

COMPUTER DECISIONS

NOVEMBER 1984

THE MANAGER OF COMPUTING

A HAYDEN PUBLICATION

The new dp specialists

James Martin
on what's ahead

Symphony vs. Framework

Budget-toting software



Go-anywhere computing



COMPAQ PRESENTS

How To Do More With Less

It used to be that when you wanted personal computers to do more, you added peripherals. A fixed disk for storage. A second monitor for graphics. A backup system for data protection. And slowly the octopus devoured your desk.

But now everything you wanted in a personal computer is *in* a computer. The new COMPAQ DESKPRO™ is here.

There's room *inside* for up to four storage devices. For instance, you could insert two diskette drives, a 10-megabyte fixed disk drive, even an exclusive tape backup system. The new COMPAQ DESKPRO can grow *inside* instead of *out*, saving your desktop.

Plus internal expansion slots will let you add even more functions like local area networking. A mouse. And more.

All that makes COMPAQ DESKPRO the most expandable PC you can buy. And thanks to some ingenious engineering, the COMPAQ DESKPRO displays high-resolution text *and* graphics on one monitor, not two.

It also runs thousands of business programs made for the IBM® PC and XT straight off the shelf—a full two to three times faster than older, slower computers.

So you can run the most complex software this side of mainframes quicker than you can say, “1-2-3.”

We designed the new COMPAQ DESKPRO around the same philosophy that made us the best-selling portable business computer in the world. We simply offer more in less space. For a free brochure or the location of your nearest Authorized COMPAQ Dealer, call toll-free 1-800-231-0900.



It simply works better

COMPAQ
DESKPRO™

ADR[®] WARE[™]

ADR[®]/DATACOM/DB[®]

From idea to application,
we get you there faster.

Faster than Cullinet.
Faster than Software AG.
Faster than Cincom.
Much faster than IBM.[®]

ADR/DATACOM/DB

Has the only migration
software that converts
your applications from
VSAM to a relational
data base management
system. Overnight.

ADR/DATACOM/DB

The only widely
installed relational data
base management
system being used for
high volume update
applications. Today.

ADR/DATACOM/DB

The only relational
data base management
system that does the
big jobs as easily as the
small jobs.

We've taken state of the art to a new state: Easy and available.
Before you make a software decision mail in the coupon below.
Or call in N.J. (201) 874-9000 or toll free
1-800-ADR-WARE.

DB

☐ Please send me more information about ADR WARE.
☐ Please send me information about ADR seminars.

APPLIED DATA RESEARCH INC.
Route 206 & Orchard Road, CN-8, Princeton, NJ 08540

Name _____

Position _____

Company _____

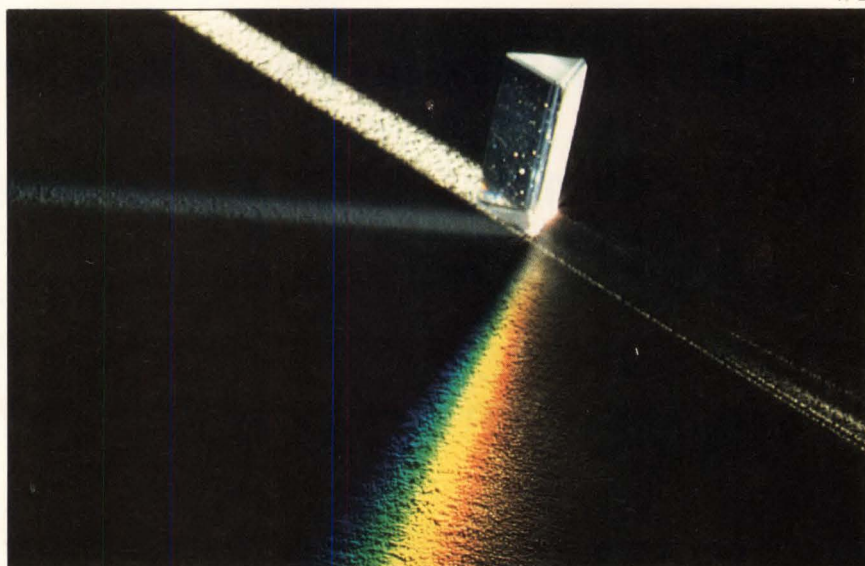
Address _____

City _____ State _____ Zip _____

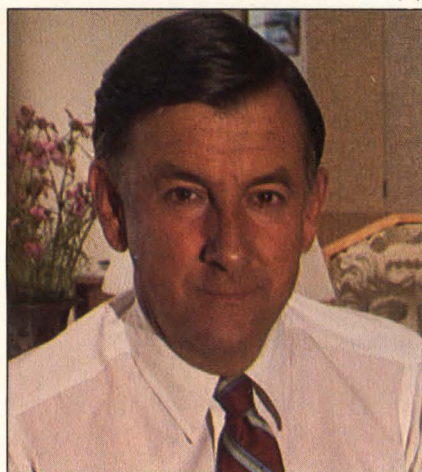
Phone Number _____

Computer Equipment _____

ADR[®] WARE[™]
From idea to application,
we get you there faster.



94



10	Insight
14	News & Comment
44	Personal Computing Self-training aids
50	Strictly Software
72	Data Communications Micro complexities
78	Office Automation
80	Following the Leaders Symphony vs. Framework
206	New Products
214	Advertiser Index
215	Your Career Influence management

COVER PHOTO: Ted Hardin

87 Outstanding data center/Theresa Conlon
A photographic tour of Wakefern Food Corp.'s data center in central New Jersey.

94 Software—What's ahead/David Kull
James Martin maps the trends and elucidates the esoteric about the future of software.

126 Growing old in dp/Martin Lasden *Personal retrospectives and astute observations from some founding dp-ers about the past—and the promise—of careers in MIS/dp.*

138 The latest revolution in financial-modeling software: Part II/Robert Perry
Profiles of spreadsheet and modeling software for mavens of corporate finance.

148 Portable computers: Light as a feather/Jennifer E. Beaver *These featherweights carry clout, but selecting the right portable can weigh heavily on buyers.*

158 Information management: Is it becoming a specialist's game?/Mary Miles *Now that you know you need the new dp specialists, only the larger questions of who they are and where to find them are left standing.*

172 OA update: Converging on the many-splendored workstation/Rick Cook *Two approaches to developing effective workstations in the office offer a spectrum of capabilities.*

DIGITAL LOWERS THE COST OF PROFESSIONAL WORD PROCESSING.



INTRODUCING DECmate III.

What it can do makes it a professional tool. How little it costs belies the richness of its features.

At just \$2695*, the new DECmate III™ word processing system does the DECmate tradition proud: It is powerful, streamlined, and complete. Moreover, it features an enhanced version of the software that has made DECmate a household word around the office.

With the new DECmate III you can cut and paste by the column. Generate scientific and technical documents. Search for words automatically. With one of the nimblest cursors in the business, you can move through text by the character, paragraph or page.

The DECmate III will help you generate lists, sort alphabetically, and make sure everything adds up.

If English isn't your native language, the new DECmate III speaks four others: French, Italian, German and Spanish.

And while the newest DECmate is designed to stand on its own, it won't leave you talking to yourself. It communicates immediately with other DECmate family members. In terminal mode, it can work with office automation software like Digital's VAX™-based ALL-IN-1™. It can communicate with remote systems around the corner, or around the continent.

The new DECmate III word processor complements the DEC-

mate II™ office workstation by affording you low-cost entry into professional word processing. While it does not offer all of DECmate II's expansion options like a hard disk, it will grow just like your need for automation will.

Add Digital's DECspell™ software and the DECmate III comes with 70,000 words** of its own. Misuse one of them and the system will get you quickly back into spelling bee shape.

There's a customer-installable modem card that automatically dials, redials and confirms message delivery at high speed.

Add the CP/M™ softcard and DECmate III runs a complete

library of popular office-support applications.

For letter-quality output there's Digital's new economical LQP03™ printer. Or others at whatever level of performance you need.

The DECmate III comes with all the service and support you expect from Digital. That is, comprehensive and worldwide.

The new DECmate III professional word processing system.

Traditional values.

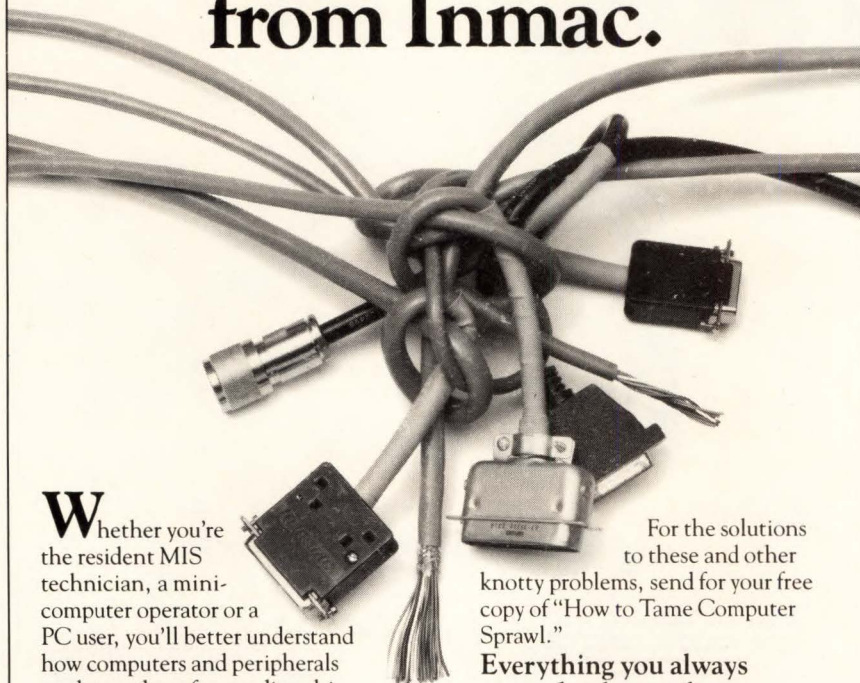
A very modern price.

For the DECmate III nearest you, call 1-800-DIGITAL. Or contact your authorized Digital sales representative.

digital™

*Price includes 12" high-resolution monitor, system unit with dual 5 1/4" diskette drive, detachable keyboard, and DECmate's word processing software. **Based on Houghton Mifflin's American Heritage Dictionary. © Digital Equipment Corporation, 1984. Digital, the Digital logo, DECmate, VAX, ALL-IN-1, DECspell and LQP03 are trademarks of Digital Equipment Corporation. CP/M is a trademark of Digital Research, Inc. Characters shown are double actual size.

Untangle your Data Communications Snarl with FREE Booklet from Inmac.



Whether you're the resident MIS technician, a mini-computer operator or a PC user, you'll better understand how computers and peripherals work together after reading this free guide. Photographs, diagrams, and easy-to-understand descriptions make this complex subject clear and manageable.

The booklet answers such questions as:

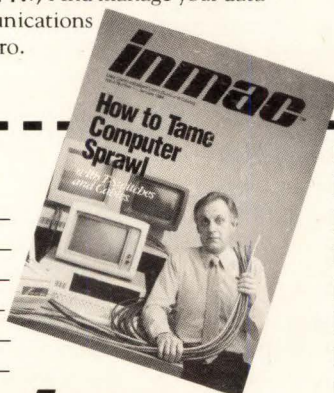
- What new kind of cable jacket can save you thousands of dollars in conduit costs?
- How far can cable stretch before the signal becomes unreliable? Why is this?
- What's the difference between a RS-232 interface and a parallel interface, and why is this important?
- Do your cables meet the new FCC requirements to keep data in and noise out?

For the solutions to these and other knotty problems, send for your free copy of "How to Tame Computer Sprawl."

Everything you always wanted to know about data communications but didn't know who to ask.

Let the experts at Inmac show you how easily you can control computer chaos with masterful connections. After all, we make over 2,000 different cables, 25 T-Switches, and 250 connectors for minis, micros, and mainframes.

We've been helping customers with products and advice since '76. Link up with the experts today and send for your free booklet. Or call toll-free 800-547-5444 (In California, 800-547-5447.) And manage your data communications like a pro.



inmac
2465 Augustine Drive,
Santa Clara, CA 95054

COMPUTER DECISIONS

Headquarters Office

10 Mulholland Dr., Hasbrouck Hts., NJ 07604, (201) 393-6000

Publisher/Vice President: **Don Huber**

Editor: **Mel Mandell**

Managing Editor: **John Rymer**

Senior Editor: **David Whieldon**

Software Editor: **David J. Kull**

Assignments Editor: **Joseph Hillhouse**

Art Director: **Bonnie Meyer**

Microsystems Editor: **Susan Foster Bryant**

Western Editor: **Martin Lasden**
(408) 736-6667

New England Editor: **Mary Miles**
(617) 746-4441

Southwestern Editor: **Jennifer E. Beaver**
(213) 548-7877

Data-Comm Editor: **John Seaman**

News Editor: **Joseph Braue**

Associate Editors: **David R. Roman, Gary Stix**

Associate Art Director: **Lynn Holl-Madara**

Production Editors: **Bonnie DeBonis, Barbara Francett, Robert Moran**

New Products Editor: **Theresa Conlon**

Staff Writer: **Patricia McShane**

Copy Editors: **Donna Jackel, Robbin Juris**

Researcher: **Mary Jander**

Editorial Support Staff:

Virginia M. Johnson, Supervisor
Joanne Wendelken

Staff Artist: **Laura Conca**

Contributing Editors:

Rick Cook **Heidi Waldrop**
Randy Goldfield **Ilene McGrath**

VBPA ABP

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 \$45. 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.

Back issues of COMPUTER DECISIONS are available on microfilm, microfiche, 16mm or 35mm roll film. They can be ordered from Xerox University Microfilms, 300 N. Zeeb Rd., Ann Arbor, MI 48106. For immediate information, call (313) 761-4700.

Where necessary, permission is granted by the copyright owner for libraries and others registered with the Copyright Clearance Center (CCC) to photocopy any article herein for the base fee of \$1.50 per copy of the article. Payments accompanied by the identifying serial fee code below should be sent directly to the CCC, 21 Congress St., Salem, MA 01970. Copying done for other than personal or internal reference use without the express permission of Hayden Publishing Co./COMPUTER DECISIONS is prohibited. Requests for special permission or bulk orders should be addressed to the editor.

Yes! Rush me the free Inmac booklet "How to Tame Computer Sprawl."

Name

Title

Company

Address

City State Zip

Phone No.

When you request this booklet, you'll also receive a free Inmac catalog.

☐ Check here if you already receive the Inmac catalog.

CIRCLE 2

167110

Ven-Tel's 212 PLUS Smarter Than Smart!



Finally,
There's A
Smart Modem
For Both
Terminals *and* P.C.'s!

Two Modems in One!

Whether your work station is a dumb terminal, intelligent terminal, or full-fledged P.C., Ven-Tel's 212 PLUS is your best choice!

It's A Terminal Modem!

In terminal mode, the 212 PLUS stores your phone numbers, manages computer connections (with sophisticated dial-routing routines)—even has its own built-in HELP commands.

It's A P.C. Modem!

With a flip of a switch, you're in 'AT' mode, for immediate compatibility with all popular personal computer communications software including Crosstalk™ and Smartcom II.™

Compare!

We think you'll agree that the 212 PLUS is the smartest modem around. Call us for the location of your nearest Ven-Tel distributor.



Ven-Tel Inc.

Effortless Communications

2342 Walsh Avenue
Santa Clara, CA 95051
(408) 727-5721

Crosstalk is a trademark of Microstuf, Inc. Smartcom II is a trademark of Hayes Microcomputer Products, Inc. 212 PLUS is a trademark of Ven-Tel, Inc.



TIME
COST
RESOURCES

The full spectrum of control — MAPPS™ to QUICK-PLAN™

MAPPS™ - MANAGEMENT AND PROJECT PLANNING SYSTEM:

- Optimizes resource usage through flexible planning, leveling and "what if?" experimentation.
- Reduces complex projects to models, then manipulate relationships to reduce project durations.
- Controls costs at every step — through precise, customized reporting.
- Exploits versatile, powerful utilities including cross network data scheduling control.
- Be personally in charge with a user-friendly, menu-driven system.
- Select hardware from any system operating on UNIX*, Data General MV*, Digital VAX*, or WANG VS*.

QUICK-PLAN™ — THE EXECUTIVE PROJECT PLANNING SYSTEM:

- Preserves integrity of MAPPS but operates on a micro.
- Operates on MS-DOS* for freedom of hardware selection.
- For complete flexibility, transfers data in and out of MAPPS.
- Become an expert immediately by use of a comprehensive user manual.

CAPITALIZE ON MITCHELL MANAGEMENT SYSTEM'S 12 YEARS OF SOFTWARE DEVELOPMENT AND CONSULTING FIELD EXPERIENCE.

*Registered trademarks of Bell Laboratories, Data General Corp., Digital Equipment Corp., Micro-Soft Corp., and WANG Laboratories.



Mitchell Management Systems Inc.

FORMERLY STRUCTURAL PROGRAMMING INC.

Westborough Office Park, 2000 West Park Drive, Westborough, Mass. 01581 U.S.A.
Telephone (617) 366-0800 TWX: 710-347-1054

CIRCLE 4

SONEX Printer Covers

Here's a quiet solution to noisy computer printers from the SONEX sound-proofing experts. SONEX acoustical foam, with a unique anechoic wedge design, has controlled industrial, computer and pro audio sound for years. Now available in a printer cover, SONEX can be ordered directly from our factory. To learn more about our printer covers and the sound control technology behind them, call us at 612/521-3555, or write for our free color brochure: 3800 Washington Ave. North, Minneapolis, MN 55412.

illbruck/usa
techniques with foams



CIRCLE 5

ADVERTISING OFFICES

Sales Representatives

Advertising Sales Director

Nick Bubany, 10 Mulholland Drive
Hasbrouck Hts., NJ 07604, (201) 393-6012

Sales Support Manager

Emily Ruffing, (201) 393-6023

Eastern

Lori Lippin

Eastern Regional Sales Manager

(212) 245-6087, (201) 393-6021

New York City: Bill Machover

(212) 724-8533, (201) 393-6024

Pennsylvania: Beth Haggerty, (215) 295-1992,
(201) 393-6007

New Jersey: Cynthia Peyton

(914) 352-0726, (201) 393-6007

Mid-Atlantic: Bonnie Breslauer

(703) 379-0346, (201) 393-6025

Southeast: Elizabeth Medley (404) 233-6316,
(201) 393-6007

New England: Chris Dobbrow

(617) 358-4147, (201) 393-6021

Molly Ryan, (617) 443-4303, (201) 393-6021

Midwest

Richard Julius

Midwestern Regional Sales Manager,

(312) 337-0588, (201) 393-6021

Mark Hickey, (312) 446-6893,

(201) 393-6025

Texas/Southwest: Deborah Goldsmith

(214) 669-1161, (201) 393-6024

Western

Virginia Pohlman

Western Regional Sales Manager

(415) 332-3075, (201) 393-6025

San Francisco: Heidi Spencer

(415) 788-5119; (201) 393-6022

Cherie LaFrance, (408) 475-6752,

(201) 393-6022

Los Angeles/Northwest: Denise Sinnott

(818) 289-5425, (201) 393-6007

Orange County/Southwest

Kathleen Kosanovich,

(213) 433-3545, (201) 393-6022

Jay Leech, (714) 492-1641,

(201) 393-6024

Direct Action Cards/Recruitment/

Quick Ads

Frank Marino, (201) 393-6028

Helen Ryan, (201) 393-6027

Publication Staff

Promotion Director: Rayna Gillman

Production Manager: Craig Balick

Circulation Director: Barbara Freundlich

Assistant Production Manager

Richard Macnamara

Promotion Copywriter: Roger A. Shapiro

Production Assistant: Frances Nelson

Fulfillment Manager

Cindy Stump

**COMPUTER
Decisions**

Make Stat Magic

Statistics, reports and plots happen magically with SPSS/PC™—the Statistical Package for IBM PC/XTs.*

SPSS/PC is the most comprehensive statistical package for performing simple or complex tasks, regardless of data size. It maintains feature and language compatibility with mainframe SPSS[®], while optimizing for the PC environment.

