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SEPTEMBER 1984

Volume 16 Number 11

Copies Printed: 171,689

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COMPUTER DECISIONS (USPS 771-040 ISSN 0010-4558) is published 16 times a year for \$35 per year by Hayden Publishing Co., Inc., 10 Mulholland Dr., Hasbrouck Hts., NJ 07604. Second-class postage paid at Hackensack, NJ 07602, and additional mailing offices. POSTMASTER: Send address changes to COMPUTER DECISIONS, P.O. Box 1417, Riverton, NJ 08077. James S. Mulholland Jr., President and Treasurer, and Philomena DiMeo, Secretary. Printed at Brown Printing Co., Inc. All rights reserved. New subscriptions: COMPUTER DECISIONS is issued free of charge to qualified executives with active professional and functional responsibility in organizations that use computers and computer-based services and among computer manufacturers. Please fill out completely the Subscriber Qualification Form in the magazine. The publisher reserves the right to reject nonqualified requests. Subscription Rates: Qualified subscribers in the U.S. and Canada Free; Nonqualified in the U.S., Canada, Mexico, and Central America \$35. Single copies \$3.00. All other countries \$45. Single copies \$4.00. Limited quota of subscriptions available for persons outside the field served. Change of address: Fill out completely the Subscriber Qualification Form in the magazine, being sure to attach old mailing label in the space provided. Send correspondence with regard to editorial matters to address listed above. Unsolicited manuscripts will not be returned or acknowledged unless submitted with self-addressed envelope bearing sufficient postage for return. Address all other correspondence to COMPUTER DECISIONS, P.O. Box 1417, Riverton NJ 08077. Copyright© 1984 Hayden Publishing Co., Inc. All rights reserved.

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translates the document from MultiMate format to DCA, translates the DCA format to Wang's WPS format and the IBM 6670 laser printer OCL format, and routes the documents to their final destinations.

Another example: a document is prepared on a Xerox word processor at Detroit headquarters and must be sent to a user at a Wang word processor in New York for further editing and printing, and to an IBM Displaywriter user in Tampa for review. The Xerox operator simply transmits the document to Soft-Switch at the IBM host and instructs Soft-Switch to route the document to the New York user and to the Tampa user. Through its directory, Soft-Switch recognizes that the sender and receivers are using different word processors and automatically translates the Xerox document into DCA, and then into Wang and Displaywriter formats. The resulting documents are then routed to the recipients.

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INSIGHT

Bad bankers love hackers

Are computer hackers a threat to business? Why, they are the best thing that ever happened to the banking community." That was my response to a query from a *60 Minutes* researcher during the recent National Computer Conference in Las Vegas. The CBS "news magazine" is planning a segment on the nation's vulnerability to computer criminals (it may have been aired by the time this column appears).

My response startled the researcher, who had been briefed on the activities of "the 414s," a collection of young hackers from Milwaukee, and other trespassers. For these hackers, breaking into private and government databases is a challenge; their motive is fun, not profit. However, the ease with which they penetrate supposedly secure databases raises serious questions about the vulnerability of computerized information—particularly the billions of dollars in digitized currency handled by banks. The researcher wondered how I could take this threat to the nation's banking system so lightly.

I elaborated: "Bad bankers should love hackers because they distract the public from the bankers' own dismal performances." I take the threat of thievery by computer very seriously, but a far greater threat to the nation's financial underpinnings—bad bankers—is obscured by the furor over computer security. I asked the CBS

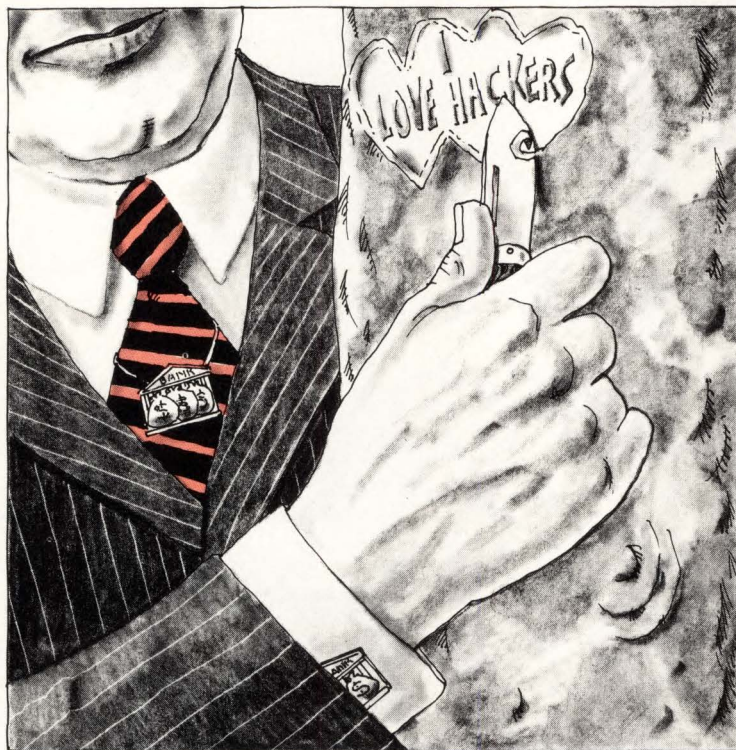


Illustration by Dan Cuthbert

researcher to name one bank—or any other company—that had been put out of business by a hacker operating from outside the company. He couldn't. (Not even SRI International's Donn Parker, a leading computer-security expert, could.)

In contrast, many banks have been destroyed or pushed to the brink of insolvency by the venality, incompetence, or poor judgment of their top officials. Bank failures have far-reaching repercussions. The failure of the mercurial Penn Square Bank two years ago is still causing problems. Last year, Seattle First National Bank, which had acquired Penn Square loans, was forced into a sale to the Bank of America. Continental Illinois Bank, the nation's seventh largest, was also grievously wounded by Penn Square's demise. The Federal Deposit Insurance Corp. had to come

up with a whopping \$4.5 billion to prevent Continental Illinois from collapsing under the weight of the Penn Square debacle and other bad loans.

In fairness, nobody knows for certain the extent of the damage computer criminals and hackers have caused to American businesses. Most corporations keep security breaches secret, making the whole discussion of vulnerability speculative at best. Even when episodes come to light, their impact is often difficult to assess. Most recently, TRW Inc. revealed that sensitive credit information had been

stolen from its files and may have been posted on an electronic "bulletin board" available to computer users. The effects of that security breach are still not known.

Bankers and the managers of other vulnerable businesses should take the steps necessary to secure their precious information resources. Measures to counter external criminals—from encrypting sensitive data to requiring employees to use passwords—are well known.

Unfortunately, there are no easy solutions to the threat from within the banking system. No software package or office procedure can negate what has always been the greatest and most enduring threat to banks: the integrity and competence of the people who run them.

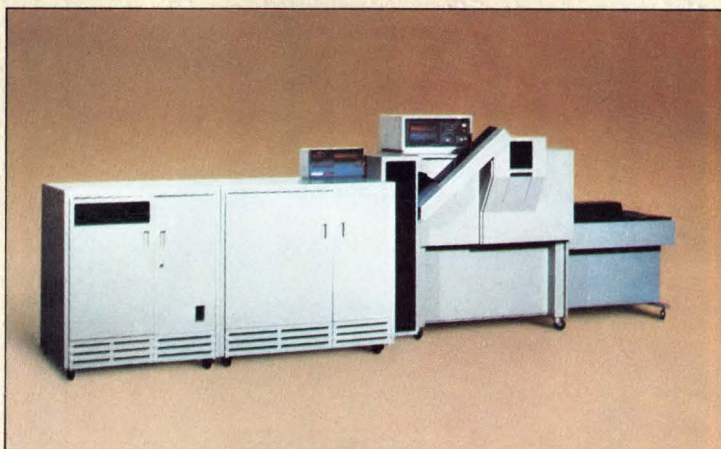
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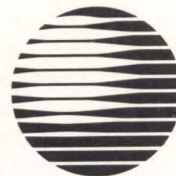
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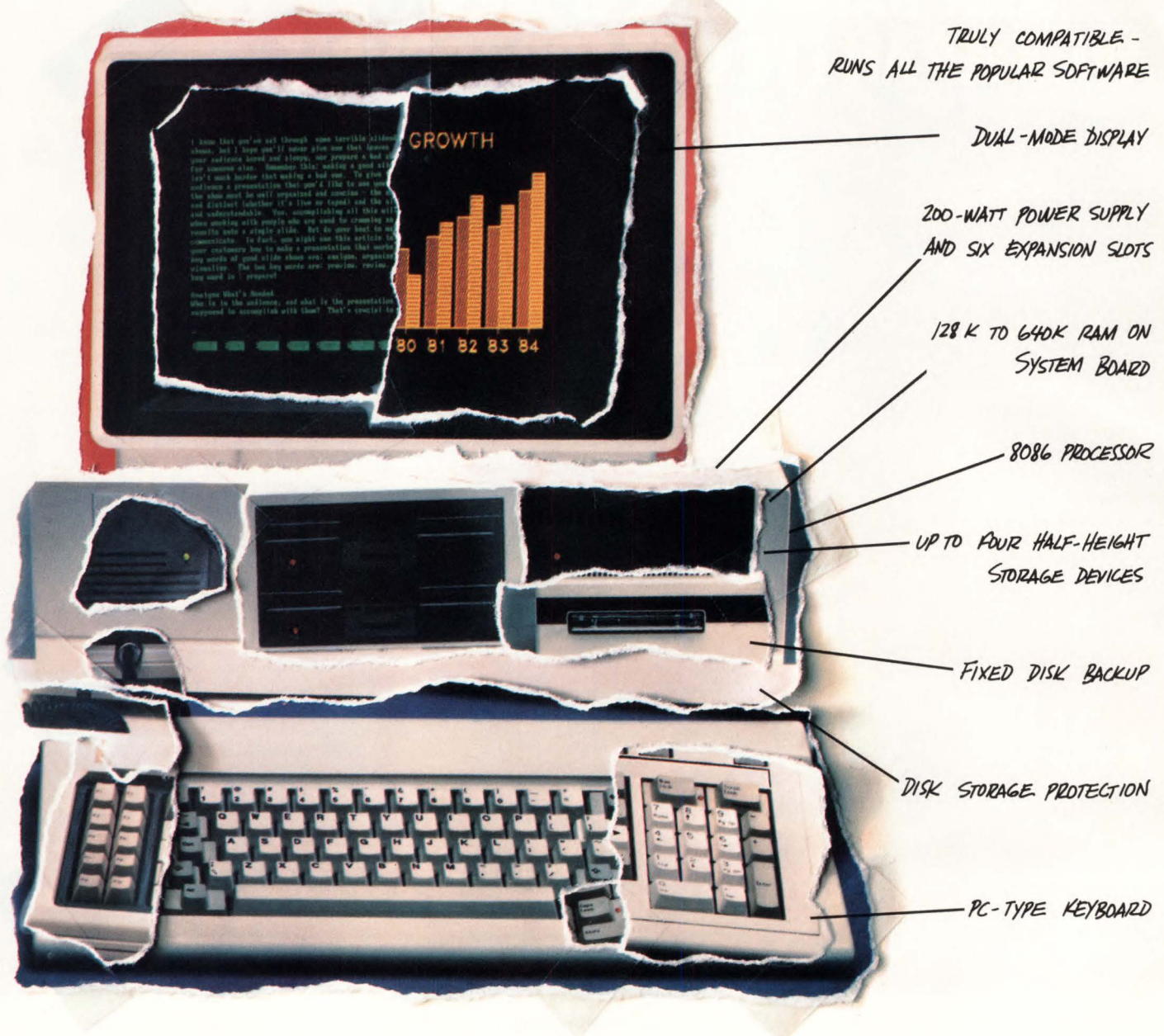
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CIRCLE 11

NEWS & COMMENT

Users rate HP number one

Look who's number one. Hewlett-Packard was rated the best of 12 large-systems manufacturers in a recent survey of about 2,800 users in industry and government. Amdahl ranked a close second. Digital Equipment Corp. (DEC) came in third, and IBM placed fourth. Bringing up the rear among the majors were Data General, Sperry, and Prime.

ware was rated for reliability and ease of use. Service was rated for response time, parts availability, and effectiveness of repair. Software was evaluated in seven categories: systems, applications, utilities, ease of use, documentation, service, and quality. Each manufacturer received a general "good-will" rating as a vendor to do business with.

A summary of the survey's findings

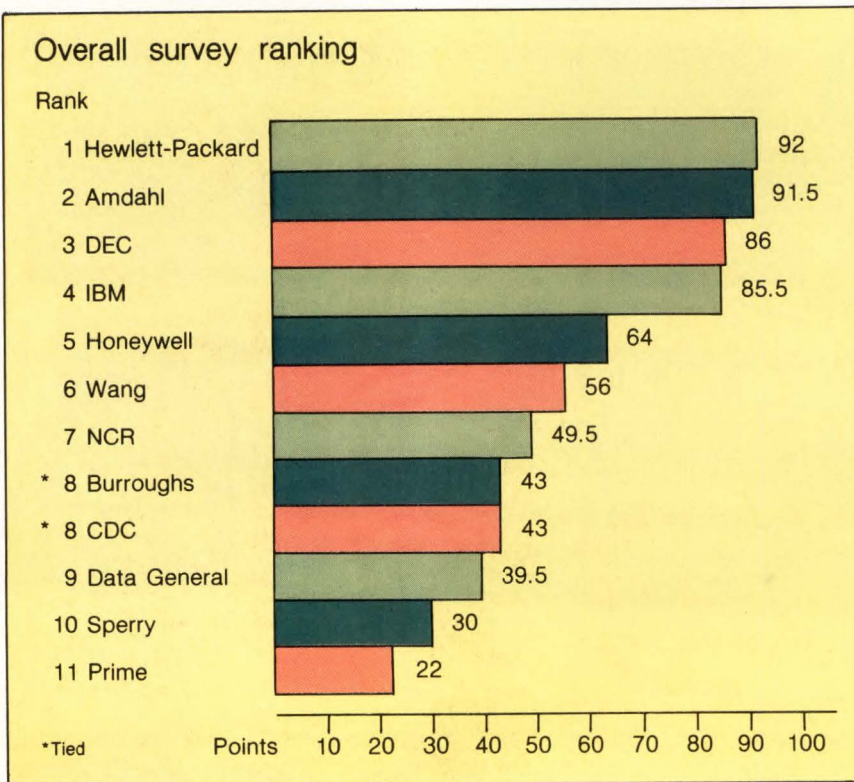
mentation, and as a manufacturer to do business with. "Users of Hewlett-Packard's products are impressed with their reliability," according to the study. "However, they complain that its service could be faster and its products less expensive."

Users had only good things to say about **Amdahl Corp.** (Sunnyvale, CA). The company was rated as the manufacturer with the best hardware and as the best company to do business with. "Amdahl's hardware is considered to be very reliable and is the easiest to use. Its service is very good in all respects, and it ranked first in speed of service response."

Digital Equipment Corp. of Maynard, MA, consistently received high scores in every category. DEC's strongest point is its software: It ranked first in systems software, applications programs, documentation, and overall software quality. It ranked fourth in the hardware and service categories.

IBM (Armonk, NY) ranked fifth in the overall hardware ranking. However, IBM scored first in hardware reliability, and its service ranked second after HP. It also ranked first in effectiveness of repair. Moreover, unlike the other manufacturers, IBM's performance in these categories did not vary in different parts of the nation. Although it was third in overall software quality, it scored in the middle ranges for systems software, utilities, applications programs, and ease of use.

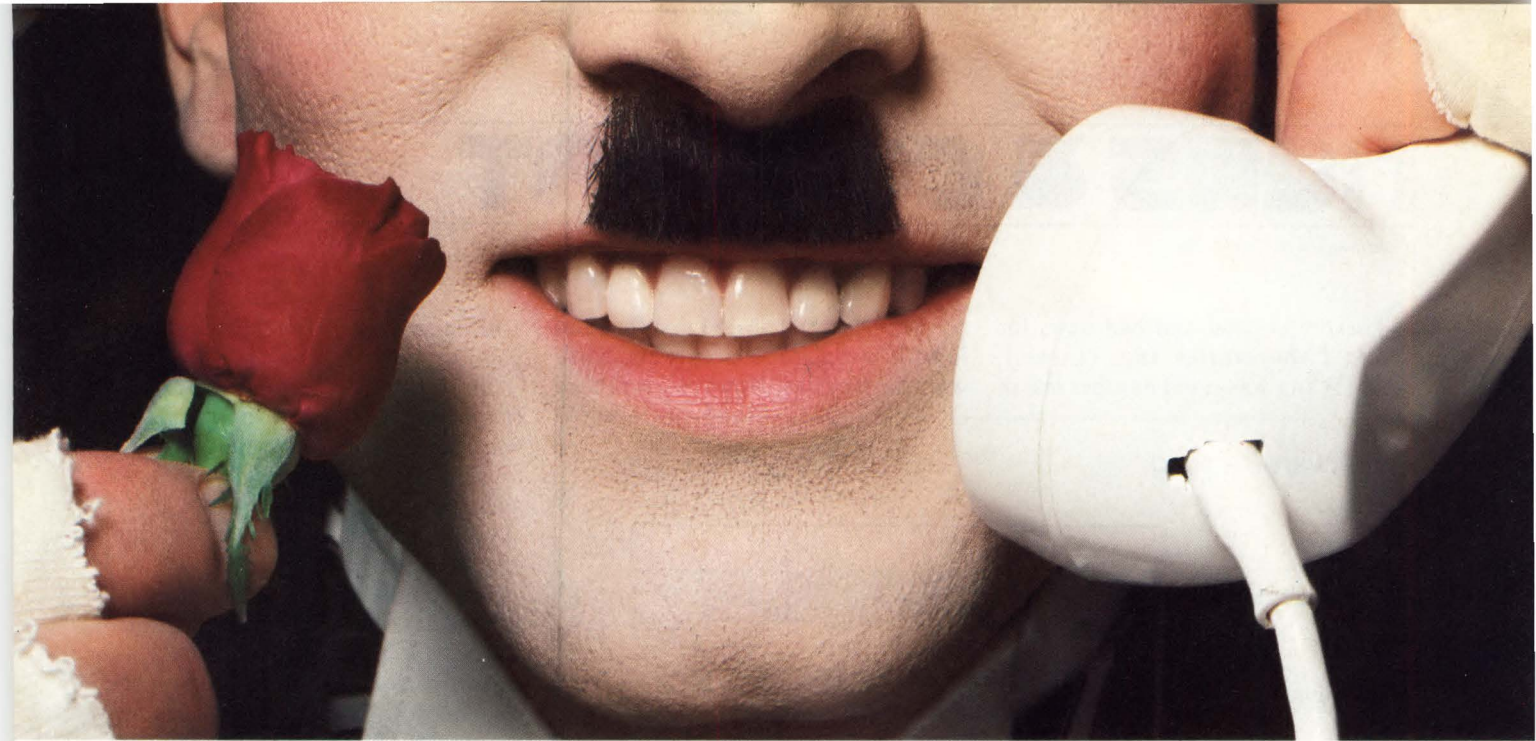
The survey revealed a significant drop in satisfaction between the top four manufacturers and the other eight. **Honeywell Information Systems Inc.** (Waltham, MA) consistently ranked in the middle ranges in hardware, software, and service. It received above-average marks for ease of software use and below-average marks in parts availability and software quality. (News continued on page 18)



The survey, by Stuart Kirkland, a Bellevue, WA, market-research house, evaluated user attitudes toward 12 large-system vendors. The overall ranking was based on the quality of each manufacturer's hardware, software, and service. Users were asked to assess the manufacturers on a scale of "very satisfied" to "very dissatisfied" in each category. Hard-

on each of the 12 manufacturers follows:

Hewlett-Packard Co. (Palo Alto, CA) ranked number one in service. HP excelled in parts availability and ranked first in software service and support. It was consistently rated near the top in reliability and hardware ease of use, service response time, effectiveness of repair, systems software, docu-



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NEWS & COMMENT

(Continued from page 16)

There was good and bad news for **Wang Laboratories Inc.** (Lowell, MA). Wang was rated number one in software ease of use and tied for third in both hardware reliability and hardware ease of use. However, it ranked

10th in service and eighth as a company to do business with.

Most of the ratings for **NCR Corp.** (Dayton, OH) were average, but it was rated below average in parts availability and received below-average marks in five software areas: systems, utilities, applications, service, and software quality.

Burroughs Corp. (Detroit, MI) ranked last in service. Its hardware was rated as adequate. Burroughs' software received good marks in the systems, utilities, and ease-of-use categories, but fared poorly in documentation and service.

Control Data Corp. (Minneapolis, MN) was rated below average in seven of 13 categories and average for the rest. Control Data's below-average rating in hardware ease of use tied it for last in the overall hardware rating. Its software utilities and documentation are weak, according to respondents, and it came in ninth in the overall software rating. CDC's strongest showing was in hardware service.

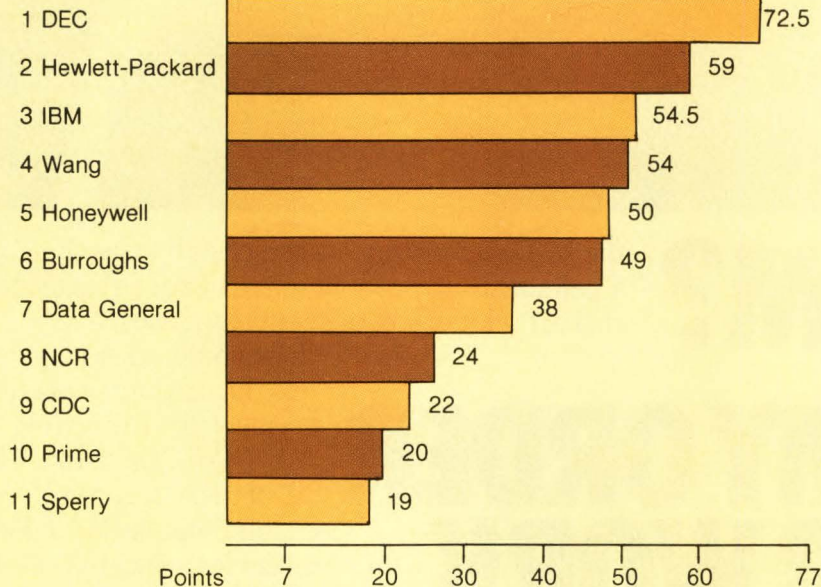
Data General Corp. (Westboro, MA) scored last as a vendor to do business with. Respondents consider its hardware adequate but hard to use, and its service inconsistent. Its strongest overall showing was in the software category, where it ranked seventh. "The strongest point for Data General is its applications software, the only category where it scores above average. Most of the other manufacturers perform poorly in this category," according to the survey.

Sperry Corp. (Blue Bell, PA) rated average or below average in all categories. Its hardware scored the lowest in reliability of all 12 manufacturers. Its service was rated ninth, and it ranked in the bottom third of the 12 manufacturers as a company to do business with.

Prime Computer Inc. (Natick, MA) also didn't achieve a single above-average rating. It was rated 11th in service and as a vendor to do business with. Its software ranked below average in all categories except ease of use, in which it earned an average rating. (News continued on page 20)

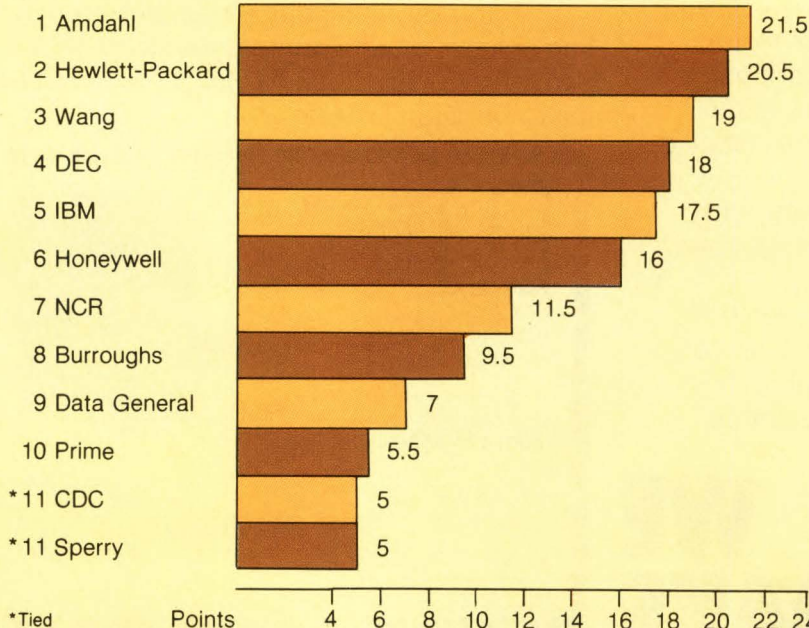
Software ranking

Rank



Hardware ranking

Rank



*Tied

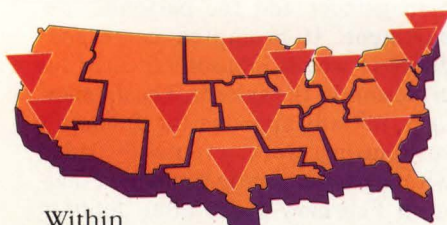
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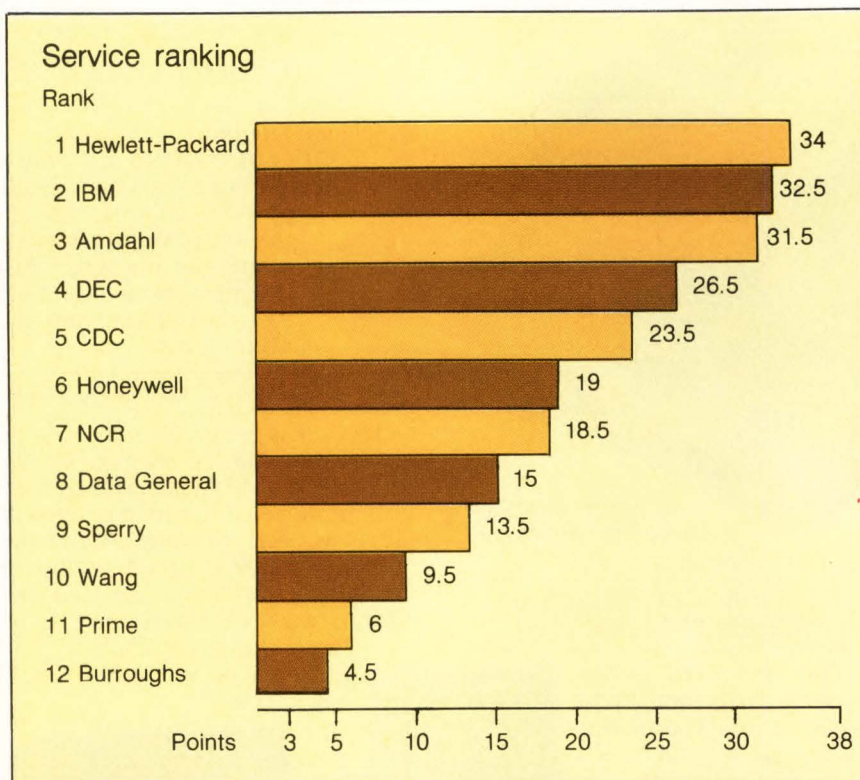
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NEWS & COMMENT

(Continued from page 18)



If you are dissatisfied with the documentation and service of the software you are buying, you are not alone, according to the survey. "Poor documentation is an industry-wide scourge," it concludes. Every manufacturer, with the exception of DEC and HP, scored low in software documentation. In the category of software

service and support, only DEC, IBM, and HP performed acceptably.

The survey was conducted via telephone interviews in late 1983 and 1984. A copy of "Computer Users, An Opinion Survey" is available for \$125 from Stuart Kirkland, 10636 Main St. #117, Bellevue, WA 98004, (206) 455-0952.

Planner: "Politics" behind firing

A former capacity planner for the Bank of America claims he saved millions of dollars for his ex-employer by tuning up its mainframe performance-measurement system, but was fired because his recommendations ruffled the feathers of the bank's capacity-management staff.

The capacity planner, Clifford J. Johnson, 35, of San Francisco, has been locked in a four-year legal struggle with the nation's second largest bank in the California state courts. He wants the bank to pay him damages for improperly firing him and de-

faming his reputation.

The Bank of America denies the charges and claims Johnson only saved it a fraction of the money he says he saved them. An attorney for the bank, Mark Ross of San Francisco, refused to comment on Johnson's allegations, other than to say they were untrue.

Johnson, hired in 1977 as an operations-research expert, claims he was fired after making several suggestions on how the mainframes in the bank's San Francisco data center could run more efficiently and safely. He says these suggestions were resented by the

systems-programming department, which was responsible for capacity planning. A political battle ensued, ending with Johnson's forced termination in 1980.

Johnson claims his firing was malicious. The bank gave bad references about him to prospective employers, he says, and that helped keep him unemployed for 18 months. Now he works as manager of capacity planning at Stanford University in Palo Alto, CA.

Johnson filed the lawsuit in 1980. The suit was twice thrown out because he didn't state how the bank's acts were illegal, Ross said. The third complaint has been pending since 1981.

In the lawsuit and a subsequent interview, Johnson alleges the following. He was hired in June 1977 (his salary at termination was about \$30,000) as capacity planner for a part of the dp department involved in new applications. However, Johnson says his boss ordered him to secretly evaluate the capacity-measurement techniques used in another section of the dp department responsible for mainline production applications. The bank's systems-programming department, which oversaw performance measurement in that corner of the dp department, resented his recommendations once they found out about them.

The animosity between the entrenched systems programmers and Johnson became apparent to upper dp management and the personnel department. It prompted correspondence in which Johnson repeated his criticisms of the system. The dp manager, initially appreciating Johnson's cost-cutting work, eventually sided with the systems programmers. Finally in February 1980, after Johnson had refused to resign, the bank fired him. He filed the lawsuit two months later.

Johnson doesn't blame his coworkers. "On one hand, you have a man [Johnson's boss] who pushed the rules to save the company money, but how can you blame him for trying to

(News continued on page 24)

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NEWS & COMMENT

(Continued from page 20)

cut costs? On the other hand you have people who were already doing the [capacity-planning] job. Can you blame them for getting annoyed at me for doing work that was originally assigned to them?"

Johnson claims that several of his suggestions saved the bank millions of dollars. But most of the legal maneuvering before the trial concerns the value of Johnson's suggested adjustments in the way that an IBM software package, Resource Management Facility (RMF), was reportedly used by the bank. RMF was used to measure the usage and performance of four IBM 3033 mainframes in the bank's San Francisco data center. Johnson reported to his supervisors that the bank's capacity-management staff had set up RMF to gather too much information about systems usage. RMF was hogging central-processing-unit time and degrading service to the bank's customers. Johnson says he proposed a way to cut RMF usage, saving the bank millions and not interfering with performance measurement.

The way the bank was using RMF resulted in superfluous accuracy, Johnson claims. Further, he says that even the bank admits that its huge volume of performance data was causing severe problems. The RMF package takes snapshots, or measurements, of many system activities. The bank had set the time between each snapshot at one-eighth of a second, meaning RMF was taking eight snapshots per second. Johnson suggested the interval be set to one second, which would mean RMF would only use one-eighth as much computer time. In addition, RMF records information from the snapshots. Johnson suggested the interval between reports be increased from five to 15 seconds.

The bank only followed Johnson's second recommendation, and continued taking the RMF snapshots at the rate of eight per second. Johnson claims that if all of his recommendations were followed the bank could have saved \$7.8 million a year. Even

with only partial implementation it saved \$600,000 a year, he claims.

The bank disagrees. It claims Johnson's suggestions only saved about \$60,000 a year. The bank also claims it is too expensive to discover the cost of the computer time needed to run RMF. Much of the legal battle centers on this issue, and Johnson has been forced to find out how the bank came up with its numbers.

Johnson, a graduate of Oxford University in England, is representing himself in the legal proceedings. And

this is not his only pending lawsuit. He is also suing the federal government, claiming that its policy on the speedy firing of nuclear weapons after warning of an enemy attack is unconstitutional because it does not give the President enough time to make a proper decision.

Why spend four years in a legal battle with a financial giant? Johnson explains that his vast investment in an education and career has been jeopardized by the bank. "My career, in essence, is my life," he says.

Is management blind to computer crime?

Does upper management pooh-pooh computer crime? Many respondents to a survey of 268 corporations by the American Bar Association (ABA) think so.

More than 75 percent of the respondents cited more comprehensive self-protection by private business as the

most effective way to prevent computer crime. The respondents claimed in their written comments that lack of both awareness and concern by management and the public is a big problem.

"The upper levels of corporate (and governmental) management may be



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CIRCLE 16

NEWS & COMMENT

underestimating both the potential magnitude and the probability of computer crime," concludes "Report on Computer Crime," the ABA report.

The price for insufficient security is high—25 percent of the responding corporations claimed to have sustained verifiable losses due to computer crime in the preceding year. The losses were put at a minimum of \$145 million and a maximum of \$730 million. "Given the small number of organizations reporting these large annual losses, the total annual loss figures nationwide appear to be enormous," the ABA concludes.

Who are the perpetrators of computer crime? Seventy-seven percent of computer criminals worked from within, according to the ABA respondents. Sixty percent of these were programmers and other data-processing employees.

A high number of "insider" crimes was also reported by a recent American Institute of Certified Public Accountants (AICPA) study. In that study, the largest number of electronic criminals in the banking and insurance industries were data-entry personnel and other clerks. The AICPA study, "Report on the Study of EDP-Related Fraud in the Banking and In-

surance Industries," involved 5,127 banks and 854 insurance carriers. Of 85 EDP-related bank crimes, 38 were committed by clerks. Of 34 EDP-related insurance crimes, 21 were committed by clerks. Although clerks most frequently were the thieves in the AICPA study, *managers* came in second. Managers also stole larger amounts of money than their subordinates.

Among the thefts chronicled were:

- Perhaps the longest-running fraud mentioned in the report, a dp manager stole \$40,000 over 6½ years. He made program alterations that suppressed changes in his account from overdraft reports, although he made sure the total figures were correct. He also ensured that no statement would be prepared for his account. Without an account statement, no one became aware of the overdraft. The fraud was detected when an independent internal audit was run against the files.
- An applications programmer altered computer programs governing a bank's cash-management service to transfer excess funds to his account. In less than one month, he diverted \$600,000.
- Over a 13-month period, an applications programmer who also worked as a computer operator, stole \$25,000

by developing a software program to decrease balances of selected inactive accounts and increase the balance of his own account. The programmer then falsified statements and mailed them to customers. In one instance, the post office returned a falsified statement to the bank, and the programmer didn't bother to prepare another statement for the customer. When the customer asked for his statement, the bank began an investigation.

According to the AICPA study, most of the frauds were perpetrated by falsifying forms or documents, making unauthorized online transactions, and incorrectly preparing reports. Only one-third of the cases were detected by internal accounting-control systems.

How can computer fraud be stopped? The respondents to the ABA survey suggested the following:

- Limit access to computer programs (85 percent).
- Limit access to computer operations (81 percent).
- Frequently change access codes and user-ID numbers (72 percent).
- Limit access to data-input channels (71 percent).
- Install asset controls and accountability systems (57 percent).

The "Report on Computer Crime" costs \$5 and can be obtained from the American Bar Association, Section of Criminal Justice, 1800 M Street, N.W., Washington, DC, 20036. "Report on the Study of EDP-Related Fraud in the Banking and Insurance Industries" costs \$3 and is available free from the American Institute of Certified Public Accountants, 1211 Avenue of the Americas, New York, NY 10036.

Qantel to offer new super-mini

MDS Qantel, Inc. (Hayward, CA), a minicomputer vendor that also designs industry-specific software to sell with its machines, recently introduced a new super-minicomputer offering twice the processing speed of any current Qantel system.

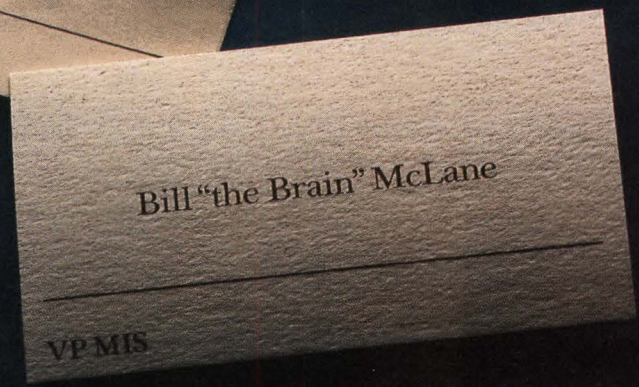
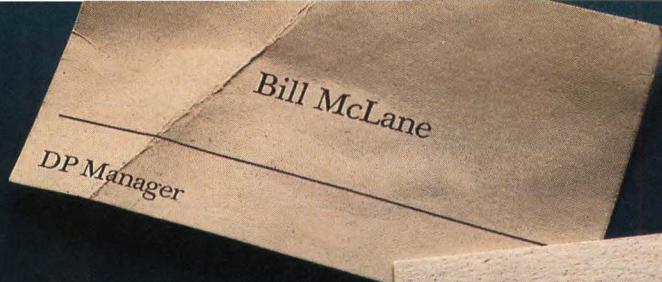
Dubbed System 264, it is powered by a 16-bit processor and is rated at 1.5 million instructions per second, offers memory capacity to 16 Mbytes, and has a total disk capacity of 2.4 billion bytes. The product's predecessor, System 64, which came out in 1982, was rated at .75 Mips. All current Qantel systems are field-upgradable to the System 264 and all Qantel industry-specific software packages are totally compatible and upgradable to operate on the System 264, the company claims.

The product is scheduled to be shipped in January. A typical System 264 configuration costing \$270,000 consists of the following: two Mbytes of main memory, 800 Mbytes of disk storage capacity, a 1000-lines-per-minute line printer, a .5-inch streaming-tape drive for backup, 12 video-terminal workstations and four matrix printers. Call (415) 887-7777 for more information.

Qantel makes minicomputers that come with special software for use in four industries; sports, retail management, manufacturing resource planning and hotel and leisure.

New Lotus mainframe link

Informatics General Corporation (Woodland Hills, CA), a maker of micro-to-mainframe links for several popular micro software packages, has an-



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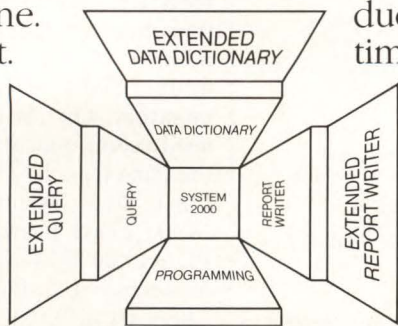
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The SYSTEM 2000 DBMS offers a powerful set of integrated functions. The result is the broadest and deepest functionality of any DBMS.

NEWS & COMMENT

nounced a similar software product for the popular Lotus 1-2-3 micro package from Lotus Development Corp. (Cambridge, MA).

The new product, Lotus/Answer, will allow IBM Personal Computer

users running either Lotus 1-2-3 or Lotus' new Symphony package to obtain information from virtually any database running on an IBM mainframe, Informatics claims. Files from the micro can be uploaded to the

mainframe, but micro users will not be able to change data on the mainframe databases.

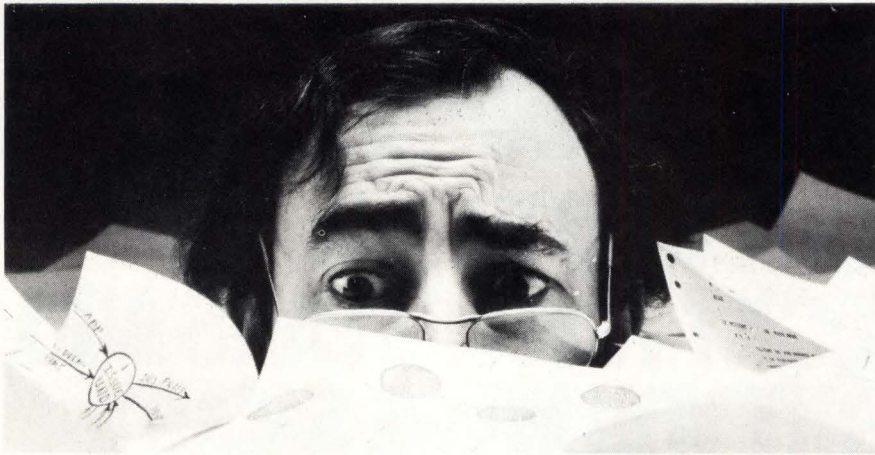
Lotus 1-2-3 is an integrated software package that combines spreadsheet, graphics, and database management functions. Lotus' Symphony, scheduled to have been shipped in August, is Lotus 1-2-3 with word processing and communications functions added.

Lotus/Answer will access data from virtually all mainframe files and databases, Informatics claims, including IBM's IMS and DL/I, Cullinet's IDMS/R, and files that can be accessed by VSAM, ISAM, and other standard IBM access methods. A micro user touches five keys, prompting a set of menus that identifies the mainframe from which information is needed. The information is automatically extracted and delivered to the micro in a format compatible with Lotus 1-2-3 and Symphony.

Lotus/Answer consists of two kinds of software: a floppy disk for the IBM PC and a software module that runs on the mainframe. Lotus/Answer, scheduled to have been shipped in late August, is expected to cost \$45,000 to service a setup of a single mainframe and 50 personal computers.

On the mainframe side, Lotus/Answer will operate under IBM's IMS/DC and CICS telecommunications monitors via asynchronous transmission. It is also planned to operate under CMS telecommunications monitors. On the micro end, users need a communications board, such as the Irma from DCA or the Forte from Forte Data Systems Inc. (Canton, MA). These boards make the IBM PC act like IBM's 3270-type terminal to access mainframe information. There are different ways to connect to the mainframe: through coaxial cable running to a 3274-type cluster controller or by using a dialup method such as DCA's asynchronous Irmaline-Irmalette combination and a modem. Most Informatics customers in the Fortune 1,000 have installed coaxial cable and are using the former

(Continued on page 31)



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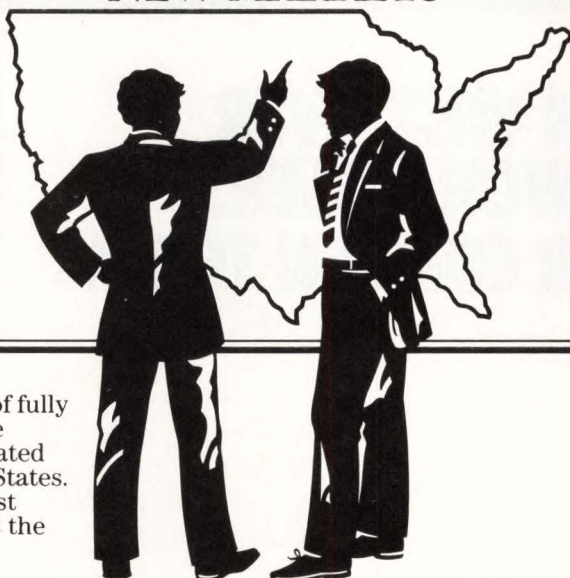
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NEWS & COMMENT

(Continued from page 28)

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CIRCLE 19

method, according to Forte.

Lotus/Answer requires a minimum of 256K of memory, two double-density diskette drives (or one diskette and a hard disk) and the PC-DOS 2.0 or 2.1 operating system. For more information, contact Informatics at (818) 887-9040 or Lotus at (617) 494-1270.

Does art affect productivity?

Art in the automated office certainly enlivens the decor, but does it stimulate the mind and increase productivity? Mal Northrup, president of Verbatim Corp. (Sunnyvale, CA), and Dr. Beverly Potter, author of *Beating Job Burnout*, believe it does. In conjunction with the San Francisco Museum of Modern Art, Verbatim is underwriting a major program to bring art into the workplace.

Camouflaged World #10, by Japanese artist Akira Kurosaki, was recently unveiled at the SFMMA as part of the Verbatim Collection. The work is a colorful woodblock print incorporating abstract, geometric shapes. The integration of the shapes and lines in the painting creates an almost hypnotic effect. "Even though the painting is abstract, it is very warm," says Potter. "It allows you to drift into your imagination."

Dr. Potter believes that art stimulates right-brain activity, where leaps of logic and creativity originate. And she maintains that art also can help employees who need to relax their minds.

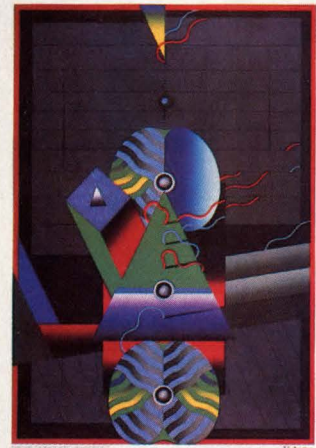
For example, mentally stimulating abstract or geometric art would benefit an employee whose attention lags because his or her work is tedious and repetitive. If the work is highly technical, involving intellectual stress, the employee needs to relax in order to do his or her best work. A soothing piece of art, such as a painting of a landscape, would provide a relief for his or her tension.

As part of her theory on art and productivity, Potter states that art in

the office expresses to employees that they are valued by the company, and thereby has a positive effect on their work. She also supports the high-tech, high-touch principle discussed by John Naisbitt in his book *Megatrends*, which states that as more offices automate, people's natural inclination is to need more touch and interaction. Potter claims artwork in the office satisfies this humanistic tendency.

Verbatim, a flexible-disk manu-

The VERBATIM COLLECTION
at the San Francisco Museum of Modern Art



Art for the Automated Office™

facturer, has established a fund at the SFMMA for the purchase of paintings by talented artists from diverse cultural backgrounds. As part of the "Art for the Automated Office" program, the paintings are reproduced as posters and are available free to automated offices. For more information, call Verbatim at (408) 245-4400.

Unix for all

The Yankee Group (Boston, MA) is sponsoring a two-day seminar on the Unix operating system and its impact on micros, supermicros and minicomputers. "The Market Impact of Unix" will be held in New York City on September 19 and 20 and on September 25 and

(News continued on page 34)

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NEWS & COMMENT

(Continued from page 31)

26 in Palo Alto, CA.

Ten speakers will each give a one-hour address to an audience of between 100 and 200. Among the Yankee Group speakers will be the following: Bob Blake, IBM systems development manager, who will talk on his company's strategic direction in Unix; Thomas Crowley, vice president of systems and software for AT&T Technologies, on his company's Unix strategy; Bernie Toth, Unix-based products manager for Digital Equipment Corporation, about Unix's future in the minicomputer environment; John Rowley, president of Digital Research, on the efforts of vendors to make Unix compatible with existing personal computer software, and Bob Marsh, chairman of the board of Plexus Computers, on the future of Unix in commercial markets.

The seminar costs \$875 for a single registrant, and \$775 for each addi-

tional attendee from the same company. Call Lisa Caruso at the Yankee Group at (617) 542-0100 for more information. On-site registration is possible but not encouraged.

The telephone game

The trend of business users to bypass local telephone companies when installing private networks for intracity communications is not as strong as many people think, according to a recent survey by the Prospective Telecommunications Group of Paramus, NJ.

Some estimates put private bypass networks at 10 percent to 20 percent of the intracity communications market, says George Pfister, president of Prospective, a consulting group. But the study shows that of the 181 million intracity communications circuits

projected by 1990, only 3.5 million will be in private intracity bypass networks, or about 2 percent.

Though this seems a minuscule percentage, it represents quintupled growth. Currently, there are about 142 million intracity communications circuits, including residential, business and cable television lines. Only 600,000 of the circuits are part of private bypass networks, according to Prospective's study, "Intracity Communications Networks II."

However, according to the study of 131 vendors, users and government officials, the further growth of these intracity bypass networks will be limited by the following reasons: failure of long-distance carriers to get into the act, the limited capabilities of private network vendors, and the fact that due to the confusion surrounding AT&T's divestiture, many users don't want to consider the additional demands of bypass alternatives. (Cont)

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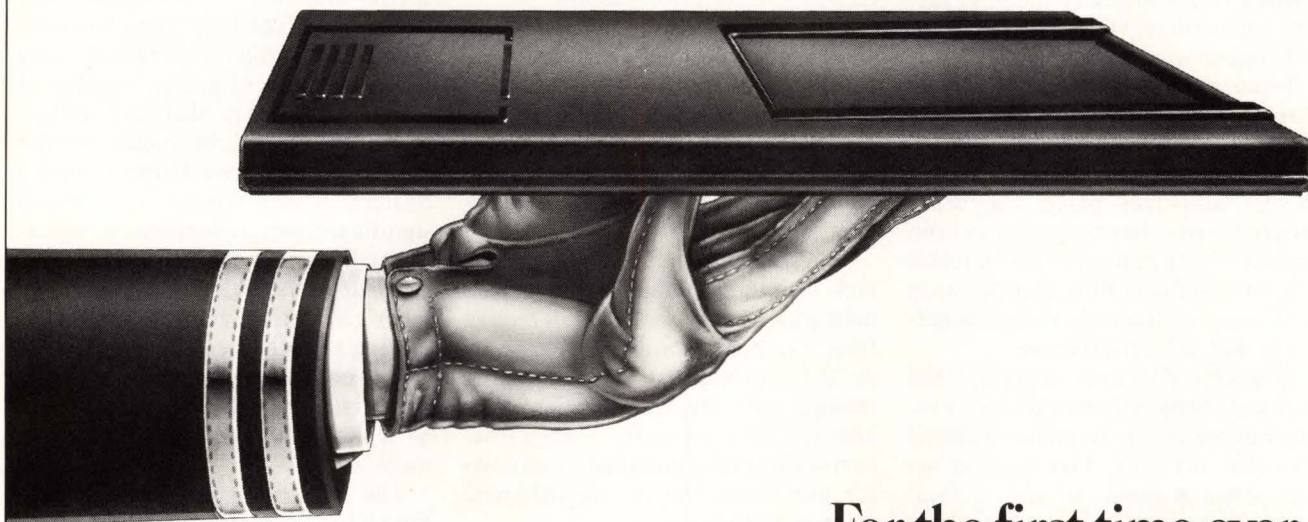
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NEWS & COMMENT

(Continued from page 34)

But the primary force against the increase of intracity bypass networks will be the market-sensitive pricing by local telephone companies. By the late 1980s, the local telcos will be competitive in all intracity communication applications via fiberoptic cable and copper wire technologies.

Telco pricing schemes, such as "Lightgate" from South Central Bell and "HiCap" from Ameritec, demonstrate a high degree of responsiveness to business-user price concerns. Pfister advises that users should keep abreast of rate requests filed by telcos with local public utility companies in their areas to ascertain if bypass networks will be cost-effective.

Prospective's study suggests that the local telcos' competition for intracity business may be more imagined than real. AT&T's entry into the bypass arena without the use of local exchange carriers will probably draw the wrath of regulatory bodies and

politicians. Other common carriers, such as MCI and Sprint, have more pressing demands on the limited capital they have earmarked for intracity transmission facilities and switching capacity, Prospective claims.

Private network vendors traditionally have had limited distribution capabilities, the study notes. Most users want a "turnkey" solution to the complicated process of setting up a bypass network, which is generally not provided by most private-network vendors today.

The study also points out the users' lack of interest in setting up bypass networks. Many users are still reeling from the complications wrought by AT&T's divestiture and generally, though intracity transmission costs are high, they represent a small fraction of the total communications costs for users and receive proportionate priority in their plans.

The study concludes that local tel-

cos will be able to provide the technology to meet business users' needs in the intracity communications market. By means of a method called the Servicing Area Concept, subscriber-loop carrier systems, on both copper and fiberoptic cables, is bringing low-cost, high-capacity digital carriers directly to the premises of a large number of users. Increasingly, this SAC system is being handled by means of the Digital Access and Cross Connect System, which affords the carriers significant cost reductions and flexibility in various forms of digital services to users. Pfister says that the telcos, using time-compression multiplexing and other technologies, will be able to boost data speeds over its regular twisted pair-wiring up to about 64 Kbits for a distance of up to three miles away.

The 382-page study costs \$6,500. For more information call Prospective at (201) 845-0110. (News continued)

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CIRCLE 23

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NEWS & COMMENT

(Continued from page 36)

NCC '84: Fewer people, more room to browse

The display in the desert—NCC '84 in Las Vegas, NV—had about 30 percent fewer attendees and fewer new product announcements than the prior NCC in Anaheim, CA.

Most new product announcements seemed to be OEM-targeted disk drives, printers and terminals. But, if you wanted to spend a few days boning up on the latest technologies at a place where 708 vendors—including most of the major hardware players in the computer industry—were on view, then NCC '84 was for your benefit.

Unlike the overcrowded NCC '83 in Anaheim, CA, there was ample space to roam the exhibits and get unhurried and detailed explanations from vendor representatives. One of the reasons was that attendance, according to two sources, was down about 28,000. Although a spokeswoman for the organizer of NCC, the American Federation of Information Processing Societies Inc., declined to quantify attendance, Las Vegas Convention Center officials estimated there were 70,000 attendees. The Anaheim Visitors and Convention Bureau put NCC '83 attendance at 98,000.

