1984. This year, the sponsor, the American Federation of Information Processing Societies (AFIPS), expects only 40,000 attendees. The number of confirmed exhibitors as of early May was only 150, shockingly fewer than the 400 at the same time last year.

But the statistics only tell part of a complex story. Much of NCC’s difficulty may be owed to external factors such as the industry’s slump and consolidation among vendor companies. Another important factor is the emergence of smaller, vertically oriented exhibitions that vendors say provide them with more focus.

Carol Purcell, president of Purcell & Associates, a trade show consultancy in San Juan Capistrano, Calif., says she won’t recommend NCC to her clients because of the show’s orientation.

A spokesman for Control Data comments, “The type of prospects we’re looking for for data storage products has been diminishing [at NCC] and we can’t economically justify participation. We’re going into more vertical industry shows and small, OEM-related shows.”

Adds a Unisys spokesman, “We’re looking more to vertical shows for the markets in which we do business—shows like the American Bankers Association’s National Operations and Automation and Uniforum.”

BY EDITH D. MYERS

On June 15, the 15th annual National Computer Conference begins a four-day run in Chicago’s McCormick Place. Many will be watching that run closely. What was once the premier trade show in the information processing industry is now a mere shadow of its former self, prompting many to wonder if its epitaph will be written in the Windy City.

How did NCC decline?

Last year in Las Vegas, attendance struggled to reach 42,000, a sharp drop from the 80,000 recorded in 1984. This year, the sponsor, the American Federation of Information Processing Societies (AFIPS), expects only 40,000 attendees. The number of confirmed exhibitors as of early May was only 150, shockingly fewer than the 400 at the same time last year.

But the statistics only tell part of a complex story. Much of NCC’s difficulty may be owed to external factors such as the industry’s slump and consolidation among vendor companies. Another important factor is the emergence of smaller, vertically oriented exhibitions that vendors say provide them with more focus.

Carol Purcell, president of Purcell & Associates, a trade show consultancy in San Juan Capistrano, Calif., says she won’t recommend NCC to her clients because of the show’s orientation.

A spokesman for Control Data comments, “The type of prospects we’re looking for for data storage products has been diminishing [at NCC] and we can’t economically justify participation. We’re going into more vertical industry shows and small, OEM-related shows.”

Adds a Unisys spokesman, “We’re looking more to vertical shows for the markets in which we do business—shows like the American Bankers Association’s National Operations and Automation and Uniforum.”

Other large vendors not attending NCC this year are Digital Equipment Corp., Data General, and Apple. Major companies that are attending include IBM, NCR, Bell & Howell, AT&T, Britton Lee, Northern Telecom, and Xerox.

Says a Xerox spokesperson, “We still believe the NCC is good for showing our products. Based on past experience—and that includes last year—we come away with good prospects, good leads.”

Lack of Defense Cited

Interviews with past and present attendees reveal, among other things, dissatisfaction with AFIPS management of the NCC. And some of the criticism is of AFIPS’ lack of recognition of the growing competitive threat of both vertical and horizontal shows such as Comdex and Info. Says one past exhibitor, “It was so bad last year that the people who run it should have seen the need for substantial changes but they didn’t.”

Others complain about specifics, such as the allegation that AFIPS did not enforce the cutoff date for final booth payments due from exhibitors last year, leaving the show with many empty exhibit spaces.

Jack Moshman, president of Moshman Associates, Bethesda, Md., and AFIPS president, says he doesn’t know of anybody dropping out of NCC because of bad AFIPS management. On the cutoff date complaints, he says, “I don’t know about that. I do know that some firms that were fully paid up
News in Perspective

Comparex Chooses Hitachi Over Fujitsu

The Siemens-BASF venture’s strategies give users new options, including going to IBM.

BY PAUL TATE

“Big Red” is here, proclaimed a massive pan-European corporate image campaign heralding the arrival of a new force in Europe’s IBM plug-compatible mainframe market this spring.

“Big Red” is, in fact, the self-appointed nickname for Comparex Information Systems GmbH, established in January in Mannheim, West Germany. Comparex was born of the merged plug-compatible mainframe interests of two of West Germany’s largest dp suppliers—Siemens and BASF.

It’s gotten off to a great start. The company began life with 3,000 users, an installed base of 650 pcm processors and 30,000 pcm peripherals, and predicted revenues for its first year of $460 million.

“We are the now the biggest pcm supplier in Europe,” contends Deiter Jonescheit, Comparex’s new managing director.

But Big Red’s picture isn’t all rosy. Foremost among Comparex’s problems is the legacy of a split user base (see Look Ahead, April 1, p. 9). Of the 650 pcm processors installed, 420 small- and medium-sized machines were built by Hitachi and sold by BASF, while 230 mostly large systems were Fujitsu-built machines supplied by Siemens. What’s more, 23 former Siemens customers are running the disputed Fujitsu operating system, OS/FV.

Despite these two sets of users, Comparex has decided that it will “actively market” only Hitachi machines, according to Jonescheit. Fujitsu systems will be available only secondhand or on demand. If necessary, new systems will be bought for users via Siemens’ continuing agreement with Fujitsu. Jonescheit admits, though, that this is not Comparex’s main policy and that “sooner or later those Fujitsu users will be moving to Hitachi machines.”

Comparex’s Strategic Concerns

Jonescheit also points out that Comparex “would have run into big problems with Hitachi if we’d decided to sell both. It is not in their interests to have a company like that.”

For former BASF customers already using Hitachi processors, this product policy is no problem, because as far as they are concerned, the bigger and stronger their pcm supplier the better.

For former Siemens users with Fujitsu machines, however, the future holds changes. When they reach the limit of their current systems, the pressure will be on to move to a Hitachi machine. Since most are already running an IBM OS, this will likely be a simple matter of exchanging processors. In the minds of many of these customers, one pcm machine is as good as another—it’s the price that’s key.

But for the 23 Siemens customers running the Fujitsu OS across 45 machines, the transition may be more difficult.

UNFILLED: McCormick Place, the site of this year’s NCC, consists of three exhibit halls, but the show is not expected to fill them.
How to survive your S/3X without Decision Data.

Alright. You might be able to survive without us. But why make things tougher than they need to be?

With over 17,000 satisfied customers in many different industries, we’re the largest, independent, worldwide supplier of compatible peripherals for the System/36, /38 and /34. But our experience with—and commitment to—the S/3X marketplace extends well beyond individual products to total systems solutions and support.

When you work with us, you work with a Decision Data representative who knows our products inside out; who takes a personal interest in your business and your needs; and who specializes in giving you more for less.

You get direct support from our own Decision Data Service, Inc. with 120 locations and over 500 field engineers ready to help when you need them.

You get products backed by an annual R&D investment of nearly $9,000,000 to ensure complete compatibility and outstanding price/performance features; products that are proven reliable by countless, rigorous testing procedures.

And you get the kind of product selection that results in the most successful solutions. Our product family includes everything from matrix, band and laser printers to multi-user systems, ergonomically designed terminals and personal workstation systems for decision support applications. Even memory enhancements and uninterruptible power supplies.

All of which means when your solution includes Decision Data, you can feel very comfortable knowing you’ll never have to mask your decision. Ever.

For more information, simply call 1-800-523-6529, or in PA, (215) 757-3322. In Canada, call (416) 273-7161.

© 1987, Decision Data Computer Corporation. 400 Borsham Rd., Borsham, PA 19044-9956

CIRCLE 12 ON READER CARD
SPRI can eliminate your report distribution problems without program or JCL changes.

If you're currently using IBM's VSE/POWER spooler for lack of a better alternative, we'd like to suggest a better alternative: SPRI from Software Pursuits. SPRI is faster, more flexible, and out-performs VSE/POWER hands down. See for yourself. Call us today for your FREE "SPRI vs. VSE/POWER COMPARISON GUIDE". Because you don't need more power, you need more performance.

800-367-4823
Inside Calif., 800-367-9851

The proven alternative for VSE users.

IBM is a registered trademark of International Business Machines Corporation. SPRI and MVT/VSE are registered trademarks of Software Pursuits, Inc. © 1987 Software Pursuits, Inc.
FOR THE MIS/DP PROFESSIONAL: THE MOST TECHNICAL INFORMATION IN THE LEAST AMOUNT OF TIME.

When it comes to comparing major systems and products — and making the right buying decisions, it’s an ongoing challenge to stay abreast of the latest changes...which is why INFO is so crucially important for MIS/DP professionals.

Only with your INFO badge do you gain access to the one event that delivers all of the latest advances in information management systems. Only with your INFO badge can you find what you need to know in one place, at one time.


If it’s important, you’ll find it at INFO — leading-edge technology from the industry’s foremost manufacturers and suppliers. You’ll come face to face with the leaders in the field. Technical specialists who speak your language and can provide you with the solutions you’re after.

If you’re part of an information intensive business, make it your business to come to INFO. It’s the one information management show you simply can’t afford to overlook.

Invest four days at INFO...get a year’s worth of technical solutions. Send us your coupon today.

PREREREGISTER NOW...SAVE $15.
☐ Please send a Show admission form
☐ Please send an INFO Conference Program
☐ Please send details about exhibiting

Name
Title
Address
City State Zip
Mail to: INFO, P.O. BOX 597, Chester, NY 10918

CIRCLE 13 ON READER CARD
News in Perspective

By Gary McWilliams

NCR Pinning Banking Hopes on Key Software

The Universal Financial System is due to compete in a changing banking market, but will it be able to lure the large banks it's designed for?

NCR Corp.'s new banking software, the Universal Financial System (UFS), was so long in development that some took to calling the package the Unknown Financial System.

Now, after more than seven years and expenditures of $15 million, the UFS is no longer a mystery. NCR is accepting orders, and it pledges to ship the bank accounting and transaction processing software this summer.

The software's appearance comes at a critical time for NCR. As a result of defections by some of its customers, acquisitions and mergers between banks, and NCR's own outmoded technology, the company has lost hundreds of the medium-sized banks that had been users of a pair of NCR's older financial packages, Central Information File (CIF) and Comprehensive Lending and Savings System (CLASS). Those programs were not designed to handle the larger-sized institutions now appearing throughout the banking industry as it consolidates.

It's within this changing business climate that UFS provides new hope for NCR in a worldwide market estimated by Quantum Science Corp., New York, at $13 billion annually. NCR officials believe UFS will enable the company to attract the regional and large banks that have been at the forefront of acquisitions of smaller financial institutions.

"UFS is very important to NCR's survival in the banking area," says Peter McLetchie, an NCR banking software user and vice president of data processing at Albany Savings Bank, Albany, N.Y. "To maintain or expand their business, they needed a new product."

It's not that NCR is a faded rose in the banking market. The company has more than 1,000 users of Banker 80-2 and V-Banker software, designed for banks with between $20 million to $250 million in assets. It also owns healthy slices of the markets for banking peripherals such as teller terminals and automatic teller machines.

But among fast-growing banks and for key bank applications such as customer accounts, deposits, and lending packages, it's been difficult for NCR to maintain its grasp, the company acknowledges.

There are several reasons: CIF and CLASS are from 10 to 15 years old and are considered outmoded by users, and the packages' transaction processing is considered to be too slow for larger banks and too difficult to modify by many others.

80% Migration Predicted

"We've lost opportunities because we had nothing new to sell," concedes NCR Financial Systems Division assistant vice president Peter J. Augusta. He claims UFS will redress that situation. His confidence in the package's appeal to current NCR software customers is such that he predicts that an impressive 80% of CIF and CLASS customers will migrate to the package within three years.

NCR isn't taking any chances that UFS won't lure those existing users. Software specialists dedicated to UFS are being assigned in each of NCR's 16 U.S. sales regions to put muscle behind early sales. In addition, current NCR banking software users can get discounts of from $25,000 to $125,000 toward UFS if they commit to buying the package within the next 12 months.

The software is priced from $275,000 to $555,000, depending on the number of customer accounts.

While NCR wants to maintain its customer base of midsize banks, UFS was originally designed to enable the company to stalk the medium-to-large-sized banks that offer NCR a more lucrative market segment. Notes Augusta, "Whoever controls the network usually controls the terminals, proof encoders, and item processing. Some banks this size get involved in office
The queen of the PROM has just graduated at the top of her class.
IRMA™ has been the most reliable and most popular PC-to-mainframe link ever created. But as good as our IRMA is, we’ve never said we couldn’t do better. Fact is, a PROM is still a PROM. And you have better things to do with your time than spend it upgrading PROMs.

But now there’s IRMA 2™; it marks a whole new era in terminal emulation technology.

IRMA 2 is software-loaded. So you can upgrade by simply changing diskettes instead of PROMs. What you also gain is an easy path to multiple host sessions, sophisticated mainframe graphics, and all that DFT technology can offer you down the road. And with our new E78 Plus™ software, you gain even more.

Like Mod 5 support. And easy-to-use menus for quick custom-configurations. And keyboard-remapping and key programmability. And perhaps best of all, you gain speed.
Introducing IRMA 2.
The most reliable
software-loaded PC-to-
mainframe link.

All this new power of IRMA 2 is available right now for the IBM® PC,® XT,® and AT™ and the PS/2™ Model 30. And soon for all other PS/2 Models.

There's some especially good news for our current IRMA and Forte PJ customers, too. Because they can also take advantage of the new power of E78 Plus software.

For not a lot of money.

For a limited time, you can get E78 Plus at a special low conversion price. But you'll have to act soon.

Contact your local DCA distributor for all the details of IRMA 2 and E78 Plus software. Or call 1-800-241-IRMA, Ext. 507. In Georgia, call 1-404-442-4500.

CIRCLE 16 ON READER CARD
News in Perspective

How Banking Adds Up for NCR

PERCENTAGE OF MAJOR PRODUCT REVENUES
BY MARKET

<table>
<thead>
<tr>
<th>Finance and Banking</th>
<th>Retail</th>
<th>Wholesale Distribution</th>
<th>Professional Business Services</th>
<th>Federal, State, and Local Government</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>31%</td>
<td>27%</td>
<td>12%</td>
<td>12%</td>
<td>8%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: NCR

NCR's revenues in 1986 totaled $4.8 billion, with the parts consisting of $2.6 billion from products, $1.7 billion from service, $414 million from business forms, and $89 million from semiconductors and components.

Banks Will Be Targets

If IBM customers are out, where will NCR find these new customers? Augusta says initial targets are banks that are now using service centers for processing; Honeywell-Bull users; and Unisys Corp. users affected by Kirchman Corp.'s 1986 decision to phase out its support for Unisys hardware. Altamonte Springs, Fla.-based Kirchman is an IBM banking software developer.

"We'll be able to expand once we get a base of reference accounts among our users," says Augusta. "In larger banks, we'll look to put retail banking on NCR and leave the wholesale business to IBM. We think we have a way of front-ending IBM in a more powerful way than Tandem (Computers Inc., Cupertino, Calif.)."

Its goal of boosting market share to 15% may not seem particularly ambitious. Yet, while NCR has bucked the industry slump by riding a new product wave across its hardware lines, it has been decidedly unsuccessful in loosening IBM's grip on the large-systems segment of the banking market. Among large-systems installations, IBM holds an 80% share and Unisys ranks a distant second with about 8% of installed systems, according to a December 1986 report on banking automation by International Data Corp. (IDC), Framingham, Mass.

"I wouldn't be too sanguine about the success of their efforts," says Peter A. Cohen, senior research manager for financial industry services at IDC. "One, that market overall isn't growing as quickly and, two, IBM clearly dominates it. It doesn't seem like they'd do much more than satisfy their own base."

NCR's share in that same large-systems segment was negligible, according to IDC. The company fares significantly better—at an 18% share—in the small-scale systems market consisting of two to 16 users. It is precisely those NCR users and smaller banks, however, that are most at risk in the wave of mergers and acquisitions.

NCR once tallied about 1,000 users of the CIF and CLASS accounting and transaction packages for commercial banks and savings and loans, respectively. The number today is about 550. It's because of those losses that users such as Albany Savings Bank's McLetchie see NCR fighting for its survival in the larger bank market.

NCR's Miollha says the new package is suited to either banks or savings and loans with $250 million or more in assets. A fourth generation-like programming language enables applications to be tailored to accept new financial products that banks are developing. There is no limit to the number of accounts the software can support, NCR claims. The company also plans to optimize the package for use with its 9800 mainframe to accommodate the largest banks.

While NCR is confident, there are those who challenge its assumption that UFS can win the affections of the large banks. First, the range of banks it expects to lure with UFS is unusual in the market today. Second, IDC analyst Cohen says banking mergers are slowing the growth of new mainframe-class installations.

Bahram Yusefzadeh, president of the Product and Marketing Strategies Division at Kirchman, says NCR's targeting of banks with assets of $250 million and up is an unusually broad strategy. "I would say if it meets the needs of a $250 million bank and is easy to use, then it probably is not sophisticated enough for a $2 billion bank," says Yusefzadeh.

IDC similarly expects most of the growth in the next several years to be in small-to-medium-scale systems, not mainframe-class packages like UFS. According to Cohen, NCR likely will see continued success in the platform automation areas where it can complement, not replace, the existing mainframe systems.

"They'll do much better in the new, front-end kinds of applications," Cohen says. "They've already got a presence, and that's a faster-growing part of the business."

Management's Preferences

Another potential limitation to NCR's penetration of large banks is the strong loyalty there to IBM. Former and current NCR users say the preference for IBM among large banks is ingrained in their upper management. "I guess some people in upper management have been around IBM more recently," is the way James H. Jarrell, a se-
FROM THE PEOPLE WHO BROUGHT POWER PROTECTION INTO THE COMPUTER ROOM FIVE YEARS AGO.

TWICE THE POWER PROTECTION. HALF THE SPACE. ONLY FROM EXIDE ELECTRONICS!

Up to 125 kVA in a UPS just six feet tall and about six feet wide. Including the battery! (That's double the capacity and one-half the size of our previous 100 kw UPS.) And best of all, Exide Electronics has it for you today.

The Exide Electronics Series 6000 uses power transistors and pulse-width modulation to increase capacity, reliability, and efficiency. In fact, it has the most power in the smallest package of any computer room UPS available.

But a lot of power in a small package isn't all the Series 6000 has going for it. Its quiet, automatic operation. Its sealed, maintenance-free batteries in a wide selection of sizes. And the fact that it's UL listed. These are all good reasons to depend on Exide Electronics' Series 6000.

The best reason, however, is that it is from Exide Electronics. We've spent more than twenty years building UPS's and earning a reputation for quality products and power protection leadership.

We're committed to making sure that our products are exactly what we say they are. Uninterruptible Power Supplies. If you want a UPS you can really depend on, buy it from the company you can really depend on. Exide Electronics. Call us today at 1/800/554-3448. In North Carolina, call 1/800/554-3449.
The improvements

The original 8-MHz COMPAQ DESKPRO 286: Best in its class.

Introducing the new 12-MHz COMPAQ DESKPRO 286: 50% faster, 100% Compaq.

You've never seen this much performance in an 80286-based desktop. Numerous enhancements to its proven technology are one more example of how Compaq maintains its industry leadership by improving and innovating.

Compaq raised the standard from 6- to 8-MHz processing speeds. Now we're setting the pace again with 12 MHz, so you can run industry-standard software up to 50% faster.

And so you won't lose compatibility, we pioneered dual-speed processing, which reduces speed from 12 to 8 MHz in the few cases it's needed.

Compaq also maintains hardware compatibility with 8-MHz expansion slots that let you use industry-standard expansion boards, modems and add-ons without sacrificing your 12-MHz speed.

Hidden assets

While many manufacturers cripple high-speed processors with low-speed RAM, Compaq gives you up to 2.1 Megabytes of 12-MHz RAM on the system board without using an expansion slot, 8.1 Megabytes using only three.

Speed is also boosted by high-performance 20-, 40- or 70-Megabyte fixed disk drives with some of
are out of sight

The industry's fastest access times. And to protect data, we offer an internal 40-Megabyte fixed disk drive backup system, another innovation.

Uncompromising vision
The COMPAQ DESKPRO 286 gives you better display options than any other PC in its class. The COMPAQ Dual-Mode Monitor displays both high-resolution text and graphics. And the COMPAQ Color Monitor and COMPAQ Enhanced Color Graphics Board support EGA and CGA standards, displaying 16 colors at once from a palette of 64.

You get more expandability too—with seven available full-height expansion slots and room for four internal half-height storage devices, including 1.2-Megabyte or 360-Kbyte diskette drives.

See for yourself
Our improvements may be hidden, but they're clearly apparent in superior performance. That's why the most demanding users prefer Compaq. And why we can offer a full-year limited warranty. Seeing is believing. For the location of your nearest Authorized COMPAQ Computer Dealer, or for a free brochure, call 1-800-231-0900, operator 20. In Canada, 416-449-8741, operator 20.
©1987 Compaq Computer Corporation, all rights reserved.

It simply works better
large financial institutions, upper management gets the feeling, "IBM is the way we should go." The bank, now with about $2 billion in assets, started with NCR as a nearly $300 million institution.

Both Vaughan and Jarrell say the greater selection of software for IBM computers was an important factor in their decisions. "There is software on IBM that no one gives a thought to putting on NCR," says Vaughan. Adds Jarrell, "I guess you could say most [applications] are there but the choices are limited. I like having more than one option when I'm looking."

With such attitudes, it's no wonder the early focus is on NCR's current users. Those customers also are being targeted by such heavyweights as Digital Equipment Corp., Wang Labs, and Electronic Data Systems, Dallas. Competition also is coming from a company with a package that resembles a souped-up version of NCR's CIF commercial banking software. The company, Software Clearing House Inc., Cincinnati, boasts it has signed 28 CIF users to use the package, called Super-CIF.

Richard J. Fitzgerald, vice president of data processing at Cayuga Savings Bank, Auburn, N.Y., says Super-CIF represents a hedge for those NCR users whose systems are running out of power and are unwilling to migrate to the more costly UFS. Some early backers of Super-CIF, says Fitzgerald, "are betting UFS won't fill the bill."

But NCR users favor UFS, even if it's been a long time coming. Robert S. Neese, executive vp at Cape Cod Bank & Trust, Hyannis, Mass., a $500 million CLASS user, plans to evaluate UFS and the NCR 9800 mainframe line for future needs. "I'm glad it's finally coming to fruition and will be there when I need it. Thank goodness each time I've been ready to do something, they've been there."

More cautious is Albany Savings Bank's M. Letchie, who also sits on an NCR financial users advisory council. "If the product becomes everything it's said to be, NCR can go out and get new users with it. It looks to be a very flexible product; banking is changing so rapidly there is a need for software that can be changed to meet the needs of the bank."

Given IBM's strength in mainframe-class applications, it will be an uphill fight for UFS to go beyond the predictable contribution of helping NCR maintain its presence among the fast-growing medium-sized banks. More important, though, will be whether NCR can make the heretofore "unknown" UFS become not only a known, but accepted, quantity among the larger, multi-billion-dollar banks it was designed to attract.

**DATABASE SYSTEMS**

**Sybase Challenges Database Machines**

But companies like Britton Lee are acknowledging the threat and readying a response.

**BY EDITH D. MYERS**

Will relational database technology find a home on online transaction processing (OLTP)-oriented general purpose computers?

Sybase Inc. thinks so. The three-year-old Berkeley, Calif., company last month announced commercial availability of what it says is the first relational database management system (RDBMS) with an architecture specifically developed for OLTP applications.

In the relational world, OLTP traditionally has been the domain of database machines, particularly those of Britton Lee Inc., Los Gatos, Calif., and Teradata Corp., Los Angeles. The database machine companies "are going to find themselves in a world of hurt," says Michael Cohn, an analyst with Input, Mountain View, Calif.

**Advantages with a Caveat**

Stewart Schuster, vp of marketing for Sybase, says his company's RDBMS, now available for Unix- and VMS-based machines from Sun Microsystems of Mountain View, but planned for IBM mainframes later this year, has all the performance advantages of a database machine. But there is a caveat, he says: "The market wants this performance on familiar hardware, commodity hardware. With database machines you dedicate a cpu to do one thing well, but the disadvantage is that nobody wants to buy them."

The only other announced RDBMS for OLTP is Tandem's NonStop SQL, a hardware-specific solution scheduled for availability next quarter.

Chuck Reiling, manager of database products for Cupertino, Calif.-based Tandem, notes that NonStop SQL's target market is Tandem's primary market, traditional production OLTP environments. He adds, however, that "we recognize that we will be strategically required to add heterogeneous database capability some time in the future." David L. Britton, president of Britton Lee, acknowledges that the performance promised by Sybase could hurt database machine companies for a few years, but not in the long term. He believes the software RDBMS vendors, "are seeding the market, selling jelly beans while we're selling systems." He feels Sybase will help increase awareness of what relational is, and "then they'll come to us. The software vendors get to open the door because they have a lower-cost offering." Sybase prices range from $20,000 to $150,000 for superminis and from $2,000 to $10,000 for supermicro workstations. Database machine prices are typically in six figures.