Statistics range from simple descriptive to complex multivariate, including Multiple Regression, ANOVA, Factor and Cluster analysis. Loglinear and nonparametric procedures are also included.

Simple facilities allow transfer of files between

SPSS/PC and programs like Lotus 1-2-3, dBase II and SAS. A complete Report Writer, Plotting facilities and a Communications program for mainframes round out a fully integrated product.

For more information, contact our Marketing Department without further ado. And see what a little stat magic can do for you.

SPSS Inc., 444 N. Michigan Avenue,
Chicago, IL 60611, 312/329-2400.

In Europe: SPSS Benelux B.V.,
P.O. Box 115, 4200 AC Gorinchem,
The Netherlands, Phone: + 31183036711
TWX: 21019.

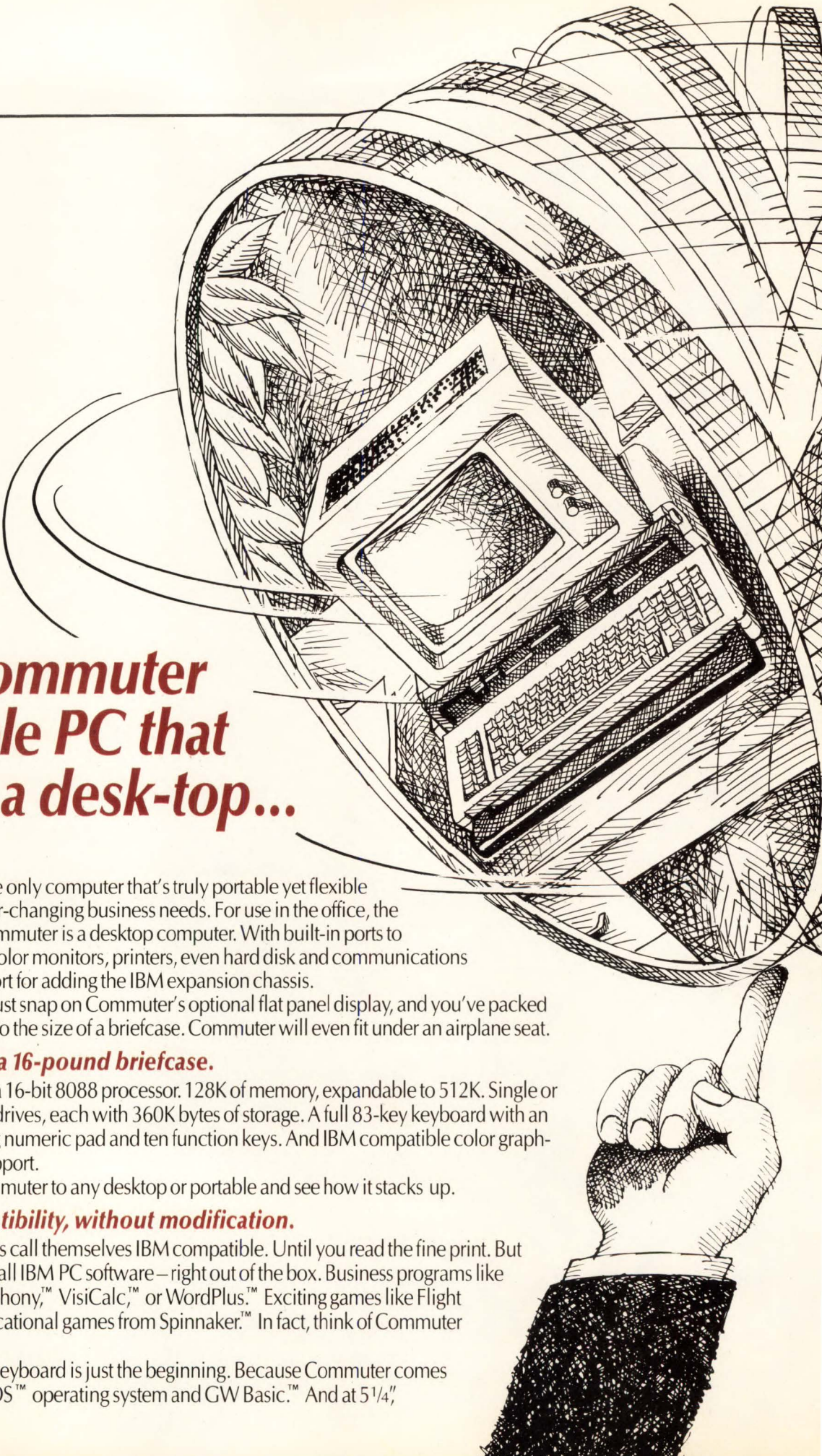


SPSS inc. PRODUCTIVITY RAISED TO THE HIGHEST POWER™

*SPSS/PC runs on the IBM PC/XT with 320K memory and a hard disk. An 8087 co-processor is recommended. Contact SPSS Inc. for other compatible computers.

IBM PC/XT is a trademark of International Business Machines Corporation. dBase II is a trademark of Ashton-Tate. 1-2-3 is a trademark of Lotus Development Corporation. SAS is a trademark of SAS Institute, Inc. SPSS and SPSS/PC are trademarks of SPSS Inc. for its proprietary computer software.

© Copyright 1984, SPSS Inc.



Is the Commuter a portable PC that acts like a desk-top...

It's Both.

Because Commuter is the only computer that's truly portable yet flexible enough to meet your ever-changing business needs. For use in the office, the IBM® PC compatible Commuter is a desktop computer. With built-in ports to attach monochrome or color monitors, printers, even hard disk and communications devices. Plus a built-in port for adding the IBM expansion chassis.

But to hit the road, just snap on Commuter's optional flat panel display, and you've packed all that desktop power into the size of a briefcase. Commuter will even fit under an airplane seat.

Desk-top power in a 16-pound briefcase.

Commuter also features a 16-bit 8088 processor. 128K of memory, expandable to 512K. Single or dual integral floppy disk drives, each with 360K bytes of storage. A full 83-key keyboard with an IBM PC layout, including numeric pad and ten function keys. And IBM compatible color graphics and monochrome support.

Now compare Commuter to any desktop or portable and see how it stacks up.

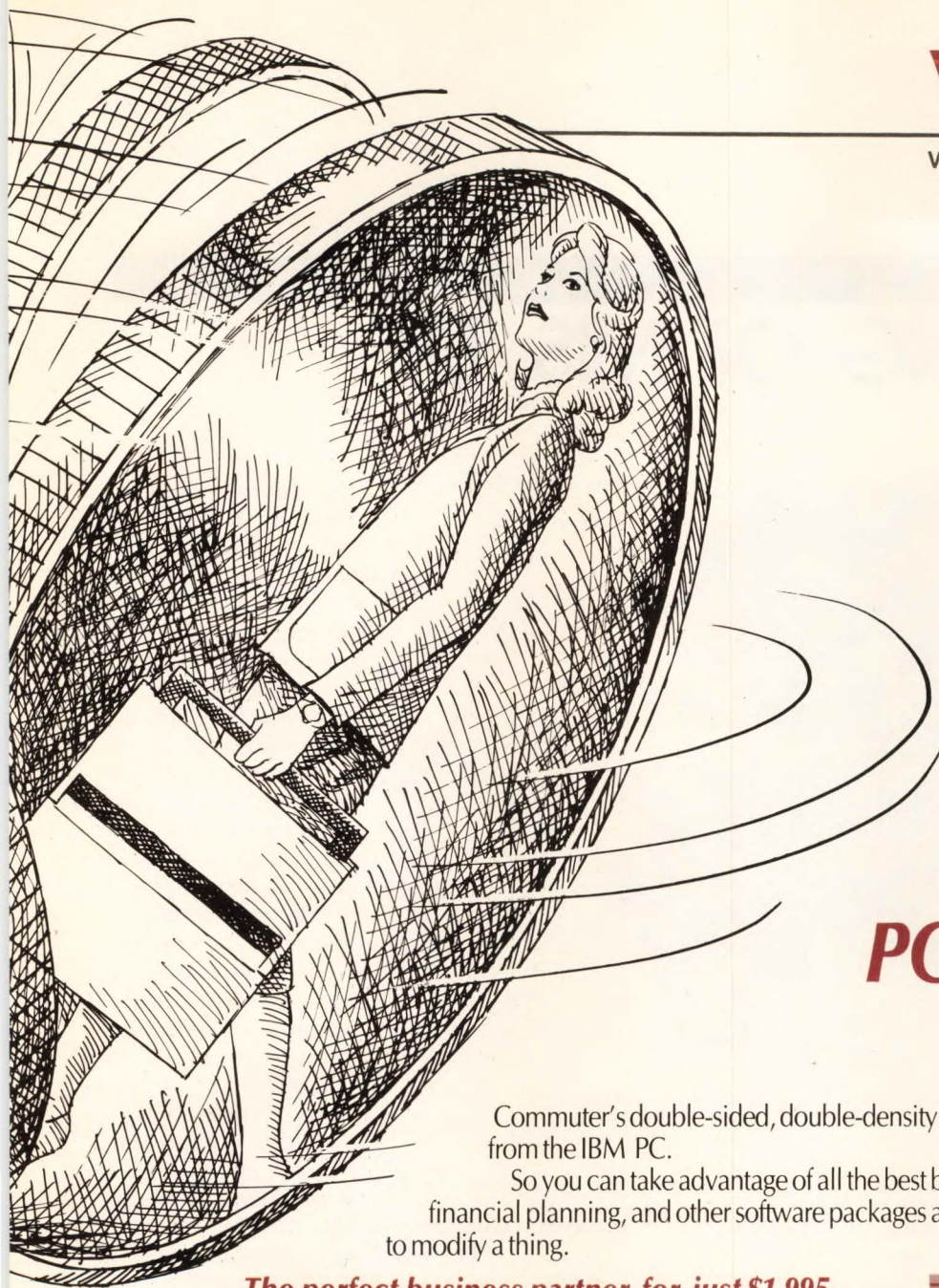
True IBM PC compatibility, without modification.

Many portable computers call themselves IBM compatible. Until you read the fine print. But Commuter runs virtually all IBM PC software—right out of the box. Business programs like Lotus® 1-2-3™ and Symphony™, VisiCalc™, or WordPlus™. Exciting games like Flight Simulator™. Or even educational games from Spinnaker™. In fact, think of Commuter as an IBM PC to go.

The IBM PC styled keyboard is just the beginning. Because Commuter comes bundled with the MS-DOS™ operating system and GW Basic™. And at 5 1/4",

VISUAL See for yourself®

Visual Technology Incorporated



or a desk-top PC that acts like a portable?

Commuter's double-sided, double-density diskettes are directly transferable to and from the IBM PC.

So you can take advantage of all the best business accounting, word processing, financial planning, and other software packages available for the IBM PC. Without having to modify a thing.

The perfect business partner, for just \$1,995.

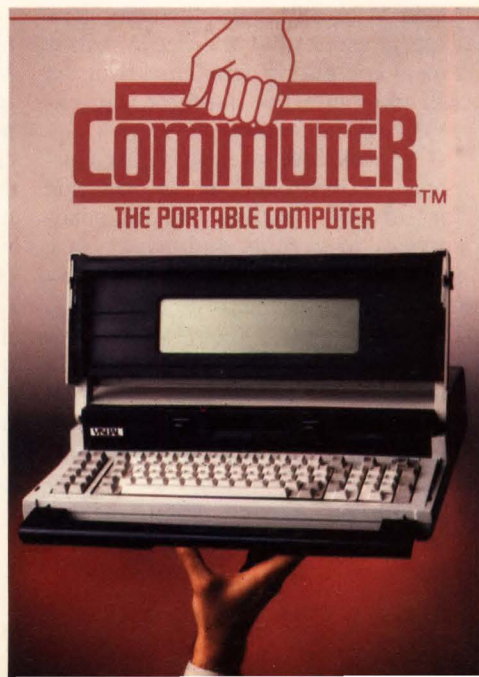
In terms of power and capacity, Commuter is as large as most desk-top models. But at 3½" x 18" x 15", and weighing just 16 pounds, it's about the size of a slimline briefcase. And there's one more area where Commuter is small: price. You can pick one up for as little as \$1,995.

So whether you think of Commuter as a powerful portable, or a portable desk-top really doesn't matter. Because to coin a phrase, Commuter gives you the best of both worlds. In a way no other computer can.

For more information, call **1-800-847-8252** (in MA call **1-800-462-5554**), or write Visual Technology Incorporated, 540 Main Street, Tewksbury, MA 01876. Or visit your local Commuter dealer today.

Commuter. It can take your business places it's never been.

COMMUTER is a trademark of Visual Technology Incorporated. IBM is a registered trademark of International Business Machines Corporation. MS-DOS, GW Basic, and Flight Simulator are registered trademarks of Microsoft Corporation. Lotus, 1-2-3, and Symphony are registered trademarks of Lotus Development Corporation. VisiCalc is a trademark of VisiCorp. WordStar is a trademark of MicroPro International Corporation. Spinnaker is a trademark of Spinnaker Software Corporation.



INSIGHT

THE GRAYING OF MIS/DP

Dark clouds may be forming on the horizon for MIS/dp managers or professionals of long standing, signifying that some of the traditional career opportunities are being blown away. What's causing the heavy weather? The big move to end-user computing.

By 1990, only 25 percent of information processing will be conducted by the MIS/dp "establishment" in major corporations, according to projections by the Diebold Group, a New York-based consultancy. This remaining 25 percent will still represent major responsibilities for managing systems that will be broader in scope than those that fall under MIS/dp's umbrella today. Few experts assert that the decentralization of computing demanded by users will eliminate the need for big, expensive data centers.

Changes have already begun. Corporations dependent on information for survival—particularly financial-services operations and banks—are assigning new responsibilities to new kinds of information managers. Rather than worry about the ups-and-downs of the data center, these managers must ensure that the right information gets to the right places in the organization at the right time. Data-center performance is a key issue, but there's much more to the job. The prevalence of these information managers in American corporations

will increase as automation becomes crucial.

Times are changing fast within centralized MIS/dp operations, as well. Managers of these facilities are seeking professionals and supervisors with new talents. Specialists in communications, perhaps the fastest-growing discipline in an era of online distributed processing, are particularly valuable. Because a growing percentage of personal computers will be tied to the data shepherded by the mainframe, adding to the capacity demands of conventional terminals, there will also be a strong demand for database administrators, as detailed in "Information management: Becoming a specialist's game?" in this issue.

All the micros have also created a demand for a brand-new specialist,

the micro manager. However, it is not yet clear that this specialty will endure or if it will be absorbed into information centers with broad charters. Eighty percent of the giant industrials the Diebold Group surveyed for its biennial report on MIS/dp budgets now have information centers, up from 67 percent two years ago.

Different breeds of managers and professionals will also be needed to bring office automation into the mainstream of information processing. The Diebold study showed a whopping 50 percent increase in OA expenditures. (See "News & Comment" in this issue.)

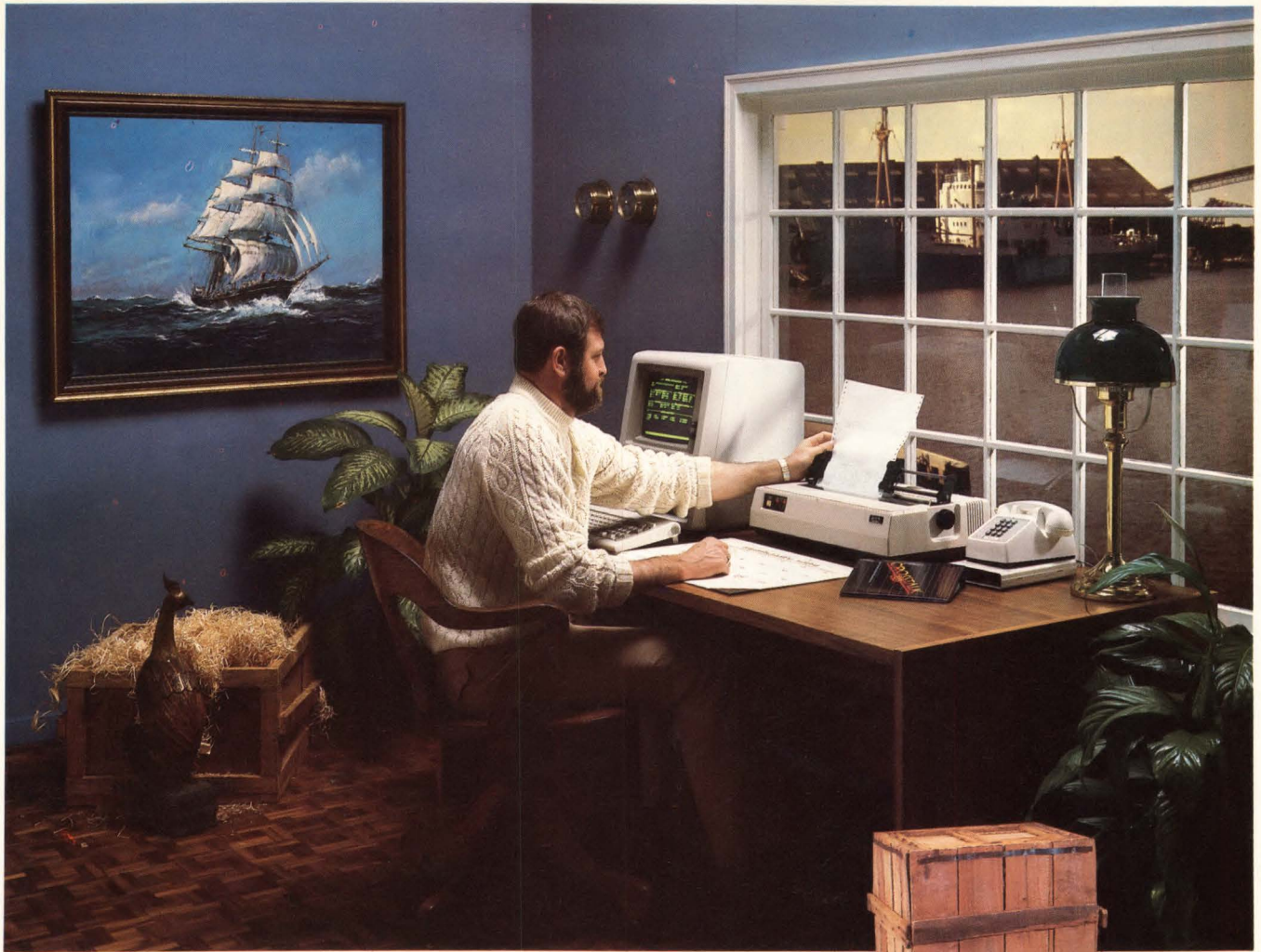
The slowdown in demand for older specialties like system analysts and programmers poses very real problems. How can corporations "redirect" these veterans into the emerging specialties? Is retraining worth the expense? I believe redirecting the careers of veteran employees is frequently preferable to hiring newcomers.