The biggest news at NCC really came from a user—the General Motors Corp.—which demonstrated how computers from different manufacturers can communicate with each other on a factory floor by using the International Standards Organization transport protocol.

The ISO has a seven-layer scheme for allowing different machines to understand each other. For the purposes of the demonstration, the vendors—



Illustration by Dan Culhane

IBM, Hewlett-Packard, Digital Equipment Corporation—labored to conform to the fourth, or transport layer. Protocols for the fifth through seventh layers of the ISO model have not been agreed on by the international body. GM, however, has come up with its own set of protocols for these layers—the Manufacturing Automation Protocol (MAP)—which it intends to implement in a new automated “paperless” manufacturing plant. Several vendors, including Hewlett-Packard, expressed explicit future support for MAP, while IBM gave a more general endorsement for future industry standards. GM is not the only user interested in MAP; there is a 60-member MAP user-group with other industrial giants such as Dupont and Eastman Kodak as members. The National Bureau of Standards, a co-sponsor of the demonstration, says that next year the technology required for linking different networks will be demonstrated.

One vendor that participated in the GM demonstration, Charles River

Data Systems (Framingham, MA) introduced Universenet, a local-area network which allows Charles River's Universe super-micros to connect to other computers using the ISO scheme. Priced at \$1,500, Universenet consists of an IEEE 802 interface network of hardware and supporting software, network-management software and application-software packages. For more information call (617) 626-1000.

A host of supermicrocomputers, many of desk-top proportions, were introduced at NCC. Some offered new 32-bit chips replacing older 16-bit microprocessors. Others, it was emphasized, run under the Unix operating system.

Panasonic Industrial Company of Secaucus, NJ, which brought a slew of new products to NCC, displayed what it called the largest and smallest high-resolution color crts, measuring 40 inches and 1.5 inches, respectively, in diameter. A Panasonic spokesman claims the resolution of the large screen is similar to that found on the crt sold with the IBM Personal Computer. Targeted at OEMs, the 40-inch crt is expected to be useful for high-resolution data and television displays for CAD/CAM and process control.

Panasonic also showed a 17-inch monochrome crt for word-processing applications that fits 6,000 characters at a time on the screen, compared to 2,000 on a normal IBM PC screen, the spokesman said.

Megavault (Woodland Hills, CA) claims to have cut data-transfer speeds of 8-inch Winchester disk drives by more than 400 percent. Its MVP212, a five-disk and eight-

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CIRCLE 27

NEWS & COMMENT

surface configuration, has parallel random-access memory (PRAM) that allows the MVP212 to download 212 Mbytes of unformatted storage in 52 seconds. A similarly configured 8-inch system without parallel random-access memory would download the data in 3 minutes and 46 seconds.

Interstate Voice Products of Orange, CA, claims to have expanded the vocabulary of voice-activated computing with its Vocalink Speech Recognition Board, a \$1,650 hardware and software package for the IBM Personal Computer that allegedly allows busy executives or professionals whose hands are occupied to operate off-the-shelf software with up to 240 spoken commands. Call (714) 937-9010 for more information.

Even for the hard-core computer-phobes in your organization, there's a product that makes it easy to input alphanumerics into the system. Say you have an executive or engineer who never learned to use a keyboard and still refuses. Now he or she can write longhand or print words and numbers on a sophisticated tablet called Scriptwriter. Yes, the user must exercise a bit more care in forming characters than usual and must stay between the horizontal lines, too. But almost magically, those characters are entered into any computer with an RS 232 interface using standard ASCII codes. Scriptwriter is available from **Scriptwriter Inc.** of Huntsville, AL, (205) 533-9699.

Then for those who are frantically looking for a fast, easy way to get typewritten documents into computer storage, **Dest Corp.** has announced a new desk-top machine for \$5,995. The Model 211 Workless Station reads 12 common type styles and four proportional space type styles at the rate of one page in 25 seconds. Dest, located in San Jose, CA, also offers larger document readers. Call (408) 946-7100 for more information.

Two high-speed line printers—300 and 600 lines per minute—that are based on a new dot-matrix technology are the new offerings from **Genicom Corp.**, Waynesboro, VA. Unlike

many line printers with banks of noisy hammers, the 4400 Series machines contain several modules that fire pins forward against ribbon and paper when electricity passes through their coils. The modules move together hor-

izontally on a frame in a kind of shuttle action. And if one of the modules proves faulty—the printers also feature built-in self-test and diagnostics—an operator can change the module in three minutes. Indeed, Genicom,



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CIRCLE 28

once known as a General Electric subsidiary, claims that of the machines in their class, only the 4400 Series machines offer operator-replaceable modules. The line printers sell for \$5,500 to \$7,200. More information

can be had by calling (703) 949-1188.

An intelligent copier/printer that will retail at about \$5,000 less than copier/printers now on the market was introduced by **Kentek Information Systems, Inc.** of Allendale, NJ.

The K-2 is expected to cost under \$10,000. Using an onboard Motorola 68000 microprocessor with a 5¼-inch floppy diskette, it is designed to print letter-quality text and graphics at speeds of about 12 pages per minute, using virtually any micro-computer. To be available in January, the K-2 is especially good for printing large numbers of contracts and proposals, a spokesman said. Call (201) 825-8500 for more information.

Epson America, Inc. (Torrance, CA) introduced a new letter-quality ink-jet printer that has an exclusive self-cleaning system to eliminate the common problem of clogging ink. Targeted at OEMs, the SQ-2000 automatically cleans the print head every few pages at a "cleaning station" located at the left side of the print carriage. The SQ-2000 also has an activator button which can be pressed at any time during printing to initiate a 10 second print-head cleaning. For more information call Epson at (213) 539-9140.

Alphacom, Inc. (Campbell, CA) announced Traveler, an 80-column thermal printer that runs on its batteries for two hours, prints 60 characters per second. It's 2¾ inches high, 14 inches wide, and weighs 5¼ pounds and is scheduled to be available in November, for a price of \$200. It can print up to 100 pages of text or graphics powered by its rechargeable batteries or can be plugged into a wall. Call (408) 559-8000 for more information.

Philips Peripherals, Inc. (South San Francisco, CA) introduced what it calls the "industry's quietest high-speed impact matrix printer." Priced at \$3,200, the GP300LC operates at lower than 50 decibels which, Philips claims, will not interrupt office functions. Call (415) 494-9111 for more information.

The Qume Corp. of San Jose, CA, introduced what it claims is the fastest letter-quality daisywheel printer available. The Sprint 11/90 Plus operates at 90 characters per second and costs \$2,895. For more information call (408) 942-4000.

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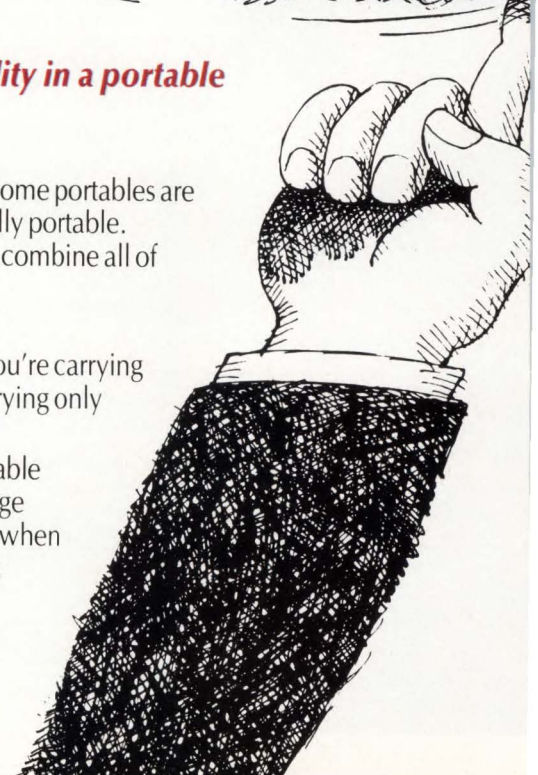
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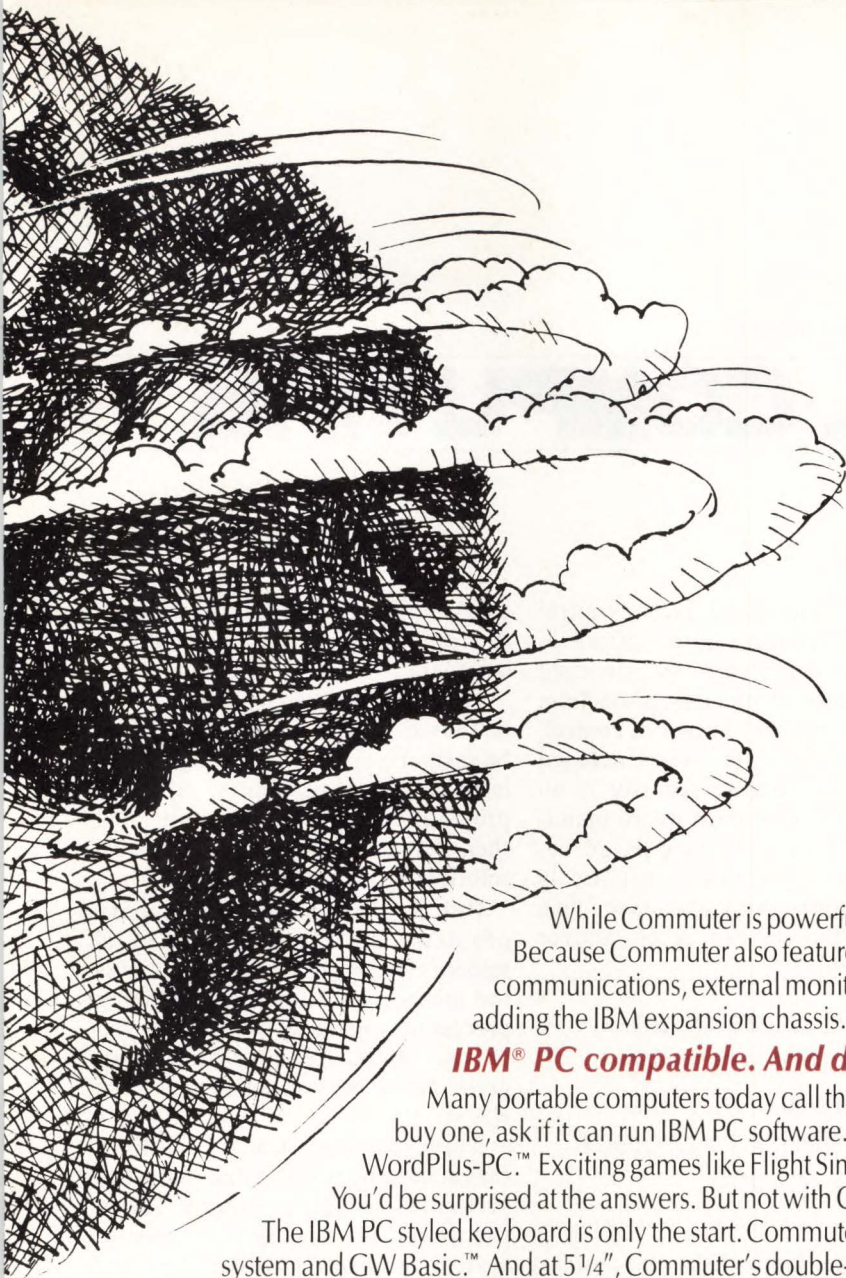
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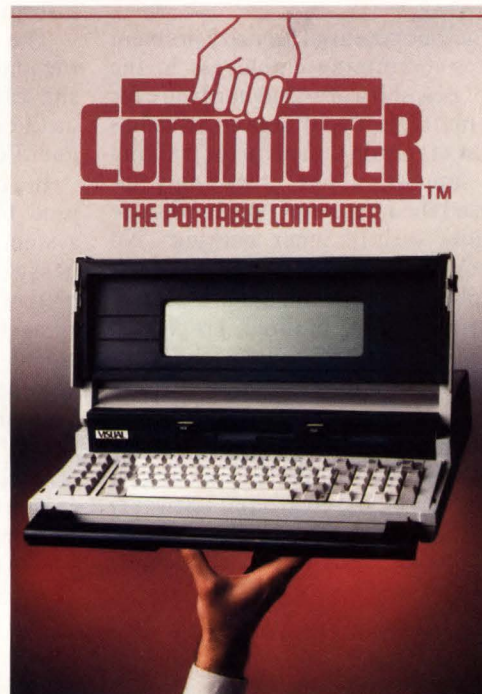
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by Susan Foster Bryant, Microsystems Editor

PERSONAL COMPUTING

Better safe than sorry

Personal computing has posed several challenges for management, but perhaps none is so great as the security threat. Loss or abuse of data is a far greater security risk than it is with large centralized systems. And then there's the vulnerability of the hardware involved in personal computing. To maintain some semblance of control and to protect their organizations from this danger, managers need to formulate effective guidelines.

What should managers beware of? To begin with, all those new, extremely popular applications-software packages may threaten data security. Now no one needs to be a computer expert to unearth highly sensitive information. It is possible to enter many different corporate databases by using just one generic application, such as a spreadsheet. This problem will be compounded in the near future as new integrated-software packages come into wider use.

Another potential security problem relates to training employees in the use of new software (and hardware for that matter). If your organization has begun to rely on outsiders for training and support, it has unwittingly increased the number of people who are familiar with its inner workings. No corporation wants to create an atmosphere of paranoia, but breaches of security will rise in direct proportion to the number of people who have access to, or knowledge of, a particular operation.

Because most micros in use today were designed for single users, access to them (both hardware and software) is rather unrestricted. Also, large

systems provide good access control via the hardware and software. Equipment is protected by privileged instructions and memory protection, as well as physical means of control.

But these measures aren't included with micros because security is an afterthought with most micro manufacturers. Any software-based security device for micros can easily be overcome. And the ease with which employees can access and/or

The end users of an organization must be made aware of their responsibility to protect their equipment.

interchange floppy disks and system components makes for a ripe security problem. One exception is Apple's Macintosh, which comes with a security "chain" option.

The micro user has access to all of the machine's system facilities. He or she can't be prevented from using utilities to read and/or modify files and file directories.

In some micros, passwords can be used to protect files. The operating system requires the user to submit the password before logging on. This method, however, has its detractors, since the passwords are ordinarily stored in file-directory records and can therefore be easily uncovered.

Another potential problem comes from "data residue." Most users erroneously believe that when they erase or delete a sensitive file, the data becomes illegible. This notion gives

users a false sense of security because files are not overwritten by the delete command.

However, the file space might *not* be reused. And the "deleted" file can be easily restored by resetting the deleted bit in the directory. A utility program that overwrites a file and then deletes it would be a possible solution to this problem.

But another memory/security problem exists because RAM is seldom cleared out completely, unless the micro is shut off. This unending process may not be convenient for you or your users. Again, a utility program could be written to clear the RAM.

There are two security facilities that should be investigated: auto-run programs and cryptography. Auto-run programs are used to restrict system-facilities access. They are menu-oriented programs that control what users can do with a micro. A predesignated program file is invoked right after powering up. This auto-run or auto-start file will contain either an executable program or a sequence of commands. These programs increase security through user identification (a password is required), access control (you can only invoke those programs you are authorized to use), and auditability (all significant work is recorded for later access if necessary).

Circumvention of auto-run routines can be avoided via physical protection to ensure that no components or modules are substituted. Also, programs should be designed to be able to recover from error.

Cryptography, another means of protecting information, involves encryption and decryption—scram-

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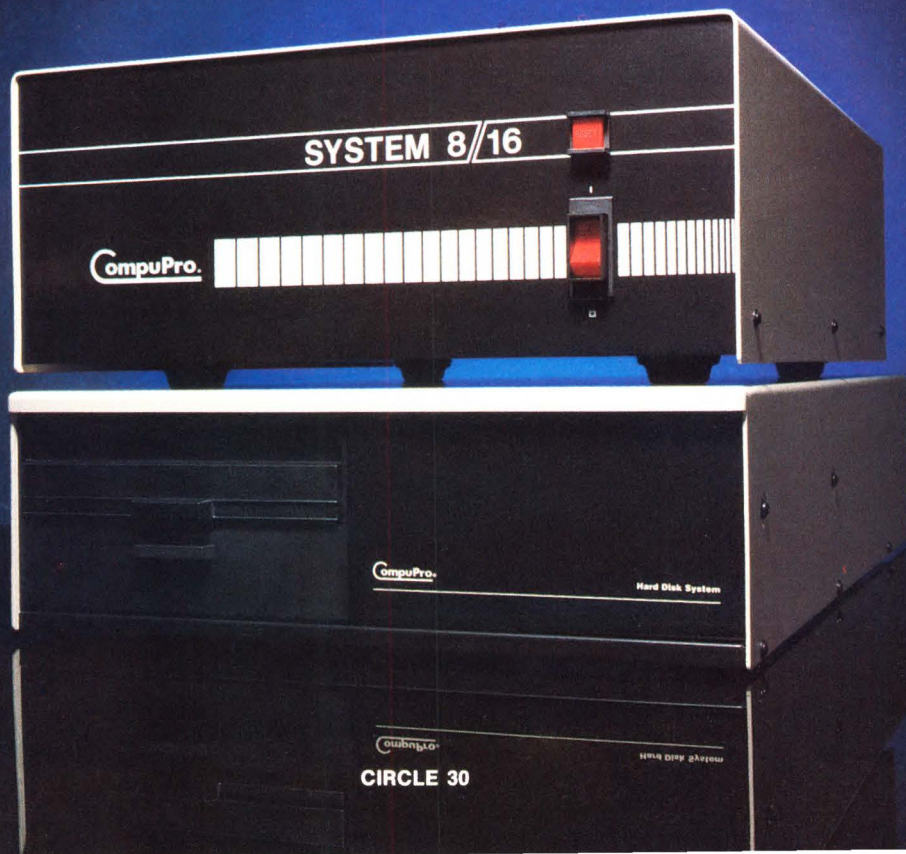
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CIRCLE 30

PERSONAL COMPUTING

bling and unscrambling information. This process is usually controlled by a string of digits.

There are two ways to use cryptography to protect personal-computer files. The first is full-file encryption and decryption, which requires users to go through various steps to transform an entire file. After the data are encrypted, the regular version of the file is deleted. Files must then be decoded before other programs can use them. Incremental encryption and decryption, on the other hand, performs the scrambling and unscrambling as a chunk of information or on a sector disk. The user doesn't have to decrypt files before working on them and then encrypt these same files after working on them.

Although technology is beginning to offer managers solutions to security problems, the ways organizational structure weaken or enhance security should also be examined. For example, a company should have a defi-

nitive policy on microcomputer responsibilities and procedures. End users in the organization must be made aware of their responsibilities to protect their equipment. Management must decide who is to have access to what information and when. Whenever possible, a separation of duties should be encouraged. During the acquisition process, users should let management know the degree of sensitivity of the information they will be working on. Physical access to micros can be controlled with keys; media can be locked.

To avoid such natural hazards as dust, equipment should be covered when not in use, and smoking, eating, and drinking near equipment should be restricted or prohibited. Power protection should be installed, as well as anti-static devices. Backup procedures should be a part of the everyday operation of the micro. While no one wants to back up files every day, even a minimal backup should include

copies of software documentation.

Microcomputer security becomes an even greater issue when a corporation installs micro-to-mainframe links. Terminal-emulation software often allows storage of an entire log-on validation sequence, possibly violating the entire authentication process for a large system. Therefore, passwords should *not* be stored in the micro.

Another problem arises when local-area networks (LANs) are installed, because all nodes are usually capable of reading data while they are being transmitted. The information is not limited to the sender and the receiver. Nodes can also disguise themselves as other nodes. Until technology can answer this security question, information sent over a LAN should be carefully screened. And until you know exactly where your vulnerability lies, and how to protect your system, look into some of the products available to reinforce security. □

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Several software packages limit access to data and applications. They differ in the security features they offer, the flexibility with which they can be implemented, the machines and operating systems they require, and their methods of interfacing with computers. Some of these differences

allow organizations to make trade-offs on several factors—the degree of security, ease of administration, convenience of operation for users, and cost—depending upon their needs.

Key features to be considered include the following:

The method of access control. Access can be limited according to individual passwords or terminal identification numbers. Besides setting limits on which employees can gain access to particular files, you may want to provide another level of security by restricting the locations from which they can do so. Under this arrangement, an employee who surreptitiously obtains a password won't do any mischief with it unless he or she uses it at the proper terminal.

The level of data protection. Some packages limit access only to complete

records—a list of employees and their salaries, for example. Others allow corporations to make distinctions about the individual data elements that make up the record. In those cases, a security manager might give a clerk access to the salary record, without revealing the names of the employees receiving those salaries. Or the clerk may be allowed to view the entire record for salaries up to a certain level of the corporate hierarchy, but see none of the information on those above it. Some organizations or departments may require specific levels of protection, while others can get by with the broader controls.

Limitation by day or time of day. Some employees will never need to use the computer on weekends. The employee salary/status files, for instance, will almost never have to be accessed at midnight. No sense leaving the computer unlocked to employees during times of the day or periods when they don't need it.

Flexibility of modifications. Some employees have to work on weekends and, in a pinch, the payroll application may have to be run at odd hours. How easily can you make changes or outline exceptions using a particular security package? Does the package allow temporary changes—authorizing weekend access for employees working on a crash project, for example, and automatically revoking it after the job's deadline?

Employees come and go, and job descriptions change. Some organizations, therefore, may find it convenient to delegate responsibility for access control to departmental managers—and some packages make it easy to do this. Shiley Inc., a health-care-products manufacturer in Irvine, CA, found this capability to be a particularly attractive feature of Surveillance, a Customer Information Control System (CICS) security

Controlling microlinks

The movement toward linking microcomputers with mainframes increases the risk to corporate information resources. The software links, which ease the exchange of information and programs between personal computers and central machines, must also allow management to control exchanges.

Some links themselves control access, others provide the mechanism for controlling access by interfacing with a system's existing security provisions. Omnilink from On-line Software, Fort Lee, NJ, for example, allows a central administrator to specify—in a dictionary—the mainframe files, data fields, and views that can be accessed by micro users. Authorized users are also identified in the dictionary. Omnilink allows the administrator to assign both data and individuals 10 levels of security. The salary listing in personnel records might be assigned to the ninth security level, while the rest of the information is given a "seven" rating. An employee authorized to access personnel records who has a "seven" or "eight" rating can view the personnel record, but not the salaries.

In addition, Omnilink will work with On-line's Guardian, which provides more comprehensive security for CICS systems. Guardian permits more detailed descriptions of the data that can be accessed—salary ranges, for example—and specific restrictions of when and from where access can be made. It also provides the audit and reporting facilities required in a comprehensive security system.



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package from Tower Systems. According to John Stager, formerly Shiley's database administrator, initial planning for the security system—deciding who should have access to what—required a lot of planning.

Implementing the plan and maintaining the system were "pretty easy," he says.

Shiley designates security supervisors within each user department. They learn how to set up and modify

their employees' security profiles, and are given access to the security system to do so. They can alter only their own department's security arrangements.

Range and flexibility of security

(Continued on page 56)

Security software

Vendor	Package	Requirements	Price	Circle
A.C.T.S. (512) 258-7869	Database Security System	IBM mainframes under MVS or VM/CMS running Intel's System 2000 database	\$7,500	985
Boole & Babbage (408) 735-9550	Secure	IBM 360, 370, and PCMs	\$15,000	986
	Secure/CICS	IBM 370, 30XX, and PCMs	\$18,000 \$22,500 with XA	
Cambridge Syst. Grp. (415) 941-4558	ACF2	IBM mainframes and PCMs under MVS, VM, or VS1	\$33,000/MVS \$24,000/VM \$18,000/VS1	987
CGA Software Products Grp. (201) 946-8900	Top Secret	IBM mainframes and PCMs under MVS	\$800/mo.	988
Chi/Cor Information Mgt. (312) 454-9670	Contingency Planning System	IBM mainframes under VS1 or MVS	\$10,000	989
Clyde Digital Syst. (801) 224-5306	Contrl	DEC systems under VMS or RSTS/E	\$1,600/VMS \$950/RSTS/E	990
Computer Assoc. Int'l. (516) 333-6700	CA-Sentinel	IBM mainframes under DOS/VS(E)	\$12,000/ 3-year lease (includes maintenance)	991
Dataware (716) 876-8722	Text Comparator	IBM 370 and PCMs under OS or MVS	\$3,000	992
FWM Digitech (212) 695-8044	Menutech	Wang VS	\$6,000	194
Goal Syst. Int'l. (614) 888-1775	Alert/CICS	IBM mainframes and PCMs running CICS	\$9,100/DOS \$12,180/OS	993
IBM (Contact local sales office)	RACF	IBM mainframes	\$786/mo./MVS \$250/mo./VM	994
Kolinar (408) 980-9411	KDES	IBM mainframes and PCMs under VM/SP2 and up	\$1,000	995
McHugh, Freeman & Assoc. (414) 784-8250	KBM	DEC systems under RSTS	\$500	996
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Oxford Software (201) 288-1515	CICS On-Line Security System	IBM 370, 43XX, 30XX, and PCMs	\$20,000/DOS \$14,000/OS	195



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CIRCLE 34

COMING NEXT MONTH

The end of firing at will: The courts are forcing corporations to discharge employees fairly.

LANs vs. multi-user systems: Find out whether local-area networks or multi-user systems are the best way to tie employees together.

Manufacturing-resource planning keeps you on time, on target: MRP now fits virtually any manufacturing operation.

Matching workstations to executive styles: How to find the right workstation to suit each executive's individual style.

Training new users: A basic training regimen is necessary to educate new users.

Data-comm hardware—leaving the analog era behind: An update on the latest hardware for the digital era.

Financial modeling: The latest revolution, Part I: With the proliferation of modelers, spreadsheets, and integrated packages, you've got more choices than ever.

Ethics: MIS/dp's new challenge: The sixth in our series of roundtables examines the need for ethics to keep pace with the technology of information management.

Outstanding data center: A photographic tour of Brookhaven National Laboratory's Upton, New York, data center.

In October *Computer Decisions*

Bob Whatsisname
in Accounting.
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Yours.



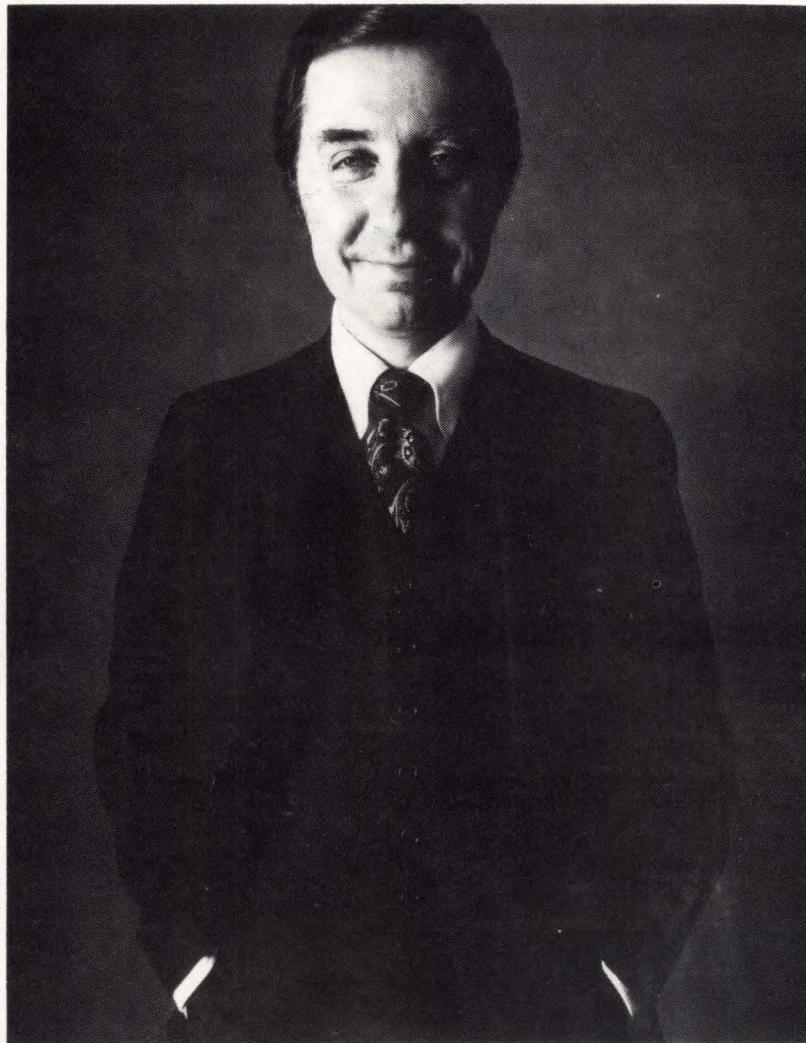
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STRICTLY SOFTWARE

(Continued from page 52)

violations and responses. Organizations might want to designate various forms of system misuse as security violations. Use of improper log-on

procedures or incorrect passwords might indicate either attempts to breach security or simple user mistakes. Employees who use the com-

puter infrequently are apt to make honest mistakes and might be given several tries to log-on before the security system shuts down their ter-

Security software

Vendor	Package	Requirements	Price	Circle
Raxco (301) 258-2620	Rabbit-4 SIP	DEC PDP-11 under RSTS/E	\$2,495	196
	Rabbit-4 FIP	Same system	\$2,495	
Remote Syst. (703) 790-0252	Secureware I	Micros with RS-232C port	\$260	197
	Secureware II	Same systems	\$775	
	Secureware Jr.	Same systems	\$125	
Software AG (703) 860-5050	Natural Security System	IBM 370, 43XX, and 30XX under DOS, MVS, VS1, or VM/CMS	\$15,000	198
Tower Syst. Int'l. (714) 752-8263	Surveillance	IBM 370, 43XX, 30XX, and PCMs under DOS/VS(E), SSX/VSE, OS/VS1, or OS/VS2 (MVS) running CICS	\$15,000/DOS \$19,500/OS	199

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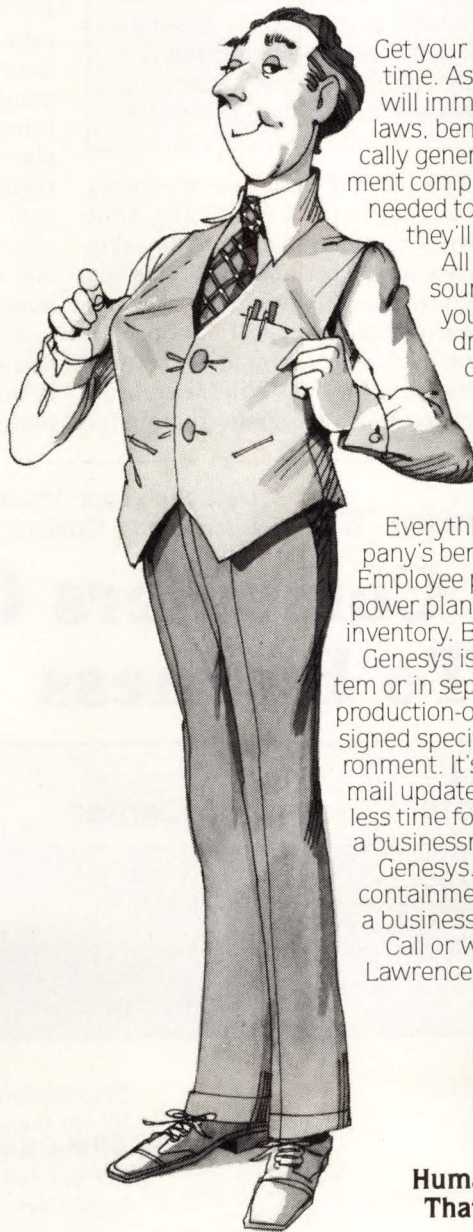
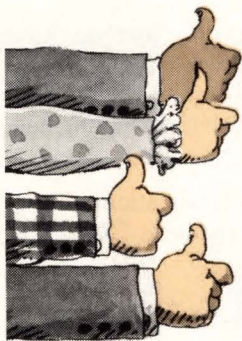
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Contracts for most major software buys require the purchaser to safeguard source code, development specifications, and other information about how the product works. Let a vendor's secrets fall into the wrong hands, and you'll be liable for any losses or damage it incurs. Since you'll only need this sensitive material for occasional changes and fixes, it's best to keep it under lock

and key.

Some corporations are turning to software-escrow services, such as Data Security International, La Jolla, CA, to control access to the proprietary information entrusted to them. The services hold the material in a secure location, allow access only to authorized employees with specified corporate clearances, and audit use of the information.

minal or locks the file or program they're trying to access. In contrast, employees who often access sensitive material might be given only one chance. Will the security package handle either case?

A terminal left "open" by an employee who has forgotten to log-off before leaving gives any passerby ac-

cess to the computer. Some security packages will automatically shut down a terminal if no activity takes place within a certain time. But some organizations might find it convenient to leave files or applications open on terminals for intermittent use throughout the day. Will the security package allow automatic shutoff for

some inactive open terminals but not others?

Reporting capabilities. "Auditors would like to have every transaction recorded and the records kept forever," says Kenneth Pollock, director of research for the EDP Auditors Foundation. Most would settle for three reporting capabilities in a security system: automatic logging of specified computer transactions for regular audits, periodic random sampling of other transactions, and immediate flagging of certain critical transactions. Deciding which items to place in which reporting categories requires careful analysis by an organization, Pollock notes, but the system should provide the three options and make it easy to add and delete items.

Implementation method. Companies can approach the protection of information resources from two directions: by securing everything and giv-

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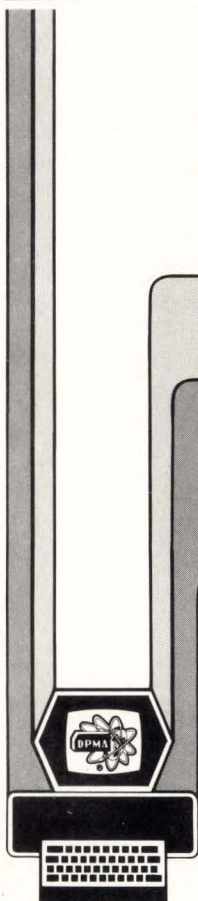
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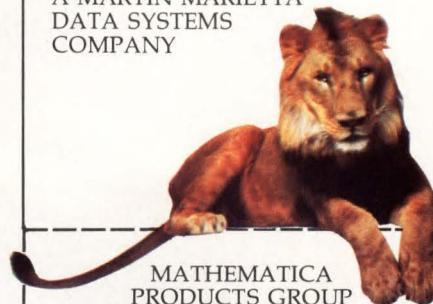
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CIRCLE 39

STRICTLY SOFTWARE

ing access to those who need it (the default method) or by identifying specific items for protection (the exception method). The Western Co. of North America, Fort Worth, TX, which provides drilling and other

petroleum-production services to large oil companies, used CGA Software's Top Secret to phase in security gradually. First, it protected critical resources, providing access to them only through Top Secret's security

procedures, while allowing other systems to continue operations under established methods. Then the company began placing employees under the security system, beginning with the data-processing staff, and gradually adding 300 remote Time Sharing Option users in worldwide field offices.

According to analyst Glinda Martin, who helped implement the system, the approach allowed Western to protect sensitive data quickly, while giving the data-processing department and other users time to assimilate the new security features and procedures.

Diebold Inc., the bank-vault and automatic-teller-machine manufacturer (North Canton, OH), selected ACF2 from Cambridge Systems Group partly for its default-implementation feature. According to Don Bailey, security officer, the corporation wanted to protect *all* of its information resources to be sure it hadn't overlooked any critical ones. No file or application can be accessed unless a rule describing how it was accessed and by whom has been specified to ACF2. If no rule exists, or if one exists but isn't followed, the system will deny access.

Diebold's security team implemented the system in a unique way. When the protection system was first installed, and the team was still devising rules, the team set up ACF2 so that it would *not* deny invalid-access attempts. Instead, it logged them all. The resulting record helped the implementors identify most of the situations that required rules before switching the system into the live mode. This implementation approach reduced the risk of missing important users during the rules-definition phase of the project. If the team had failed to provide a rule authorizing necessary access to a legitimate user, it would have found out about it when that employee complained about his or her inability to get to the information. Meanwhile, of course, no one else could get to that information either.

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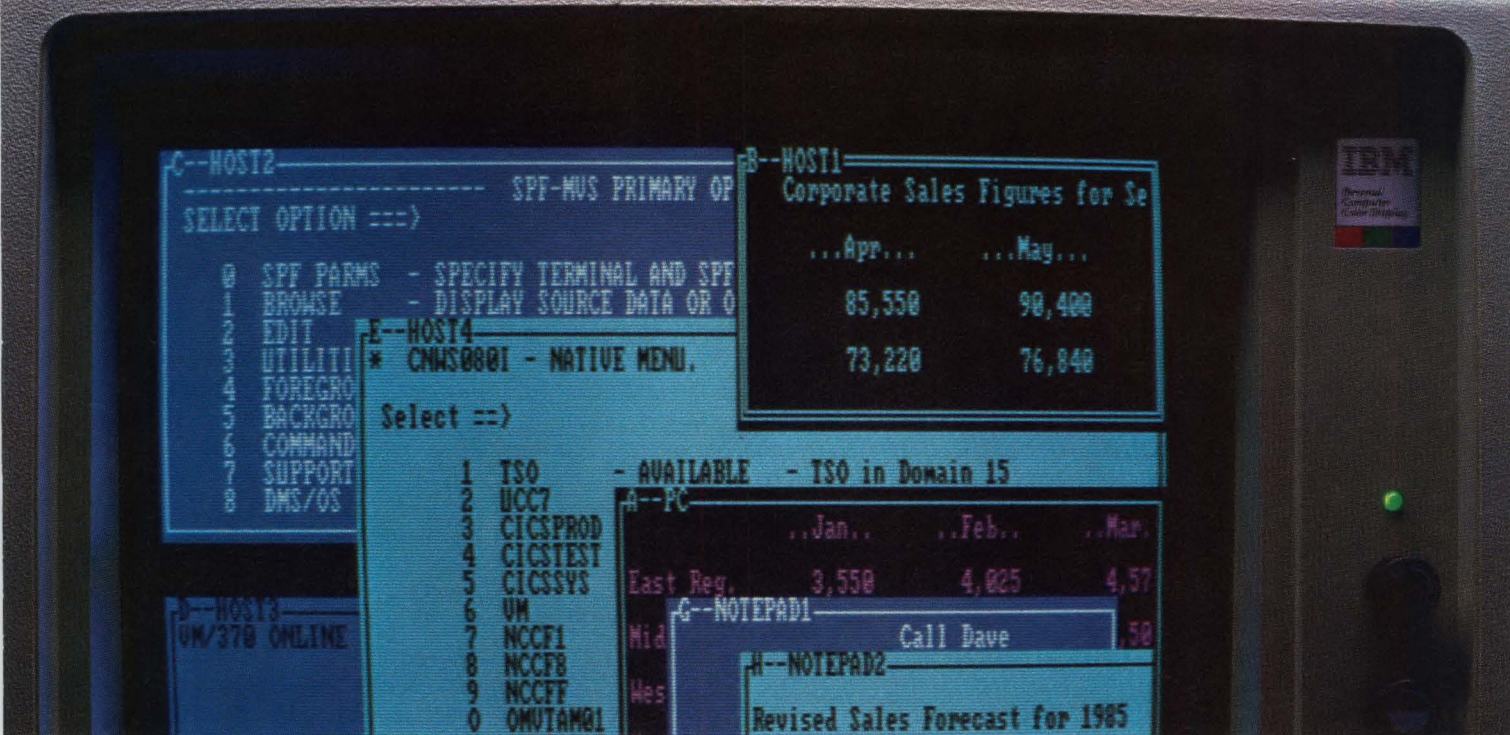
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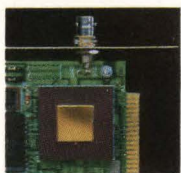


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with operating systems, others ride on top of them. According to Robert P. Campbell, president of Advanced Information Management, a consultancy in Woodbridge, VA, the former generally provide broader security features and machine efficiencies, but require more "care and feeding" for installation and maintenance. The less-integrated systems are generally easier to handle.

Louisiana Gas Transmission (Harvey) selected Goal Systems International's Alert/CICS in large part because of its convenience, according to Virginia Batte, software manager. The organization could have purchased a package with more extensive security provisions, she notes, but not without having to cope with additional complexity.

Alert/CICS operates within CICS, which accounts for much of its ease of use. The approach also limits the protection to CICS applications

only. This was fine with Louisiana Gas Transmission, Batte says. The MIS department is physically secure, she explains, and only a few employees have access to the computer for batch processing. Other organizations, however, may want to provide software protection for batch processing, as well as for online applications under systems like IBM's

You might give a clerk access to the salary file, without revealing the names of employees receiving those salaries.

CICS. Knight Publishing Co., publishers of the *Charlotte Observer* and *Charlotte News* (NC), for example, decided that level of security was important.

"A programmer could easily access sensitive files, such as personnel or payroll, by simply submitting a batch job," says David Orbaugh, Knight's director of advanced systems. The publishing company wanted to secure those batch files as well as its online CICS applications. To do so, it selected CA-Sentinel from Computer Associates International, which provides CICS and batch security for mainframes running the DOS/VS(E) operating system. Computer Associates, which has had plenty of experience interfacing with IBM operating systems with its line of performance monitors and other utilities, claims the fit for CA-Sentinel is quite comfortable.

Machine efficiency. Any security package will add to system overhead, but some will add more than others. RACF, IBM's security package for MVS-based systems, for example, has a reputation for inefficiency. (A

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CIRCLE 42

RESEARCH REPORT

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CIRCLE 48

recent release, however, may improve its operation.) The First Pennsylvania Bank in Philadelphia is pleased with the efficiency of the Secure system from Boole & Babbage, according to Don Hann, MIS officer. Under the bank's system, MIS groups data sets by generic names according to the application to which they belong. The data within each group can be accessed only if the user enters the proper job-ordering criteria to which the group is keyed—without prompting from the system.

Confidence in a system's security on the part of users will encourage them to take advantage of its benefits.

The MIS department also provides certain highly sensitive files with specific password protection, Hann says. In addition, it maintains separate databases for production, testing, and management information, further limiting the chances for compromised data. "It's a clean system," Hann says. "We have thousands of data sets protected by a database with about 250 entries."

Computer security is necessary to protect vital resources. But organizations may achieve benefits from protection beyond the reduced risk of compromised data and the peace of mind such protection brings. The increased confidence in a system's security on the part of users—and potential users—will encourage them to take advantage of the computer's benefits. Departments will be more willing to store files electronically when they know they can strictly control access to them, for example. Glinda Martin of Western Co. reports that 150 new users signed on with the corporation's system after the Top Secret security package was installed—many, she believes, because they knew their resources would be safe. □

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CIRCLE 43



by John Seaman, Data Communications Editor

DATA COMMUNICATIONS

DOVs eliminate costly cable

Are you hesitating to order a new, expensive, multi-featured, voice/data PABX to link up your phones and terminals? Are you reluctant to run cable to many new local data terminals because of the cost and disruption? Do both seem to involve too much cost and trouble?

Don't despair. There is a third alternative that has not yet received the attention it deserves. You can use data-over-voice (DOV) transmission equipment to quickly and cheaply link phones and data terminals over twisted-pair cabling, the telephone wiring that commonly runs throughout most office buildings. With DOVs, you don't need two independent sets of wiring, one for voice and one for data, in a local (within your building or corporate campus) telecommunications system.

In the past, organizations had to pull cable to each data terminal, a difficult task in older buildings without elevated floors and overhead conduits. Even if your building is newer, installing cable is expensive. The materials

and labor costs incurred in installing cable add up quickly. Also, in almost every case, you'll eventually run out of cabling space.

Technological strides during the last few years now make it possible for existing telephone wires to be employed for both data and voice transmission using a simple adaptation of modem technology. DOVs modulate and demodulate digital data streams for transmission over analog phone lines. The analog voice signals are not affected. DOVs can transmit voice and data signals simultaneously on the same twisted-pair cable because voice signals do not take up the full available bandwidth of the twisted-pair cable. Voice signals are carried at low frequencies, so the higher frequencies can be used for data transmissions.

With DOVs, the data signals cannot conflict with the voice signals. To ensure the separation of voice and data, DOVs filter transmissions. The only catch is that you can't transmit data over the public phone network, through telephone switches, without

first separating the voice and data signals.

DOVs offer several advantages. Managers anticipating network expansion can benefit by using DOVs at their local sites. Data terminals can be installed at each telephone location without putting in new cabling. All local personnel can have immediate online access to the central processing unit. As the staff grows larger and the need for online data terminals increases, DOVs greatly simplify the addition of new terminals. Practically every telephone wall jack is a potential link to the cpu.

Relocating data terminals you already have is also easier with DOVs. Previously, it was frequently simpler to move an employee to a terminal than to move a terminal to the employee's location. Relocating a terminal meant that cable had to be pulled to the new site. With DOVs, however, a terminal can be easily shifted to wherever the phone lines reach.

Before deciding to use DOVs, consider the alternatives. What about the latest digital private automatic branch exchanges (PABXs), which can

DOV sampler

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Gandalf Data (312) 459-6630	Line Miser	A,S	9,600	18,000 feet	\$540	972
Micom Syst. (213) 998-8844	Instalink 460	A	19,200	6,000	\$500	973
Teltone (206) 827-9626	DCS-2	A	9,600	1 mile	\$500	974
	DCS-2SE	S	9,600	4 miles	\$600	

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The bad news is that, according to USA Today, AT&T is filling only 25% of its private line orders on time, has doubled the waiting time to 10 weeks, and is taking 50% longer to repair private lines than in 1983. They miss you, Ma.

Install Scotsman and Reduce Line Costs

How can data network users avoid these delays? Easy. Reduce the number of private lines by installing Scotsman multiplexers. Scotsman I is a high-quality, low-cost 4- or 8-channel stat mux with optional built-in 2400 or 4800 bps modem. Scotsman II is even more sophisticated, providing system control and monitoring. One customer saw his line costs drop from over \$1,000 to \$58 a month merely by adding a pair of Scotsman. They paid for themselves in a few months.

Data Compressor Further Cuts Line Costs

Racal-Vadic's new data compressor sends a 19.2 kbit data stream over a single voice-grade line using 9600 bps modems. Or data from 4 bisync or 2 full-duplex 9600 channels can be transmitted over one telephone line. This can add up to great savings for users.

Now, Free Installation

No one has to wait for AT&T — or deal with multiple vendors — because Racal-Vadic can supply the whole system, including multiplexers, modems, data compressors — and accessories.

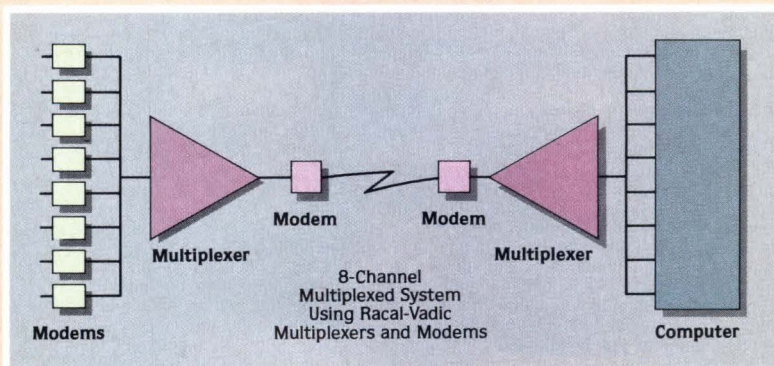
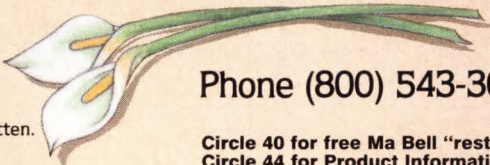
They're even offering FREE INSTALLATION 'til September!

I doubt if you can find a better deal in heaven, Ma.

Your independent thinking son,

Alexander Graham Jr.

Gone, but not forgotten.



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DATA COMMUNICATIONS

handle both voice and data? Voice/data PABXs, sometimes called computerized branch exchanges, offer many fancy options and have been highly touted.

For connecting data terminals at local sites, however, voice/data PABXs have their drawbacks. One of these is price. The price per data port for a voice/data PABX may be over \$1,000, whereas a DOV channel can often be set up for under \$500 (less in quantity).

Be aware that although DOVs can use phone wiring, not all voice/data PABXs can. Installation of additional wiring for a complex voice/data PABX can be costly and probably will disrupt your organization.

Another possibility with DOVs is the use of a data switch, or data-only PABX. Such a switch is simpler and cheaper than a voice/data PABX, provides data switching and signal-collision detection, and is less likely to break down. With a data PABX, a breakdown in the voice system will not affect data communications, nor will a data communications problem interfere with voice transmission.

Other points should be considered as well. Do you really need data and voice capability at every station? With

DOVs, only workstations that actually require both data and voice capability get them. With a voice/data PABX, you may be paying for more than you need.

DOVs also provide more options in vendor selection to managers putting together a telecommunications system. With a voice/data PABX, you're locked into a single vendor. By using separate switches for voice and data, however, you can choose the best voice PABX and also the best data PABX for your needs.

Once you've decided to go with DOVs, the next decision is which DOV to choose. DOVs are not all alike. Range is one important feature to consider. The maximum transmission distance between a central DOV and a remote DOV may be as little as one mile or as much as three miles, depending on the model. The transmission standards supported by different models also vary. All currently available DOVs support asynchronous operation. The Line Miser unit from Gandalf Data Inc. is one of the few that will support synchronous operation.

The speeds at which DOVs can transmit and receive data also vary by vendor and model. Although virtually

all DOVs will handle data at speeds of up to 9,600 bits per second, only the Instalink460 from Micom Systems Inc. will support data at speeds of up to 19,200 bps, in asynchronous mode only.

Installation is another variable. Some models must be installed by the vendor; others can be put in by your staff. Some models also require that you call in the vendor for terminal relocations. Finally, close liaison with the local telephone company is always necessary, unless your organization has a private phone system.

Managers' reasons for choosing DOVs can vary as well. Jerry Paul, information manager for the City of Salinas, CA, decided to use a DOV because his communications center, in the basement of the Salinas City Hall, was built by the federal government as a bomb shelter, with walls 24 inches thick. Paul says, "The U.S. government wouldn't have been too happy if we'd drilled holes for cable conduit in its bomb shelter, but the basement was already equipped for telephone communications."

Paul did not run any cost comparisons of DOV vendors. "We'd been using Micom as a supplier for other equipment and had been very satisfied, so we just decided to stay with it."

Paul now has 12 Instalink460 channels up and running, and has installed enough capacity for 36 more. The cost has worked out to under \$500 per channel. The Instalink460 is connected both to a Micom600 data PABX and a Dimension analog voice PABX from the telephone company.

DOVs are an inexpensive alternative to costly voice/data PABXs or overpriced data add-ons to voice PABXs. DOVs simply use phone wall jacks to plug in data terminals, and when used with a data PABX, can provide data switching and collision detection. By using DOVs, you can avoid running high-priced cable through your installation. If your organization is planning to install new data terminals or augment existing local systems, DOVs are an option you can't afford to ignore. □



Data-over-voice (DOV) communications simplify wiring requirements to workstations by using the same twisted-pair telephone wiring for both voice and data communications. Pictured here is the Line Miser DOV (under the telephone) from Gandalf Data Inc.

WHAT'S THE BEST WAY TO SAVE PDN CONNECT CHARGES?

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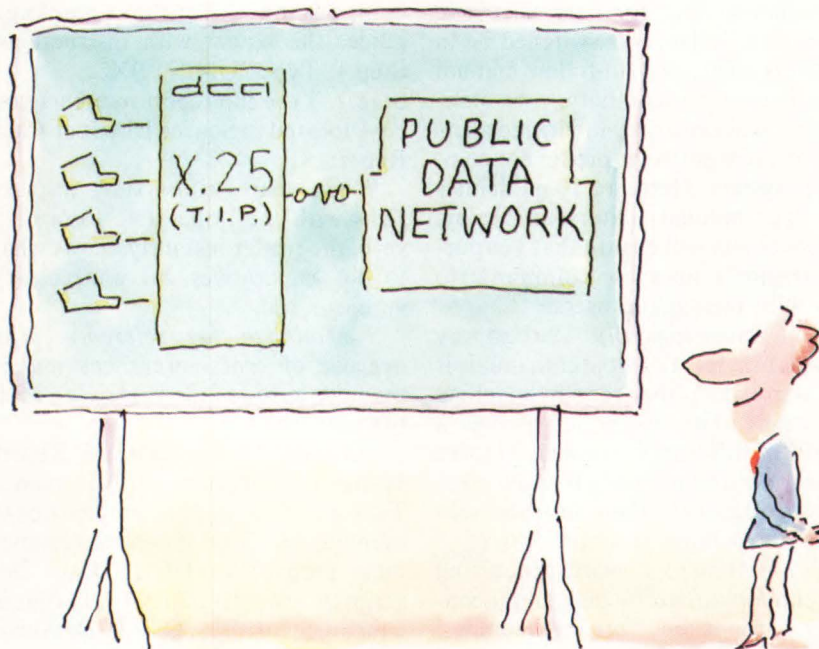
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OFFICE AUTOMATION

Ten tips for better user manuals

When installing the hottest new office workstations and software, the key to raising user productivity often is not the products themselves. Rather, it's the manuals that introduce the innocent to new technology.