As for the database machine being special purpose rather than general purpose, he begs to differ. "We can do general purpose data processing in our machine. We can talk to all people in a relational way."

Dick Voorhees, manager of marketing analysis for Teradata, says of Sybase, "Yeah,
There's only one way to keep on top in the terminals business.

Keep on topping yourself.
Presenting the Wyse WY-60.

It's a better ASCII terminal. A better ANSI terminal. And a better PC terminal.

The WY-60: multiple personalities, but character that's singularly Wyse. It's the best example yet of the ingenuity and attention to detail that put Wyse on top in the first place. A terminal designed to work better, above all, for the people who work with it.

Consider how it works better for their eyes. Sharp 10 x 16 characters create extraordinary resolution. Since lighting—and taste—varies, so does our selection of screen colors.

Now consider how the WY-60 works better to organize data. Its 132-column x 44-line format displays an entire spreadsheet. We give you double-high, double-wide characters for headings and highlights. A 512-character soft font to download perfected by Wyse for more efficient touch typing. And because people simply like it.

No small consideration. People simply like working with the WY-60. They like its looks. The ease with which it tilts, swivels or elevates. They appreciate WyseWorks, our built-in calendar, clock/alarm, calculator and ASCII table. And Wordstar users enjoy the reduced key strokes our integrated Wyseword firmware provides.

What's white and amber and green? The WY-60's screens.

The WY-60 is as comfortable to invest in as it is to work with. With quality backed by the company that ships more terminals than anyone but IBM, and the most comprehensive service and support program in our industry.
The WY-30
Our entry-level ASCII terminal. An exceptional value, with a 14" flat, Touch-Tilt screen, four dedicated function keys and multiple emulations.

The WY-50
Our breakthrough 132 column display and ergonomic design made the WY-50 the world’s best-selling ASCII terminal. It also features the comfortable Wyse keyboard feel and 16 dedicated function keys.

The WY-350
This is the color version of our best-selling WY-50. Its big screen and range of 64 colors make complex data easy to read.

The WY-85
A dramatically better value in a VT-220 compatible: 14" tilt-and-swivel screen in your choice of green or amber, with fully compatible VT-220 keyboard.

The WY-99GT
All the features of our WY-85 plus high resolution characters and graphics (Hercules, IBM CGA, and Tektronix 4010/4014 compatible). Shifts easily from DEC resolution to our hi-res mode.

You’re looking at five of the reasons Wyse ships more terminals today than anyone but IBM*. But the most important reason of all, we think, is the way we build every one of our terminals. Virtually from the ground up. With unwavering insistence on reliability, value, and integrity of design. No short cuts. No compromises. Because we know the best way for you to get more work out of a terminal is for us to put more work into it. And that increased productivity is the most important value of all.

Call today or mail the coupon. And see what the terminal industry’s top line can do for your bottom line. 1-800-GET-WYSE.


Yes, please send me detailed information on the WY-60 and the entire Wyse product line.

I'd like to see a demonstration of the WY-60.

Name ________________________________
Title ________________________________
Company ________________________________
Phone ________________________________
Address ________________________________
City _______ State _______ Zip _______

Mail to: Wyse Technology, Attn: Marcom Department 60-4p, 3571 N. First Street, San Jose, CA 95134

We make it better, or we just don't make it.
it'll probably have some impact on the database machine market, particularly in the local area network niche and that is Britton Lee's stronghold. From Teradata's perspective, we feel that our new communications processor and shared information architecture strategy has opened up access to DB1012 [Teradata's database machine] from that arena and that the Sybase product will represent only a piece of the equation, an equation Teradata can balance."

The User Experience at TRW

B.K. Richard, director of advanced technology at the Information Systems Group of TRW, has been using Sybase for six months in a testbed environment to analyze large databases. "We're taking inventory of our databases, which are large and growing," he notes. "It [Sybase] has a good user interface and good performance. It is a likely candidate to be rolled over into a production environment based on performance and cost-effectiveness, but we're not ruling out other RDBMS products. We haven't done any head-to-head benchmarks yet, but we will." TRW is an investor in Sybase and also has a joint development agreement with the Berkeley company under which Sybase is developing an interface between its RDBMS and a technology called Fast Data Finder that TRW developed in its laboratory. Fast Data Finder "is a complex product," explains Richard. "It searches data for patterns at a rapid rate, filtering out irrelevant information."

He says TRW invested in Sybase because "we believed in the people. They helped shape the [RDBMS] technology." Sybase has drawn people from most of its major competitors, including Britton Lee, Relational Technology Inc. of Alameda, Calif., and Oracle Corp. of Belmont, Calif. Sybase's president, Mark Hoffman, had been vp of operations at Britton Lee. Robert Epstein, executive vp and principal architect of the Sybase product, was manager of the Ingres project at the University of California, Berkeley, and a chief architect at Britton Lee. Schuster was vp of new business development at Relational Technology. Five other developers came from Oracle.

All of these people came from neighboring competitors but, in April, Beryl Hartman, formerly a vice president at Computer Corp. of America, Cambridge, Mass., the purveyor of the Model 204 DBMS, joined Sybase. Hartman, now manager of product marketing for Sybase, says, "I looked around. I interviewed with the others and think I picked the best."

Deals With Pyramid, Stratus

Sybase sells its Sun and Digital Equipment Corp. products directly, but it has OEM agreements with Pyramid Technology of Mountain View and Stratus Computer Inc. of Natick, Mass. On May 4, Pyramid introduced its series 9000 multiprocessor computer systems incorporating the Sybase RDBMS.

Steve Tolchin, as technical director of a clinical systems division at Johns Hopkins Hospital, implemented a clinical information system with Sybase on Pyramid machines. He says he had converted systems using Relational Technology's Ingres to Sybase and "performance and availability is better." What he liked most was the fact that it could support more users and could be maintained "on the fly. You don't have to take the system down."

Tolchin has since left Johns Hopkins and has started his own, as yet unnamed, company to build health care systems products under Sybase on Pyramid machines. He says he had evaluated Britton Lee but "theirs is not a general purpose computer."

Stratus hasn't yet announced a Sybase product, but, says William Elliott, vice president of product marketing, "We have high hopes for our joint development of products. Sybase has taken the relational concept and created a new arena." Any joint products from Sybase and Stratus would go head to head with Tandem in the fault tolerant world.

"Sybase's Schuster likes to describe competitive RDBMS software products as being more suited for decision support. Sybase, he notes, also has decision support, as well OLTP, capabilities. Kim Brown, an analyst with Dataquest Inc., San Jose, agrees that this combination is important. Brown is most impressed by Sybase's graphics-based and icon-oriented user interface. "That really puts decision support in the hands of the end user," he says. "In the IBM world, if you want to perform decision support you have to go through the information center or, even worse, through the MIS application staff. What if the decision you have to make involves cutting down the size of the information center or the MIS staff? SQL is not intuitive and not user friendly."

Sybase has put a language it calls Visual Query Language on top of SQL that, says Brown, "makes the system incredibly interactive."

Tandem's Reiling says NonStop SQL is not intended...
AT&T Power Protection Systems: Your best security against costly downtime.
Eliminate the cause of up to 50% of your computer downtime: power disturbances.

Power disturbances, brief and imperceptible, cause very visible data loss, data errors, and equipment damage, all resulting in costly downtime.

According to AT&T Bell Laboratories and IBM research, a typical computer site experiences as many as 135 commercial power disturbances a year, accounting for up to 50% of all computer downtime.

The protection solution. AT&T offers two product lines to combat these disturbances: the Uninterruptible Power System (UPS) and the Power Line Conditioner (PLC). Each effectively eliminates power fluctuations, including noise, transients, peaks, brownouts, and distortions. The difference being that the UPS includes a built-in battery reserve for protection against blackouts. The UPS is available in 1, 3, 5 and 10 KVA power ranges. The PLC is available in 3, 5 and 10 KVA models.

A 50-year advantage. Why specify AT&T's power protection equipment over that of other manufacturers? Because AT&T has an unmatched 50 years of experience in manufacturing power equipment. And, because AT&T also designs and manufactures computers, we have a unique understanding of what should go into a superior power protection product.

For instance, our parallel processing architecture offers reliability few others can provide. It also maximizes cost-efficiency: less power is needed to run our systems, and heat loss is substantially reduced.

Easy does it. AT&T UPS and PLC power protection systems are easy to install, need no operator, and require no scheduled maintenance.

Furthermore, AT&T backs you with an unequalled nationwide service network and a 24-hour toll-free number for technical service support.

Fast delivery. AT&T is ready to ship from stock. Once our Dallas facility has your order in-hand, we'll have your system speeding on its way to your site.

So for maximum security against power disturbances, along with low-cost, trouble-free performance, call AT&T at 1 800 372-2447 or mail the coupon below. Let us show you how to turn expensive downtime into productive uptime.
standard criteria for relational systems developed by E.F. Codd while he was at IBM. "We've developed a very powerful system that goes beyond Codd's 12 rules."

Schuster acknowledges that both Oracle and Relational Technology probably will come up with OLTP capability at some time, but he thinks Sybase has a two-year lead.

Input's Cohn isn't so sure. "A two-year lead may be wishful thinking. My [intelligence] tells me they [Oracle and Relational Technology] are also looking at the transaction side of the equation."

New Products Coming

Tom Siebel, vice president of product line marketing for Oracle, refers to OLTP capabilities when he says, "We have some next generation products we have been working on for 24 months that are going to create significant problems for those guys [Sybase]." On the user interface side, he says, "We introduced Easy SQL last January and it is now running in 70 operating environments. It's icon based and easy to use. We don't feel Sybase represents any challenge to us where user interfaces are concerned."

Mark Hanner, product marketing manager of application development for Relational Technology, says RDBMSs generally "are getting faster by leaps and bounds. By the end of this year, we will have a rearchitected Ingres that will represent a significant advancement, particularly in the support of high numbers of concurrent users."

Cohn says, "Sybase has the advantage now. They're getting attention." He sticks to his guns that the database management market will be most hurt and that Oracle and Relational Technology will not fall too far behind. "It'll be a great shoot-out and the beneficiary will be the end user."

WORKSTATIONS

Micro, Workstation Vendors Butt Heads in Product Overlap

Workstations are getting cheaper as their purveyors eye commercial markets, but a powerful threat has emerged from the growing sophistication of pcs.

BY SUSAN KERR

Workstations are starting to get personal.

It used to be obvious to the casual observer that technical workstations were a clear and separate entity from personal computers, no matter how high-powered and jazzed up those aforementioned micros were. But now, those clean and simple categories have been shattered.

In recent months, the best and the brightest of the micro makers have introduced products that go far beyond the typical restraints of a microcomputer. IBM, to take a major example, has moved away from the name Personal Computer in its latest generation of microcomputers: it now calls them Personal Systems. Not to be outdone, technical workstation vendors are responding with products falling well below the magical $10,000 workstation price tag threshold, while vamping features usually associated with microcomputers.

Despite the perception that these two types of products are colliding in the marketplace, workstation and micro vendors insist this really isn't happening. They point out that since technical workstations have made inroads with from only 3% to 10% of the potential user base, there's plenty of room for everyone. Still, given the high level of marketing moxie on the part of competing companies, peaceful coexistence seems to be the last thing on their minds.

At stake are the dollars of an estimated three million engineering and scientific professionals in just the U.S. alone. According to International Data Corp., Framingham, Mass., this user base has bought only 104,000 workstations as of the end of 1986. The easy sales have been made. Now it's time to go further.

Workstation vendors also are discovering new categories of technical professionals such as financial and insurance industry analysts. While fighting to maintain their engineering turf, they are looking to serve more mainstream business computing users.

"They are the power business users who need multitasking capabilities and realtime performance."

Wall Street firm Morgan Stanley & Co. recently proved that point by signing a $1 million contract to buy Unix workstations from Sun Microsystems Inc., Mountain View, Calif. The securities house had looked at options ranging from pcs all the way up to superminis. The contract was an important win for Sun, which opened a sales office on Wall Street roughly six months ago.

Sun's Pricing Tactics

There's no doubt that base workstation prices are decreasing. Sun in April dropped the price of its barebones Sun 3/50M to $4,995 from $7,995. Hewlett-Packard's Port Collins, Colo., Engineering Systems Group, which has steadily strengthened its position in the technical workstation arena during the last year or so, recently unveiled a new low-end sys-
The SAS System
The Data Analysis Tool You Won't Outgrow.

If your job demands a powerful data analysis tool, the SAS® System is your solution. The SAS System gives you ready-to-use procedures for performing every kind of analysis—from simple descriptive statistics to advanced regression, analysis of variance, discriminant analysis, clustering, scoring, and more.

The SAS System reads data in any structure from any kind of file. You can create new variables, modify old ones, combine files, detect errors, and accumulate totals. Once your analysis is complete, you can report your results in lists, tables, charts, or plots.

And as your needs grow, the SAS System grows with you. All the tools you need for color graphics, forecasting, modeling, “what if” analysis, project management, optimization, and quality control are available in the SAS System. You choose the products you need, and enjoy the same easy-to-use language and syntax in each. Plus, you can use the same software on your personal computer.

For details, send us your name and address. Or call a Software Sales Representative today.

The SAS System. It’s the most widely installed tool for data analysis among VMS users*... And more.

SAS Institute Inc.
Box 8000 □ SAS Circle
Cary, NC 27511-8000
(919) 467-8000
Fax (919) 469-3737

* Computer Intelligence, January 1986.

The SAS System runs on these minicomputers: Digital Equipment Corp. VAX® 8000 and 11/7xx series under VMS® and MicroVAX II® under MicroVMS®, Prime Computer, Inc. Prime 50 series under PRIMOS®, and Data General Corp. ECLIPSE® MV series under AOS/VS. The SAS System also runs on IBM 370/30xx/43xx and compatible machines under OS, CMS, DOS/VSE, SSX, and IC CF; IBM XT/370 and AT/370 under VM/PC and IBM PC XT and PC AT under PC DOS. Not all products are available for all operating systems.

SAS is the registered trademark of SAS Institute Inc., Cary, NC, USA. Copyright © 1986 by SAS Institute Inc. Printed in the USA.
Apple "intends to take a significant position in the engineering market over the next few years," declares the company's business marketing manager, John Zeisler. Apple has the base of systems and the cash in the bank to do so, he adds. But what the company doesn't have today are applications. Currently, there are maybe 20 or so third-party packages that fall under the CAD/CAM/CAE heading. On the other hand, Sun boasts close to 1,000 specialized packages in its Catalyst third-party software program.

Apple is talking to the major PC CAD software vendors to develop Macintosh ports, says Homer. Yet the company feels its ace in the hole is the estimated 2,500 other applications already available for the Macintosh. "It's a lot easier to add dedicated CAD packages on top of a huge product base," claims Zeisler.

A Question of Presence

Still, Apple must overcome its low profile in the engineering workstation market. Although the Macintosh II was a step forward, Apple is still criticized for not offering the larger 19-inch screens to rival systems. Apple has neither the more technical versions nor graphics with as high power levels, a big drawback in compute-intensive technical applications, whereas the low-end workstations aren't user friendly.

That doesn't stop the rhetoric, though.

Apple “intends to take a significant position in the engineering market over the next few years,” declares the company’s business marketing manager, John Zeisler.

VANDERSLICE: The Apollo chairman insists his company will not get caught up in a price war.
When you’ve got to turn those numbers into a presentation, turn to the SAS® System. The SAS System includes easy-to-use procedures for charts, plots, maps, and three-dimensional displays. At a glance, you can grasp detailed statistics, spot relationships among items, and trace emerging trends. And when your manager wants more, the SAS System lets you customize your graphs and present multiple displays on the same page for easy comparison. You can produce your graphs on terminals, plotters, transparencies, or slides.

You can even use the SAS System to analyze your data before you present them. We’ve got tools for every kind of analysis—from simple descriptive statistics to advanced regression, analysis of variance, discriminant analysis, clustering, scoring, and more.

And as your needs grow, the SAS System grows with you. All the tools you need for full screen data entry, modeling, forecasting, “what if” analysis, project management, optimization, and quality control are available in the SAS System. You choose the products you need, and enjoy the same easy-to-use language and syntax in each. Whether you license one product or several, you’ll enjoy the same high-quality software, training, documentation, and support we’ve offered for more than ten years.

For details, send us your name and address. Or call a Software Sales Representative today.

The SAS System. It’s for those who need a graphics package today, and for those who have an eye on tomorrow.
News in Perspective

gram of providing finders’ fees to dealers while all systems are actually shipped directly from Apollo to the customer. Apollo vice president John Newton describes the sales through this route as “incidental.”

Yet, in no way, shape, or form, does Apollo want to be placed in the same category as pcs. Thomas Vanderslice, Apollo chairman, stresses that Apollo will not get caught up in a pricing war. He declares, “We don’t feel pressure to bring prices down” to a pc level. With current products, “we concluded it would be foolish to match the price cuts. We’re holding pricing.”

While Apollo might not be willing to take what he terms a “foolhardy” cut in margins to drop prices, Vanderslice underscores a change in perception. Apollo has always targeted work groups, not individual users. But those groups can be “professionals—not just technical professionals,” he says.

To reach a wider range of power users, both Sun and Apollo have pc coprocessor products, allowing users to run pc applications. “I thought the product wouldn’t move,” confesses Vanderslice, surprised at its success. Likewise, Sun is pleased with its product while recognizing room for more functionality.

Sun’s coprocessor board is “not perfect,” says Tupal dos, adding that Sun is planning to address this area. Some analysts expect Sun this summer to announce a new Unix operating system version capable of executing MS/DOS commands. Sun wouldn’t comment about this, either. Dual functionality is what it will take to expand the horizons of workstations, industry watchers say.

But even with all the technology in the world, says International Data Corp. analyst Vicki Brown, “the issue Sun still needs to resolve is that it has no image in the general dp community. They’ve gotten the message to the technical community [and are hoping] that the technology in the technical realm ripples into the front office.”

Two companies not grappling with name recognition are IBM and Digital Equipment Corp. DEC currently is pitching its VAXstation 2000, a workstation with a base price tag of $10,500. While some analysts think DEC’s success with the product has been limited, the company considers it to be a strategic product.

Although IBM has enjoyed success with its pc line in the technical arena, its technical workstation, the RT PC, has not. With a base price tag of $7,738 (quantity 20), the RT PC will go head-to-head against the new PS/2.

IBM huffily defends the RT PC. A spokesman says that while the “PS/2 does get into the engineering arena, that arena is more intended for the RT PC.” Despite all the intentions in the world, users perceive that the PS/2 will be around a lot longer than the RT PC, according to Dataquest’s Burdick, and that will limit its future.

So that leaves the PS/2. Although there are still holes in the new line—namely questions on the delivery dates and functionality of its new OS/2—it’s a tough competitor. Rivals hope that since the real powerhouse versions of PS/2 with OS/2 won’t be out on the market until 1988, now’s the time to grab the attention of software developers and make inroads with customers.

With the falling prices and the increasing power and functionality of workstations, it’s estimated the market could nearly triple in value to more than $4 billion by 1990. Any market that offers that potential growth rate will be too tempting for vendors to pass up.

BENCHMARKS

Ericsson to Get CGCT

The French government has decided to sell Compagnie Générale de Constructions Téléphoniques (CGCT) to a group led by LM Ericsson of Sweden. It beat out such competitors as AT&T and West Germany’s Siemens. The Ericsson-led group, consisting of Matra S.A., Bouygues S.A., and the Indosuez banking group, will pay $83 million for CGCT. CGCT previously had been an affiliate of ITT.

Lotus–IBM Deal

Lotus Development Corp. plans a version of its Lotus 1-2-3 personal computer spreadsheet package for IBM mainframes that will be sold exclusively by IBM. The mainframe version, which is not expected to be available until early 1988, will run under the VM and MVS operating systems.

Plexus, Arete to Merge

The issue of critical mass again raised its head as two small vendors of Unix-based multiuser commercial systems agreed to merge. Plexus Computers, a $31 million company, and Arete Systems Corp., a $33 million concern, will join under Plexus’s banner. The deal, which the San Jose companies declined to put a dollar value on, will be accounted for as an exchange of stock. The united company will be run by Plexus chief executive Paul Klein.

Apple’s Software Co.

Apple Computer Inc. has launched a software division, which it plans to spin off as an independent company within the next year. The new, as yet unnamed, entity will create and market software for Apple’s Macintosh and Apple II pcs as well as re-label third-party packages.

Cullinan to Retire

John J. Cullinan, chairman and founder of Cullinet Software Inc., the Westwood, Mass., database and applications software developer, plans to resign, effective Sept. 22, to pursue interests outside the software industry. Cullinan, a pioneer in the mainframe database and systems software market, resigns as his company pursues a new applications and midrange systems software strategy, with packages for Digital Equipment Corp. VAX and IBM 9370 systems. David L. Chapman, the former Data General executive recruited more than a year ago as chief executive and vice chairman, will replace Cullinan as chairman of Cullinet.

Compaq Reacts to PS/2

Could IBM’s Personal System/2 line of micros turn out to be the pc industry’s version of the NeXus? Compaq Computer Corp.’s CEO Rod Canion posed this question while announcing record quarterly earnings and profits for the four-year-old Houston-based maker of IBM PC compatibles. Compaq’s revenues for the first quarter of 1987 increased to $211 million, 47% over last year’s first quarter, while profits jumped 142%, to $20.2 million. “Products that fail to deliver compatibility with the industry standard stand a good chance of failing in the market,” Canion said in a recent New York address, “and I believe that even includes products from IBM.” Canion said that IBM’s use of “new formula” technology in the PS/2 line—including the use of 3½-inch diskettes instead of 5¼-inch floppy’s—will offer real benefits, at a significant cost in compatibility for users of the estimated 8 million pc compatibles. “Compaq will continue to support the classic [pc] standard,” he said. Still, Canion would not rule out eventual production of a PS/2-compatible from Compaq, should a market materialize.
Most people still believe only DEC™ is schooled to service their computers.

At Control Data, we never stop teaching our people to service DEC equipment, as well as our own. In fact, our customer engineers spend an average of 188 hours a year learning to maintain everything from PCs to mainframes.

Add that to the fact that we've been in the computer maintenance business for 25 years, and you'll see there really is an alternative to DEC.

So shake the sand out of your ears. And call 1-800-828-8001, ext. 58L.
In Minnesota, 612-921-4400, ext. 58L.

CONTROL DATA
YOU'VE SEEN TEK GRAPHICS PERFORMANCE LIKE THIS. BUT NOT AT $2495.
The powerful 4200 feature set includes graphics intelligence to boost throughput of those graphics applications. And with local segments, you can use such popular features as true zoom and pan to view data well beyond display resolution.

To take full advantage of those features, you’ll find 4200 compatibility with the world’s leading software and hardware vendors. And because the 4200 Series are members of the broad Tek product family, your investment in that software, hardware and training time stays protected now and in the future.

You can bring your 4200-applications to life by adding a Tek Color Ink-jet Printer. That enables high-resolution color hardcopy output on paper or transparencies. To further enhance productivity, there’s 4200 background copy that allows system use even while you’re printing.

To learn more about the 4200 Family of Intelligent Color Graphics Terminals, contact your Tek representative. Or call, 1-800-225-5434. In Oregon, 235-7202.
Remote diagnostics for your 4300 or 308X, from Sorbus.

Sooner is better.

And when we connect your IBM® 4300 or 308X with one of our National Support Centers, we can often pinpoint problems before a field engineer walks through your door. Which helps you get up and running again sooner than you might have thought possible.

When you call Sorbus, you're calling the experts at 4300 and 308X service. In fact, we service more IBM computer equipment than anybody else. (Except IBM. But we're working on it.)

The readers of Data Communications have voted us as having the “Best Price/Performance Ratio” for nine consecutive years and the “Best Service Organization,” too—and the readers of Datamation and Computer Decisions have rated us the number one independent service company for 11 and eight years, respectively.

It's time you took better care of your 4300 or 308X, and the peripherals connected to them. Call Sorbus today. 1-800-FOR-INFO.

IBM is a registered trademark of International Business Machines, Corp.
Sorbus is a registered trademark of Sorbus Inc.
Software Protection in the Throes of a Legal Morass

The lack of clear guidelines on copyrighting software will force the continuation of a crucial debate over how software should be protected.