More than likely, most veteran MIS/dp-ers will adapt to the changing nature of their profession—MIS/dp-ers are accustomed to rapid change. MIS/dp need not be a young person's game—just that of the young in mind and spirit. For those with a healthy attitude toward change, there is a silver lining in the dark clouds—opportunities of new scope and depth.

—Mel Mandell



Illustration by Dan Culhane



International Connections

With the industry's most popular data communications program, the world is at your command.

An import/export office in New Jersey can instantly check the London market for current dollar exchange rates ... send Hong Kong an updated production schedule ... print-out the week's sales results from the Dallas branch.

There's virtually no limit to how far you can reach with your microcomputer, ordinary telephone lines, and CROSSTALK.

Even if your own business and personal needs are closer to home, you'll appreciate CROSSTALK's compatibility with a wide user base ... smart terminal characteristics ... total modem control ... and the ability to capture data at a high speed for later off-line editing. CROSSTALK has extras you may not find in other programs. Data capture to memory buffer (and on-line display). Protocol error-checking file transfer. Modem/telephone hangup, and display of elapsed time of call. Command file power and flexibility. Remote takeover and operation. And much more.

There is a CROSSTALK version for almost every CP/M, CP/M-86, or IBM DOS based microcomputer system. See your dealer, or write for a brochure.



CROSSTALK™

MICROSTUF®

1000 Holcomb Woods Parkway / Roswell, Georgia 30076

CROSSTALK is a trademark of Microstuf, Inc., CP/M and CP/M-86 are trademarks of Digital Research, Inc., IBM is a trademark of International Business Machines, Inc.

THE AT&T FAMILY OF DATASPEED



You need hardworking, multi-functional terminals dedicated to improving your productivity.

AT&T Information Systems can help. We have a full line of asynchronous and synchronous data terminal products that enable you to move and manage information quickly. Products designed to get the word around.

Our DATASPEED® 4000 Terminals get along well with people, too.

Non-glare, high-resolution, black background tilt screens, English language options, and lightweight detachable keyboards keep users more productive.

Features like windowing, split-screen mode, 80- or 132-column wide-screen

format help reduce user errors.

Conversational and editing terminals that speak for themselves.

The DATASPEED 4410, 4415, 4420 and 4430 Terminals are asynchronous desk-top workstations with superior features and functionality.

The 4410 is conversational, with graphics and sophisticated display capabilities.

If you need an editing display terminal, the 4415 is one of the most functional in its class. The 4420 is a feature-rich editing terminal. It's especially engineered to help the nontechnical user become proficient.

The 4430 is a conversational terminal for the multi-point, private line environ-

ment. There's no need for the computer to poll and address these terminals. This saves valuable processing time.

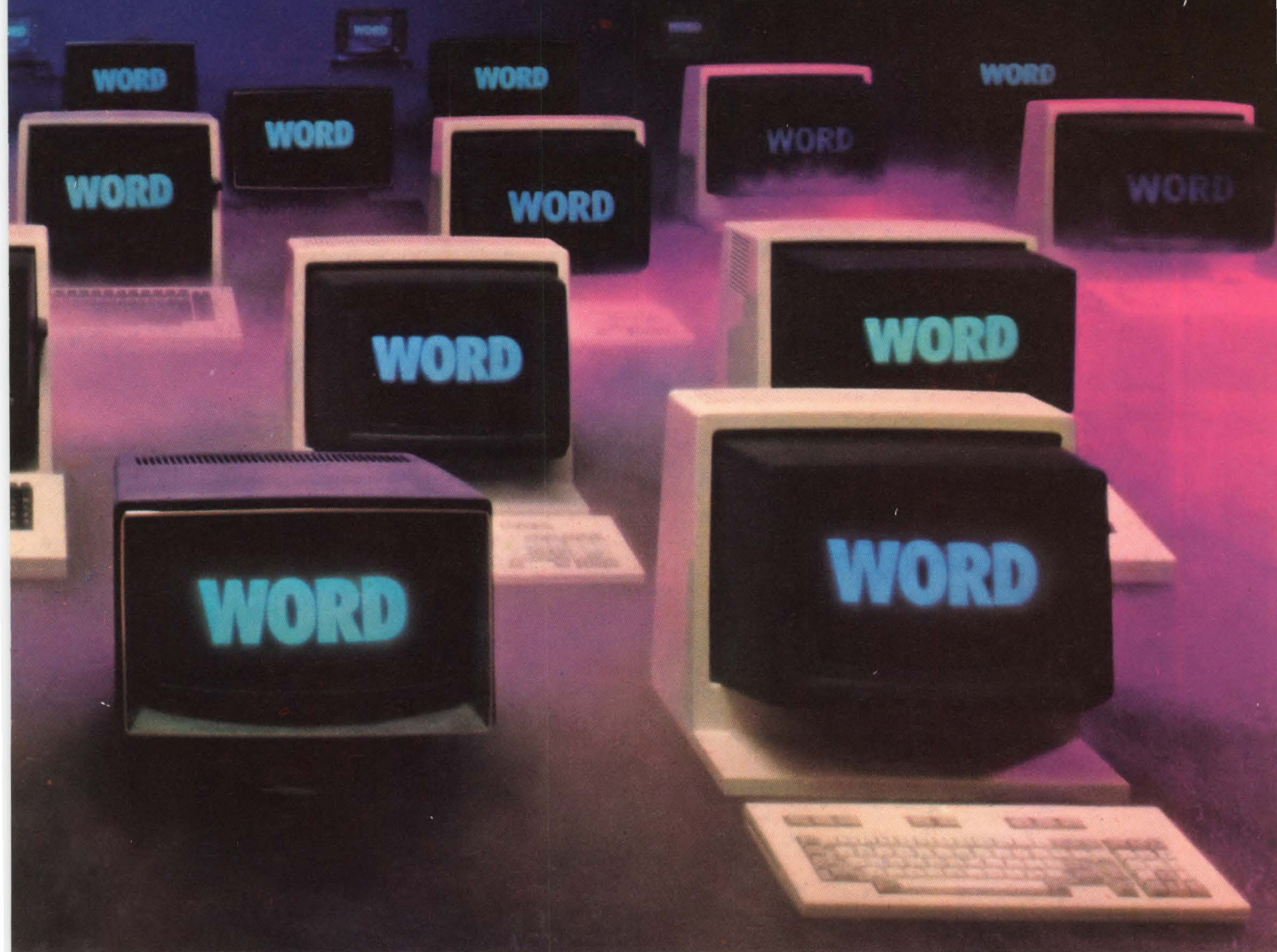
Synchronous terminals on speaking terms with IBM.

AT&T Information Systems' DATASPEED 4540, Enhanced 4540 and 4540 Touch Screen Terminals are designed for a clustered, polled environment.

All of these synchronous terminals are compact, modular and 3270 compatible.

The 4540 and Touch Screen 4540 both support SDLC/BSC line protocols. With one of our new controllers, you can upgrade to SNA protocols by simply changing a diskette.

TERMINALS. WE SPREAD THE WORD.



For SNA/SDLC compatibility, there's the Enhanced 4540. It offers flexibility, introducing a choice of two controllers, standard- or reduced-sized displays and high- or low-profile keyboards.

The Touch Screen 4540 has 30 touch-sensitive areas on the screen which give you fast, easy access to information.

A history of communicating better.

For over a century, AT&T products and service have set the standards for performance and reliability.

Today, 4,000 scientists and engineers from Bell Laboratories are working full time to develop and design new business products at AT&T Information Systems

Laboratories. Products we continue to support by the largest, most experienced sales and service force in the industry.

Our DATASPEED Terminals incorporate Information Systems Architecture, the design principle that integrates our products so they perform as one system. As you grow, its flexibility allows for easy system expansion.

To learn how our family of DATASPEED Terminals can increase your profits and productivity, call 1-800-247-1212, Ext. 329.

WHEN YOU'VE GOT TO BE RIGHT.

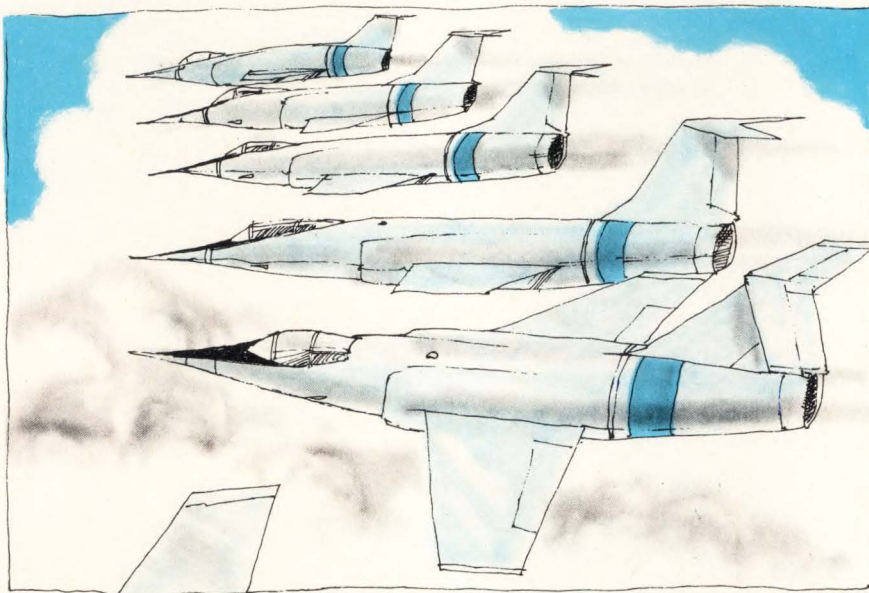


AT&T

Information Systems

NEWS & COMMENT

IBM'S FALL BLITZ



Autumn in Armonk has been golden for IBM. The computer giant has been announcing new deals and products as fast as its public relations machinery can crank out the releases. IBM announced that it had reached an agreement to buy Rolm Corp., the Santa Clara, CA-based private branch exchange (PBX) maker, for \$1.25 billion. In June 1983, IBM paid \$228 million for a 15 percent stake in Rolm and later increased it to 23 percent. The acquisition of Rolm gives Big Blue much-needed communications muscle in the race with AT&T and other PBX makers for the office of the future: voice-data workstations and PBXs that not only handle voice communications but also manage large volumes of data. IBM also announced 11 new software products and 20 supporting packages for its Personal Computer, made more moves to strengthen its drive into factory automation and scientific and engineering arenas, introduced additions to its minicomputer and low-end mainframe computer lines, and added two new disk controllers for its 3880 disk drives. Finally, IBM an-

nounced that John F. Akers, currently its president, will take over as chief executive officer when John Opel retires in January.

At the end of September, IBM doubled the number of its home-grown application packages for the IBM Personal Computer with the introduction of a series of 11 programs and 20 supporting programs for small to mid-size businesses and corporate departments. All the programs won't be available until March.

The principal offerings of the series are divided into two sets. The first set, called the Personal Decision Series, is a collection of five packages for general business uses (spreadsheet, data management, graphs, reports, and limited word processing) that are priced between \$150 and \$300. In the second set, the Business Management Series, there are six applications for specific financial and accounting purposes (general ledger, accounts payable, accounts receivable, payroll, inventory accounting, and order entry and invoicing). Each of these applications is priced at \$695. The packages can be bought separately as the user needs them; however, the Personal

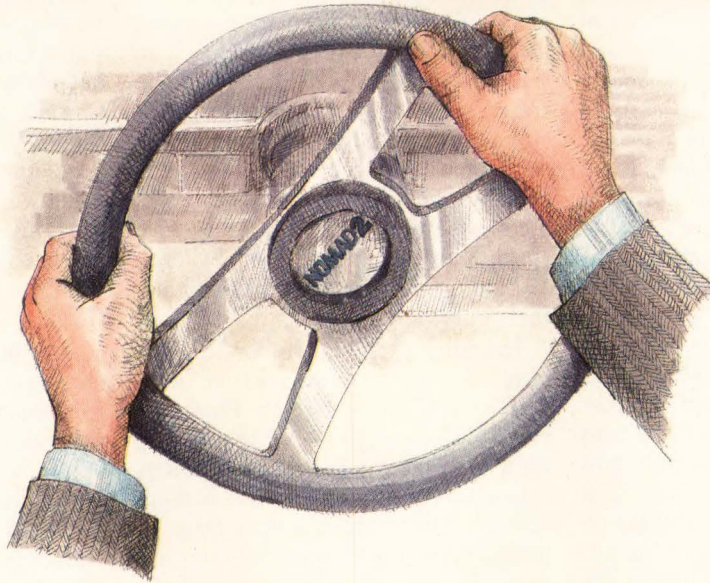
Decision Series requires the data-management module, Data Edition, for use with any of the other four modules. Information can be transferred within modules and between the two series. For instance, a manager using the Personal Decision Series can design spreadsheets or graphs using information located in the Accounts Payable Edition of the Business Management Series.

The offerings also include software links between PCs and the System/36 minicomputer (the Attachment/36 Edition) and PCs and the 4300, 303X, and 308X mainframes supported by the MVS or VM operating systems (the Attachment/370 Edition). Users of the PC packages can thus have access to data stored in larger hosts. IBM incorporates a virtual-disk feature that allows a PC user to utilize the disk-storage capacity on the host computer. PC users can share information using this virtual disk. Attachment/36 Edition costs \$150 per single-PC module and \$1,050 for the module residing on the minicomputer. The Attachment/370 Edition costs \$200 per single-PC module and \$16,000 for a host computer running VM and \$20,000 for a host running MVS.

Perhaps realizing the size and complexity of such varied software offerings, IBM announced several support services and training packages. The Extended Support service, for a yearly fee of several hundred dollars, offers telephone assistance, program maintenance, a journal of related news, and program updates. Also, IBM is offering Training Editions that offer how-to guides for the new software. The Training Editions cost between \$60 and \$90. In addition, IBM is offering "Extensions" to show users how to apply information in the specific financial and accounting packages to the general business packages through ready-to-run examples of graphs and reports. The Extensions cost \$245 each.

(News continued on page 16)

MOST PEOPLE WHO TRY NOMAD2 BUY IT!



All 4-GL/DBMSs make the same claims as to features and attributes, but you have to look closer to see the difference between NOMAD2 and all the others. It's not only *what* NOMAD2 does. It's *how* it does it. And it's the *how* that leaves the programmer productivity issue in the dust.

As the saying goes, talk is cheap. So rather than just telling you about NOMAD2, we'd rather prove it to you through an application building demonstration, or a trial installation. Further, we invite you to compare NOMAD2 to the products of our leading competitors. And we wouldn't make that suggestion if we weren't fairly certain of the outcome of such a comparison.

Among current NOMAD2 users are some of the largest corporations in America in-

cluding banking institutions, motion picture companies, supermarket chains, oil companies, pharmaceutical firms, insurance companies and major newspapers, to name just a few. And in most cases, NOMAD2 was chosen after head-to-head testing against the leading competitive products.

The products and services of D&B Computing Services have evolved over the years to keep pace with the rapidly changing business environment. And evolution is an essential part of our ongoing commitment to providing quality business tools to help you get more leverage from the way you do business. NOMAD, now NOMAD2, is a product which can help keep you on the right track.

Most people who try NOMAD2 buy it. You owe it to yourself to find out why.

NOMAD2: AN INNOVATION IN END-USER COMPUTING FROM DUN & BRADSTREET

D&B Computing Services

DB a company of
The Dun & Bradstreet Corporation

For more information call: Roger Cox at (203) 762-2511. Or drop your business card into an envelope and mail it to Roger at: D&B Computing Services, 187 Danbury Road, Wilton, CT 06897

NOMAD is a registered trademark of D&B Computing Services, Inc.

The Business Management Series and the Personal Decision Series require an IBM PC (they won't run on the PCjr) with 256-Kbyte main memory; two double-sided-diskette drives; PC-DOS release 2.0, 2.1, or 3.0 with 320 Kbytes of main memory; an 80-character, 24-line monochrome or color display; and a printer. The System/36 attachment requires 320 Mbytes of main memory; and an IBM PC with the 5250 Display Station Emulator Adaptor and emulation program, 256 Kbytes of memory, 30 Mbytes of disk storage, SSP 2.0 and up, and a utilities-program product for the System/36. The 4300 and 308X attachment requires 384 Kbytes of main memory, a 3278/3279 Emulation Adaptor and emulation program on the PC side, and the appropriate operating environment for VM and MVS on the host-computer end.

WHO CAN? IBM CAD/CAM

Embacing the retail marketing technique of one-stop shopping, IBM wants you to buy your robots where you buy your mainframes. As part of its strategy of leaving no marketing niche unoccupied, Big Blue has descended upon the nascent market for computer-integrated manufacturing, estimated at only \$39 million in 1984, as well as the burgeoning science and engineering market.