Poorly written manuals have plagued computer users for decades—probably since the first electronic computer, Eniac, was switched on in 1946. A clear, easy-to-follow manual can increase productivity, save money, speed acceptance, and increase usage of a new software product or computer system. Here are 10 guidelines for your manual writers to live by. These tenets will ensure that your organization's manuals communicate the right message to users:

1. *Organize logically.* The best way to organize most computer manuals is by user tasks rather than by machine functions. The distinction makes a world of difference to users. They're much more concerned about how the product can help them on their jobs than about how the system works.

For instance, a word-processing manual organized by task might contain sections on "writing memos," "writing letters," "writing technical papers using footnotes," "writing in script format," "editing your work," and "producing customized direct-mail letters." Those headings are far more appealing and meaningful to users than section headings like "dot commands," "cursor movement," "block/marker identification," "file operations," "scroll text," and "toggles."

To ensure that manuals are sensibly organized, direct your writers to first make an outline. They can use the items in the outline as headings and subheadings in the final version. This procedure will help writers prepare manuals that reflect your organiza-

tion's organizational scheme, and also will break the text into short, easy-to-read sections.

2. *Use numbered step-by-step instructions.* Clear instructions leave no room for doubt. Use the "active" narrative voice: Start sentences with imperatives and use direct statements. For example, the manual accompanying a database package guides the reader with instructions: Step 1. Type "UNISTOX" Step 2. Type the report numbers you have located in Source Digest or Data Reports.

When your writers start instructions with the imperative form of a verb, the reader instantly knows what to do. Imperatives cut unnecessary verbiage, too.

3. *Minimize cross-references.* The overuse of cross-references makes manuals hard to follow. Here's a real-life example:

"In order for the FOCUS Report Writer (see Section 2.3.1) to read a TOTAL Database (see Database manual), the user or project designer must prepare a FOCUS Data Description (see Section 3.4.1.1) that is equivalent to the TOTAL Database structure (see Appendix C)."

Instead of learning the system, the user will spend most of his or her time frantically turning pages, switching from section to section for instructions or descriptions vital to understand what he or she is reading.

Cross-references are frustrating and confusing. Use only cross-references that are absolutely necessary for the user to understand the material.

Even better, provide all the information the user will need to understand a particular point in the section of the manual outlining that point. If the material to be referenced is only a sentence or two long, you're better off

repeating it wherever it's needed, rather than continually cross-referencing. If it's more than half a page, and vital to getting your meaning across, then a cross-reference is appropriate.

4. *Repeat procedures until the user gets them right.* For example, the user has to go through the logging-on procedure regardless of which function he or she wants to perform. Should the manual repeat the procedure under every section or assume the user got it right the first time?

We recommend repeating basic procedures (loading disks, accessing programs, using menus) until you can be reasonably certain that the user is comfortable with them. When the manual writer reaches that point with the users, procedures can be reduced to simple statements like "log onto the system" or "set margins for standard paper."

5. *Show users—don't tell them.* Employees would rather *do* than *read*. Keep descriptive text to a minimum; most of the manual should give the user instructions to follow at a terminal or personal computer.

6. *Use lots of illustrations.* When words cannot adequately describe a thought, the manual writer should use illustrations. For example, in addition to writing "Put the tape reel on the take-up drive," present a picture of how the tape reel fits onto the drive.

7. *White space and the right typeface make the manual easier to read.* Readers appreciate the clear, uncluttered look of a manual that uses wide margins and lots of blank, or "white," space.

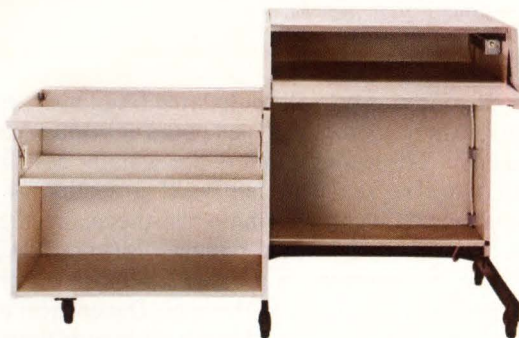
If the manual will not change, typeset the text to give it a clean professional look. Typeset text makes manuals more legible, and it also introduces an element of familiarity. It will help manuals seem like real books, as opposed to slapdash imitations of books.

(Continued on page 70)

One good idea



deserves another



and another



and

another.



At IBM, we've been working to help your business keep up with its computer needs.

That's why we developed our innovative line of IBM Personal Computer Furniture. You'll find work stations, tables and chairs that are custom-designed to accommodate Personal Computers, as well as the people who use them.

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The IBM Synergetix® PC Work Station (pictured in pearl white) provides a convenient and compact workspace for the Personal Computer. In addition, it's completely mobile, so you can move it from office to office. But most important, the entire unit closes and locks, so you can secure and protect your system.

The IBM PC Table (pictured in walnut) is a stationary unit that's economically priced. It has the same durable construction as our PC Work Station, along with some basic security features. What's more, it's also perfect for the IBM PCjr.

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You'll find our IBM PC Furniture in a variety of attractive colors at your IBM Product Center. The IBM PC Work Station is also available at participating retailers. To find out the location nearest you or to order by phone, call *IBM Direct* toll free at 1 800 IBM-2468, ext. 81.

IBM Personal Computer Furniture. It's designed with you and your PC in mind.



OFFICE AUTOMATION

(Continued from page 68)

If your manual will be updated frequently, you'll probably want to reproduce typed pages or printer output to save money. Three-ring binders are usually best for manuals that are revised frequently. If a section or a page is changed, you can distribute just the changed portion, not a revision of the whole manual. But don't skimp on the "type" you present to users. Pick a typewriter or printer typeface that is easy on the eyes. Daisywheel printers, for example, produce much more legible copy than dot-matrix machines. Daisywheel printers are more expensive, but the results will justify the added cost.

8. *Add guideposts to aid readability.* Another ploy to keep the reader on track is adding "guideposts"—a table of contents, introduction, index, and tabs. The table of contents outlines all sections and subsections of the manual. The index should cover key terms and concepts, but not every word in the manual. If a user wonders what to do when a disk is filled to capacity, he or she should be able to find the heading, "Disk, full" in the index.

9. *Break the tension.* Although the manual should be written in a straightforward, instructional tone, an occasional pun, joke, or other "human" interruption can break the tension and help put nervous computer novices at ease. Here's an example from one of the many guides that's been written for the IBM Personal Computer, *The IBM PC Guide*, by James Kelley (Banbury Books, \$30):

"We need just 10 of the 255 characters in IBM's extended set. Thus, we ought to be able to pack some 25.5 times more numeric information into a byte than is permitted by the ASCII coding scheme. That seems reasonable, doesn't it?"

"In fact, this is exactly what is done in practice. I'm not going to put a glaze in your eyes by explaining the arcane coding schemes used—I'd have to look them up anyway!"

10. *Test drive your manual.* Although your technical-communications pros will probably review a manual writer's work, the true test of a manual's effectiveness is that it be so easy that any old user can understand it. So, give drafts of manuals to a few "typical" users for a tryout.

For instance, if a manual helps bank tellers access checking-account balances, give them the manual and see if they can follow the instructions. If they have trouble, so will your organization. Better send your manual writer back to the drawing board. If the users can follow the instructions, you can be confident the manual—and the new automated tool—will be successful. □

Gary Blake is director of The Communication Workshop, a consultancy that advises management on how to improve writing and communication skills. Robert W. Bly is an independent copywriter specializing in high-tech advertising. Blake and Bly are coauthors of Technical Writing: Structure, Standards, and Style (McGraw-Hill, 1982).

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AT&T IS IN TRAVEL.

Before NASA can transport someone into space, they must have access to an incredible amount of information. Numbers. Checkpoints. Hard, cold facts.

It has to be fast and it has to be accurate.

Whom do they call on for help?

They call on us. The people of AT&T Communications.

And with every space shot, 56,000 bits of data are exchanged in an instant.

In the same way, travel agents also need fast, accurate information. They need to know about hotels. Rates. Connecting flights.

Our people can help them, too. We have specialists who can tailor a long distance data network for any kind of business, based on size, needs and volume of information.

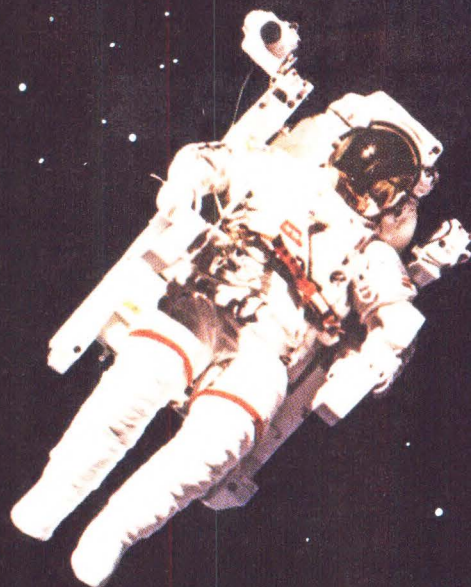
For example, if you're a large company with a large volume of data to transmit, an AT&T account team can show you how to choose the appropriate application from our family of ACCUNET* Digital Services.

First, there's our ACCUNET* T1.5 Service. A high-capacity terrestrial digital service, capable of sending 1.5 megabits per second and providing the transfer of large volumes of information simultaneously between locations. So you have the flexibility

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Then there's DATAPHONE® Digital Service. You can send from 2400 to 56,000 bits of information per second, virtually error free. Furthermore, AT&T has the capability to monitor accuracy, note trouble spots, and take





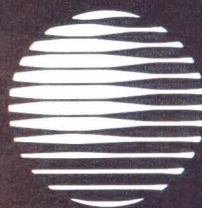
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FOLLOWING THE LEADERS

IBM's obsolescence strategy

When it comes to office systems, IBM is product rich. But although its OA riches are the source of considerable wealth for Big Blue, they're also worrisome. No other office-systems manufacturer has more dinosaurs and dodo birds in its product lines.

IBM's challenge is to make sense out of its vast array of incompatible office products. The old products are assets in terms of the knowledge and experience IBM gained from them, and they do contribute to the profit pie. But these products are also liabilities: They're less profitable, but Big Blue cannot afford to abandon them and still sustain its remarkable growth rate.

IBM must handle the fast-growing market for automated-office products with care. About 20 percent of its revenues of \$40.2 billion last year were

gained from the sale of office products. That's \$8 billion, nearly four times the total annual sales of IBM's closest current rival in the office, Wang Laboratories of Lowell, MA. IBM says it expects the worldwide office-systems business to be worth \$40 billion a year by the end of this decade.

A problem for IBM and all of its major competitors is the steady drop in the price of office workstations. Price drops mean Big Blue and its competitors must chase sales even harder just to maintain current profit levels. An obvious reason for the price-reduction trend is the upgrading of the microcomputer into a more flexible office machine, best exemplified by IBM's offering of software for its Displaywriter word processor on its Personal Computer.

How will IBM compensate for

reduced revenues and not only sustain revenues but increase them by the margins projected in its growth objectives? The answer is to expand the scope of its office products to include data and word processing, database management, graphics, electronic mail, teleconferencing, and whatever else executives, managers, and professionals do in offices.

IBM's other big hope for increased revenues and profits is an expected influx of business from new users. Contrary to some estimates, the office market is not saturated and should continue to grow at a respectable annual rate of between 17 percent and 20 percent (by value) during the rest of this decade. However, if you're a top-tier vendor like Wang or IBM, you can't kill your dinosaurs or relegate them to museums overnight.

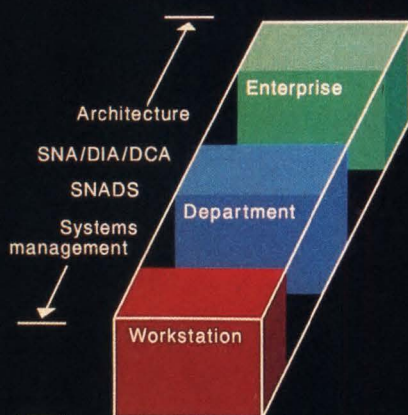
How can IBM integrate a plethora of old, incompatible office products into cohesive office systems? The answer is through its SNA/DIA/DCA and SNADS architectural standards. These standards are the glue that holds IBM's many hardware and software offerings together.

In recent "statements of direction," IBM has indicated which path it will follow into the future.

- The June 1980 announcement of the document-interchange facility.
- The November 1982 and November 1983 announcements of cross-product format conversions (these are now available).
- The introduction this spring of its local-area-network (LAN) cabling system, IBM's first step toward offering a full-fledged LAN.

Other IBM signals have included extensions of SNA to handle voice, text, graphics, images, and data-communications. Big Blue has also proposed a token-passing ring net-

Integrated information systems



Management of information
Control of communications
Evolution through architectures
Building on investment

All of IBM's diverse products for the office can be linked to Big Blue's mainframes and minicomputers through Profs and DISOSS.

Photo courtesy of IBM

Both letter-quality and draft hard copy

Fastest document throughput in its class

Both friction and tractor paper feed

Industry standard serial and parallel interfaces.

Better, more versatile operator controls

TI reliability

Compatibility with third-party and proprietary software

Better, more durable easy-access font modules

Introducing the TI 855 microprinter.

No other printer says better so many ways.

Feature for feature, no other microprinter can match the versatility, compatibility, reliability and productivity of the OMNI 800® Model 855 microprinter. Here's why.

Two Printers In One. With the TI 855 you get the speed of dot matrix draft copy. Plus the precise clarity of the most advanced matrix technology for letter-quality print. It's two printers in one — at one low price.

A Great Family Name. Texas Instruments is known for providing the world with the industry standard for printers — the TI 810. TI builds the same reliability into every 800 series microprinter. Both the 855 and the data processing Model 850 are part of the expanding TI line of high-performance, low-cost microprinters.

Hardware Compatible. The TI 855 microprinter is compatible with all major PC hardware. And it provides both serial RS232C subset and "Centronics-type" parallel as standard interfaces.

Software Compatible. The TI 855 uses industry standard escape sequences for compatibility with virtually all third-party software. And for those with proprietary software needs, a model is available with ANSI standard escape sequences.

Tough Font Modules For Quick Character Change. Three font modules can be inserted into the front of the printer at one time, and are accessed individually. Each contains both draft- and letter-quality character sets. They're easier to use, more reliable and more durable than traditional metal or plastic daisy wheels.

More Productivity Than Any Other Microprinter. The 855 offers both friction and tractor paper feed, to handle all types of word and data processing applications. A quick-change snap-in cartridge ribbon. Raster and mosaic graphics. And intelligent printing which maximizes document throughput — regardless of format.

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TEXAS INSTRUMENTS

Creating useful products and services for you.

FOLLOWING THE LEADERS

work to the IEEE LAN-standards committee and published details of the DIA/DCA formats and protocols.

The office-systems planners at IBM know that 80 percent of all information is communicated within an organization. Thus, a carefully designed LAN that meets all the future requirements of corporations is critical. IBM's LAN standard must last for at least 20 years. But IBM's moves have left key questions unanswered. For example, bit rates, which are measures of transmission speeds, will vary widely within and between the work groups of different corporations. Peak loads may reach an average of 1,000 bits per second per user workstation by the late 1980s. As compound documents integrating data, voice, graphics, and images appear, local bit rates will grow exponentially. How will IBM allow any terminal, PC, workstation, or other device communicate with any other terminal, PC, workstation, or device *and* host computer? Via an LAN or a wide-area network (WAN)?

Not just unintelligent bit streams

Micom left out

Micom Systems Inc. was slighted in the 1984 edition of "The Top 100 in data processing," published in June. The \$113.7 million grossed by the Chatsworth, CA-based vendor of data-communications hardware during 1983 would have made it the 90th largest dp vendor—if its revenues from the sale of data-only private automatic

branch exchanges (PABXs) were included. However, the Gartner Group Inc., which prepared the pullout report, excluded PABXs from its listing of "computer products." In actuality, most PABXs handle voice communications only. In future editions of the Top 100, data-only PABXs will be included—and so will Micom.

will be sent between these many different products. Session-level, presentation-level, and application-level communications must take place. Those forms of communications are not easy to accomplish. Some existing products must be retrofitted with protocol converters to let them communicate at these higher levels within and between systems in a corporation. Different chip sets and software are required for each of the major classes of IBM products.

In addition, fault-tolerance must be

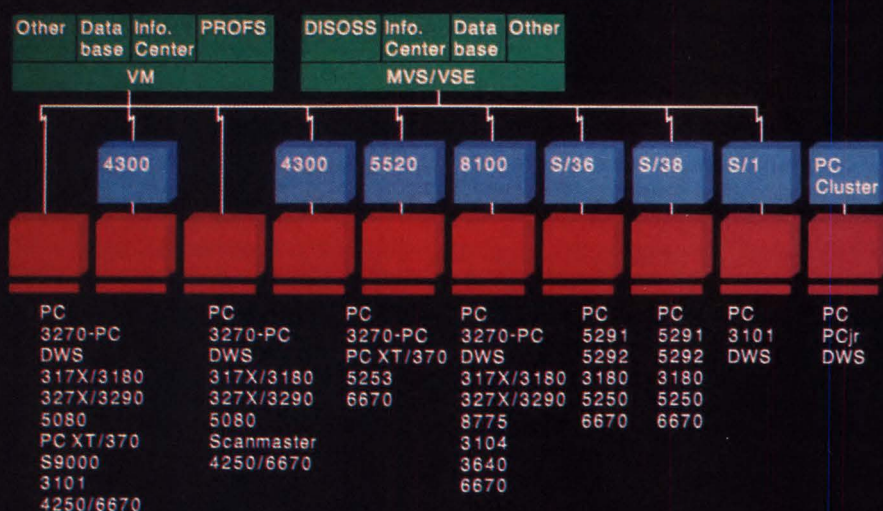
provided within the LAN and WAN, with automatic fault detection and bypass switching to keep operations running during failures.

IBM's LAN for office systems must also provide for future expansion into other features—the ability to handle different speeds, different types and configurations of workstations, and different WAN-gateway protocols, including SDLC and X.25.

IBM has been criticized for only announcing the cabling system for its LAN. By announcing only the first part of its LAN, IBM may be exercising caution in a very important product category. Big Blue cannot afford to make any major mistakes with its LAN—the stakes are too high. No other manufacturer except AT&T has more to lose (or gain) from an LAN offering. No other vendor has such a broad product line and such a vast array of software. Therefore, IBM faces a bigger challenge than do its competitors to integrate.

Will IBM's forthcoming LAN—expected in two years—become a de facto standard? No one can say for sure. Ten years passed before IBM's SNA protocol became an industry standard. IBM's Fortune 500 customers must first indicate a strong preference for Big Blue's unique LAN, and that preference won't become evident until two to three years *after* the product is shipped. Thus, IBM's LAN may not be acknowledged as a standard until the end of this decade. □

Integrated information systems



IBM's marketing strategy presents corporations with an evolutionary approach to office systems, starting with workstations and working upwards to departmental systems and corporate (enterprise) systems. Photos courtesy of IBM

Photos courtesy of IBM

Internal modem
direct-connects to any
telephone network.

Standard 132 columns
(compressed print) add
wide format for spread-
sheets, financial data.

Full-size keyboard is
a practical tool.

Exclusive program
cartridges add
custom functions
now; added
expandability
later.

All you appreciate in
the 745 and more — in an
even smaller, lighter
package.

Rechargeable
battery puts you
in the know
wherever you go.

TI Silent 700™
operation won't add noise
to surroundings.

Only Texas Instruments packs more portable terminal into less space.

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Sylvan-Lawrence, owner of the Port Authority building (above), was also the contractor that built CSC's data center. One hundred employees work in the center, 30 of which are professionals.

The Computer Service Center (CSC) for the City of New York works on a grand scale keeping a grand-sized city up and running.

CSC has been in its quarters since New York's data-processing operations were unified in 1979. The new department moved into the old Port Authority of New York and New Jersey building at the corner of Eighth Avenue and 16th Street, bringing computers to space that was previously occupied by a manufacturer. The conversion was handled by Lizardos Engineering, a local firm. "The ceilings were 20 feet high, allowing us to install false ceilings and floors," recalls Thomas D'Auria, first assistant commissioner. "Some of the new walls



Joseph Giannotti (right), director of MIS/dp, designed CSC's data center with the help of an outside engineering consultant. He also oversaw its construction. Giannotti's IBM Personal Computer sits close at hand, providing ready access to CSC's mainframes via a micro-to-mainframe-link package.

by Theresa Conlon, Staff Writer

Photos by Ted Hardin



CSC runs technical classes on documentation and specific data-center services for users (top). VDT screens are projected on a large screen using a Sony Videoscope RVP-460, allowing the entire class to see data and commands. At left, operators monitor job entries at the main console and teleprocessing-control board. Tape drives were supplied by Storage Technology. The city's seal (above) contains images of a simpler time.

Outstanding Data Center

are movable in case we need space for more computer equipment."

CSC doesn't have abundant space, but the amount of information and work it processes each day seems endless. The data center provides computing services for more than 60 city departments and agencies, including the police, fire, and sanitation departments, and the planning department.

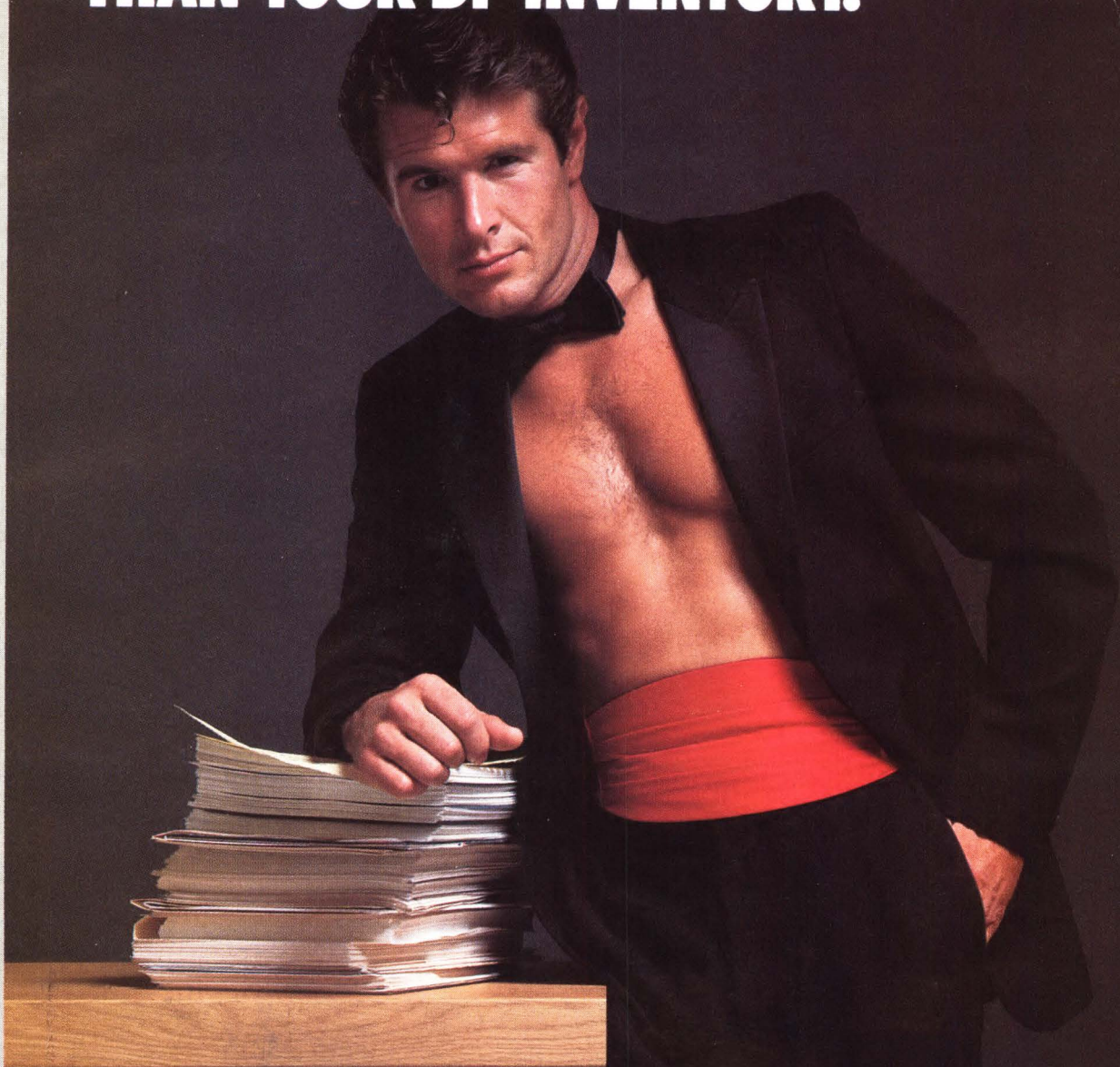
CSC also offers remote job-entry stations for batch processing, interactive timesharing facilities under IBM's VM/CMS operating system, data-management services under IBM's Customer Information Control System (CICS), documentation services, a user hot line, and project-development assistance. □

(Continued on page 82)



The information center (top) helps nontechnical users understand the latest personal-computer software. A guard station (left) at the data center's entrance is manned 24 hours a day. Guards monitor activity throughout the facility with the help of RCA TV cameras. Before entering the data center, an employee must insert a card and punch an identification number into a Sentracon card-key system (above).

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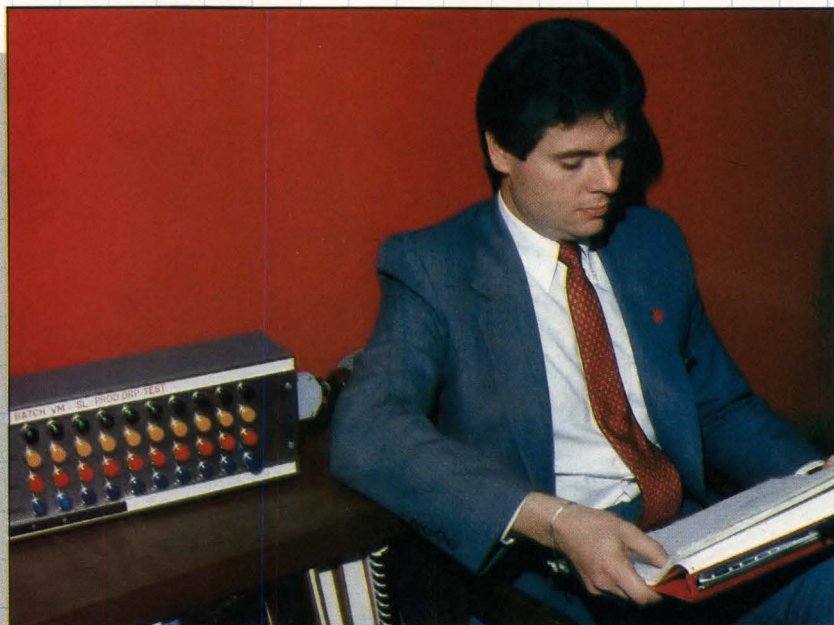
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A custom system-status indicator alerts Thomas D'Auria, first assistant commissioner, about software failures (top). Freight elevators as big as loading docks (left) are reminders of the building's industrial past. Now, elevators carry CSC trucks and heavy computer equipment 11 stories to the data center. The motor-generator and electrical room (above) supply power to CSC's IBM 3033 and 3081 mainframes.



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DP DISASTER: READY OR NOT

Sixth in the 1984 series of roundtables

John Cushma, Donald G. Davis, Toni B. Fish, Mike Fedele, Ed Zietler, and David Earley (left to right) discuss the growing



Disaster-recovery planning has become more strategically important, and some corporations have responded with more sophisticated preparations for disabling crises. In these corporations, the bigwigs in the data-processing department are no longer being left to take care of disaster planning. Rather, top management is learning about the possibilities for and implications of dp disasters—and getting involved. What's more, the definition of a dp disaster is expanding: Disasters are no longer limited to headline-grabbing calamities that can create havoc in an organization or threaten its very survival. Seemingly insignificant occurrences, like brief power glitches and careless placement of wiring, can lead

to episodes that also have a catastrophic effect on businesses.

Computer Decisions recently hosted a lively discussion about disaster-recovery planning in which emerging insights, trends, and corporate awareness were scrutinized by several experts and users. The roundtable participants also provided real-life insight into contingency planning. The participants began by exploring the startling fact that disaster-recovery planning is still in its infancy in many major corporations. Some organizations have plans but fail to regularly test them, and some don't even have plans.

Donald Davis: I speak at contingency-planning and disaster-recovery workshops, and among an average audience of 70 or 80 people, if you ask how many have a disaster-recovery

plan, a maximum of 10 hands go up.

William Gladden: Thirty-five percent to 40 percent of the Fortune 500 have viable plans, but probably only 5 percent to 10 percent really test them.

Toni B. Fish: Viable is the key word here. Many corporations have plans, but a very low percentage have tested them. If a plan isn't tested, it can't be classified as a workable, viable plan.

Ed Zeitler: If the definition of a viable disaster plan implies that it will work without a hitch—when something crashes you can go by the book—I don't think anybody has one. The intent is to have a plan of action—a framework, if you will, for major decisions. The real-life situation is inevitably going to be different from anything you anticipated. You may find a key element missing from your plan during a test or an actual disaster, but

Disaster-recovery planning is an expensive, arduous task, but the result can ensure your organization's survival.

by Mary Miles, New England Editor

importance of disaster-recovery planning.

Photos by Bob Ward



at least you know how the missing piece should fit in with the overall plan.

Why is corporate America failing to prepare for dp disasters? The participants cited a variety of reasons. Disaster-recovery planning is expensive and time consuming. In addition, it's easy for executives to lull themselves into a false feeling of security.

John Cushma: It's analogous to thinking about life insurance. Executives don't like to talk about disasters—they don't want to think about bad happenings. There is also an assumption in most organizations that the employees are going to be able to respond to any type of situation. That's one reason that until the last four or five years, little had been done to address the need for disaster planning. The pressure that some top manage-

ment has been getting from outside—for example, from external auditors and the U.S. comptroller of the currency—has brought new attention to this problem, as has some of the publicity about recent disasters. Another factor is that a disaster-recovery plan is not a revenue producer, and that's where decision-makers are focused.

Mike Fedele: Another factor is the high cost of disaster-recovery planning. Obviously, as your installation grows, planning becomes even more expensive. And it's not easy to do—it's usually a long job. Dp pros are usually expected to complete these plans, but they have many fires to put out anyway, so they just may not address disaster-recovery planning. The disaster-recovery plan is often proposed as a project and carried in the

budget from year to year, with everyone hoping it will somehow get done.

Michael Carr: Our experience at St. Paul Fire and Marine indicates that middle management recognizes the need for effective disaster-recovery planning but, unfortunately, that need is not communicated to senior management. The corporation must be behind an efficient disaster-recovery program.

Some industries and businesses are leaders in disaster-recovery planning, while others take virtually no action. What's the reason for the wide divergence?

Zeitler: Banks have excellent programs. For one thing, we have a lot of very real pressures. For example, the comptroller of the currency recently ruled that the board of directors of every bank in the country must annu-

Dp Disaster

(Continued from page 85)

Zeitler, Michael Carr, Cushma, William Gladden, John Rudolph, George Trowbridge, and Roy Oakes (left to right) explore why



ally review and approve the dp disaster-recovery program. Also, if we lose any of our systems for any length of time, the amount of money at risk is just astronomical. The numbers are large enough that we don't have separate budgets for separate data centers because it's so important that we be able to shift jobs among our data centers very quickly. We have many data centers running jobs that can be shifted back and forth. We don't even consider contracting for space in a "shell" or cold site and moving some equipment out in case something happens. In case of a failure, we have to get up and running immediately.

Roy Oakes: Banks have a heightened awareness at the corporate level because there are billions of dollars at stake every day. If its data processing is not kept up, a bank will very rapidly go under.

John Rudolph: At Quaker State, disaster-recovery planning was recently defined as a corporate-level function and a position has been created to address disaster recovery and data security. We have worked hard on our plan during the last year

and are testing it now. I can't speak for the petroleum industry as a whole, but I believe awareness is quite high, considering the recent maritime bombings in the Persian Gulf, as a result of the war between Iran and Iraq. Oil companies are probably prime targets for sabotage.

Fish: The first corporations I knew of that had extensive plans were petroleum producers. Some of these—Mobil and Shell—had parallel data centers and recognized the economies of building excess capacity into their plans years ago.

Cushma: One of the reasons that's true is that the big oil companies have large credit-card operations. They are in the financial-transaction and information-handling business—one of their products is information. It's a very different strategy to try to back up a facility manufacturing cars or batteries. We don't move money around in banks. We move little dits and dots and blips. A financial transaction involving billions of dollars takes 3 seconds to move from anywhere in this country to Japan. Those are the activities you can back up with disaster plans; you can't back up a

football-field-sized manufacturing facility, it's just not feasible. That's why the information processors—insurance carriers and financial institutions with large credit operations—have the highest levels of disaster planning.

Fedele: Duracell is a manufacturer with a viable, tested disaster-recovery plan, but maybe we're not typical. Whenever you manufacture a product, you normally deal with an inventory. If it's cars, batteries, widgets, or whatever, you may have hundreds or thousands of items sitting in a lot. You adopt the stance that your dp facilities could be down for five days or a week without hurting sales and operations. The key difference is the product, and manufacturers just haven't taken the lead.

Zeitler: Another consideration affecting disaster-recovery planning is the move to online systems. A lot of large data centers were not prepared to go online and they have been killed. They don't spend the bucks—and their user communities have started tromping on them with hobnail boots, demanding that online systems be backed up for cpu failures—never

so many corporations are unprepared for dp disasters.



mind disasters. All of a sudden, dp managers are beginning to realize what the implications of failure are for the users, and that has tended to accentuate disaster planning in many corporations.

Fedele: When the computer is down, top management and the users become very aware of it. They have no way to process orders or bill customers. Top management begins to wonder what would happen if a serious problem arose? What would the corporation do to cope? That's when the brass starts to think about planning.

Another incentive comes from the auditors. They've grown more aware of the dangers, partly because of new professional standards, partly because of the move to online systems, and partly because of personal computers. We've all had disasters—not necessarily a hurricane or a bombing, but things happen. That's when disaster-recovery planning begins.

Fish: Early on, we said only 5 percent to 10 percent of the Fortune 500 have viable plans. We need to be careful not to make it sound as if there are a lot more plans out there than there

are. I still don't think many corporations have recovery plans. Many are just playing catch-up, rather than

designing plans, because planning is so expensive. The new guys on the block are designing with the thought

Roundtable participants

Moderator: Mary Miles, New England Editor, *Computer Decisions*.

Michael Carr, commercial-underwriting manager, St. Paul Fire & Marine Insurance Co., New York.

John Cushma, vice president, technical-support services, First National Bank of Atlanta.

Donald G. Davis, manager, corporate data centers, Burroughs Corp., Detroit.

David Earley, service-ventures group manager, Digital Equipment Corp., Maynard, MA.

Mike Fedele, assistant director, corporate data center, Duracell Inc., Bethel, CT.

Toni B. Fish, manager, computer security and contingency planning, Shearson/American Express, New York.

William Gladden, corporate director of dp operations, K-Mart Corp., Troy, MI.

Roy Oakes, senior consultant, HSH National Management Inc., Columbus, OH.

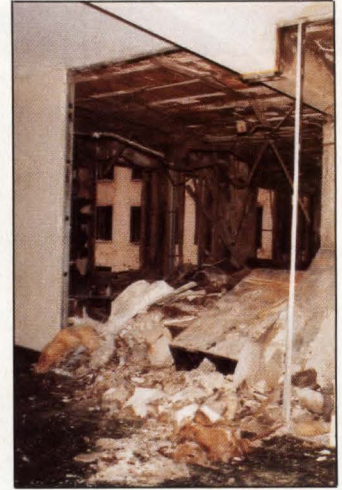
John Rudolph, corporate-security administrator, Quaker State Oil Refining Co., Oil City, PA.

George Trowbridge, director, computer services, Hancock Dikewood Services Inc., Albuquerque, NM.

Ed Zeitler, vice president and manager, ADP security division, Security Pacific National Bank, Glendale, CA.

Dp Disaster

(Continued from page 87)



Northwestern National Bank of Minneapolis' data center (left) was devastated by a four-story blaze in 1982. Also wiped out were the reception area (center) and control center.

of providing several levels of redundancy, and they will be ahead in the long run. But disaster-recovery plans are still not common.

Some corporations hurt their own disaster-recovery planning by assigning responsibility for planning to the dp department. Also, including funds for disaster planning in the dp department's budget can be an inhibiting factor.

Fish: At Shearson/American Express, disaster planning is not lumped into one large budget. When you put disaster-recovery planning in the dp budget, you risk losing sight of the fact that it is not just a dp problem. Disaster-recovery planning is a corporate function; if it gets lost in the dp budget, you're going to back up dp's data, but that's all you're going to back up. For example, we have several critical user areas—securities-trading floors, back-order operations, order rooms. If those operations aren't backed up, we've spent a lot of money to back up dp, but let the user facilities that feed into dp fail.

George Trowbridge: At Hancock Dikewood Services, our disaster-recovery plan and its maintenance, testing, and so forth is under the dp budget, which means I have to divide the money. Sometimes I can't come up with enough money to both serve the users and do what I want with the disaster-recovery effort. The disaster-recovery plan should be separated

from computer operations.

Zeitler: At Security Pacific National Bank, disaster planning for dp has to occur at the line-management level within data processing. You can't have an ivory-tower group or some third-party organization do the job; it's got to be the manager of operations and the manager of applications. They have to be responsible for a relevant plan. So it seems logical that the budget would be within dp.

David Earley: At DEC, we have to handle the budget issue 200 different ways. Obviously, critical corporate applications are backed up and administered through a dedicated organization. However, in our other 250 or so data centers worldwide, you will find quite a variety of disaster-planning expertise and investments of different sizes. Basically, disaster planning is budgeted with the rest of computer operations. It's not a separate line item in the budget.

Fedele: At Duracell, the disaster-recovery plan is part of the dp budget, but it is a separate line item. That's very important, because if you think only in terms of backing up dp, the emphasis is going to be on backup for dp's services, equipment, and files. The poor user who sits next to the computer center and gets wiped out along with the center has nowhere to go. You have all this great information and hardware running, but if there's no user, what's it all for?

Keeping the disaster-recovery plan a separate line item means that some portions of that money and support staff will be allocated to the users, so they themselves can have a disaster plan.

If an MIS/dp executive's employer doesn't have a disaster-recovery plan, what's the best way to get one going? Should the executive approach someone in top management or go it alone?

William Gladden: Top management at K-Mart got involved after an educational process, with the dp department and the internal and external auditors providing input. The brass is also aware of and sensitive about its responsibility to protect data under the Foreign Corrupt Practices Act. Once top executives got involved, they really stayed involved through the entire process. We conducted the impact analysis and did the feasibility study on the different alternatives for disaster recovery, all the time reporting to top management. The last step was to develop the disaster-recovery plan. At that point, management also authorized us to give the plan the number-one priority at our data center, so we had all the resources we needed to put the plan together in a timely manner.

Trowbridge: At Hancock Dikewood, where we provide services for health-maintenance organizations, getting a plan started was a problem. The first

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Dp Disaster

(Continued from page 88)



The aftermath of this disaster wasn't as bad as it might have been: The bank had a disaster-recovery plan that worked. Pictured here, a view of the lobby and two more views of the data center.

real commitment I was able to obtain was from the senior vice president of systems. He organized a committee. There's no question in my mind that it's vital to get and maintain a commitment from upper management.

Cushma: Selling the idea to the top executives early in the process and making sure their interest stays high are the keys. It wasn't too long ago that when a company signed up for a backup site, everyone said, "Great, now we can relax because we have a disaster-recovery plan." You simply must get top management to understand that installing the backup central-processing power is probably the easiest part of putting a plan in place. It is the communications and storage facilities, the people, and the accessibility of systems to users that will make or break your plan.

Zeitler: It's not hard to sell the idea to top executives. The really important people to involve are the line managers—the managers who run the operations, the technical services, and the application-support groups. If they don't participate, it ain't going to get done! Lining up these commitments is a pain in the neck, but if these managers aren't totally sold, committed, and ready to be responsible, you'll fail.

Davis: One of the reasons disaster-recovery planning hasn't been going on at the lower levels is that people there have heard it is hard to do. They

won't even address it. Back in the late '60s, Burroughs started right at the grass-roots level, and our plans evolved from that level because the data-center-operations managers believed it was part of their duty to protect the data. That's the focal point: If those people aren't interested or are afraid, the planning just isn't going to get started.

We have used internal and outside auditors to help us line up these managers. Our president wrote a letter to all department sections, telling them, "You'd better believe one thing, that I read all the audits that come in, and you people had better do the job!" He got behind us, and we got action.

Fish: At Shearson, we also have a high level of commitment. People know disaster-recovery planning is an important part of their jobs. They will do it. Their performance at it will be measured. They will consider it when they make a decision. This sort of pressure has to come from an appropriately high level, and has to be constantly hammered home. Until it's part of each manager's mindset, you can forget about contingency planning.

Carr: Ms. Fish's point is well taken. A disaster-recovery plan has to be a living document; it has to be monitored and maintained on a systematic basis. It has to be incorporated into the daily operation. We often recommend that a client adopt a disaster-

recovery plan, but the organization responds by developing a plan only to put it in a bottom drawer. It's never tested until a fire erupts or something blows up, and everyone goes running for the manual.

Cushma: The advent of minicomputers and personal computers has given departments and individuals their own data centers. They think that's great. But they should know that they also have to be able to answer the question: "When it's not there any longer, what are you going to do to get yourself back in business?"

Of course, getting top executives to agree to plan for dp disasters and convincing them to pay for the effort are two different chores, the participants noted.

Fedele: You have to deal with dp as if it were an asset of the corporation. If top management doesn't see dp as an asset, it obviously won't take much interest in disaster recovery.

Davis: It's a matter of the top executives realizing that in both marketing and manufacturing, data are critical to remaining competitive and staying in business. If they do, they aren't likely to squawk about the cost of a disaster-recovery plan.

Cushma: It's important to understand that as managers, we are all asked to assess and take risks. That's what our job really is. So, helping the executives, who are probably the biggest risk-takers in the organization, be

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Dp Disaster

(Continued from page 90)

aware of the importance of a corporate-wide disaster-recovery plan is the key to having them make an appropriate expenditure to get what you need. One commitment follows the other.

Are there any rules of thumb on the cost of readying, testing, and maintaining a disaster-recovery plan that MIS/dp executives should present to top management?

Earley: At DEC, we quizzed customers who already had plans in place. In the average Fortune 1,000 corporation, the resources committed to get a disaster-recovery plan off the ground totaled six months, or 50 percent of a full-time coordinator's time. We haven't been able to break disaster planning down to specific services—what people spend on storage, backup services, or telecommunications. There is no way to get a handle on this because it varies.

Cushma: Actually, that's probably one of the worst subjects you could bring to top management. We don't want the plan to be a dp problem, but if we try to quantify it, it gets put in the context of the dp budget.

Zeitler: That's right. It's nearly impossible to give any rules of thumb that say, "Here's what each function or each department ought to be allocated for the disaster-recovery plan." It probably always costs more than you think.

Fish: Somehow, we have to get away

from always tying disaster-recovery planning to the dp budget. For small organizations, it may in fact be only a dp problem; in a disaster such companies may be able to take their users and go someplace else without having a massive problem—so there's just the cost of backup. However, the larger you get, the more complicated the contingency planning becomes and the more you have to get out of that mindset of associating disaster planning with dp.

However, we do have benchmarks. The percentage we use is no more than 10 percent of the total dp budget. This is only for facilities, hardware, and communications. It does include some of the testing costs, but doesn't include maintenance. That is charged to another cost center.

Cushma: You're probably not going to have total backup for all of your facilities. It's a physical impossibility. What you must plan for is the survival of the corporation. You should not plan to start doing business as usual immediately after a disaster. You are just not going to be able to provide that report that Joe Blow wants on his desk every day at 1 p.m. That's an idea that's tough to sell.

Fish: That's right. When we talk about a backup site and spend a certain amount of money on it, managers should know that when and if we use the site, they are not even going to remain competitive. At that point it is not a matter of being competitive. It's a matter of staying on the street! Hopefully, you'll be able to return to a competitive position quickly. But you don't hope to remain competitive, you hope to survive, and

that's all.

The huge time commitment needed to set up a disaster-recovery plan is often cited as a big barrier to widespread corporate acceptance of disaster-recovery planning. How much time does an organization need to set up a plan?

Trowbridge: It took us about six months to put a written plan into place. It took another three or four months to gather all the resources that had to be taken to an off-site facility and prepare to activate the plan. We have done some minor tests, but nothing really significant. For a large corporation, the process could take much longer.

Gladden: At K-Mart, the impact analysis took about six months. The feasibility study took six more. We needed about nine months to develop the actual disaster-recovery plan. We broke that time period into two parts. The short-term task was to determine whether or not we could use a hot site. After deciding we could, we devoted the next seven months to readying a permanent plan that also included testing and debugging. Every two months, we have an all-teams test at our hot site [Corporate Contingency Services; New Hudson, MI].

Of a 700-member dp staff, 25 to 30 pros were involved in this effort. The startup cost, which includes all one-time expenditures, was about \$80,000. The ongoing expenditures will be about \$160,000 a year. The annual cost represents less than 1 percent of the dp department's budget at K-Mart headquarters.

Flexibility is crucial to success in

(Continued on page 96)



"The intent is to have a plan of action for making major decisions."

Zeitler, Security Pacific National Bank

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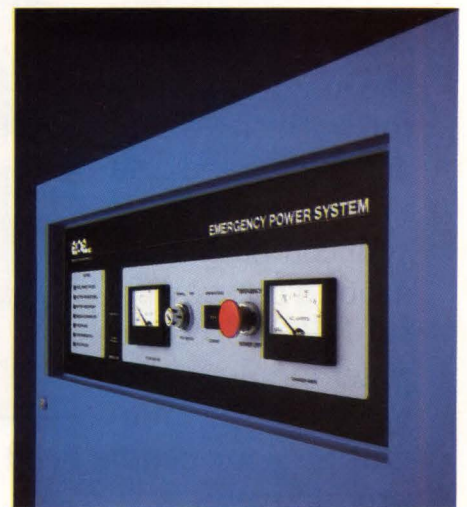
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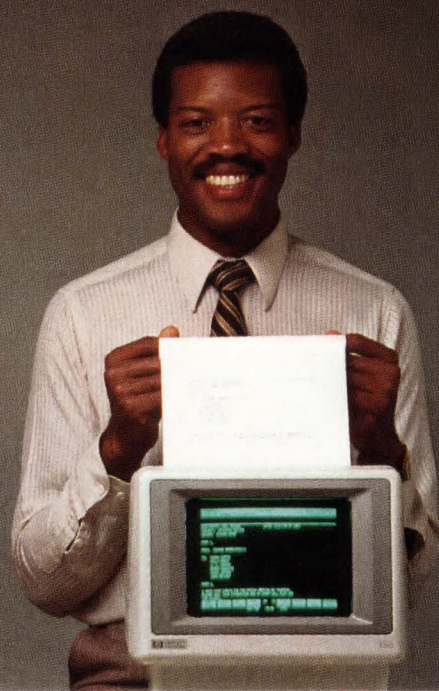
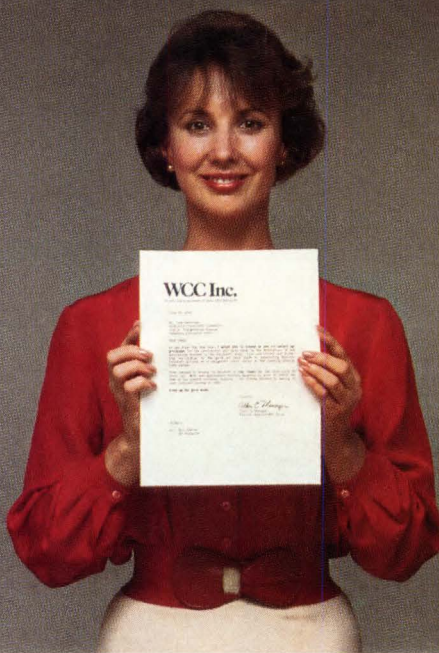
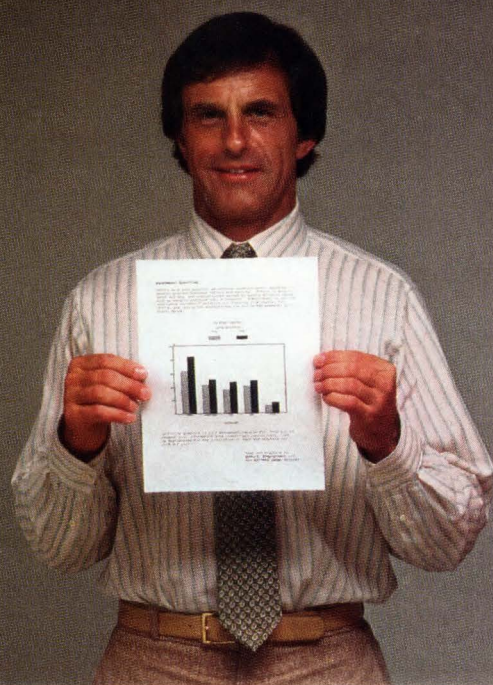
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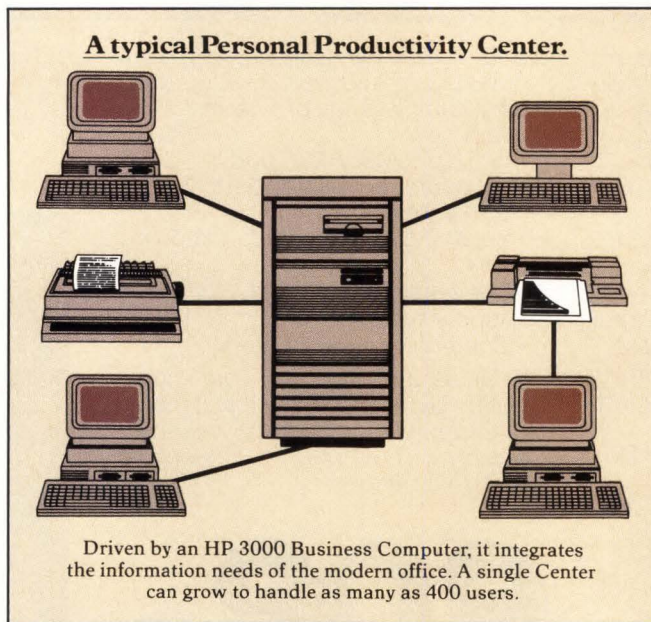
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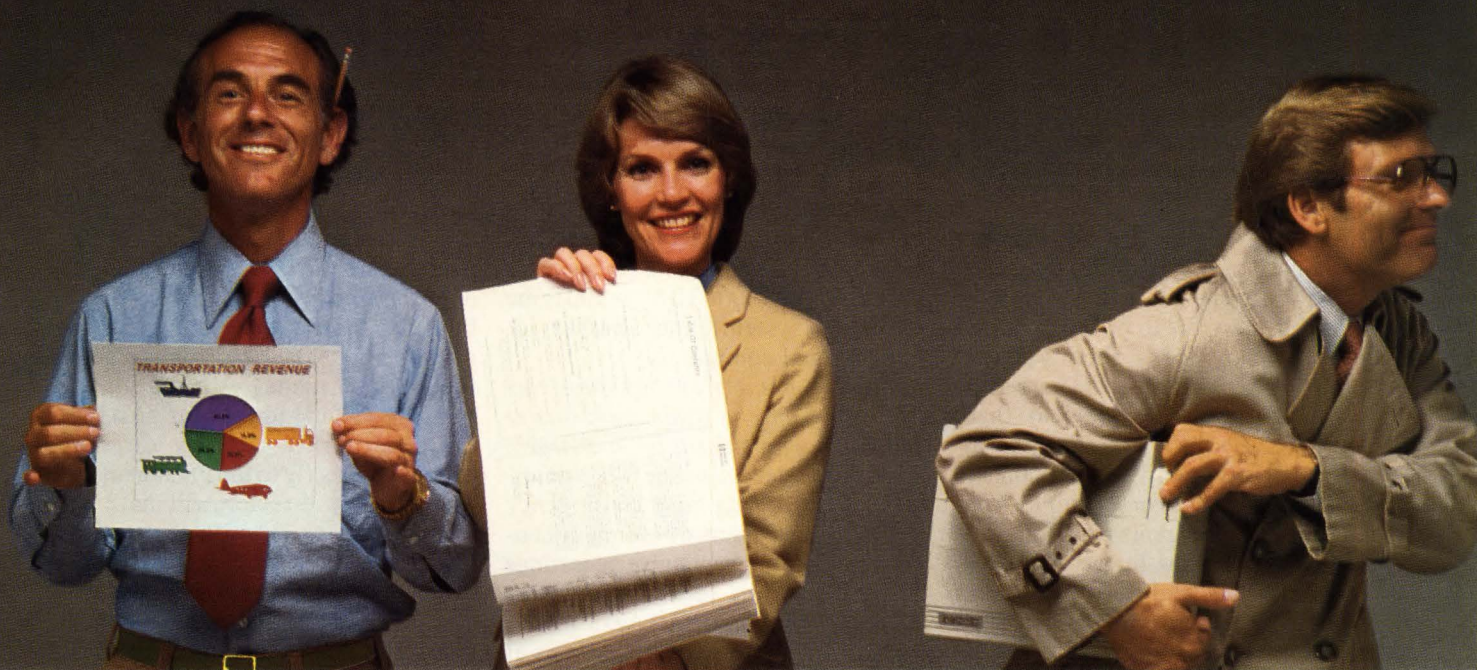
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Dp Disaster

(Continued from page 92)

disaster-recovery planning, according to the participants. As businesses and systems change, the plan must be modified.