BY ESTHER RODITTI SCHACHTER

The computer software industry is now embroiled in the most significant debate concerning copyright protection since the late 1970s, a time when software programs were not protected by the U.S. Copyright Act. While copyright protection has since been extended to include both the source codes and object codes of application programs, operating system programs, and microcode, the scope of that protection is currently at issue.

Recent decisions, most notably the one in Whelan Associates Inc. v. Jaslow Dental Laboratory Inc., have held that protection extends beyond a program's literal code to encompass its structure, sequence, and organization, or what since has been termed a program's "look and feel."

The question of whether, and then to what extent, a program's look and feel should be subject to intellectual property protection has produced a host of lawsuits among program owners and developers. What's worse is that there has been a corresponding number of contradictory decisions on these lawsuits by the courts. But the filing of new cases—and, presumably, the continuation of contradictory decisions—is likely to continue in light of the recent refusal by the U.S. Supreme Court to rule and thus set standards in this area.

The extension of copyright protection to a program's look and feel has had important consequences for software vendors and users. Increasingly, program vendors are being asked to warrant against the assertion of any copyright infringement claims with respect to products they sell or license. In developing such products, vendors seek to ensure that their programs are both noninfringing and competitive with similar products already on the market. Producing a "clean" product that can be warranted free of infringement claims is increasingly difficult in light of decisions broadening copyright protection. The extension of such protection also concerns users who, in licensing or purchasing a product, do not want to run the risk that the product's vendor will be enjoined from further development or sales, thus affecting the maintenance of products already sold or licensed.

The federal power to enact copyright and patent legislation is derived from Article 1, Sec. 8, of the Constitution. In interpreting this power, the courts have said that the primary purpose of copyright is not to reward the author, but to secure the public benefit derived from the labor of authors. As the Supreme Court explained in its 1954 decision in Mazer v. Stein, "The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and Useful Arts.'"

In 1974, Congress created the National Commission on New Technologi-
Behind the News

The courts have made a variety of decisions on software lawsuits.

The Importance of Whelan

The current debate on the scope of software copyright protection is the result of whether software should be protected under the copyright law. In 1976, before the Copyright Act of 1976, Congress passed a new copyright law—Section 102(b) of the Copyright Act of 1976—which did not include computer programs. To replace the old law, which had been in effect since 1909, Section 102(b) made explicit that copyright protection extends only to the expression of an idea and not to the idea itself. “In no case does copyright protection extend to an original work of authorship—whether a program, process, system, method of operation, concept, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.”

A Congressional Interpretation

Although the Copyright Act did not yet include computer programs, Congress interpreted Section 102(b) to apply copyright protection to software. According to the House of Representatives Report, which publishes the representatives’ comments on legislation, “Copyright does not preclude others from using the ideas or information revealed by the author’s work. Some concern has been expressed lest copyright in computer programs should extend protection to the methodology of processes adopted by the programmer, rather than merely to the ‘writing’ expressing his ideas.” Section 102(b) is intended, among other things, to make clear that the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods embodied in the program are not within the scope of the copyright law.”

CONTU’s Final Report, which was delivered to the President on July 31, 1978, recommended that the new copyright law be amended to make explicit that computer programs, to the extent that they embody an author’s original creation, are proper subject matter for copyright; to apply to all computer uses of copyrighted programs; and to ensure that rightful possessors of copies of computer programs may use or adapt these copies for their use.

Congress responded to these suggestions in the 1980 Computer Software Copyright Act by adding a provision defining computer programs to Section 117 of the 1976 Copyright Act. That section does not, however, elaborate upon the scope of software copyright protection. While amendments to the Copyright Act extended its protection to computer programs, it was left to the courts to determine just what aspects of those programs were copyrightable. In a landmark decision in 1983, the Third Circuit court, in Apple Computer Inc. v. Franklin Computer Corp., held operating system programs copyrightable.

This case addressed the issue of which elements in a program constitute expression—and are therefore copyrightable—and which elements constitute an idea or method—and are therefore not copyrightable. Franklin had argued that operating system programs were not copyrightable because Section 102(b) of the Copyright Act precluded copyright protection for a “process, system or method of operation.” The Third Circuit, however, disagreed, stating, “Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves...”

The Apple decision made clear that operating system instructions were protected even though the OS code implemented ideas, procedures, methods of operation, and systems that were unprotectable under Section 102(b). In what have generally been regarded as logical and appropriate extensions to the law, copyright protection had also been accorded to the source codes and object codes of application programs and, most recently, to microcode as a result of last year’s NEC Corp. v. Intel Corp. lawsuit.

The Importance of Whelan

The current debate on the scope of software copyright protection has its origins in the decisions in Whelan v. Jaslow. On Aug. 4, 1986, the Third Circuit upheld the district court opinion in Whelan’s favor. The U.S. District Court for the Eastern District of Pennsylvania had held that the protectable expressions of an idea in a software program were the methods in which “the program operates, controls, and regulates the computer in receiving, assembling, calculating, retaining, correlating and producing useful information either on a screen, printout or by audio communication.” Because of the substantial similarity between the two programs, the district court found that Jaslow’s program infringed Whelan’s copyright. The Third Circuit concluded its opinion simply by holding that “copyright protection of computer programs may extend beyond the programs’ literal code to their structure, sequence, and organization.”

Subsequently, on Oct. 8, 1986, in a suit filed by Broderbund Software Inc. against Unison World Inc., the Northern District of California found sufficient direct evidence of copying to establish that Unison had infringed the copyright of Broderbund’s audiovisual displays of its program, “Broderbund” is significant in the current debate because of the court’s reasoning. While the court found sufficient direct evidence of copying to prove infringement, in the interest of creating what the judge called a “comprehensive record,” he undertook a circumstantial analysis to determine whether Unison had access to Broderbund’s program and whether the two programs were “substantially similar.”

With respect to the issue of substantial similarity, the court noted that it was bound by precedent to apply tests aimed at determining whether there existed a substantial similarity in underlying ideas, and whether there existed a substantial similarity in the expression of the underlying idea. Were he not bound by precedent, the judge noted, he would have preferred to have joined the Whelan opinion and adopt an “integrated substantial similarity test pursuant to which lay and expert testimony would be admissible.”

The court then held that there was no question but that the two programs shared the same underlying idea, and that the purposes and uses of the two were essentially identical. In addition, the court found that an ordinary reasonable person would think the expression of the two programs substantially similar. Said the court, “The ordinary observer could hardly avoid being struck by the
DOLLAR FOR DOLLAR, ORACLE® WORKS MORE EFFICIENTLY ON HARRIS COMPUTERS.

It's a wonder. The wizardry of Harris computers makes ORACLE DBMS software work harder for less money. Less money than IBM and DEC. In fact, the Harris HCX-9 concurrently supports greater than 100 users at significantly less cost per user.

And Harris is the only name offering a complete range of hardware, from super-micros to super-minis, that supports ORACLE in a UNIX® environment. We also offer other leading software products for office automation, CAD/CAM/CAE and project management.

And our extensive networking capability such as NFS, Ethernet, DDN and SNA provide for flexibility and a complete growth path. Harris has a strong commitment to ORACLE. We were the first ORACLE OEM and the first to deliver distributed database capabilities.

When you decide it's time for ORACLE to go to work for you, make sure you team it with the harder-working system.

To see how fast ORACLE works on Harris computers, write D.S. Coller, Harris Computer Systems Division, 2101 W. Cypress Creek Road, Ft. Lauderdale, FL 33309.

Or call 1-800-4-HARRIS, ext. 4052.

At Harris, wonders never cease.
Getting your PC spreadsheet users on a minicomputer is going to take some pull.

As good an idea as the minicomputer spreadsheet is, wishing that your PC spreadsheet users would see all its advantages isn’t going to make it happen.

But there is something that just might. It’s called 20/20,™ from Access Technology, the world’s leading supplier of spreadsheets for larger computer systems.

Simply put, 20/20 is as easy to use as PC spreadsheets like Lotus 1-2-3,™ yet it lets you exploit the somewhat awesome potential inherent in multi-user computer systems.

Like moving entire models between computers. Accessing your central database. Running other programs without leaving your spreadsheet. Or consolidating financial statements. All with just a couple of keystrokes.

Not to mention the considerable cost advantages of 20/20. Because one copy of 20/20 will serve all your computer users, there’s less software to buy. And because 20/20 probably runs on the hardware you already own as well.

After all, 20/20 is available for a broad range of micros, minis and mainframes, including DEC,™ IBM,™ Prime,™ DG,™ Wang® and UNIX®-based systems.

And if you think it won’t fit in with the rest of your software, think again. 20/20 integrates with your entire OA system.

It can be a powerful complement to your PC spreadsheets, since our Lotus link makes it easy to use 1-2-3 models in 20/20 and vice versa. Or, thanks to a very high-performance PC version, 20/20 can become the standard modelling tool for all your computers.

We have a special Evaluation Kit that makes it easy to try 20/20 on your own equipment, in your own company. To order one, call us at (617) 655-9191. Or mail the coupon.

Is there an easier way to get your PC spreadsheet users to see the advantages of a minicomputer spreadsheet? You wish.
The eerie resemblance between the screens of the two programs... Put simply, [one] looks like a copy of [the other], with a few embellishments scattered about in no particular order. The 'total concept and feel' of these programs... is virtually identical. The application of the [substantial similarity in underlying ideas] test in the present case compels the finding that their expression is substantially similar.

On Jan. 12, 1987, the Supreme Court declined to review the Whelan case. The denial left intact the Third Circuit's opinion that copyright protection of computer programs may extend beyond the programs' literal code to their structure, sequence, and organization. Many observers had viewed the Supreme Court review of the case as critical in resolving growing industry uncertainty engendered by Whelan and Broderbund.

That uncertainty has not been slow in rearing its head. In a case running counter to the current trend of decisions finding infringements of a program's structure, sequence, and organization, the Fifth Circuit recently affirmed a lower court decision that had denied a preliminary injunction to a company seeking copyright protection for the organizational structure of its cotton farming software system.

In its opinion in Plains Cotton Cooperative Association v. Goodpasture Computer Service Inc., the Fifth Circuit cited favorably a 1978 Texas district court decision in Syncom Technology Inc. v. University Computing Co. (now Uccel Corp., Dallas), which held that "input formats" of a computer program—the organization and configuration of the information fed to the computer—were ideas, not expressions, and thus not protected by copyright. The Fifth Circuit then stated that the appellees had presented evidence that many of the similarities between the programs at issue were dictated by the "externalities" of the cotton market. "The record supports the inference that market factors play a significant role in determining the sequence and organization of cotton marketing software, and we decline to hold that those patterns cannot constitute 'ideas' in a computer context." In so doing, the Fifth Circuit "decline[d] to embrace" Whelan's reasoning.

Finally, in what some see as an attempt to expand "look and feel" copyright protection to the maximum, Lotus Development Corp., Cambridge, Mass., filed suit against Mosaic Software Inc. and Paperback Software International on Jan. 12, 1987—the same day the Supreme Court declined to consider Whelan. The suits allege that Paperback's VP Planner program and Mosaic's TWIN program infringe Lotus's copyrights on its 1-2-3 spreadsheet program, and also charge the two companies with false advertising and unfair trade practices. On March 5, 1987, Lotus amended its complaints, adding as a defendant Stephenson Software Ltd. of Canada, which conceived and created the VP Planner.

Lotus alleges that the programs sold by Paperback and Mosaic recreate, with only trivial variations, the look and feel of the design of the user interface of Lotus 1-2-3, noting that the competing programs "clone" 1-2-3's command names and the sequence and range of choices it presents to users. In its amended complaints, Lotus says that on Jan. 20, 1987, the U.S. Copyright Office declined to register the applications for certificates of registration of 1-2-3 as an audiovisual work under the title "1-2-3 Screens." Lotus claims, however, that the Copyright Office's position was based on the "ground that textual screen displays embodied within the computer program that generates them are an integral part of the computer program and are accordingly covered by the registration for the program, and that Lotus's application for separate registration on the screen displays was therefore unnecessary." Lotus further claims that "every element of original and copyrightable subject matter contained in Lotus 1-2-3 [including its textual screen displays, source and object code, documentation, text, etc.]... is... fully covered by its registered copyrights for Lotus 1-2-3."

In the most recent development involving Lotus, the company itself was sued in early April on the same grounds it has used in pursuing others. SAPC Inc., the successor company to Software Arts Products Corp., the developer of VisiCalc, filed a $100 million suit against Lotus alleging that Lotus had illegally copied into its 1-2-3 program the look and feel of VisiCalc. Lotus has denied the allegations in the lawsuit, which asks damages from both Lotus and its founder Mitchell D. Kapor, who resigned from the company last July.

Screen Display Copyright Protection

Finally, on March 31, 1987, the U.S. District Court for the Northern District of Georgia in Digital Communications Associates Inc. v. Software Distributing Corp., et al., enjoined the sale of a software package, holding that it violated the copyright on "the placement, arrangement, and design" of words on a computer screen display of another product, known as Crosstalk. The maker of Crosstalk, Digital Communications Associates of Alpharetta, Ga., had obtained copyright registration on the underlying computer program and the screen display. While upholding the copyright on the appearance of the screen as expressing and conveying information, the court also held that copyright protection of a program does not extend to screen displays generated by the program.

What many see as the biggest conceptual problem with the Lotus suits and with Whelan and its progeny is their tendency to blur the lines between the three forms of intellectual property protection—trademarks, copyrights, and patents. Although each of these forms of protection is distinctive in function and scope, the recent decisions have caused the conceptual problem with the Lotus suits and the possibility for a patent-like protection for the functional design of the 1-2-3 spreadsheet program.

As another example, some companies are reportedly altering clean-room procedures to ensure that programmers are exposed only to materials regarding new product development that are neither similar in function nor in appearance to existing competitive products. Such procedures are alien to a copyright context, which is designed to protect dis-
Announcing... For the first time...

"Two Computer Security

The IBM Users
Computer Security Conference

July 13-14, 1987

The Need — These two conferences are designed to address the security concerns of three groups — users of IBM systems, of Digital Equipment Corporation systems, and the large number of users who rely on both IBM and Digital processors. Up to now, there has never been a major security conference dedicated to DEC systems...and the offering of IBM and DEC security workshops concurrently is another first-time opportunity.

The Programs — To meet these needs, CSI is adding a brand new "DEC Users Computer Security Conference" to its traditional July "IBM Users Computer Security Workshop." Each two-day conference will feature both "Overview" and "Advanced" workshop tracks. There will be 14 IBM-specific and 14 DEC-specific workshops, all led by experienced professionals. Sessions are either 1-1/4 or 2-1/2 hours long, and participants can select up to four workshops per day, depending on topics. In addition, optional full-day security seminars will be presented on Sunday, July 12th, and Wednesday, July 15th.

Cross-Over Privileges — Because of the prevalence of multi-vendor installations, we're adding an extra dimension to these two conferences. We're allowing unlimited cross-over between the two programs...split your day between the IBM and the DEC workshops any way you wish. To facilitate this interaction, both conferences are being held under one roof—Philadelphia's Sheraton Society Hill.
Conferences in One”

The DEC Users
Computer Security Conference

historic Philadelphia

A Super Deal on a Super Hotel — The 10-month-old Sheraton Society Hill is perhaps the finest hotel ever used for a CSI-sponsored program...and the rates—normally $135 single, $155 double—are only $85 for both singles and doubles!

A Terrific Bargain in Air Travel — Computer Security Institute has negotiated its best-ever airline rate for conferences...60% off Eastern Airlines' regular coach fares unrestricted (i.e., no minimum stay, no advance purchase, no cancellation fee).

A Wonderful Vacation Opportunity — The two conferences are scheduled to coincide with Philadelphia's celebration of the 200th anniversary of the Constitution. A special tour program available during the conferences will add to your family's enjoyment. And best of all, the conference hotel, the Sheraton Society Hill, is located in the heart of historic, downtown Philadelphia where many of the anniversary activities will be happening.

Send to: Computer Security Institute
360 Church Street, Northborough, MA 01532
Telephone (617) 393-2600

☐ Please send me complete details on the IBM Users/DEC Users Computer Security Conferences

Name ____________________________
Title ______________________________
Organization _______________________
Address ____________________________ Mail Stop ______
City __________________ State ______ Zip ______

CIRCLE 28 ON READER CARD
semained information. They are familiar in a trade secret context, where an employee’s knowledge and use of the trade secrets of a competitor may justify a competitor’s infringement claim.

As well as blurring intellectual property distinctions, these look and feel cases, coupled with the Lotus complaints, have raised important questions as to what elements in a program are copyrightable; what standards a court should apply in determining whether a defendant has copied copyrightable elements of a program; and what the look and feel standard truly means.

**Geography a Major Legal Factor**

At present, the scope of software copyright protection and the answers to these three questions depend, at least in part, upon geography. In the Third Circuit, a program’s structure, sequence, and organization is protectable by virtue of the Whelan decision; in the Fifth Circuit, it is not protectable by virtue of the Goodpasture decision; in the remaining circuits, the outcome is unpredictable.

While the Supreme Court may accept a case for review when the circuit courts are divided on an issue of import, it is uncertain if and when the high court will consider the scope of software copyright protection. That court’s refusal to hear the Whelan case has left the software industry to cope with great legal uncertainty.

As well as stirring public debate and comment regarding the vulnerability of software products to copyright infringement suits, uncertainty is affecting the policies and operations of micro and mainframe software vendors, equipment manufacturers, and users.

If a given product is, or appears to be, a clone of another software product, or is designed to be compatible with the systems software of a popular machine, the software vendor runs the risk of encountering infringement claims. The vendor’s marketing strategies, pricing decisions, and plans for protecting its product are affected.

In the time since the Whelan decision, lawyers have been advised to cautiously draft warranties of indemnification and noninfringement provisions in licensing agreements to avoid, if possible, putting the vendor into the position of being an insurer of an unmeasurable risk. The ensuing negotiations can result in increased negotiating costs, thereby necessitating a software price increase to cover the greater risk of copyright infringement actions.

In addition, such risks may have a negative impact on the value of software products in an acquisition or a merger. "The more the protection of intellectual property is obscured," says Bernard Goldstein, a partner in Broadview Associates, Fort Lee, N.J., "the more negative effect it may have on the process of determining values in mergers and acquisitions. I tried to see it the other way and could not. In the acquisition of a software company the balance sheet plays a limited role . . . The major value in an acquisition is a projection of the earning stream—the future expectations of the earnings of software products as reflected by growth in revenues and the continuing annuity from the maintenance stream flow. Obscurity would thus have a negative effect on value. I can extend this comment to the public market. Multiples are a trajectory of future growth and earnings. The reasons for the negative effect on mergers and acquisitions would also affect multiples."

Mainframe software vendors, however, have not been as adversely affected by industry uncertainty as their micro software counterparts. Says John P. Imlay Jr., chairman and ceo of Atlanta-based Management Science America Inc. (MSA), and a member of Datamation’s advisory board, "We have not felt it because of our protective capability through contracts and trade secrets [law]. Our systems are very sophisticated, with millions of lines of code, and require a great deal of service and education. Protection has not been a problem because of our contracts. I was in the micro business and the lack of protection was one of the three reasons I got out."

With respect to new product development, some people believe increased software protection will benefit the industry and encourage R&D. "People are running around and saying that audiovisual [user interface] protection will stifle innovation," says Irving S. Rapaport, associate general counsel of Apple. "I’ve been in the business since ’62 and there is absolutely no evidence of that at all. The Constitution recognizes that an individual can make a contribution and that we will reward that individual and thereby encourage competition. Without protection the little person has no means of protection from big companies—U.S. and foreign."

Others argue that R&D financing will be harder to obtain because of copyright uncertainties and increased litigation risks. It has also been argued that R&D costs will escalate if the structure, sequence, and organization of the new product, including user interface and hardware compatibility, must be substantially dissimilar to and not look like an existing competitive product.

Whether new product development is enhanced or hurt, it is probable that competition from smaller domestic vendors will be reduced. On the other hand, competition by foreign vendors may increase. In this context, foreign vendors could include U.S. vendors that develop and publish a software product through a foreign subsidiary, joint venture, or licensing arrangement in a country in which software copyright is assured but less uncertain and extensive than coverage in the U.S.

**The Effects on Software Sales**

While equipment manufacturers would appear to be unaffected, in the long run industry uncertainty as to software copyright protection has an impact. This is due in large measure to the long-range plans of the equipment companies to derive more revenues from software than hardware. "Money must be made from intellectual property and a fortunate is being invested in software," says Nick Pappas, who is responsible for software licensing and pricing policies for Digital Equipment Corp.

Users, too, may be placed at risk by industry turmoil over software protection. Their use of a licensed product may, for example, be enjoined if that product is found to be infringing. Also, if the financial resources of a software vendor are
Westinghouse Software Solutions

Building a better network . . .

Increasing the productivity of VTAM networks means getting users on line and lined up — with the data, with the application programs, with the jobs that must be done.

Westinghouse Software Solutions is a portfolio of program products that can be used, either separately or concurrently, to increase your systems productivity and effectiveness.

NCI/XF (Network Control Interface/Extended Features) is a network-wide single point entry system. NCI/XF helps VTAM users access applications quickly and easily, while reducing user support requirements and simplifying network administration. NCI/XF also provides message and broadcast capabilities.

NCI/XF adapts to your installation needs.

- Customized network entry procedure
- Accommodation for network configuration changes
- Basic or total network security

MULTSESS, the most efficient multiple session manager available today, orchestrates the complex connections between users and applications for improved productivity and data availability.

MULTSESS switches a user from one application to another in the time it takes to press a predefined function key, as easily as changing television stations.

With the optional Automated Transaction Processor (ATP), MULTSESS users can get to the working levels of their applications automatically.

MULTSESS provides fast transaction processing with minimal storage requirements. MULTSESS is also a security controller. Access to programs is secured by user or terminal ID. For protection during brief absences, MULTSESS has easy disconnect/reconnect capabilities.

Getting the job done . . .

NCI/XF and MULTSESS are tools to align your network users and their functions for peak effectiveness. The Westinghouse Software Solutions portfolio makes your network an organized, efficient, easily managed data processing resource. Westinghouse Software Solutions makes it easy to get the job done.

You can be sure... if it's Westinghouse

Westinghouse Electric Corporation
P.O. Box 2728
Pittsburgh, PA 15230-2728

Call (412) 256-2900 or 1-800-348-3523
Behind the News

drained in litigation, that vendor will find it difficult to maintain and enhance its product. On March 3, 1986, the Supreme Court declined to hear 58 D ATAMAT I ON
pris e s Inc., Inc., thereby leaving intact a decision allowing a bankrupt licensor to reject as an executory contract the parties’ licensing agreement and claim the licensed intellectual property (the software) as a debtor’s asset.

Despite the possibility of risks for users created by the Whelan case, Alan Gross, the founder and past president of the New York-based Microcomputer Managers Association, doesn’t see too much immediate fallout. "I have not seen much concern by our [member] corporations about these cases," says Gross. "They don’t feel threatened. [They] don’t look with great merit on Lotus’s suit. We want software that looks and feels alike to reduce training time required to convert users from one product to another. The large user’s attitude is ‘wait and see’ on the Lotus suit. [Even] if Lotus wins, from a practical point of view there is no way they [the courts] will force the return of the software. [I] anticipate that courts would only stop sales of more infringing software, not take software from users.

"As for bankruptcy of a small vendor, it is always a risk. Any company, including Lotus or Microsoft, could go belly up. I don’t see that as a problem. One thing the industry should be wary of is the large companies driving small innovative companies out of business with lawsuits, because this becomes monopolistic."

Some industry sources agree that large users can be myopic in their demands. "If users want a viable [computer] industry they must understand the economics of the industry," says Digital’s Pappas. "For example users are taking license terms more seriously. There has been a shift over the years. They are beginning to understand what the suppliers need for economic viability."

In the end, many people question whether litigation is the best forum for deciding technological policy issues having economic implications for the software industry and for the country as a whole. According to Pappas, "The real tragedy is that policy issues of great import to the industry are being left to judges to decide." This view is shared by Milton R. Wessel of Georgetown University Law Center, the former general counsel of ADAPSO. "There is clearly no industry position," he says. "The industry can set guidelines better than the courts. If industry refuses and it goes back to the courts, then industry should not complain."

Esther Roditi Schachter, Esq., is the partner in charge of the New York office of Schachter, Courter, Purcell & Robert, specializing in computer law. She is also editor of the newsletter Computer Law & Tax Report.
Just because it's small doesn't mean you shouldn't take it seriously.

In fact, there is nothing funny about the Tandon Targa's high level of advanced features and performance. It has been designed to quietly fit into your working environment. Not dominate it.

With its trim, attractive design, it takes up 40% less space than comparable PCs.