The first indication that IBM was about to make its entrance into the factory was the consolidation a year ago of its business units for robotics, computer-aided design and manufacturing, and industrial applications software into the Industrial Systems Organization, Milford, CT. This has been followed by a flurry of announcements that give unequivocal proof of IBM's direction.

Of the new products offered thus far, some of the most important originated outside IBM. Cincinnati Milacron, Inc., Cincinnati, the largest U.S. machine-tool manufacturer, introduced a machine-tool control

system that uses the IBM Personal Computer. The PC-based system will enable machining information to be uploaded into a mainframe. The system uses the new IBM 5531 Industrial Computer, a PC that can withstand temperature extremes, vibration, shock, voltage surges, and dust found in factories, according to IBM. The system is supplemented with special software, developed by both IBM and Milacron, to make machine-tool programming easier.

In addition, on September 26, IBM entered into a joint venture with Italy's state-owned Societa Finanziaria Telefonica (STET) to develop both hardware and software products for factory automation. Also in September, IBM announced a slate of products for the engineering and science markets, including several software offerings for computer-aided design production planning. "We want to get to a position of leadership in the engineering and science markets, something our current reputation wouldn't support," said Charles L. Bruce, director of engineering and scientific marketing for IBM's National Accounts Division, at a recent press conference. A software package, CADAM (Computer-Graphics Augmented Design and Manufacturing) Express is touted as an easy-to-use product designed to run on IBM's 4300 series computers. The software can be used on the new 4361 Model 3, a lower-priced processor in the 4300 line targeted to the engineering and science markets.

At the same time, IBM introduced two new models of its System/38 minicomputers, with greater internal memory and performance. New versions of MAPICS (Manufacturing Accounting and Production Control System) for both the System/38 and the System/36 are also forthcoming. MAPICS is one of the largest-selling production planning (manufacturing-resource planning) software packages. In the same new-product barrage, graphics capabilities for the IBM PC AT and PC XT have been extended with the IBM PC Professional Graphics Display and Professional Graphics Controller, which can generate and display up to 256 colors

for applications such as product design, engineering, and computer-aided manufacturing. The Professional Graphics Controller, for which outside vendors are being encouraged to write software, is intended to give the PC line some of the capabilities of a dedicated engineering workstation at a lower cost. Its entry into what was previously considered a specialized market will pit IBM against companies such as DEC and Computervision Corp.

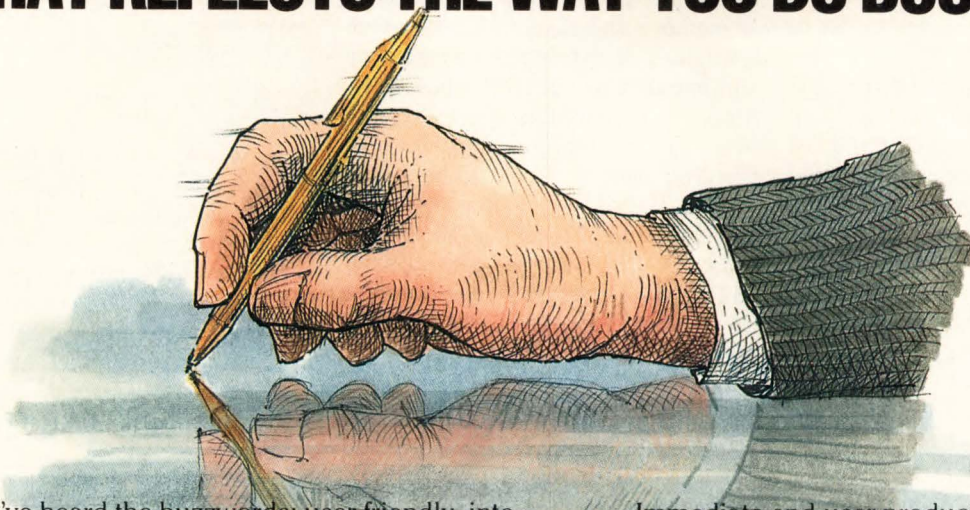
Another facet of IBM's marketing strategy appears to focus on support for General Motors' efforts to endorse a standard for factory-level local-area networking. GM's Manufacturing Automation Protocol, which sets communications protocols for a factory-wide network, won IBM's backing at the recent National Computer Conference, where a Series/1 minicomputer was connected to a prototype network. While DEC, the leading vendor of factory-floor computers, also participated in that demonstration, IBM has given much stronger support to the MAP effort. (Early reports suggested that IBM, too, resisted MAP specifications, which facilitate connections by multiple vendors. It relented, however, apparently seeing an opportunity to undercut DEC.) IBM's much-awaited token-bus network, which some analysts say is being manufactured for IBM by Sytek Inc., Mountain View, CA, is believed to conform to the MAP specification. DEC, meanwhile, has only issued vague statements about how its existing local-area network products could be made compatible with MAP.

To market its new products, IBM has commissioned outside distributors to supplement its own sales force. Many analysts believe that this non-IBM dealer network will do most of the selling and support in a market that yields slimmer profits than the mainframe sales market.

One question that remains to be answered is whether IBM plans to use its "little tramp" imagery to publicize its foray onto the factory floor, where Charlie Chaplin labored in the film classic *Modern Times*.—Gary Stix

(News continued on page 18)

DUNSPLUS: THE MICRO SOLUTION THAT REFLECTS THE WAY YOU DO BUSINESS



You've heard the buzzwords: user friendly, integrated, smarter, faster, cheaper. But when you push the rhetoric aside you're still asking the same question, "Why can't I get a system that solves more problems than it creates?"

You can. It's called DunsPlus and it's built to respond to your information-related business demands without creating demands of its own.

DunsPlus gives the IBM PC XT a built-in business environment. This lets you mold DunsPlus to fit the way you do business.

Within the DunsPlus environment is a software base of the best. Lotus, MultiMate, Western Union electronic mail (to name but a few), are all ready for immediate use. But additional programs to solve your unique problems can also be added with ease.

Instant, yet controlled, access to your choice of mainframes and subscription databases is also a part of the DunsPlus environment. And transferring data throughout the system is as easy as moving a piece of paper from the In Box to the Out Box.

Immediate end-user productivity is not an issue: DunsPlus is a menu-driven system requiring minimal keystrokes for maximum results.

Installation is not an issue: DunsPlus is installed by IBM.

End-user training is not an issue: Training and support are part and parcel of DunsPlus.

Flexibility is not an issue: Any part of the DunsPlus solution—hardware, software, or service—can be tailored to meet your precise business needs.

In fact, there are no issues. DunsPlus does what you want, the way you want it—now.

Designing systems that reflect the way you do business is business as usual for us. NOMAD2, the premier 4th-Generation-Language/DBMS from D&B Computing Services, has made us a leader in the field of information management services. And as your needs evolve, so do we. DunsPlus is just the latest step in translating technological advances into usable business tools—tools that reflect the way you do business.

DUNSPLUS: AN INNOVATION IN END-USER COMPUTING FROM DUN & BRADSTREET

DunsPlus

DB a company of
The Dun & Bradstreet Corporation

For further information call: 800-DNB-PLUS. Or drop your business card into an envelope and mail it to DUNSPLUS, 187 Danbury Road, Wilton, CT 06897

Lotus spreadsheet and graphics from Lotus Development Corporation. MultiMate™ word processing from MultiMate International, Inc. IBM is a registered trademark of International Business Machines Corporation. DunsPlus is a registered trademark of DunsPlus, a company of the Dun & Bradstreet Corporation. NOMAD2 is a trademark of D&B Computing Services.

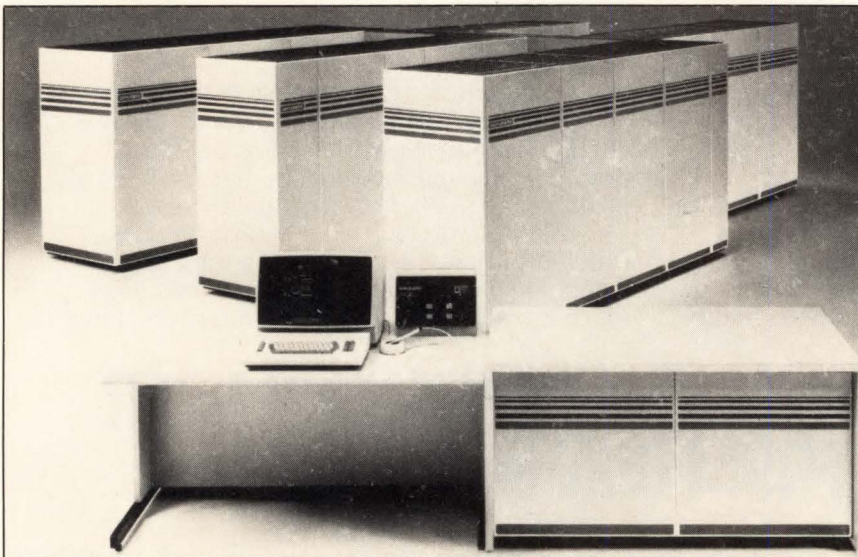
IBM REVS UP SYSTEM/38

Two new versions of IBM's System/38 minicomputer with up to twice the memory and 70 percent greater performance than the latest model were announced along with a cheaper version of IBM's 4361 low-end mainframe and the termination of the 4321 and 4331 lines. The new System/38 Model 40 is available with 8, 12, or 16 Mbytes of memory. When configured with 12 Mbytes of memory and a disk drive, the Model

40 costs \$250,000. The System/38 Model 20 comes with 4, 6, or 8 Mbytes of memory and costs \$175,000 when configured with 6 Mbytes of memory and one disk drive. IBM's new 4361 Model 3 is available with 2 and 4 Mbytes of memory at prices of \$56,500 and \$71,500. The older Models 4 and 5 are now priced at \$135,000 and \$180,000, a 10 percent price cut. Prices for the discontinued 4321 and 4331 models have been cut up to 37 percent. IBM is also offering a 25 percent price cut for 4331 users who wish to upgrade to a 4361 Model 5.

AMDAHL'S NEW SUPERCOMPUTERS

The Amdahl Corp. (Sunnyvale, CA), introduced two new supercomputers that are the first to be compatible with IBM's System 370 peripherals and scientific-application software, according to the company. The processors, scheduled to be available in mid-1985, will come with a set of software tools that programmers can use to tap Fortran applications on existing mainframes. The new models are made for Amdahl by Japanese computer



manufacturer Fujitsu Ltd., which owns about half of the American plug-compatible computer maker. Prices on the new models 1100 and 1200 range from \$7.7 million to \$20 million. They are not being strongly pushed as replacements or additions to regular business computers, which specialize in doing many simple tasks very quickly. However, Amdahl claims that businesses today want more complex modeling features for creating and testing expensive and intricate products than are currently available. For example, according to Amdahl, manufacturers can use these supercomputers to simulate flight conditions for new aircraft models, understand complex molecular structures, or create three-dimensional models of geological formations to aid in oil exploration. For more information, call (408) 746-6000.

IBM FLEXES STORAGE MUSCLES

While two of its plug-compatible storage competitors were announcing bad news, IBM announced several new disk-storage products. IBM introduced two new high-end 3880 disk controllers with 256-Kbyte memory chips and increased performance. Meanwhile, Control Data Corp. (Minneapolis, MN) announced that it would no longer make plug-compatible disk-storage devices, and Storage Technology Corp. (Louisville, CO), IBM's next largest competitor in mainframe storage, announced that it was cutting its staff by 10 percent and would report a \$20 million loss for the third quarter of 1984. The new IBM 3880 Models 23 and 21 are priced from \$150,000 to \$270,000. Also, according to IBM, they operate at least 20 percent faster than previous models and offer cache memories of 8, 16, and 32 Mbytes.

HARRIS UNITES UNIX AND VOS

The Harris Corp. of Ft. Lauderdale, FL, has jumped on the Unix bandwagon by announcing that it's planning to join Unix System V to its proprietary Virtual Operating System (VOS), which is used on its super-minicomputer series. The new combination operating system will be called Vue. It will offer Harris computer users the high-speed execution of the VOS system plus the portable, programmer-friendly environment of Unix, according to the company. Harris took Unix System V and replaced the kernel (the place in the operating software that is machine dependent) with the VOS kernel. Harris owners will still be able to run their VOS applications packages. For more information, call (305) 974-1700.

(News continued on page 22)

VAX ALL YOUR FLOORS WITH SMARTSTAR.™



Get better decision-making, more productivity and a very profitable competitive edge. Instantly.

With SMARTSTAR software, everyone in your office can get on the VAX. They can get the facts they need, when they need them. Organize them any way they want them. In seconds. When a decision needs to be made, it can be made *now*. Not days later when the overworked computer guys can finally get you what you asked for.

Everyone from top to bottom works from the same information.

And no one has to be a computer expert. With SMARTSTAR, anyone can quickly design on-screen windows that customize the organization of information, easily access and update it, and create complete reports with a few simple keystrokes.

Because non-programmers can now do their own computer work, programmers love it. They can spend their time on more challenging jobs. Their backlogs

disappear. And SMARTSTAR helps cut programming time by a 10 to 1 ratio. It also works with Rdb, DEC's relational database.

SMARTSTAR does so much that productivity soars. So does profitability.

Call Signal Technology, the leading independent developer of VAX software, for a 30-day trial or on-line demo. See how SMARTSTAR can make your whole office shine.

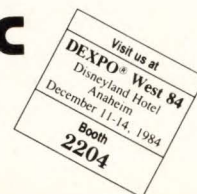
Signal Technology Inc

5951 Encina Road • Goleta, CA 93117 • (805) 683-3771

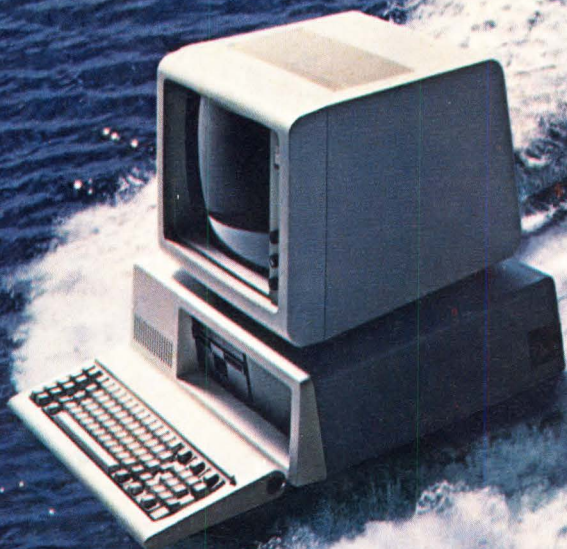
Call toll-free (800) 235-5787

CIRCLE 11

VAX, DEC and Rdb are trademarks of Digital Equipment Corporation.



With IRMA's™ latest
innovation, a remote
PC can reach the
mainframe when all
the ports are full.





It's a sinking feeling indeed.

On the one hand, you have a remote PC which makes a lot of business sense to connect to your big IBM mainframe.

On the other, your 3270 controller doesn't have a single empty port. Which means buying a new controller for one PC. Which doesn't make any kind of business sense at all.

Take courage.

Your ship has just come in.

Introducing new IRMAcom from the people at DCA.

IRMAcom allows any IBM® PC or compatible personal computer to communicate with the mainframe by emulating the function of a 3270 controller.

That's hardware that makes hard business sense. Just like the software you can get with it.

IRMAcom/3270™ and 3270B™ gives your IBM PC the ability to communicate with the mainframe in an SNA/SDLC or BSC network environment.

IRMAcom/RJE™ software allows PC to-mainframe com-

munication in a BSC environment by emulating 2780/3780 Remote Job Entry Workstations.

With the IRMAcom/3770™ software package, IRMAcom will emulate a 3770 Remote Job Entry Workstation in an SNA/SDLC environment.

In all there are four software packages that can be used with IRMAcom. Which gives you the flexibility to choose the right software for the precise job the remote PC is performing.

IRMAcom. From DCA, the makers of the IRMA family of IBM-emulation products.

It makes perfect business sense. And, they're available for immediate shipping.

For more information about IRMAcom or any of the IRMA family of IBM-emulation products, send in the coupon below. Or call 1-800-241-IRMA. Telex 261375 DCAATL.

Mail to DCA, 303 Technology Park, Norcross, GA 30092. And we'll tell you more about IRMAcom and all IRMA products.

Name _____

Firm _____ Title _____

Address _____

City _____ State _____ Zip _____

Phone _____

dca[®]
Digital Communications Associates, Inc.

MP-02-10

IRMA, IRMAcom, IRMAcom/3270, IRMAcom 3270B, IRMAcom/RJE, IRMAcom/3770 are trademarks of Digital Communications Associates, Inc. DCA is a registered trademark of Digital Communications Associates, Inc. IBM is a registered trademark of International Business Machines Corporation. Software copyright Pathway Design, Inc., 1983. © 1984, Digital Communications Associates, Inc.

FEDERAL DP SAVINGS

What has 17,000 computers, 250,000 data-processing employees, and annually wastes billions of dollars in its data-processing operations? It's the world's largest user of computers: the federal government. The President's Private Sector Survey on Cost Control (informally called the Grace Commission, after its chairman, J. Peter Grace, chairman of W.R. Grace & Co.) came up with 58 recommendations for federal dp operations that, if implemented, could save the taxpayers \$19 billion over three years.

Although the federal government's data-processing staff, budget, and needs are larger than those of most corporations, there are many similarities between the government and the private sector. For example, the Grace Commission found that the government spends about 1.4 percent of its budget on dp, the same percentage that large private corporations spend, on average, according to a recent survey by the Diebold Group, a New York-based management consultancy. And the two share many of the same dp problems. The recom-

mendations from a 42-member subcommittee of the Grace Commission, chaired by William Agee, former chairman of the Bendix Corp., may have some relevance for your organization.

The commission found the following important problems:

- Government dp activities are "disorganized and inefficient."
- More than half of the government's computer systems are obsolete. The average age of the government's hardware is 6.7 years, more than double the age of equipment in private industry. Half of the systems in the U.S. Army were bought before 1975.
- There is little coordinated planning, which results in generally incompatible equipment.
- One of the problems caused by this chaos is the government's inability to attract quality dp personnel to help turn the situation around.

A principal suggestion by the commission is to appoint a Federal Information Resource Manager (FIRM) to coordinate planning for information technology. The FIRM would have authority to expedite funding for cost-effective systems and could reject systems that are not compatible or cost justified. The commission was careful to note that the FIRM should

not be just another level of bureaucracy, and its recommendation should not mean that all dp acquisitions should be centrally controlled. The commission noted that a large part of the obsolete equipment problem was fostered by the Brooks Act in 1966, a piece of legislation designed to control computer acquisitions. In fact, however, the Brooks Act slowed the acquisition process by up to 4 years, by which time state-of-the-art computer purchases were well on the way toward obsolescence, the commission noted.