Cushman: Actually, disaster-recovery planning is an ongoing process. You are never finished with it. Your way of doing business has to be incorporated into that plan. Today, there's no reason to reinvent the wheel. There are a lot of consulting services out there and a lot of written material that almost allows you to fill in the blanks to generate a plan. For example, consultants advise organizations on operating systems, how to set up a shell, and hardware and software inventories. One factor to remember, however, is that every time you make a major change in your business or systems, it must be reflected in your contingency strategies.

Gladden: Probably one of the most difficult matters we had to address was managing change, especially in application development and hardware and software upgrades and modifications. And that really just scratches the surface because a plan of this type touches every part of the data center. Change-control mechanisms have to be put in place to keep the plan effective.

Zeitler: In a large company, you can have lots of different plans. Within the dp organization, we have centers that have different kinds of equip-

ment and different user communities. We may have one plan for the large [IBM] MVS-based mainframes that are our backbone systems and another for the international-banking group; one for our large systems based on VM [an IBM mainframe operating system] and another for our personal computers.

Since so many groups in large corporations have a stake in disaster planning, who should be in charge?

Fish: You need someone who identifies with security and contingency planning. A person whose main concern is operations will give operations his or her prime focus; contingency planning will take a back seat. I don't win all my battles, and that's as it should be, because contingency planning should not drive the organization. I have to play the game and I lose a few.

Fedele: A lot depends on the size of the organization. Shearson is a big company. At Duracell, we don't have one specific entity or person to deal with disaster planning. However, we believe it's important to get everyone's input. Our planning is done by the management of the data center. It encompasses support, programming, and computer operations. What we try to do is involve all those functions. It's also very important that the user be involved. Otherwise, when he or she comes in and the computer center is charred and the offices aren't there any more, how is the user supposed to know what to do?

Rudolph: If you don't have someone responsible for the disaster-recovery plan as his or her sole function, it does tend to take a back seat.

Gladden: Within our dp department, we have a security administrator. Under that person, we have organized recovery teams with leaders and alternates. Through this kind of organizational structure, you can not only send policy from the top down, but also notify the top decision-makers about the needs or problems the low-level managers have.

We're moving toward hiring a separate corporate-security director reporting directly to top management. The security director will have responsibility for overall information-systems security. Such a position, being high up in the organization, will have the clout of corporate management, and will be monitored by those at the top.

Earley: The disaster-recovery plan is a business plan, so the person in charge should understand the nature of the business. That person should have good project-management skills, a clear understanding of the organization's objectives, and the ability to influence other departments within the organization. In some cases, the dp manager is the best person, but it could easily be another operations person, someone from financial control, or a risk-management specialist. It's best to focus on the skills needed rather than on which department the person comes from.

Fish: You cannot function without the dp line managers. They are the people who are going to go to the backup site and set things up. So, while you need a person with sole responsibility for contingency planning and security, you'd better make sure



"Disaster-recovery is analogous to thinking about life insurance."

Cushman, First National Bank of Atlanta

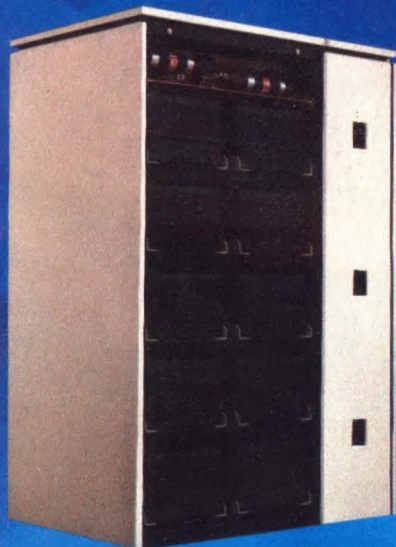
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Dp Disaster

(Continued from page 96)

that the person in charge understands day-to-day dp functioning or you're going to lose out.

Cushma: There is an interesting twist to assigning responsibility to a single disaster-planning or security manager. Others in the organization will perceive a way to abdicate responsibility, and that's one thing you have to be very careful about. People say, "You know, that's a dp problem because it involves computers." That's not always true, though. If you put the responsibility for the disaster-recovery plan somewhere else in the corporation, people may just say, "That's a corporate disaster-recovery problem. That's not my problem." No matter what, you still have to emphasize how each department has to fulfill its particular responsibilities in the plan to make it work.

Davis: The way we have solved that problem is first to make sure users are a part of the planning. Second, when we test the plan, we take users with

us. They have to be an integral part of this whole thing—otherwise, you don't have a viable program.

After assigning responsibility for disaster-recovery planning and designing a plan, what's the best way to test your efforts?

Zeitler: Most executives think of testing as running applications at a backup site. We've found large-scale simulations to be just as effective. They're very expensive, but they are part of an ongoing program to maintain a timely program. We also do smaller simulations—they're like little brain-teasers. We bring the personnel staff in, give them a scenario, and ask how they will react to that situation. For example: "Twenty-five employees were just afflicted by food poisoning at the data-center cafeteria. It looks as if there are a lot more who ate lunch there. What are you going to do? How are you going to cover for the sick employees? Are you going to bring in the day shift?

Are you going to approve the overtime pay?" You'd be surprised how many insights we gain from these brainstorming sessions.

Trowbridge: Surprise simulations are important. They test employee awareness of the plan—who calls whom, and who makes which decisions.

Fish: I'm not so sure about that. Years ago, I was in on a surprise test. I was working for the U.S. Army, and we went to one of the major command centers, walked into the data center, and said, "Consider yourself shut down. Go get your backup tapes, come back in, and work." Something didn't work, and when that happened, somebody tried to make it work, and that created another problem that somebody else tried to cover up. By the time they got finished obscuring plans that didn't work, we had a real disaster on our hands.

I have a fear of just walking in and pulling the plug, especially when you're talking about millions of dol-

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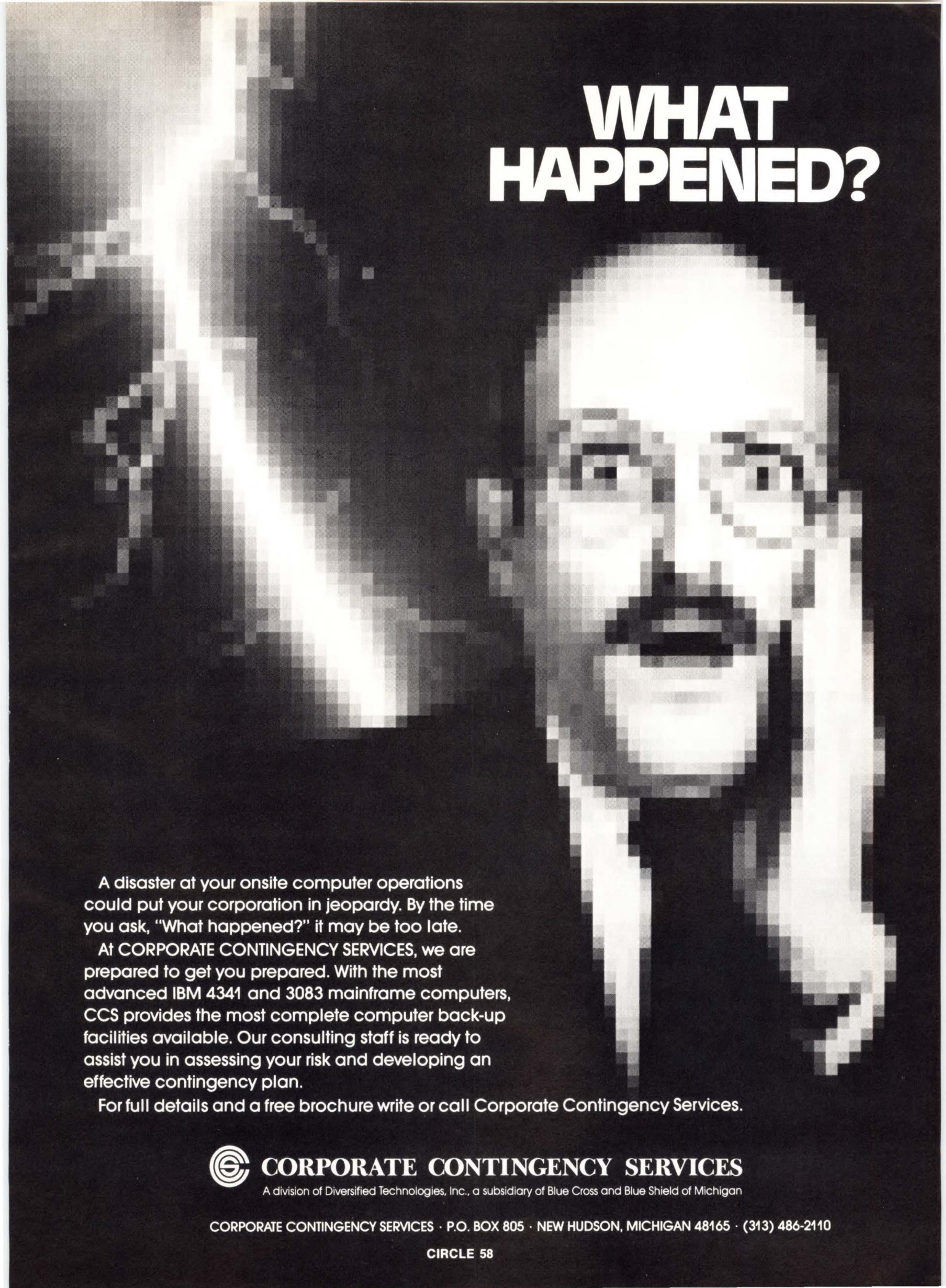
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Dp Disaster

(Continued from page 98)

lars in transactions on a live network. We recently did a planned test, in which we brought in the branches from all over the country, transmitted a full day's worth of work to our backup center, ran it through processing, and brought it back, using the users

to do the entry and the checkup. It was a massive and costly operation taking in employees on the trading floors, in the branches, and in systems-support groups. Because we have such a large network—primarily of backed-up leased lines—we also

test portions of it daily to make sure the lines are functioning.

We also do drills on paper. They take time, and even though they are relatively inexpensive, they are people-intensive and people-expensive because you take pros away from their jobs.

Zeitler: I would rather set fires in wastebaskets than go in and disrupt production to do a backup test.

Tests are important, whether they are surprise or planned events. Of course, reality is the best test. Roy Oakes described how his former employer's plan was put to the test by Hurricane Alicia.

Oakes: I used to work for a major Houston bank. We felt very secure: We had been testing our disaster-recovery plan for three years, we had training sessions as part of the orientation for all new employees, and there were standards in place so we didn't have to browbeat managers to keep our plan current.

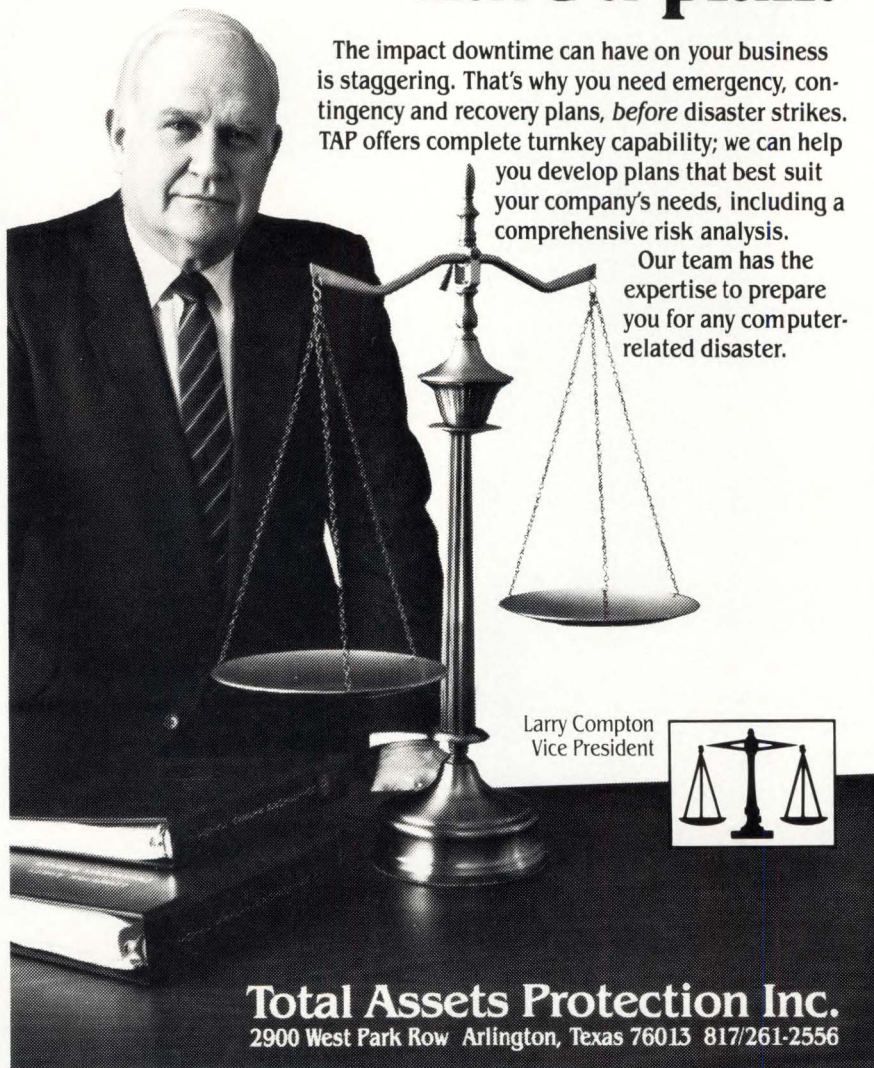
Last year we decided to fake a disaster. I wrote a scenario for an event that might happen in Houston—a hurricane. In mid-August, the director of contingency planning announced the "disaster" to the lead operator: "A hurricane is battering Houston. The roof has blown off the transformer tower. Start the disaster plan!" Everyone was notified. We activated a command center in a hotel a couple of blocks away. The teams came in and as they arrived, we gave them more pieces of the puzzle. For example, we fed them estimates of the amount of equipment that had been damaged. We also gave team members a list of employees who were not available—because the plan cannot be dependent upon certain employees.

Then we went to our off-site facility, got our tapes, flew to our hot site in Chicago, and continued to process transactions. This was all very intricate and tedious—and successful. We came back on a Sunday evening, and on Monday we had executive meetings, briefings, debriefings, etc. On Monday afternoon, there was a report about a tropical depression out in the

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CIRCLE 59

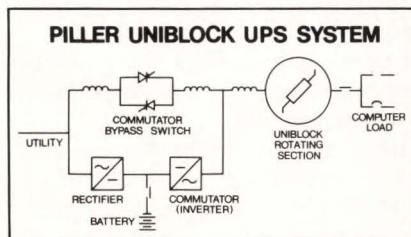
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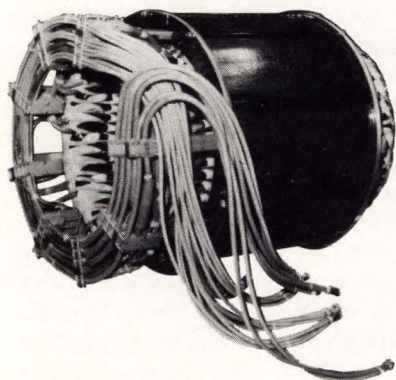
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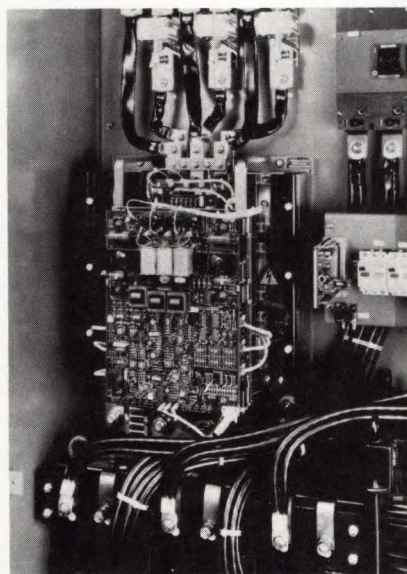


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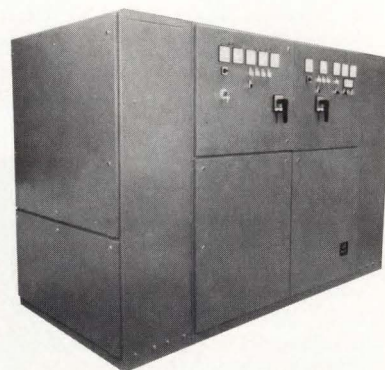
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Dp Disaster

(Continued from page 100)

Gulf of Mexico. By Tuesday, it was turning into a major hurricane, and we thought, "Oh God—now we really have to do it!"

We activated portions of the plan—established command centers, identified which personnel were go-

ing to be on hand, and made hotel reservations for the families of those who'd be staying in the data center (so they wouldn't be worrying about their families). We even ordered medicine, food, and water. We had no idea what was going to happen.

The hurricane hit at about 5 p.m., and followed almost to a "T" the scenario I'd written months before. At about 5:30, the downtown district was being blasted by 130 mph winds and the roof actually did blow off the transformer tower. We had to evacuate our building because of the danger of explosions. Getting from the building through the tunnel system and overhead passageways to the hotel across the street was difficult because the tunnels were flooded and glass and debris were flying. It was like a disaster movie.

This was a heck of a way to beta test a disaster-recovery plan—but we really learned a lot from Hurricane Alicia. What helped us most was that we realized what we'd been preaching to the board of directors was true—the disaster-recovery plan isn't just for data processing. The board had been hesitant about a corporate-wide plan. Hurricane Alicia convinced them. They saw that the international-banking, oil-leasing, item-processing, and wire-transfer departments—even though they didn't have terminals—did rely on dp for reports. This is an important trend—the development of disaster-recovery plans that take the total corporation into consideration.

Zeitler: At Security Pacific, we also had an experience that enlightened us about our disaster-recovery plan. We had what we call a "meltdown" in our primary data center. It was an event that could not happen—but it did. A malfunction in the power system put thousands of volts through all the mainframes. We lost four in a couple of milliseconds. However, we did not declare a disaster. We recovered, with a lot of help from IBM, which sent teams to scavenge parts and brought in the 3081 mainframe, which was then brand new and extremely hard to get, within 10 hours.

We were very lucky. But we learned two things: It doesn't take a big earthquake, a tropical storm, or a fire to disable a data center. Disaster can result from a very small incident

(Continued on page 172)

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Being able to switch from task to task without inserting and booting different programs is many a manager's dream. Integrated software might make that dream come true.

by Susan Foster Bryant, Microsystems Editor

Integrated software offers shortcuts—ways to get around the tedium of working on one task at a time. Packages that can split screens, combine applications, and view data from several files at once are making computers easier and faster to use.

This increased work power is due to two factors, the fast transfer of data between applications and a consistent, uniform set of commands for different applications.

With this software, users only need to learn one set of commands to master several applications. Or so it goes in theory. In practice, there are two realities. First, many of the programs you've been hearing about for months, including those detailed in this article, are not yet available or have only been recently released. For example, Ovation Technologies' integrated package has received much acclaim and attention although (at this writing) its creator admits the package won't be available until October 15, a full year after its over-hyped "introduction."

The second reality is that integrated software, by any other name, may not be integrated software. Several innovations in personal-computing software programs are being marketed as "integration." By closely examining these innovations, it is possible to dispel any confusion that may exist as to what is and what is not integrated software.

A program family, a simple form of integration, is made up of a series of packages designed to work alike and share the same files. Usually bought from the same vendor, these packages share the same commands for similar functions, such as movement of data within a file. These programs are easy to learn because basic

commands only need to be committed to memory once.

These programs usually can't be run simultaneously, however. Another possible drawback is that you have to use programs within the same family to acquire the compatibility needed between applications. This means you could get stuck with an application program that doesn't fully meet your needs. For example, in the Perfect Software Series from Perfect Software, which includes Perfect Writer, Perfect Calc, Perfect Speller, and Perfect Filer, you have to use Perfect Writer for word processing to interchange data among the siblings. If you or your



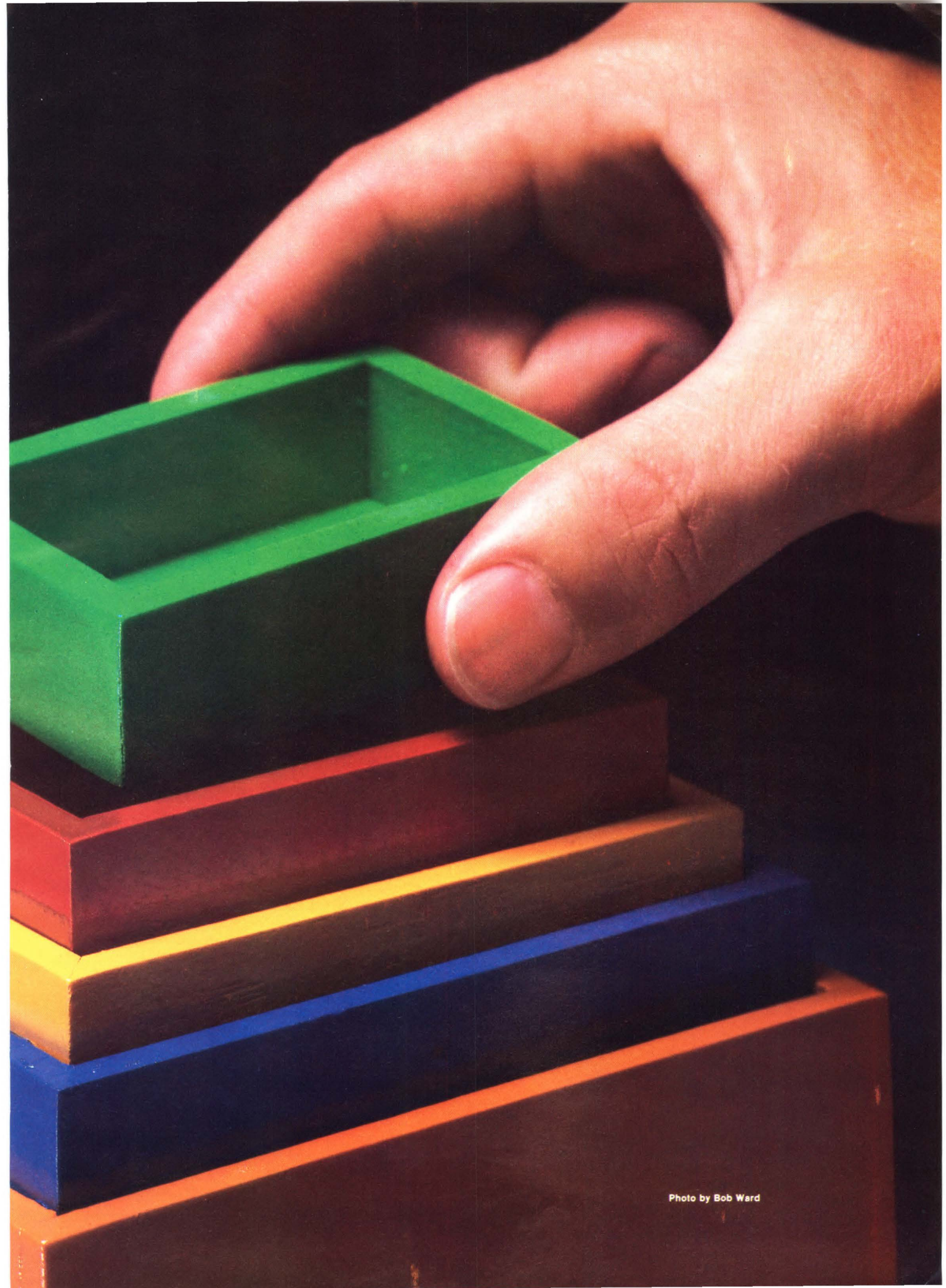


Photo by Bob Ward

Integrated Software

(Continued from page 105)

subordinates prefer a word processor such as Multimate (from Multimate Inc.) or Wordstar (from Micropro Int'l.), you must sacrifice integration.

It is important to remember that when you move within a family to a new application, you or your subordinates only need to know those aspects of the new application that are unique to it. Thus, learning time is significantly reduced.

Integrated-function programs

These packages are single programs that contain different applications. The applications they contain vary. For example, Context Management's MBA includes a spreadsheet, graphics, database, communications, and word-processing capabilities. Lotus 1-2-3 is the same, sans the communications and word processing.

A key to the integration of these programs lies in the fact that they all offer windows. With this feature, the user can split the screen into several portions, treating each one as if it were a separate screen displaying a separate program. Decisions awaiting just a little more information can be made quickly and effortlessly. You can, for example, retrieve information from your database, analyze it using a spreadsheet or graph, write up your



final analysis, and transmit copies of the analysis to whomever you wish.

Both Context MBA and Lotus 1-2-3 are spreadsheet-based; that is, they store data in a worksheet format and use spreadsheet terminology. T/Maker III, on the other hand, offers word processing, a spreadsheet, graphics, and list processing, but it's all built around the program's word processor. According to some software experts, T/Maker III completely integrates text and graphics. The program's editor lets users change, add, or delete formulas, numbers, or text, at the same time, in the same file. All of the program's functions can run on any file.

All information fed to T/Maker III is entered via an "edit" command.

Text will wrap-around to the next line automatically, obviating the need to hit the Return key at the end of every line. A search-and-replace feature allows you to scroll horizontally and vertically. Although the program doesn't permit you to move large blocks of text, you can place up to 40 lines into a buffer and then move those lines anywhere in your file.

Other word-processing functions include an "align" command, which reformats text, and a print command. Unlike other spreadsheets, the spreadsheet in the program does not have table "cells;" rather, the program creates a table by having the user type in headings and numbers via the editor. Columns can be established wherever you wish.

The database approach

Lotus 1-2-3, MBA, and T/Maker III have been the focus of much attention. Only recently have database managers—the core of integrated applications programs—received deserved attention. Most of these programs share common data and can interface with many popular applications programs. Vendors making great strides in this category are Alpha Software Corp., Condor Computer Corp., Microrim Inc., and Software Products International.

These programs achieve integration by lodging applications around the database, which is the chief source of information. Data can be transferred to and from programs in the database. The packages that fall into this category will differ in the ease in which information can be transferred from the database to specialized applications.

For example, Database Manager II from Alpha Software integrates a database program with popular spreadsheet and word-processing programs. Information can be passed between Visicalc, Multiplan, 1-2-3, Wordstar, Easywriter, and many other word processors. This package also includes a data-exchange format for easier data transfer from a mini or mainframe to another format.



Desq, a software integrator from Quarterdeck Office Systems, allows users to run existing PC- and MS-DOS applications in a multi-window environment.

(Continued on page 110)

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Integrated Software

(Continued from page 106)

One database-core integrated package that's getting more than a whisper of attention these days is Aura 5 from Softrend Inc. A spreadsheet, word processor, graphics and communications package are inte-

grated with a database manager. The entire program is menu-driven, asking the user questions throughout. (Some say this program prevents users from making mistakes.)

Aura 5 can handle changes made to

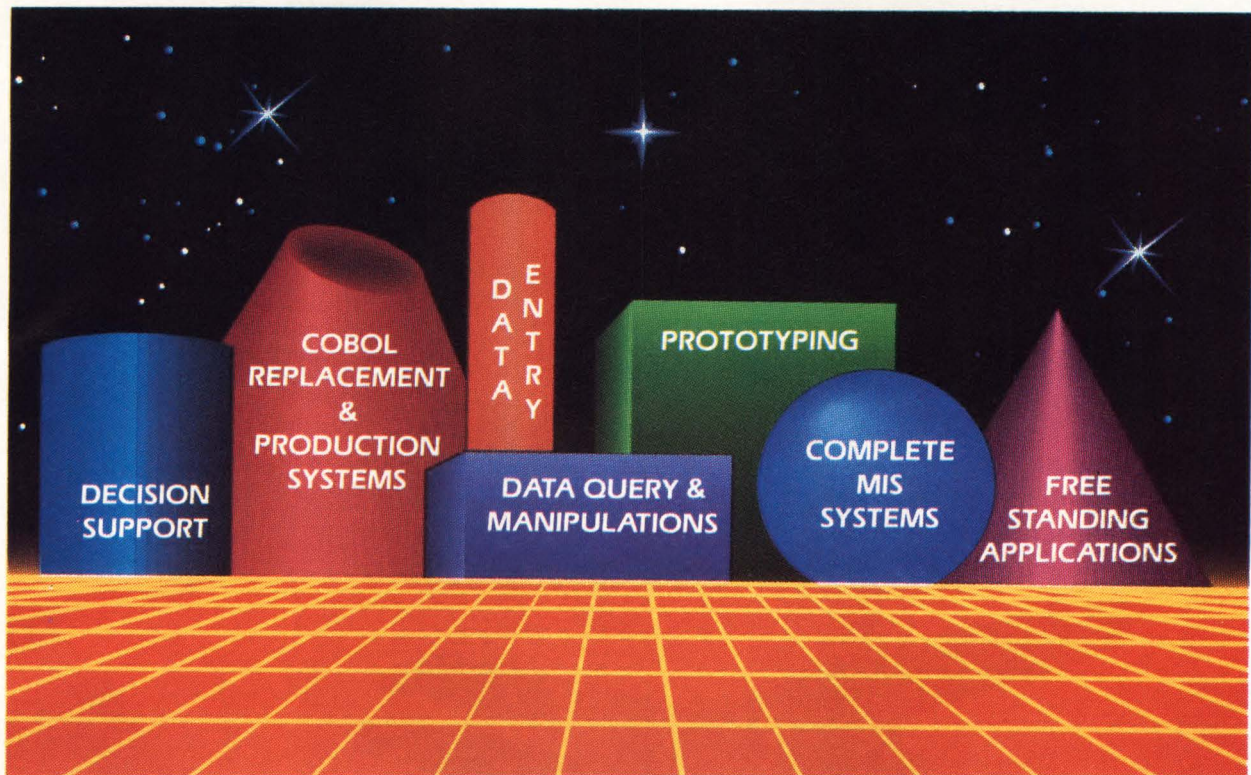
the database-field formats or file data (a task which throws most database managers into chip psychosis). It automatically reformats the whole database if you need to make a formatting

(Continued on page 168)

Integrated-software products

Vendor	Package	Requirements	Price	Circle
Alpha Software (617) 229-2924	Data Base Manager II — The Integrator	IBM PC and PC XT	\$295	401
	Electric Desk	IBM PC	\$345	
Arktronics (313) 769-7252	Jane	Apple II, II Plus, IIe	\$295	402
Ashton-Tate (213) 204-5570	Framework	IBM PC and compatibles	\$695	506
Business Solutions (516) 269-1120	The Incredible Jack	Apple II, II Plus, IIe	\$179	403
Computer Assoc. (516) 333-6700	CA-Executive	IBM PC, PC XT, 3270 PC, XT/370, and compatibles	\$1,295	968
Computer Corp. of America (617) 492-8860	PC-204	IBM PC and compatibles	\$1,750	969
Computer Mktg. Svs. (609) 795-9480	Silicon Office	IBM PC, Commodore CBM 8032, Victor 9000	\$999	404
Concentric Data Syst. (617) 366-1122	Concentric Information Processor	IBM PC XT and compatibles	\$395	405
Condor Computer (415) 424-8311	Condor 3	MS-DOS-based micros and IBM PC	\$650	406
Context Mgt. Syst. (408) 946-7700	MBA	IBM PC XT	\$695	407
		HP 9816, 9836; Compaq	\$795	
Corvus Syst. (408) 946-7700	ISYS	Corvus Concept	\$495	408
Datamension (312) 564-5060	Manager Program Collection	IBM PC and Victor 9000	\$499	409
Desktop Computer Software (404) 448-6177	The Super Plotter	Apple II, II Plus, IIe, III	\$70	410
Digital Research (408) 649-3896	Concurrent PC-DOS	IBM PC and compatibles	\$295	411
Executec (214) 239-8080	Series One Plus	IBM PC, Wang PC, Victor 9000 Pronto, Durango Poppy, DEC Rainbow, TI PC	\$495	412
Haba Syst. (213) 901-8828	III E-Z Pieces	Apple III	\$295	413
	Habadex	Apple III	\$295	
	Habatel	Apple III	\$3,000	
Human Edge Software (415) 493-1593	The Management Edge	IBM PC; Apple models	\$250	414
	The Sales Edge	IBM PC; Apple models	\$250	
	The Leadership Edge	IBM PC; Apple models	\$250	
	The Communication Edge	IBM PC; Apple models	\$250	
	The Negotiation Edge	IBM PC; Apple models	\$250	
Innovative Software (913) 383-1089	Smart Data Manager	IBM PC	\$595	415
	Smart Word Processor	IBM PC	\$475	
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HOW TO MANAGE YOUR BOSS

A boss who wreaks havoc on your work life need not become your nemesis. Here, some coping strategies to make you equal to your superior.

by Martin Lasden, Western Editor

To quit or not to quit—that was the question. Just a year ago, Jim found himself face to face with a situation requiring rigid self-control and redirection—one that might have sent a lesser man round the bend. In summary fashion, giving Jim no opportunity to respond, his boss announced that one of Jim's major responsibilities would be taken from him. To make matters worse, his boss began to sharply question methods and details Jim felt had been key to his success. To every argument Jim made—in what had by then become his defense—his boss' reply was: "That's your opinion."

Jim saw the bitter end of eight years of hitherto rewarding and prosperous employment with the corporation, an eastern chemical manufacturer. And he had an agonizing decision to make—cope or quit.

"My first reaction was to challenge him by taking my case to *his* superior, or walk out. Then, I decided to remain cool, think long and hard about my eight-year investment in my career with a company I had grown to respect, and predicate my actions on logic rather than anger," he recalls.

Jim figured the boss felt threatened and that his dictum was part of a self-serving ploy to quash a subordinate and distinguish himself from other staff vice presidents. By staying, even under such adverse circumstances, Jim believed he could push to cash in on what he felt fairly certain would be his boss' fall from grace in an organization that frowned on megalomania.

After a lot of soul-searching, Jim realized the most promising path to

success would be a Zen-like path of least resistance. At this juncture, any decision Jim made about his remaining responsibilities would depend on what his boss had decided to do in Jim's former sphere. Jim knew his boss had already taken on too much and handled his own work as if the boss was making all the necessary decisions. Jim's boss was secretly relieved not to have to overtly delegate, much less carry Jim's former workload, so he merely ratified the moves Jim had already made.

Because Jim's boss was saved from the consequences of his mania, and because Jim appeared to have all the spark of a cod, Jim won his boss' unwitting cooperation and his well-deserved present position—corporate director of information resources.

You won't see any warnings from the Surgeon General on the harmful effects of this kind of quotidian agony, but top executives who routinely get under the hides of their subordinates cause them pain: ulcers, heart attacks, nervous breakdowns, and other manifestations of the sort of discomfort that literally can take years off your life.

Deeply disturbing conflicts with a superior wend their insidious way into your psyche in various forms. Your boss might be an outright ogre, repeatedly forcing his or her way past your breaking point. He or she may be an overeager authoritarian, who intrudes into the personal realm of your work style or singles you out for picayune gripes over and over again. Then there's the garden-variety underminer, masquerading behind a benign veneer, yet finding every con-

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Managing Your Boss

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ceivable way to set you up for a fall. Or, you may be working for an implacable incompetent—the boss who leaves top-level decisions to you, but is never satisfied with your choices and plans.

These bosses are not necessarily cruel, malicious, or indifferent. But when the traditional relationship in a corporation between those who are managed and their managers is often adversarial, participative management is more theory than fact. Resentment, suspicion, and even hatred of the boss (often the superior's greatest weapons) are reflexive, even though a boss' negative behavior is merely the expected flexing of executive muscle.

In a relationship where your fate rests so heavily on the whims of another, and in which shooting first means misunderstandings that often endure to cloud other, unrelated, situations, there is bound to be resentment and suspicion, maybe even paranoia—feelings inimical to health and well-being.

If you find yourself somewhere between a rock and a hard place with your boss, you know that you are faced with the clear-cut choice of either accepting your fate and deal-

ing with it as best you can, or removing yourself from this source of turmoil and moving on.

However, when, like Jim, you know you have more to gain by staying, the situation calls for a nontraditional, even maverick, set of strategies, and a reoriented point of view—both to get you through the day and to help disassociate you from a regime you hope is on its way out. Rather than the boss managing you, you must manage your boss.

On first hearing, the notion sounds so intriguingly subversive, deliciously manipulative. But, in reality, managing your boss is less an overt act than it is subtle posturing. Your emphasis isn't on a revolt against the boss, nor even manipulation. *Empathizing*—seeing the world through the boss' eyes, and learning to accommodate him or her accordingly—is the game plan you must adopt. No wonder, then, when the advocates of managing the managers speak, there are many bosses who encourage their subordinates to listen.

"Every time I speak in front of a group on this subject," says consultant Christopher J. Hegarty, author of *How to Manage Your Boss* (Rawson, Wade, 1980), "the first thing I



say is: 'Do you really want to know how to get the boss off your back?' Everybody leans forward with anticipation. And then I say: 'Okay, here's your answer: Come up with three ways to make yourself more valuable to your boss.' When I say that, everybody groans."

And who would expect otherwise? However, to dismiss Hegarty's advice as a thinly disguised way for top management to enhance its power would be a mistake. The message is not "make the boss happy." Its meaning is implicit: Understand the boss, understand what makes him or her tick; because it is only through such understanding that one can begin to exert some influence, if not control, over the relationship.

What we're talking about is a matter of style, which shouldn't be overlooked. Because when you've done the necessary introspection and come up with a clear picture of who you are and who your boss is, there is before you the task of managing the differences. At this point you must decide whether or not to make compromises on certain issues that may not appear to be important at first glance, but can have serious consequences in the long run.

The importance of style is perhaps most dramatically indicated by the work of David Sherman of Cambridge, MA, who describes himself as a work-issue counselor and who, on a daily basis, sees the pain and turmoil that bosses cause.

Working with a troubled individual to determine the roots of his or her boss' negative style, Sherman induces a state of deep relaxation, and employs what he calls the "distant city" exercise. It's a five-step visualization exercise geared to make an emotionally-charged situation objective:



Work-issues counselor David Sherman leads a client through the "distant-city" exercise. Employing visual imagery combined with the insight gained during a state of deep relaxation, this exercise helps a stressed subordinate define the basis of a poor working relationship with a superior, and suggests remedial tactics.

Photo by Gaye Hilsenrath

1. Select two people to be the subjects of the exercise—your boss and one other difficult person.

2. Close your eyes and imagine that you are sitting on a park bench on a nice spring day. Relax. You notice a neatly folded piece of paper on the ground. You pick it up, open it, and there is the name of the third subject for this exercise.

3. Imagine that you travel to a distant city to do some sightseeing. Somewhere in this city you see your boss in another life, so to speak. He or she might be a bartender, a flower vendor, a person eating in a fancy restaurant, a shopper, or a person in any one of countless other roles. What does the role you've assigned your boss tell you about his or her needs? What kind of person fills this role? How has your treatment of your boss been contraindicated by this role?

4. Repeat Step 3 for the other two people. What do all three people have in common? What is the common element missing from your relationship with these people?

5. Go back to the park bench. On the ground is another piece of paper

with a statement of the quality you need to deal with your boss. Pick it up, open it, and read the quality.

This exercise, Sherman says, lets you tap into the intuitive (right) side of the brain. By getting in touch with this side, he maintains, invaluable insights can be gained into the boss-subordinate relationship, in this case. Sherman cites an example: a middle-aged client we'll call George, who was in conflict with his co-workers. Each time he complained to his boss about them, the boss would seem sympathetic, but then the next day, George's co-workers would come in and sway the boss to their point of view. Why would the boss always switch sides? George wanted to know.

By mentally transporting himself to a distant city, George found a possible answer. He saw his boss not as a technical manager, but as a counselor, rendering care and sympathy to those who needed it most. Rather than being a cool, logical manager of people, the boss was actually a sucker for the underdog, George realized. Thus, George altered his act accordingly. Now, when he talks to the boss,

rather than keeping a stiff upper lip, he makes it a point to spill his guts, expressing as vividly as possible just how depressed, frustrated, or hurt he may be. For George, it's no longer just a question of outthinking his adversaries, it's out-feeling them as well. While this may sound silly or degrading, if it can win you a more dependable ally, why not try it?

In another example cited by Sherman, the boss in question was visualized as a factory worker on an assembly line doing the same chore over and over again. What this told the subject was that his boss could not be trusted with anything too complex; to communicate more effectively, the subject needed to simplify, simplify, simplify. Again, another insight from the right side of the brain.

To the extent that such insights are gained and profited from, two important conclusions can be drawn. First, there is within the subordinate's own purview the power to improve a faltering relationship. You need not wait for your superior to make the first move.

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Visions of sugarplums

To help unburden clients of the damaging excess baggage of stress, counselor David Sherman employs an exercise called "face-the-boss." It goes like this:

1. With eyes closed, see your boss before you. Describe your boss' facial expression.

2. What is your reaction to the boss? Does your boss trigger self-critical statements you create internally? Does anyone else do this to you?

3. As you watch your boss' face, what do you feel? Anger? Fear? Guilt? Let this feeling intensify. Where in your body do you feel it? If you can't feel it in your body, how do you know it is there? Does anyone else make you feel this way?

4. Is this feeling familiar? Go back in time—even to childhood—to find other times you felt this way.

If you felt this way with your parents, are you repeating your parental relationship with your boss?

5. Feel the *opposite* feeling or sensation in your body. When have you felt that opposite emotional state? Is there a scene or even several scenes you associate with the opposite sensation?

6. Practice feeling that opposite state around your boss by recalling the associated scenes and body sensations. This new body sensation is an antidote to your former feeling.

7. Look at the boss' face again. What is he or she feeling? What does your boss really want to say to you? How fragile is he or she? Does your boss really care? Can you sense his or her way of coping with life?

Moving through this exercise, Sherman says, it's not unusual for subjects to see their bosses undergo

a startling metamorphosis right before their minds' eye. One woman, for example, reported seeing her boss turn into a crying child.

This particular boss was a stickler for detail, one who could not leave her alone without going over every minute aspect of her work. Needless to say, this practice drove the woman batty. But after going through the face-the-boss exercise, she came back to the job with a different perspective. The next time her boss started acting up, she remained very quiet and stood there with a pitying expression on her face. She looked at him as if he *were* a crying child.

The boss must have noticed the subordinate's changed attitude too, because that night he felt compelled to give her a call to tell her he was sorry.

Managing Your Boss

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Second—and there's a seeming in-consonance to be appreciated here—to know another, you need to know yourself. When looking for the answer to a persistent problem like an unproductive relationship with your boss, what you need to know may be what you *already* know. That's what Sherman seeks to bring out when he takes his clients through the distant-city exercise. He gives them the opportunity to get in better touch with what's already inside their heads but is obscured by expectations of what their bosses should be like.

Listen to an east coast dp manager who knows how important homing in on the boss' style can be:

"I've had 15 bosses in 20 years, and until I've had a chance to learn each one's particular style, I've always been uncomfortable," he says. My current boss likes me to be direct and to the point. That's the exact opposite of my previous boss, who would want me to develop matrices of alternative options and present elaborate show-and-tell presentations. When my present boss came on board, I started to do the same thing. He told me to 'cut the crap.'"

Style extends not only to your immediate boss, but also to the organization, as the manager learned on a different occasion. We'd like to tell you who the manager really is, but the last time his name appeared in a magazine, he felt compelled to confiscate all the copies of the issue he could find.

It's not that he was quoted as saying anything damaging or dumb. In fact, it was pretty harmless stuff about the conflicts between career and family. But after he gave the interview, he sounded out a number of his colleagues who told him that having your name published in a magazine "just isn't done around here." His company's preferred managerial style, he was told, is low-profile.

The manager is still willing to talk to the media; he still accepts calls with good cheer. But under no circumstances does he ever want to see his name in print again. He says that to do so just wouldn't jibe well with



the company's style or the boss' expectations.

Matters of style extend not only to what's presented, but also to how it's presented. Author and consultant Peter Drucker, for one, divides bosses into two categories: readers and listeners. "If you have a reader for a boss—like an Eisenhower or a Kennedy," he writes, "don't just go into his office and talk to him about a problem or a project. Write it up first, make sure you have something for him to read; then you can start to talk."

"If you have a listener—someone like Franklin Delano Roosevelt or Harry Truman—don't send in a memorandum. Go in and talk about it first; then you can leave the memo."

Of course, the categories of personal characterizations can seem endless: obsessives, compulsives, orals, anals—even classifications, by body type, such as ectomorph, mesomorph and endomorph—each seek to typify personalities. It seems that psychiatrists are forever inventing new ways to classify us. But it's not an empty exercise if, out of the process, you are able to better appreciate the differences among people.

Dr. Douglas LaBier, a Washington-based psychiatrist, notes you can have real problems when you put together persons whose dominant characteristics are antagonistic. For example, pairing what he calls a "defender boss," who's always gravitating toward the status quo, with a "gamesman subordinate," who's always looking for excitement and new conquests, could mean trouble.

"Where those conflicting values exist, you're bound to see tension," LaBier declares. And when tension like that develops between two people, it's quite easy for one to perceive the other as being either lazy, incompetent, or stupid.

Seen through a pall of negativity, stylistic differences readily devolve into substantive conflicts. Where does one end and the other begin? Because style is subjective, that is impossible to say.

And yet, style is an attribute rich with opportunity. Because once you've learned the boss' tune, you can play it back in your own key—to sell *your* ideas, push *your* initiatives, and realize *your* potential. Of all the compromises a subordinate might make, adaptations to style are often the easiest.

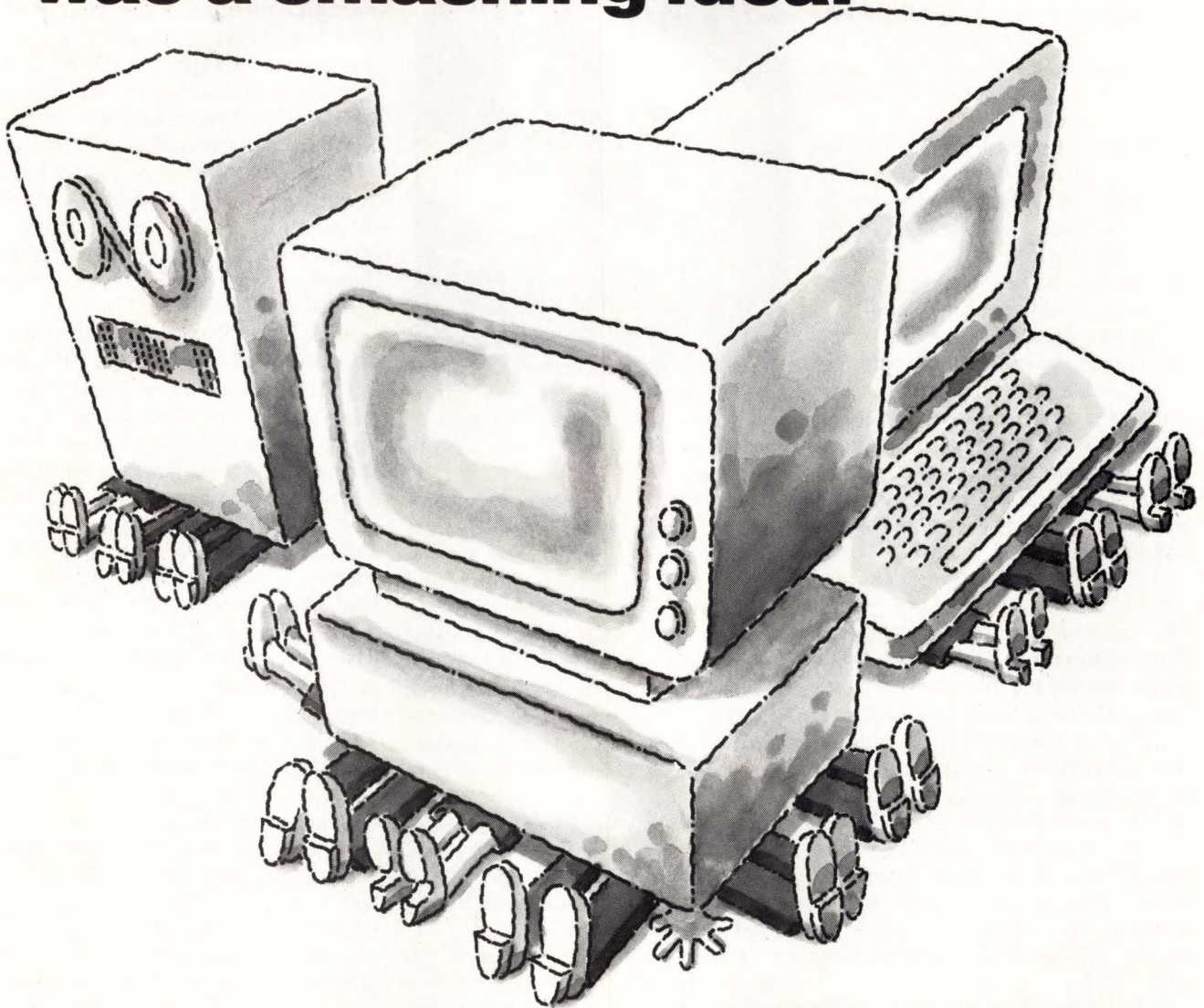
It's quite another story, however, when the boss is genuinely malicious or gravely incompetent. Here, we're talking about a set of problems that demand different tactics and coping strategies.

When talking about the incompetent boss, Christopher Hegarty draws a distinction between passive and aggressive incompetence. The latter is a boss who very actively inflicts his or her incompetence—demoralizing, disrupting, and alienating a staff—on a regular basis. To the employee who is unfortunate enough to be working under a boss like this, Hegarty does not offer much hope of reworking a relationship through empathy.

However, this is where a second exercise designed by David Sherman becomes relevant. Called "face the boss" (see "Visions of sugarplums," which accompanies this article), it is a salvo for over-the-limit subordinates who must deal with an intractable superior every day. Drawing on a power known by those heart-stopping fakirs who allow themselves only to feel the freshness of a cool mountain breeze while they walk on hot coals, "face the boss" provides relief.

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Managing Your Boss

(Continued from page 116)

of a pleasant situation onto the undesired one. The technical name for this is "reframing," and once you learn how to do it, the picture will never look the same.

But with the passive variety of incompetent boss—those who yield to the good work of their subordinates in spite of themselves, Hegarty notes that, "There are many incidences of incompetent bosses being supported by able subordinates for years."

Hegarty speaks of zigging when your boss zags—filling in the gaps his or her weaknesses create with your own strengths. He speaks of setting deadlines so that your boss is forced to decide, even though indecision is his or her natural preference. And he speaks of influencing these bosses without threatening them.

"I once had a boss who was extremely indecisive," Hegarty recalls. "He was constantly barging into my office looking for advice. I couldn't get any work done. It was terrible. So, I went to lunch with him one day. Lunch is a nonthreatening time to bring up difficult subjects. And I said to him: 'Look, I'm being paid a lot of money for what I do. If you could just give my secretary 20 minutes notice before you want to see me, you'd be able to get a lot more out of me.' He thought that was a reasonable request, and never did barge into my office again."

Indecision crops up persistently with the passive incompetent. There is the flight-from-the-first-decision syndrome—the boss experiences extreme discomfort on any given issue unless he or she changes his or her mind at least once. Working under a regime like that, the worst you can do is act on the boss' initial impulse. Instead, you'd best wait until the inevitable change of heart comes through.

And then there's the boss who seems to believe if he or she ignores a problem long enough, it will disappear. In that case, you have to take the bull by the horns. You have to say something like: "If I don't get a decision from you by such and such a date, I'm going to have to act on my own." If you don't establish those



sorts of constraints, Hegarty warns, you'll be perceived as being part of the old order when the ax falls on your boss.

Working for these passive incompetents, there is, however, one distinct advantage. They tend to leave you alone. Typically, they're uninterested in seeking out new responsibilities, and not particularly zealous about defending their turfs. These bosses' primary concern is to make it through the day. Consequently, their subordinates often enjoy a level of freedom that could not be found anywhere else.