But its small size belies its large number of features. Like full AT-compatibility. Five full-size expansion slots. 20MB of Winchester hard disk storage. A standard 1MB of memory on the main board. And Tandon's advanced memory management system that lets you use it all.

The Targa's small size is matched by its incredibly small price. At $1,999* it's a midget among the giants of the industry. And there is nothing funny about that, except that you can laugh all the way to the bank.

To see this small wonder in action, visit your nearest Tandon dealer or call us toll-free at 1-800-338-4555. In California call 1-800-237-1735.

* Monitor not included.
There is no substitute for experience. When we wanted to design a really practical inventory control system, we gathered a group of the most successful distributors we could find and had them design it.

What they helped us develop was a total business system. A system capable of improving every part of your operation. From inventory control to customer service to turnaround time.

With a Honeywell Bull system in place, you have access to absolutely current information. This helps you make better business decisions, provide better customer service, and keep your warehouses running smoothly.

Customers are more important than ever before.
ventory items.

'tre really tying your

service, and do away with a lot of paperwork.
A Honeywell Bull system also helps you look ahead. To anticipate the ebb and flow of business by tracking product demand and customer buying trends. A big part of maintaining proper inventory levels. And profits.

To see for yourself call 1-800-328-5111, ext. 9726 or write Honeywell Bull Inc., MS440, 200 Smith Street, Waltham, MA 02154.

Honeywell Bull

portant than computers.
An electronic stock market. An international network of computers through which shares are electronically traded with incredible speed.

The market is NASDAQ, and the network was built with Unisys equipment. The National Association of Securities Dealers Automatic Quotation system was founded in 1971. By 1978, daily volume was 11 million shares.

Now, in 1987, an average of 155 million shares a day are traded on a network of 3,000 terminals over a 6 million square mile trading floor. Uptime for the central Unisys computer is 99.92%.

"You can't leave network growth like that to chance. Build too fast and you waste money. Too slowly and you compromise service," says Sam Vail. His Unisys team is responsible for helping NASDAQ plan and manage the network growth. "We've been through three generations of equipment without once stopping for software conversions," Sam proudly points out. "Unisys systems grow right alongside the customer. I guess that's what the power of 2 means."

Unisys and NASDAQ. The power of 2.

"We kept NASDAQ running nonstop through three major upgrades."

Sam Vail, Account Executive, Unisys.
Inflexible Manufacturing

BY ROBERT POE

When Susumu Katoh, general manager of Mazda’s Information & Systems Division in Hiroshima, wants to illustrate the comparative advantages of people and machines in automobile manufacturing, he starts by drawing a simple graph. The vertical axis represents productivity; the horizontal one, flexibility. Machines are positioned high and to the left, indicating that they are productive but inflexible. Human beings are positioned low and to the right, since they are flexible but not very productive.

This postulate is a common one in Japan and is often used to determine where, and where not, to automate in a Japanese factory. The trouble is that this premise can easily lead to blind spots in management thinking, especially since factory automation systems are becoming more flexible and sophisticated.

Katoh admits that there is a need to make Mazda’s production machines more flexible. “We want to move both machines and people to here,” he states, pointing to the top right area on the graph, where productivity and flexibility are equally high.

But despite the fact that linking production equipment to computers would be instrumental in achieving this goal, this advantage appears almost totally unappreciated in many Japanese factories, and the ability of modern robots to change tools and programs in a few seconds is largely wasted. The automobile and electronics industries have come to represent advanced Japanese manufac-

The established view that Japanese manufacturing automation is the best in the world is only partly true. The actions required to install the correct combinations of components are so complex and varied that in most factories fewer than 10% of the tasks can be automated. Some tasks that a single human worker could accomplish in one operation might require several machines. Many operations are so complex or require human judgment of such subtle quality that machines with appropriately sensitive capabilities have not yet been developed. The trouble is that this premise can easily lead to blind spots in management thinking, especially since factory automation systems are becoming more flexible and sophisticated. Few Japanese sites take advantage of the new systems.
turing techniques; they have obvious differences, but both exhibit strikingly similar attitudes toward manufacturing automation.

Matsushita’s vcr factory in Okaya, probably the most advanced and efficient of its type in the world, is a good example of the electronics side of the picture. Although the final assembly line is more than 80% automated, its efficiency stems from high-volume production of nearly identical products—200,000 units a month divided among only four basic vcr models. Almost all of the assembly machines are dedicated to specific tasks, and any changeover to produce a different model requires shutting the whole line down for an hour or more.

Even when programmable robots are used, they are often treated almost like single-purpose assembly machines. For example, the only flexibility needed by the few robots on the Matsushita vcr line is so that they can pick up parts in order from different locations on a pallet, when a fixed parts feeder cannot be used. On a Toshiba printer line in Ome, all of the final assembly—except for one operation—is done by off-the-shelf robots. Even though only one type of printer is being made, the robotic ability to perform different tasks with a mere change of program remains entirely unexploited.

When true flexibility is needed, human beings usually get the job. A good example is the final assembly of automobiles, where modern market requirements call for almost every car coming off the line to be different from those preceding and following it. The actions required to install the correct combination of components are so complex and varied that in most factories fewer than 10% of the tasks can be automated. Little direct computer control is involved. Japanese workers generally get instructions from printed sheets attached to the car body or its carrier. In many cases, however, these sheets have been printed out on a computer hardcopy terminal at the beginning of the line.

Robots Relieve Humans

The few robots on car assembly lines are used for physically difficult tasks, such as the installation of spare tires, batteries, and windshield. Even so, they usually don’t receive their cues from computers but through simpler methods such as limit switches or bar codes, and the types of actions they need to perform are quite limited.

In Japan, true computer-controlled, flexible manufacturing has made more headway in the stages prior to final assembly. It is most common in automotive body welding, a visually spectacular operation that has come to symbolize advanced Japanese automation techniques. At Mazda’s Hiroshima factory, 95% of the spot welds on a body are made automatically within a minute or so. The detailed programs reside in the welding robot, and the controlling computer sends instructions about which program to use. Flexibility is still limited, however; each welding line can handle only the two- and four-door versions of a single body type.

As with assembly-line robots, one of the main reasons for automating welding was the physical discomfort the operation caused human workers. For the same reason, the paint shop is the second most robotized area in automobile manufacturing, according to Japan Industrial Robot Association (JIRA) statistics.

Kindness to workers is not the only reason for using machines for arduous tasks, be it in automobiles or electronics. “When workers have to work in severe conditions, they make mistakes,” says Teruhiko Shoji, general manager of Toshiba’s Fukaya vcr factory.

There are many situations where special conditions proscribe the use of automation. For example, hard disk drive
Exhibitors, attendees and the press all agree. The excitement and sales momentum are back and growing stronger than ever! The sales resurgence shifted into high gear at COMDEX/Fall '86. More new products, more new business, more excitement and optimism than ever before! Over 80,000 attendees from around the world came to meet with more than 1,200 exhibiting companies and to attend the most intensive—and most successful—COMDEX conference yet.

The excitement and anticipation are already building for COMDEX/Fall '87. Exhibit halls are selling out fast, with manufacturers in every segment of the microcomputer industry looking forward to the biggest and most important marketing event of the year. Plus, COMDEX/Fall '87 has been designated an International Trade Fair by the U.S. Government, and will be promoted worldwide to attract even more than the 7,000 foreign buyers who came in 1986. It's all shaping up now to make COMDEX/Fall '87 the most valuable event possible for manufacturers and resellers alike.

The verdict is in and the opportunities are unlimited! Complete and return the coupon today for information or call (617) 449-6600.

**TELL ME MORE about new business and profit opportunities at COMDEX/Fall '87!**

- [ ] Send me complete exhibitor information.
- [ ] Send me attendee information when available.

Name ____________________________
Title ____________________________
Company ____________________________
Address ____________________________
City __________________ State __ Zip ____________________________

Return to: Mr. Richard Schwab, THE INTERFACE GROUP, Inc.
300 First Avenue, Needham, MA 02194

DMT 6/1/87

*The Interface Group, Inc.*
production is usually not automated—the drives must be assembled in clean rooms and it is too expensive to use robots outfitted with special accordion-like sleeves over their joints. "Clean-room robots cost twice as much as standard robots," claims Tadashi Kurachi, manager of the engineering administration department of Toshiba's Ome factory.

Computers Support Production Lines

Many operations—such as adjusting disk drive heads—are so complex or require such subtle human judgment that machines with such sensitive capabilities have not yet been developed. And some tasks that a single human worker could accomplish in one operation might take several machines.

Companies usually have clear criteria about when and where to automate: generally, a robot won't be installed unless it can pay for itself in two years. Capacity for flexible on-line control remains a minor factor in most of these decisions.

The Mazda Net

Mazda's communications system may not be a showpiece of state-of-the-art digital networking, but it gets the job done.

Domestically, the computer centers of its five major business offices in Hiroshima, Nagoya, Osaka, Sendai, and Tokyo are connected by high-speed analog leased lines capable of 48Kbps transmission. In August they will be upgraded to 1.5Mbps digital lines. Among other things, this will permit video teleconferencing, requiring 384Kbps of capacity, between Hiroshima and Osaka. The service is to be extended next year to Tokyo, Sendai, and the Hofu factory near Hiroshima. Although the present analog system carries only data, the digital lines will also support voice and facsimile communications in addition to video.

The company's 111 domestic dealers, along with 12,000 salesmen, are tied into the network through more than 300 terminals using 30 leased lines and 80 public line setups. Dealers can access the main database in Hiroshima for information on parts and options, as well as for transmitting and receiving order and delivery data.

There are communications channels to both Europe and the U.S. Separate 14.4Kbps connections via analog undersea cables link Japan with Mazda Manufacturing USA Corp. in Michigan and Mazda North America in Los Angeles. These links also permit direct access to Japanese databases by U.S. dealers and by workers at a factory being built in Flat Rock, Mich. The two U.S. sites are also linked to provide redundancy. Yet another link uses Kokusai Denshin Denwa's VENUS-P satellite packet switching network, at 9.6Kbps, which is accessed via Nippon Telegraph & Telephone Corp.'s DX network in Japan and through ITT in the U.S.

Mazda's European operation is connected to Japan by satellite, but currently only for voice and facsimile use. Tests are being made to begin transmission of order and delivery information in the near future, with an eye to setting up a European value-added network (VAN) to connect sales offices and dealers as in Japan. A similar VAN is being planned for the U.S.

The Hiroshima factory complex is the site of the only optical network, a seven-mile SNA-based LAN that connects production facilities, two main offices, and a technical design center. Three IBM 3090/20s and a 3084 are accessed by more than 1,000 terminals via a 9.6Kbps data-only channel; this will be increased to 64Kbps and support phones and facsimile as well.

When the upgrading is complete, this Mazda network will be among the most advanced of any Japan's international manufacturing companies.

While computers don't play a major role in controlling the production line in Japan, they are quite important in supporting it. The most obvious use is in traditional business applications like order tracking and inventory. At Nissan, explains Atsushi Sasaki, systems engineer in the production control section, dealers upload new card orders from pcs through phone lines to the sales department's Hitachi mainframe. Production and scheduling data are then sent to the appropriate factories and suppliers via Nissan's group network.

In many cases, computer control ends at the factory's loading dock, once the parts are loaded in. It then becomes the responsibility of the forklift operator to make sure the assembly-line stations are adequately supplied with parts. In some cases, computer-controlled vehicles help with stockpiling. Where just-in-time delivery is not used, automated warehouses are common, with bar-coded bins full of parts, which are loaded onto ceiling-high racks and summoned when needed.

Further along the road toward computer integrated manufacturing (CIM) is automated transfer of engineering data from R&D to manufacturing. Most Japanese manufacturers have not made much progress in this area. The Toshiba VCR factory in Fukuya, for example, although highly automated, sends basic design data to its internal and external suppliers by mag tape. Nissan uses microfilm to move complex design information and electronic links to move basic data; it is planning to employ optical disks in the near future.

Mazda may come closest to the integration of design and manufacturing functions with its Geometric Modeling and Numerical Control (GNC) system. Written in PL/1 and running on two IBM 3090s, it can handle basic layout and design, structural analysis, and detail design for three-dimensional body and interior parts, as well as the design, production, and machining of stamping dies for making those parts. Says Yoshimi Okada, senior information and systems R&D manager, "We plan to add material billing to the system in the future." Developing programs or numerical control instructions for actual production machinery is not planned, however, since that can be done less expensively with conventional methods. For problems like the design of engine parts where a two-dimensional approach will do, Mazda uses Lockheed's CADAM system.

Overseas manufacturing doesn't present any problems in data communications, despite the complexity of the systems at home. Only information on scheduling, parts, and shipping travels by data link between Nissan's main office and its plant in Smyrna, Tenn. Mazda, too, despite several overseas data links, including on-line access to the main Japan database by its U.S. operation, sends only basic business data back and forth (see "The Mazda Net").

While automation is a key factor in the Japanese manufacturing industry's success, its application is limited and much of its potential is still unrealized. Judging from the present state of affairs, it will be a number of years before there will be Japanese networks that can link the outposts of flexibility found scattered throughout Japanese factories and design centers into anything approaching full-fledged CIM. Since flexibility is still regarded very much as a human attribute, it's the Japanese workers who will have to do the adjusting until then.
Not every DP manager uses FOCUS.

It's easy to recognize the ones who don't. They're surrounded by impatient users.

FOCUS delivers major productivity gains fast by helping you develop the applications your users need.

FOCUS is the ultimate in fourth-generation technology. A complete and powerful language. A flexible database manager with relational facilities. And a state-of-the-art, full-featured decision support system.

It has the functional completeness demanded by professional programmers. A recent study found that over 40 percent of all mainframe FOCUS usage is in production applications.

Yet FOCUS also offers a point-and-pick windowed interface which allows end users to create their own applications—without learning the language.

FOCUS Fits Right In

FOCUS has interfaces to every important database manager on the market.

You can build a new system in FOCUS that runs directly against existing files. Create separate FOCUS files. Or both.

And for Information Center use, these same interfaces enable FOCUS to serve as a friendly front end to any file on your mainframe.

FOCUS runs in IBM's 370, PC and PS environments, on the DEC VAX, under Wang VS, and under UNIX. Your programmers can write a FOCUS application on the most convenient machine—say, an IBM PC—and port it to any of the other environments.

76 of Top 100

Of the 100 largest U.S. corporations, 76 use FOCUS. In fact, existing customers buy more new copies of FOCUS than anyone else.

Applied FOCUS

Thousands of FOCUS applications run in all of these categories:

- Financial and Accounting
- Tracking Systems (e.g., Inventory, Assets, Equipment)
- Marketing and Sales
- Personnel and Payroll
- Strategic Planning and Analysis
- Research Studies and Surveys
- Order Entry
- Production Control

FOCUS has a large and independent user group. And Information Builders backs FOCUS with the support you'd expect from an industry leader: local help lines in 12 regional offices, a central hotline, and a national network of technical support and training centers.

Don't wait until your back is to the wall. Get more information on FOCUS. Call 1-212-736-4433, Ext. 3700. Or write Information Builders, Inc., Dept. B1, 1250 Broadway, New York, NY 10001. Our literature gets right to the point.
Transient overvoltages plague all communication networks.

Cylix is the cure.

It can happen to any of the links in your communication network, anywhere, at any time.

It can be caused by lightning, electrostatic discharge, or even just ionized air.

In fact, the only certain thing about transient overvoltages is their high cost — which, including downtime, servicing and employee salaries, can run as much as $10,000 an hour for a medium-sized company with a modern data communication network. Not to mention the damage to company equipment and reputation.

But have no fear. The Cylix Corporation provides an extremely effective remedy for the overvoltage ills. The Cylix line of Transient Surge Protectors.

Combining avalanche diodes for speed and gas tubes for sheer power, Cylix protectors provide maximum security in nanosecond response time. And, unlike similar products on the market, our components are modular and easily replaceable. Which means that, whether you’re an OEM or an end user, you get convenient, custom-tailored protection. For anything from single sites to entire networks.

Available in a variety of models to fit every need, Cylix protectors are just what it takes to keep your equipment — and your business — in good health. For more information, contact us at (516) 361-7340, or write: The Cylix Corporation, 550 Smithtown Bypass, Smithtown, NY 11787.
WITHOUT DATA GENERAL, INTEGRATING YOUR COMPUTERS IS LIKE PITTING MAN AGAINST MACHINE.

DATA GENERAL GIVES YOU THE BEST SOLUTIONS FOR COMPUTER INTEGRATED MANUFACTURING SYSTEMS.

Are the levels of your manufacturing operation locked in hand to hand combat? Our total integration solutions can make them all work together. Hand in hand.

Our computers and solutions span key areas. Linking Engineering with Manufacturing. Planning with Sales.

We give you advanced productivity solutions. Like TEO™, our technical automation system. And CEO™, our business automation system. To combine with major CIM applications. Data General is firmly committed to industry communications standards. Like MAP, SNA, X.25 and Ethernet™. They help you forge different systems into a single information mainstream.

What's more, our MV/Family computers are price/performance leaders. Which make these solutions more affordable.

If your company is wrestling with today's complex manufacturing needs, call 1-800-DATAGEN (Canada 1-800-268-5454).

Data General
a Generation ahead.

© 1986 Data General. 4400 Computer Drive, MSC-228, Westboro, MA 01580. TEO is a trademark; CEO is a registered trademark of Data General. Ethernet is a registered trademark of Xerox Corp.

CIRCLE 37 ON READER CARD
How to Shop for Your Information Center

BY JOHN N. OGLESBY

The information center, a phenomenon that has come to epitomize the end-user computing cause in many organizations, could well become an institution in the shifting landscape of corporate America. The vast majority of Fortune 1000 corporations already have either an info center or a group that performs the same function. Yet despite the pervasiveness of information centers, there is no standard recipe for success. That’s because the organizations served by info centers are all different and the environments in which the centers operate are constantly changing.

To remain vital and viable, an information center must have a dynamic set of tools, techniques, strategies, and tactics that support that ever changing environment. So any checklist of essentials cannot be merely a static list compiled at the info center’s inception and discarded when the facility gets under way. Instead, that roster of requirements must become an ongoing part of the information center’s success plan, modified over time as end-user needs shift.

Some items or aspects considered too expensive or difficult to have been included early on can be added later as more funds become available or as needs grow more acute. Many things that remain on the list may never be purchased or implemented, and others will simply be dropped. Its composition at any given point will depend upon the center’s maturity as well as on the needs of the organization.
organization it serves. It is also very important that this list do more than simply catalog needed tools and services; it should also include the strategies and tactics that the info center will implement.

A good information center shopping list should be built around eight elements. The first is a strategic plan that answers the key questions “What did my organization hope to accomplish when it started the information center?” and “How can the information center best serve the organization?” The answer to the first question clearly establishes what the information center is expected to deliver. If those expectations are not met, the info center will be viewed as a failure and will risk being eliminated.

The same thing holds true for the second question. No matter what is initially expected of the information center, if it does not profitably serve the organization, it will almost certainly be viewed as a waste of time and money that can be done without. Obviously, if there is a conflict between the two answers, the info center management must modify the initial expectations of the organization.

Nevertheless, the ways that the info center can best serve the organization inevitably will exceed the organization’s initial expectations, and ultimately the services it provides will in turn inform and change the expectations of the organization. While a desire for administrative support may have brought an info center into being, the organization should learn that the value of the center does not stem from its ability to provide clerks and administrators, but from its role as educator and innovator.

For example, an information center might have been started to provide corporate end users with access to mainframe data. The center was expected to select a query, analysis, and reporting language for the end users, train them in its use, and make production databases or production extracts available. This answers the first question, but what about the second? Why did the end users need access to mainframe data? Did they need the data and how often? Do many people need to share data? What quantities? What people need the data and how often? Do many people need to share data? The answers to these questions indicate the kind of work the users need to perform.

If you need to support the gathering and analysis of data by small, independent work groups, then the hardware you probably should consider is departmental computers or micros. Departmental computers make more sense if individuals within the work group must share data or analyses frequently, or if the amount of data they need to share is large. On the other hand, micros would probably fill the bill if individuals tend to operate more autonomously with very little need to share data with others.

Large, corporate databases need to be accessed by many different groups, then a mainframe-based tool may be called for. If the need is large enough, you may even consider the purchase of a mainframe specifically dedicated to end-user computing.

The frequency of data transfer must also be taken into account, and one way to determine this is to ask, “What are the data access needs of the organization?” In other words, what kinds of data are needed? What quantities? What people need the data and how often? Do many people need to share data? The answers to these questions indicate the kind of hardware that is needed. But an equally important question is, “What will the users do with the data?” Will they simply access data, or will they create new data and add to them?

A lot of micros extracting small quantities of information from a mainframe on a frequent basis are likely to drain mainframe resources much more than a departmental processor would. Also, if there are a large number of departmental machines that often need copies of large mainframe databases, then a mainframe dedicated to end-user chores may be a better choice.

**Mainframe May Be Needed**

Heavy reporting needs may necessitate a mainframe. Heavy analysis and number crunching also usually dictate a mainframe. Substantial communications requirements may call for a departmental or mainframe-based electronic mail capability. The need to create a large database that will be accessed and maintained by a large number of users may also suggest a role for departmental or mainframe-based solutions.

If there is a need to do smaller, individualized tasks such as producing short memos or reports or doing limited spreadsheet, statistical, or graphical analyses, then micro-based equipment may be indicated. In any case, when all aspects of the requirements are addressed, you’ll probably need a range of hardware.

Now the search for software begins. Once again, the software must perform the tasks needed to support the strategic and tactical plans. You must select software that not only fills the present needs of the organization, but that also meets the needs for future capabilities and expansion.

It should have the capability of exchanging data with other software products and be well supported by the vendor. In addition to the total acquisition costs, your organization will also be investing thousands of dollars in training and in developing applications using that software, so you want a product that will serve you well over the long haul.

Information center software typically breaks down into the following areas: query, reporting, spreadsheet, database management, word processing, graphics, statistics, modeling, communications, and application development. Most info centers eventually reach the point where they need software to cover all these capabilities.

There are several fourth generation language products on the market that combine many of these capabilities. Sometimes vendors provide versions of...
See valuable response time improvements for your Information Center users with data stream optimization products from BMC Software.

Save costs and improve productivity without expensive hardware upgrades.

Profs* users see especially high reductions in data streams to remote terminals.

3270 SUPEROPTIMIZER/CICS (under MVS/XA, MVS, or DOS/VSE) or 3270 SUPEROPTIMIZER/IMS reduces outbound and inbound data streams 50% to 85%. 3270 OPTIMIZER/VM reduces outbound data streams up to 40%.

For more information, or to begin a 30-Day-Plus Free Trial, clip and mail the coupon or call your BMC Marketing Representative.
Now PCs on your LANs can talk to your mainframe as easily as they talk to each other.

Talk about resource sharing. All it takes is one PCOX Gateway to deliver full mainframe privileges to all the PCs on a LAN.

And talk about resource saving. A PCOX Gateway can save you all kinds of modems, controllers, terminal emulators and line costs.

Each PCOX Gateway is a single board that plugs into a single slot on a single PC on the LAN. And unlike other gateways, PCOX Gateways let every PC on the LAN talk to the mainframe, using software alone.

In fact, PCs can talk through more than a single PCOX Gateway. They can automatically seek mainframe sessions through multiple PCOX Gateways on a LAN. Then they can carry out 3278/79 emulation, 3270 PC emulation, send-receive file transfers, or even 3287 host printer emulation with their PC printers.

One PCOX Gateway board works as a micro-to-mainframe connection for every PC on a LAN—including the gateway PC. The rest of the PCs use software alone.

PCOX Gateways work in all NETBIOS-compatible LANs, including IBM's own Token Ring and PC Network; plus LANs from AST, AT&T, Novell, Sytek, Ungermann-Bass and others.
Gateways: micro-To-Micro-To-Connections.

PCOX/GATEWAY COAX connects directly to a 3274 cluster controller, and supports up to five concurrent host sessions. In fact, you can even make a PCOX Gateway Coax out of your existing IRMA board.

PCOX/GATEWAY-16 and PCOX/GATEWAY-64 each connect to a mainframe communication controller over modems and phone lines, and support up to 16 or 64 host sessions.

You can also put any number of PCOX Gateways on any size LAN, and control access to the mainframe through configuration and security features built into the gateway itself.

PCOX Gateways are products of PCOX Technology, a modular system of advanced micro-to-mainframe connections that helps manage PC demands for mainframe access.

And PCOX Gateways are at the top of the PCOX product migration path. Which means all you need is software to turn any existing PCOX micro-to-mainframe link—coax or remote—into a PCOX Gateway.