The U.S. Navy's implementation cycle for dp projects is so long (one project listed in the report is expected to take 20 years) that it eliminates timely cost savings. Also, most systems are virtually obsolete by the time they are brought online. The problem can be attacked by consolidating the current acquisition-review process, acquiring general-purpose computers instead of specially designed hardware, and anticipating certain dp needs by using experience and general planning methods.

The commission also recommended that the government simplify time-consuming hiring practices, offer more bonuses to reward good performance, and pay more for qualified personnel. Government salaries at upper levels are at least 25 percent less than those paid in the private sector. The starting salary for a computer professional with a college degree is \$12,854, whereas many organizations outside the government pay more than \$20,000 for entry-level personnel.

In the Army, the commission recommended that dp activity be centralized into one command. Also, the Army should upgrade the limited potential for advancement it offers dp-ers, thus encouraging qualified personnel to stay in uniform instead of accepting jobs in the private sector.

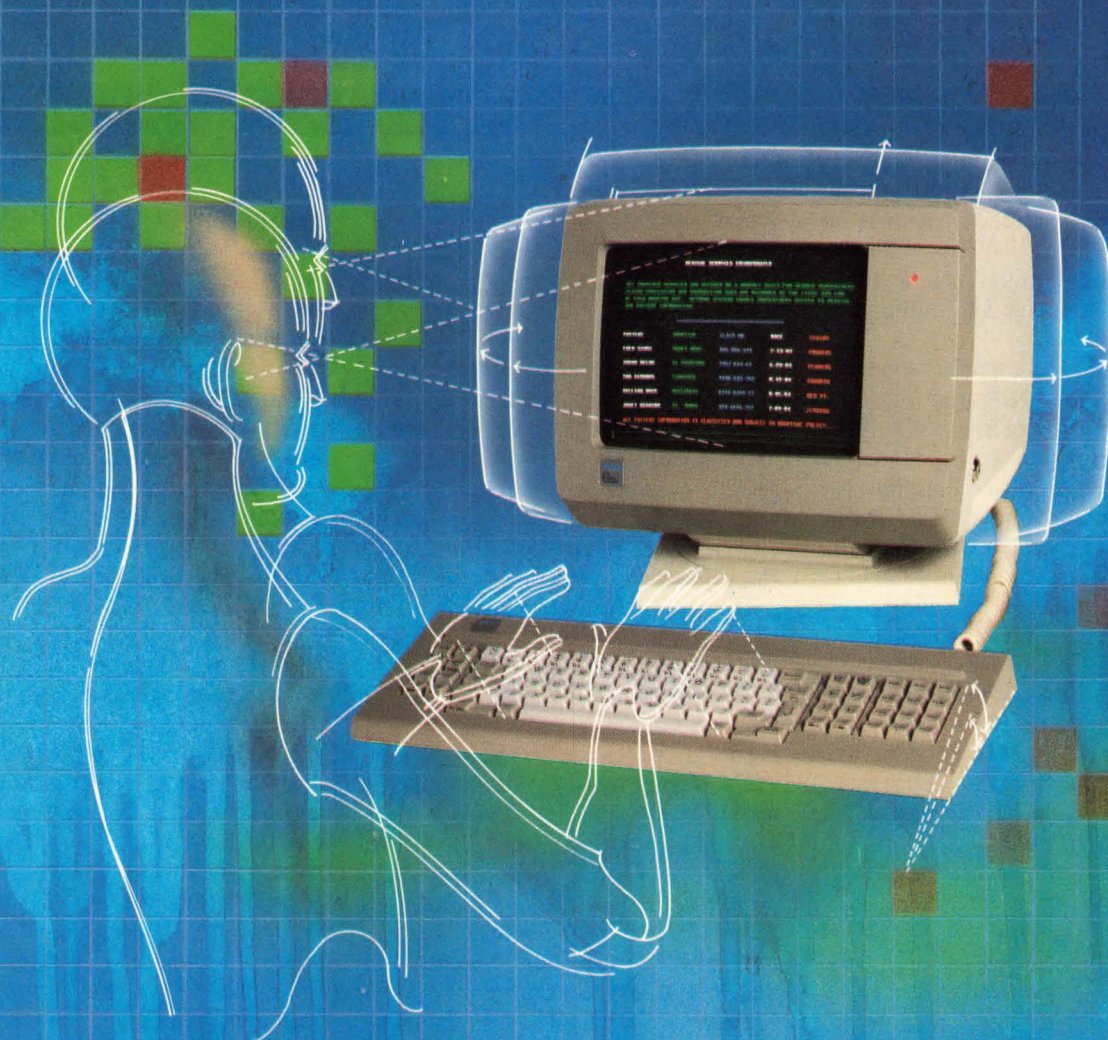
The commission also recommended that government agencies share computer resources to save money. For example, in the decentralized Department of Transportation, several small agencies (such as the National Highway and Traffic Safety Administration) do not have adequate staff

NEW PACKET SERVICE

AT&T Communications recently announced the availability of Accunet Packet Service, a new long-distance, shared data-communications service offering low-delay, high-throughput data transmission to its business customers. Accunet is the successor to AT&T's Basic Packet Switching Service, first introduced in June 1983. It offered switching capabilities only. The new service offers both switching and trunking—providing the actual line the data packets travel over. Previously, customers had to subscribe to another AT&T service to obtain the trunking feature. Now, according to AT&T, it's cheaper to go to one source for both packet services. The monthly fee for the Accunet Packet service ranges from \$470 to \$1,065.

The Accunet Packet Service network will support digital transmission speeds of 4.8, 9.6, and 56 Kbps, or analog mode speeds of 4.8 or 9.6 Kbps. As many as 1,000 data terminals can be addressed on a single data line and, depending upon the transmission speed, up to 511 different messages can be transmitted simultaneously over one access line. Accunet is available nationwide from existing packet-service points in New York, Chicago, and Atlanta. Additional service points in Los Angeles, Denver, Dallas, and Minneapolis will be added later this year.

For further information on Accunet Packet Service, contact the nearest AT&T business sales and service center.



The 3270 alternative designed for the way the other half works.

Telex new 078 and 079 people compatible terminals. 3270 compatible on the inside. People compatible on the outside. Now you can have IBM alternatives that are compatible with the other half of your 3270 system. The people half. And since they're from Telex they feature the only kind of compatibility we know. True compatibility.

For the people half. Ergonomics. A ten dollar word that can mean millions. Because it's a design concept that makes people part of the design process. Which makes people and machines work together more efficiently. More productively. With Telex that means displays and keyboards that move and tilt to fit the user. Screens and keys that are easy on sight and touch. It means

lower profiles and reduced sizes to make better use of the workspace, too.

For the 3270 half. The 078 and 079 are from Telex, a recognized leader in 3270 terminals. So you know you're getting true IBM device compatibility. Along with the Telex nationwide network of service and support.

On the whole. IBM compatibility from the company that's helping to establish the industry's standards. People compatibility based on the standards set by the world's leading ergonomic designers. Both standards that will someday be the rule are part of these exceptional new Telex products today. And part of a whole new line of people compatible products for tomorrow.

TELEX® The Innovation continues...

Telex Computer Products, Inc., 6422 E. 41st Street, Tulsa, Oklahoma 74135 (918) 627-1111

Regional Sales Offices Cherry Hill, NJ/(609) 665-8066 • New York, NY/(212) 599-7220 • Southfield, MI/(313) 358-1195 • Atlanta, GA/(404) 955-7745 • Rosemont, IL/(312) 298-9800 • Garden Grove, CA/(714) 898-9833

Federal Marketing Springfield, VA/(703) 922-9333 • **Canada** Willowdale, Ontario/(416) 494-4444

International Addison, TX/(214) 931-8511

CIRCLE 13

to obtain dp equipment effectively. The result is that dp quality and compatibility with the department is uncontrolled. If dp functions were consolidated, the commission asserts that the DOT could save \$46 million over three years.

If all the dp recommendations were put into effect, including those for more automation of reports, internal mail, information storage and retrieval, and other office functions, the government could save \$22.6 billion over three years, an amount equal to three years' worth of income taxes paid by 3.4 million median-income families, according to the commission. But just like efficiency drives in any organization, commitment for reform has to come from the top—in this case from 1600 Pennsylvania Ave. and the various department heads—for it to be successful, the commission concedes.

CORPORATE MUPPETS



If your sales report is putting people to sleep, perhaps Grump and Leo, the Corporate Muppets, will wake them up. Muppets Meeting Films, a division of Henson Associates Inc., provides break and motivational films made exclusively for the meeting room to provide humor and entertainment. Each reel includes four one- to three-minute segments and sells for \$300 to \$500. Films can also be rented for \$150 per reel. For more information, contact Muppets Meeting Films at (212) 794-2400.

FIFTH GENERATION ON TRACK

The first three-year phase of Japan's fifth-generation computer project is drawing to a close. Both American and Japanese experts say it is on track, that solid results have already been achieved, and that if progress continues at the current rate, a substantial portion of the project's goals will be realized.

By 1992, the Japanese intend to have completed building an intelligent computer that can converse with humans in natural spoken or written languages and also understand pictures and other images. These computers will supposedly be able to learn, make inferences, associate, make decisions, and, in effect, almost think. Fifth-generation computer products will be available in the realms of expert systems, robotics, natural-language understanding and database query, and others.

For example, expert systems using the capabilities of the fifth-generation computer will no longer be limited in the scope of the problems they can tackle. Much more complex expert systems will be possible. For instance, a rule-based expert system might be able to respond to voice inputs in real time, whereas today there is usually a considerable delay before a rule-based expert system can respond (and then only via a crt screen or printer). Or, the database used by a rule-based expert system may be expanded by several orders of magnitude.

The fifth-generation project is the brainchild of the Japanese Ministry of International Trade and Industry (MITI)—the government agency that spearheaded Japan's astounding successes in consumer electronics, autos, steel, and VLSI (Very Large-Scale Integrated circuits). As a first step in the project, in 1982 MITI established ICOT, the Institute for New Generation Computer Technology, the think tank that is intended to guide the 10-year research and development program. The 60 researchers in the working group at ICOT come

from the eight Japanese manufacturers composing the consortium that supports ICOT and the two national laboratories that are also participating. With the establishment of ICOT, related R&D groups in the individual manufacturers' labs have been set up to track the progress at ICOT and put it to their own use.

What has been accomplished so far? At the International Conference on Fifth-Generation Computer Systems, being held this month in Tokyo, ICOT is exhibiting its Sequential Inference Machine (SIM), which is a unit intended as a stepping-stone to the ultimate fifth-generation computer. These machines are different in that the building blocks with which an inference machine "reasons" are collections of words, phrases, or concepts, not numerical bits as in a conventional arithmetic computer. SIM will be used initially in the development of Prolog software. Prolog (logical programming language) is the artificial-intelligence (AI) language the Japanese have elected to use, rather than Lisp (list-processing language), which is in general use in the United States. As one American observer puts it, "If Prolog catches on, then it's IBM and the rest of us who will have to worry about being compatible."

Another tangible result of the first phase of the ICOT project is Delta, a relational database machine. Delta can handle large relational databases, necessary for any computer that attempts to rival human thought processes. And it can operate in parallel, which means that many Delta processors can access the same database at the same time. To meet the goals of the fifth-generation computer project, a processor that operates in parallel to access large relational databases is essential. (Very large memory banks are necessary to successful AI practice.) In the final fifth-generation computer, it is expected that a modified Delta will be combined with a modified PSI and other ICOT hardware developments as well.

A third important achievement of the first phase of the project is a new software language, concurrent Pro-

(News continued on page 28)

INTRODUCING DECISION DATA'S DUAL-PURPOSE COMPUTING WORK STATION



THE NEWEST CRT TERMINAL FOR THE IBM/34/36/38 IS A PERSONAL COMPUTER, TOO.

One machine. Two separate functions. A multi-feature work station for easy access to your System/34/36 or /38. And your own personal computer which runs programs from the IBM Personal Computer software library.

The Decision Data Computing Work Station combines the power of on-line computing with the freedom of independent processing. For less cost. And in less space.

Our Computing Work Station boosts your productivity two ways: First, it adds many new working conveniences to your standard CRT operations. Second, it makes it easy to use thousands of versatile personal computer programs.

You get the power you expect from an advanced system: a basic 256K-bytes memory, two disk drives, two serial ports and one parallel port — plus four expansion slots.

A special "hot key" lets you switch back and forth between terminal emulation and personal computing.

Operating as a terminal, the CWS permits computer output to be printed on your personal printer or stored on diskettes. Six memory keys

let you enter or retrieve up to 78 characters each — with a single key stroke, cutting down on repetitive typing.

Decision Data also provides you with nationwide service and support. Software operation and assistance during installation are provided through a toll-free 800 line that connects you to our software support center. A variety of maintenance options are also provided.

With the Computing Work Station, Decision Data can help you get more from your System/3X and more from personal computing than ever before.



**Decision
Data
Computer
Corporation**

Box 4311, 400 Horsham Road, Horsham, PA 19044

- ☐ Send me more about the CWS, Decision Data's dual-purpose work station.
- ☐ I want to know more now. I'll phone (800) 523-6529. In PA call (215) 757-3322.

Your Name _____

Company _____

Telephone _____

Address _____

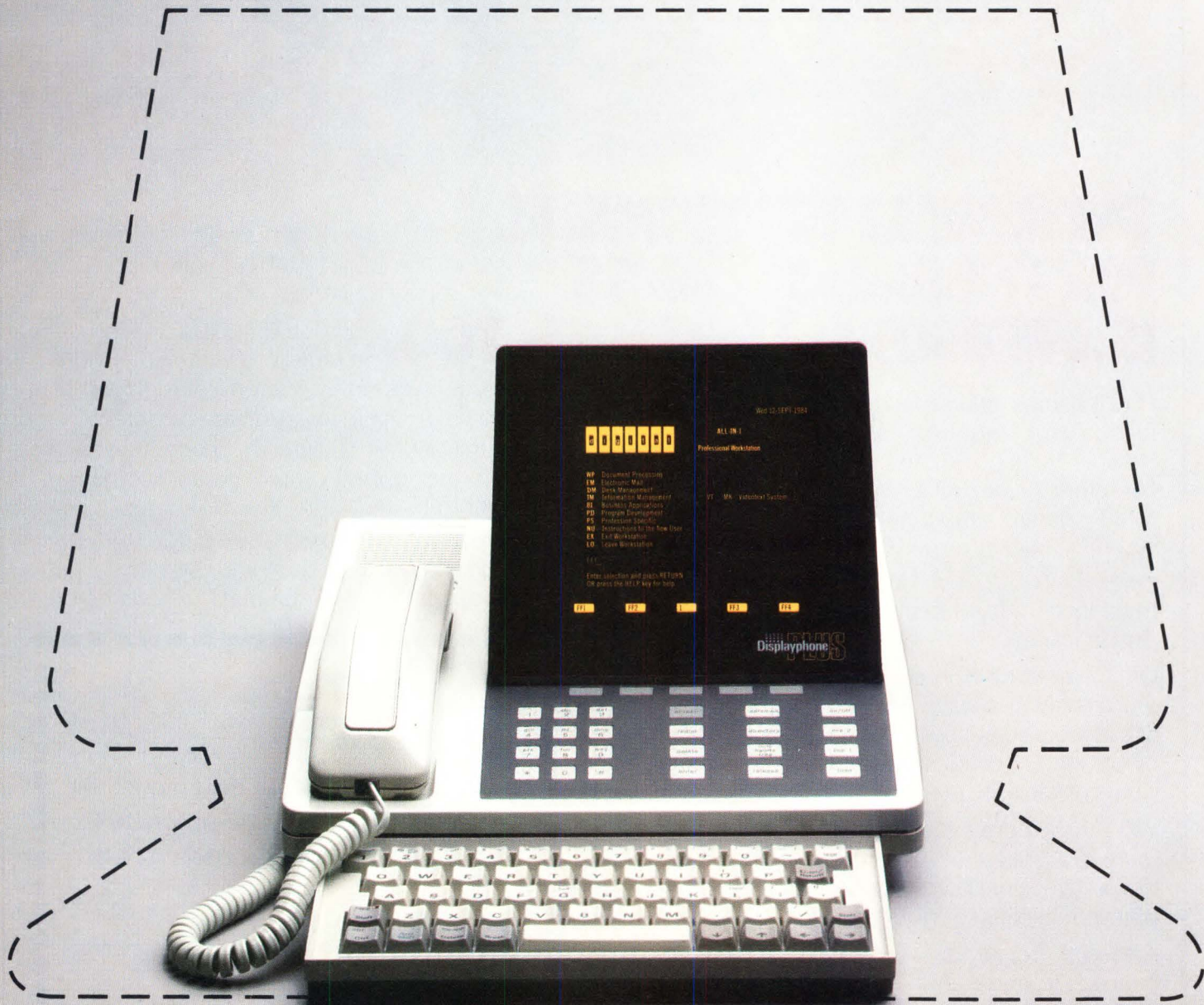
City _____

State _____

Zip _____

DECIDEDLY BETTER

Takes their without



The Displayphone-Plus Terminal

terminal's place the space.

It's important that the Displayphone-Plus* terminal can fit with an existing information management system, offering download emulation of virtually any cursor addressing conversational CRT and plug-and-play compatibility with the VT-100.

But what makes the Displayphone-Plus amazing is that it does it all while still fitting comfortably on a desk.

Inside the Displayphone-Plus terminal is a 212A compatible auto answer modem with selectable 300/1200 BPS transmission rates and full automatic log-on. So it can meet the needs of managers and other occasional data users, while emulating such terminals as the Digital Equipment Corporation

VT-100™ and VT-52™, ADDS Viewpoint®, Regent 25®, and many more.

On the outside is a full-stroke keyboard and easy-to-read amber screen which allows the Displayphone-Plus terminal to match the performance of large, conventional terminals. Its sophisticated telephone capabilities allow it to surpass them with a 90-number directory, automatic dialing, and handsfree speaking. And it's as easy as a telephone to use.

To find out more about the Displayphone-Plus terminal, call 1-800-328-8800, or write to Northern Telecom Inc., Advanced Communications Terminals Division, P.O. Box 202048, Dallas, TX 75220-9990.



log. This development represents an important step toward broadening the capabilities of logical programming languages.