However, even the most passive of incompetents occasionally does take a stand. And when he or she does, invariably it is against particularly good ideas.

"I don't know how she does it!" exclaims a friend who speaks in reverential terms about a colleague of his. "She has this incredible way of getting around the boss. She mounts quiet offensives and is somehow able to push her ideas through without a confrontation."

The woman in question entertained my query about this with a hearty laugh. "It's my 'water-dripping-on-a-stone technique,'" she said. "What I do is keep slipping the point in during unrelated conversations, and like water eroding rock, the message eventually gets through." Paraphrasing an ancient Chinese adage, this master of upward managing goes on to observe: "Nothing is more gentle than water, yet it has the power to wear away mountains."

The executive vice president and

managing director of E.F. Hutton & Co. (New York), meanwhile, has his own favorite strategy when dealing with incompetent bosses. Reminiscing about the time he had such a boss, Norman Epstein confides: "I would walk into his office and say to him: 'Remember that great idea you had six months ago. Well, I'm ready to implement it now.' The fact is, though, he never had those ideas. They were all my ideas."

Such is the power oppressed subordinates can wield when they take the initiative to rethink difficult work relationships and alter power structures. Active fulfillment of an influencing stratagem, however, must be carried out not only with aplomb, but also with the sternest resolve to personally walk the line. No hot-dogging, please. Check those retorts; hold back those impulses to be sarcastic or nasty. Above all, don't be a pawn of your own foibles. The success of the subordinate at managing the boss suggests a double-edged axiom: To control another individual, it's essential to have control over yourself.

"In the final analysis," Peter Drucker writes, "one doesn't really manage a boss; you work with a human being." Well, that really is the bottom line on all of this. Because when you read through all the books and articles that have been written about managing the boss, you're not going to find a whole lot of ideas that you couldn't just as easily have picked up in some other management textbook. What you are going to find here, though, is a certain spirit. A spirit that says: You don't have to be your boss' victim. The power to affect your working relationships extends upward as well as downward.

It should be noted, though, that an overtly mean-spirited or aggressively incompetent superior can render the situation unsalvageable. The amount of energy you're going to have to expend to "cover your ass" all the time can get tiresome very quickly. But even here you can employ the lingo of the literature and say that you're going to "terminate the boss." Which is to say, you should get the hell out. □

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CIRCLE 66



Display Terminals: Pick What's Best For You

Those alphanumeric VDTs may look alike, but they're often different under the skin. Make sure you get the variety that satisfies your organization's appetite.

by David Whieldon, Senior Editor

Video-display terminals, or VDTs, are such familiar computer peripherals you may hardly remember the brands your organization has.

Because display terminals are ubiquitous, the impact they can have on productivity is easily taken for granted. However, as the chief input and output devices in any system—channeling information to and from central processors—VDTs are essential. They determine, in some measure, how well a system works.

The MIS/dp manager who over-

sees the purchase and support of VDTs can make improvements with each addition to and replacement of existing stock. An astute buyer should seek gains from all the options available today—options that won't necessarily break your budget. When you consider the dirt-cheap prices of basic display terminals, even the promise of small gains in productivity can justify the purchase of more advanced machines.

More and better VDT features make their appearances almost daily.

Some terminals are promoted as being able to do the work of VDTs made by IBM, Digital Equipment Corp. (DEC), Data General, and other major vendors faster and better, with a smaller investment up front. Some are kinder to operators, with tilt-and-swivel screens, sculptured keys and keyboards, no-glare screens, highly legible characters, and special-function keys. Some are more compact than ever, use less power, and tolerate unusual levels of heat and humidity in poor environments.



Prices are dropping steadily. Many feature-loaded machines are selling for less than \$1,500, and some for less than \$1,000. The Ampex 210, from Ampex Corp. (El Segundo, CA) carries a price tag of \$549, while boasting a 14-inch screen that tilts and swivels and comes in green or amber phosphor.

So-called intelligent VDTs cost more, but they allow users to tap into central computing power and organizational databases and utilize large-system software. These VDTs

are really personal computers. One example is the Topper II from Beehive International (Salt Lake City), which emulates an IBM 3278 terminal, but also comes with two built-in floppy-disk drives, at a cost of \$3,595.

And then you'll find other capabilities built into the current crop of VDTs. As might be expected, many of them feature compatibility with IBM, DEC, Data General, Hewlett-Packard, and other widely used VDTs. But many go beyond just fitting into an established, or planned,

data system. They offer features that allow them to accomplish tasks little dreamed of only a few years ago. They're more versatile than you may have imagined—and may help you reduce the number of machines you have to buy, connect, and support.

The popular term for these display terminals is "multi-functional." Instead of taking care of one chore or another, they handle two or more, often moving from one to the other at the flick of a switch. For example, users can operate in a synchronous

Display Terminals

(Continued from page 121)

mode—as in an IBM 3270-terminal system—or an asynchronous mode, also called ASCII-protocol mode. (Protocol converters make this possible.) Display terminals can often emulate several other terminals, communicate with diverse mainframes, provide 132 columns of color or graphics, and connect to other peripherals.

“Buyers were pretty safe in buying terminals with the same basic functions, until about 18 months ago,” says Jack Barry, vice president of marketing at Harris Corp.’s Interactive Products Division, Dallas. “But VDTs have changed, and a lot of users haven’t realized it.” Now, he says, buyers may also have to decide how to accommodate monochrome, color, and personal-computing terminals. Also, mixed terminals must be connected to the host computer through controllers, to control data traffic in the system. Controllers prevent individual terminals from making heavy, undisciplined demands on the host.

Although the trend is toward multi-functional terminals, some organizations don’t need such machines,



concedes Barry. Buyers should base choices on more than technology alone. Referring to the IBM market that Harris serves, he says, “The 3270-type workstation hasn’t changed in 10 years and probably won’t change in the next 10. Many customers don’t need multi-functionality, and shouldn’t worry about it. Organizations that give everything to every employee very quickly run out of money.” His advice: “Find the dominant characteristic of the terminal-operator’s job. That’s what a buyer has to consider.”

At American Home Products (New York), Jack Simpson, director of systems, believes multi-functionality is a promising, yet problematic, trend. “The use of a single box as a terminal, personal computer, word

processor, and graphics station is coming up more and more. Fourfold functionality should save money.”

At the same time, though, he sees practical difficulties. “Multi-functionality is being talked about a great deal, but I’ve seen only a few applications. In our company, we’d have to see proof of savings. We wouldn’t buy additional functions simply as icing on the cake. Besides, we often need hardware quickly, say, within 60 days. So we may have to go ahead, under the pressure of business, and only act on the first and most important reason for acquisition.”

When more is more

DEC (Maynard, MA) is responsible for the multi-functional terminal, says John J. Hunter, senior editor at Data Decisions, a market-research organization in Cherry Hill, NJ. “DEC had a great idea a couple of years ago—perhaps it was ahead of its time. It was the built-in ability to upgrade the VT100 terminal to have greater intelligence by adding memory chips.”

DEC’s idea allowed users to switch between the ASCII-protocol mode, used on DEC and compatible machines, and a personal-computer mode on the same terminal. “Lee Data Corp. [Minneapolis] has had a multi-functional terminal out for quite a while,” he adds. “And Davox Communications Corp. [Merrimack, NH] offers a terminal that also allows you to switch from the ASCII mode to personal computer, though it takes a different approach.

“Upgradeability of machines is a definite plus,” stresses Hunter. “Once IBM embraced the concept of a personal computer hooked to mainframes, other manufacturers jumped on the bandwagon. You’re protecting your investment in a terminal if it’s upgradeable to personal computing or greater intelligence. Buying a single-function machine strictly on the basis of price is shortsighted.”

Lee Data indicates multi-functionality with the label it applies to certain of its products: Universal Terminal System. With a single command,

Reading over employees’ shoulders

A worker anxious about health and safety hazards needn’t go any farther than the local magazine rack or library to learn more. Consumer magazines, especially those aimed at working women, regularly carry articles dealing with hazards and stress in the workplace. If you’re interested in what your employees are reading as a way to understand their concerns, dip into recent issues of the *Readers’ Guide to Periodical Literature*, available in almost every public library.

Office Work Can Be Dangerous to Your Health (Pantheon Books, \$6.95) by Dr. Jeanne Stellman, founder and executive director of the Women’s Occupational Health Resource Center at Columbia Uni-

versity, and Mary Sue Henifin, an environmental-science graduate of Columbia and a writer, covers all aspects of office work, from furniture to fire safety, but an entire chapter is devoted to VDTs.

The authors are careful to point out that studies have shown no severe hazards from ionizing radiation, nonionizing radiation, or ultrasound in machines that are operating properly. However, they caution that steps should be taken to reduce the physical stress caused by ill-suited chairs and VDT stands, and to relieve emotional stress stemming from stringent work quotas, lack of decision-making power, and unvaried routines.



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Display Terminals

(Continued from page 122)

these VDTs can be switched between applications running on IBM, DEC, Hewlett-Packard, Prime, or time-sharing services. The system is compatible with IBM 3270-terminal standard and can be converted, by means of software, to act like a personal computer. Prices range from \$1,462 to \$5,711, without the required terminal controller.

That's not all that multi-functional terminals can do, according to Hunter. "There's a need for editing terminals with local page storage," he points out. "A user can save on communications costs, because it's not necessary to send pages to a central processor for storage. Yes, it requires more memory, but memory is getting cheaper."

Hunter singles out the ATL Models 004 (\$995) and 008 (\$1,495) from Beehive International as examples of machines with large page-storage capacities. He also mentions Televideo Systems Inc. (Sunnyvale, CA) and the Teleray Div. of Research Inc. (Minneapolis) as manufacturers offering similar innovations. "I understand that Datamedia Corp. [Pennsauken, NJ] has been working on a machine with an 8-Kbyte buffer for about \$500, which would make it one

of the lower-priced units on the market," he says.

Another feature that Hunter views as important in multi-functional machines is the 132-column format on some terminals. "It allows you to create spreadsheets that you can't now handle conveniently in 80 columns," he adds. (For more on sophisticated graphics see "Computer graphics: Art serves business," May 1984.)

The power of X3.64

Another important trend is a growing interest in terminals that operate according to the ANSI X3.64 protocol standard endorsed by the American National Standards Institute.

"Ten years ago, if you wanted to command a terminal to return the cursor to the home position, you might have hit the escape key, then a capital J on the keyboard of one machine," says F.T. Renshaw, vice president and general manager of Teleray. "But if you had 10 different manufacturers' terminals in the shop, you would have to give a different command to each, say, escape plus period, escape plus capital C, or escape plus lowercase B, to move the cursor home."

The ANSI standard enables you to

buy a product and make it compatible with the command structure of your system. "You can focus entirely on the hardware features, quality, size, ergonomics, and maintenance. And you can home the cursor the same way on that new terminal as on the ones already installed," says Renshaw.

Naturally, the question is whether the ANSI X3.64 protocol standard is catching on. Renshaw argues that it is. "Televideo Systems has a lot of market muscle, and it's now advertising ANSI on its terminals. DEC

If an intelligent VDT costs more, but has versatile capabilities, it could be a wiser purchase in the long run.

has implemented 20 percent to 30 percent of the ANSI-protocol sequence on its VT100 terminals. Data General and Hewlett-Packard, too, have implemented the standard."

Televideo Systems is touting the ANSI X3.64 protocol standard built into its Model 970 (\$1,495), among others. Sixteen function keys (with shifting, 32 keys) facilitate the entry of ANSI protocol commands. User-friendly features include a palm rest, sculptured keys, and a no-glare screen that tilts. A newer model, the 922, also conforms to the ANSI protocol standard, and sells for under \$1,000.

Lear Siegler Inc., Anaheim, CA; Esprit Systems Inc., Melville, NY; Wyse Technology, San Jose, CA, and Qume Corp., San Jose, CA, also offer X3.64 products. All the terminals that Teleray has manufactured during the past two years have included an ANSI subset, says Renshaw. The machines list for between \$1,000 and \$1,500.

Qume Corp., which has been in the terminal business for about two years, has been offering a DEC-compatible terminal operating with the X3.64 protocol standard. Called the QVT 103, it has 12 user-programmable function keys and carries a price tag of \$1,095.

(Continued on page 126)



The 8000 Series intelligent terminals from Zentec Corp., Santa Clara, CA, feature ergonomic design: Each terminal swivels 60 degrees and tilts 20 degrees; the screen is glare-free and comes in white, amber, or green phosphor. Communicating in synchronous or asynchronous modes, this terminal lists for \$1,750.

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Display Terminals

(Continued from page 124)

Cutting the cost of VDTs

One way to save on terminals is to buy used models rather than new ones. Refurbished machines—and surplus new terminals—are available both from small and large companies around the country.

Data General Corp. (Westboro, MA) offers several VDTs at con-

siderable savings in its inventory-reduction catalog. For example, the Dasher D400 display workstation, listing originally at \$2,000, has been reduced to \$1,200. In addition, the Dasher D100, with a 96-character ASCII protocol set, is priced at \$750.

Renshaw maintains that if you're a large end user and anticipate a need for the ANSI protocol standard within two or three years you should consider a display terminal compatible with your present system and the ANSI standard. He admits that it may not be the cheapest way at the outset, but he claims the payoff awaits down the line: "Instead of buying an \$800 terminal that you'll have to replace in three years, you're better off buying one for \$900 that you won't

have to throw away."

Of course, a large group of users is tied to entirely different protocols, which aren't compatible with either the ANSI or ASCII protocols. They're the customers of IBM, and their machines require IBM protocols, like System Network Architecture (SNA) and Synchronous Data Link Control (SDLC).

Some terminal manufacturers, however, supply protocol converters enabling their products to be tied to

IBM 3270-system networks. IBM-equipped data centers are attractive to vendors: Nearly one-third of the display terminals in the United States are 3270-type or 3270-compatible. SNA, some conclude, will become the common denominator of protocols. And IBM continues to add to this product family, so interest apparently hasn't flagged, as some observers had predicted it would. Within recent months, IBM has announced the 3180 monochrome VDT and the 3179 color unit.

A large proportion of corporations with 3270 equipment use it for very basic transactions: data and order entry, and database inquiry. Clerical workers carry out these tasks. But Jack Barry notes that as more and more professionals and managers plug into mainframe databases, terminal communications have become more important.

"More professionals are using

(Continued on page 128)

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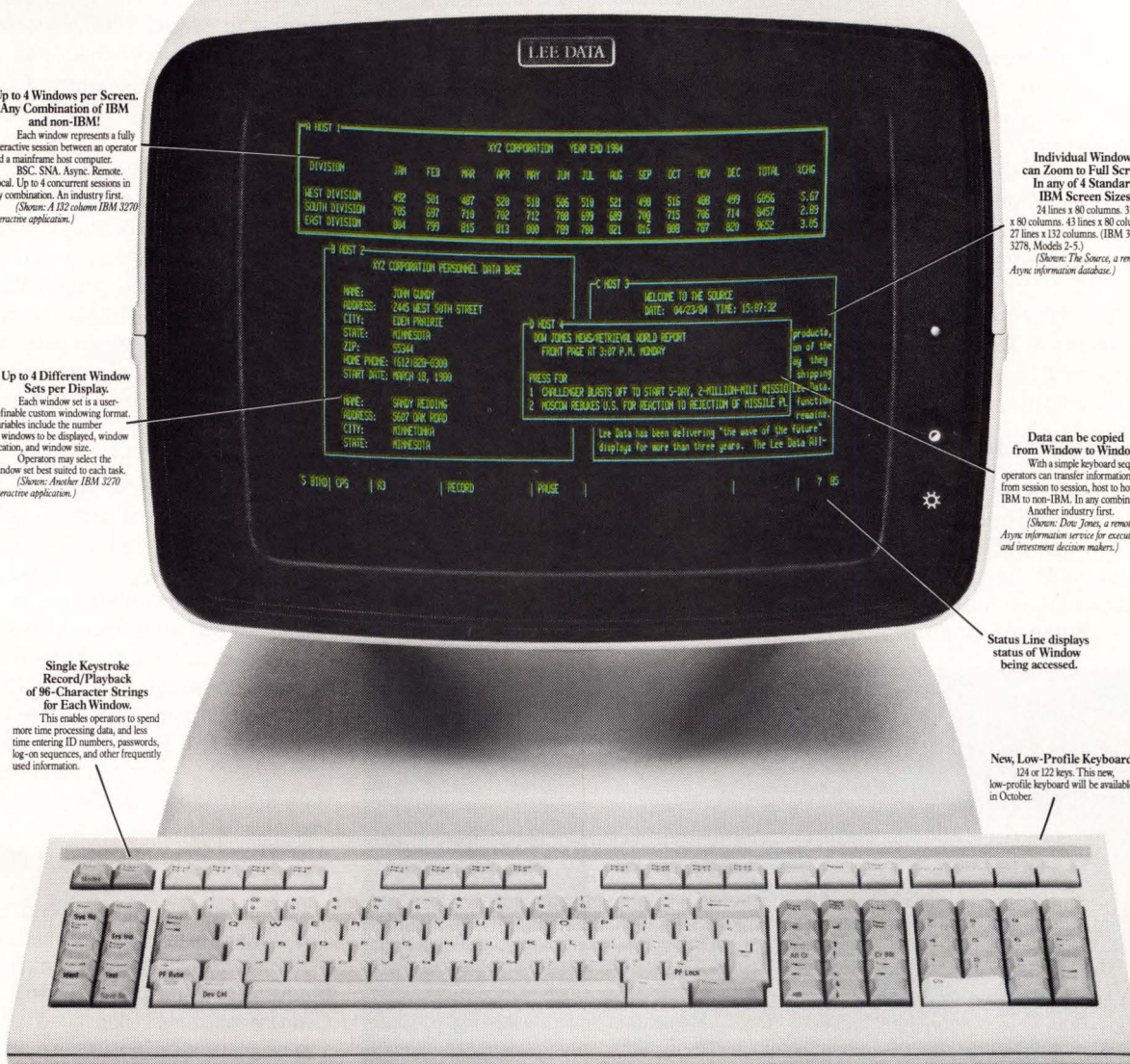
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(Shown: The Source, a remote
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Display Terminals

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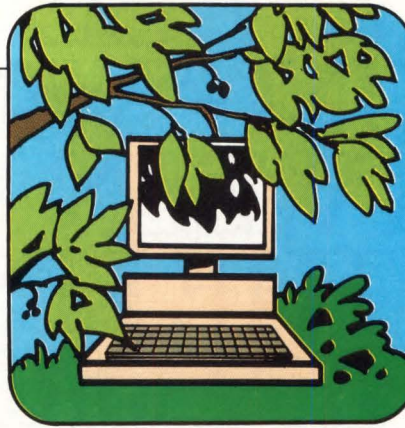
3270-type terminals now," he says. "Also, professionals in marketing, sales, engineering, and accounting have taken to personal computers. They want to expand beyond their personal databases. To do so they get into communications. However, most corporations don't want these users to have free access to mainframe databases. Therefore, it's very, very important that the personal computers be attached to the same controllers as 3270-type terminals.

"We're seeing a resurgence of clustered communications controllers supporting 3270-terminal systems and multi-function terminals as well," he continues. Barry points out that even a simple controller can handle four to 32 terminals and personal computers. He recommends avoiding the problems of stand-alone communications by hanging all kinds of devices on a communications controller.

Checking off the features

Once you have determined the functional requisites for your equipment, you can decide which features best suit your needs. Some further considerations include the following:

Color. Some terminals provide col-



or to highlight certain words or portions of the screen. This feature is not to be confused with color graphics, in which hardware and software combine to produce graphs and charts on screen, paper, or film.

Color may be useful if, for example, an operator must quickly be apprised of critical information or to highlight complicated elements on the screen. Some experts contend that users become faster and more efficient at entering or calling up data when their VDTs have color capabilities.

That was the case at Pennsylvania Blue Shield (Camp Hill). Managers had leased terminals and other peripherals from ITT Courier Terminal Systems (Tempe, AZ) that claims examiners used to code and enter claims data into an IBM host computer. While checking the value of color to accentuate errors, an independent

consultant found operator productivity at color terminals improved by an average of 7.9 percent—in one case, by as much as 12 percent—over productivity at monochrome devices. Eighty-three percent of the operators in the study favored color terminals, and believed they suffered less eye-strain and fatigue.

A new ITT Courier seven-color terminal, the Model 1900, incorporates tilt and swivel features, and comes with a detachable keyboard. Compatible with the IBM 3179, it sells for \$2,295.

Color is useful, but Dan Printz, vice president of marketing and sales at Teletype Corp., Skokie, IL, notes that most display terminals are monochromatic. "As the price difference between monochromatic and color narrows, we'll see more user interest in color," he says. Color adds a premium of 40 percent to 50 percent to the cost of the VDT, he says.

Compactness. The amount of space a display terminal occupies on a desktop can be a critical factor, especially when the desktop belongs to a professional, manager, or executive. Happily, display terminals are shrinking in overall size and occupy less space.

A case in point: The Whisper Screen Terminal from the Business Communication Products Division of 3M Corp. (St. Paul, MN) includes a display that takes up little more space than a telephone handset, not including the detached keyboard. This ASCII-protocol terminal is priced at \$1,795.

Appearance. Good looks are an issue when terminals are installed in office areas, where they're expected to blend in with furniture and decor. Clunky machines like those bought in years past won't cut the mustard today.

Even Lear Siegler, which built its reputation on serviceable low-cost units, has beautified its offerings. A new IBM 3278-keyboard-compatible ADM 1178 (\$995), in a light gray cabinet, imitates the appearance of IBM terminals as well as emulates their functions.

(Continued on page 132)



"Instead of buying an \$800 terminal you'll have to replace in three years, you're better off buying one for \$900 with the ANSI X3.64 protocol that you won't have to throw away," says F.T. Renshaw, vice president and general manager at the Teleray Division of Research Inc.

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CIRCLE 70

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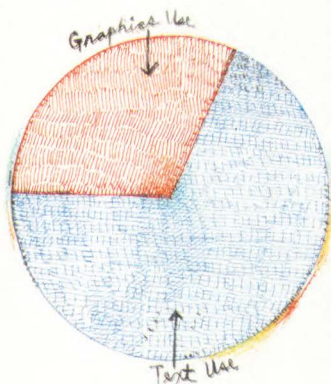
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dimension of color, continue the tradition of engineering excellence for performance. They offer full VT100™ compatibility to take advantage of a host of offerings already developed. And to meet the needs of the business environment, you'll find a set of standard text features that are either unavailable on other terminals or may have to be purchased at an additional cost.

These features include bidirectional smooth scrolling, split screen, a choice of 80 or 132 columns per line and a double width/double height format. A highly legible 8 by 10 dot matrix character font displays true ascenders and descenders for exceptional crispness and legibility. If cer-

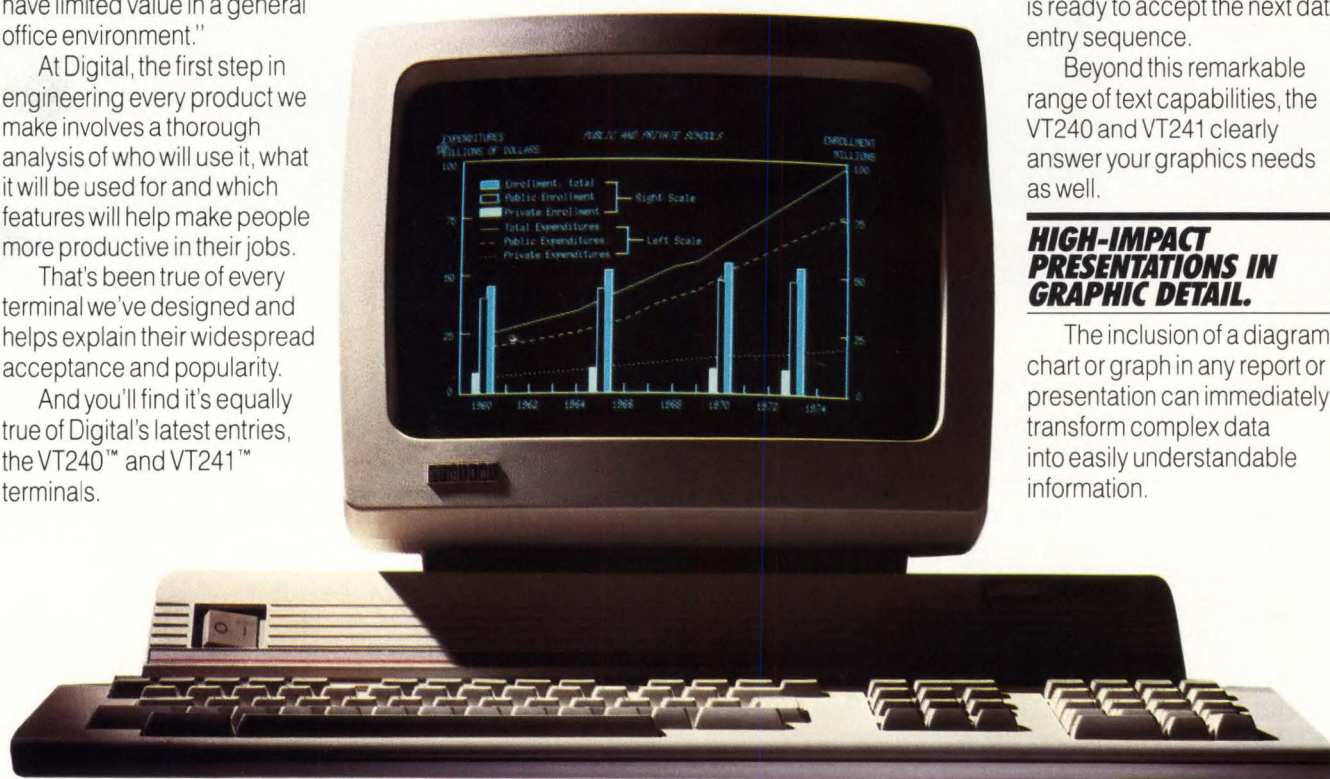
tain information needs to be highlighted, you can select from a combination of bold print, blinking and underlining in either normal or reverse video. For your added convenience, there's even a built-in printer port for printing hard copy.

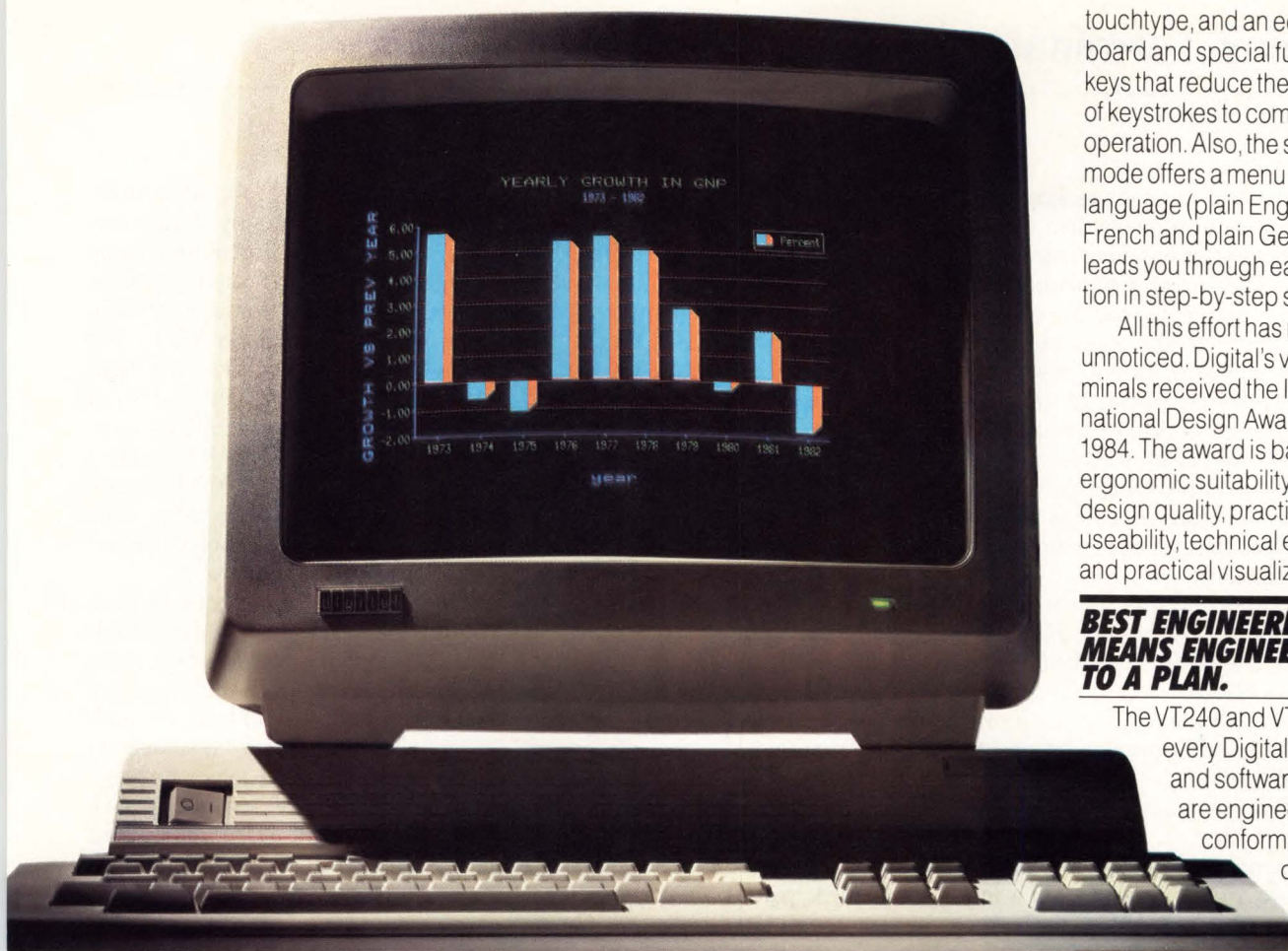
Both the VT240 and VT241 terminals give you the option of erasing selected character positions on the screen for more efficient communications and increased productivity. For those applications that require data to be entered by filling in the blanks of a form, once the data has been accepted by the host, the filled-in information – and only that – can be erased by means of a single command. The form itself remains up on the screen and is ready to accept the next data entry sequence.

Beyond this remarkable range of text capabilities, the VT240 and VT241 clearly answer your graphics needs as well.

HIGH-IMPACT PRESENTATIONS IN GRAPHIC DETAIL.

The inclusion of a diagram, chart or graph in any report or presentation can immediately transform complex data into easily understandable information.





touchtype, and an editing keyboard and special function keys that reduce the number of keystrokes to complete an operation. Also, the set-up mode offers a menu in plain language (plain English, plain French and plain German) that leads you through each operation in step-by-step sequence.

All this effort has not gone unnoticed. Digital's video terminals received the International Design Award in 1984. The award is based on ergonomic suitability, safety, design quality, practical useability, technical excellence and practical visualization.

BEST ENGINEERED MEANS ENGINEERED TO A PLAN.

The VT240 and VT241, like every Digital hardware and software product, are engineered to conform to an overall

Both the VT240 and VT241 terminals generate bit map graphics in a choice of two protocols—Digital's ReGIS™ (Remote Graphics Instruction Set) and Tektronix 4010/4014™.



ReGIS lets you create and store business graphics as simply as producing ASCII text. With VAX-11 DECgraph™ and VAX-11 DECslide™ software, even a novice can prepare graphs and charts and turn them into slides. Self-explanatory icons let you

choose a box, circle, line, polygon, triangle or arc.

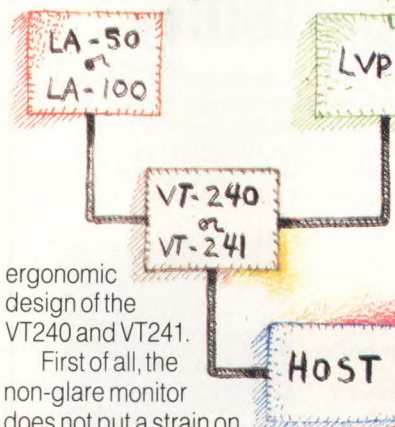
The Tektronix 4010/4014 protocol supports the full array of existing 4010 compatible graphics software. Besides, Tektronix Plot 10,™ TELL-A-GRAF™ and DISSPLA™ from ISSCO® and DI-3000,™ GRAF-MAKER™ and GRAFMAS-TER™ from Precision Visuals are also supported.

When you're using third party software, Digital provides you with the total hardware/software solution: video terminals, hard copy with the LVP16™ Pen Plotter and the VAX™ computer.

THE HIGHEST AWARD FOR ERGONOMIC DESIGN.

Your people have to spend long hours in front of a terminal. It stands to reason the easier they are to use, the more productive the results.

That's why so much time and thought have gone into the



ergonomic design of the VT240 and VT241.

First of all, the non-glare monitor does not put a strain on the eyes. Plus, it tilts to adjust to the exact viewing angle that's most comfortable to work with. The detachable keyboard is ruggedly constructed, yet light enough to place on your lap. Even the way the keyboard has been arranged boosts productivity.

There's a standard type-writer keypad so you can

computing strategy. This means our products are engineered to work together easily and expand economically. Only Digital provides you with a single, integrated computing strategy direct from desktop to data center.

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THE BEST ENGINEERED COMPUTERS IN THE WORLD

digital™

Display Terminals

(Continued from page 128)

Power consumption. As keen observers can determine for themselves, most dp hardware has done more than shrink in size—it also consumes less electricity and runs cooler. Manufacturers like to cut the size and, therefore, the amount of power required, and this works to the benefit of users, too. Modest savings on the power consumed by each terminal in a room full of busy terminals, when added to the energy savings on environmental control, can mount up in a year's time.

Low power consumption is one of the claims of IBM's new 3270 terminals. Model 3180 monochrome and Model 3179 color terminals require only about half the power of their predecessors. In addition, they're said to take up 30 percent less desk space and weigh 35 percent less than other 3270 models.

Flat-panel displays. Who wouldn't like to use a screen that's only a few inches thick, that could be pushed to

the back of a desk or even hung on the wall like an audio speaker?

For example, IBM introduced its Model 3290 gas-panel terminal about 18 months ago. Filled between grids with neon and argon gases, the display is six inches deep. But at more than \$7,000, the IBM 3290 doesn't come cheap.

Telegenix Inc. (Cherry Hill, NJ) has announced a family of large gas-plasma displays in various sizes, which are compatible with most data-communications systems and computer networks. Prices range from \$3,000 to \$55,000.

Sharp Electronics Corp., Paramus, NJ, is now supplying electroluminescent (EL) flat panels to engineers who will incorporate them into system designs. The panels are only 1½-inches thick, providing 25 lines, each of 80 characters in an orange color. Sharp reminds users that it's been supplying smaller EL panels for portable computers from Grid Systems Corp..

Mountain View, CA, for some time.

Ergonomics. Roughly equivalent to user-friendliness, ergonomics is the study of what makes users comfortable and efficient. Some ergonomic features now popular on VDTs will receive a quick review here. (See "Demystifying ergonomics" in this issue.)

The benefits of ergonomic features are best measured by VDT users who are most likely not VDT buyers: That fact could explain why some managers are hard-pressed to justify including ergonomic features.

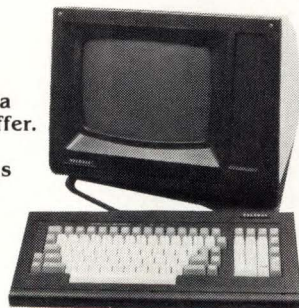
One of those managers is Jack Simpson at American Home Products. "Ergonomic features cost extra on the IBM and Hewlett-Packard equipment we buy—and we just don't spend it," he comments. "If somebody in our operating divisions asks, say, for an extra 20 percent in an appropriation for screen-tilt, no-glare features, or special furniture, the request just doesn't survive."

(Continued on page 135)

D200 and ANSI Compatibility

Our new Model 7-DDG talks both Dasher* D200 and DEC* VT102 (ANSI X3.64). It is the only terminal that does. As a D200, it has all the features you want, including dedicated user function keys and hidden display attributes. In DEC mode, it's a VT102, with a more extensive ANSI code set.

The 7-DDG has two or four pages of display memory, smooth horizontal and vertical scrolling, two bi-directional RS232 ports and a 256-character input buffer. And it stores up to 32 programmable functions in nonvolatile memory. It even has a time of day / elapsed time clock.



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CIRCLE 72

7300 and ANSI ...and Graphics

The smart new Telera Model 7-HNY is the only terminal that offers Honeywell VIP7300 and ANSI X3.64 compatibility, plus optional Tektronix 4010 / 4014 graphics.

The 7-HNY comes with a sculptured, detached 7301 / 7303 multifunction keyboard, green or amber, 12 or 15 inch display, and two bi-directional I/O ports. It features keyboard selected set-up modes, horizontal and vertical smooth scrolling, non-displayed

attributes, protected fields, non-volatile, user programmable function keys, and optional multi-page memory. And more.

This unique terminal is also VT52* and VT102 compatible, which makes it ideal for applications where a single terminal is needed to operate in both Honeywell and DEC* environments. And still more.

Its optional 4010 / 4014 graphics capability, with 640 x 240 resolution, cost-effectively supports business graphics operations in either environment.



MODEL 7-HNY. Unique . . . versatile . . . cost effective.

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- Low profile keyboard with adjustable height for easier data entry.



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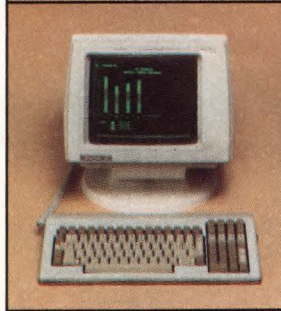
VIEWPOINT®/90.

OEM's delight... double-high / double-wide, split screen, programmable function keys, down-line loadable, and more.



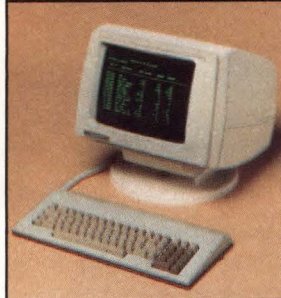
VIEWPOINT®/78 and VIEWPOINT®/78 Color.

IBM functionality in monochrome and color.



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THE SECRET of putting 3270 computer power into a small space is the 9116 System by Harris. And the secret of the system is the 9116 *Controller*. Now branch offices, customer service desks, and all remote departments with limited space can link up with an IBM mainframe without the burden of a big, bulky controller. The 9116 offers full remote SNA

communications capability at protocol converter prices. And as your remote office grows, so can your Harris System. Each 9116 can accommodate up to 16 devices — including a range of terminals: 12" and 15" displays; green, amber, and color displays; screens up to 132 columns. The 9116 is customer installable. The fit is perfect. The quality is Harris.



HARRIS

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TO: J. Barry, VP Marketing Interactive Products Division, Harris Corporation,
16001 Dallas Parkway, P.O. Box 809022, Dallas, Texas 75380-9022.

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CD-984

For your information,
our name is Harris.



Display Terminals

(Continued from page 132)

However, as the link between ergonomic features and productivity is more widely accepted, some features may become imperative in VDT purchases. Display tubes that can be tilted and swiveled, for instance, allow a terminal to be adapted to operators of different heights and work styles. Some experts maintain the display screen should be high, only a few inches below eye level. But whatever the user's mode, a screen tilted at the preferred angle may help to prevent eye- or neck strain.

Detached keyboards give users a great deal of freedom, even to the extent of placing keyboards on their laps. Attached keyboards, by contrast, force operators to sit very close to the screen, a position that can be uncomfortable. Increasingly, detached keyboards are a requirement for many data- and word-processing jobs. Users may reward you with higher productivity if you provide this feature.

Keyboard configurations are also important. Keyboards sit at dissimilar angles, some are higher than others, or keys may be arranged differently or be variously shaped.

No-glare screens are another widely proclaimed feature of ergonomic terminals. In theory, they cut the light reflected into the eyes of users by trapping light rays at the screen's surface. Some manufacturers provide a hooded bezel or shallow visor that intercepts light from windows or fixtures.

If you're not satisfied with what you see on a display screen, you can buy a filter to fit over it. Polaroid Corp. (Cambridge, MA) manufactures a series of sophisticated polarizing filters for common terminals, priced from below \$100.

Glare/Guard is said to eliminate up to 94 percent of display-screen glare. From Optical Coating Laboratory Inc. (Santa Rosa, CA) every panel, regardless of size, sells for \$99.

Special features. Some VDTs come with features that have value for certain users, but that add considerably to the cost. In particular, there's the telephone combined with a

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You are adding terminals to the office. Your business requires a link-up with a remote IBM® SNA or BSC mainframe — but traditional 3270 controllers just take up too much space. You'd like a compact desktop controller, and you insist on an established vendor with a reputation for reliability and service. You want a system that satisfies your current needs, but assures flexibility and options for growth. And you need economy.

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Functional, economical, and reliable, the 9116 System does it all at a cost way below the competition's. And it's even customer installable.



9116: At heart, a powerful full-line system.

9116 Controllers come in four models (4-, 8-, 12-, and 16-device); the full complement can be any mix of up to 16 Harris interactive displays and printers:

- 15" display terminal with a variety of screens.
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- Terminal Multiplexer.

- Personal computing option.
- Harris Connection for the IBM® Personal Computer.
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Even if your present circumstances require no more than a single display, long-term savings are all part of the 9116 package.

With an extensive complement of display, computing, and printing capabilities, your Harris 9116 will fit your space, fit your budget, and fit your plans like no other remote 3270 System.

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HARRIS

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ADDRESS _____
CITY _____ STATE _____ ZIP _____

Display Terminals

(Continued from page 135)

terminal. One device, called the Displayphone, allows an executive to tap into databases, and combines an automatic-dialing feature with electronic mail. It's from Northern Telecom (Minneapolis) and the base price is \$1,295.

Tolerance of conditions. Most ter-

Multi-functionality and compatible protocol standards are trends to consider for long-term utility.

minals can operate effectively in environments that might shut down sensitive minicomputers and mainframes. CIE Terminals (Irvine, CA) makes terminals that can tolerate temperatures from 32 degrees to 105 degrees and humidity from 5 percent to 95 percent. The CIT-101e, with ergo-



Equipped with the ANSI X3.64 protocol, the Televideo Systems Model 922 sells for less than \$1,000.

nomic features and compatibility with the DEC VT100, costs \$1,495.

The most intimidating issues in terminal use have to do with health and safety. Heavy users of VDTs have complained that display terminals are the source of ills ranging from backache to fetal damage. District 925, an affiliate of the Service Employees International Union, the National Assn. of Working Women, in Cleveland, and other unions have cam-

paigned for changes in workplace laws to protect employees who use VDTs. Only Maine has passed a law affecting terminal usage, although it is a limited one, only covering state, county and municipal employees. But some states may well pass one of the bills already drafted, even if the stringent requirements are softened, thanks in large measure to trade-association lobbying.

Legislation and worker dissatisfaction—data-entry employees are considered the ripest of all dp workers for unionizing—may affect the purchase decisions you make in the future. That's true even though investigators from federal agencies, like The National Institute of Occupational Safety and Health, and public panels have not yet discovered evidence supporting the notion that radiation from terminals undermines health. If you're buying for the long term, you'd be well advised to look for terminals

(Continued on page 140)



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- 46% would change jobs for more autonomy, authority, or control
- 42% would like to move into general management

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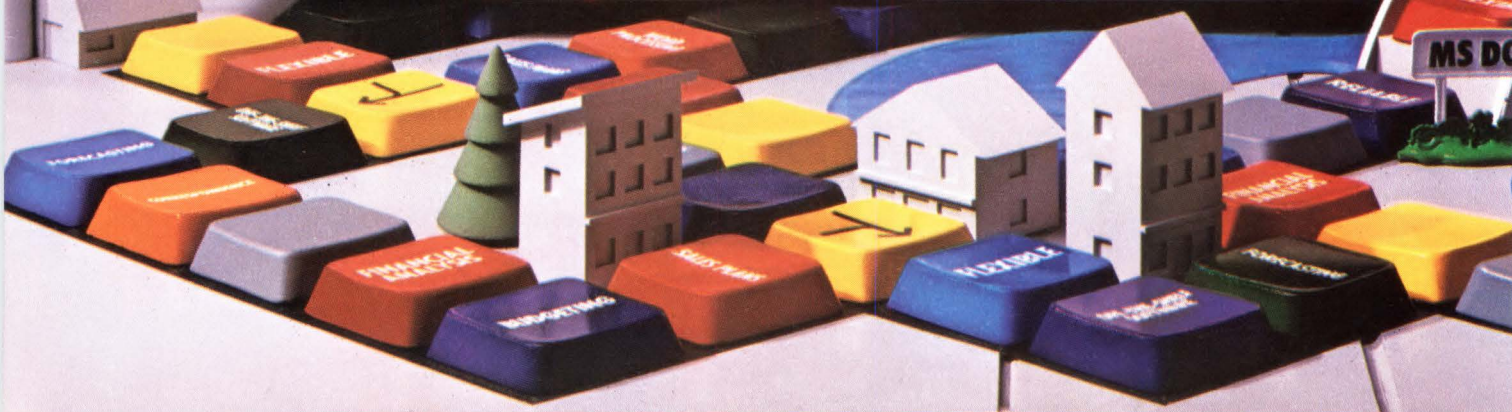
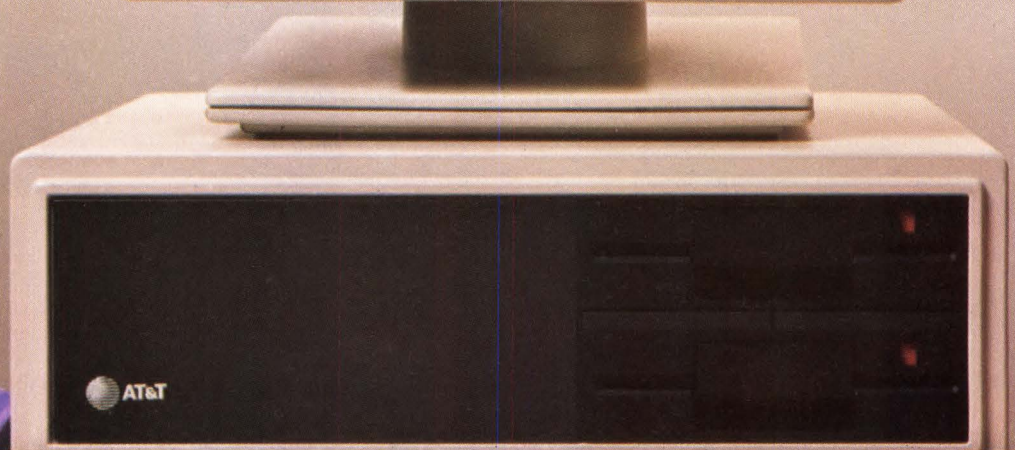


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Driven by the MS-DOS* operating system, the AT&T PC runs the most popular off-the-shelf software for a wide range

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Display Terminals

(Continued from page 136)

that come with reassuring information on radiation levels and with ergonomic features that will head off complaints of discomfort—or worse.

Because terminal operations are vital to your business, you can't afford to see your equipment go out of service. Therefore, you should check

Decide on functions and compatibility first, then go for the features—color, graphics, size, and ergonomics.

carefully into the extent of technical support a vendor can furnish.

Before you buy, Printz recommends, benchmark terminals and associated hardware. "Get the vendor to ship you terminals—three or four terminals, a cluster controller, and a printer—and put them through their



Equivalent to the IBM 3180, the Model 9230 from ITT Courier Systems boasts a 15-inch monochrome screen. The list price is \$2,295.

paces," he advises. "Run that system against another, in parallel. Determine whether the proposed equipment is truly compatible with installed hardware and whether it will

handle your applications."

Lastly, before buying, consult with operators and heed their comments, he adds. "Consider the total cost, the support and maintenance available, and the reputation of the vendor."

Does that sound like far more effort than you've ever lavished on terminal

"Buying a single-function machine strictly on the basis of price is shortsighted."

Hunter, Data Decisions

acquisition before? Printz argues that he and his colleagues have customers with just such requirements, especially on major purchases. That course may seem difficult, but then, doing a thorough job on ordinary tasks has always been the mark of a true professional. □

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TeleVideo corrects the VT220 key mistakes.

The new TeleVideo® 922 shares but one feature with the VT220®: full DEC® compatibility. The similarity ends there.

1. Take our keyboard, for example. The RETURN key is within direct, easy reach. But VT220 users must stretch over an additional key to hit RETURN. Or have the hands of a concert pianist.



Here's ours.



Where's the VT220 ESCAPE key?

That's a true accounting keypad, complete with a Clear Entry, Double Zero and a TAB key. Not merely the numeric keys you get with the VT220.



DEC VT220

2. Our ESCAPE key is located above the TAB key, right where you'd expect to find it.

Theirs isn't.

In fact, you have to go hunt for the VT220 ESCAPE key halfway across the row of function keys.

3. Take a look below at the 922 key-

4. Our SHIFT key is exactly where it should be, so it does exactly what it should do—shift. Their SHIFT key is shoved over by the < and > key to create lots of < and > on the CRT. Of course with a little practice, you could re-learn their keyboard. But why, now that you've seen our 922?

Moving The Shift Key Is A Mistake.

922 Display Screen.

<oving <he <hift Key <s A <istake.

VT220 Display Screen.

5. And after we built a better keyboard, we built a better terminal. With exceptional reliability. Quality. Advanced ergonomics. Everything you'd expect from the industry ANSI leader.

The new 922 is available now and priced to move now. And it's backed by a worldwide sales and support network. Which means doing business with TeleVideo is yet another key difference.

6. Here are 6 more advantages to the 922.

	TeleVideo 922	DEC VT220
Programmable Function Keys	15 (30 with shift)	15 (shifted only)
True Accountant Keypad	YES	NO
Plug-in Graphics Upgrade Option	YES	NO
Non-glare, Green Phosphor Screen	YES	NO
Full Tilt & Swivel	YES	NO
Enhanced ANSI Mode	YES	NO

DEC VT220 are registered trademarks of Digital Equipment Corporation.

800-538-8725.

In California, call 408-745-7760.

The TeleVideo® 922

• TeleVideo Systems, Inc.

CIRCLE 81



Demystifying Ergonomics

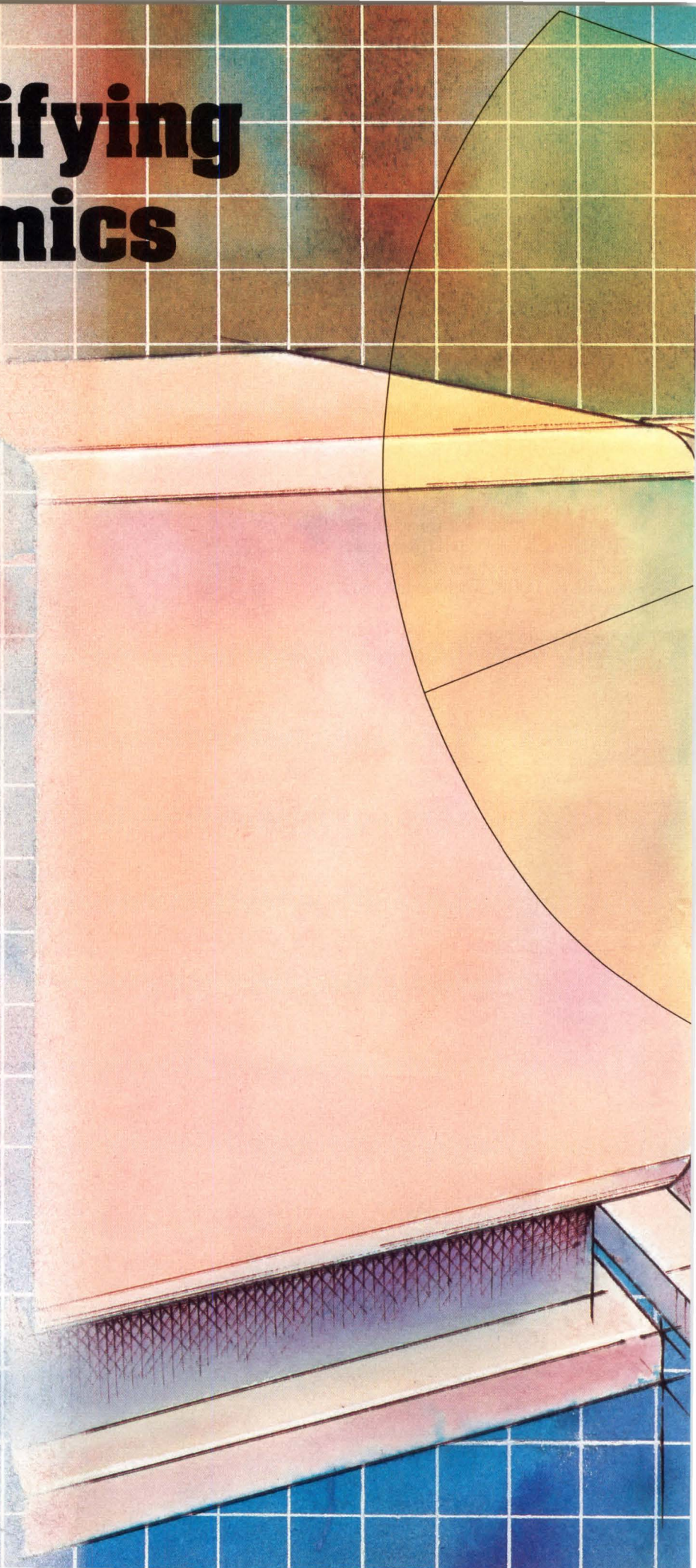
by David Kull, Software Editor

Creating comfortable, effective working relationships between humans and computers requires a little knowledge and a lot of common sense.