So find out how PCOX Technology can help connect any number of micros to your mainframe. Call now for more information about PCOX Gateways. And ask for the name of your nearest CXI distributor.

800-225-PCOX
In California, call 415-969-1999.

CXI

CXI, Inc., 1157 San Antonio Road
Mountain View, CA 94043. Telex: 821945

PCOX and all PCOX products are trademarks of CXI, Inc.
IBM is a registered trademark of International Business Machines.
IRMA is a trademark of Digital Communications Associates, Inc.

CIRCLE 39 ON READER CARD
their software that operate in mainframe, departmental, and micro environments. These wares often have excellent data transfer facilities.

The most widely used information center wares for the mainframe are fourth generation language and database management products. The most popular products at the micro level are spreadsheet and word processing packages such as Lotus 1-2-3 and MultiMate. Until recently, DBMS programs for micros were limited and the software primitive.

But all that has begun to change. Products such as R:base System V from MicroRim in Bellevue, Wash., dBase III+ from Ashton-Tate of Torrance, Calif., and PC/Focus from Information Builders in New York have begun to take advantage of the 80286- and 80386-powered PCs. As a result, the micro can now be served by a host of more sophisticated and user-friendly DBMS tools.

Business graphics and desktop publishing software have also become popular applications for the PC. Both tend to be used as time-savers and productivity enhancers, however, rather than as strategic tools. That's really a shame, since both provide capabilities that could be used to further an organization's strategic plans.

Business graphics, for instance, could be used as part of an overall plan to analyze an organization's markets and communicate the results efficiently to people who could quickly respond to the needs thus identified. Desktop publishing could be used as the central part of a plan to communicate frequently and directly to important customers who need timely information to build or solidify a certain segment of their market.

Statistics and modeling have been slow to develop on PCs, mainly due to a lack of PC power. Until recently, these applications have been done on departmental and mainframe computers, but now the more powerful PCs can run many of those statistical and modeling programs that demand a lot of processing juice.

Choose and Train Staff

After the software is selected, it's time to choose and train the staff. The Info center staff must be capable of introducing a new technology and set of tools to the organization. They must also be able to support the end user who will learn to use and apply these tools. Information center personnel must be adept at cooperating and guiding, and must possess strong technical fundamentals.

They must exercise judgment, patience, and tact and be capable of working at the clerical level one moment and with high-level executives the next. They must be able to handle multiple demands upon their time, choosing carefully and accurately which demands should be satisfied first.

To say that this kind of person is hard to find would be a gross understatement. Since info centers haven't been around very long, the people pool for them is not very deep. There simply aren't enough people around with the proper background and skills. Complicating things further is the fact that the people who have demonstrated these skills are probably already at too high a salary level for the information center to afford them. Maybe we should either scale down our expectations of the info center staff, or develop a much broader career path that can better challenge and compensate them.

Next on the agenda is end-user training. A high-quality, dynamic training program is a must for the information center. Keep in mind that the training needs will change as the technology and users change. The kind of training that's needed the first day will be dramatically different from what will be needed in several years.

While training in how to use a tool is certainly necessary, it is only the first step. The real goal should be educating users in how to apply the tool to the business problems at hand. This education should be aimed at the strategic areas of the business.

Obviously, there's only so much a training program can do. To truly educate users in how to apply tools to business problems, a good consulting program is also necessary. In fact, it's another must for any information center shopping list. The info center staff itself should function as good consultants. They must have enough knowledge about the organization's business and the technical capabilities of the tools available so that they can recognize opportunities to use them in profitable ways.

Info center workers must actively seek these opportunities, and not just wait for them to appear. This means maintaining excellent user relations and being actively involved in the users' business. It also means sometimes helping the users accomplish tasks rather than just showing them how to get it done.

Many information centers have refused to "do" projects for their users. They insist the users do it for themselves. Some facilities, however, have realized that occasionally it's necessary to lead by example, teaching as you go. This is especially important when users are not inclined to risk the success of a strategic project to a new tool.

Finally, you need a good evaluation and feedback program. If the information center is to know how it is doing, both in terms of user satisfaction and in terms of effectiveness to the organization, a feedback mechanism is vital. The program will determine if the expectations of the users are being met and if the objectives of the organization are being achieved.

Program for Users and Management

The information center at First Tennessee Bank in Memphis has a feedback program that includes regularly scheduled user contact meetings and an annual user satisfaction survey. During the meetings, which are conducted with both users and user management, current and prospective projects are discussed and consideration is given to how the info center staff and tools could be used to make those projects easier or more successful. The users' degree of satisfaction with the training, consulting, and hot-line assistance programs are also reviewed. Numerous changes have been implemented in each of these programs as a result of the feedback.

The bank's annual satisfaction survey provides a more formal evaluation of user and management satisfaction with the overall level of service they receive from the information center. Feedback from this poll typically leads to the development of certain strategic and tactical objectives for the year.

In summary, an information center shopping list is more than just a simple list of the hardware and software items the facility might incorporate. It is a dynamic group of elements that includes a strategic plan and specified objectives defining the services the center will offer, as well as a feedback system to ensure that the information center is meeting these objectives. Informed by these fundamentals, the information center can fulfill its function as facilitator, innovator, and apostle of a new era of productivity.

John Oglesby, who is information center manager at First Tennessee Bank in Memphis, is cofounder and president of the Information Center South Central Regional Association of Management.
Now you can autodial from any remote site, in any sync protocol, with Racal-Vadic's new 4850 PA modem.

Set your remote sites on the most capable 4800 bps dial-up sync modem ever made. The new 4850PA, from Racal-Vadic.

No other 4800 bps dial-up modem makes more sync connections, more ways, more automatically. With a 4850PA, you get both 208B and V.27 ter compatibility. You also get BSC, SNA/SDLC and HDLC serial autodialers, plus an 801 parallel autodialer. You can even upgrade it to 9600 bps. Which means the 4850PA can sync up with just about everything.

The 4850PA is extremely compact, fully automatic and packed with useful features. The front-panel keyboard comes with an LCD display, and lets you program up to 28 options, including storage for 15 phone numbers.

And since it's a sync modem, the 4850PA is the ideal companion for every kind of remote device, including RJE's and PCs in micro-to-mainframe applications. You can even use it to lynk up your minis.

So get all your remote sites in sync with your mainframe. Dial up Racal-Vadic today at 800-482-3427 and ask for more information about the 4850PA.
In 1962, we were a complex networking problem because at that point we were a complex networking problem.

For 25 years, Codex has been a networking company. Concentrating on only one business: communications.

1962
Codex develops its first data communications product for secure government applications.

1967
Codex announces the first commercial 9600 bps modem. In 1976, our technology is adopted as the international standard by the worldwide CCITT Committee.

1975
Codex announces the first statistical time division multiplexer and pioneers the concept of network control.

1984
Codex introduces breakthrough technology and architecture that transforms its new generation of high-speed modems into a "network systems resource." In 1986, the first software option--a complete communications test package--is announced.

1985
Codex introduces gateways that allow separate networks to be combined.

1985
Codex introduces the first 19.200 bps modem with built-in network control as a standard feature to optimize throughput and minimize downtime.

1987
Codex combines multipoint modem and multiplexer technology to allow independent applications--using different protocols--to share the same communications line.

Codex hasn’t just developed a lot of networking solutions. We’ve practically developed the whole business of networking.

So whether you’re attempting to get the most out of existing transmission facilities, working with equipment from a variety of companies, wrestling with multiple networks supporting different applications, seeking an improved network management scheme—we’ve been there.

And we can show you how we’ve developed a constant flow of new technology to deliver bottom-line benefits. Like pushing transmission speeds as high as they can go to cut transmission costs over analog lines. Developing multiplexer technology to increase line efficiency. Dealing with a variety of mixed protocols and chairing international standards committees to keep pace with your needs. And offering independent central site systems to help manage your entire network.

That’s been the secret of our success. And it could be the secret to yours.

Being part of the solution is sometimes the solution itself.

In 25 years of engineering network solutions, we’ve worked with all sorts of equipment companies and in countries all over the world. So regardless of which vendors the pieces of your network come from, or where they are, we can maximize their performance and functionality.

We also back our solutions with a wide breadth of reliable networking products. Our history of offering independent central site systems to help manage your entire network.

When you call Customer Service, you’ve got the whole company on the line.

© 1987 Codex Corporation, Motorola and ® are trademarks of Motorola, Inc. Codex is a registered trademark of Codex Corporation. Sales offices in more than 40 countries worldwide. In Europe call 32 2 660 3980, in Canada 416 793 5700, in the Far East 813 3848 0210, in the American 617 364 2000.
innovative product capabilities means you’re getting high quality communications products that will make your particular network as productive as possible. Because we present a full range of solutions, we’re never in a position of trying to force fit a particular technology.

If you’re planning on business growth, your network company should be planning on growth, too.

Since your network is a major investment in the future of your business, one of our highest priorities is to ensure that your investment is protected.

So, we design our networks so that they can actually spark growth within your company – helping to drive it by being a vital and powerful corporate resource.

Of course, this demands an enormous investment of time and money in R&D.

It also requires us to be very active on today’s international industry standards committees. We’re helping to create the kind of “open architecture” that will allow you to link equipment from many vendors in a more productive way. And will help us further accommodate your company’s future growth.

With that kind of support, your network will be able to grow by leaps and bounds. And your business along with it.

At Codex, we don’t have set solutions – we work with your current environment. Which is why we spend a lot of time drawing diagrams like this.

And of course, besides working for successful companies, we’re also backed by a successful company – Motorola.

How can you find out what Codex can do for your applications?

You can start by calling Codex at 1-800-426-1212, Ext. 248. Or write to Codex Corporation, Dept. 707-48, Maresfield Farm, 7 Blue Hill River Road, Canton, MA 02021-1097.

We’ll be happy to send you a free copy of The Basics Book of Data Communications – an informative guide to the ins and outs of networking based on our extensive experience.

Of course, the book should be informative. After all, it took 25 years to write.

For years, we’ve worked with some of the best-known companies in business. Isn’t it time we worked with you?

Codex is currently working with 97% of the Fortune 100. And the experience we’ve gained from those associations and others can be put to work just as successfully for your organization.

In fact, in a recent Data Communications survey, many of these and other companies consistently ranked Codex first as the networking vendor they preferred in categories ranging from best price/performance to technology to customer support.

IBM is a registered trademark of International Business Machines Corp. DEC is a registered trademark of Digital Equipment Corporation. AT&T is a registered trademark of American Telephone and Telegraph Co.

Visit Codex at NOAC booth #535-41, May 31 – June 2
Team Your IBM System With a Thoroughbred!

NEW!
Powerful Printers For Your IBM 3X or 3270!
• 850 cps (240 lpm throughput)
• Twin-ax and Co-ax Models
• 100% duty cycle to keep your jobs running day and night.
• On site service available

The New TriMatrix™ 888XL And 889XL Printers.
They're brand new from Output Technology...the American company with the world's fastest serial dot matrix printers! Incredibly powerful partners for your IBM mini and mainframe systems.

The 888XL features an internal protocol converter for twin-ax connection to IBM 3X systems, while the 889XL offers co-ax (IBM 3270). A parallel port is also standard on both models.

A Myriad of Applications:
- Data Processing
- Financials
- Spreadsheets
- Bar Code
- Near-Letter-Quality
- Graphics

More Features Than Ever Before!
- 888XL emulations: IBM 4214, 5224, 5225, 5256, and EPSON.
- 889XL emulations: IBM 3287, 3262, and EPSON.
- Full international character set
- Front panel menu programming (no DIP switches).
- Front and bottom paper feed
- 8K data buffers
- 5 to 18.2 pitch printing

Over 120 Service Centers in the U.S. and Canada.*

Team Your IBM With OTC's Champion Performers!
OTC's unique printing mechanism distributes the work load over three print heads for reliability you can trust. Premium performance and speed...priced at only $3795 for the twin-ax model, and $3995 for the co-ax.

To put our team to work for you, call today!

1-800-422-4850 (8 a.m. - 5 p.m. PST)

E. 9922 Montgomery, Suite #6, Spokane, WA 99206
(509) 926-3855, 1-800-422-4850
Telex #15-2269 OUTPUTSPOK FAX #922-4742

See us at COMDEX/SPRING '87 Booth #2900, WEST HALL

*Call for availability in your area.
The info center’s ultimate mission is to get users to fulfill their own specialized graphics needs. But before that can happen, the info center must provide end-user managers with the hands-on training and help they need to create the razzle-dazzle graphics that will impress their colleagues, their CEOs, and even their competitors. To achieve those eye-opening results, you need to evaluate and select carefully the appropriate software packages and output devices. The info center must also be ready to provide the necessary artistic tools, symbol libraries, and slide-creation brochures, along with detailed instruction on how to operate output peripherals.

Drawing the Graphics Line in Your Info Center

BY NEIL KLEINMAN

Sometimes desperation breeds demand. A frantic user shows up at the information center asking for help; the manager, impressed by the graphics a colleague had used at yesterday’s meeting, wants to use the same effective approach. Running against the clock, the info center staff has less than 48 hours to churn out the user’s charts and tables for a razzle-dazzle presentation at the next meeting.

This is an ideal situation for an info center to prove its worth. Unfortunately, the whole exercise will be a blur for the manager, who hasn’t really learned anything about the proper use of graphics resources in the info center. A week or a month later, that same user, along with two or three other managers, will turn up at the info center and again ask for similar graphics support. At this point, the info center specialist assigned to deliver the graphics goods can only respond to these urgent needs by neglecting other users and other responsibilities.

This is where the info center director has to draw the line. If not, these excessive demands could turn the facility into an informal graphic arts department overnight. This is just one of many issues that make microcomputer graphics a frustrating as well as promising application area for the info center.

During the initial stages of promotion, the info center must have a staffer who is dedicated to graphics support. This person should be skilled in hands-on application training as well as the more conventional educational methods. The user must not be a passive participant in this training process. Follow-up also is crucial. The info center must anticipate the user’s next graphics need—a need that should be fulfilled by the user, not by the the info center specialist.

Once the info center has a strategic perspective for graphics support, it must then assemble the tools to address a broad range of user needs. Tools that are suitable for analytical graphs, for instance, may not be ideal for creation of professional presentations. Complex tools may be too difficult for occasional users, while basic tools and hardware configurations are necessities.

Essential hardware for graphics applications includes a high-resolution color display, an Enhanced Graphics Adapter (EGA) or equivalent with 256KB of DRAM, a pen plotter, and either a mouse or a digitizer. Apple’s Macintosh II and IBM’s Personal System/2 drama-

Symbols and mapping can be used to highlight a simple text chart, such as this one provided by Computer Support Corp., St. Louis.
Software Is Greatest Challenge

Selection of graphics software is the greatest single challenge facing the info center. More than 40 vendors now supply over 70 graphics packages. The absence of a de facto standard and the fact that no single product can answer all the diverse graphics needs mean you should be prepared to support multiple packages that have the following features or capabilities:

- ease of use for occasional users;
- extensive charting capability for analytical applications;
- drawing capability for diagrams and organizational charts;
- artistic features for on-screen and slide presentations;
- data handling capabilities for downloading from a mainframe; and
- batch processing capabilities for automatic generation of multiple slides or graphs.

The evaluation of packages that excel in one area but are deficient in others requires qualitative as well as quantitative criteria. One approach is to judge the results obtained when the program's default settings are used. If the results are aesthetically pleasing, most users will obtain satisfying results quickly, without having to learn about the options that are buried in the pull-down menus or invoked through letters or numbers in complex full-screen menus.

The software evaluation should result in the selection of three or four packages. One package should be for the creation of text slides, which represent 80% of all slides. Another should have extensive charting capabilities and permit plotting of multiple charts on a single page. A third package for drawing should address the need for creation of text charts or generation of artistic slides. Finally, if desktop presentations represent a major application area, then software that's optimized for slide generation should also be supported.

In most organizations, the info center must implement and support advanced output devices such as hardware and software for on-screen presentations and film recorders that produce slides. Even when outside slide service bureaus are available, users will most likely still want to preview slides produced with an in-house film recorder. A film recorder, which can sell for under $5,000, is also needed for the last-minute changes typical of many presentation applications. The availability of instant slide film permits these eleventh-hour adjustments to be incorporated in a matter of minutes.

Ever since PC graphics' inception, users have clamored for color hardcopy handouts of slide presentations. Early color graphics hardcopy devices were slow, so users were restricted to black-and-white handouts. Leading software vendors have recognized laser printers' potential for graphics hardcopy. Many programs automatically eliminate color and convert solid-fill fields into hatched patterns for easy output to standard laser printers. The laser printer, then, is an im-

**Getting Graphic at Connecticut Mutual**

The info center at Connecticut Mutual Life Insurance in Hartford, is getting serious about graphics. The $9 billion insurance company has set aside one of the three rooms in its info center for microcomputer graphics; the center's six-member staff includes one specialist dedicated to serving the graphics needs of the company's corporate staff of 2,200.

Approximately 800 personal computers are used by that work force, which gradually began to get into the graphics mode about 20 months ago. Launching the company's graphics campaign was a single user armed with Lotus 1-2-3. Today, the center, which directly serves 40 to 50 users, has helped implement graphics systems in six user departments.

Connecticut Mutual's info center contains an IBM PC and AT dedicated to graphics, a Hewlett-Packard 7550 plotter, a CalComp Colormaster thermal printer, two VideoShow presentation systems from General Parametrics, Berkeley, Calif., and a film recorder. One VideoShow system is used to create on-screen and slide presentations, while the other is used for actual presentations. Software includes Lotus Freelance Plus, IBM PC Storyboard, Decision Images (a specialized package for the insurance industry from Travtech Inc., Hartford), and the MasterGraphics Series from Ashton-Tate, Torrance, Calif. Picture Pak artistic symbols from Marketing Graphics Inc., Richmond, Va., are also available.

Even with all that hardware and software, Connecticut Mutual is still at the bottom of the graphics learning curve, "We're just at the beginning of using presentation-quality graphics," explains Elizabeth Hale, an info center consultant at Connecticut Mutual. The current mix of output is 60% transparencies and 40% slides. But as the use of graphics spreads, pressure on nonusers is increasing. "As soon as they see a presentation, they want to do it," says Hale.

Connecticut Mutual's info center has provided extensive support for creation of slides and transparencies. In fact, the facility spends so much time on slide production that it's considering charging for these services. If charges are implemented, then the info center may be able to increase the number of graphics specialists on its staff. At that point, the center would be assuming some of the functions of a graphic arts department.

While this extraterritorial issue still has not been resolved, the fact that it is an issue at all attests to the fact that Connecticut Mutual's info center is addressing its users' graphics needs.
The most up-to-date training in the UNIX® System, from the people who keep the UNIX System up-to-date.

What could make more sense than UNIX System training from the people who invented the UNIX System—the people responsible for all its updates and revisions. AT&T.

Created to train AT&T's own professionals, our curriculum is the most comprehensive available—including C language as well as the UNIX System. And every course is practical and job-related.

Training for everyone
- Systems developers
- Applications programmers
- Technical specialists
- System managers and users

Whatever your specialty, AT&T has the right curriculum, from basic overviews to programming to business applications and data communications. And every course is kept up-to-the-minute with such recent advances as System V Release 3.0.

Individual attention
Classes are limited in size, so that each student can be given individual instruction and supervision. In laboratory classes, each student is assigned his own terminal. Instruction is by AT&T UNIX System veterans and is personal, thorough, productive.

Classes forming now
Reserve as quickly as possible for preferred dates at our completely equipped training centers in Atlanta, Chicago, Dublin, OH, Los Angeles, Princeton, NJ, and Sunnyvale, CA. Or we'll arrange instruction on your site at your convenience. But don't wait—call or write now for information and seat reservations.

Free fact-packed training catalog: Call 1 800 247-1212, ext. 1002, or mail this coupon.

Registrar, AT&T Training, P.O. Box 45038, Jacksonville, FL 32232-997
Please rush me your course catalog with information on:
- UNIX System training
- UNIX System video training
- Data communications and networking training

Name ____________________________
Title ____________________________
Company ________________________
Address __________________________
City ___________________ State _____ Zip ______
Phone ( ) ____________________________
**IELY • WINGS**

WINGS™ PROVIDES EXACTLY WHAT YOUR PROJECTS NEED.

**IMMEDIATE ANSWERS, RIGHT ON SCREEN.**

**RELY ON AGS** WINGS is an on-line, shared database-oriented mainframe project management system. Fully interactive, it provides you with the speed and performance no other system can match. Now you can easily create, edit and collect information for planning, simulation, and project status updating; you can accurately report time, cost and progress to the System; and you can retrieve, immediately, any information contained in the System—right on screen.

WINGS was created to minimize your input burden while maximizing your feedback so that you spend less time entering data, and more time analyzing schedules and costs before you act on them.

Planning, budgeting, “what if” simulation, scheduling, resource management in a multi-project environment, skill scheduling, progress tracking, cost management, graphics, on-line help screens—WINGS is equipped with everything you need for effective project and resource management for projects of any size or complexity.

WINGS is backed by a complete program of training and support to help you utilize the System to bring your projects in on time, within budget, and with optimum resource utilization.

If immediate response is one of your requirements in a project management system, call or write today. We’ll respond immediately.

**Drawing the Graphics Line**

Important piece of hardware to add to the info center’s graphics tool chest.

The info center is in the perfect position to set standards of professionalism for graphics use. The place to start is with your company name and logo. For a modest fee, most software suppliers will digitize your logo. The info center should check to see that proper colors are used and that placement of the logo is consistent for all presentations. Formats that use different frame options should also be established.

Standard symbols and artwork can also be used to add interest and excitement to graphics presentations. Most drawing packages provide some symbols, and a wide variety of artwork can be acquired at minimal cost. The ability to create maps is one of the most popular uses of standard artwork. This application can be addressed by special packages or standard symbols that can be “unjoined” so that individual countries can be grouped and colored.

As with any new application area that involves relatively new technology, success may depend upon your ability to learn the tricks and avoid the traps. The first trick of the graphics trade is to use the numerous brochures that teach you how to create slides and use color. Take advantage of the free product literature that’s doled out in volumes by many graphics vendors.

The big trap comes from the need to interface unique graphics peripherals. A simple pen plotter, for example, can become a nightmare simply because different software packages use different data transmission rates to drive the device. To avoid these problems, set program defaults so they use the same transmission rate—either 2,400 baud or 9,600 baud. If this can’t be done, then make available clear instructions on what to do if the plotter doesn’t function.

While microcomputer graphics is a complex and challenging application, it is also one of the most rewarding tasks the info center can tackle. Success leads to effective presentations that are valued both inside and outside the company. As usage grows inside the company, the info center should implement dedicated graphics systems in user departments. In this way, the info center can fulfill both its mission and the graphics mandate of the corporation.

Neil Kleinman is president of Pacific Technology Associates, a Tarzana, Calif., consulting firm specializing in computer graphics.
What can you expect from the new LaserJet Series II Printer?

Everything.
Because the LaserJet Series II Printer from Hewlett-Packard is the product of experience. It's a second generation printer from the company with the world's largest installed base of laser printers.

Whatever your company's needs, the LaserJet Series II will deliver the performance you expect, at up to 8 pages/minute.

Take a simple memo like the Soup letter we created with Microsoft Word. As you can see, you can print in a variety of formats and type styles with our wide selection of LaserJet fonts.

Or you can create a sophisticated combination of text and graphics. With additional plug-in memory, you can also produce full-page 300 dpi graphics, like our Nuts form shown below. To do this, we used HP's new ScanJet desktop scanner, Microsoft Windows and Pagemaker® from Aldus.

With support by more than 500 of the most popular software packages, the LaserJet Series II Printer can produce whatever type of business document you need. And LaserJet Series II works with all popular PCs so it can easily be integrated into your existing system.

In fact, only the price is unexpected—starting as low as $2495.*

For the authorized dealer nearest you, call us at 1 800 367-4772, Ext. 276K.

HEWLETT PACKARD
Business Computing Systems

Microsoft is a registered trademark of Microsoft Corp. Pagemaker is a U.S. registered trademark of Aldus Corporation.

* Suggested U.S. list price. © 1987 Hewlett-Packard Co. PE12701DM3

CIRCLE 45 ON READER CARD
Fasten your seatbelts. The new Pinwriter® P9XL printer from NEC is about to take off. It cruises at 400 characters per second in draft mode, 140 characters per second in letter quality mode. Which means it can really make those business letters fly. In fact, no other 24-pin printer is faster.

And because it uses a 24-pin printhead and a multistrike film ribbon— the same kind that's used in typewriters and letter-quality printers—the P9XL also delivers better print quality than its competitors. It even prints in color.