The private corporations that make up the ICOT consortium, and some others not yet directly involved, are making progress on projects of their own. These might be considered spin-offs from the initial phase of the ICOT project. Nippon Electric Corp. (NEC) is working on the hardware and problem-solving software related to Prolog machines. Nippon Telegraph and Telephone Corp.'s (NTT) Musashino Labs, on the other hand, is involved in hardware used in the Lisp language. Hitachi's System Development Lab and Energy Lab are producing a number of workable expert systems. And Fujitsu's Central Lab is also building a Lisp machine. Meanwhile, at other manufacturers, developments in machine translation (Japanese/English), expert systems, and robotics continue at an accelerated pace.

The United States has a three-year lead today in related AI work, says Edward A. Feigenbaum of Stanford University, a leading AI expert, but this lead is being squandered at the rate of one day per day. As Feigenbaum puts it, if Americans are content to let the Japanese take the lead in the computers of the future (which will go far beyond the United States' big number-crunching machines), they'll continue to ignore the Japanese initiatives and reject any proposals for a concerted U. S. effort with government support in this direction.

—John Seaman

MIS BUDGET NEWS

The good news from a survey of 160 large corporations is that MIS/dp's share of the corporate budget has increased dramatically over the past two years. The bad news (for MIS/dp pros) is that most corporations are demanding such a sharp increase in MIS/dp data processing that, despite the increased funding, MIS executives are being forced to

shift more work and responsibility to the users.

The survey by the Diebold Group Inc., a New York-based management consulting firm, shows that MIS's share of the corporate budget has increased an average 13.6 percent over 1983 expenditures. While this trend isn't really different from increases in past years, it stands out because corporations have been cutting expenditures in other areas.

The 13.6 percent increase is an average from 90 manufacturers. Banks, retail, and insurance corporations, which devote much greater resources to MIS than manufacturers, were not included. The average survey respondent spent \$31 million on MIS in 1984, as opposed to the \$27.4 million average spent in 1983.

Among the other findings of the survey:

- The amount of money spent on hardware rose 11.3 percent with a

whopping 35 percent increase in expenditures for minicomputers. The mini's role as a shared device for specific applications is expanding, says David Dell, director of Diebold's research services.

- The number of employees rose by only 4.8 percent on the average while the total payroll increased by just over 8 percent.
- Expenditures for telecommunications within the MIS budget rose over 20 percent, an indication of expanded computing power, according to Diebold.
- Software spending increased nearly 30 percent. It is now more than 5 percent of the total MIS budget—up from 3 percent in the last Diebold survey, taken two years ago.
- Office automation expenditures within the MIS budget increased almost 50 percent from last year.
- About 80 percent of the respon-

(News continued on page 32)

RECOVERY AIDS JOB APPLICANTS

Better economic times have strengthened the bargaining status of qualified job applicants, according to a survey of 700 large American corporations by Thomas-Mangum, a Los Angeles-based executive-search firm. Corporations reporting refusals of key job offers jumped to 58 percent in 1983, up from 10 percent in 1982. Also, 44 percent reported making counteroffers in 1983, as opposed to only 13 percent the previous year.

Almost half of the respondents reported "great difficulty" in hiring qualified job candidates for high-technology jobs in fields such as electronics, artificial intelligence, and communications. Two-thirds of the organizations hire these applicants locally. The most common way of finding high-tech applicants is advertising for them, followed by using employment agencies and employee referrals, and personal contacts. Few employers participate in job fairs or hold open houses. (Job fairs will be examined in detail in the Feb. 12, 1985 issue of *Computer Decisions*.) The average cost per hire for high-tech jobs, excluding relocation expenses, is \$4,800. This is about half the cost of hiring middle managers and only one-fifth the cost of finding executives. Most organizations offer high-tech job candidates less than \$10,000 in relocation expenses, whereas they offer \$10,000 to \$30,000 to middle managers and from \$30,000 to \$50,000 to executives.

The most frequent reason cited by candidates who refuse jobs is high interest and mortgage costs, followed by the receipt of a counteroffer, insufficient compensation, and the reluctance of an applicant's family to move. About 60 percent of the corporations indicated they use inducements beyond moving expenses for obtaining new hires. Chief among these was paying for trips to shop for a new home and paying real estate transfer fees.

A free copy of the Fifth Annual Thomas-Mangum Survey of the U.S. Executive and Professional Manpower Markets can be obtained by calling (213) 259-0600.



**MORE THAN 800 LARGE
NETWORK USERS
DON'T HAVE TO FIT
NCR COMTEN.**

NCR COMTEN FITS THEM.

There are two basic choices in developing a data communications network: you can compromise your objectives to fit the limitations of the system; or you can choose a system with a flexibility to accommodate your needs.

NCR Comten gives you the latter option. Our Communications Network Architecture lets you accommodate yesterday's and today's technologies in your present network and anticipates future and emerging technologies without major equipment change.

Fitting our system to your needs is just part of the NCR Comten story. You'll find more good reasons in our special executive briefing. For details, write "Data Communications Systems", NCR Comten, Inc., Department 8015, 2700 Snelling Ave. N., St. Paul, MN 55113. **Or call 1-800-334-2227.** In Canada, call 1-800-543-5713.

NCR COMTEN. KNOWN BY THE COMPANIES WE KEEP.

NCR

NCR Comten, Inc.

Prime Computer has more solutions than you have problems.

Applications from accounting to CAD/CAM. From transaction processing to process control. From time-sharing to time series analysis. They can all work on the same Prime® system, at the same time. Prime's systems software is versatile, so you can do more.

Every software package runs on all Prime systems. There are systems for a few people, or for dozens.



INDUSTRY: General
APPLICATION: Finance
FUNCTION: General Ledger
DESCRIPTION: Features include:

- Structured ANSI COBOL
- "Self" tutorial available to operator for ease of training
- Complete user documentation
- Accounting controls throughout
- Tagged by a "Six Eight" accounting firm
- Flexible, user-defined account structure
- 24-month detail on account master
- Budgeting capability for all accounts
- List status inquiry for input monitoring and control
- List verification
- Account inquiry with current and year-to-date budgets, actual, and optionally posted detail review
- Accrual reversals and standard entries supported
- Financial reports available by department for complete control of income and performance
- Prior year, prior month totals on statements
- Flexible, user-defined reports
- Automatic year-end closing to retained earnings with balance forward generation for the new year
- One module in the fully integrated direct product line which includes accounts payable, accounts receivable and payroll/personnel.



Looking for solutions to your company's problems? Take a good long look at our list of software.

Prime's list of commercially available application software is already over 1,000 packages long. And more software is being added all the time by hundreds of developers worldwide.

If you ever need to modify your software, it's easy and economical to do. Prime's operating system is programmer-friendly. Prime systems are even used to develop software for *other* computers.

You can do more with a Prime system. We're a Fortune 500 company with world-wide support. With a family of computers so compatible, you can interchange hardware and software at will.

Find out what you can do with our versatile systems. Call **1 800 343-2540** (in Mass., **1 800 322-2450**) or your local office. Or write: Prime Computer, Prime Park, MS15-60, Natick, MA 01760. In Canada: **416-678-7331**; Prime Computer of Canada Ltd., 5945 Airport Road, Mississauga, Ontario, L4V1R9 Canada.

PRIME
Computer

We're versatile, so you can do more.

PRIME is a registered trademark of Prime Computer, Inc., Natick, Massachusetts.

dents have information centers in 1984, up from 67 percent a year ago. On the average, respondents said they expected to handle about 10 percent of the programming workload

through end users' participation in information centers.

The survey showed stability in MIS personnel as expenditures remained at 43 percent—the same level in 1984

as the previous year. But expenditures have fallen since 1971 when Diebold first did the survey. The numbers of MIS workers increased by only 4.8 percent in 1984. In fact, 25 percent of the respondents reported a decline or no growth in staff between 1983 and 1984. (There was a 10 percent growth in headcount in the previous two Diebold surveys.)

In addition, the turnover rate in 1984 was only 5.6 percent compared to 16 percent in 1981. This is a double-edged sword, according to Diebold analyst Donna Tarbania. It means that MIS departments are keeping their seasoned veterans, which may make it harder to infuse new blood and technology into the departments. The growth in personnel budgets is limited to applications programmers and telecommunications staff, and a significant number of these employees are expected to be outside the MIS budget, says Tarbania.

The study detected that there is pressure on MIS executives to control personnel costs and "do more with less." As a result, many MIS departments are relying more on commercial software packages, the study showed. The study also revealed that MIS executives were increasing computer-operations automation, speeding the adoption of advanced-systems-development methodologies, and shifting responsibility and workload to end users through decentralized computing, personal computers, and the information center.

1990 SERVICE: MORE USERS IN CONTROL

With the growth of distributed computer systems and office automation, users in 1990 will be more responsible for machine maintenance, claims a recent study.

Users will be major purchasers of service for OA systems and will be more responsible for maintenance of minicomputers and systems peripherals, reports a \$125,000 study by Arthur Andersen & Co. for the Association of Field Service Managers (AFSM). Dp executives will continue to be responsible for servicing OA as well as mainframes, minis, systems peripherals, and telecommunications. In 1990, more money (\$8 billion) will be spent on fixing OA systems than on minicomputers (\$7.5 million) or mainframes (\$6.2 million), according to the study. In 1983, only \$1.1 billion was spent on servicing OA, a category in which the study included word processors and personal computers.

The study, consisting of the opinions of 100 executives from vendor, user, and service companies, depicted a rosy service outlook for users in 1990. New computer equipment is expected to break down less often, and vendors will adopt policies allowing them to fix their competitors' equipment, thus saturating the service market with similar offerings. The experts interviewed by Arthur Andersen predict that the number of new equipment failures will decrease between 25 percent to 50 percent for mainframes, minis, and OA systems. New telecommunications equipment and systems-peripherals failures will drop by 10 percent to 25 percent. By 1990, vendors such as Control Data Corp., ITT, Honeywell, and Xerox will offer service for a variety of other manufacturers' products. Other companies, including IBM, AT&T, Burroughs, DEC, GTE, Hewlett-Packard, NCR, Sperry, and Wang, are expected to offer service for competitive products that are networked with their own, according to the authorities.

By 1990, about 20 percent of customers will be fixing their own minicomputers, OA systems, systems peripherals, and telecommunications devices, predicted user-organization executives who participated in the survey. Only 10 percent will choose self-service for mainframes, they conjectured. Executives from service companies were less bullish on the prospects for self-service than the executives from user organizations. All the executives forecast that remote diagnostics, mail-in or carry-in product-repair centers, and cooperative programs to aid customer service will increase.

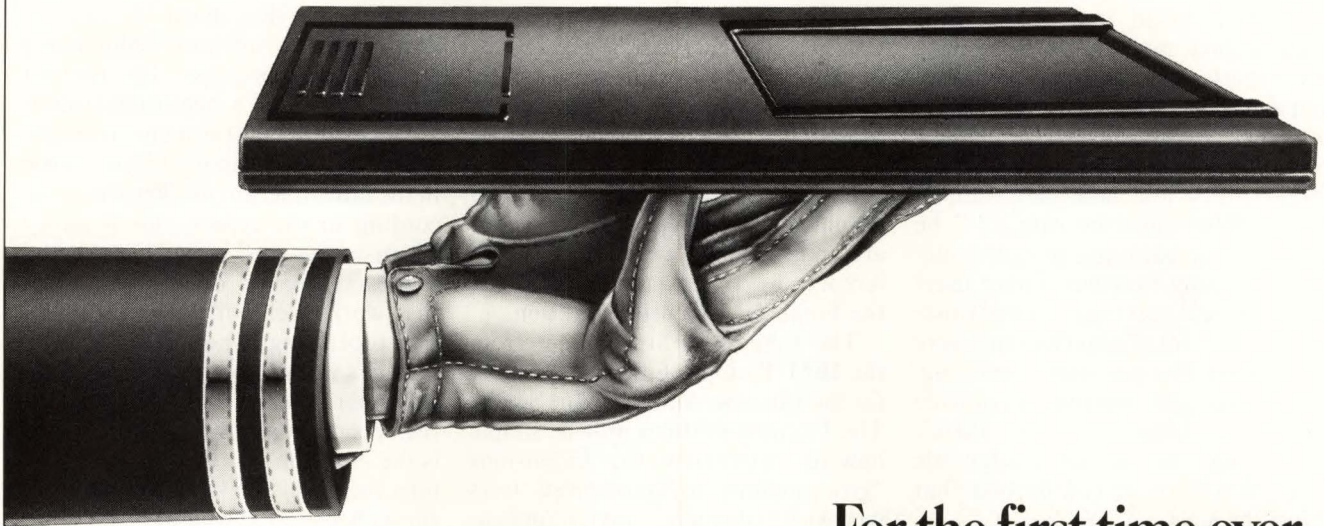
Customers will be prompted to move toward self-service because of the rising cost of computer service, says Jeffrey Miller, an Arthur Andersen partner who supervised the study. Also, because computer efficiency is becoming increasingly important to the organizational bottom line, companies are reluctant to wait even one or two hours for a service company to respond to a breakdown, he says. But there are hidden costs to self-service, such as maintaining a support staff and spare parts inventory, that have to be considered, Miller notes. As a result, some companies are buying duplicate equipment, which will virtually eliminate the downtime problem and decrease the need for immediate service.

The report, "Future Trends in Service of Electronic Products," is available for \$100 through the AFSM at 7237 Presidential Court, Suite B, Ft. Myers, FL 33907. The AFSM has about 4,200 members in 1,200 high-technology organizations, including vendors, users, and third-party service organizations.

NEW - PHASE TRAINING SOFTWARE

More than a score of vendors sell how-to training diskettes that introduce novice personal-computer users to specific hardware or software products. But a "second generation" of training software is starting to appear that shows more sophisticated users how to apply software packages, such as spreadsheets, to their businesses. Cdex Corp.'s Business Applications Train-

Meet Max.



For the first time ever,
a professional, reliable, removable disk drive. Thanks, Mom.

MOM knows a good drive when she sees one. And Max Drive™ is the best mass storage disk system yet for IBM PCs, XT's, and IBM-compatibles. Apples, too. With infinite capacity for storage, one removable 10-megabyte cartridge at a time.

MAX PUTS 10 MB IN THE PALM OF YOUR HAND.

The trouble with fixed hard disk systems (and we mean all of them) is that they have just so much storage capacity

built in. And when it's full, it's time to buy another system.

Not Max. His capacity for storage never ends. You can slip 10 mb in, one right after the other. Ad infinitum. That means you—or anyone else—can keep your own information on your own cartridge. And take it along when you're finished. No more crowded storage on single disks. A lot more security.

BACK-UP? MAX GOES FULL SPEED AHEAD.

You can copy 10 mb of hard disk information onto one Max cartridge in about 3 minutes. Without Max, it takes 40-60 diskettes and nearly a whole day. Reformatting is something else. Max takes 4 ½ minutes. Your hard disk takes 4 ½ hours. (Yawn.)

MAX DRIVES A HARD BARGAIN.

Byte for byte, you cannot find more storage for the price than Max. For that

matter, you can't find anything else quite like Max on the market today.

Max comes in both single (10 mb) and dual (20 mb) disk drive units. Give MOM a call today and ask for a test drive. Dial 1-800-241-1170 or 404-351-2902.

Remember,
MOM knows best.



Dual Drive



MOM™

Specialists in Marketing of Micros to Mainframes.

© 1984 The MOM Corporation. National Product Marketing, Inc., Two Northside 75, Atlanta, GA 30318. (404) 351-2902.
IBM PC and XT are trademarks of International Business Machines Corporation. Apple is a trademark of Apple Computer, Inc. MOM and Max Drive are trademarks of National Product Marketing, Inc.

ing Series is one such offering. And among IBM's recently announced personal-computer software is a group of instructional diskettes called "Extensions," which show users how to apply IBM software packages to their work.

Cdex is the first training vendor to offer disk-based instruction that explains how micro software can be put to work, says Cdex' national sales manager, Gary Niedermier. "These packages are for people who know how to use their computers and their spreadsheets, and now they want to know, 'What can I do with it?'" he says. How-to packages provided adequate training to novice micro users two or three years ago, Niedermier says, when a lot of organizations were just getting into personal computing. Those packages continue to provide adequate training today, "but there's a growing base of knowledgeable users who have moved beyond that level," he says.

A how-to product like Cdex' beginner's course, "Introductory Training for Lotus 1-2-3," shows a user how to move through a spreadsheet, how to store or print data, and how to create graphs with the program. The second-generation software, such as Cdex' "Analyzing Financial Statements," when used with a spreadsheet may help a manager check a company's financial statement to see, for example, if it is a good credit risk. Cdex' financial-statement product has a template, or model, of Lotus 1-2-3, specifically designed for analyzing a financial statement when loaded into a personal computer running the program. It could take up to five hours for a user to create such a specific spreadsheet model, a Cdex representative says. The product tells the user which numbers to take from the sample financial statement and plug into the template.

Cdex has four such packages and plans to expand to six by December. The training packages run with Lotus 1-2-3, Multiplan, Visicalc, and Supercalc 2, and Cdex plans to add Symphony and Framework to the list. The training packages are available for the IBM Personal Computer and compatible micros. Versions of each

program are also available for the Apple IIe and IIc.

IBM refers to its instructional diskettes as Extensions to its new six-package Business Management Series (BMS). Each of the new IBM application programs belongs to one of two software series. One is the BMS; the other is the IBM Personal Decision Series (PDS). Each Extension describes how one of the packages from the BMS series, such as general ledger or accounts receivable, can be used in conjunction with PDS packages that include spreadsheet and graphics applications. The Extensions are collected into two offerings, the Accounting Extensions Edition and the Financial Extensions Edition.

The Extensions are distinct from the IBM Training Editions available for the Business Management Series. The Training Editions provide simple how-to instruction; the Extensions "give guidance to experienced users who wish to do more complex applications with BMS," according to IBM.

The packages in the Cdex series cost \$70 apiece for the IBM PC and \$60 for the Apple models. Cdex can be reached at 5050 El Camino Real, Suite 200, Los Altos, CA 94022, (415) 964-7600. IBM's Extension Editions, priced at \$245 apiece, will be available from authorized IBM PC dealers early next year.

—David Roman

FAULT TOLERANCE

Tandem Computers Inc. (Cupertino, CA), with its Nonstop system, is number one in the fault-tolerant marketplace. Stratus Computer Inc. (Natick, MA) holds the number-two spot with its Stratus/32 system.

These are the results of a 60-page report, "Fault Tolerant Systems," published by the San Francisco Consulting Group. The report examined 15 vendors of fault-tolerant systems, including Tandem, Stratus, Synapse, Parallel Computers (Santa Cruz, CA), Nohalt Computers (Farmingdale, NY), Computer Consoles

Inc. (Rochester, NY), and others.