In an age when many employees spend more time conversing with their terminals than with their co-workers and spouses, the question of human-machine compatibility has important sociological and economic implications. What do we really know about the factors that determine whether or not interaction between people and processors is efficient? How much of a difference will this knowledge make? The answers are not clear-cut. They are, in fact, the subject of some controversy.

On one side, a white-collar workers union claims that computers turn offices into dangerous sweatshops. On the other side, vendors contend that their display terminals are perfectly safe. Managers responsible for introducing technology into the workplace must sift through these arguments. The hard facts about ergonomics they find beneath the rhetoric, combined with common-sense techniques, will help them design the most effective systems.

(Continued on page 144)





Demystifying Ergonomics

(Continued from page 143)

It seems obvious that ergonomic factors—the wide variety of issues related to human-machine interaction—will have an effect on productivity. Design affects any tool's usefulness. There is some evidence that the physical design of VDT workstations has a significant impact on operator output. Recent studies by the National Institute for Occupational Safety and Health (NIOSH), for example, found that data-entry workers using ergonomically designed VDTs increased productivity by 23 percent.

According to Marvin Dainoff, a professor of psychology at Miami University (Oxford, OH) and consultant to NIOSH, these specially designed stations addressed only a few ergonomic issues: They reduced overhead glare, altered the screen-viewing angle to 15 degrees below horizontal, and adjusted keyboards and chairs. The study focused on data-entry clerks from temporary agencies and compared the work they performed at ergonomically designed stations with work performed at "typical" terminals, which Dainoff described as "slightly maladjusted." Not only did the clerks stroke more keys at the ergonomic stations, they felt better doing it, according to their responses to a questionnaire.

One cannot extrapolate very far from these findings without entering shaky ground and lively arguments. Would other types of workers have achieved similar benefits from similar ergonomic measures? Is the design of a workstation a matter of health and safety? Beyond the physical characteristics of workstations, can the format and content of computer-generated messages influence employee productivity?

More than meets the eye

Little is known for certain about the interaction between humans and computers. Yet almost anyone who has used a terminal for any length of time has experienced some eyestrain. Some users say they suffer severe visual impairment. The National Academy of Sciences' committee on vision

recently reviewed the research on terminals and vision, however, and found no evidence linking video displays to visual harm. But the committee decided more data were necessary. "Careful research on the effects of VDTs on visual performance and comfort would be useful, especially in view of the projected increase in the number of workers who will be using such equipment," the committee concluded.

Researchers have found that visual discomfort associated with display terminals is caused by relatively few factors: poor contrast between characters and background, flicker, glare and reflection, and differences in lighting between the screen and surrounding objects. According to the Academy's committee on vision, there is little to choose from on the first two points. Although there are methods

for measuring sharpness and clarity, it stated, manufacturers currently use "diverse and generally not very useful ways of describing display characteristics." The committee noted, however, that a television, which is designed for moving images, is a poor terminal because stationary images flicker noticeably on the screen.

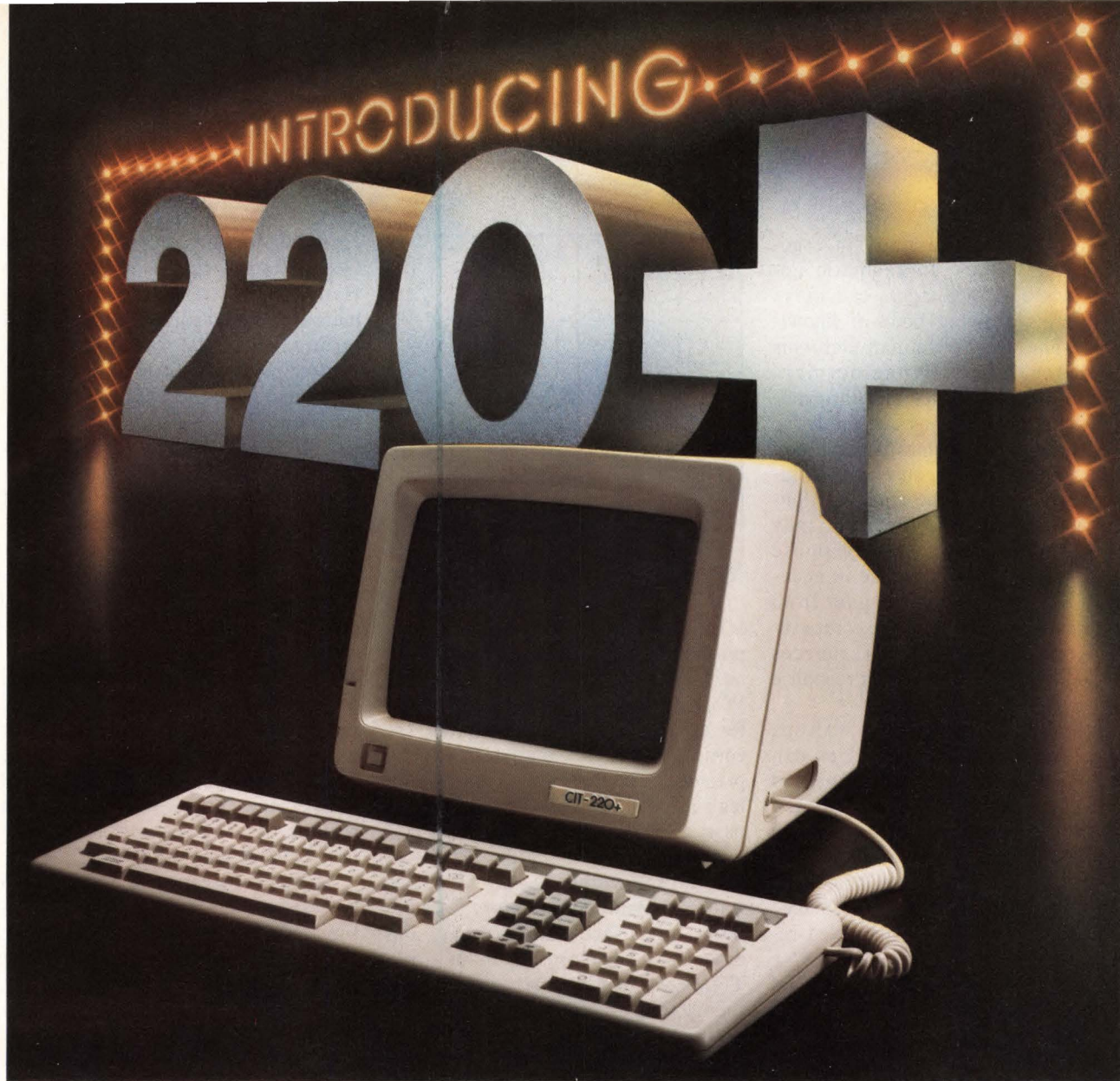
The lighting in your terminal room will determine the amount of glare and reflection present. Lighting designed to illuminate a horizontal desk will usually cause glare on a vertical screen. Short of redesigning a facility's lighting, screen filters ranging in cost from a few dollars to hundreds, can reduce glare and reflection. Because filters have only limited effectiveness—while reducing glare they may reduce the quality of the character image—the committee on vision recommends that they be used only to supplement an adequate lighting design. A hood extending from the top and sides of a screen can also reduce reflection and glare. Hoods are commercially available, but a makeshift hood can be easily constructed with cardboard and tape. Visual-display users also have difficulty adjusting their vision to the differences in the intensity of the light cast by the terminal screen and nearby light fixtures or windows. Placing terminals away from windows is one obvious precaution.

Poor legibility on a display terminal can also hamper user performance. According to Ben Schneiderman, director of the Human-Computer Interaction Laboratory at the University of Maryland, College Park, studies have found that video displays are 30 percent less readable than printed copy. For example, readers take about 30 percent longer to proofread and discover mistakes in material displayed on a terminal than on printed matter. The reasons for this phenomenon aren't understood, Schneiderman says, even though a number of factors—character size, screen colors, and contrast—have been studied. Whatever the cause, a prudent manager will have printouts made so text can be carefully proofread. (Continued)

Making the message

Words on a screen provide the primary link between computer systems and their users. Just like language between humans, the messages presented on terminals can be compelling or offensive. Ben Schneiderman, director of the Human-Computer Interaction Laboratory at the University of Maryland, suggests these guidelines for creating computer messages that will win friends and influence users:

- Be concise.
- Avoid scolding terms such as "error," "illegal," or "invalid."
- Provide specific help in terms the user will easily understand: An inventory application, for example, might direct users toward acceptable entries by stating: "Dress sizes range from five to 16."
- Put users in control by providing them with enough information to take action.



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Demystifying Ergonomics

(Continued from page 144)

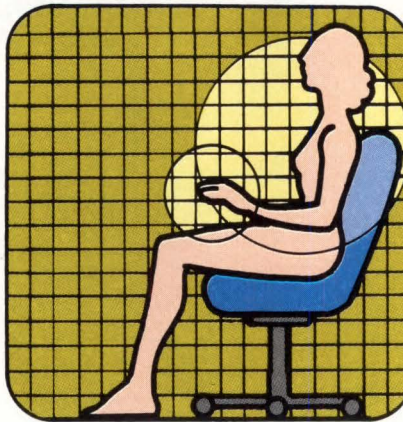
Since little in the study of ergonomics is certain, a pragmatic approach is best. Managers can make use of this growing body of knowledge. "The study of human factors is a science," says Schneiderman. "There are techniques and information that organizations can apply."

Although it's generally accepted that a terminal's response time influences productivity, the exact relationship is ambiguous. Employees may work faster with faster response times, yet suffer a decrease in accuracy. For some tasks, the gain from rapid conversation with the computer may not be worth the resources needed to achieve that faster response time.

Schneiderman suggests various ways organizations themselves can analyze these questions. One method is to vary response times between groups of employees using the same computer for the same task, and then compare their output. Another way is to let the corporate "marketplace" determine the value of improved response time. Using this strategy, a manager requesting faster terminal response would be expected to pay for it with the funds coming from the department's improved efficiency.

One benefit of the "marketplace approach" is that it considers ergonomic factors in specific contexts. A multitude of factors influence human-computer interaction, and terminals are used in many different ways. Some factors will be important in some situations and meaningless in others. This complicates the search for optimum workstation and system designs—and for minimum standards.

Movement toward federal health standards for display terminals has waned in the wake of the Reagan administration's anti-regulatory stance. The American National Standards Institute (ANSI), however, is working to develop voluntary standards. According to Gene Lynch, senior-human-factors engineer for Tektronix Inc. (Beaverton, OR) and chairman of the ANSI committee on video terminals, a draft of proposed



standards should be available for publication late this year or early next. The National Association of Working Women, 9 to 5, is pushing for standards at the state level. According to Karen Nussbaum, 9 to 5's president, 11 states are considering legislation, but none are expected to pass it within the next year.

Nussbaum sees no difficulty in determining standards—at least for full-time terminal operators. She believes adjustable chairs, desks, and detachable keyboards are mandatory. These factors allow operators to make themselves comfortable by shifting positions occasionally, an important capability for any worker performing a task over an extended period. And although she doesn't cite candlepower or other technical measures, she feels standards can provide for proper office lighting and screen contrast.

Improper terminal design causes real pain and suffering for operators, Nussbaum contends. And radiation emissions, she says, may cause actual illness and/or physical damage. Her organization is particularly concerned about non-ionizing, extremely low-frequency radiation (ELF), which is associated with electric current and given off by many common appliances.

The dangers of X-ray emissions are well established and there are standards that are generally adhered to, but researchers know much less about the effects of ELF. At some frequencies and intensities, however, it has been associated with reproductive pathology in experimental animals,

according to the Canadian Center for Occupational Health and Safety in Hamilton, Ontario. The center has measured ELF radiation from several terminal models. Although many emitted no or very little ELF, leakage was found from the sides and backs of some units.

"Since we don't know for sure about the biological effects of the emissions," says Karel Marha, chief scientist for the studies, "we recommend that operators not sit to the side of, or behind another terminal that's in use." According to Marha, many terminal models are shielded all around to prevent ELF leakage. Manufacturers should be able to tell prospective customers about the radiation levels emitted from their terminals for all frequencies. And the Canadian Center for Occupational Health and Safety will provide, on request, the ELF readings for the terminals it tested.

Many of the concerns about health and safety apply primarily to full-time terminal operators. According to researcher Jon Ryburg of the Facility Management Institute in Ann Arbor, MI, which is funded by furniture manufacturer Herman Miller Inc., ergonomics becomes an issue only when employees spend more than 20 percent or 30 percent of their time at terminals. But the number of employees who spend hours in front of those terminals can escalate rapidly when automation begins. Ryburg suggests that a corporation plan well ahead for this eventuality.

Selecting the proper furniture takes time. Because office furniture has about a seven-year lifespan, the decision will have long-term effects and important budgetary implications. New furniture—and new lighting—costs plenty, particularly if you have to refit a large office or installation. Chances are that final expenses will be even higher than estimated. Ryburg advises planning for the greatest possible infiltration of technology—a ratio as high as one terminal per employee.

Information-services managers should be part of facilities planning,

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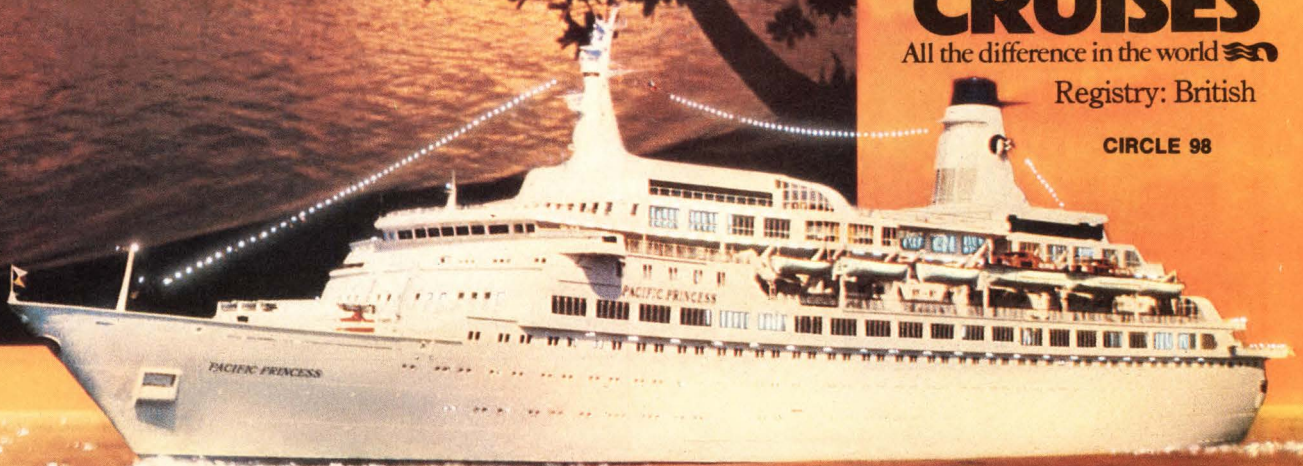
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Demystifying Ergonomics

(Continued from page 146)

Ryburg says, along with representatives of the human-services department. This committee should develop standards for furniture and terminals, he asserts, so that the major decisions can be researched and carried out one at a time. The standards should be keyed to specific job classifications.

The existence of a facilities-planning committee helps ensure that those with the greatest knowledge and interest in the introduction of technology to the workplace are held responsible for its success.

According to Ben Schneiderman, corporations that employ human-factors engineers for system development often set these engineers up in separate departments to operate as internal consultants. This practice hampers the effectiveness of the engineers, he says, because development teams naturally view these internal consultants as visitors. For this reason, their opinions may not carry the same weight as the permanent employees who will have to live with the finished product. The internal consultant's limited personal investment in a project may also temper his or her insistence on important points. Whether or not there are human-factors engineers on staff, Schneiderman says, responsibility for a system's ergonomics belongs to the development team.

Schneiderman suggests that project directors assign this responsibility to an individual or divide it among several team members. Depending on the project, it may be a part-time job for one employee or a full-time job for several. The key is to concentrate energy and authority for the human-computer interface within the development team. Those assigned to the team would be responsible for gathering together the human-factors expertise and any other resources necessary to ensure that their design works effectively.

How can developers guarantee a successful system that will work well with users? Although there are guidelines for screen design and error messages (see box), the surest way to determine the level of human-com-

puter interaction is to test it. User-acceptance tests can take a variety of forms. During implementation, for example, a group of users might be asked to complete a set of tasks after a certain period of study. A second test might compare the performances of employees who had continued to work with the system with those who had only the initial training.

The test design must fit the system's purpose. If it will be used only occasionally, the users' ability to remember operations should be measured. If the system will be used to make split-second decisions, the test should assess the users' speed and accuracy. The human-factors engineers on the development team should design the tests.

As the computer becomes closely intertwined with more and more jobs,

NIOSH found that data-entry workers using ergonomically designed VDTs increased productivity 23 percent.

problems caused by the machine may blend with problems inherent in the work. Drudgery performed on a typewriter is as debilitating as drudgery on a computer terminal. But few critics cite the typewriter as the cause of job discomfort. No doubt the computer makes possible—or sometimes requires—some new types of painfully boring labor. And in many instances, such toil is merely transferred from manual methods to a terminal. In any case, the machine—the agent of perhaps frighteningly rapid change—can unfairly take the rap for poorly designed work.

Responsibility for shaping palatable, if not meaningful, duties has traditionally belonged to line managers. Their sensitivity to the terminal's increased role in their employees' work, and to their employees' perceptions of the tool, is the first step toward an effective working relationship between humans and computers. □



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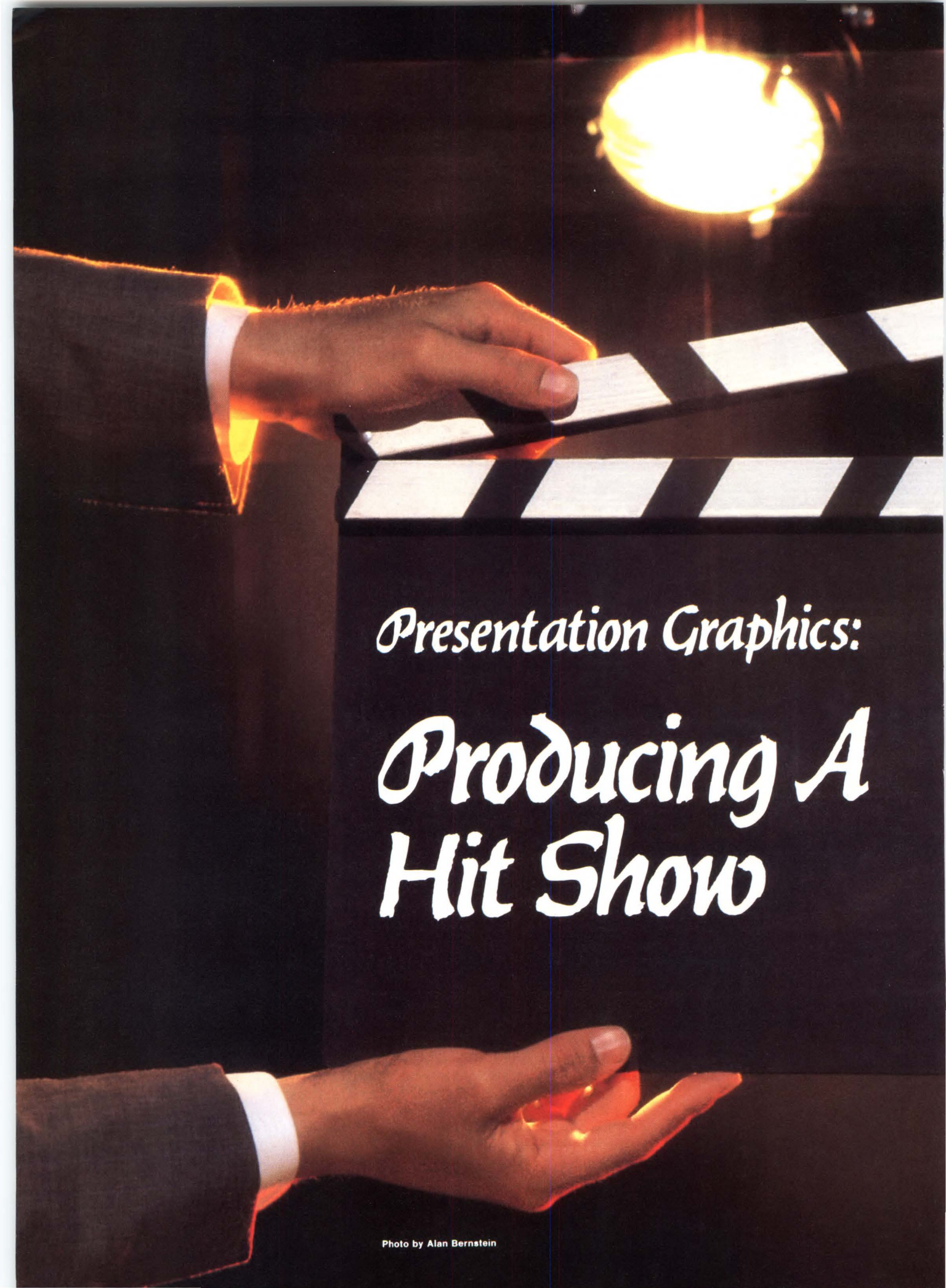
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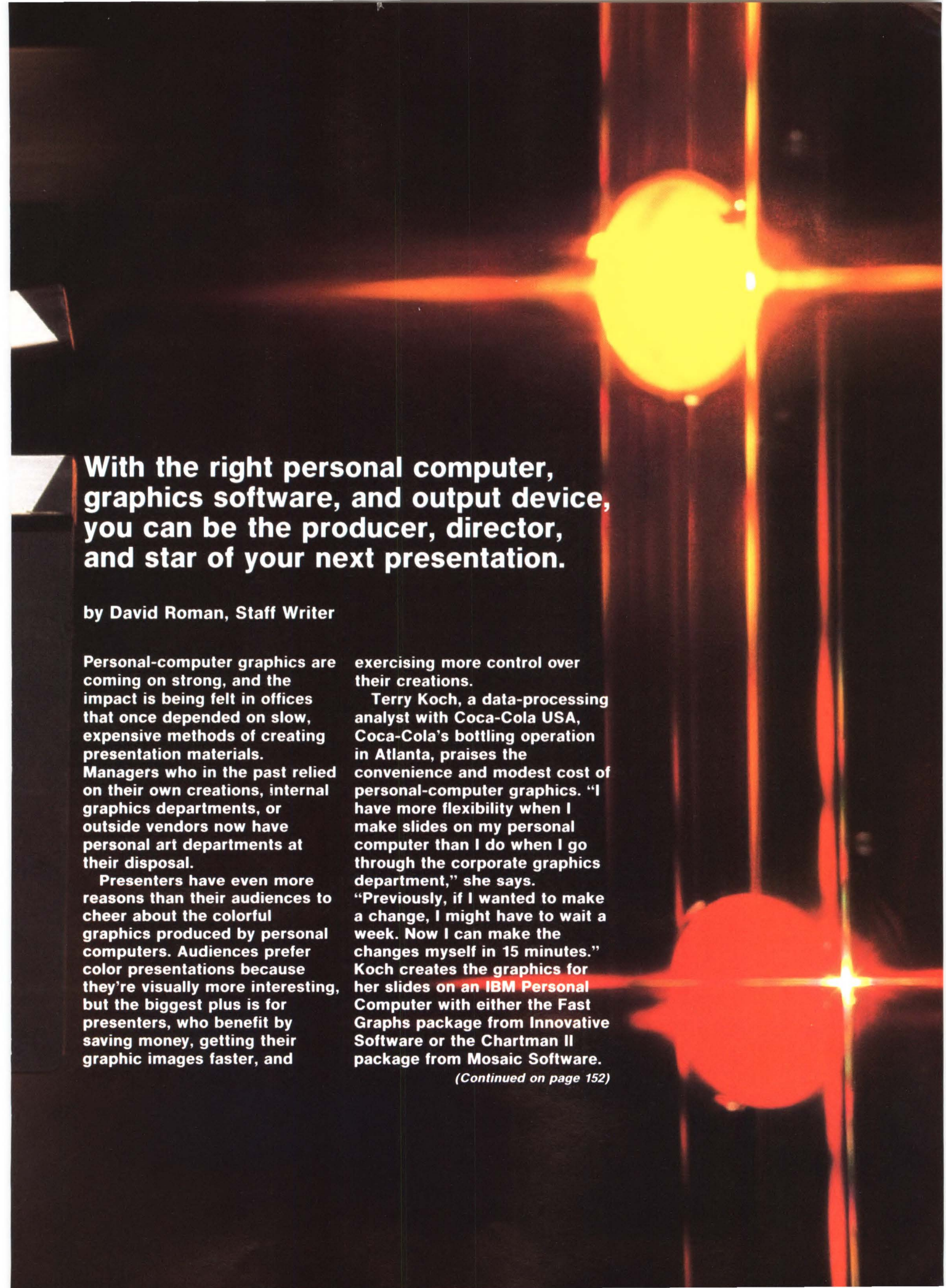
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A photograph of a hand holding a clapperboard in a studio setting. The hand is wearing a dark suit jacket and a white shirt cuff. The clapperboard has black and white diagonal stripes. A bright, circular light source is visible in the upper right corner, casting a warm glow. The background is dark.

Presentation Graphics:

*Producing A
Hit Show*

Photo by Alan Bernstein



With the right personal computer, graphics software, and output device, you can be the producer, director, and star of your next presentation.

by David Roman, Staff Writer

Personal-computer graphics are coming on strong, and the impact is being felt in offices that once depended on slow, expensive methods of creating presentation materials. Managers who in the past relied on their own creations, internal graphics departments, or outside vendors now have personal art departments at their disposal.

Presenters have even more reasons than their audiences to cheer about the colorful graphics produced by personal computers. Audiences prefer color presentations because they're visually more interesting, but the biggest plus is for presenters, who benefit by saving money, getting their graphic images faster, and

exercising more control over their creations.

Terry Koch, a data-processing analyst with Coca-Cola USA, Coca-Cola's bottling operation in Atlanta, praises the convenience and modest cost of personal-computer graphics. "I have more flexibility when I make slides on my personal computer than I do when I go through the corporate graphics department," she says.

"Previously, if I wanted to make a change, I might have to wait a week. Now I can make the changes myself in 15 minutes." Koch creates the graphics for her slides on an IBM Personal Computer with either the Fast Graphs package from Innovative Software or the Chartman II package from Mosaic Software.

(Continued on page 152)

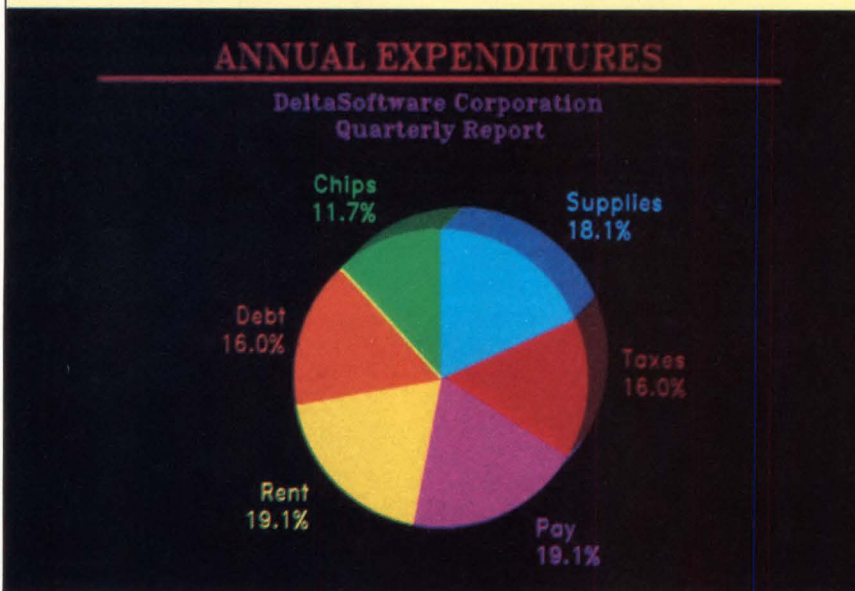
Presentation Graphics

(Continued from page 151)



Improving graphic imagery

The image above is a reproduction of a slide photographed by Celtic Technology's Computer Camera. Jagged lines are most noticeable in the "o" of Smokestack and along the back of the sloping block to the left. Photos taken with the Computer Camera reproduce the pixel resolution you would see on a monitor, including jagged lines. The General Parametrics Slidemaker 150 video film recorder, which created the slide below, bypasses pixel resolution. Jagged lines are missing, even along the continuous curves of the pie chart. The small words identifying the pieces of the pie demonstrate how legible fine print can be when jutting pixels are missing. The 3-D bar chart above was created on the IBM PC with Videogram software from Softel. The image below was created on the IBM PC with General Parametrics' Picture It software.



The graphics are then photographed with the Videoslides 35 from Lang Systems Inc., a video film recorder that photographs images projected on a crt.

Koch uses two other output devices to create presentation materials—an HP 7470A two-pen plotter for transparencies or handouts and a Polaroid Palette Computer Image Recorder that creates slides instantly. She says she no longer has to ask the in-house graphics department to make slides for her. Although the slides generated on the PC "are not as good as some of those drawn by artists," Koch says, "they are very satisfactory."

They are also very inexpensive slides. Last year an outside service prepared a presentation for the annual meeting of Coca-Cola USA's southeast staff and sales personnel. Koch says that Coca-Cola paid the service \$15,000 to create 250 slides, or \$60 per slide. For this year's meeting, 350 slides were created on the IBM PC and photographed with the Lang Videoslides. The cost: only \$175, according to Koch, or 50 cents apiece. Slides created by outside services "always run into big bucks," Koch says. "And if you pay \$60 for a slide, you're going to use it whether you like it or not. The benefit of using the PC with Videoslides is that cost is not a factor. If you don't like the way a slide turns out, you can create a new one."

Nancy Amos, an associate operations-research analyst with Federal Express Corp. in Memphis, TN, also prefers personal-computer graphics. "Before we had our new equipment, we didn't use many slides because they were expensive or difficult to create," she says. Amos works with two graphics software packages, either Videogram from Xiphos Inc. or DR Draw from Digital Resources. The packages run on an Advanced Personal Computer (APC) from NEC Information Systems Inc.

Employees at Federal Express are just getting comfortable with personal computers with graphics capabilities. Although most of them have

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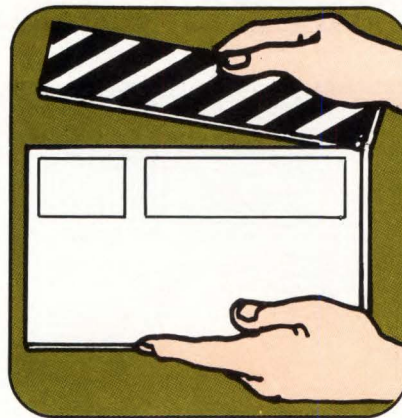
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Presentation Graphics

(Continued from page 152)

been trained to use IBM mainframe graphics available on IBM 3279 graphics terminals, Amos says the employees prefer using personal computers to create presentation graphics. "Most of our slides are created on personal computers," she says. "The terminals are used to look at graphic representations of data. We have more control because we can play with a graphics package until we get the right image. That's better than telling somebody else what we want and hoping it comes out right."

Plotters have been used at Federal Express to create transparencies of images that appear on the graphics terminals and, occasionally, images off the APC. But Amos believes the slides are more popular because "they're easier to make, and they keep a presentation rolling along bet-



ter than transparencies."

Amos uses two methods to create slides that replace the old method of photographing the face of a crt with a 35mm camera propped on a tripod. "There was too much fooling with the camera settings when we shot from the screen," she says, "and we got

some curvature distortion, too." One of the new methods employs the Computer Camera from Celtic Technology Inc. Instead of photographing a monitor directly, this device converts the signal that projects an image onto a monitor into an image on film, which is then developed.

The Computer Camera, which resembles an elongated shoebox, is plugged into a micro's graphics board where the monitor is usually hooked up. The Computer Camera includes a cable that attaches to a monitor, so the camera can be hooked in series between the computer and its monitor. The monitor will still display an image. This allows the user to examine and change an image until it is satisfactory, and photograph it only then.

The Lang Videslide 35 follows similar principles, as does the Polaroid Palette. The Palette, however, comes with something extra. The film from other video film recorders has to be sent out to be developed. The Palette comes with the Polaroid 35mm Instant Slide System, which, Polaroid claims, enables a user to develop the film and create slides in five minutes. The Instant Slide System is a box about the size of a wall phone. A roll of film is placed in the box and wound through, much the way film is wound through a camera. This first winding exposes the film to chemicals. After a few minutes, the film is rewound onto the roll. The system comes with slide mounts and a cutting device to separate exposures. The entire development and mounting process can be done in broad daylight. The system requires the use of Polaroid's Instant Slide Film, which is available in black-and-white and color. The Instant Slide System can be purchased separately from Palette for under \$100. The cutting and mounting device costs an additional \$20.

Because the signals produced by each personal computer and graphics terminal are different, the manufacturer's task of providing compatibility between its video film recorder and the scores of micros currently available is a complicated one. Each

Tips on giving good presentations

Good graphics help make a good presentation, but they don't guarantee success. Here are a few pointers to apply to your next presentation.

- Assemble the right people. If you are arranging a debate, make sure you have speakers who can present each side's case thoroughly. If you are trying to reach a decision, make sure the person responsible for approving that decision is present.
- Promote discussion. Don't talk too much; it bores your audience. Encourage participants to speak up, but don't let them stray from the topic. One technique that keeps audiences attentive and you in control is to switch back and forth between short talks and visual projections. Your visuals should relate to your discussion anyway, but this technique lets you shift attention from yourself to the data and back again. If an exchange between participants heats up, simply switching on your projector should direct attention and control back to you.
- Place your projection screen to the side of the room. Don't stand in front of the screen and block someone's view. A side screen will also help shift the audience's attention from the projections to you.
- Relax. Don't grip your lectern or pace back and forth. An audience can tell when you're nervous.
- Keep the lights on. Don't give anyone a chance to snooze. Bright lights keep attention and participation levels up.
- Plan, polish, and practice your presentation. Even though new technology may allow you to throw together your slides at the last minute, it's better to give yourself plenty of time to prepare.

These tips can be found in "How to present more effectively and win more favorable responses from more people in less time," a brochure available from the Audio Visual Division of 3M. For a copy, write to the division at 3M Center, St. Paul, MN 55144, or call (612) 736-1285.

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Presentation Graphics

(Continued from page 154)

brand of recorder must be able to understand the signals of each computer or terminal its manufacturer wants it to support. Palette now works with nine micros from six vendors. The Computer Camera works with about 20 personal computers and graphics terminals, and the Videoslides is compatible with more than 80.

Similarly, the manufacturers of the plotters, printers, and graphics boards (also called adapters or cards) that make up a microcomputer's graphics outfit have to convince the makers of graphics software to write packages that will put their products to use. Because the box picks up the signals the graphics board sends to the monitor, the photograph is identical to the image that would be projected onto the screen; that is, it is composed of a pattern of pixels, or dots. A printer or plotter will only print graphics generated by particular software packages—those that include the proper command codes. Every available software package will not drive every available plotter. Every color graphics card won't project every color a package offers.

The hardware and software puzzle

that a user must assemble just to get a graphic image on a screen in some presentable form is not simple. The pieces are all interrelated. The leeway available in the selection process lets the user decide the quality of the graphics that the system will produce. Here's a list of some items that must be added to a personal computer if it is to conjure up graphic images. A few clues on what to look for to make each of these pieces fit your system are also included.

Software. Some packages can create a wider variety of graphics with a larger range of colors than others. Make sure the package you select can run on your micro.

In graphics software, like the hardware, there's always something new. The R:graph and dGraph packages from Fox & Geller Inc. can get by as standard graphics packages, but they can also create graphics from information stored in the files of Microrim Inc.'s R:base database management system (DBMS) and Ashton-Tate's dBase II DBMS, respectively. This makes them more attractive to users who already own those database packages. Add-on packages that store pre-



Slides can be created in minutes with Polaroid's Palette system, which operates with the IBM PC (shown here) or several other personal computers. The Palette comes with an attached 35mm camera, Polaroid's unique Instant Slide System (foreground). Film development takes place within this box. The smaller device at the edge of the table is the system's slide-mounting unit.

drawn images can be purchased with VCN Execuvision software from Visual Communications Network. These packages expand the range of images a user can incorporate into a presentation.

Graphics boards. These boards (cards) are responsible for projecting the images created by graphics software onto a computer's screen. You can choose between cards for color or black-and-white graphics. Software is written for a particular graphics chip, which you will find on several cards from different vendors. The capabilities of these cards vary widely. Color graphics demand more memory of a micro, and a graphics card comes with this extra memory. However, some of the cards carry only enough memory to display four colors at a time, a problem for users of software that can "paint" with a much larger selection of colors. Cards with more memory will display more colors, 100 or more in some cases. But there is a price for these

(Continued on page 160)



These images are part of the Professions: Faces and Figures package of add-on graphics available with Visual Communications Network's Execuvision software. This disk-based library of predrawn images gives the standard Execuvision graphics package an extra kick of capability. Images like these can be reproduced in full or in part.

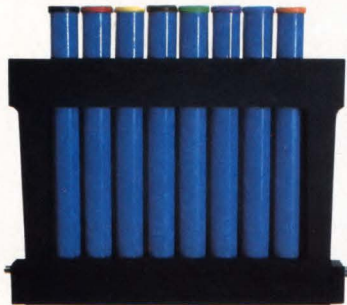
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with our "no stopping" feature you'll get unbeatable throughput.

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Designed expressly for the SNA/SDLC environment.

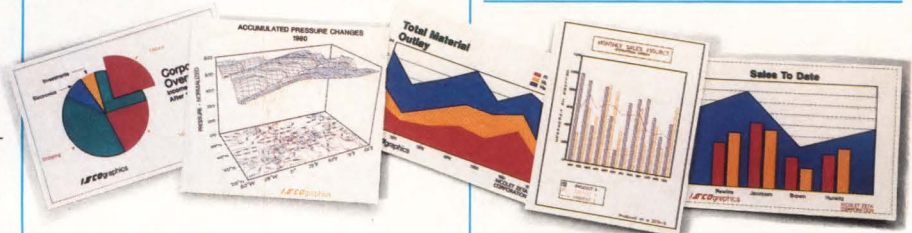
The ZETA 887 connects to your IBM cluster controller the same way your IBM 3287 printer does. Just plug it in.

We're more than just hardware compatible. We take IBM's GDDM

a leader in the IBM interfacing world with a wide family of field-proven plotters running direct from IBM.

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and convert it into a data stream all of our Zeta plotters have been designed to understand. In fact, we're

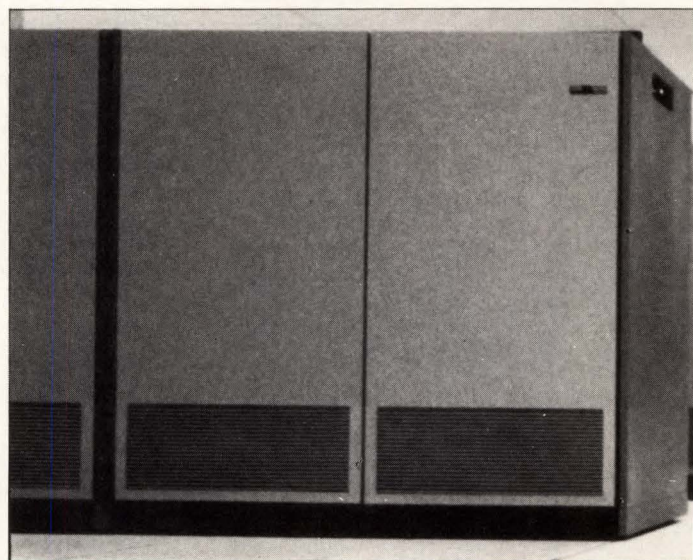
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Presentation Graphics

(Continued from page 156)

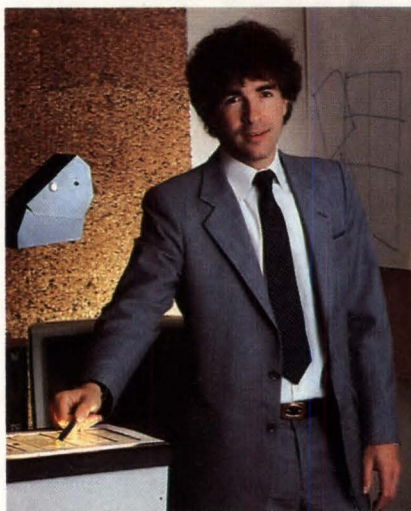
extras, and you must decide how much you are willing to pay for these capabilities.

A graphics card also determines the resolution of the image projected onto a monitor. Some cards offer higher resolution than others, but again, you pay extra for this feature. The resolution quality is determined by how dense an array of pixels the graphics card supports. This factor

Presenters have more reasons than audiences to cheer about the graphics produced by personal computers.

should be considered if you plan to use a video film recorder to produce presentation slides because the recorders reproduce projected images exactly, rough edges and all.

Monitors. Color graphics and a color graphics card require a color monitor for you to see exactly what the graphics will look like before they are created on your output device. It's possible that your monitor could be your presentation device, but only if



David Solomont, president of Business & Professional Software Inc., doesn't believe graphics capability should require users to make "a significant extra investment in their personal computers."

your presentations are made to very small groups. If you don't want to see a graphic image before it is transmitted to a plotter or photographed by a film recorder, a monitor is not needed. High-resolution monitors are available, but they will not display sharp images on their own. They require high-resolution cards. Some costly high-resolution monitors can

display images that are more precise and colorful than any currently produced by any micro software or graphics card.

Printers and plotters. Graphics software packages are particular about which printers or plotters will reproduce their images. Typically, a software vendor will claim that its product supports all major peripherals, whether it drives a half dozen or

The hardware and software puzzle users must assemble to get graphics images on the screen is not simple.

several dozen output devices. It is clearly in the software vendors' interest to support as broad a line of output devices as possible. It is also clear that some of these devices are more popular with end users than others and, consequently, with the software vendors as well.

When it comes to output methods, users do not have as many choices as they do of output devices. For years, graphics output has appeared in one

Presentation hardware

Plotters for personal computers

Alpha Merics
(213) 709-1155
Circle 484

Amdek
(312) 364-1180
Circle 485

BMC USA
(213) 515-6005
Circle 486

Calcomp
(714) 821-2011
Circle 487

Envision
(408) 946-9755
Circle 488

Houston Instruments
(512) 835-0900
Circle 489

Hewlett-Packard
(Contact local sales office)
Circle 490

IBM
(Contact local sales office)
Circle 491

Mannesmann Tally
(206) 251-5524
Circle 492

Nicolet Zeta
(415) 671-0600
Circle 493

Panasonic
(201) 348-5337
Circle 494

Strobe
(415) 969-5130
Circle 495

Tektronix
(503) 627-7111
Circle 496

Versatec
(408) 988-2800
Circle 497

Western Graphtec
(714) 770-6010
Circle 498

Yokowaga
(404) 253-7000
Circle 499

Video film recorders

Celtic Technology
(213) 884-6767
Circle 500

Dunn Instruments
(415) 957-1600
Circle 501

General Parametrics
(415) 524-3950
Circle 502

Image Resource
(805) 496-3317
Circle 503

Lang Syst.
(415) 328-5555
Circle 504

Polaroid
(617) 547-5177
Circle 505

Direct screen-shooting cameras

Eastman Kodak
(716) 724-4765
Circle 508

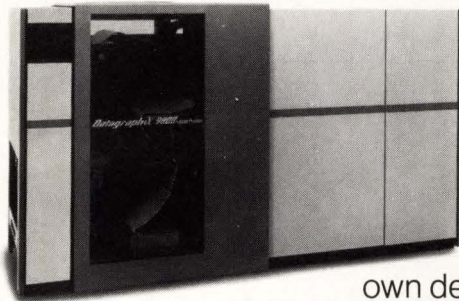
NPC Photo Div.
(617) 969-3487
Circle 509

Photographic Sciences
(716) 265-1600
Circle 510

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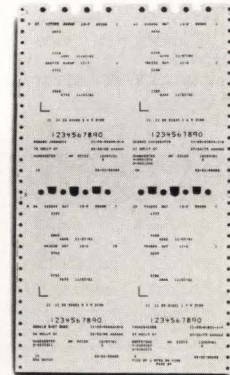
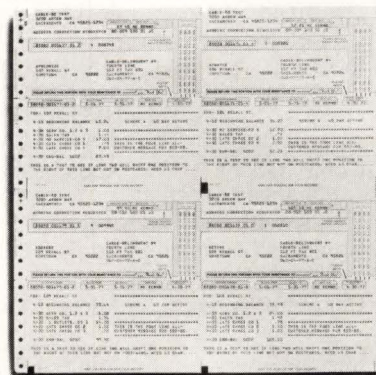
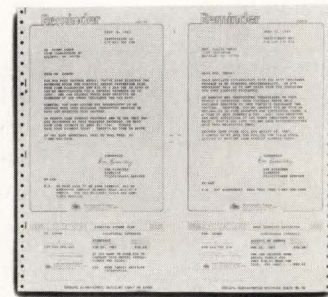
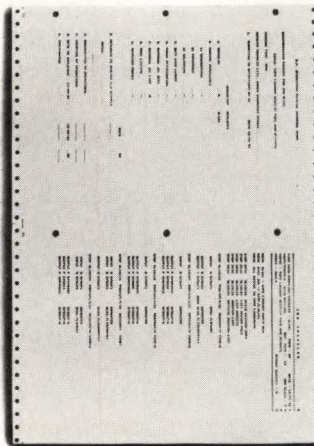
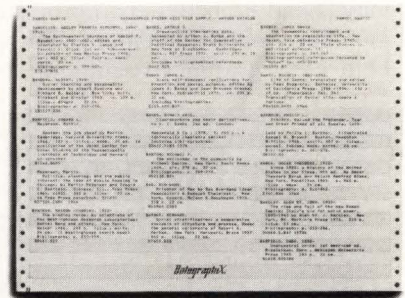
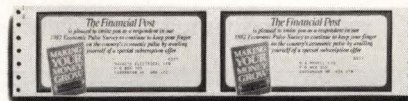
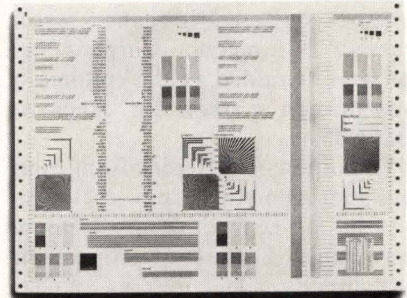
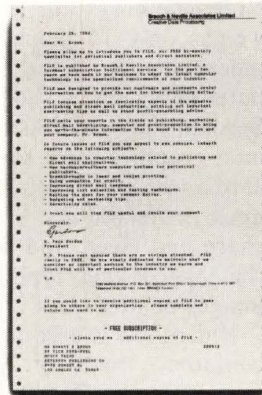
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CIRCLE 89

Presentation Graphics

(Continued from page 160)

of three forms—paper, transparencies, or slides. A new method of image projection is available with a product called Videoshow from General Parametrics Corp., which has been heralded as the epitome of presentation systems for executive boardrooms.

Videoshow is different from other presentation methods in several ways. Instead of reproducing an image stored on disk, the unit projects images directly from a disk onto a color monitor or television screen. This may sound no better than projecting an image onto a monitor with the help of a graphics card, but it is

superior in two ways. First, the Videoshow system is portable (it weighs only 16 pounds) and works independently of the personal computer on which its slides are created. Second, the system is not dependent on a graphics card, so it is free of a card's resolution limitations. The images projected by Videoshow are sharp and clear, and do not contain the jagged lines typically found on images painted with a pixel array.

Videoshow is used in the executive conference room of ANR Pipeline Co.'s offices in Detroit's Renaissance Center. "There's an incredible difference in resolution and color," says

Michael Carmichael, manager of customer relations for the Pipeline operating unit of American Natural Resources, the nation's second largest natural-gas utility.

If a user wants to see color graphics on the micro's monitor before they are presented on Videoshow, a color graphics card is necessary. As of this writing, Videoshow only projects images created with General Parametrics' Picture It software, which runs only on the IBM PC.

General Parametrics has recently introduced its own video film recorder, the Slidemaker 150. Like Videoshow, Slidemaker sidesteps the

Graphics software for personal computers

Vendor	Package	Requirements	Price	Circle
Accent Software (415) 949-2711	The Graphic Solution	Apple II Plus, IIe, IIc	\$150	436
American Programmers Guild Ltd. (203) 794-0396	Press 'n' Plot	IBM PC	\$149	437
Avant Garde (503) 345-3043	Graphics Applications	Apple II Plus, IIe, IIc	\$10	438
	Hi-Res Secrets	Apple II Plus, IIe, IIc	\$130	
	Paintmaster	Apple II Plus, IIe, IIc	\$35	
	Starsprite	Apple II Plus, IIe, IIc	\$395 (including board)	
	Super Shape Draw	Apple II Plus, IIe, IIc	\$35	
Business and Professional Software (617) 491-3377	Ultra Plot	Apple II Plus, IIe, IIc	\$70	439
	Overhead Express	IBM PC	\$195	
Computer Station (314) 432-7019	Business Graphics	IBM PC, PC XT, and compatibles; TI PC; NEC APC; Wang PC; Apple II Plus, IIe, IIc, III	\$350	440
	Combined Enhanced Graphic Software	Apple II Plus, IIe, IIc	\$35	
	Combined Graphic Writer	Apple II Plus, IIe, IIc	\$55	
Datasoft (818) 701-5161	Ultra Hi-Res Graphics	Apple II Plus, IIe, IIc	\$50	441
	Micropainter	Apple II Plus, IIe, IIc	\$35	
Decision Resources (203) 222-1974	Chart-Master	Apple II Plus, IIe, IIc, III; IBM PC	\$375	442
	Sign-Master	IBM PC	\$245	
Desktop Computer Software (408) 458-9095	Graph 'n' Calc	Apple II Plus, IIe, IIc, III	\$195	443



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ITT
COURIER

Presentation Graphics

(Continued from page 162)

pixel-resolution problem to produce crisp, sharp presentation slides. Although it is based on the Computer Camera, the Slidemaker is more like the Samurai recorder from Image Resource Corp., which preceded Slidemaker. Both recorders avoid pixel-resolution limitations.

All of these technological im-

provements don't change the basic elements of presentation graphics. They still primarily consist of either simple words or simple graphics. Words and simple charts, for example, can be made to appear to be three-dimensional images. Bars can be stacked, put next to each other, or inside one another. They can stand up

or lie flat. One piece can be cut from a pie chart and highlighted. But all of these images are constructed from the same simple components. David Solomont, president of Business & Professional Software Inc. (BPS), believes that the creation of presentation graphics should be simple, too. "Presentation graphics today require

Graphics software for personal computers

Vendor	Package	Requirements	Price	Circle
Dickens Data Syst. (404) 448-6177	The Super Plotter	Apple II Plus, IIe, IIc, III	\$70	444
	Wall Street Plotter	Apple II Plus, IIe, IIc	\$125	
Digital Research (408) 649-3896	DR Draw	IBM PC; micros under CP/M-86	\$295	445
	DR Graph	same systems	\$295	
Enercomp (303) 988-1648	Plotware-Z	micros under MS-DOS or CP/M-80	\$399	446
	Mouseware	Plotware-Z	\$150	
	Typeset	Plotware-Z	\$150	
Enertronics Research (314) 725-5566	Energraphics	IBM PC, PC XT, and compatibles	\$350	447
Ferox Microsyst. (703) 841-0800	Encore!	IBM PC, PC XT	\$695	448
	Graphpower	Apple II Plus, IIe, IIc, III; IBM PC, PC XT	\$295	
Fox & Geller (201) 794-8883	dGraph	IBM PC, PC XT, and compatibles; micros under CP/M-80	\$295	449
	Grafox	IBM PC and compatibles	\$295	
	R:graph	IBM PC and compatibles	\$295	
Funk Software (617) 497-6339	Sideways	IBM PC; Apple II Plus, IIe, IIc	\$60	450
Graphic Communications (617) 890-8878	Basic Set	IBM PC; micros under MS-DOS; DEC Rainbow; Fortune 32/16; NEC APC	\$395	451
	Extension Set	same systems	\$395	
	Graphwriter (combination set)	same systems	\$595	
Graphware (513) 424-6733	Charts Unlimited	IBM PC; Apple II Plus, IIe, IIc	\$195	452
Howard W. Sams (317) 298-5419	Picture This!	IBM PC	\$40	453
	Graphics for the IBM PC	IBM PC	\$30 (book and software)	
Hypergraphics (214) 783-9900	Authoring Graphics System	IBM PC, PC XT, and compatibles	\$395	454
	Presentation Graphics System	IBM PC, PC XT, and compatibles	\$349	

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YOU UNDERSTAND
WHAT YOU THINK
I SAID BUT I'M NOT
SURE YOU REALIZE
THAT WHAT YOU
HEARD IS NOT
WHAT I MEANT."**

The problem with language is English.