But it's not limited to letters. The Pinwriter P9XL is a true multi-purpose printer that can fly through payroll, invoices, continuous forms, multipart forms—just about any business or office application.

Best of all, it's from NEC—the world's largest...
manufacturer of 24-pin printers. The company that consistently offers you the highest reliability ratings in the industry. (You can expect your P9XL to run for five years before it might need a repair.)

So don’t waste any more time. Fly down to your nearest dealer and ask to see the new Pinwriter P9XL. Or call NEC at 1-800-343-4418 (in MA, (617) 264-8635). Or if you prefer, write to NEC Information Systems, Dept. 1610, 1414 Massachusetts Ave., Boxborough, MA 01719.

NEC PRINTERS. THEY ONLY STOP WHEN YOU WANT THEM TO.
Can your System/3X workstation do this?

Run MS-DOS
Connect to networks
5219 emulation

The ComputingLynk can

Introducing Lynk’s PC-based workstation. For the way you really work with information.

Run 3180/3197D jobs and MS-DOS programs using PC support without local disk storage...Hot key between concurrent 3X sessions or 3X and PC sessions...Use popular ASCII printers and program them to print bold, italics, color and other special attributes...Add laser-quality printing.

You can do it all without sacrificing the ergonomic features of the 3X workstation — 15" 132-column screen with 3180-quality alpha characters and CGA graphics, in your choice of amber or green, and 122-key keyboard.

And you can have a ComputingLynk/I for only slightly more than a 3197D display station!

Add one or two 3½" or 5¼" disks, or a combination of 3½"-5¼" drives to do even more. Plug in industry-standard boards to access local area networks and connect to 370s and other hosts.

You can do it all with ComputingLynk. From The Lynk Corporation.

Call for a free trial
1-800-IBM-LYNK
(in PA: 215-265-3550)
How Should Contractors Be Taxed?

Section 1706 Makes Sense

BY DANIEL PATRICK MOYNIHAN

One of the main goals of last year's tax reform legislation was to get the tax code out of economic decision-making. An effort was made to tax similar business activities in the same way—so that the tax code became “neutral” in business decisions. This goal of a “level playing field” was also a matter of fairness.

Judged by the yardsticks of neutrality and fairness, the tax law had not been working very well in the technical services industry, specifically with respect to independent contractor status. The rules for determining whether a technical service worker was an employee or an independent contractor were flawed. The operative rules were the common-law definitions of “employee,” but a “safe harbor” added by Section 530 of the Revenue Act of 1978 allowed a taxpayer to treat a worker as an independent contractor so long as there was any reasonable basis in industry practice for doing so.

This special safe harbor was not uniformly available, however. A so-called “consistency requirement” stipulated that a class of workers was eligible for safe harbor treatment only if the firm had not at any time after 1977 treated as an employee any worker holding a substantially similar position. Accordingly, the safe harbor was denied to firms that had made the “mistake” of treating workers as employees. Because of the significant tax advantages associated with independent contractor status, firms and individ-
How Should Contractors Be Taxed?

BY ALFONSE M. D’AMATO

Last year, Congress passed landmark legislation that dramatically simplified the tax code and instilled a new sense of fairness in our tax system. At least this is what I thought when I voted for the Tax Reform Act of 1986. But in December of last year I became aware of a provision of the tax bill that specifically discriminated against certain professionals for absolutely no reason. Now I am not so sure that the tax bill was such a great success.

Of course, I am referring to Section 1706 of the Tax Reform Act, which has unintentionally jeopardized the existence of thousands of small businesses throughout the nation. To right this terrible wrong I have introduced Senate bill 491 to repeal Section 1706.

Identical legislation has been introduced in the House of Representatives by Rep. Joe DiGrazia (R-N.Y.) as House bill 1240.

What truly disturbs me is how Section 1706 became law. It truly represents a grave distortion of the legislative process. Neither the House nor the Senate held hearings on Section 1706. For that matter, no meaningful floor debate accompanied passage of this onerous provision. Thousands of small businesses are severely hurt by Section 1706, yet Congress did not even allow the impacted taxpayers their “day in court.”

As you know, Section 1706 forces certain technical service workers involved in third-party arrangements to comply with common-law tests determining independent contractor status for tax purposes. In 1978, Congress created a safe harbor for technical service workers if there was reasonable basis for treating these individuals as independent contractors. Section 1706 simply repeals the safe harbor specifically for engineers, computer programmers, systems analysts, drafters, and similar professionals involved in third-party contracting arrangements.

When the safe harbor was established in 1978, it was stipulated that Congress would formally study this issue before taking further action. Despite never undertaking the study, Congress went ahead and removed the safe harbor for certain technical service workers. I feel strongly that Section 1706 must be repealed. Once this onerous provision is eliminated, Congress can study the independent contractor issue in a calm, deliberate, and dispassionate manner. The only way to reach this goal is to pass my bill, S. 491. To do this, you must contact your elected representatives in Congress urging their cosponsorship of S. 491. Support for my legislation is building, but more work must be done.

I will continue my efforts to repeal Section 1706. I believe equity dictates that technical service workers get a fair shake from Congress.

Alfonse M. D’Amato, a Republican, is the junior senator from New York.

Reprints of all DATAMATION articles are available in quantities of 100 or more. Details may be obtained by telephoning (800) 323-4958, or by writing to DATAMATION, Cahners Plaza, 1350 E. Touhy Ave., P.O. Box 5080, Des Plaines, IL 60017-5080.
INFORMIX. It's the fastest RDBMS for UNIX™ And now it has a high-performance option that makes it even faster.

Introducing INFORMIX-TURBO, the first fault-tolerant transaction processing database server for UNIX. It lets INFORMIX-SQL and INFORMIX-4GL fly through large databases. With features like optimized data layout, adjustable-size shared memory, and tunable performance parameters.

And to keep even the most demanding multi-user databases flying, there's our fault-tolerant feature. Which makes for speedy recovery from system crashes.

Of course, it's technology like this that has made INFORMIX the best-selling RDBMS for UNIX™ And a leading contender in MS™-DOS, VMS™ and networked systems.

For our latest benchmarks, graphs and more on INFORMIX-TURBO, write Informix Software, 4100 Bohannon Drive, Menlo Park, CA 94025. Or call 415/322-4100. And bring your database up to speed.

INFORMIX

The RDBMS for people who know better™
WHETHER YOU SHAPE METAL OR MOLD PLASTIC...USE CAD OR CAM...
WE OFFER YOU INTEGRATION ABOVE THE NEED, BEYOND THE NORM.

We offer a CIM solution called ICEM: Integrated Computer-aided Engineering and Manufacturing.

ICEM is integrated by Control Data's advanced information management capability and powered by CYBER computers.

Our processing power reaches from the CYBER 910 workstation and CYBER 930 departmental computer all the way to the supercomputing level.

The CYBER line supports one, one hundred or thousands of users in your multivendor environment. It meets and then exceeds the need.

As does the ICEM software suite. It offers a complete package of tools for design and drafting, geometric modeling, finite element modeling and analysis, and numerical control—for both metal and plastics.

And they're all integrated by the ICEM Engineering Data Library, creating a total engineering environment.

Comprehensive, systemwide integration. If that's what you seek, look above and beyond the norm—to ICEM.

There's much more to a DP deal than signing on the dotted line. Six top information systems executives tell DATAMATION what they expect from their vendors before putting pen to paper. What they're looking for is alliances for progress with both their suppliers and their system users. These pacts should have more than just hardware behind them, they should have honesty. Fed up with being fed spiced-up versions of yesterday's technology, these candid MIS chiefs want sellers that are a lot smarter about their individual industries, company cultures, and end-user customers. They want vendors that are more responsive to their strategic needs, more innovative, and infinitely more compatible with the mixed installations of today and tomorrow.

Alliance for Progress: MIS Views Vendors

The vendors of information systems wares are peddling too many off-the-shelf products and reworked versions of old solutions to satisfy today's MIS executives. What these MIS chiefs want to do is forge new alliances with both their suppliers and users—pacts that will help them build and structure the systems and networks of the future.

These information systems executives want honesty as much as they want hardware from their major vendors. They want them to be a lot smarter about their industries and customers and more responsive to their specific organizations' strategic and long-term needs. All of which means that suppliers will have to be much more cooperative, far more innovative, and infinitely more compatible with the mixed installations of today and tomorrow. These MIS pros also want to be their own systems integrators. Eventually, they hope to parcel out ownership of the technology to their end users.

Today's MIS execs want to be in partnerships for progress with end users. They want their vendors to go beyond the purchase order and fill the bill for computing customers. To find out how those partnerships are progressing, DATAMATION recently held a roundtable with six top MIS chiefs to reveal their views on vendors. Participating in the discussion were Ronald Brzezinski of Quaker Oats Co., Bruce Curry of Peat, Marwick, Mitchell & Co., James Hernon, an information systems consultant, Rear Admiral Harry Quast of the U.S. Navy, Dale Schaub of Morton Thiokol Inc., and John Singleton of Security Pacific Automation Co.

Q: What are your most critical concerns today in dealing with information systems vendors?

QUAST: Two principles guide the Navy's dealings with vendors. First, we try to get the most bang for the taxpayer's dollar. Second, we try to give everyone an equal shot at Uncle Sam's dollar. That means we have to develop very elaborate specifications describing what we need. But the vendors like to say, "Why don't you set your specifications aside? I've got just the thing for you." But when we set them aside because they're not responsive, they resort to the time-honored tradition of protesting the bid, which delays us and takes us forever to meet our requirements.

SCHAUB: Since we are decentralized, we have very different divisions at Morton Thiokol, each needing different services. Our vendors have to understand this diversity and offer solutions accordingly, instead of coming with their standard approach: "You're a manufacturing company. Here's our manufacturing solution. Would you like to sign a contract?" We'd...
like to develop fairly close working relationships with a limited subset of vendors so that we really form strategic partnerships.

SINGLETON: At Security Pacific, we also want to get the biggest bang for the buck and we want as many bids as possible because we'd like to drive the costs down and see more solutions. I think that the poor sales in the industry are because hardware and software firms have been bringing old technology and old, canned solutions to users, window-dressing them to look better and newer. Users don't want to accept that anymore. Vendors like IBM have had problems because they aren't providing the portability and the connectivity needed. Nobody's buying all IBM or all DEC anymore, and vendors have to recognize that and provide the means to tie the whole mixture of equipment together.

SCHAUB: I think there's been a change in vendor attitude, but not in behavior yet. What's hard on the vendors is that we all perceive value differently. John Singleton has a very large staff that has a lot of depth technically. I don't have quite that much depth, so I need more support from my vendor. But vendors try to market to both of us in the same way.

At Morton Thiokol, MIS is not so technology driven. So we're in a position where we can sit back and watch other folks break ground with the vendors. And then we acquire the technology after it's stabilized.

CURRY: It's vital that vendors understand that it's not a cookie-cutter market. At Peat Marwick, for instance, we use Apple Macintoshes for our auditors and Wang systems for office automation. Since we're betting our future productivity on those vendors, we need to know their plans and directions. If you're talking about an organization based on people and services, productivity is important, and we've put a lot of investment into that. If you have good communication at the top, you're not pursuing a false course.

BRZEZINSKI: Quaker Oats, like many other food companies, began to invest heavily in information technology only three years ago to catch up to where it should have been. To help us meet the commitments we've made, we've invited 15 or 20 of our vendors to sit through an individual three-hour presentation on what we are trying to accomplish—our plans, our ideas, our direction. I always end up with four basic rules to communicate to ven-

Panel Participants

Ronald Brzezinski is vice president of information systems at Quaker Oats Co., the $3.7 billion Chicago producer of consumer foods and Fisher-Price toys. Brzezinski, who oversees a budget of $70 million, has functional responsibility for all computing at Quaker and direct budgetary control of the corporate data center.

Bruce Curry is the director of Peat Marwick, Mitchell & Co.'s Computer Resources Dept. in Montvale, N.J. Curry is in charge of management systems, communications, and office automation for the New York-based Big Eight accounting firm, which is currently expanding its business through acquisitions.

James Hernon is a consultant and visiting researcher on the "Management in the 1990s" program sponsored by MIT's Sloan School of Management, Cambridge, Mass. Hernon recently retired from Eastman Kodak Co., Rochester, N.Y., where he was director of manufacturing information systems architecture.

Rear Admiral Harry Quast is the director of the Information Systems Division on the staff of the Chief of Naval Operations in Washington, D.C. Responsible for information support for tactical and business operations, Quast is also director of information resource management for the Secretary of the Navy.

Dale Schaub is manager of information systems services at Morton Thiokol Inc., Chicago. He is in charge of application development and consulting services at this highly decentralized $2 billion company that manufactures and markets high-technology propulsion systems, rocket motors, specialty chemicals, and salt.

John Singleton is vice chairman and deputy to the president of Security Pacific Corp., a $64 billion financial services company. He is also chairman and president of Los Angeles-based Security Pacific Automation Co., which uses its $300 million budget to provide dp and banking operations services to its parent company and other clients.
dors. First, know your own industry. Second, know your customer’s industry. Third, understand the individual customer’s culture. And fourth, build relationships not only with us in the information systems community, but also with our clients, our users. I expect vendors to be an extension of my department’s resources. I need them a lot now because we are in the rebuilding stage.

The problem is that, like us, vendors are also going through a cultural change. Years ago, there was a select community of sales personnel out there. Suddenly, now we’re seeing salespeople in the thousands. My question is, how do the vendors find this many good people who have an understanding of their own industry and ours?

CURRY: Data processing is also a more confused industry because the rate of technological change has been doubling for the last few years and will probably continue to do so. There just isn’t enough work being done to determine what that architecture of systems will be in five years. The vendor doesn’t know how to handle it. It’s obvious with IBM’s product line and with others. Many makers really aren’t sure of their role.

BRZEZINSKI: Just look at the evolution in the relationship between the user, dp, and the vendor. In the 1960s and early ‘70s, dp dominated the show. Then, in the later ‘70s, the vendor took over, and we in the information systems business were at odds with our own users. Neither stage worked well. What is natural is a managed partnership where we each have roles and responsibilities. For me, the vendor has to help educate the client as far as opportunities for using new technologies and awareness.

Q: Do vendors really believe in managed partnerships?

BRZEZINSKI: They all pay lip service to it. I even had one vendor representative ask for a fourth presentation of our plans. I think they just wanted to convince me that he’s really interested, but he still doesn’t respond. A few have, however. DEC, for example, has made it their responsibility to visit our plants and all the people involved in using their equipment. That’s really performing the kind of value-added service that I need. That used to be IBM’s forte, but in our case, they slipped.

HERNON: Before we can determine what we expect from a vendor, we have to understand what the problem is. I don’t think any of us feel comfortable that we are really getting the bottom-line benefits that are promised or expected by this technology. We have to know where to place our bets—our investment—and where to put in the controls to ensure that the investment is congruent with where the enterprise is going. We are the ones who have to establish the architecture of the network, the infrastructure that we’ll need to achieve our business goals.

QUAST: That interests me more than the vendor problems. Management has not taken its responsibility for information support. Our main theme is to get line management more involved in the process of providing information support. We are also trying to shift personnel resources in information systems into top-down strategic and architectural planning, leaving the technical expertise to the vendor community. We’re not talking turnkey operations, but a more effective partnership in which we concentrate on what the organization does and what information is needed and let the vendors concentrate on technology, suggesting alternatives and providing the hardware and software.

Q: So you’ve identified the management problem and the roles to be played in the partnership. Are the vendors responding?

QUAST: We aren’t getting a lot of help on architecture, because vendors still like manageable chunks with short time frames, so they can sell you something in six or 12 months. They’re saying, “Is there an acquisition contract at the end of this?” And we’re saying, “Well, yes, but we haven’t figured out yet where we want to put our dollars. We’re still stumbling around trying to figure how to utilize some of this technology.” They don’t have the patience for that.

Q: How do you draw the vendor into a more meaningful relationship?

SINGLETON: I think the poor sales in the industry are because hardware and software firms have been bringing old, canned solutions to users, window-dressing them to look better and newer. Users don’t want to accept that anymore.

SINGLETON: I think the poor sales in the industry are because hardware and software firms have been bringing old, canned solutions to users, window-dressing them to look better and newer. Users don’t want to accept that anymore.
Introducing the New OKIDATA CLX96 Series Modems.

First the good news. Now you can get a 9600 bps V.29 modem that's also an OKIDATA modem. So you know it's dependable, flexible, affordable and fully backed by one of the most-respected names in telecommunications.

Now the Better News: Built-in Full Diagnostics.
Send and receive data with a CLX96 without worrying about interruptions. Automatic adaptive equalization smooths out variable line conditions. A built-in test pattern generator probes for potential trouble. Digital and analog loopbacks look for faulty circuits, both local and remote.

It's all part of the CLX96 series built-in diagnostics. Something few other modems in this price range offer.

Good News for More People.
No matter what type of network you use there's an OKIDATA 9600 modem to fit it. For point-to-point applications, the CLX96. For multidrop situations, the CLX96FP with a 15-millisecond polling time. And, for multiport operations, the CLX96M with a 4-port multiplexer.

Turn Ordinary Minutes into OKIDATA Minutes.
When you're using a 9600 bps modem, a minute of downtime is bad news. But an OKIDATA Minute is always good news. You get a full 60 seconds of quality transmission every minute you're on-line.

And the price? That's the best news. But you'll have to call your OKIDATA distributor to get it. Or call 1-800-OKIDATA to get the name of an OKIDATA distributor near you.

CIRCLE 50 ON READER CARD
Think Globally.

As a MIS executive, corporate network control is the most important issue facing you and your organization. Integrating personal computers into an overall corporate strategy that supports and enhances your mainframe, databases and application software investment—while still providing services to end users—has been a difficult and, at times, impossible task. Until now.

Introducing The Harris 9300

The Harris 9300 is a powerful communication system combining the best of PC-based local-area networks (LANs) with access to mainframe resources. The system is ideal for professionals and departments that operate in a mixed systems environment of PCs and 3270 and RJE terminals.

Control And Protect

The Harris 9300 is designed to provide network control and management without abandoning your existing equipment.

Up to four mainframe connections may be running at once using any of five different protocols, including 3270 SNA and Bisync, RJE SNA and Bisync, and SNA LU6.2. This means any PC or workstation on a Harris 9300 can have mainframe access, easily and inexpensively.

The Harris 9300 consolidates as many as 16 personal computers and 16 3270 terminals on a single, direct line to the host. And, by networking multiple Harris 9300s together, that direct line can support more than a hundred PCs and terminals, providing an elegant solution for bridging the stand-alone world of individual PCs with your
Act Locally.

major investment in centralized databases and applications.

Get The Lay Of The LAN

The Harris 9300 is also a powerful PC LAN and file server, supporting NETBIOS applications, and is compatible with IBM's PC network and token-ring architecture. What's more, MS-DOS 3.1 programs are supported on the network. The Harris 9300 also allows you to share resources such as laser printers, high-speed band printers, modems, terminals and PCs, maximizing your investment in existing systems and peripherals.

To help you plan and manage networks on a corporate and departmental basis, without sacrificing individual PC application productivity, call Harris at 1-800-4-HARRIS, ext. 5001.

We're Ready To Communicate

We'll send you free in-depth product, application and technical information concerning how the Harris 9300 can help you control your corporate and PC networks before they control you. We'll also provide you with information concerning our unique, nationwide network maintenance, service and support programs—all backed by Harris Corporation, a $2.2 billion leading supplier of information-technology equipment and systems.

If this all sounds good to you, think and act today by calling 1-800-4-HARRIS, ext. 5001 or by writing to Harris Corporation, National Accounts Division, 16001 Dallas Parkway, Dallas, Texas 75380-9022.
QUAST: We’re looking for a more effective partnership in which we concentrate on the organization and what information is needed and the vendor concentrating on technology, suggesting hardware and software alternatives.

users and our vendors. We agreed to levels of performance set by our users for their applications, levels that are regularly reviewed and rated. We also stressed that our vendors needed to manage the required service levels of our organization. If they didn’t agree, we wouldn’t do business with them.

BRZEZINSKI: During the last three years, we’ve been working hard to build credibility that has been lost during a period of misfocused IS spending. We hammered out our technical direction, established a plan with a funding level, and communicated the business impact of the new IS direction to our executives. We also established commitments and delivery targets through arrangements that were similar to John [Singleton’s]’s service-level agreements. Once you do that, you’re part of the business team. We also have a steering committee for management review. And I personally spend a third of my time meeting with business people in the company. I feel we have overcome the back room image.

Q: Can you tell us something about your technological direction and what you need from the vendors?

BRZEZINSKI: Our company’s success comes from maintaining the number one and number two brand positions. To attain those positions, you have to have quality market research and excellent customer service. That implies better databases, responsive systems, and flexible decision support systems. We also have to form alliances with vendors supplying technology and information. In manufacturing, we are networking a lot of our remote facilities to standardize interface requirements. In five years, our IS department will be much smaller, because we are going to disseminate the management and ownership of the technology throughout the company while maintaining a strong centralized direction. Our department will ultimately be a managed utility, serving as the integrator of data and communications.

CURRY: Our long-term objective is to take the centralized and core products and move them out to Peat Marwick’s 100 offices. They can do what they need with the technology out to the user. We don’t think technology is a problem. What is a problem is the intelligent application of that technology.

HERNON: There are two major technology areas that need a lot of improvement: networks and data. To make those improvements, we need good, effective standards efforts. The users have to establish the standards framework in order to force vendors to take a more positive role.

QUAST: The Navy certainly has a lot of clout here, but we have probably been too timid in playing the standards game. We talk about all this integration, and that means standards. We’ve been in communication with General Motors and Boeing in the CAD/CAM area. We’ve told them, “Let’s join forces. Together, we’re an unbeatable combination.”

BRZEZINSKI: I’ve always put industry standards at a lower priority only because it takes too long and I’m not sure you can standardize such a dynamic industry. Some good entrepreneurs out there are going to create that standard bridge for us to buy.

HERNON: I really think you need to look at standards in terms of intention and you need a strategy associated with them. The kind of standards I was referring to are those that ensure a migration path. We have to make sure we establish what’s needed for integration and interconnectability. The MAP and TOP efforts are providing evidence that standards can be turned out much, much more quickly. If users don’t assume a proactive position, they will end up losing in the process.

SINGLETON: Not everyone wants to support standards. But it’s like paying the IRS. You may not be thrilled about it, but if you don’t pay, you’re in trouble.

Q: What else do you need from your vendors?

BRZEZINSKI: The overwhelming need is always service—the ongoing need to keep the business running. And service, in my opinion, is 70% of the game. The other 30% are the nice-to-haves—the integration, the support, the education, the extending of our resources. This means that the vendor is helping us communicate the messages, the needs, and the awareness of technology to the field, to our clients.

QUAST: I’d like to put in a plug here for computer security. We need more and better computer security devices from vendors. The private sector ought to come out with security in the form of utility packages. That will happen, but not fast enough. We’ve already had a lot of disasters. And people lose confidence that we can in fact stop a missile from firing inadvertently.

I would also like to see more done on the business side of the house with Ada. But industry has been slow in coming up with validated Ada compilers or an Ada environment. And the standard user interface is also important. We massage data, we spreadsheet data, but there’s technology out there that can help us view that data. And I would put that into the standard user interface so that we don’t have 92 different protocols on 62 different devices.

SINGLETON: I have a long list of things I want from my vendor. First, I want a prototyping ability, which enables us to build a prototype before rushing into production. Second, I want a partnership strategy that allows us to build something unique together with the vendor who sells the result and we get royalties. Third, I want a technology exchange or trade-in program on hardware because the life cycle is far less than five to seven years now. Also important is vendor support for the R&D function so that we can get breakthrough results. I also want a comprehensive telecommunications network, along with the architecture and tools to implement that.

In the PC area, I have all kinds of requirements. The PCs must be friendly to
New PowerHouse versions for Digital and Data General

The latest versions of the PowerHouse development language on Digital Equipment's VAX and Data General's ECLIPSE MV computers solve many of the problems associated with adopting a relational DBMS. Because PowerHouse supports both vendors' relational databases and dominant file systems, you're guaranteed integration, compatibility and performance, and 'production' development power.

Integrate new applications with existing data

New applications built in a third party relational DBMS won't necessarily integrate with your existing data. Because PowerHouse supports Rdb/VMS and VAX RMS, and DG/SQL, INFOS II, ISAM, DBAM and AOS/VS, you're free to build new applications on a relational database and integrate them with your existing ones. That means you're not 'locked-in' to a proprietary relational DBMS and 'locked-out' of your existing data.