Tandem's premier system, the Tandem Nonstop, handles fault detection by using hardware and software together. Hardware locates and identifies a failure; software handles the recovery and repair. Because recovery and repair are handled online, it is not necessary to shut down the system. Also, there is software redundancy because each processor has its own copy of Tandem's operating system.

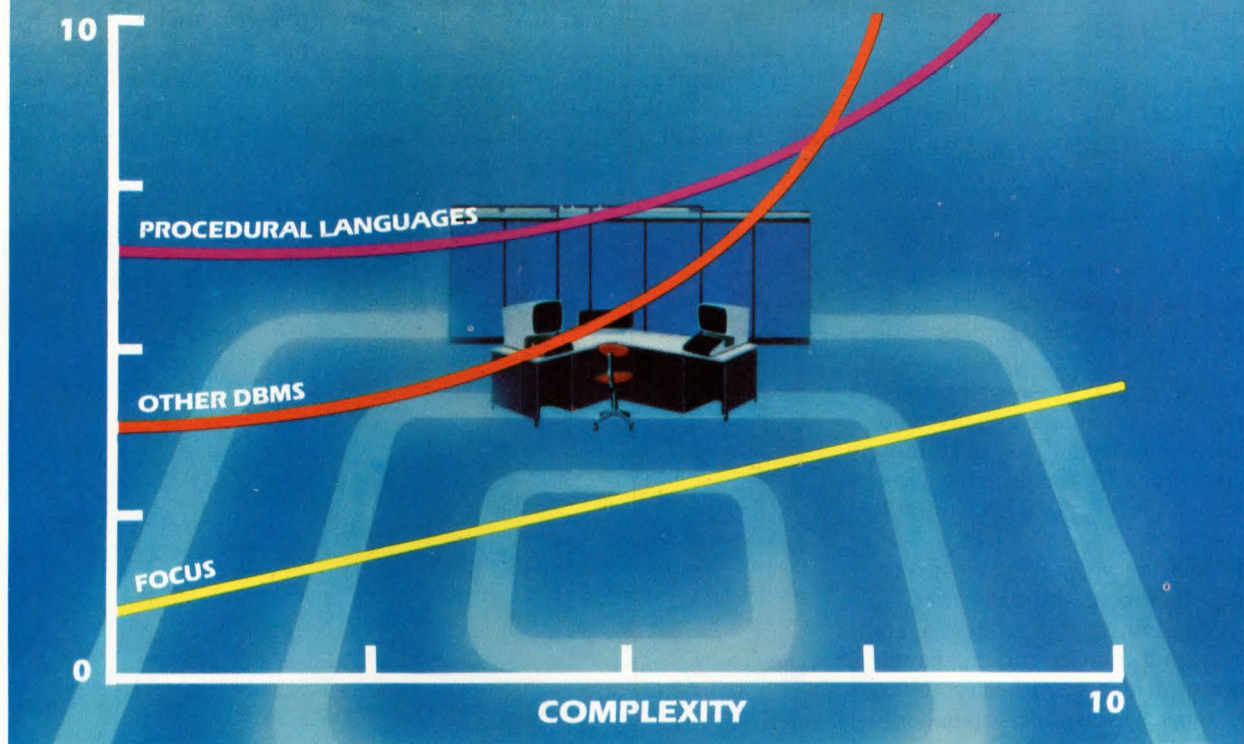
With over 5,000 systems installed, Tandem is maintaining its dominance in the fault-tolerant marketplace. According to the report, this is partly because of a good software base and a message-based operating system that works well with online transaction processing. One of the Nonstop system's weaknesses is that it is sometimes perceived as an old technology, the report found. Another drawback is the Nonstop's software-based fault tolerance. This makes it necessary to run a check on the whole system every time a change is made in the software. Nonstop systems start at \$143,000.

The recently announced Nonstop TXP is a 32-bit multiprocessor system that offers two to three times the processing power of the Nonstop II for about half the cost per transaction, according to the report. Compatible with earlier NonStop computers, it is intended to improve the performance of Nonstop II applications.

Stratus, which has installed approximately 100 Stratus/32 systems, seems to be prepared to offer Tandem a run for its money. The Stratus/32 system features hardware with self-checking logic on each major circuit board to detect failures. Failure detection is contained within the circuit board, not in the software. According to the report, the system's strengths are its hardware-based fault tolerance, limited space and environmental requirements, and a good application-development environment. Weaknesses include a proprietary operating system and lack of application software. Stratus/32 starts at \$140,000.

The cost of the report is \$395. For more information, contact The San Francisco Consulting Group at (415) 777-0721. (News continued from page 36)

EFFORT VS. COMPLEXITY.



FOCUS DATABASE. It Stays Easy to Use as Your Applications Grow More Complex.

What's the real genius behind FOCUS? This one simple fact: FOCUS lets you Expand your applications to meet increasingly more demanding business information needs with **very little** extra effort.

FOCUS has already enabled thousands of Information Center users to successfully develop their own reports and graphs with a minimum of training. And it can do the same for you! Here's why:

FOCUS' powerful, built-in facilities combine an English nonprocedural language with advanced database and 3270 screen management technology.

Plus, our new Table-Talk™ windows make queries and reporting even simpler as they guide you through the creation of your FOCUS request. And that request can access any existing file or database (VBSAM, QSAM, IMS, IDMS, TOTAL, ADABAS, MODEL 204, SYSTEM 2000 and DL/I).

So FOCUS starts out easy to use and stays easy to use, enabling you to build systems ten times faster than older technologies!

Why not let FOCUS' proven Information Center facilities put you on a successful productivity curve? For details write to:

**Don Wszolek, Dept. M2,
Information Builders, Inc.,
1250 Broadway, New York,
NY 10001.**

INFORMATION BUILDERS, INC.

New York: (212) 736-4433 • Washington, D.C.: (703) 276-9006 • St. Louis: (314) 434-7500 • Chicago: (312) 789-0515
Dallas: (214) 659-9890 • Palo Alto: (415) 324-9014 • Los Angeles: (213) 615-0735 • Houston: (713) 952-0260

DIAGNOSING MIDDLE-MANAGER ILLS

While middle managers routinely prescribe training to alleviate their staffs' weaknesses, upper management may struggle to do the same for them. What should middle management be taught, and how? Management Decision Systems Inc., a training and consulting group, has developed the Sherlock questionnaire to help senior management or individual training managers identify the primary weaknesses of the corporation's middle managers.

The Sherlock questionnaire surveys middle managers and asks them to rate their abilities to develop budgets, motivate and counsel workers, handle conflicts, delegate authority, interview, and perform other managerial tasks. Sherlock also asks them if they would like training to develop these skills and what type of training they would prefer on-the-job training, self-study courses, or lectures.

The survey can pinpoint an individual manager's training needs, but it is most effective in "profiling the weaknesses of a group of managers, say, all those within a single division of the corporation," says Paul Connolly, a consultant with Management Decision. "It tells you what skills most of your managers think they need, so you know where you're going to get the most for your training buck." Connolly suggests that a group of at least 25 managers fill out the questionnaire. For a limited time, Management Decisions will provide and process 25 Sherlock surveys free of charge.

Connolly says the surveys are sent out with a business-reply envelope so surveyed managers can return their questionnaires anonymously. "Some managers are afraid they'll get clobbered if they say anything about their organizations, so they need the anonymity," Connolly says. "It depends on the level of paranoia in the organization."

Management Decisions will offer organizations the free processing of 25 surveys until the end of the year. The usual cost of the service is \$5 per surveyed manager. The company is located at 777 Boston Post Rd., Darien, CT 06820, (203) 655-4414.

—David Roman

MORE LINKS

Two more micro-to-mainframe links for the IBM Personal Computer and compatibles, for local and remote connections, are now available from Techland Systems Inc. (New York). Bluelynx 3270 Local

COMPUTER SUPPORT SYSTEMS BY LIEBERT



IT'S HERE.

THE FEATURE
YOU NEED MOST
IN AN ENVIRONMENTAL
CONTROL SYSTEM.

consists of a plug-in board, associated software, and a coaxial cable that runs from the board to the 3274 controller. The controller is connected to the mainframe via modems or a channel connect. The board and associated software are bundled with Data-reader, which transforms downloaded

files into a format for use with spreadsheet and other applications. The Bluelynx 3270 keyboard is also included in the price of \$1,290.

The Bluelynx Gateway allows a single PC on a remote local-area network to act as a 3274 terminal and communicate synchronously with an IBM

host computer through modems. Other PCs in the network use the first PC as a gateway to access mainframe data by emulating 3278/3279 remote terminals. A Gateway that can support an eight-PC network sells for \$2,000. The package includes a circuit board for the PC acting as the gateway, associated software, Datareader, and the Bluelynx 3270 keyboard. For more information, call Techland Systems Inc. at (212) 684-7788.



Designed-in intelligence to create the ultimate computer room environment.

Microprocessor-based intelligence to continually analyze its own data base.

INTELLIGENCE!

Operational intelligence to respond dynamically to data-initiated commands and maintain precise temperature, humidity and air cleanliness!

The new Deluxe System/3, with software-driven technology, adapts instantly to changing needs and performs within extremely tight tolerances.

These performance factors, along with uncompromising quality in parts and manufacture, assure **minimum downtime** due to environmental problems with **maximum energy efficiency and savings!**

Whether you're designing an all new data center or retrofitting an existing one, select today's most advanced environmental control system — It's the only **intelligent** thing to do!

Liebert Corporation, 1050 Dearborn Dr., P.O. Box 29186, Columbus, OH 43229
Phone 614-888-0246 Telex 246655 LIEBERT WOGN

See us at NCC Booth No. A-1722



Liebert

World leader in computer support systems.

NEW CPU, SOFTWARE

The Burroughs Corp. (Detroit, MI) has introduced a new low-end mainframe to replace its four-year-old B5900 system; new menu-driven systems software that can run on all Burroughs mainframes; and a new Unix operating system for its XE500 minicomputer series.

The A3 Series mainframe is designed to compete with IBM's System/38 minicomputer and 4361 low-end mainframe. It is roughly half as powerful as Burroughs' A9 Series, announced on Jan. 17. The A3 comes in three models with maximums of 6, 24, and 48 Mbytes of main memory. When set up with peripherals, the three models are priced at \$136,000, \$275,000 and \$450,000. Since the A3 is compatible with the A9, as well as with Burroughs' large B5000, B6000, and B7000 mainframes, users can migrate to bigger machines without costly reprogramming, according to Burroughs.

Interpro, the new software, was hailed by Burroughs executives as the corporation's biggest software announcement in years. Interpro consists of six products in which menus replace complicated commands. "It brings the programming and operational ease of the personal computer to mainframe computing," says W. Michael Blumenthal, chairman and CEO. Interpro's six components are: Menu Assisted Resource Control; Interactive Datacomm Configurator, which helps to establish and maintain terminal networks; Screen Design

NEWS & COMMENT

Facility, which simplifies creation of the many screen forms required for online transaction-based systems; Communications Management System, which guides high performance and resource conservation for transaction-processing environments; Ad-

vanced Data Dictionary System, which manages the descriptions of all information resources available on the system; and Extended Retrieval with Graphic Output, which simplifies the process of forming inquiries and reports. Interpro is cheapest when

run on the A3 Series, at a cost of \$1,300 per month; however, the price increases with larger systems.

Burroughs also introduced its XE550 minicomputer system. The XE550 is really its XE520 system (announced in May) with an applications processor board that runs Bell Labs' Unix System 5. The XE550 has multiple processor boards that control separate tasks, such as file processing and communications. It offers a bridge to the MS-DOS world through the use of its B20 and B25 workstations. Users running MS-DOS-type software can send their files to the XE550. There, with the press of a key, their files can be turned into Unix files, which can be worked on by other users hooked up to XE550. A basic XE550 is priced at \$43,000. It can handle up to 16 terminals. For \$1,695, Burroughs is also offering for the XE550 an intelligent PT 1500 terminal with multiple windowing features.

For further information, call Burroughs at (313) 972-7000.

A UNIX LINK TO THE IBM WORLD

A supermicro-to-mainframe link? That's what Pathway Design Inc. of Wellesley, MA, is offering. Pathway makes Unipath, a series of software products that will enable 32-bit micros running under Unix to access information from IBM mainframes, according to the company. Costing about \$1,000, Unipath is available off the shelf for Charles River Data Systems' Universe 68, the Visual 2000, and the Televideo PM 16. A Pathway representative says custom modifications are needed to use the product on the AT&T 3B2 supermicro series. The Unipath software module operates under Unix Systems 3 and 5 and is loaded onto a hard disk attached to the supermicro. It will then be able to connect up to 32 asynchronous terminals and printers to any 4341-and-up IBM mainframe in the SNA/SDLC and BSC networking arrangements. Unipath makes the Unix devices emulate IBM 3270, 3770, 3780, and 2780 devices, according to Pathway. In addition to the Unipath software, users will need a communications board in their supermicros. For more information, call (617) 237-3220.

PEN TO PAPER TO PC



Anyone can print alphanumeric and draw with a ballpoint pen on a sheet of paper. But users of the Pencept pen and digitizing tablet do all that while printing and drawing on an IBM Personal Computer screen. Printed characters are transformed into letters and numbers in various type styles; sketches, charts, and graphs can be created and modified; and colors can be switched easily until results are satisfactory. One use: developing a slide show on a disk for showing on the PC screen. Pencept Inc. (Waltham, MA) offers a tablet, stylus, and interface board for about \$1,000. A four-color graphics card adds about \$300 to the cost. For more information, call (617) 893-6390.

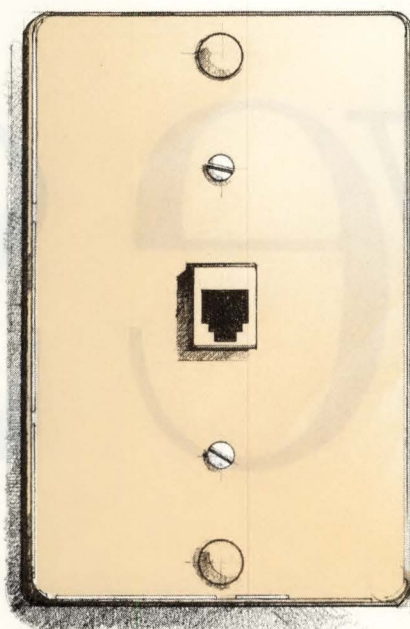
RX FOR WP BABEL

Another solution to the problem of incompatible word processors was announced by Keyword Office Technologies Inc., creator of the Keyword 7000, a disk-to-disk microcomputer conversion device that allows users to swap documents between such incompatible devices as the Decmate from Digital Equipment Corp. and the Displaywriter from IBM. The drawbacks are the \$9,995 price and the fact that it takes about 13 seconds to transfer one page of a document between dissimilar machines.

The Keyword 7000 is a console with two 8-inch and two 5¼-inch disk drives and a board that rests inside an IBM Personal Computer. A user inserts into the device a word-processing diskette that contains a document to be transferred into the device and a blank diskette. With a few keystrokes, the document on the source diskette is

(News continued on page 42)

YOU MAY NEVER USE COAX AGAIN.



Up to 1,000 feet
of your existing
telephone
wiring.

Introducing the Lee Data *QuickLink*™ Adapter. And MORE LEEWAY™ for your growing 3270 System.

QuickLink™ is a passive in-line adapter that can reduce cabling and installation costs to near zero.

With *QuickLink*, thousand-foot stretches of your existing, twisted pair

telephone wiring can do the same job as traditional, higher cost coaxial cabling.

It all boils down to MORE LEEWAY when you add or move workstations.

Lee Data™ also manufactures 3270/Async controllers, multifunction displays, coax eliminators, printers, and IBM-compatible personal computers.

Like *QuickLink*, each is a passport to MORE LEEWAY in crossing the borders you face today. And the new borders you'll face tomorrow.

Standard, 6-pin modular telephone cable.

Lee Data *QuickLink* Adapter.

To a LEE Data display terminal or controller.

Call 1-800-LEE-DATA or (612) 828-0300 for our FREE booklet, **MORE LEEWAY: Passport for MIS Planners**. Or write to Lee Data Marketing Services, 7075 Flying Cloud Drive, Eden Prairie, Minnesota 55344.

Name _____

Title _____

Company _____

Address _____

Phone _____

1900-1100

LEE DATA CORPORATION



You live so

A 3M diskette can make one read/write pass on every track, every hour, every day for 200 years and still be in terrific shape.

Has 3M discovered the floppy fountain of youth?

In a way, yes.

We discovered that if

you want to make a floppy that's certified 100% error-free and guaranteed for life, you have to make every last bit of it yourself.

That's why we're the only company that controls every aspect of the manufacturing process.

We make our own magnetic oxides. And the binders that attach them to the dimensionally stable substrate. Which we make ourselves from liquid polyester. Which we make ourselves.

We also test our

should long.

floppies. At least 327 ways. And not just on exotic lab equipment with perfectly aligned, spotless heads. But also on office equipment like yours. We even reject a diskette if its label is crooked.

3M
diskettes

Some companies claim their floppies are as good as ours.

They should live so long.

One less thing to worry about.™

converted page by page to a new format without any errors through the use of Keyword's software, the vendor claims. The Keyword 7000 will translate the Xerox 820, the Lanier No Problem and Super No Problem, Philips' Micom 2000 and 3000 series, and the microcomputer packages Multi-mate and Wordstar. The device comes with software that allows translation between one pair of word-processing documents; software for each additional pair costs \$495. Call Keyword (San Jose, CA) at (408) 371-7770 for more information.

Users of the IBM Series/1 mini-computer have another solution for translating text from incompatible word processors that has been available for about 18 months but has not been strongly marketed: the Cosmos software system from United Systems Group, a small software house in New York. Cosmos is an \$18,000 communications package that resides on a Series/1 and can translate text from the following word processors: IBM 5520, IBM Displaywriter, all Wang systems, the Lanier "No Problem" and Shared System units, and the AM Jacquard 500. Users on the various word processors need to be connected to the Series/1 by means of a modem or cable in order to access Cosmos. Call United Systems at (212) 563-3610 for more information.

PC AT ENHANCEMENT

Computone Systems Inc. of Atlanta, GA, in what may be a record for a third-party follow-up to an IBM product, announced a new board and operating system to enhance the IBM PC AT only 28 days after the new micro was announced. Called the AT-Vantage, the software-hardware product will allow up to eight users to hook up to a PC AT—that's five more than the PC-Xenix multi-user operating system will allow when the PC AT becomes available from IBM early next year. The IBM PC and PCjr can be used as terminals. The only software that can run under Computone's operating

system is its applications software, including various accounting packages and packages for specific professional applications, such as wholesale distributors, medical offices, insurance agencies, and jobbers. Computone is offering a PC AT with a 20-Mbyte hard disk, AT-Vantage, and an applications program at a price of \$16,000 to \$18,000. It will be available in the fall through authorized dealers. For more information, call (404) 393-3010.