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CIRCLE 94

Presentation Graphics

(Continued from page 164)

a significant extra investment in your personal computer," Solomont says. "Too many vendors are taking technology and throwing it at the user. Everybody thinks their presentation graphics have to have bars and pies with lots of fancy colors. But a typical business presentation consists mostly

of title pages and bulleted lists of data. They're the meat and potatoes of presentation graphics."

Solomont blames his own company for some of the overemphasis on "fancy" graphics. BPS wrote the graphics software sold by IBM, Apple, Texas Instruments, Wang,

NEC, and others. Solomont stands by those products, but he says there is now a much greater need for simpler graphics packages. With BPS' Overhead Express software, for example, users with less money and equipment can create "working presentations" simply and inexpensively. These

Graphics software for personal computers

Vendor	Package	Requirements	Price	Circle
Image Resource (805) 496-3317	Image I	IBM PC	\$490	455
Infographics (714) 675-4385	Infograph	IBM PC; micros under MS-DOS, CP/M-80, or CP/M-86	\$295	456
Innovative Software (913) 383-1089	Fast Graphs	IBM PC, PC XT, and compatibles	\$350	457
Interactive Microware (814) 238-8294	Curve Fitter	Apple II Plus, IIe, IIc	\$35	458
	Curve Fitter-PC	IBM PC	\$95	
	Quick-Draft	Apple II Plus, IIe, IIc	\$50	
	Quick-Shape	Apple II Plus, IIe, IIc	\$25	
	Scientific Plotter II	Apple II Plus, IIe, IIc	\$25	
Lifeboat Assoc. (212) 860-0300	Scientific Plotter-PC	IBM PC	\$95	459
	Halo	IBM PC; micros under MS-DOS	\$200	
Media Cybernetics (301) 270-0240	Graftalk	IBM PC	\$450	460
	Dr. Halo	IBM PC and compatibles	\$100	
Micro Control Syst. (203) 647-0220	Advanced Space Graphics	IBM PC, PC XT, and compatibles	\$1,995	461
Micro Lab (312) 433-7550	Graphics Wizard III	Apple III	\$100	462
	Multigraph	Apple II Plus, IIe, IIc	\$150	
Multisoft (503) 626-4727	Stretchcalc	IBM PC	\$99	463
PC Software (619) 279-2482	PC-crayon	IBM PC	\$45	464
Peachtree Software (404) 239-3000	Peachtree Business Graphics	IBM PC, PC XT, and compatibles; Zenith Z-100	\$295	465
Penguin Software (312) 232-1984	The Complete Graphics System	Apple II Plus, IIe, IIc	\$80	466
	Graphics Magician	Apple II Plus, IIe, IIc, III; Commodore 64; IBM PC	\$60	
	Graphics Magician Picture Painter	IBM PC; Apple II Plus, IIe, IIc; Commodore 64	\$50 \$40	
	Map Pack	Any Apple micro	\$20	
Plantronics (408) 945-8711	The Draftsman	IBM PC	\$99	467
Primesoft (301) 229-4229	The Prime Plotter	Apple II Plus, IIe	\$240	469

graphics don't have to be slick, expensive, or colorful, Solomont says. They replace materials once created at a typewriter or with a grease pencil. And the user "doesn't require anything more than a plain IBM PC with a dot-matrix printer."

As BPS works on simpler, less ex-

pensive graphics, companies like Polaroid, General Parametrics Corp., and Visual Communications Network are working to perfect and expand the capabilities of organizations that have the money and the desire to create elaborate graphics. Products like the Polaroid Palette film re-

corde, the Videoshow presentation system, and VCN Execuvision software are helping presenters create graphics with increased clarity, color, and variety. Both efforts have the same goal: to help users, assisted by their personal computers, create hit graphics presentations. □

Vendor	Package	Requirements	Price	Circle
Redding Grp. (203) 329-8874	Graftalk	IBM PC, PC XT, and compatibles; Televideo; Zenith	\$450	470
Sensible Software (313) 399-8877	Image Printer	Apple II Plus, IIe, IIc	\$50	471
	Graphics Department	Apple II Plus, IIe, IIc	\$125	
Softel (212) 677-6599	Videogram	IBM PC, PC XT, and compatibles	\$150	472
The Software Grp. (518) 877-8600	Enable	IBM PC; micros under MS-DOS	\$695	474
Software Publishing (415) 962-8910	PFS:Graph	Apple II Plus, IIe, IIc, III; IBM PC and compatibles; TI PC	\$125 to \$175	475
Starware (202) 331-8833	The Draftsman	IBM PC	\$200	476
Supersoft (217) 359-2112	Stats-Graph	Micros under CP/M-80	\$200	477
T/Maker (415) 962-0195	Clickart Graphics	Macintosh	\$50	478
Transparent Data Syst. Inc. (408) 559-0288	uGRAF	Micros under CP/M, MP/M, CP/M-86, MP/M-86, MS-DOS, TurboDOS, or Unix	\$495	479
Visicorp (408) 946-9000	VisiOn/Graph	IBM PC, PC XT, and compatibles; Wang PC	\$345 (includes application manager)	480
	Visitrend/Plot	Apple II Plus, IIe, IIc; IBM PC, PC XT, and compatibles	\$99	
Visual Communications Network (617) 497-4000	VCN Execuvision	IBM PC	\$395	481
	EV Capture	Execuvision	\$125	
	Add-on image libraries	Execuvision	\$80 to \$90	
John Wiley & Sons (212) 850-6336	Slide-Pro	IBM PC, PC XT	\$125	473
	Graph-Pro	IBM PC, PC XT	\$395	
Xiphias Inc. (213) 821-0074	Videograph	Micros under UCSD p-System, MS-DOS, NEC APC, IBM PC and compatibles	\$895	482
Zenographics (714) 851-6352	Mirage	IBM PC and compatibles	\$595	483
	Autumn	IBM PC and compatibles	\$295	
	Ego	Mirage and Autumn	\$395	

Integrated Software

(Continued from page 110)

change. The word processor carries all the features you might want, the spreadsheet interacts with all other aspects of the program, and the communications module supports IBM's SNA and SDLC, bisynchronous and asynchronous communications, and offers 3270 terminal emulation. The graphics module allows you to build bar, pie, line, and organizational charts.

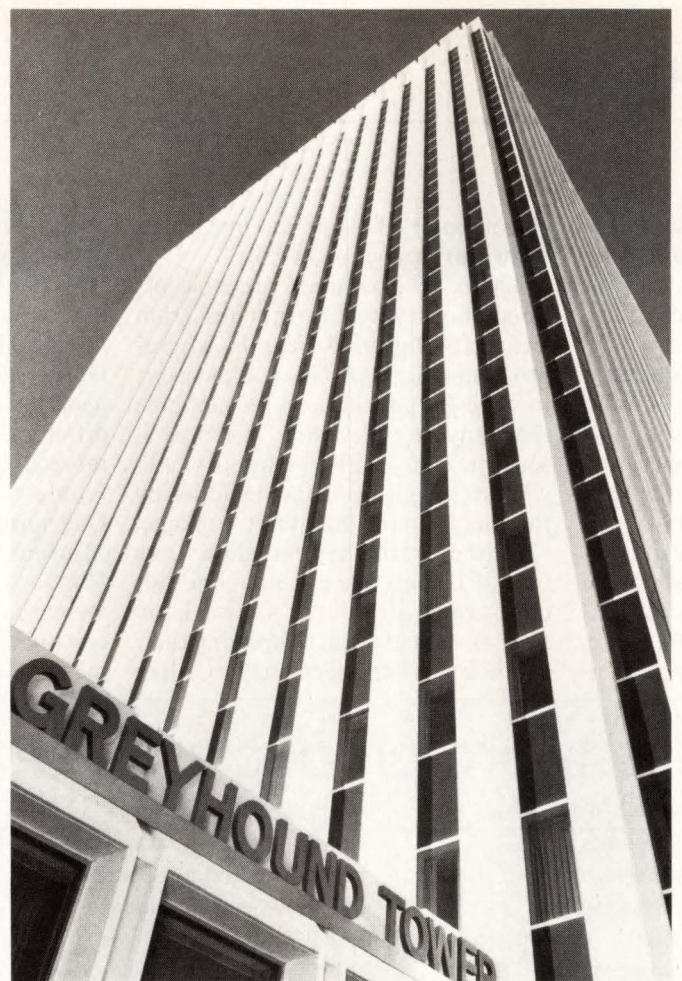
Lotus' Symphony is a new integrated package that's being touted for its word-processing capability. Symphony also boasts spreadsheet, database, graphics, and communications functions. Window management enables all text, spreadsheets, forms and graphs to be displayed simultaneously. Symphony's open-ended architecture lets the programs use information brought in from separate application

software. This information appears in its own window. A command language allows the user to customize the program while password protection is provided.

Framework, an integration package from Ashton-Tate is somewhat unique. This package lets users organize their work in outline form. Users work in the frames (or windows) of a database, spreadsheet, or

Integrated-software products

Vendor	Package	Requirements	Price	Circle
Lotus Development (617) 494-1192	Lotus 1-2-3 Series Version A	Most personal computers	\$495	416
	Symphony	IBM PC and compatibles	\$695	
Martin Marietta Data Syst. (301) 982-6500	Keep It	IBM PC	\$450	417
	Calc It	IBM PC	\$400	
	Link It	IBM PC	\$150	
	Pass It	IBM PC	\$250	
	Sort It	IBM PC	\$125	
	Edit It	IBM PC	\$150	
Micro Data Base Syst. (317) 463-2581	Knowledgeman	Micros under CP/M-86 or MS-DOS	\$500	418
Micro Pro Int'l. (415) 499-1200	Star Burst	Micros under CP/M, CP/M-86 or MS-DOS	\$195	419
Microrim (206) 641-6619	R Base 4000	IBM PC and compatibles	\$495	420
	Extended Report Writer	IBM PC and compatibles	\$150	
	Clout Natural Language Query	IBM PC and compatibles	\$195	
Micro Software Int'l. (605) 335-7676	Business Accounting	Micros under MS-DOS 2.0	\$595 and up	421
	Accounts Payable	IBM PC XT	\$695	
	Accounts Receivable	IBM PC XT	\$695	
	Business Word Processor	IBM PC XT	\$695	
	Neat: Time & Information Manager	IBM PC XT	\$150	
On-line Software (201) 592-0009	Omnilink	IBM PC, PC XT, or plug compatible	\$400 to \$1,200	970
Prentice Hall (201) 592-2173	Master Menu	IBM PC and PC XT	\$25	435
	General Accounting	IBM PC and PC XT with Master Menu	\$595	
	Accounts Payable	IBM PC and PC XT with Master Menu	\$695	
	Accounts Receivable	IBM PC and PC XT with Master Menu	\$695	
	Business Word Processor	IBM PC and PC XT with Master Menu	\$250	
	Neat Time and Information Manager	IBM PC and PC XT with Master Menu	\$150	
Quarterdeck Office Syst. (213) 392-9851	Desq	IBM PC	\$395	422



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Integrated Software

(Continued from page 168)

graph. The program's procedural language can be utilized. Ashton-Tate provides several utilities with the program, including one that handles form letters.

Integrated software is not limited to programs that cluster around a spreadsheet, word processor, or database manager. Integrated operating environments also fall under the banner of integration. Originally designed by Xerox engineers for the vendor's innovative Star workstation, the integrated-environment concept was picked up by Apple Computer Corp. and incorporated into the Lisa person-

al computer (Lisa is an integrated software/hardware device).

These environments are now offered in varying incarnations from Visicorp, Digital Research, Micropro, and Microsoft. They allow users to choose applications and combine them any way they wish. In comparison, integrated software limits you to whatever applications are included by the vendor in the integrated package.

Most operating systems allow users to work on only one task at a time, but employees often like to work on several tasks at once, redirecting their attention when necessary. Unlike

operating systems, operating environments give users freedom to switch from one task to another without having to change disks. Sometimes called "electronic desktops," these products let users access several tasks simultaneously. Users can view data from different files at the same time and move data from one file to another. Apple's Lisa, Visicorp's VisiOn, Quarterdeck Office Systems' Desq, Micropro's Starburst, Microsoft's Windows, and, in some ways, Digital Research's Concurrent CP/M are a few of the new operating environments.

Integrated-software products

Vendor	Package	Requirements	Price	Circle
Schuchardt Software Syst. (415) 492-9330	Intecalc	IBM PC and compatibles	\$295	423
	Inteword	IBM PC and compatibles	\$395	
	Intebase	IBM PC and compatibles	\$495	
	Intevate	IBM PC and compatibles	\$195	
	Interpret	IBM PC and compatibles	\$195	
	Inteplan	IBM PC and compatibles	\$149	
	Intemate	IBM PC and compatibles	\$195	
Sensor-based Syst. (507) 867-4440	Metafile	Vector Graphic; IBM PC and compatibles	\$995	424
Softrend (603) 898-1777	Aura 5	Micros under MS-DOS	\$495	425
Software Group (518) 877-8600	Enable	IBM PC and compatibles	\$695	507
Software Products Int'l. (619) 450-1526	Open Access	IBM PC XT and compatible systems; Columbia	\$595	426
Software Publishing (415) 962-8910	PFS:Write	Apple IIe	\$125	427
		IBM PC	\$140	
Sorcim (408) 942-1727	Supercalc3 w/Super Data Interchange	IBM PC and PC XT	\$395	428
Strategic Software Syst. (714) 476-2842	Bottomline-V	IBM PC; Apple; DEC Rainbow; Micros under MS-DOS or CP/M	\$295	429
T/Maker (415) 962-0195	T/Maker III	Micros under CP/M-80, CP/M-86 or MS-DOS; IBM PC; TI PC	\$275	430
	T/Maker Integrated Software	Micros under CP/M-80, CP/M-86 or MS-DOS; IBM PC; TI PC	\$450	
United Software (918) 622-4800	TMP Manager	IBM PC	\$595	431
Visicorp (408) 946-9000 (408) 942-6010	VisiOn	IBM PC	\$495	432
	Visicalc	IBM PC	\$395	
	Visiword	IBM PC	\$375	
WB Syst. (401) 596-1811	Wes	IBM PC and micros under CP/M-80, CP/M-86, MP/M or MS-DOS	\$495	433
Zetec (714) 836-3560	Information Manager	IBM PC and compatibles; Apple II, and IIe	\$4,000 to \$4,700	434



T/Maker Integrated Software features a full relational database, a 50,000 word-spelling checker, and complete online help facilities.

Windows is called a "window manager and graphical-device interface" by its creator, Microsoft. Windows integrates application software for the IBM PC and compatible machines. Considered an extension of the company's MS-DOS operating system, it lets users view several programs or documents simultaneously. You can resize and stack windows, much as you might with the manila file folders on your desk.

Although Windows is an OEM product, many software houses have announced support of the system and will make their applications programs available to run under this operating environment. These vendors include Ashton-Tate, Lotus Development Corp., Software Arts, and Software Publishing Corp. Microsoft claims that software applications developed to run under Windows will be portable to any other micro that supports Windows. This remains to be seen, but since it costs \$20,000 to write software for VisiOn (developers can use any Unix-based Digital Equipment Corp. VAX mini, although Microsoft expects to release a \$500 IBM PC XT development tool kit), Windows represents a less expensive and potentially vast source of application-software development.

Desq is another software-developer's product. Like Windows, VisiOn, and Lisa, it uses a mouse to move the screen cursor. The similarity ends there, however, since Desq will run most canned software that operates under MS-DOS. Although the program permits data to be transferred between files, it does not permit the

formulas or other information that defined the data to be transferred at the same time.

A very different, but equally interesting program is Micropro's Starburst. Most integrated packages and/or environments were designed with the manager in mind, but this program lets the manager create a sequence of tasks to be delegated by his or her subordinates.

This package combines applications such as word processing and spreadsheet analysis in a way that makes them easy for computer novices. The corporate manager takes individual software packages and combines them in a menu-driven system with help messages and instructions. The end result is a series of steps to guide the user through specific tasks. This program will run with most programs that use CBasic files—with the notable exceptions of dBase II and Supercalc. The program, however, lacks the graphics and windowing ca-

pabilities of say, VisiOn, and it does not handle more than one task at a time. It sells for \$195 if purchased separately and \$595 in conjunction with Infostar. It will run on MS-DOS, CP/M, and CP/M-86 based systems.

Finally, Digital Research's Concurrent CP/M is worth mentioning although it is an operating system rather than an environment. Semantics aside, this system has the ability to run up to four programs at once. Programs can be queued to run in a given order, and unlike VisiOn or Lisa, this species of CP/M will run on most systems in the \$3,000-\$5,000 range.

There can be no doubt but that the ever-changing personal-computing software industry has moved into the integrated arena. Some pundits claim that the days of separate application programs are numbered. While this may happen, it will be some time before the true benefits—and drawbacks—of integration are known. □

Integrated mainframe link

CA-Executive, a new product from Computer Associates, combines an integrated software package for personal computers with an intelligent link to mainframes. The microcomputer portion is built on a relational database-management system with a variety of applications available as database commands. A "window manager," which the company describes as a Unix simulator, allows the applications to run separately or concurrently.

The package provides the de rigeur spreadsheet, word-processing, and graphics functions plus the foundation DBMS. It also integrates a screen painter for data-entry form design and a full-screen editor for creating procedures that can later be called up and executed by the system. An "open-ended" window lets the user integrate existing PC-DOS programs into the CA-Executive repertoire.

The mainframe link can access and transfer any CICS and CMS files as well as data from CA-Universe, Computer Associates' mainframe relational-database system. The personal-computer section of the link translates data into Basic, DIF, or SDF formats for processing built-in applications and any other applications brought in through the PC-DOS window. The mainframe portion of the link allows the data-center manager to specify what corporate information each user has access to.

Users can select information from files according to criteria based upon single-data items. This limits the amount of data they must review and download to find what they want. Once the user has entered the CA-Executive database via the personal computer, information can be protected by passwords. The link operates in two directions, allowing data developed on the personal computer to be uploaded into sequential, VSAM, or VM/CMS files on a mainframe.

Dp Disaster

(Continued from page 102)

like a momentary malfunction in an uninterruptible power supply (UPS). The second thing we learned was that contingency planning must address the decision-making process. When do you declare an emergency? What steps do you take and who pushes the

button that activates your plan?

What are some of the other possibilities corporations must prepare for?

Carr: Traditionally, the main causes of loss have been fire, smoke damage, and water. Actually, the primary fear

and probably the biggest source of damage is water. However, from our standpoint, true disasters are considered to be fires, earthquakes, hurricanes, and events like that.

Recently, however, there's been a trend toward insuring against mechanical and electrical breakdowns. New York City, which is subject to brownouts and blackouts, is really a key concern for us. A power outage that shuts down a financial institution for three hours can cost an insurance carrier millions of dollars. The main concern of a company is getting back into business as quickly as possible, and to do this, exorbitant extra expenses must often be incurred.

Fedele: It's important to look at potential disasters in assessing your contingency needs. Say, for example, that a train derailment shrouds your center in fumes, preventing employees from working. In that case, you'd need a hot site right away. A shell wouldn't do you any good because you need redundant hardware. We have a private airport nearby—what if a plane crashes into our computer center? The whole building would be lost. We'd need a hot site and we'd also need a place to rebuild our installation—a shell. That kind of complete package is vital because, obviously, the hot-site proprietor wants to get you out of the hot site as soon as possible, especially if he or she is faced with multiple disasters.

Designing a contingency plan calls for decisions about alternatives—hot sites, shells, redundant facilities, and so forth. Some computer manufacturers are trying to eliminate many of these decisions by offering their customers disaster-recovery services. However, for most users, the choices are difficult to make.

Earley: The disaster-recovery business is very fragmented. There are probably 200 vendors offering off-site retrieval and about 18 offering hot sites, most of which contain IBM hardware. To a degree, DEC is being forced to get into disaster recovery, because there are no hot sites for the users of minicomputers.

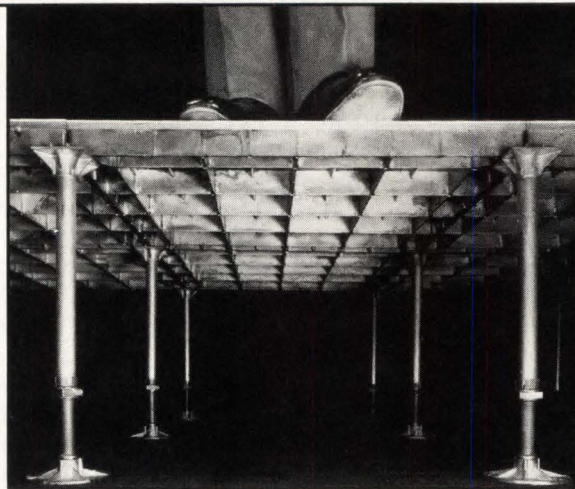
(Continued on page 174)

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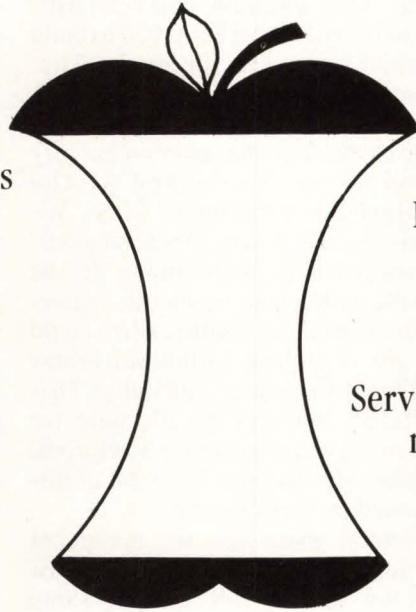
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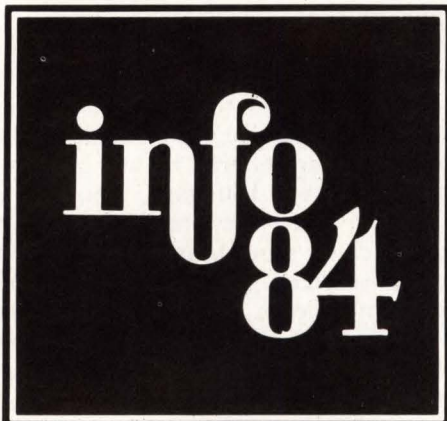
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CIRCLE 105

Dp Disaster

(Continued from page 172)

Rudolph: Hotsite is one of the sites with IBM equipment. Originally, we looked at three service alternatives—hot site, reciprocal agreement, and shell. Our building engineer estimated it would cost \$800,000 to build a shell adequate for dp backup. That's just the building and the wiring, but no equipment whatsoever. The payback on that didn't seem very good. Then we looked at the reciprocal-agreement idea. We decided against that after asking ourselves some hard questions. If the people with whom we had the agreement needed our facility, when could we give it to them—from, say Friday midnight to Sunday midnight? That certainly wouldn't be adequate for our needs or anyone else's. Reciprocal agreements also run into a lot of discrepancies in equipment.

Several years ago, we considered setting up a consortium, but that idea fell by the wayside for the same reasons—the incompatibility of equipment owned by the users in our area and the disruption sharing would cause. Finally, we looked at hot sites and were pleasantly surprised at what we could get for the dollars we had to put out. To back up just the critical operations of our system runs us somewhere in the neighborhood of \$2,000 a month, which I believe is pretty cheap insurance. Moreover, if we ever do have to activate the plan, our business insurance will pick up the activation cost (about \$7,000), as well as all the expenses of going to that site—including notification fees, additional telephone lines, hotel rooms—any additional expenses incurred over normal operating expenses to get back into business.

Davis: User organizations should be careful when contracting for hot sites. What kind of commitment will they give you during a general disaster—when 40 people are suddenly at the door?

Rudolph: Ordinarily, you'd better make sure you have a definite answer to that question before you sign a hot-site contract. In our contract, the question is not spelled out in black and white—we have to share with

whomever else. But we are in Oil City, PA, an isolated area. We don't face the same problem as corporations in New York or Chicago, where a disaster can knock out 50 companies at a clip. Sharing is a risk that we find to be acceptable, but it has a lot to do with our unique circumstances.

Earley: Some hot sites are addressing the problems posed by general disasters. At DEC, our concern when getting into the hot-site business was trying to get enough customers in an area to justify letting processing power stand idle. The solution we came up with was to network all of our customers, so we can process data in several backup sites.

Fedele: We looked at reciprocal agreements, but we were bothered by doubts about when we could get on the other company's hardware. We also looked at the possibility of building our own shell, but the cost was too high to justify the benefits. Because we don't have many data centers, we really needed both a hot site and a shell. The facility we chose [Comdisco, Rosemont, IL] has both.

Then there's the hardware issue. Ed Zeitler mentioned IBM coming to the rescue in an emergency. But can you count on vendors to supply replacement machines during a widespread disaster—when everybody needs particular machines? Where do you go under those circumstances? Our hot site answered this need by tapping the used-equipment market. It does seem smart to look for one recovery service that can meet as many as possible of your needs in a disaster.

Cushma: There is no single alternative, and our plan takes into consideration the need for a hot site, a cold site, and a shell facility, all of which are offered by our contingency service [Sungard, Philadelphia]. We have a second data center—primarily a special-function data center right now—which could handle part of our needs. And we have some local reciprocal agreements that would allow us to do some of our processing—such jobs as copying tapes, printing,

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Dp Disaster

(Continued from page 174)

and some special-purpose jobs. One type of facility isn't going to be enough for many organizations, so sometimes you have to be creative.

Fish: We ruled out a shell because we can't tolerate downtime. We also looked at a hot site as an alternative,

but found that, normally, communications aren't provided by the hot site. You have to provide your own lines and special front-end gear. When we weighed the costs against the risk of being beaten to the site by another user—we couldn't share the

facility—we decided to build our own backup site and lay in all our own equipment. Luckily, one of our subsidiaries had just built a data center, so we tacked several thousand square feet onto it. They use our backup machine as their test-development system, so it is exercised all the time.

We spent a little more money, but not that much more than we'd have spent on a hot site. And we don't have to worry about who's going to be first to claim a hot-site facility in a multiple disaster. Like Cushma at First National Bank, we are going to have our own processing, our data entry, and our printing done at separate locations. We have many operations to look at, and one place just can't service all our needs.

Zeitler: It's much more conducive to a good night's sleep if you can rely on your own organization to back up itself. It's much more practical. But there's more to the question than resting easy. If you rely on outside facilities, you're spending a lot of money preparing for something that may not happen. If you somehow network your resources, when you lose one facility, you can shift the work to the others. There's minimal disruption and the cost of that backup capability is lower.

Davis: At Burroughs, we deliberately made our U.S. marketing sites exactly alike so they could back up one another. We have one hot site, and use reciprocal agreements overseas.

Cushma: Although you may not be able to rely on reciprocal agreements for large equipment, you can for small, specialized machines. One agreement might say, "In an emergency I am going to give you one initiator, four disk packs, and a printer." That kind of contingency is easy to plan for.

The trend toward building networks that provide backup capabilities, however, is gaining. The changing interstate banking laws are causing us to look very carefully at the way we back up our operations. Banks that have merged have begun to design communication networks so that work can easily be switched be-



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tween locations during emergencies. As the laws change, so will the way executives look at backup and recovery services. You're going to be able to rely a lot more on your own resources, minimizing the risk that one center's disaster will overload a backup site, causing yet another disaster.

The next few years will be full of change, the participants predicted. Corporations will have to expand their disaster-recovery plans to include entire networks, not just single data centers.

Cushma: Satellite data centers are emerging as an important development in disaster-recovery planning. However, computer-dependent corporations are also stressing communications. Think of what you'd do without a telephone! If you are going to be responsible, rather than AT&T, New York Telephone, or Southern Bell, you've got to back up phones as well as computers. You're talking about coping with a different technology.

Fish: It's critical to have our network up all the time. That's where our lifeblood is—in our branches. That fact adds a new wrinkle to disaster recovery: expensive communications backup. Unfortunately, voice-communications designers in corporations don't necessarily think about backup when they plan. This is going to lead to a whole lot of trouble.

Fedele: It all goes back to the idea of getting users involved in disaster-recovery planning. In the past, voice-communications pros haven't reported to the data-processing department. The dp specialists would do their disaster-recovery plan, get their data network up, and then say, "We're up and running, but unfortunately, no one can use the phones." That doesn't make sense.

One of the first questions we asked as we were setting up our center was "Where is our PBX [private branch exchange] backed up?" The same kind of disaster that can disable a computer can knock out a PBX. The power fails. The place burns down. If you want to see executives scream,

wait till the phones go down!

Users will also play a bigger role in disaster-recovery planning in the future. In some corporations, they're virtually demanding to be included. Recently, users' groups have been formed for the express purpose of sharing information about disaster recovery.

Cushma: There are two classes of users' groups starting to emerge. One is the traditional vendor-based user group—customers of contingency services. They meet to discuss common experiences, problems, and directions, helping others to understand where the business is going. Also, as more and more companies put greater effort into disaster recovery and information-systems security, informal groups of users are forming to share ideas. They say: "Let's not reinvent the wheel; we don't always need to run to consultants."

Oakes: There's a new sophistication about disaster-recovery planning

that's causing users to consider their future needs. Also, as corporations open international divisions, they are thinking about their backup needs overseas.

Davis: We have 35 sites overseas. We've shown them how to put a disaster-recovery plan together, test it, and make it effective. There are certain standards they have to meet, and we are enforcing those standards. Those divisions are coming through.

Oakes: Actually, overseas operations are very aware of the need for disaster-recovery plans—particularly in Europe. One French terrorist group is dedicated solely to destroying data centers.

Because you can never predict the nature or magnitude of a disaster, planning to cope with one is often more art than science. What are the factors that executives and managers often overlook?

Oakes: As a result of our brush with disaster in Houston, we found we'd



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Dp Disaster

(Continued from page 177)

neglected the tremendous stress on employees during a disaster. We had to call in extra personnel because a lot of people were sort of spacey and tired, and they began forgetting what they were supposed to do. You may have to build in the possibility of

bringing in outside employees or workers from other departments to get the data center operational again. **Davis:** We shouldn't forget something we only touched on lightly earlier: the impact of personal computers on disaster planning. Most of us just don't

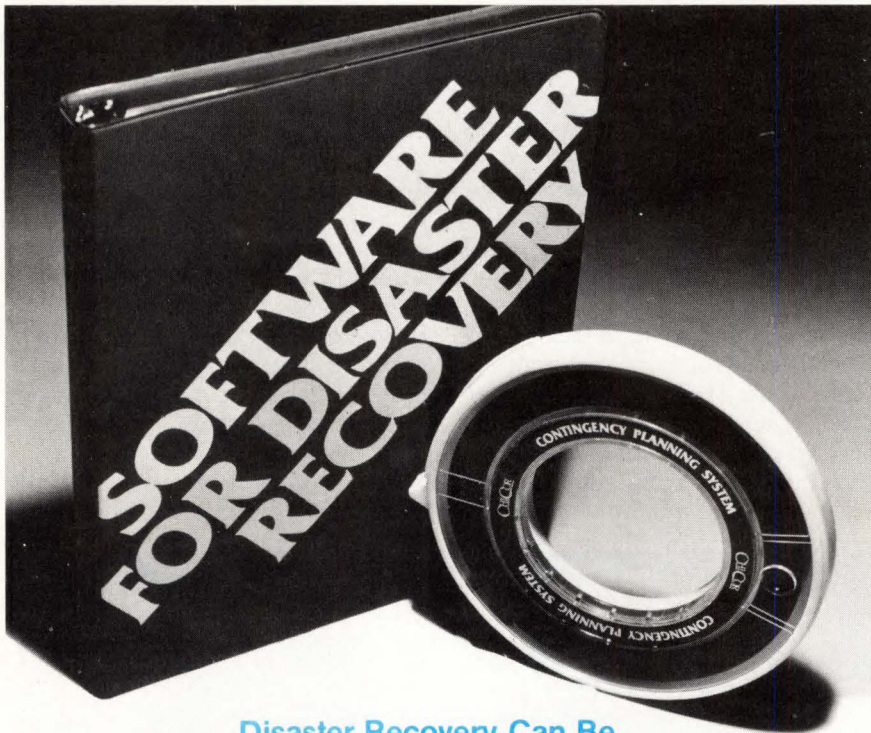
know how to control these machines. I don't know anybody who has a good, solid plan for small systems in case of disaster.

Zeitler: Our bank has a manual on information-systems security that includes a separate chapter especially geared to the microcomputer. It spells out each user's responsibilities. When a person gets a micro, he or she gets a copy of that chapter as a standard document. Someone recently suggested that personal computers should be categorized and registered according to their criticality. Class A might be high-priority, sensitive applications, for example. Still, I worry about the security issues of having micros online. We are not really wild about giving any micro users access to sensitive data.

Cushma: The more we change, the more we seem to remain the same. Fifteen years ago, responsibility for data rested with the individual managers in the line departments. He or she didn't have a computer facility down the street to store data. Data were stored in ledger books, under lock and key. Then we got into fire-resistant filing cabinets and vaults. Later, we came up with the large computer center and said, "OK, it's no longer my responsibility to take care of that data. That's dp's bag, because dp houses the data."

What we've done with micros is to give that responsibility back to the individual managers again. And there are dangers these managers must be aware of. For instance, a blank diskette costs \$5. However, if the same diskette has all the financial plans and marketing strategies of the organization on it, what's its value?

In the banking business, you look to credit experts to help make credit decisions. In insurance, you look to risk managers to help make decisions on how to price premiums. You need to look to information professionals to find out how to back up data and understand your responsibilities. That represents the education process we always seem to hark back to when we're talking about getting a disaster-recovery plan in place. □



Disaster Recovery Can Be A Lot Less Expensive Than You Think

If you have the right tools to help, that is. CHI/COR developed the automated Contingency Planning System (CPS) to provide key elements of your Disaster Recovery Plan. CPS is an indispensable software package that helps:

- Ensure that you continue to have the right vital records offsite.
- Confirm the adequacy of your chosen recovery processing facility.
- Maintain your Disaster Recovery Plan as your environment changes.
- Document the adequacy of your backup/recovery provisions.

CPS is easy to use and includes thorough documentation, assuring accurate analysis of your recovery needs without time-consuming staff involvement. Your total software investment of \$10,000 (one-time perpetual license) will be easily recovered by the time and effort saved. Plus, the in-depth disaster recovery planning facilitated by CPS can save you millions.

CHI/COR

Consultants to Management

CHI/COR Information Management, Inc. • 10 South Riverside Plaza • Chicago, IL 60606 • 312/454-9670
6 Landmark Square • Stamford, CT • 203/359-5639

Fully equipped backup sites

IBM sites

Bessemer Information Svcs. (412) 829-3336 Circle 511	Computer Alternatives (201) 652-0400 Circle 515	Eloigne (612) 644-0882 Circle 519
Bradford Nat'l. Computer Svcs. (201) 833-1020 Circle 512	Continental Computer Assurance (215) 968-6000 Circle 516	Hotsite (216) 652-9624 Circle 520
Combac (416) 821-2800 Circle 513	Corporate Contingency Svcs. (313) 486-2110 Circle 517	Information Network (214) 630-1240 Circle 521
Comdisco Disaster Recovery Svcs. (312) 698-3000 Circle 514	Data Networking Svcs. (314) 343-2858 Circle 518	LDI Disaster Recovery (216) 248-0991 Circle 522
		Software Research (617) 449-5310 Circle 523
		Sungard Svcs. (215) 854-1400 Circle 524

Non-IBM sites

Cadre (203) 674-1285 (Burroughs medium systems) Circle 525	Hale Syst. (213) 386-6430 (Burroughs large systems) Circle 529
Computer Alternatives Protective Sites (201) 652-0400 (NCR) Circle 526	Information Network (214) 630-1240 (DEC VAX) Circle 530
CRA (602) 944-1548 (Honeywell) Circle 527	Phoenix Svcs. (617) 863-5040 (Burroughs large systems) Circle 531
Disaster Control (215) 355-7800 (Burroughs) Circle 528	Starboard Data Svcs. (215) 337-4155 (Sperry) Circle 532

Empty-shell sites

Auto Owners Disaster Recovery Facility (517) 323-1200 Circle 533	Combac (416) 821-2800 Circle 537	Data Processing Security (817) 457-9400 Circle 541	Digital Equipment (617) 496-9672 Circle 546	HSH Coldsite (614) 888-1050 Circle 551
Bradford Nat'l. Computer Svcs. (201) 833-1020 Circle 534	Corporate Contingency Svcs. (313) 486-2110 Circle 538	Data Shelter (804) 264-2528 Circle 542	Disaster Control (215) 355-7800 Circle 547	S.E.C.U.R.E. (206) 383-2511 Circle 552
Cadre (203) 674-1285 Circle 535	CRA (602) 944-1548 Circle 539	Datashield (414) 421-7710 Circle 543	Eloigne (612) 644-7587 Circle 548	Secured Data Svcs. (513) 433-2660 Circle 553
Centre de Recuperation d'Informatique (514) 527-3621 Circle 536	Data Networking Svcs. (314) 343-2858 Circle 540	Iron Mountain Grp. (I) (914) 658-3132 Circle 544	Emergency Computer Center (913) 888-6200 Circle 549	St. Louis Recovery Grp. (314) 993-3355 Circle 554
		Iron Mountain Grp. (II) (401) 949-1090 Circle 545	Hale Syst. (213) 386-6430 Circle 550	Western & Southern Emergency Recovery Facility (513) 629-1800 Circle 555

Protection against fire

Fire-suppression systems

AD-X (303) 794-1544 Circle 556	Amerex (205) 655-3271 Circle 557	Automatic Sprinkler (216) 526-9900 Circle 559	Chemetron Fire Syst. (312) 534-1000 Circle 561	FPS Int'l. (201) 753-7717 Circle 563
	Ansul (715) 735-7411 Circle 558	Badger-Powhatan (804) 973-4361 Circle 560	Fike Metal Products (816) 229-3405 Circle 562	General Fire Extinguisher (312) 272-7500 Circle 564

Dp Disaster

(Continued from page 179)

Protection against fire

Fire-suppression systems

Great Lakes Chemical
(317) 463-2511
Circle 565

Pem-All Fire Extinguisher
(201) 276-0211
Circle 566

Pyrene
(201) 862-1300
Circle 567

Pyro Chem
(201) 335-9750
Circle 568

Pyronauts
(817) 281-2156
Circle 569

R.C. Industries
(201) 862-2900
Circle 570

Walter Kidde
(201) 241-2950
Circle 571

Fire-detection devices

Digital Pathways
(415) 493-5544
Circle 572

Fenwal
(617) 881-2000
Circle 573

J.W. Syst.
(201) 561-0500
Circle 574

Pyrotronics
(201) 267-1300
Circle 575

Fireproof vaults and cabinets

John D. Brush
(716) 381-4900
Circle 576

Diebold
(216) 489-4000
Circle 577

Fire King Int'l.
(812) 948-8400
Circle 578

Meilink Steel Safe
(212) 684-4750
Circle 580

Metropolitan Business Syst.
(212) 760-1600
Circle 579

Mosler
(513) 867-4000
Circle 581

Oxford Pendaflex
(516) 741-3200
Circle 582

Schwab Safe
(317) 447-9470
Circle 583

Supreme Equipment & Syst.
(212) 492-7777
Circle 584

Victor Syst. & Equipment
(614) 374-9300
Circle 585

Wright Line
(617) 852-4300
Circle 586

Security systems and devices

Security software

Advanced Information Mgt.
(703) 643-1002
Circle 587

Cambridge Syst. Grp.
(415) 941-4558
Circle 599

CGA Software Products
(201) 946-8900
Circle 588

Dylakor
(818) 366-1781
Circle 589

Fischer Innis Syst.
(813) 793-1500
Circle 590

Futurex Security Syst.
(916) 966-6836
Circle 591

Identatronics
(312) 437-2654
Circle 592

Integrated Applications
(216) 341-6700
Circle 593

Int'l. Microcomputer Software
(415) 454-7101
Circle 594

M/A-Com Linkabit
(619) 457-2340
Circle 595

Microframe
(201) 828-4499
Circle 596

On-Line Software Int'l.
(201) 592-0009
Circle 597

Sophco
(303) 444-1542
Circle 598

United Software Security
(703) 556-0007
Circle 600

Hardware/software systems and services

American Locker Security Syst.
(716) 664-9600
Circle 601

Analytics
(703) 893-2124
Circle 602

Backus Data Syst.
(408) 279-8711
Circle 603

Basix Control Syst.
(213) 638-0400
Circle 604

Butler National
(913) 888-8585
Circle 605

Continental Instruments
(516) 334-0900
Circle 606

Honeywell
(612) 870-5200
Circle 607

Int'l. Mobile Machines
(215) 569-3880
Circle 608

Leemah
(415) 434-3780
Circle 609

Racal-Milgo
(305) 797-3401
Circle 610

Secure Data Assoc.
(801) 561-1657
Circle 611

Stellar Syst.
(408) 946-6460
Circle 612

TEC
(602) 792-2230
Circle 613

Teltech
(212) 514-5440
Circle 614

Ven-Tel
(408) 727-5721
Circle 615

Access-control systems

Amcard Syst.
(617) 562-7111
Circle 616

Cardkey Syst.
(213) 998-2777
Circle 617

Computer Security Syst.
(516) 752-7790
Circle 618

Datakey
(612) 890-6850
Circle 619

Emidata Syst.
(301) 363-1600
Circle 620

Fingermatrix
(914) 428-5441
Circle 621

Graphic Laminating
(216) 881-2100
Circle 622

Johnson Controls
(414) 228-1200
Circle 623

Laminex
(704) 588-4700
Circle 624

Mastiff Syst.
(404) 448-4100
Circle 625

Medeco Security Locks
(703) 387-0481
Circle 626

Mosler
(513) 867-4000
Circle 627

Palmguard
(503) 644-3235
Circle 628

Remote Syst.
(703) 790-0252
Circle 629

Rusco Electronic Syst.
(213) 240-2540
Circle 630

Schlage Electronics
(408) 727-5170
Circle 631

Security systems and devices

Access-control systems

Securitron
Magnalock
(213) 618-0204
Circle 632

Sensormatic
Electronics
(305) 427-9700
Circle 633

Sielox Syst.
(408) 255-1490
Circle 634

Simplex Security
Syst.
(203) 693-8391
Circle 635

Synergistics
(617) 655-1340
Circle 636

Wright Line
(617) 852-4300
Circle 637

Protective covers and cases

ATS Cases
(617) 653-6724
Circle 638

Bengoa Covers
(806) 765-9039
Circle 639

Champion Industrial
Products
(516) 482-2280
Circle 640

Compucover
(904) 243-5793
Circle 641

Computer
Accessories
(516) 767-0366
Circle 642

Computer Coverup
(312) 276-9007
Circle 643

Coverguard
(201) 522-0044
Circle 644

Records management and storage

American Safety
Deposit
(704) 377-9615
Circle 719

Archives
(901) 386-5560
Circle 720

Arcus
(415) 489-5100
Circle 721

Bekins Records
Mgt.
(213) 466-9271
Circle 722

Dataguard
(201) 592-7868
Circle 723

Data Safe
(213) 906-0415
Circle 724

Datasafe
(404) 256-5775
Circle 725

Data Security
(206) 581-4200
Circle 726

Data Vault
(617) 444-8908
Circle 727

Digital Equipment
(617) 496-9672
Circle 728

Fort Knox Safe
Depository
(404) 455-4477
Circle 729

Iron Mountain Grp.
(617) 357-9034
Circle 730

Keep-Safe
(415) 326-7290
Circle 731

Leahy Business
Archives
(212) 691-9414
Circle 732

Metro Business
Archives
(213) 489-5990
Circle 733

National Safe
Depository
(408) 243-3300
Circle 734

Off-Site Storage
(617) 454-8033
Circle 735

Perpetual Storage
(801) 942-1950
Circle 736

Pierce Business
Archives
(215) 586-1545
Circle 737

Private Safe Place
Center
(216) 464-3470
Circle 738

Records Control
(312) 543-8040
Circle 739

Safe Deposit Center
(516) 746-2323
Circle 740

Safe Keeper
Center/Data
Security
(619) 292-5056
Circle 741

Safety Vault
(617) 653-1813
Circle 744

Secured Data Svcs.
(513) 433-2660
Circle 742

Southern Vital
Records Center
(601) 879-8211
Circle 743

The Treasury
(619) 699-7233
Circle 745

The Vault
(404) 266-8400
Circle 747

The Vault at
Greenwich
(203) 637-1212
Circle 746

The Vault Ltd.
(302) 652-2202
Circle 748

Underground Vault
& Storage
(316) 663-5434
Circle 749

Vital Records
(201) 526-7557
Circle 750

Data recovery/transport

Airborne Freight
(206) 285-4600
Circle 751

Mayflower
Electronics
(716) 664-9600
Circle 752

Randomex Data
Maintenance
(213) 595-8301
Circle 753

Taylor Electric
(414) 241-4321
Circle 754

Protecting your environment

Air conditioners, cleaners, humidifiers

Airflow
(301) 948-5000
Circle 645

Armstrong Machine
Works
(616) 273-1415
Circle 646

Carnes
(608) 845-6411
Circle 647

Data Aire
(714) 891-3471
Circle 648

Edpac
(215) 657-8030
Circle 649

Hiross
(716) 283-6464
Circle 650

Liebert
(614) 888-0246
Circle 651

Nippondenso of Los
Angeles
(213) 549-7660
Circle 652

Research Products
(608) 257-8801
Circle 653

Dp Disaster

(Continued from page 181)

Protecting your environment

Air conditioners, cleaners, humidifiers

United Air Specialists
(513) 891-0400
Circle 654
Wilson Jones
(312) 774-7700
Circle 655

Dorlen Products
(414) 282-4840
Circle 659

Honeywell
(612) 870-5200
Circle 660

Inmac
(408) 727-1970
Circle 661

Innovations in Control
(408) 298-7218
Circle 662

Johnson Controls
(414) 274-4000
Circle 663

J.W. Syst.
(201) 561-0500
Circle 664

Kidde Automated Syst.
(216) 871-9900
Circle 665

Liebert
(614) 888-0246
Circle 666

Mosler
(513) 867-4000
Circle 667

Omega Grp.
(203) 322-1666
Circle 668

Retawmatic
(212) 687-0890
Circle 669

Static prevention

ACL
(312) 981-9212
Circle 769

Akro
(216) 456-4543
Circle 770

Astec
(201) 343-0013
Circle 771

Falcon Safety Products
(201) 233-5000
Circle 772

Ludlow Composites
(419) 332-5531
Circle 773

Omnium
(612) 430-2060
Circle 774

Solder Absorbing Tech.
(617) 788-6191
Circle 775

Tech Spray
(816) 372-8523
Circle 776

Tenex
(312) 439-4020
Circle 777

Tepromark Int'l.
(516) 569-4533
Circle 778

3M
(612) 733-8254
Circle 779

United Technical Products
(617) 852-4300
Circle 780

Wright Line
(617) 852-4300
Circle 967

Monitors and alarms

Denco
(301) 948-2090
Circle 656

Dickson
(312) 543-3747
Circle 658

Digital Pathways
(415) 493-5544
Circle 657

Powerful ways to shield power

Solid-state UPSs

Abacus Controls
(201) 526-6010
Circle 781

Advance Conversion Devices
(201) 778-0707
Circle 782

ATR Electronics
(612) 222-3791
Circle 783

Behlman Engineering
(805) 684-8311
Circle 784

Best Energy Syst.
(608) 565-7200
Circle 962

Clary
(213) 287-6111
Circle 785

Compumart
(901) 685-5021
Circle 786

Computer Power
(201) 735-8000
Circle 787

Cuesta Syst.
(805) 541-0160
Circle 788

Cyberex
(216) 946-1783
Circle 789

Electro-Pac
(312) 543-6200
Circle 790

Elgar
(619) 565-1155
Circle 791

Emergency Power Engineering
(714) 557-1636
Circle 792

Emerson Industrial Controls
(714) 545-5581
Circle 793

Exide Electronics
(919) 872-3020
Circle 794

General Power Syst.
(714) 956-9321
Circle 795

Gould
(619) 291-4211
Circle 796

Hitran
(201) 782-5525
Circle 797

Int'l. Power Machines
(214) 343-6076
Circle 798

ITT
(419) 468-8100
Circle 799

LaMarche Mfg.
(312) 299-1188
Circle 800

Liebert
(614) 888-0246
Circle 801

Lorain Products
(216) 268-1122
Circle 802

Lortec Power Syst.
(216) 327-5050
Circle 803

Nova Electric Mfg.
(201) 661-3434
Circle 804

Professional Syst.
(414) 542-5200
Circle 805

Ratelco
(206) 624-7770
Circle 806

RH Electronics
(805) 688-2047
Circle 807

RKS Industries
(408) 438-5760
Circle 808

Saft America
(612) 645-8531
Circle 809

Semiconductor Circuits
(603) 893-2330
Circle 810

Sola Electric
(312) 439-2800
Circle 811

Solidstate Controls
(614) 846-7500
Circle 812

Sun Research
(603) 859-7110
Circle 813

Teledyne Inet
(213) 325-5040
Circle 814

Terado
(612) 646-2868
Circle 815

Powerful ways to shield power

Solid-state UPSs

Topaz
(619) 279-0831
Circle 816

Triad Power Syst.
(214) 341-8700
Circle 817

UP Syst.
(213) 634-0621
Circle 818

Welco Industries
(513) 891-6600
Circle 819

Wilmore Electronics
(919) 732-9351
Circle 820

Rotary UPSs

Atlas Energy Syst.
(617) 492-2525
Circle 821

Computer Power Products
(213) 323-1231
Circle 822

Georater
(703) 368-2101
Circle 823

K/W Control Syst.
(914) 355-6741
Circle 824

Power Syst. & Controls
(804) 355-2803
Circle 825

Motor generators

Atlas Energy Syst.
(617) 492-2525
Circle 826

Computer Power Products
(213) 323-1231
Circle 827

Emergency Power Engineering
(714) 557-1636
Circle 828

General Electric
(615) 859-8515
Circle 829

Georater
(703) 368-2101
Circle 830

Kato Engineering
(507) 625-4011
Circle 831

K/W Control Syst.
(914) 355-6741
Circle 832

Litton-Louis Allis
(414) 481-6000
Circle 833

Power Syst. & Controls
(804) 355-2803
Circle 834

Transformers, regulators, line conditioners, suppressors

Abacus Controls
(201) 526-6010
Circle 835

Acme Electric
(919) 738-1121
Circle 836

Amtek Syst.
(214) 238-5300
Circle 837

Computer Accessories
(619) 695-3773
Circle 963

Computer Mate
(214) 669-9370
Circle 964

Computer Power
(201) 735-8000
Circle 838

Computer Power Syst.
(213) 515-6566
Circle 839

Cuesta Syst.
(805) 541-0160
Circle 840

Data Devices Int'l.
(213) 998-2900
Circle 841

Digital Equipment
(617) 493-3120
Circle 842

Dymarc
(301) 298-9626
Circle 843

Electronic Specialists
(617) 655-1532
Circle 845

Elgar
(619) 565-1155
Circle 844

Emergency Power Engineering
(714) 557-1636
Circle 846

General Electric
(219) 743-7431
Circle 847

General Semiconductor Industries
(602) 968-3101
Circle 848

Gould
(619) 291-4211
Circle 849

GTE Products
(609) 392-3141
Circle 850

Hitran
(201) 782-5525
Circle 851

Isoreg
(617) 486-9483
Circle 852

Jefferson Electric
(312) 626-7700
Circle 853

LaMarche Mfg.
(312) 299-1188
Circle 854

Liebert
(614) 888-0246
Circle 855

Lightning Elimination Assoc.
(213) 944-0916
Circle 856

Marway Products
(714) 973-1800
Circle 857

MCG Electronics
(516) 586-5125
Circle 858

Micron Industries
(312) 345-0788
Circle 859

Misco
(201) 780-9299
Circle 965

Oneac
(312) 295-2800
Circle 860

Pilgrim Electric
(516) 420-8989
Circle 861

Power Conversion Products
(815) 459-9100
Circle 862

Power Integrity
(919) 379-9773
Circle 863

Powermark
(619) 565-8363
Circle 864

Power-Matic
(619) 292-4422
Circle 865

Pulizzi Engineering
(714) 973-1800
Circle 866

RKS Industries
(408) 438-5760
Circle 867

Scientific Atlanta
(404) 939-6340
Circle 868

Sentec
(707) 542-8336
Circle 869

SGL Waber Electric
(609) 456-5400
Circle 870

Shape Magntronics
(312) 620-8394
Circle 871

Sola Electric
(312) 439-2800
Circle 872

Superior Electric
(203) 582-9561
Circle 873

Surgeonics Ltd.
(914) 241-3202
Circle 874

Tab Products
(415) 858-2500
Circle 875

TII Industries
(516) 789-5020
Circle 876

Topaz
(619) 279-0831
Circle 877

Ultima Electronics Ltd.
(516) 752-0144
Circle 966

Westinghouse Electric
(616) 949-9636
Circle 878

Standby supplies

Best Energy Syst.
(608) 565-7200
Circle 879

Emergency Power Engineering
(714) 557-1636
Circle 880

Superior Electric
(203) 582-9561
Circle 881

TII Industries
(516) 789-5020
Circle 882

Emergency generators

Abacus Controls
(201) 526-6010
Circle 883

Powerful ways to shield power

Emergency generators

Atlas Energy Syst.
(617) 492-2525
Circle 884

Computer Power
(201) 735-8000
Circle 885

Computer Power
Products
(213) 323-1231
Circle 886

Georater
(703) 368-2101
Circle 887

K/W Control Syst.
(914) 355-6741
Circle 888

Onan
(612) 574-5000
Circle 889

Power-line monitors

Billings McEachern
(415) 570-5355
Circle 890

Consultronics
(201) 227-4855
Circle 891

Dranetz Engineering
Labs.
(201) 287-3680
Circle 892

Emergency Power
Engineering
(714) 557-1636
Circle 893

Liebert
(614) 888-0246
Circle 894

Power-Science
(619) 292-4322
Circle 895

Professional Syst.
(414) 542-5200
Circle 896

Ratelco
(206) 624-7770
Circle 897

RKS Industries
(408) 438-5760
Circle 898

Sentec
(707) 542-8336
Circle 899

Sola Electric
(312) 439-2800
Circle 900

TII Industries
(516) 789-5020
Circle 901

Welco Industries
(513) 891-6600
Circle 902

Power distribution units

Atlas Energy Syst.
(617) 492-2525
Circle 903

Computer Power
Syst.
(213) 515-6566
Circle 904

Digital Equipment
(617) 493-3120
Circle 905

Emergency Power
Engineering
(714) 557-1636
Circle 906

Liebert
(614) 888-0246
Circle 907

Superior Electric
(203) 582-9561
Circle 908

Topaz
(619) 279-0831
Circle 909

Protection for micro power

Online UPSs

Bits Power Syst.
(214) 340-1208
Circle 910

Computer Power
(201) 735-8000
Circle 911

Cuesta Syst.
(805) 541-4160
Circle 912

Dorlen Products
(414) 282-4840
Circle 913

EPD
(617) 890-2518
Circle 914

General Power Syst.
(714) 956-9321
Circle 915

Gould
(619) 291-4211
Circle 916

Innovations in
Control
(408) 298-7218
Circle 917

Sola Electric
(312) 439-2000
Circle 918

Sun Research
(603) 859-7110
Circle 919

Topaz
(619) 279-0831
Circle 920

Transwestern
Products
(408) 279-2544
Circle 921

Standby UPSs

General Power Syst.
(714) 956-9321
Circle 922

Kalgo Electronics
(215) 837-0700
Circle 923

Panamax
(415) 472-5547
Circle 924

Para Syst.
(817) 731-8296
Circle 925

PTI Industries
(408) 429-6881
Circle 926

Saft America
(602) 894-6864
Circle 927

Sun Research
(603) 859-7110
Circle 928

Topaz
(619) 279-0831
Circle 929

Triad Power Syst.
(214) 341-8700
Circle 930

Power-line protection

ADC/Magnetic
Controls
(612) 835-6800
Circle 931

Amtek Syst.
(214) 238-5300
Circle 932

Brooks Mktg.
(215) 244-0264
Circle 933

Computer
Accessories
(619) 695-3773
Circle 934

Computer Mate
(214) 669-9370
Circle 935

Computer Power
(213) 515-6566
Circle 936

Computer Power
Solutions
(813) 544-8801
Circle 937

Dymarc Industries
(301) 298-9626
Circle 938

Electrolert
(513) 667-2461
Circle 939

Electronic
Specialists
(617) 655-1532
Circle 940

EPD
(617) 890-2518
Circle 941

Exlin
(619) 571-3134
Circle 942

Gould
(619) 291-4211
Circle 943

Indus-Tool
(312) 642-6871
Circle 955

Inmac
(408) 727-1970
Circle 944

Kensington
Microware
(212) 486-7707
Circle 945

Misco
(201) 780-9299
Circle 946

Networx
(212) 821-7555
Circle 947

Oneac
(312) 295-2800
Circle 948

Protection for micro power

Power-line protection

Panamax
(415) 472-5547
Circle 949

Perma Power
Electronics
(312) 763-0763
Circle 950

PMC Industries
(619) 695-3520
Circle 951

Power Unity
Electronics
(714) 566-3893
Circle 952

PTI Industries
(408) 429-6881
Circle 953

RKS Industries
(408) 438-5760
Circle 954

Saft America
(602) 894-6864
Circle 956

Sutton Designs
(607) 277-4301
Circle 957

Topaz
(619) 279-0831
Circle 958

Transtector Syst.
(208) 773-1521
Circle 959

Ultima Electronics
Ltd.
(516) 752-0144
Circle 960

Power-line monitors

EPD
(617) 890-2518
Circle 961

Education and consultation

Advanced
Information Mgt.
(703) 643-1002
Circle 670

American Society
for Industrial
Security
(703) 522-5800
Circle 671

Arthur Andersen
(312) 580-0033
Circle 672

Auerbach
Publishers
(609) 662-2070
Circle 673

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Training Center
(703) 471-5751
Circle 674