PowerHouse provides compatibility and performance

Implementing relational technology can present compatibility and performance problems. Not with PowerHouse — it's tightly integrated with Digital's and DG's databases and operating systems to guarantee you exceptional 4GL/DBMS performance. You enjoy the combination of a fast-execution language and databases optimized by your computer manufacturer. And wherever they take their hardware and software — your applications and data will go too.

Development power for 'production' applications

PowerHouse gives you total development capability in one language, and not a collection of weak DBMS utilities and interfaces. Regardless of which database you're using, PowerHouse gives you advanced, dictionary-driven development power to prototype and build 'production' commercial applications.

And Cognos has a full-service organization to back you up. For more information, call toll-free, 1-800-4-COGNOS. In Canada, call 1-613-738-1440. In the U.K., call +44 344 486668. Or call on any of our 40 Cognos offices around the world and find out why 7,000 customer sites use PowerHouse.

THE RELATIONAL PROBLEM JUST GOT SOLVED

PowerHouse® brings solutions to typical relational DBMS problems

Cognos Corporation, 2 Corporate Place, 1-95, Peabody, Massachusetts 01960.
PowerHouse is a registered trademark of Cognos Incorporated.
Rdb, RMS, VAX and VMS are registered trademarks of Digital Equipment Corporation.
ECLIPSE, MV, DG/SQL, INFOS, ISAM, DBAM and AOS/VS are registered trademarks of Data General Corporation.
use and have such features as touch screens and natural language interfaces and the capabilities of voice activation, recognition, and response. The whole area of image processing is also important. But the most important thing in a vendor is honesty. Tell us what you can't do so we don't go into something where we really don't have a chance to be successful.

Q: In the final analysis, what type of relationship can you have with your vendor?

HERNON: What we really need are partnerships in which the users do the homework, stating the kind of requirements they have. Then you have the ability to add on to that, getting into issues like interfaces.

BRZEZINSKI: The idea of a partnership is really only limited to one product. What I would like to see more of is executive forums of 12 to 30 really good clients sponsored by vendors. That's where the real feedback is going to come. But I don't think vendors are paying serious attention to executive forums.

CURRY: I don't want a partnership with a vendor because that implies a long-term commitment. I want a good business relationship. And, if it's a critical vendor, then I must know what he's doing and he has to know what my needs are.

SINGLET ON: I don't think you should have partnerships with vendors on all things. It depends on the company's size, the strategic value, what you're trying to do, and whether you're a leading-edge firm. You don't necessarily need a partnership if you're not on the leading edge. Partnerships have gotten the least emphasis on the user side. If you don't have a partnership with your user, everyone loses.

SCHAUB: Alliance may be a better word. We need to be able to articulate our strategy to vendors and tell them, "We see using your products in this way. If you've got a dead-end product that you're going to kill in a year, tell me now. Don't let me hang myself because you've still got niches in the market where you can sell that product." I need some honesty.

Coordinating this roundtable was DATAMATION advisory board member Angeline Pantages. Moderating the discussion was senior writer Ralph Emmett Carlyle. Participating in the panel were senior editor Linda Runyan and assistant editor Mary Kathleen Flynn.
COMPETITION IN THE PRIVATE branch exchange (PBX) market has been heating up over the last couple of years. With the shakeout from divestiture still being felt in the U.S., some of the Bell operating companies have entered the market, targeting small- and medium-sized businesses. In Europe, deregulation is creating a similar battle for market share, and competition is also increasing. North American PBX companies such as AT&T and Northern Telecom have been feeling the pinch. Although both companies have large installed bases, their PBX sales have leveled off in the last year, prompting them to look at less traditional markets—i.e., small- and medium-sized businesses—for their equipment.

Both Northern Telecom and AT&T recently introduced new PBXs for small and medium-sized firms. The offerings, in essence, provide full PBX functionality to the smaller user, at a significantly lower price.

Northern Telecom recently rolled out its low-end Meridian SL-1 Integrated Services Network PBX, the Meridian SL-1ST. NT product manager Mark Benson says that small systems is the fastest growing marketplace for PBXs. The SL-1ST offers all of the capabilities of the larger Meridian SL-1 systems, including integrated voice and data communications; digital trunk interface, which allows 24 trunks across a T1 carrier with one card; remote peripheral equipment, which serves remote locations up to 70 miles away; and automatic call distribution, which coordinates calls evenly among a number of agents on a system.

The SL-1ST is available in three models and its capabilities range from 80 lines to 400 lines. A typical system is priced from $550 to $650 per line, compared with $550 to $1,200 per line for a typical larger system.

AT&T's new low-end system is a redesigned System 75 PBX. The System 75 XE is priced at $67,000, compared with $80,000 for a similarly configured early model. AT&T claims the new series is twice as powerful as anything it has developed so far. The 75 XE design, says AT&T, allows users to start with a smaller design and grow from 40 to 100 stations in one cabinet. It can be expanded to 600 users without a hardware upgrade. AT&T claims the System 75 XE offers full System 75 functionality, including voice, data, messaging, networking and call management, and hospitality applications.

McDonnell Douglas Extends Reality Minicomputer Line

Series 18 systems geared toward large-scale transaction processing environments.

BY THERESA BARRY

McDonnell Douglas's new Series 18 minicomputers round out the company's line of relational database management business computer systems for real-time transaction processing. The new series joins the low-end Series 6000, which supports from eight to 64 users, and the mid-range Series 9200, which supports up to 208 users. The new Series 18 can support up to 400 local and remote terminal users concurrently.

The Series 18 has two models: the Series 18/955 and the Series 18/965. McDonnell Douglas claims the new series is twice as powerful as anything it has developed so far. The 18/955 is available with from 4MB to 12MB of high-speed RAM memory with the option to install up to 10 disk drives of 500MB, for a total of 5GB of data storage capacity. It supports up to 300 concurrent users.

The 18/965 features from 8MB to 16MB of RAM memory with disk subsystems offering from 1GB to 5GB of storage. This model supports 400 users.

The company says the Series 18 system incorporates a "major restructuring" of the internal system architecture, which features three levels of intelligence for faster cpu performance and higher throughput, and is compatible with all other Reality systems. Lower-end systems can be upgraded to the Series 18. As in all Reality systems, performance-sensitive portions of the system reside in firmware, so that less disk memory is used.

McDonnell Douglas's fourth generation program development language, ALL, is available for use with the new machines. The Series 18/955 is priced at $395,000; the Series 18/965 is $575,000. ALL is sold separately and is priced at $25,000. Volume shipments of the systems will begin in September. MCDONNELL DOUGLAS, St. Louis. CIRCLE 261

Departmental Computer

Most powerful in series.

A 68020-based Unix computer, designed for departmental computing, has been added as the top model of Plexus Computer's P series.
Real Time

The P/95 is claimed to support up to 128 interactive users and provide from two to three times the performance of Plexus's next largest machine, the P/75. It employs up to 48MB of main memory and 6.7GB of disk storage, and it supports VMEbus-compatible peripherals that include an optical storage disk and optical scanner. The system also uses a 16Kb associative write-back cache memory and can be equipped with a floating-point arithmetic processor. The P/75 can be programmed with the firm's newly unveiled Extended Data Processing System (XDPS), which provides relational database capabilities for storing and managing image, text, and alphanumeric data. XDP also ties Plexus computers into AT-like workstations over an Ethernet.

Intended customers include telecommunications companies, military services, government agencies, and health care providers. In a typical small configuration, the P/95 is priced at $57,200. With XDP software, workstations, and peripherals, the system can range as high as $1 million. The hardware and most software are available immediately. PLEXUS COMPUTERS INC., San Jose. CIRCLE 262

Scanner

Intelligent character recognition for work groups.

Kurzweil Computer Products has introduced its Discover 7320 PC-based OCR scanner, which is geared toward small departments or work groups where the documents to be scanned are consistent in nature.

The product is comprised of a proprietary PC board that incorporates Kurzweil's proprietary ICR software and from 2MB to 4MB of RAM, plus a desktop scanner. The board inserts into a slot of an IBM PC or compatible. The scanner converts text for output to ASCII, DCA, and user-defined, application-specific formats. Graphics, including line art and halftones, are output as uncompressed bit-mapped and Xerox.RES uncompressed. KCP says Discover averages a speed of 4ppm or from 20cps to 60cps, depending on text density, and the system will recognize any font from 8 to 24 points, including multiple fonts per page. User-defined lexicon files can be added, and errors in character recognition can be flagged by the system. Discover can scan documents from offset press, laser printers, typesetters, letter-quality dot matrix and other nonimpact printers, daisywheel and other impact printers, and typewriters.

Available now, the price of the Discover 7320 ranges from $10,000 to $12,000, depending on memory size. KURZWEIL COMPUTER PRODUCTS, Cambridge, Mass. CIRCLE 263

Wyse Terminal

Offers ANSI, ASCII, PC compatibility plus graphics.

The new WY-99Gt is the latest high-end offering from Wyse Technology. It allows users to work in the ANSI/DEC VT-220, multiuser PC, or ASCII terminal environments. A dedicated graphics co-processor provides compatibility for popular graphics standards, including Tektronix 4010/4014, Hercules, and IBM CGA.

In the DEC environment, a user can select either 10-by-10 character resolution for full VT-220 soft-font compatibility or 10-by-13 resolution. In multiuser PC mode, the WY-99Gt can be fitted with a Wyse-enhanced PC keyboard for compatibility as a multiuser PC terminal in the IBM PC AT- and 80386-based environment. The terminal is also compatible with the Wyse WY-50 terminal. It provides dual-host connections, so users can switch between computers without having to reconnect cables. It features a 14-inch amber tilt-and-swivel screen.

The terminal has a dual-processor architecture that uses the company's proprietary VLSI gate array technology. The WY-99Gt is available now and is priced at $895. WYSE TECHNOLOGY, San Jose. CIRCLE 264

Pc Upgraded

Epson enhances its Equity I.

Epson, which earlier this year enhanced the top-of-the-line Equity III microcomputer, recently enhanced its low-end Equity. The Equity I+ is hardware and software compatible with the PC XT.

The Equity I+ comes in three models. The base configuration comes standard with a dual-speed 8088 microprocessor, 640Kb of RAM, a 360Kb floppy disk drive, an enhanced AT-type detachable keyboard, both a built-in Centronics parallel printer port and an RS232C serial port, an 8087 math co-processor socket, an internal programmable speaker, and slots for two mass storage devices. A second configuration comes with two 360Kb floppy disk drives and a third offers a 360Kb floppy disk drive and a 20Mb internal hard disk. MS/DOS 3.2, a set of system diagnostics, and GW-BASIC are included with the Equity I+.

The basic configuration is priced at $1,095; the two-floppy version is $1,295; and the internal hard disk version is $1,695. EPSON AMERICA INC., Torrance, Calif. CIRCLE 266

Dot Matrix Printer

Nissho's 24-wire dot matrix printer features built-in three-way tractor.

The NP-2405 24-wire dot matrix printer from Nissho Information Systems offers dot matrix printing for continuous form, spreadsheet, and word processing applications. It prints up to six-part forms, and includes a three-way paper feed system and an LCD screen for presetting of print configurations. The noise level is less than 55db, says Nissho.

Nine resident and seven optional font cartridges are offered and print speed ranges from 250cps to 428cps draft and from 80cps to 144cps letter quality. The three-way tractor includes a bidirectional feed, a push tractor, and a pull tractor. Standard emulation for the NP-2405 is Epson LQ-1500; Diablo 630 is optional. Modular interfaces are available, including Centronics parallel with a 30Kb buffer and RS232C Serial with a 30Kb buffer.

The printer is available now and is priced at $1,295. NISSHO INFORMATION SYSTEMS, Cypress, Calif. CIRCLE 267

Network Workstation

3Com unveils first in family of IBM-compatible "netstations."

The 3Station is an IBM-compatible 80286-based Ethernet "netstation" that can be integrated with PCs on a network. It is the first in a family of 3Com net-
stations, says the company. 3Com plans to include a token ring version in the future.

The 3Station integrates an 80286 microprocessor, four graphics adapters (monochrome, Hercules, CGA, and EGA), 1MB of main memory upgradeable to 4MB, and Ethernet. Its single-board design runs on 25 watts of power. There is no fan in the device, which measures 14 inches by 14 inches by three inches, including a channel on the bottom to route and collect cables. Since video, networking, and memory are integrated, add-on adapter cards are not needed and the CPU has direct access to these capabilities.

The 3Station is available now and is priced at $1,895. 3COM CORP., Mountain View, Calif.

QMS Laser Printer

New 8ppm printer for IBM Systems/34, 36, and 38 computers. The SmartWriter 8/3X from QMS has a built-in twin-axial interface, which emulates IBM 5224, 5225, and 5356 dot matrix printers and the IBM 5219 daisywheel printer. It features DisplayWrite 36 software compatibility and supports proportionally spaced fonts. Emulations include HP LaserJet-, Diablo 630, and Qume Sprint, and either an Epson FX-80 or IBM Proprinter emulation. All emulations are accessible via RS232c interface.

Other features of the SmartWriter 8/3X include full legal page bit map graphics applications, 300 by 300dpi resolution, up to 29 resident fonts, an 825KB print buffer and download font area, and an ANSI X3.64 driver.

The SmartWriter, which prints at 8ppm, is available now for $4,995. QMS INC., Mobile, Ala.

Networking Products

Intelligent Technologies adds to micro-to-mainframe systems. The Exchange Series of micro-to-mainframe communications systems was recently announced by Intelligent Technologies. The products are Gateway Exchange and ClusterNet II.

ClusterNet II allows one PC to be a server to emulate an IBM 3274 cluster controller, and to support up to eight PC workstations communicating directly over IT's proprietary LAN to an IBM mainframe in an SNA environment. ClusterNet II operates on an IBM PC, XT, AT, or compatible. Each PC can run two on-line host sessions, one of which can be an IBM 3287 printer emulation. ClusterNet connects to the host through a transparent synchronous modem, at up to 9,600bps, using either leased or switched telephone lines. It consists of a high-speed 84222 serial link and a communication protocol that supports data transmission at 19.2Kbps. ClusterNet also emulates IBM 3777 Remote Job Entry (RJE) functions to send batch jobs to the host, and to receive output directly from the host.

A basic ClusterNet II system links two PCs to a remote IBM mainframe and contains two printed circuit boards, floppy disks that supply the SNA software, and one set of IT's proprietary cables. It is priced at $1,795.

The Gateway Exchange communications system converts one or more PCs on a Netbios LAN into a communications server, which emulates an IBM 3274/6 cluster controller, allowing all other PCs to communicate over an SNA/SDLC network. PCs can emulate either an IBM 3278/9 or IBM 3180 display terminal; the standard PC printer can emulate an IBM 3287 printer. The server PC interfaces to the IBM host via a synchronous modem running an SNA/SDLC protocol and to other PCs through LAN hardware using Netbios facilities. Gateway Exchange can provide RJE with both 3270 session control and 3770 RJE emulation. Other features are switched or leased line communication, 9,600bps transmission speed, 128KB memory usage, and diagnostics.

A 16-session Gateway Exchange is priced at $1,995; a 64-session system is $3,495. INTELLIGENT TECHNOLOGIES, Foster City, Calif.

ISDN Chip Set

Advanced Micro Devices five-chip set for the "S" interface.

AMD's chip set is for both ends of the "S" interface that connects digital phones or terminals with a PBX. The ISDN chips are geared to systems for voice-only, data-only, and voice/data applications.

The Am79C30 Digital Exchange Controller resides in the ISDN Digital Exchange Controller and connects to the telephone line. It separates the bit stream into three channels for voice, data, and signaling. The Am79C32 SDN Data Controller (IDC) is a pin-compatible version for data-only applications.

The Am7936, which resides in the terminal also, extracts power from the telephone line at the S interface, and provides a regulated 5V DC supply to circuits in the ISDN terminal. The Am79C31 Digital Exchange Controller resides at the switch or PBX end of the S interface and provides the exchange termination functions for one ISDN subscriber line. It connects directly to the standard pulse code modulation highway used to carry traffic within digital PBXs, so no additional circuitry is needed to make the connection with the switch. It can support point-to-point or point-to-multipoint configurations. The Am7938 Quad Exchange Power Controller (QEC) resides at the switch or the PBX end and provides a regulated 40V power source for up to four S interfaces. It's powered by a local station battery or a centralized regulated power supply and resides in PBX, central office line cards, or in intelligent network termination equipment.

The Am79C30, in 100-unit quantities, is priced at $39.25 each; the Am79C31 and Am79C32, $23.75; the Am7936, $7.25; and the Am7938, $22.75. All are available in production quantities now. ADVANCED MICRO DEVICES, Sunnyvale, Calif.

Multiple Host Support

Switch connects 3270 terminals to more than one computer.

Network Systems' 3270 MultiSwitch lets users with 3270 or async-type terminals access data in more than one computer without either new software or changes to present software. The switch resides between the 3270 terminal and the controller or the async hosts.

One MultiSwitch supports up to 96 applications, depending on the mix of terminals, controllers, and hosts. The switch operates locally via standard terminal and controller media. Multiple switches can also be connected locally via coaxial cable or fiber optics.

The 3270 MultiSwitch is available now at $32,700. NETWORK SYSTEMS CORP., Minneapolis.
Funny how the greatest success stories always seem to hinge on some special combination. The bat. And the hitter. The song. And the singer. The IBM 9370. And VMCENTER II. The 9370's potential for greatness has never been in doubt. But it takes more than potential to make departmental systems run smoothly throughout large organizations. What it takes—is VMCENTER II.

**THE ACCESS USERS NEED. THE CONTROL YOU NEED.**

VMCENTER II AND THE 9370: **A HARD-HITTING COMBINATION.**

VMCENTER II is VM Software's newest, most comprehensive answer to the systems management needs of the VM operating environment—the environment best suited to the overwhelming majority of 9370 users. In one easy-to-use package, VMCENTER II brings computing power to the people who need it at every organizational level.

Equally important, VMCENTER II helps maintain strong central control while vastly reducing the tasks traditionally faced by data processing professionals in interactive user environments. System security. DASD management. Performance monitoring. Project accounting. They may sound mundane. But they're critical to smooth-running applications. And VMCENTER II takes care of them all—plus a lot more.

All this while users are enjoying dependable, easy access to a system that performs at its peak, day after day. And even helps them plan ahead for future needs.

**THE POWER. AND THE GLORY.**

The 9370 marks a great opportunity for your entire organization. But to make the most of it, there's nothing like VMCENTER II. After all, VMCENTER II is based on the original VMCENTER—the world's leading VM data center management system. And it's loaded with new features specifically designed for departmental environments.

The result is a system that's a potent partner for the 9370. A sure way to simplify a major transition for your organization. And an all-round clutch performer that'll make you look good for choosing it.

**VMCENTER II. For more information call 1-800-562-7100**

Ashton-Tate Releases New MultiMate Software

Popular word processing package is significantly enhanced.

BY THERESA BARRY

Ashton-Tate, whose MultiMate word processing package has a user base of a half million, has announced a major upgrade of the product. Among the new capabilities of MultiMate Advantage II is the ability to merge word processing and dBase files.

Additional features that the previous version, 3.6, did not offer include the option of document or page orientation; an optional pull-down menu interface consistent with Ashton-Tate's dBase III Plus, Framework II, and RapidFile; a merge with dBase files without leaving MultiMate; an enhanced, continual undo/delete function to retrieve deleted text, which the company says is limited only by disk space; and increased laser support that allows up to 26 fonts within a document and up to 18 soft, downloadable fonts.

Also new are a "hot start" menu bypass, six-function math (3.6 had two-function math), autohyphenation, sorting within a document, single-key execution, and an FFT-DCA conversion feature for FFT-DCA formatted files. The company says it has improved—in some cases by two times—the speed in scrolling from page to page, in outputting to laser printers, in searching and replacing, and in checking spelling.

Other new features found in this release are a document summary screen-bypass option that allows direct access into a document, a comment feature to annotate documents, full support for DOS 2.0 and above pathing to create subdirectories for file organization, backward search, a directory of key procedures so users can select macros from a directory, ASCII import into an existing document, and an enhanced footnote function. The integrated MultiMate On-File now allows users to sort in three fields; print labels, envelopes, or columnar reports; and merge directly with MultiMate and search by subject, character string, date, or index word.

MultiMate Advantage II is priced at $565 for the 5¼-inch version. This version runs on the IBM PC, XT, AT, and compatibles with 384KB of memory for DOS 2.0 or higher. A "Premium Pack" version, which includes both a 5¼-inch disk and a 3½-inch disk in one package, is priced at $595. Upgrades from any version of MultiMate are $100. Ashton-Tate, Torrance, Calif. CIRCLE 250

Project Management Pack

PC-based package for large projects.

QuikNet Professional from Project Software & Development Inc. (PSDi) is a PC software program designed to help manage large projects encountered at electrical utilities, telecommunications, manufacturing, aerospace, and military companies.

The software employs critical-path method scheduling and tracks the availability of resources. Users can set priorities on time or resources and can produce reports that include bar charts, histograms, and logic diagrams. Multiple projects and multiple calendars can be handled. A window-based screen can be manipulated by a mouse, with changes in one window reflected automatically in another. Preprogrammed function keys can be used. The management of projects of up to 1,000 activities may be handled. QuikNet Professional can upload to and download from Project/2, Psdi's mainframe and minicomputer project management program.
The software runs on the IBM AT, XT, and compatibles, and is available now for $1,495; an optional mouse is $125. PROJECT SOFTWARE & DEVELOPMENT INC., Cambridge, Mass. CIRCLE 252

PC Text DBMS
Built-in word processor allows quick record changing.

DayFlo Software has reworked its DayFlo textual database system for nontechnical users. The DayFlo Tracker package is designed to help managers, salespeople, administrators, and other people with the need to keep track of ever changing records of textual information that they might otherwise have to store using stacks of paper.

Unlike other database and file management programs, Tracker enables records to be changed with a simple but powerful built-in word processor. No two records have to look the same or be of the same length; additions to them can be made as needed. Searches may be performed according to predefined indexes (up to 101 keywords are permitted) or by sequential passes through text. This should mean easier, more intuitive recall of selected records.

To help the less trained user, Tracker employs much of the core database management system technology of DayFlo but adds a series of predefined forms designed for use in popular applications. Predefined reports and mailing list programs are also included. The software can handle up to 65,000 records of as much as 32KB each.

The package is available now for $149.95, but the first 2,500 copies will go for $99.95 apiece and will include an optional application pack that normally sells for $39.95. DAYFLO SOFTWARE CORP., Irvine, Calif. CIRCLE 251

Personal Account Manager
First product from Conductor Software.

Act! is a personal account management program the vendor is targeting to personal sales management, accounting firms, service and professional organizations, and field engineers—those whose work involves intensive phone and personal contact.

The program organizes and maintains records and files, and prints reports. It has a calculator, bulletin board, electronic reminder, a library, an integrated word processor, Lotus-like menus, hot-key commands, and pop-up windows. The program has automatic archive capabilities that update records as a user creates a schedule, and an instant record search.

Act!, packaged with both a 5 1/4-inch and 3 1/2-inch diskette, is not copy protected. It is priced at $395. It requires an IBM PC or compatible desktop, portable, or laptop with MS/DOS 2.0 or higher. The program requires a minimum of 420KB of RAM with two 360KB drives, one 720KB drive, or a hard disk. Conductor has signed an agreement with GRiD Systems Corp., whereby GRiD will be a reseller of Act! on diskette and in ROM in its portable computers. CONDUCTOR SOFTWARE INC., Irving, Texas. CIRCLE 253

Operating Environment
Toltec integrates Pick and Unix System V.

Toltec Computers has introduced a new operating system that it calls Symetrix. The system integrates standard Pick Open Architecture with Unix System V.

Symetrix is currently available only on a computer system developed by Edge Computer Corp., Scottsdale, Ariz., that features a 32-bit processor. The price is about $255,000. The Symetrix user interface allows users to select which programs or applications to run from a series of menus. Toltec says it does not layer Pick on top of the Unix kernel; instead, it maintains the standard direct interface between the Pick virtual code and Pick monitor by combining the monitor with kernel functions into a common hybrid supervisor.

A resource scheduler serves as an interface between the monitor and kernel, allocating such system resources as memory and I/O processing. Toltec says its Symetrix environment allows Pick applications to communicate interactively with other Pick applications and with Unix applications. When instructions are added to a Pick application, users can access any Unix program, Toltec says. Unix applications can also access Pick databases. TOLTEC COMPUTERS INC., Scottsdale, Ariz. CIRCLE 254

Spreadsheet for Focus
IBI adds spreadsheet capability to its 4GL DBMS.

Foccalc from Information Builders is a fully integrated spreadsheet for use with Focus for VAX. It permits users automatically to populate one cell or an entire matrix from any Focus-accessible dataset through the use of a Focus report request. The request is entered by the user as on a standard spreadsheet and may contain calculations against data in one or more files. IBI says the output of the executed request is automatically brought into a specified cell range in the spreadsheet.

Foccalc and Focus are integrated through the use of the Focus 4GL. Because the data and spreadsheet can be stored independently, the same spreadsheet can be used with many sets of data contained in one or more datasets. Foccalc will access data stored in Focus databases, RMs files, Rdb tables, and other DBMSs. Up to 16 datasets can be joined relationally.

Spreadsheet models created in Foccalc can be moved to any environment in which Focus operates. Foccalc spreadsheets and data can be uploaded or downloaded between Foccalc running under VAX/VMS and PC/Foccalc running with PC/Focus under MS/DOS.

IBM acquired the basis of Foccalc under a license agreement with Access Technology, South Natick, Mass., developers of the 20/20 spreadsheet. Foccalc for VMS requires release 1.3 of Focus on VAX/VMS. A one-time license ranges in price from $1,600 for MicroVAX and VAX stations to $12,000 for VAX 8800 and larger. INFORMATION BUILDERS INC., New York. CIRCLE 255

Professional Illustrator
Auto-trol rolls out new release of Tech Illustrator.

Tech Illustrator 6.0 is a drawing and annotation tool designed for use by professional illustrators in a technical publishing environment, says the vendor. This latest release is claimed to include illustrator selection of up to 10 user-definable...
Advertisers' Index

<table>
<thead>
<tr>
<th>Circle</th>
<th>Page</th>
<th>Circle</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 ...</td>
<td>Access Technology</td>
<td>52 ...</td>
<td>Information Builders, Inc.</td>
</tr>
<tr>
<td>8 ...</td>
<td>ADR</td>
<td>11 ...</td>
<td>Informix</td>
</tr>
<tr>
<td>44 ...</td>
<td>AGS Management Systems, Inc.</td>
<td>35 ...</td>
<td>Information Builders, Inc.</td>
</tr>
<tr>
<td>20, 43</td>
<td>AT&amp;T Technologies</td>
<td>38 ...</td>
<td>BMC Software</td>
</tr>
<tr>
<td>47 ...</td>
<td>NEC Information Systems</td>
<td>86-87</td>
<td></td>
</tr>
<tr>
<td>13 ...</td>
<td>Cahners Expo Group</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>1 ...</td>
<td>C. Itoh</td>
<td>Cov 2</td>
<td></td>
</tr>
<tr>
<td>52 ...</td>
<td>Codex</td>
<td>78-79</td>
<td></td>
</tr>
<tr>
<td>34 ...</td>
<td>Compaq Computer Corp.</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>28 ...</td>
<td>Computer Security Institute</td>
<td>54-55</td>
<td></td>
</tr>
<tr>
<td>23, 49</td>
<td>Control Data Corporation</td>
<td>45, 92-93</td>
<td></td>
</tr>
<tr>
<td>39 ...</td>
<td>CXL, Inc.</td>
<td>74-75</td>
<td></td>
</tr>
<tr>
<td>42 ...</td>
<td>Cylix Corp.</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>16 ...</td>
<td>DCA</td>
<td>25, 26-27</td>
<td></td>
</tr>
<tr>
<td>39 ...</td>
<td>Data General</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>53 ...</td>
<td>Data Group</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>5 ...</td>
<td>Datasouth</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>200 ...</td>
<td>**Dataware</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>12 ...</td>
<td>Decision Data Computer Corporation</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>64 ...</td>
<td>*Ericsson Information Systems</td>
<td>68-10-68-11</td>
<td></td>
</tr>
<tr>
<td>12 ...</td>
<td>Exide Electronics</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>31 ...</td>
<td>Tandon Computer Corporation</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>24 ...</td>
<td>Tektronix, Inc.</td>
<td>46-47</td>
<td></td>
</tr>
<tr>
<td>33 ...</td>
<td>Unisys</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>7 ...</td>
<td>Universal Data Systems</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>26 ...</td>
<td>Harris Computer Systems</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>51 ...</td>
<td>Harris Corp.</td>
<td>98-99</td>
<td></td>
</tr>
<tr>
<td>10, 45</td>
<td>Hewlett Packard</td>
<td>14-15, 85</td>
<td></td>
</tr>
<tr>
<td>32 ...</td>
<td>Honeywell Bull Inc.</td>
<td>60-61</td>
<td></td>
</tr>
<tr>
<td>47 ...</td>
<td>Lynk</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>3 ...</td>
<td>MSA</td>
<td>Cov 4</td>
<td></td>
</tr>
<tr>
<td>46 ...</td>
<td>NEC Information Systems</td>
<td>86-87</td>
<td></td>
</tr>
<tr>
<td>50 ...</td>
<td>Okidata</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>2 ...</td>
<td>On-Line Software</td>
<td>Cov 3</td>
<td></td>
</tr>
<tr>
<td>36 ...</td>
<td>Output Technology Inc.</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>30 ...</td>
<td>Overland Data</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>13 ...</td>
<td>Paradyne</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>40 ...</td>
<td>Racal-Vadic</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>61 ...</td>
<td>*System Software Associates</td>
<td>68-3</td>
<td></td>
</tr>
<tr>
<td>63 ...</td>
<td>*French Computer Peripherals Club</td>
<td>68-9</td>
<td></td>
</tr>
<tr>
<td>6 ...</td>
<td>Fujitsu America, Inc.</td>
<td>6-7</td>
<td></td>
</tr>
<tr>
<td>35 ...</td>
<td>Information Builders, Inc.</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>48 ...</td>
<td>Informix</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>47 ...</td>
<td>Lynk</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>3 ...</td>
<td>MSA</td>
<td>Cov 4</td>
<td></td>
</tr>
<tr>
<td>13 ...</td>
<td>Paradyne</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>40 ...</td>
<td>Racal-Vadic</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>61 ...</td>
<td>*System Software Associates</td>
<td>68-3</td>
<td></td>
</tr>
<tr>
<td>31 ...</td>
<td>Tandon Computer Corporation</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>24 ...</td>
<td>Tektronix, Inc.</td>
<td>46-47</td>
<td></td>
</tr>
<tr>
<td>33 ...</td>
<td>Unisys</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>7 ...</td>
<td>Universal Data Systems</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>26 ...</td>
<td>Harris Computer Systems</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>51 ...</td>
<td>Harris Corp.</td>
<td>98-99</td>
<td></td>
</tr>
<tr>
<td>10, 45</td>
<td>Hewlett Packard</td>
<td>14-15, 85</td>
<td></td>
</tr>
<tr>
<td>32 ...</td>
<td>Honeywell Bull Inc.</td>
<td>60-61</td>
<td></td>
</tr>
<tr>
<td>54 ...</td>
<td>VM Software</td>
<td>106</td>
<td></td>
</tr>
</tbody>
</table>

Marketplace

**Smooth Conversion**

with CTG/DATAWARE

Save money, time, and manpower on your conversion project with CTG/Dataware. Our skilled specialists work with you to ensure a smooth, timely, cost-effective conversion.

COBOL TO COBOL

RPG TO COBOL

ASSEMBLER TO COBOL

EASYCODER TO COBOL

PL/I TO COBOL

DOS TO MVS

CTG/Dataware has the total solution — software, methodology, and support services — to help you change hardware, programming languages, or operating systems smoothly and quickly. Call the conversion specialists, CTG/Dataware:

1-800-367-2687

COMPUTER TASK GROUP INC.

DATAWARE CONVERSION SERVICES

3095 Union Road

Orchard Park, New York 14127-1214

(716) 874-9310 TELEX: 510-100-2155

CIRCLE 200 ON READER CARD

<table>
<thead>
<tr>
<th>Circle</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 ...</td>
<td>*Wandel &amp; Goltermann</td>
</tr>
<tr>
<td>29 ...</td>
<td>Westinghouse Electric Corporation</td>
</tr>
<tr>
<td>4 ...</td>
<td>WordPerfect</td>
</tr>
<tr>
<td>19 ...</td>
<td>Wyse Technology</td>
</tr>
</tbody>
</table>

*International Edition
**Marketplace
graphic viewports for creating drawings and editing, dynamically sizable menu and message windows, improved selection of graphics creation tools, automatic hidden-line removal, enhanced 2-D and 3-D capabilities, new pagination and imaging device interfaces, and expanded functionality in the use of isometric, dimetric, and trimetric drawing projections plus multipoint perspective.

Tech Illustrator 6.0 is available for use on Digital workstations, as well as Apollo and IBM PC-based workstations supplied by Auto-trol. This release, which supports Auto-trol interfaces for electronic publishing and laser printers, is priced at $31,500.

**Telecom Manager**

PC software that automates telecommunications operations.

Communication Sciences has introduced Telecom manager, a six-module PC package that is designed to automate telecom operations and order processing.

The six modules are equipment manager, private-line manager, trouble manager, cable manager, directory manager, and bill manager. Capabilities include cost control, producing and tracking of vendor orders, automatically updating inventory, reporting, generating bills, maintaining logs of all troubles, identifying equipment/cable associations, and maintaining current physical and electronic addresses for all personnel. All modules interface to each other, and voice, data, and other equipment can be tracked.

Telecom Manager runs on IBM PCs and compatibles. The number of modules needed will depend on both the size and the needs of the company. Prices begin at $9,500 and go up to about $20,000.

**Common Lisp**

First release is for Digital's PDP machine.

Artificial Intelligence Research & Systems Ltd. has introduced its Common Lisp development package for the PDP and VAX or MicroVAX. The package is said to provide an AI workstation environment on general purpose terminals. Current facilities include a structured editor, a debugging utility, windowing with mouse/digitizing pad support, and bit-mapped graphics, which are Tektronix 4010/1014 compatible.

An incremental "garbage collection" design for efficient memory management, and an optimizing compiler for compact code and rapid execution have been included. The company's Common Lisp supports RSTS version 9.2 and VMS version 4.2 operating systems. The company says a Unix version will be available by August.

The package is priced at $4,000.

---

**Big business or small business, high blood pressure is a costly business.**

Each year over 29 million work days are lost due to high blood pressure-related illnesses, creating a loss of $2 billion in earnings. And since high blood pressure affects one out of every three working adults, your business is going to feel that loss—in production, in profits and in worker health.

So if you think that starting a company blood pressure control program may cost you time, trouble and money...you could use a lesson in business.

Write: Work Place Coordinator, National High Blood Pressure Education Program, 120/80 National Institutes of Health, Bethesda, MD 20205

**HIGH BLOOD PRESSURE**

*Treat it for life.*

The National High Blood Pressure Education Program
The National Heart, Lung, and Blood Institute, National Institutes of Health
Public Health Service, U.S. Department of Health and Human Services
NOW AVAILABLE!
1986 Editions
Directory of Systems Houses
and Computer OEM's

International Directory of Systems Houses
and Computer OEM's

Both of these unique compendiums have been fully updated and expanded to contain information never before included.

The eighth annual edition of the Directory of Systems Houses and Computer OEM's contains over 4,200 U.S. value-added resellers. This is more than double the listings contained in the 1985 edition.

The second annual International Directory of Systems Houses and Computer OEM's lists more than 1,100 firms worldwide. This represents an 81% increase over the first edition published in 1985.

Both directories have been expanded to 6 indexes:

- **ALPHABETIC INDEX**—Contains detailed information on all firms who qualified to be included in each directory.
- **BUSINESS ACTIVITY INDEX**—New in the 1986 editions.
  Companies are listed by their specific function as a value-added reseller, Hardware/Product OEM, Systems House/Systems Integrator, Dealer/Distributor/Commercial OEM, Software Distributor/OEM.
- **GEOGRAPHIC INDEX**—Locate OEMs/VARs by state/city in the U.S. directory and by country/city in the International directory.
- **APPLICATIONS INDEX**—Expanded to include 166 specific applications. Firms having expertise in each application are listed with address and phone number.
- **COMPUTER VENDOR INDEX**—Value-added resellers are listed by their principal computer suppliers. Model names/numbers of computers purchased are included in each firm's listing.
- **PERIPHERALS INDEX**—Also new in the 1986 editions.
  Pinpoint sales organizations by the computer peripherals they purchase for resale. Thirty-eight separate peripheral devices are included.

More than just directories...profiles of the OEM, VAR, ISO market!

Both directories contain an entire section of market statistics which identify emerging markets, track industry growth rates and buying trends, and compare competitive market shares among vendors to the firms listed.

All data collected is analyzed, including the industries to which these OEMs/VARs market their products. Statistics appear side-by-side those of previous years for easy comparison.

**Order your copies today!**

- The 1986 Directory of Systems Houses and Computer OEM's is available for $795.00 per copy.
- The 1986 International Directory of Systems Houses and Computer OEM's is available for $345.00 per copy.

Both directories, when ordered at the same time, can be purchased for $965.00.

Call today to order your copies of these comprehensive sources of computer OEMs, VARs and ISOs.

**800-446-1233** In Massachusetts call 617-964-8900

**Technical Publishing**, 199 Wells Avenue, Newton Centre, MA 02159
You're Bonnie Hazelton and you're a business consultant. Your clients' appetite for information seems to grow. They need to know which services can deliver virtually any form of information and do it with high reliability and accuracy. That means you need to be prepared.

That's why AT&T comes through for Bonnie with the AT&T ACCUNET® Family of Digital Services, as offered in the AT&T Consultant Liaison Program. Now Bonnie has a better chance of becoming the "most valuable player" in the telecommunications game.

How? By working with AT&T, you can develop a program to show your clients how to benefit from high-quality, end-to-end digital communications. These systems range from low-volume, low-speed, intermittent transmissions, to high-volume, high-speed, continuous transmissions.

For instance, the AT&T ACCUNET Family of Digital Services can transmit video, voice, graphics, bulk data and electronic mail. These services are: The AT&T DATAPHONE® Digital Service, ACCUNET T1.5 Service, ACCUNET Reserved 1.5 Service, ACCUNET Packet Service and ACCUNET Switched 56 Service. And these services come with the excellent digital reliability you expect from AT&T.

What about your presentation? We'll work with you to put together a winning plan that helps you make better informed strategic recommendations. That's the best way to keep the title "most valuable player."

What about follow-through? You also have the support of our AT&T Product and Network Applications Manuals (both available for a small fee).

So find out how the AT&T Consultant Liaison Program and the variety of services in the AT&T ACCUNET Family of Digital Services can assist you.
t to be the MVP
unications game?

From equipment to networking, from computers to communications, AT&T comes through.
To find out more, talk with your account executive at AT&T. Or call 1 800 CLP-INFO.
Determined to Look Further Down the Road

Chilean Fernando Flores applies philosophy and sociology to his company’s innovations.

BY SUSAN KERR

In heavily accented but fluent English, Fernando Flores expounds on his view of the natural intertwining of computer science, philosophy, linguistics, and management.

“What we need is a new conception of what technology is,” says the co-founder and chairman of Action Technologies Inc., an Emeryville, Calif., software house. He concludes that rather than concentrating on the notion that computers should act as substitutes for human minds—à la artificial intelligence—we should be trying to define human actions and see how computers can coordinate and facilitate these most native of processes.

Complex, serious thoughts come easily to Flores, 43, who has the benefit of a unique background. Born and raised in Chile, Flores, at the age of 29, became Salvador Allende’s Minister of Finance and the youngest cabinet member in Chile’s history. Prior to this, Flores had earned an engineering degree and had been acting provost at Santiago’s Catholic University. He talks sparingly of his government experience, describing his appointment to political office this way: “The big positions are not given by [educational] degrees but by influence. To be president of a corporation, it’s the same thing.”

After the overthrow of Allende’s government one year later, Flores was imprisoned. Through the efforts of Amnesty International and the U.S. State Department he was released three years later, in 1976, and came with his wife and five children to California where he took a job as a research associate at Stanford University.

Although he prefers not to discuss his imprisonment, Flores briefly comments, “One of the things I learned in prison is that if you’re going to do something, do something good . . . . It was a tremendous interruption going to prison and coming to a new country. It gave me the determination and ambition to look further.”

Flores did look further than Stanford. He soon moved north, up the San Francisco Bay to Berkeley, where he worked on his PhD at the University of California. While returning to his engineering roots, Flores succumbed to his other loves—philosophy and linguistics—and developed a thesis that was far out, even by Berkeley standards. In it, he makes use of philosophical insights to explore the “office of the future.”

Out of his thesis effort came Action Technologies. Partially funded by Flores himself, the four-year-old company offers a software product called the Coordinator. Currently used by more than 9,000 workers, including those at Frito-Lay and Du Pont, the IBM PC-based Coordinator is, according to Action Technologies president Chauncey Bell, “the next generation electronic mail with active processing.”

Flores stresses that for managers “information is not the important aspect. What is are the signals that you have to act upon . . . . To be an executive is to be in a permanent dance with people. For example, you’re watching for something to be completed and you’re reformattin if it’s not complete. You’re in constant action.”

A computer is one of the best tools around for keeping track of these actions, he adds.

How Flores keeps track of his own life is another story. Described by Bell as “an excellent manager and inspiring to work for,” Flores attempts to pass those traits on. Along with Action Technologies, Flores also founded and is actively involved with Logonet Inc., Berkeley, Calif., an educational and training firm. Roughly 10,000 people a year participate in Logonet workshops, some of which Flores leads, to become “more productive in action, a better listener and distinguisher, and to apply it to different domains,” he says.

Here’s a sampling of Logonet course titles: “The Competitive Edge Sales Workshop,” “Excellence in Listening, Excellence in Action,” and “Passion, Relationship, and Peace.” Many Fortune 500 executives have attended these courses.

In addition, Flores just co-authored a book entitled Understanding Computers and Cognition (Ablex Publishing Corp., Norwood, N.J., 1986). Given Flores’ involvement in numerous projects, Bell concedes that “with respect to this company, we’d go faster if he were around more, but it’s not clear that the market would have needed us to go faster.”

Flores, who has not returned to Chile since his departure more than a decade ago, says, “A subject of concern is the democratic future of the people of Chile. But at the same time I accept my entrepreneurial life in America.”
What Price Success?

BY GERALD M. WEINBERG

Anyone who has ever managed a project has struggled with the question: how can we compare two projects to find out which one was most successful? If we could successfully answer that question, project management would be well along the path to becoming a science.

What would be a good metric for reviewing two management books? If I choose price, Ralph Kleim's The Secrets of Successful Project Management is a truly remarkable achievement. But if I choose price per idea, Robert Gilbreath's Winning at Project Management could successfully answer that question, a truly remarkable achievement. But if I wanted to avoid the path to becoming a science.

Unfortunately, there are so many possible metrics that almost anyone can claim success for any project, or book. I knew I was going to love Gilbreath's book when he addressed this very issue on the first page: "The variables by which we measure success or failure are neither objectively defined nor independent. When we speak of a project exceeding its budget we could be pronouncing it a cost control failure. The exceeded budget, however, may have been poorly contrived, erroneously calculated, and totally unrepresentative of the work to be performed. Rather than a breach in cost control, this 'failure' may be one of poor budgeting. Or given an excellent budget and careful, disciplined cost control efforts the budget may still be exceeded due to schedule delays or technical errors, which almost always have negative cost ramifications. Rather than a cost control failure, we may be merely witnessing a cost manifestation of a technical failure. These three primary project performance factors (cost, schedule, and technical) are so highly interrelated and interdependent, that any change in one will almost certainly cause (or have been caused by) changes in the others. Failure is contagious."

If I could consistently commun-

icate the true meaning of this one paragraph to my clients' executives and project manager, I would pay a hundred times the price of Gilbreath's book. Yet virtually every page contains a nugget or two of project management wisdom that's worth at least as much. If you manage projects, or have projects managed for you, or even participate in projects that are (or should be) managed, buy this book and read it every day until you have been through it three or four times.

I cannot make the same recommendation for The Secrets of Successful Project Management. Like Gilbreath's book, Kleim's is about project management in general, not just information systems projects. But Gilbreath's book does not suffer from an excess of generality when applied to the narrower realms of software or hardware development. Kleim's book, on the other hand, doesn't stand up to its many dp-specific competitors as an introductory text. To take just one example, Meiler Page-Jones's Practical Project Management: Restoring Quality to Dp Projects and Systems (Dorset House, New York, 1985) has much more to recommend it.

Moreover, the specialist in information processing will find lots of Kleim's book offensive or, at best, amusing. For instance, when he talks about the use of computers in project management, the discussion is so naive that dp readers will tend to discredit what is good about the rest of the book.

The Secrets of Successful Project Management might be suitable as a textbook for a very first course for novice project managers, but not in information systems projects.

Winning at Project Management is not entirely flattering to dp professionals either, particularly in the chapter entitled "Information: Scapegoat and Panacea," but Gilbreath backs up his statements with solid information, experience, crisp writing, and pointed reasoning. We may not like what an "outsider" has to say about our bad side, but if we're serious professionals, we'll read it, believe it, and use it to improve.

Open your eyes and see just how many subjects are covered in the new edition of the Consumer Information Catalog. It's free just for the asking and so are nearly half of the 200 federal publications described inside. Booklets on subjects like financial and career planning; eating right, exercising, and staying healthy; housing and child care; federal benefit programs. Just about everything you would need to know. Write today. We'll send you the latest edition of the Consumer Information Catalog, which is updated and published quarterly. It'll be a great help, you'll see. Just write:

Consumer Information Center
Department TD
Pueblo, Colorado 81009

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration

---

**Real Time**

**READERS' FORUM**

**Post-Graduation Thoughts**

To the class of 1987, as to most recent graduating classes, the employment opportunities for engineers and computer scientists throughout the private and public sector appear to be unlimited. It's no secret that opportunities abound for dp professionals with skills in database management, the latest programming languages, systems design, data communications, and other disciplines that journalists describe as "high tech."

Twenty years ago, graduating engineers hit the job market with the same enthusiasm. Wasn't there ample opportunity for designers of the translators and mainframe computers that heralded the information age? Unfortunately, years later, many 1967 enthusiasts learned about job stagnation.

As an alternative, today's graduates should look beyond entry-level positions and the euphoria of earning $25,000. They should be asking what the job market is like for those with five and 10 years' experience—a narrow technical or application-specific experience at that. How do such specialists compete in the job marketplace? One thing is certain: professionals will continue to find that advancement is slow for those who remain totally dedicated to technology. As with other members of corporate society, advancement in income and position comes to those computer professionals who migrate into management.

There is, however, a growing community of computer professionals who are less willing to compromise their technical and professional careers. They have selected a dp/its career in answer to a series of academic, scientific, and personal challenges. A management position is not part of their career plans. How do they plan for the future?

Frustrated, a number of them leave corporate or government careers. They become consultants. Most, unfortunately, never get beyond a one-person consultancy. They learn that even the smallest consultancy needs to be sales oriented in order to attract a continuing flow of new contracts.

Many professionals, however, are finding an alternative between being corporate employees and independent consultants. They are obtaining assignments as contract consultants, working through firms that specialize in filling the range of corporate software and computer assignments by retaining temporaries on a project basis. Government studies show that use of temporaries is growing 20% annually and is currently a $10 billion-a-year industry.

Employers are moving in the direction of contract consultants as a way of eliminating overstaffing for peak or seasonal loads or as an efficient way to fill job vacancies rapidly. For contractors, despite their less favorable treatment under the new tax law—specifically by Section 1706—there is the chance to make peak salaries, normally 10% to 20% more than the comparable staff salary, while avoiding corporate posting.

For the class of 1987, the trend toward the use of contract consultants has an even more important meaning. To begin with, being a computer consultant is not synonymous with early retirement or corporate layoffs. More times than not, contract consultants are in their early thirties. Their professional profile includes a bachelor's and a master's degree, often in computer science or a related engineering field, along with approximately three to eight years of very current and relevant work experience. Dig a little further and you'll also find that many have been involved with computers since high school.

Often, their experience includes programming in the latest languages as well as a background in dbms and in the use of pcs as standalone or mainframe interfaces. In short, to professionals who seek their primary career challenge in technology, contract consulting can mean the end of job stagnation.

**Stock Shock**

General Motors bought EDS
To make its ailing systems go.
It issued stock of a whole new class,
To gain the talents of Ross Perot.

General Motors bought EDS,
And found itself hit by culture shock.
EDS people began to aggress,
And Ross had grown up on a different block.

General Motors bought Perot out,
His managers followed in a flock.
But nobody's putting up the dough
To buy out the holders of Class E stock!

FREDERIC G. WITHINGTON
Retired Industry Analyst
Concord, Massachusetts