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Administration
Institute
(312) 228-6200
Circle 675

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Computer Svcs.
(201) 833-1020
Circle 677

Braniff Syst.
(212) 698-6691
Circle 676

Bureau of National
Affairs
(202) 452-4420
Circle 678

Chi/Cor Information
Mgt.
(312) 454-9670
Circle 680

Combac
(416) 821-2800
Circle 681

Comdisco Disaster
Recovery Svcs.
(312) 698-3000
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Environments
(201) 242-4321
Circle 683

Computer
Protection Syst.
(313) 459-8787
Circle 684

Computer Security
Institute
(617) 845-5050
Circle 685

Coopers & Lybrand
(312) 559-5500
Circle 686

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Contingency
Svcs.
(313) 486-2110
Circle 679

CRC Syst.
(703) 385-0440
Circle 687

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Circle 689

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(414) 421-7710
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Deloitte Haskins &
Sells
(212) 790-0500
Circle 692

Devlin Assoc.
(215) 337-1667
Circle 693

Digital Equipment
(617) 496-9672
Circle 691

DPCS
(714) 557-9662
Circle 695

DP Facilities
(212) 674-8600
Circle 694

EDP Auditors
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Circle 696

Emergency
Computer Center
(913) 888-6200
Circle 697

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Planning Assoc.
(214) 780-0300
Circle 975

Gottfried
Consultants
(213) 387-2271
Circle 698

Hale Syst.
(213) 386-6430
Circle 699

Heinlein Assoc.
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Circle 701

HSH National Mgt.
(614) 888-1050
Circle 700

IBM Information
Syst. Mgt.
Institute
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Circle 702

Information
Network
(214) 630-1240
Circle 703

Information Syst.
Resources
(612) 452-7913
Circle 704

International Assn.
for Computer
Systems Security
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Circle 705

Mgt. Advisory Svcs.
& Publications
(617) 235-2895
Circle 706

Mgt. Data Syst.
(703) 893-4820
Circle 707

Mgt. Dimensions
(714) 946-9780
Circle 708

Kenneth Meyers
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Circle 709

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Circle 710

Peat Marwick &
Mitchell
(612) 341-2222
Circle 711

Price Waterhouse
Mgt. Advisory
Svcs.
(412) 355-6000
Circle 712

Security Letter
(212) 348-1553
Circle 713

Sungard Svcs.
(215) 854-1400
Circle 714

The Vault at
Greenwich
(203) 637-1212
Circle 717

Total Assets
Protection
(817) 261-2556
Circle 715

Walter E. Ulrich
(713) 666-5433
Circle 716

Woodland
Consulting
(201) 536-5205
Circle 718

Dp Disaster

(Continued from page 185)

Education and consultation

Useful books and periodicals

Assessing Data Processing Safeguards
Detecting & Preventing Misuse of Computer Systems
Pilot Books
(516) 422-2225
Circle 755

Computer Crime Law Reporter
National Center for Computer Crime Data
(213) 850-0509
Circle 756

Computer Security, Auditing & Controls
Com-And Mgt. Advisory Svc. & Publications
(617) 235-2895
Circle 757

Computer Security Digest
Forensic Accounting Review
Computer Protection Syst.
(313) 459-8787
Circle 758

Computer Security Journal
Computer Security Quarterly
Computer Security—A Manager's Guide
Computer Security Institute
(617) 845-5050
Circle 759

Data Processing & Communications Security
Assets Protection
(608) 231-3817
Circle 760

Data Security Management
Auerbach Publishers
(609) 662-2070
Circle 761

Disaster Plan 80
EDP Security
(617) 890-6666
Circle 762

Disaster Planning Guide
Kalbaugh-Elling Assoc.
(516) 781-8108
Circle 763

EDPACS—The Journal of Computer Auditing Automation
Training Center
(703) 471-5751
Circle 764

Fire Officer's Guide on Disaster Control
National Fire Protection Assoc.
(617) 770-3000
Circle 765

Security Letter
(212) 348-1553
Circle 766

10 Questions You Can't Afford to Overlook When Planning for Disaster Recovery
Chi/Cor Information Mgt.
(312) 454-9670
Circle 767

The Data Center Disaster Consultant
QED Information Sciences
(617) 237-5656
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(formerly Amtek Systems, Inc.)

CIRCLE 107

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- simple?
- integrated into your business' organization?
- providing immediate benefits?

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CIRCLE 108

SHOW PREVIEW

Info 84

Executives, managers, and professionals alike are expected to be drawn to the 11th annual International Information Management Exposition & Conference, October 1 through 4 at the New York Coliseum. More than 300 exhibitors, filling up all four floors of the Coliseum, will display complete lines of business hardware and software, ranging from computers, peripherals, and office-automation equipment to applications and communications software.

The Info 84 conference sessions will cover all aspects of information management and systems, presenting MIS/dp managers with dozens of new ways to help boost their employers' productivity and profits. Some of the topics will include: integrated software systems, computer security, databases, graphics, and networks.

MIS/dp managers will find many valuable sessions on information systems. This section will be broken down into 30 sessions:

- Management productivity and information technology: Augustus van Nievelt, Strategic Planning Institute.
- Selecting business information-management systems: Alan C. Verbit, Verbit & Co.
- Data security and protection: Alan L. Goldberg, Deloitte Haskins & Sells.
- Decision-support systems—micros vs. mainframes: Mort Rosenthal, Corporate Software.
- Fourth-generation technology—impact and trends: Computer-industry guru James Martin will chair this discussion.
- Relational database management—the best paradigm for end-user computing: Bruce Donath, Management Decision Systems.

Key sessions in the personal-computer category will include:

- Aids to selecting personal-computer software: William L. Cogshall, Software Access International.
- Microcomputer hardware acquisition in the corporate environment: John D. Whalen, Auerbach Publishers.

- Unix—software portability and standards: Jean Yates, Yates Ventures.

Key sessions on office automation will include:

- Management success strategies for office automation: N. Dean Meyer, N. Dean Meyer and Associates.
- Local-area networks—benefits and risks: Morton Fortgang, Contel Information Systems.

- Office-automation-implementation case studies—the benefits and pitfalls: Ira Sandler of the Bank of Boston will chair this discussion.

The keynote address will be given by Charles E. Exley Jr., president and chief executive officer of NCR Corp., Dayton, OH. In his presentation, "How trends in technology will affect information-processing managers," Exley will look at the development of technology to integrate systems, examine current research, and predict what will happen in the near future.

For more information about Info 84, call the show manager at (203) 964-8287. □

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Here's why.

Quality disks deserve a quality sleeve. Sleeves of TYVEK® spunbonded olefin provide unsurpassed data protection because

1. TYVEK is strong—won't tear like paper.
2. TYVEK does not lint.
3. TYVEK is smooth, non-abrasive.
4. TYVEK is chemically clean, has a neutral pH.
5. TYVEK reduces static problems.
6. TYVEK is unaffected by water.

You're in great company when you rely on the disk protection of TYVEK. To learn more, write DuPont Company, Room X40411, Wilmington, DE 19898.

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New MSS Service

MRP II Software Audits

Manufacturing Software Systems, Inc. offers a new consulting service: MRP II Software Audits. Designed to reduce software evaluation time and eliminate surprises in implementation, MSS Audits compare the package you're reviewing with the new Standard MRP II System.

MSS Software Audits identify missing functions and those which work incorrectly based on our experience with Class A MRP II systems. The problems you'll encounter are clearly defined *prior to purchase*...plus we'll give you detailed solutions and the effort required to change the system.

Since 1976 MSS has been the only source of professional MRP II software evaluations. And our Standard System has been accepted industry-wide as the standard for a Manufacturing Resource Planning system.

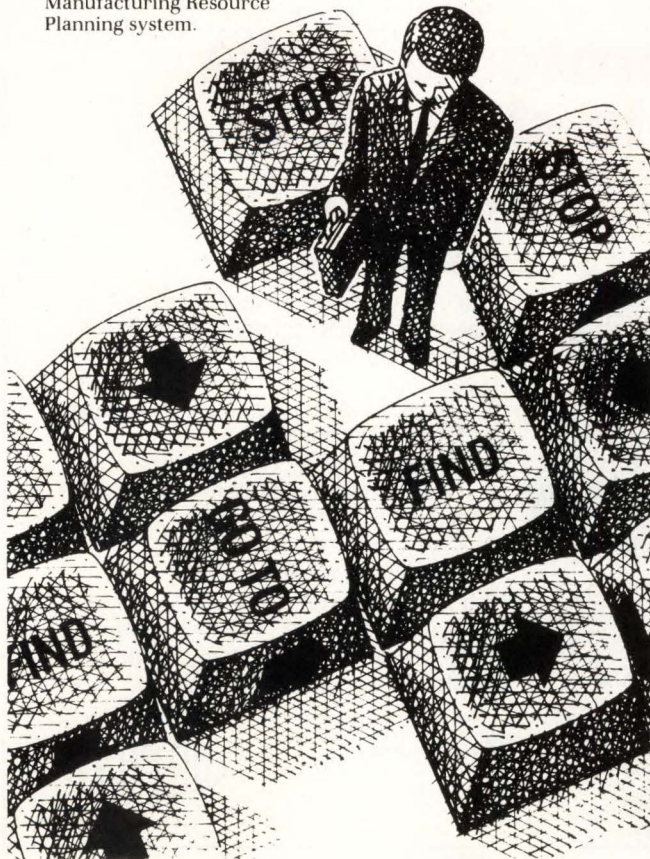
Accelerate your MRP II software decision and system implementation. Call: 800/343-0625 or 802/878-8161 and schedule your MSS Software Audit. We're prepared to work within your time frame...and to assist you in making the right software selection.

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LETTERS

Rhapsodic about Dvorak

James E. Dolan's letter [June] suggesting that educators should teach typing on a Qwerty keyboard using "a more useful system" of home-row keys (AWEF-JIO;), rather than even consider the Dvorak layout, needs a reply.

While the "fundamentals of learning how to type properly" are perhaps important, so is the keyboard layout. How many of us remember the painful days (weeks, months) we had learning the Qwerty keyboard? It is a design of the 1870s, when typewriter inventor Christopher Sholes was troubled by keys' jamming in his primitive machine. He reasoned that if he placed the keys on the keyboard for maximum awkwardness, the number of jams would lessen, and his invention would sell.

Sholes put the most-used keys at opposite ends of the keyboard. He fixed the keyboard so that few words could be typed using just the middle row. He assigned weaker fingers to the more popular keys, put keys often used together as far apart as possible. He gave the generally weaker left hand the lion's share of the keystrokes.

But today, our minds and fingers jam before our typing devices. So why not bring ingenuity into play again, and consider the Dvorak keyboard? Seymour Papert, in his book, *Mindstorms*, has chosen the name "Qwerty syndrome" to refer to our clinging to once good but now obsolete technology.

What are the Dvorak's strengths then? First and foremost, it is easy to learn. Using our online, adaptive tutorial, The Coach, for about 20 minutes a day, non-typists are reporting speeds of 20 to 30 words per minute in less than two weeks; and professional typists surpass their Qwerty speeds in three to four weeks (while retaining fluency in Qwerty). Non-typists usually want to reach nine-finger fluency as quickly as possible with a minimum of effort.

Second, the Dvorak layout offers increased productivity because it reduces finger movement for most types of text. While "home-row" letters are important, of greater importance is the position of letter sequences (a point James Dolan's proposal doesn't consider). The Dvorak layout pays special attention to letter sequences.

Consider these facts. During a normal day's typing, a professional typist's fingers will move about 16 miles over the Qwerty keyboard, and only one mile on the Dvorak keyboard for the very same text. The Dvorak layout is balanced, as the letters of most words are stroked with alternating hands. One can type about 4,000 words without ever moving one's fingers off the home row on the Dvorak, versus only 100 words on the Qwerty home row. And 92 percent of the Dvorak keystrokes are on the home row and the row above it. Any proficient typist will tell you it's much easier to reach out and up than down and in. Try it yourself. Reduced finger movement must mean less fatigue, hence fewer mistakes.

If you're proficient and happy with your hard-earned Qwerty skills, there's no need to switch—at least until your colleagues recover from their Qwerty syndrome.

Richard A. Helwig
Chairman

Seasoned Systems Inc.
Chapel Hill, NC

Address letters to the editor to Computer Decisions, 10 Mulholland Dr., Hasbrouck Heights, NJ 07604.

SYSTEMS

Mainframe line

A new family of five mainframes ranges from the intermediate AS/8023 to the AS/8083 large system. The intermediate model is field-upgradable to the large-scale level. They all support IBM operating systems and VS1, MVS 3.8, VM, DOS, and DOS/VSE. Prices range from \$639,000 to \$3.5 million. Current AS/80X0 models can be upgraded on site to this family at no charge.

National Advanced Systems, 800 E. Middlefield Rd., CA 94040.
(415) 962-6000.

CIRCLE 236

Entry-level VS

Wang's VS 15 is a business system for smaller work groups and has capabilities for data processing, office automation, graphics, networking, and communications. A basic system with 256 Kbytes of main memory, 5 $\frac{1}{4}$ -inch 360-Kbytes fixed disk drive, and a 5 $\frac{1}{4}$ -inch 360-Kbyte diskette drive is \$13,500. Users may choose one of eight preconfigured models or custom configure an individual system.

Wang Laboratories Inc., One Industrial Ave., Lowell, MA 01851.
(617) 459-5000.

CIRCLE 237

Conference graphics

An IBM XT-compatible hardware/software system called Comgraph II offers database access, color-graphic creation, electronic presentation, and audiographic teleconferencing—including 3270, 3278, 2780, 3780, and ASCII TTY emulation. Interact 300, a basic system with eight RS-232 async ports, eight video ports, and one centronics parallel port, is \$22,500. Interact 2000, a smaller version, is \$13,500. Images may be viewed on a large monitor or video-projection system or at multiple individual remote locations. Secondary images can be used for supplementary information, to provide overlay, or to provide an animated sequence to the primary image. Im-

ages can be chosen in sequence or randomly.

Digigraphic Systems Corp. 10273 Yellow Circle Dr., Minnetonka, MN 55343.
(612) 935-9111.

CIRCLE 238

Line with dual operating systems

The Cyber 180 family of systems for scientific and commercial applications runs two operating systems simultaneously—Network Operating Syst-



em and Network Operating System/Virtual Environment—in the same memory and cpu. NOS/VE provides a virtual address space of 8,800 gigabytes. Unix-based programs can also be run on NOS/VE. Entry-level supermini Model 810 costs \$147,500 for 2 Mbytes of memory expandable to 16 Mbytes. It's upgradable to the 830, which can have two cpus and 2 million words of memory. The 830 begins at \$249,500 for 2-Mbyte memory, and at \$394,500 for dual cpu. The top of the line Model 990 is 60 times more powerful than the 810. It begins at \$3,350,000 for 8 Mbytes of memory, expandable to 32 Mbytes.

Control Data Corp., P.O. Box O, Minneapolis, MN 55440.
(612) 853-2622.

CIRCLE 239

Business model

Model 65 is the high end of the 8870 General Business Systems family. The master display workstation acts as a multiplexer, allowing three slave devices to be controlled without connection to the cpu. A basic configuration with 512 Kbytes of memory, hardware



arithmetic unit, 264 Mbytes of hard-disk storage, 300-lines-per-minute printer, and four terminals costs \$92,700. The three slave devices operate independently and function even if the master workstation is not turned on. Master and slave can also be connected remotely over a modem and phone line.

Nixdorf Computer Corp., 300 Third Ave., Waltham, MA 02154.
(617) 890-3600.

CIRCLE 240

VAX multi-tasking

Mini-Map Plus4 is a multi-user/multi-tasking array-processor system for DEC VAX 11/780, 750, and 730. It allows the VAX to accommodate up to four separate computationally intensive tasks simultaneously. A basic



system of four array processors with 64 Kbytes of data memory each, chassis with power supply, and Unibus interface cabling, is \$78,700. Other configurations up to 16 Mbytes per array processor are available. The system provides extensive software-development tools. Each processor is treated as an allocated peripheral. When a user requests an allocation, the next available one is assigned.

CSP Inc., 40 Linnell Circle, Billerica, MA 01821.
(617) 272-6020.

CIRCLE 241

PERIPHERALS

Asynch terminal

Teletype's Model 5410 asynchronous terminal has an optional modem/dialer operating at 300 or 1,200 bps. Price: \$915. Modem: \$460. A total of 120 characters of memory are dedicated to auto dialing and auto log-on.



The modem can be set to automatically receive calls. The terminal also offers 80- or 132-column high-resolution display, five character sets including a 128-character ASCII set, help messages, split-screen editing, and various ergonomic features.

AT&T Teletype Corp., 5555 Touhy Ave., Skokie, IL 60077.
(312) 982-2000. **CIRCLE 224**

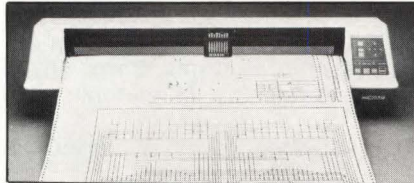
Output adapter

A Universal Subsystem Adapter enables non-IBM computers to drive an IBM 3211 2,000-line-per-minute (lpm) impact printer, a 9,240-lpm, a 18,000-lpm Xerox laser printer, or a Kodak Komstar micro-image processor, which prints on microfiche or roll film. Price: \$6,000.

Spur Products Corp., 13469 Beach Ave., Marina del Rey, CA, 90292.
(213) 822-7100. **CIRCLE 225**

E-size plotters

The Zeta 836 is an eight-pen, 34-inch-wide digital drum plotter that provides high-resolution graphics for continuous-feed and cut-sheet media. Price: \$15,900. Consecutive plots may be produced without operator intervention, allowing drawings of up to 120 feet long. The unit supports ANSI sizes A through E and ISO A4, A3, A2, A1, and A0. Pen speed, pressure, acceler-

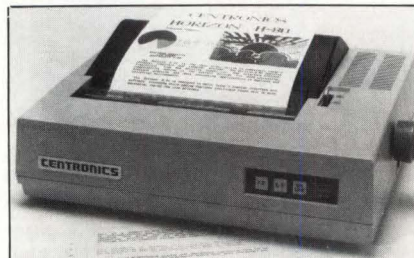


ation, and up/down delay times can be set by single-touch control.

Nicolet Computer Graphics, P.O. Box 3020, Martinez, CA 94553.
(415) 372-7568. **CIRCLE 226**

Dot-matrix printer

The Horizon dot-matrix printers are for personal computers and small systems. Price: \$699. Model H80 has an 8-inch print line and typewriter-style font, and it prints 160 and 27 cps in draft and letter printing, respectively.

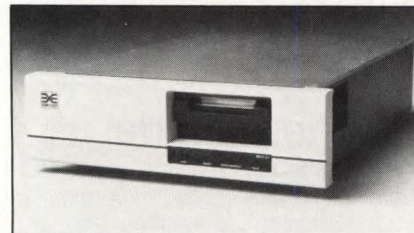


Price: \$699. Model H136 has a wide carriage and prints a 15.6-inch line. Price: \$899.

Centronics Data Computer Corp., One Wall St., Hudson, NH 03051.
(603) 883-0111. **CIRCLE 227**

DEC subsystems

The Medley Subsystem provides enhanced storage and backup for DEC Qbus and Unibus users. It consists of a



36- or 110-Mbyte 5 $\frac{1}{4}$ -inch Winchester disk with a cartridge-streaming tape drive offering up to 70 Mbytes of backup, as well as an appropriate host

adapter. The 110-Mbyte model is \$12,455 for the Qbus version and \$12,855 for the Unibus model. The 36-Mbyte version is \$9,795 for Qbus and \$10,195 for Unibus.

Emulex Corp., 3545 Harbor Blvd., P.O. Box 6725, Costa Mesa, CA 92626.
(714) 662-5600. **CIRCLE 228**

E-size plotter

The Alphaplot flatbed plotter, which costs \$5,895, can produce E-size drawings when used in conjunction with Autodesk's Autocad software. The drawings are produced in two halves, with the paper being moved manually between the plots. The complete system is under \$15,000.

Alpha Merics Corp., 20931 Nordhoff St., Chatsworth, CA 91311.
(213) 709-1155. **CIRCLE 229**

Quality dot matrix

A high-resolution dot-matrix printer produces 54-cps letter-quality printing, 144-cps drafts, and graphics with a 180-by-180 dots-per-inch density. Price: \$995. The P1340 features software-selectable multiple fonts,

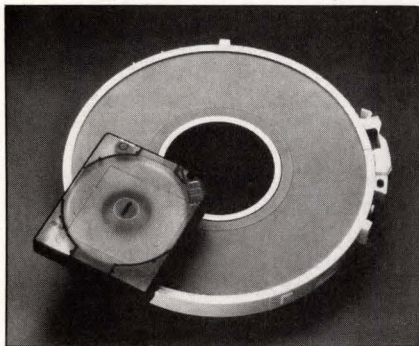


itches, line spacing, condensed print, and proportional spacing. It also offers Qume Sprint 5 emulation for wp packages and has a Centronics-compatible interface.

Toshiba America Inc., 2441 Michelle Dr., Tustin, CA 92680.
(714) 730-5000. **CIRCLE 230**

Cartridge tape drive

The IBM 3480 magnetic-tape subsystem takes a cartridge rather than a reel. A typical setup with a controller and eight drives costs \$237,910. The cartridge is about one-fourth the size of a 10 $\frac{1}{2}$ -inch reel of magnetic tape but



stores 200 million characters—up to 20 percent more characters. Data can be transferred at rates of up to 3 million characters per second. The drive also offers increased reliability, improved operator productivity, and easier cleaning procedures.

IBM. (Contact your local sales office.)

CIRCLE 242

CAD system

System 25 computer-aided design system has a 32-bit cpu, alphanumeric screen with keyboard, monochrome or color-graphics screen with joystick for pan and zoom, digitizer tablet, and stylus. The application processor has a



20-Mbyte disk drive for drawing and software storage and 1-Mbyte floppy for backup. The VAX-compatible system is expandable to a multi-user or network system. A basic workstation is \$65,000. Operators can enter graphic data into a computer with the 9100

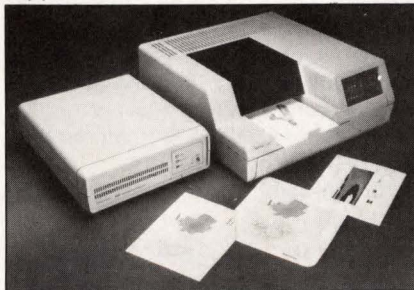
Series digitizer by overlaying the surface with a drawing or photograph and tracing over it with a pen stylus or a multi-button electromechanical cursor. Price is \$4,350, \$4,620, or \$5,321, depending on size. It comes with tablet surface in one of three sizes, RS-232C interface card, transducer, and power supply.

Calcomp, 2411 W. LaPalma Ave., Anaheim, CA 92801.
(714) 821-2142.

CIRCLE 231

Graphics copier

The Tektronix 4692 Color Graphics Copier is compatible with the company's 4107, 4109, 4113B, and 4115B terminals. This ink-jet copier has special features to eliminate bubbles and head clogs, increase copier reliability, and decrease maintenance. It automatically handles A- and A4-size paper and transparencies and has on-board support for 216 colors. Price: \$5,995.



An optional four-channel multiplexer costs \$895. A stand-alone 4510 Color Graphics Rasterizer can be used with the Tektronix 4692 and 4691 copiers. It enables them to become shared system resources for entire networks. Price: \$4,495 for 128-Kbyte version, \$5,995 for 512 Kbyte, and \$9,995 for 2 Mbyte.

Tektronix Inc., P.O. Box 500, Beaverton, OR 97077.
(503) 627-7111.

CIRCLE 232

Portable OCR

The 4-pound battery-powered Porta-Scan 2002 can go anywhere to collect OCR information from tickets, tags, or other OCR media, and stores it in CMOS memory until it is transmitted to

your computer. Price: \$2,995. Information may be entered with an OCR wand, bar-code wand, or alphanumeric keyboard, and is transmitted to the computer by modem, acoustic coupler, or directly through an RS-232C connector.

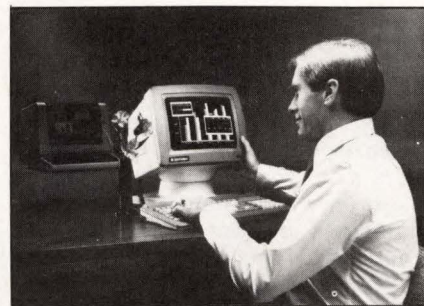
Digitronics, 53 John St., Cumberland, RI 02864.

(401) 724-8500.

CIRCLE 233

Ergonomic terminal

Model 925E is an ergonomically designed emulator of the Televideo 925 terminal and is compatible with the



925/950 application software. Price: \$795. It has tilt and swivel screen, buffered printer port, 16 functions that can be shifted to 32, and optional graphics board.

Televideo Systems Inc., 1170 Morse Ave., Sunnyvale, CA 94086.
(408) 745-7760.

CIRCLE 234

Info-network phone device

Pelorus 2000 provides direct communication between your computer and anyone at the other end of the phone line. Price: \$6,000. It turns a touch-tone phone into a terminal keyboard by translating numeric information into computer data. It also had digitized and synthesized voice capabilities, with a 2,000-word vocabulary that can be expanded for any application. Other capabilities are auto-dial, auto-answer, and a built-in modem.

Pelorus Inc., 3824 Marcus Court, Monkton, MD 21111.
(301) 557-7274.

CIRCLE 235

SOFTWARE

System/34 job queue

Queue/34 is a productivity tool that increases the throughput of the S/34. One-time license fee is \$295 per cpu. Queue/34 establishes an auxiliary batch-job queue, allowing user jobs to run concurrently with jobs in the system-job queue. Users have complete control of their job's position in the queue.

Greene Software, P.O. Box 23, Victor, NY 14564.
(716) 924-4456.

CIRCLE 215

Micro/mainframe link

Tempus-link is a transparent link between micros and mainframes that supports most communication devices. It allows any type of data transfer including access to mainframe virtual disks from micro applications. It features upload/download, PC-DOS or MS-DOS operation, simultaneous disk sharing, and flexible conversion. Price depends on the maximum number of current users (MCU); examples are \$4,750 for five MCU and \$39,000 for 200 MCU. Tempus-data is a batch and online subset of a data-management system allowing nontechnical users to access mainframe data for microsystems. Features include read/write access to all IBM standard-file types as well as Tempus-link virtual disks, online dictionary, and unlimited computing. Price, also based on MCU level, is \$3,100 for five and \$25,000 for 200 MCU for Tempus-data Batch, and \$1,550 and \$12,750, respectively, for online.

Micro Tempus Inc., 440 Dorchester Blvd., W., Montreal H22 1V7.
(514) 397-9512.

CIRCLE 216

Multiple printing

CMS normally supports one printer per user. A program called CMS Multiple Printer Support extends the support to an arbitrary number of printers, eliminating the need for creating inter-

mediate disk files and facilitating the use of VM spooling capabilities. Price: \$2,375, or \$107 monthly. Release 1.1 of the VM/Space Performance Analysis/Capacity Evaluation Subsystem is a benchmarking and testing tool. Depending on usage, there are three price levels from \$22,500 to \$45,000 for purchase, or \$795 to \$1,950 per month.

The Adesse Corp., P.O. Box 607, Ridgefield, CT 06877.
(203) 431-3071.

CIRCLE 217

Logistics applications

Plus Systems, a recently formed division of Cleveland Consulting Associates, has announced its first products-applications packages incorporating the company's expertise in logistics. The packages, designed to run on the IBM PC/XT, IBM mainframes, and PCs, range from \$40,000 to \$250,000, depending on configuration. Locate II helps optimize network distribution; Transplan assists in transportation planning; and Paragon enhances vehicle routing and scheduling.

Plus Systems, 23925 Commerce Park Rd., Beachwood, OH 44122.
(216) 464-5550.

CIRCLE 218

Self-programming

Transform/IMS is an application generator for systems running IMS OB/DC under MVS or VS/1. Price: \$200,000. It gives the computer the ability to program itself, automating system design, program design, program coding, implementation, and maintenance, including revisions and enhancements.

Southwest Consultants Inc., 9801 Westheimer, Houston, TX 77042.
(713) 978-7808.

CIRCLE 219

VAX management

IIS/Destiny is an integrated application and information-management system for DEC superminis under VAX/VMS. Permanent license is \$39,500 for VAX 11/730, and \$49,500 for 11/750 and up. It features interactive methodology at all levels, ability to learn and make deci-

sions, online documentation, and top-down structured applications.

Intelligent Information Systems Inc., 90 West St., New York, NY 10006.
(212) 962-0662.

CIRCLE 220

Database design

Logical Database Design (LDD), which is used to design stable, shareable databases, runs on IBM or plus-compatible mainframes under the TSE option of MVS, and can be used with top-down information-planning tools. Price: \$45,000. An analyst can create and maintain a Data Element Directory, which is then used in the development of logical data models. The refined data model serves as a design "template" for all databases.

Holland Systems Corp., 3131 S. State St., S-303, Ann Arbor, MI 48105.
(313) 995-9595.

CIRCLE 221

CICS programs

BIM-ODIS/OS, which supports MVS and OS/VS1 CICS systems, monitors the status of CICS systems and helps analyze operational or performance problems. Permanent license is \$5,000. Bimecho, running under DOS/VSE CICS/VS, takes what is occurring on one screen and simultaneously duplicates it on other crts, 3270 terminal printers, or DOS/VSE printers. Permanent license: \$1,600. BIMCNSOL permits DOS/VSE users to use 3270 crts under CICS as alternate or remote consoles. A display-only version costs \$880 for a permanent license. A full-command version, which also allows the operators to control the system remotely, is \$2,000. All of these programs may be leased on an annual or monthly basis.

BIM, 5788 Lincoln Drive, Minneapolis, MN 55436.
(612) 933-2885.

CIRCLE 222

Personnel VAX pack: CJ/Personnel is a personnel-processing and reporting package for Dec's VAX minis. Graphics can also be added to this menu-driven software from Collier-Jackson of Tampa, FL.

CIRCLE 223

MICROSYSTEMS PLUS

Emulator for PC

A communication package for the IBM PC can emulate virtually any asynchronous terminal. Price: \$195. Its capabilities range from a typewriter-with-slave-printer mode to a built-in programming language for automating complex sequences of multiple-data transmissions. The program automatically remembers log-on and log-off procedures, provides for unattended file transfers, and allows the PC to act as a screen-oriented text editor.

Direct Aid, P.O. Box 4420, Boulder, CO 80306.

(303) 442-8080.

CIRCLE 208

Wang micro emulates 3278

The 3278 Emulation Board, a hardware/software package, allows the Wang Professional Computer or professional image computer (PIC) to access an IBM mainframe database when attached to a 3270 terminal network. The Wang becomes an intelligent workstation replacement for a 3278 terminal while still operating concurrently and independently of the host programs. Price: \$1,095. The board occupies one I/O slot on the Wang and does not reduce the amount of available memory. It can be purchased as a stand-alone or as an attachment to the Wangnet CMUX-3270 Cable Multiplexer.

Wang Laboratories Inc., One Industrial Ave., Lowell, MA 01851.

(617) 459-5000.

CIRCLE 209

Network for Kaypro

Add-Net interface and software allows Kaypro 2, IV, and 10 and all Eagle 2 computers to operate as intelligent workstations on an Alspa-Net local-area network. Price: \$595. The computers can also be linked into their own local-area network with the CN-4001 network master and the TurboDOS operating system. They cost \$1,195 and \$750, respectively. The capacity and flexibility of the networks

can be expanded with HD modular hard-disk drives. Up to 255 workstations can plug into one Alspa-Net network, which can manage up to 1,000 Mbytes of information. The HD Series has 10, 20, 35, and 50 Mbytes of storage and ranges in price from \$2,495 to \$5,495.

Alspa Computer Inc., 477 Division St., Campbell, CA 95008.

(408) 370-3000.

CIRCLE 210

Monitors for PC

Two monochrome monitors compatible with the IBM PC feature slow persistence phosphor for flicker-free viewing and have a built-in handle. Model 121 with green phosphor is



\$200; Model 122, with amber, is \$230. There is an optional tilt-swivel base with an LCD clock.

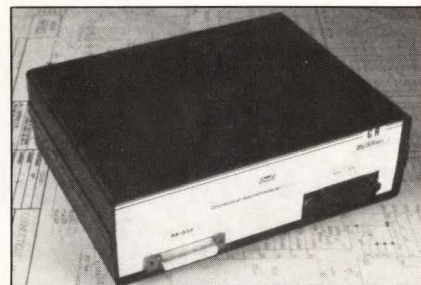
Taxan Corp., 18005 Cortney Court, City of Industry, CA 91748.

(818) 810-1291.

CIRCLE 211

Interface converter

Busster GR is a micro-based interface that allows a computer with an IEEE-488 interface to communicate with any computer, peripheral, or other device that has a standard RS-232 interface. The GR costs \$495 and has many software-controlled features. It is programmed through Basic commands from the host.



Connecticut Microcomputer, 36 Del Mar Dr., Brookfield, CT 06804.

(203) 775-4595.

CIRCLE 212

Pop-up menus

Designer Pop-up software eliminates the need to memorize complex commands. Price: \$95. An individually designed or preset menu appears on the screen when it's needed, the user points to the desired command with a PC Mouse, presses a button, and the menu disappears as the command is executed.

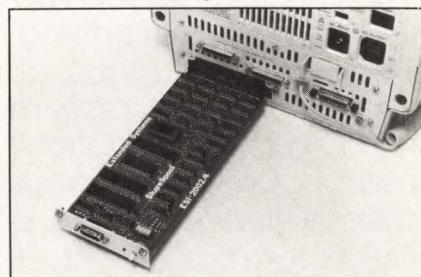
Mouse Systems Corp., 2336H Walsh Ave., Santa Clara, CA 95051.

(408) 988-0211.

CIRCLE 213

Printer sharing

Sharespool acts as an intelligent printer interface when installed in an HP 150 expansion slot. Price: \$485. It spools and manages printouts for up to three personal computers, allowing them to share one printer. Models are available for either serial RS-232C or parallel Centronics-compatible interfaced



printers. Sixty-four Kbytes of spooler memory are standard; an additional 64 Kbytes can be added for \$80.

Extended Systems Inc., P.O. Box 4937, Boise, ID 83711.

(208) 322-7163.

CIRCLE 214

Scouting For **Management Talent?**

Computer Decisions Launches A New Recruitment Advertising Section In July

If you've been looking for an exciting and responsive new market for recruiting MIS/dp managers, engineering managers, and computer-involved general and corporate managers, your search is over. Starting with the July issue, *Computer Decisions* gives you the opportunity to draw from a pool of 160,000 highly qualified executives you can't reach with any other publication. Managers who are prime prospects for the positions you have to offer.

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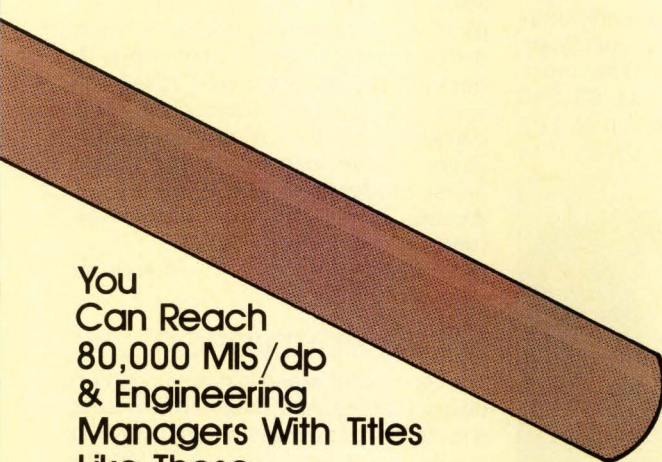
- *46% would change jobs for more autonomy, authority, or control.

- *42% of MIS/dp managers would like to move into general management.

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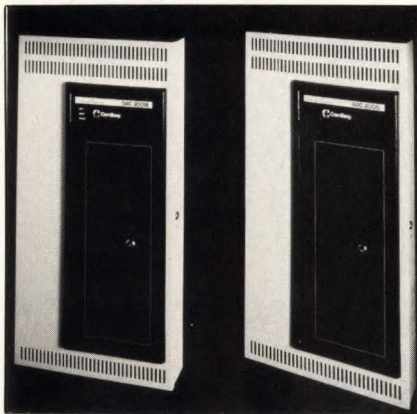
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SECURITY

Access control

Pass-4100 is a sophisticated, flexible access-control system with open-ended parameters. Prices start at \$30,000. The basic system handles up to 512 terminals and monitors, 10,000 card holders expandable to 65,000, and 64 peripherals in any location. It offers triple redundancy and printer redirection for backup. Each card can be individually coded for up to 512 access levels and 64 time zones with eight stop-starts within each zone. The



BAC200 Energy Management System interfaces with a Cardkey Pass security system, allowing energy consumption to be adjusted while eliminating the need for separate terminals and printers. Price: \$17,180. The system is modular, comprising up to 16 master units and 240 slaves. The Master, costing \$17,180, receives and processes data and communicates with the other units. The Slave, which gathers data and executes commands, is \$8,290.

Cardkey Systems, 20660 Bahama St., Chatsworth, CA 91311.
(818) 998-7560.

CIRCLE 201

Dialup access

Lineguard Model 3060 controls dialup access to stored data, securing up to 60 lines. Price: \$985. Callers are given 20 seconds and two chances to enter a correct code. If the code is verified, users are informed whether the call-back can be placed immediately or must be queued, and they can choose to accept or reject call-back. Group

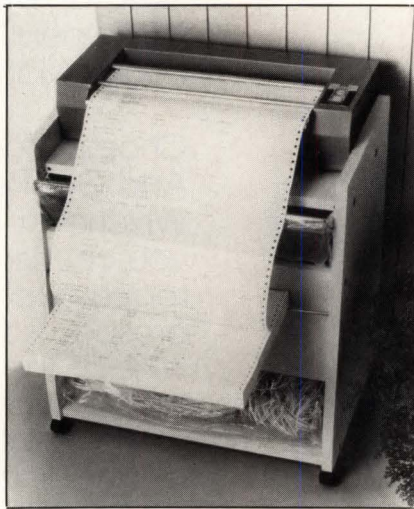
codes assigned to users provide for least-cost routing, port contention, and port selection.

Western Datacom Co., 5083 Market St., Youngstown, OH 44512.
(216) 788-6583.

CIRCLE 202

Paper shredders

Two Gobbler shredders can be rolled about on casters. They relieve paper jam and prevent motor burnout. Model 15 handles continuous forms and costs \$825. With a 15 $\frac{1}{4}$ -inch throat, it accepts up to five computer-size sheets at a time and cuts them into $\frac{3}{32}$ -inch-wide strips. The more powerful Gobbler 18, at \$3,295 accepts forms or printouts up to 17.7 inches wide and cuts them into



particles about $\frac{1}{8}$ -by-1 inch. It also shreds punch cards, plastic cards, and microfilm.

Imperial Impressions, 9820 N.W. Seventh Ave., Miami, FL 33150.
(305) 693-0300.

CIRCLE 203

Intelligent modem

Data Sentry offers the telecommunications features of a conventional intelligent modem and prevents data theft from micros, minis, and mainframes. Price: \$895. If a caller does not give the correct password within three tries, Data Sentry won't return further calls from that phone number.

It also creates an audit trail of user passwords and phone numbers, whether or not calls are successful. An optional device, Remote-on, turns power on and off from a remote terminal after security has been cleared. It costs \$145.

Lockheed-Georgia Co., 1100 Circle 75 Pkwy., N.W., Atlanta, GA 30339.
(404) 951-0878.

CIRCLE 204

PC disk protection

Safe-Gard Disk Security System, for IBM PC, XT, and compatibles, protects disks from bit-copy programs. If backup copies are made, they will work only on Safe-Gard disks. Two diskettes cost \$10. A complete duplication system can be bought for in-house production.

Avcom Inc., P.O. Box 29153, Columbus, OH 43229.
(614) 882-8176.

CIRCLE 205

Micro encryption

The Scrambler stand-alone encryption device for personal computers prevents access to data transmitted over the public phone lines. Prices are \$295 for 300 to 1,200 baud and \$495 for 300 to 1,200 baud and \$495 for 300 to 9,600 baud. Cables are \$37 to \$66. The units at both ends of the line communicate asynchronously via an RS-232C interface to encrypt and then decipher the files.

Industrial Resource Engineering, P.O. Box 57, Timonium, MD 21093.
(301) 252-1379.

CIRCLE 206

Access unit

Model 2500 Security Access Unit limits access to a variety of micros, minis, and mainframes. Price: \$395. Up to 20 user names and passwords can be assigned or cancelled, and all completed or failed events are recorded. The unit connects to any RS-232C full-duplex port and operates at 300, 1,200, and 9,600 baud.

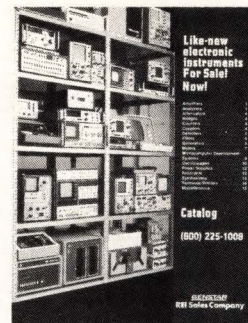
Terminal Data Corp., 11878 Coakley Circle, Rockville, MD 20852.
(301) 881-7655.

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CD-9



by Mary Miles, New England Editor

YOUR CAREER

The effective manager: semi-tough

Leadership is a very simple proposition," wrote *Boston Globe* reporter David Nyhan in a recent column on this year's presidential candidates. "The test for leadership is basic: *How well can you impose your will on others?*"

Clear, strong leadership is essential to achieve objectives and realize corporate goals. How to go about imposing your will on your subordinates, in order to reach those goals, is a different story. Those who wear the mantle of authority easily seem to be in the minority. These fortunate few don't agonize over how their style is perceived by subordinates; what people think of them is less important than getting the job done. How do they do it? Are they incurring respect and loyalty—or fear and discontent—on the part of their subordinates?

If you are new to your management position, you may be uncomfortable in this role. You know you want to be on the fast track, but are you a leader? A man recently put in charge of a large MIS department says, "I know the job; I know what I want done and how it should be done; and I know who should do it. But it's difficult for me to tell people what to do. I want to be a tough boss, but I don't want to be feared. Can I have it both ways?"

Instead of focusing on work goals, this manager is wasting valuable time and energy competing in a popularity contest, forgetting that a subordinate is an employee *beneath* the boss in rank, power, and importance.

Trying to maintain a "nice-guy" attitude while cracking the whip can drive you crazy. Constantly worrying about your image is very stressful. But the most troublesome aspect of assuming power usually stems from

anxieties about what others think. You may be one of those people who has a difficult time reconciling the use of power with being a likeable person. If you have mixed emotions about how tough you should be, you're probably in trouble. It may be time to dispense with that eternal winning smile long enough to ponder ways of becoming an effective leader.

More easily said than done, true. It's a task that requires scrupulous self-examination. To get some pointers on developing a management style that allows you to do your job effectively without losing self-respect and the respect of others, *Computer Decisions* asked Madeline Klein, a consul-

Being "nice" has nothing to do with being an effective boss. Being *secure* has a lot to do with it. *Klein, consultant*

tant (M. I. Klein, Scarsdale, NY) and seminar developer/leader for the American Management Associations (AMA), the following questions.

Question: Is it possible to be a strong boss *and* a popular, well-liked person?

Answer: Yes. People respond to you in terms of what you do and how you do it. If you set up clear goals and involve subordinates in these goals, they will become committed because they "own" part of the goals. They will follow you not because they like you or don't like you, but because they understand you and what you're doing.

Q: Aren't there times when you

must be especially tough, when you have to fire someone, chew someone out, or tell a team its efforts have not paid off?

A: If by "tough" you mean making decisions that may be unpopular, certainly. That's what leadership is about. No matter how deeply a boss believes in bringing people into the decision-making process, in reality only the boss can make the final decision. But it's the *way* the decision's made that counts. For example, firing someone: If you've established a discipline process that ensures that subordinates are aware of the consequences of certain behavior, and someone chooses not to follow these rules, then it's up to *you* to endorse and enforce your rules. When you set up a consistent system, subordinates know what to expect and can respect you for your actions.

Naturally, during times of pressure (when the business is not going well, for example), it's tougher to be responsive to employees. That's when you're really tested as a leader.

Q: Is it possible to learn how to be a tougher, more decisive boss?

A: Yes, but it can't be done just by taking courses. You learn how to use power effectively and positively by building your own self-esteem. If you have a strong self-image, you can combat the rejection or disapproval you may get as a result of your actions.

Q: Are there some managers who are just too "nice" to be effective bosses?

A: Being a "nice" boss doesn't have anything to do with being an effective boss. Being *secure* has a lot to do with it. You can be a strong, decisive leader who makes unpopular decisions and be a likeable person, or you can be

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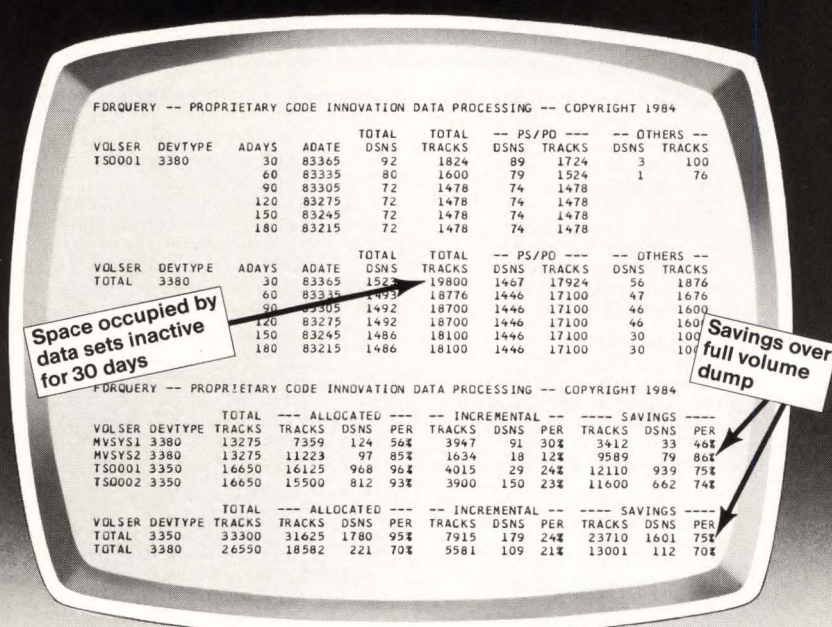
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Q: What about maintaining the proper "distance" between the boss and subordinates?

A: The transition from co-worker to boss is extremely difficult. You want to be open and sensitive, but you are no longer a peer. It can be dangerous to continually emphasize that you are now on a higher level. That's sort of playing your trump card. At the same time, you must maintain a degree of objectivity and professionalism. This means that while you're establishing the goals and standards of performance for your subordinates, you must do a lot of careful listening.

Q: Are there any specific measures you can take to find out how you are performing as a boss?

A: Absolutely. Give your people the opportunity to do a regular performance appraisal of you. Such evaluations must be anonymous and totally nonthreatening to employees' job security. You don't want to put them on the spot, because then they'll only tell you what they think you want to hear.

Q: You have to be strong to benefit from that kind of feedback, don't you?

A: Yes. Unfortunately, there's a sort of catch-22 here. The secure managers who don't need such devices are polishing up their acts. Those who really need to hear the truth, the insecure managers, may never be able to accept it.

Leadership isn't simple. The constructive use of authority entails the ability to formulate clear goals and to determine what steps are necessary to achieve them, including getting people to do what you want. The requirements are hard work, self-confidence, good communication skills, and a secure sense of your own strengths. You also need respect for others and a willingness to listen, evaluate, and take appropriate action. The payoff can be very gratifying—to your organization, your subordinates, and, most of all, to you. □

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