GOULD SAVES WITH HP

Gould Power Conversion Division (San Diego, CA), expects to save \$50,000 in operating costs over the next year, thanks to Hewlett-Packard's System 3000. The Gould division accounting office has installed the HP 3000 business computer, and HP MM/3000 financial software. The division would have spent \$30,000 to upgrade their old system—MAI Corporation's Basic/Four—and HP 3000's customizing facility allowed the company to change information in the database without having to hire a professional programmer, resulting in another annual \$20,000 savings.

Recalls controller Bill Zang, "We were looking for a totally integrated hardware/software package with the solution to our application needs." The company's former system was becoming increasingly inadequate for its 10-person accounting department because it lacked a database management system, and data in many files had to be replicated. MIS manager Don Pardee explains, "We were locked into a one-state payroll system and had to handle our out-of-states by hand. For documentation we had file layouts and that's about all. The materials-requirement system was only two levels deep. And we had no order-sizing calculation capability."

Zang and a project team were charged with the responsibility to search for the right system. The ultimate choice was the HP 3000 business computer and HP MM/3000—a

materials-management package and financial-accounting software. This included a general ledger, accounts payable and receivable, and a general-ledger interface package database that was integrated with an MCBA (Mini Computer Business Applications Inc.) system.

The system turned the Gould division accounting office around, saving employees hours of work. The accounting department's purchase orders are now machine printed, receiving logs are on the system, as is its factory order-entry documentation. The HP system eliminated the typing of factory work orders and other shop-floor paperwork. The HP 3000's networking capability allows the accounting department to get up-to-date summary information from other HP 3000 terminals distributed throughout the company.

Pardee also praised the easy-to-use retrieval/reporting feature called Inform. This allows users to call up inventories, backlog data, parts receiving, all at the HP 3000 terminal. Claims Pardee, "It couldn't be more user-friendly."

Because conversion programs had to be written, Gould experienced a six-month lag period between purchase and getting the system online, which is pretty much the norm for implementation. Zang comments, "Although there were a few bugs at first, Hewlett-Packard gave excellent support. I recommend going with a single vendor. It greatly reduces response time."

The manufacturer's list price for the HP 3000 hardware are as follows: HP 3000 Series 44 (with 2 megabytes main memory)—\$66,500; three HP 7925 disks—\$60,150; eight HP 2624B terminals—\$24,280.

Prices for Hewlett-Packard's Financial Accounting Modules software are as follows: HP MM/3000 (materials management)—\$12,000; general ledger—\$6,000; accounts receivable—\$6,000; accounts payable—\$6,000; allocator—\$4,000; report facility—\$5,000; interface facility—\$5,000.

For further information on the Hewlett-Packard System 3000 call (415) 857-1501.

We've cut the mustard...

at R.T. French



We're Cyborg Systems, and we solved the Payroll/Personnel problems at R.T. French. We'd like to do the same for you.

Cyborg has developed the most flexible, comprehensive On-Line Payroll/Personnel software package on the market. We're flexible enough to serve any industry, on most any brand of mainframe. In fact, we run on ten of the top mainframe manufacturer's equipment.

Give us a call. We'll show you how we can cut through your problems, as we've done for R.T. French and hundreds of other companies.

Cyborg Systems, Inc.
The Payroll/Personnel People

John Kluska • 2 N. Riverside Plaza • Suite 2160
Chicago, Illinois 60606 • (312) 454-1865
Telex: 9102216009

Chicago • Los Angeles • New York • Philadelphia • Dallas • Ontario

CIRCLE 71

PERSONAL COMPUTING

KUDOS FOR SELF-TRAINING AIDS

by Susan Foster Bryant, Microsystems Editor

User friendly: That phrase has acquired the aura of a sugar-coated menace. It's supposed to mean easy to use. But the fact is that today's microcomputer hardware and software are cumbersome, complex, and time-consuming to master. Each time an application is computerized, there's a new learning curve to go through—one that eats time as hungrily as a dirty disk eats data.

But—not to worry. An entire new market has sprung up around the human immunity to new technology.

"User friendly" has acquired the aura of a sugar-coated menace.

One devoted to teaching your employees about personal computing as quickly and effortlessly as possible—self-training products.

But some self-training aids work

and some don't. There are so many forms now available—audio cassettes, video cassettes, software disks, books, tutorials, interactive videodisks—which do you choose?

Ask Steve Carrier, director of The Hartford Insurance Group's (CT), learning center, and he'll tell you that interactive videodisks are best, "because the learner is actually working at the micro. With a straight videotape you may have 20 to 40 minutes of tape to look at before you get to the micro, but with the interactive video-

SELF-TRAINING PRODUCTS GUIDE

Training diskettes

Advanced Syst.
(312) 981-4260
Circle 246

American Training Int'l.
(213) 546-4725
Circle 247

CDEX
(415) 964-7600
Circle 248

CMA Micro Computer
(619) 365-9718
Circle 249

Comprehensive Software Support
(213) 318-2561
Circle 250

Computer Syst. Research
(203) 678-1212
Circle 251

Courseware
(714) 720-1824
Circle 252

Data Processing Educational
(614) 457-0577
Circle 253

Deltak
(312) 369-3000
Circle 254

Edutronics
(212) 512-2000
Circle 255

Individual Software
(415) 341-6116
Circle 256

Knoware
(617) 576-3821
Circle 257

MDBS/Application Development Products
(312) 981-9200
Circle 258

Micro Courseware
(415) 751-5223
Circle 259

Microvideo Learning Syst.
(212) 255-3108
Circle 260

Minnesota Educational Computing Consortium
(612) 481-3500
Circle 261

National Training Syst.
(213) 394-7685
Circle 262

QED Information Sciences
(617) 237-5656
Circle 263

Softech Microsyst.
(619) 451-1230
Circle 264

SRA
(312) 984-7000
Circle 265

Supersoft
(217) 359-2112
Circle 266

Text Sciences
(213) 452-9114
Circle 267

Videotapes

Advanced Syst.
(312) 981-4260
Circle 268

Computer Tech. Grp.
(312) 987-4000
Circle 269

Datawriter
(612) 471-0240
Circle 270

Deltak
(312) 369-3000
Circle 271

Dialogue Syst.
(212) 475-3900
Circle 272

Edutronics
(212) 512-2000
Circle 273

Embassy Home Entertainment
(213) 556-7609
Circle 274

Fliptrack Learning Syst.
(312) 790-1117
Circle 275

Learn-PC Video Syst.
(612) 546-0552
Circle 276

Microvideo Learning Syst.
(212) 255-3108
Circle 277

Peat, Marwick
(212) 872-6666
Circle 278

RCA/Columbia Pictures Home Video
(213) 954-4950
Circle 279

Soft Fuzzy Productions
(612) 927-5547
Circle 280

Softwarebanc
(617) 641-1241
Circle 281

Understanding Personal Computers
(415) 494-3737
Circle 282

LINE PRINTER COMPARISON CHART				
STANDARD FEATURES	CIE TERMINALS CI-300	CIE TERMINALS CI-600	DATAPRODUCTS B-300/600	PRINTRONIX P-300/600
LOWEST PRICE	X	X		
L Q PRINTING	X	X	X	
COMPRESSED PRINT	X	X		
GRAPHICS RESOLUTION				
60 x 72	X	X		X
120 x 72	X	X		X
200 x 144	X	X		
200 x 288		X		
BOLDFACE PRINTING	X	X		
SLANTED PRINTING	X	X		
CHAR. ENLARGEMENT	X	X		
INT'L CHARACTERS	X	X		

This printout proves we out-print the competition.

The chart above tells a telling story about our CI-300 and CI-600 Matrix Line Printers. Feature for feature, they out-print Dataproducts® and Printronix®—and at a lower cost. Our printers can accommodate many types of applications and computer systems. They provide both multimode

printing and graphics plotting. Graphics resolution on the CI-300 and CI-600 printers is the highest available on a line printer in their speed class, with excellent graphics quality for business, scientific and

barcode applications. Barcode applications are easily developed with optional graphics card.

Interfacing is not a problem either. RS232-C Serial, Centronics® and Dataproducts Parallel, and IBM-compatible interfaces accommodate most types of computer systems.

The printers' sturdy design and small number of moving parts make them extremely dependable, and easy to maintain as well.

The CI-300 and CI-600 are the Matrix Line Printers with the versatility built in. And they're available immediately. To find out more, just write or call CIE Terminals, 2505 McCabe Way, Irvine, CA 92714. (714) 660-1421.

Call toll-free 1-800-854-5959.

In California, call toll-free

1-800-432-3687.

®Dataproducts is a registered trademark of Dataproducts Corp.

Printronix is a registered trademark of Printronix Corp.

Centronics is a registered trademark of Centronix Data Computer Corp.

©1984 CIE Terminals.

CIE TERMINALS
A CITIUM ELECTRONICS COMPANY

CIRCLE 24



"See us at Comdex Booths 1730 & 1736"

PERSONAL COMPUTING

disk, no more than three minutes elapse before the student has to answer a question or choose what to do next," he says.

"It integrates attention and momentum. I've seen people here in the learning center whose eyes glaze over after looking at a tape for 30 minutes.

You know their retention powers have vanished. But the interactive video-disk demands their involvement."

Carrier concedes that people have various styles of learning, and that some methods are better for some than others. "But even taking this into consideration, the interactive video-

disk works best," he states.

At The Hartford, experience has proven that managers and executives don't want to go into training courses, but would rather learn in the privacy of their own offices. "Some are loath even to come into the learning center," he says. "Some of the clerical employees who were requesting courses were doing so for their managers. In the quiet of their offices, the managers would learn according to their own schedules." But one caveat: The self-training material had better be good. Managers go into self-study with high expectations of the quality of the material.

At The Hartford, motivation to learn about personal computing comes from the top, so there is less resistance to change than there might otherwise be from managers and their subordinates. "Sometimes we have an entire division in for training on Lotus 1-2-3, for example. A manager will organize a staff meeting, bring a video-cassette recorder into his department and give his staff the videotape that explains what the software is all about. He'll then allow his subordinates to schedule actual hands-on learning. And it works. They learn," states Carrier.

It's also interesting to note that at The Hartford, managers aren't the ones using 1-2-3—they have their clerical staffs do the work they want done on the package. "This actually works well," states Carrier, "because the manager isn't tied down to data entry-type tasks, and the clerical worker is thrilled about learning something new and using a package that is viewed as sophisticated and leading-edge.

The Hartford learning center was set up five years ago as a data-processing learning center. Today, everybody uses it and the center serves between 400 to 600 employees a month. The center's focus on personal-computing self-training aids is centered on interactive videodisks, which might also be right for your organization. If not, there's still a host of other offerings. With whichever you choose, you're on your way to bringing your department into the new work technology. □

Protection without Penalty

MultiSentry — the only system that blocks computer fraud by telephone without denying authorized callers quick access to your multiport computer.

MultiSentry gives you today's most sophisticated, effective defense against computer crime by telephone — and more.

Other systems offer protection that considerably restricts the convenience of authorized callers. MultiSentry's technology actually enhances that convenience.

These are some of MultiSentry's many exclusive features:

- MultiSentry can be accessed by all telephones: by Touchtone, or by rotary phones using TACT's patented voice-activated method — a remarkable ability.

- Up to 128 authorized callers can get a line simultaneously. Each call is responded to in less than a second. No waiting in a queue.

- MultiSentry is the only security system that activates an alarm mode.

- MultiSentry operates on the analog side of your modem. No callers hear a modem tone until they have been cleared for system access.

- MultiSentry offers three access choices: one direct connect and two call back modes.

Don't let another defenseless day go by. And when you buy protection, don't buy a system

that imposes a penalty of restricted convenience and ease of use. Look into MultiSentry.

Call for full details or a demonstration: 1-800-523-0103, Ext. 510. Your call will get through.



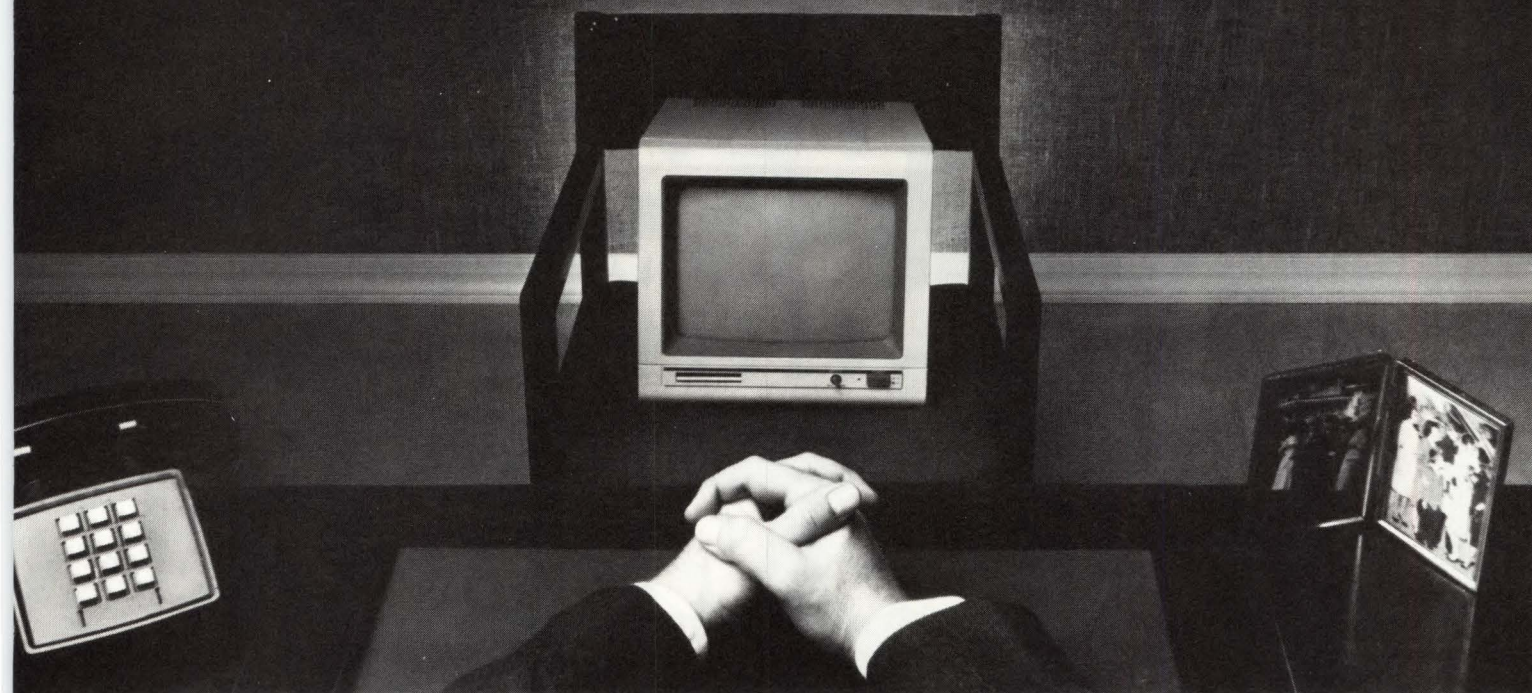
128 calls can be accommodated at the same time by the MultiSentry system.



Protection without Penalty

TACT TECHNOLOGY, 100 N. 20th Street, Philadelphia, PA 19103 • 215-569-1300

"HOW LONG DO YOU PLAN ON STAYING WITH OUR COMPANY?"



INTRODUCING THE BURROUGHS B25. THE MICRO COMPUTER THAT GROWS WITH YOUR BUSINESS.

Buying a computer is a lot like hiring an employee. You need one that can produce a lot now and even more in the future.

Take the B25. It's modular, so when you need more memory or storage, you simply snap on more modules.

Another feature that allows the B25

to grow with you is its ability to network. You just add workstations and people will be able to share the same data and memory at the same time.

You can also share peripherals—like printers. Which means several workstations can be linked to one printer so many people can use it.

What's more, the B25 has three operating systems (CP/M-86®, MS-DOS®, BTOS) so you can run the most popular software available today.

And, of course, the B25 is backed by Burroughs' worldwide service and support.

The Burroughs B25. You wouldn't

hire a person who couldn't grow with your business. Why buy a computer that can't?

© 1984 BURROUGHS CORPORATION

For more information about the B25, mail coupon or call toll free: **1-800-621-2020.**

Name/Title _____ CD-11

Company _____

Address _____

City _____

State _____ Zip _____

Telephone _____

Send To: Burroughs Corporation,
Dept. B25, P.O. Box 10934, Chicago, IL 60610

Burroughs

THE QUESTION ISN'T WHO'S BIGGER.
IT'S WHO'S BETTER.

**1200
Multiple
CPU Users
redefine
the word:**

S.I.S.S.Y

S.I.S.S.Y (sis'ē) *n.* A smart data processing professional who has used Single Image Software™ to solve multiple-CPU related problems.

Whether your company has ten mainframes or just brought in its second computer, a multi-processor configuration that shares DASD complicates your operation. S.I.S. is the high performance family of Single Image Software products that makes things simple again for everyone, from technical staff to operations people, right through to end users.

Transparently, S.I.S. products work across all systems to safeguard data integrity, speed up the accurate flow of information and dramatically streamline operations. S.I.S. helps bring your multi-system complex up to peak performance while saving time, money and valuable on-staff talent.

SUPER
MSI

Multiple-CPU's let you distribute workload between systems. Sharing DASD moves the jobs even faster. But what about the bottlenecks and job back-ups when hardware RESERVEs lock out entire devices? What are you doing to protect files from being clobbered when two users inadvertently modify the same dataset simultaneously?

If you're a S.I.S.S.Y, you give the problem to Super-MSI™, the Single Image Software Multiple Systems Integrity facility. Super-MSI eliminates RESERVE lockouts and insures data integrity in a shared DASD environment. With no complicated job scheduling, elaborate control schemes or extensive software changes, Super-MSI guarantees your data integrity and eliminates your problems.

MSM

Do you want to save your operators from the tedious and error-prone chore of manual tape monitoring? Prevent tape overwrites? Relieve your budget of duplicate hardware costs and your systems staff of job reruns?

As every S.I.S.S.Y knows, you solve the problems of sharing devices in your multi-system complex with MSM®.

MSM, the Single Image Software Multiple-Systems Manager, automatically manages the allocation of shared tape and mountable disk drives across all systems in your complex. With MSM, your operating system controls which system can use which tape drive right now so your operators can concentrate on more productive tasks.

GCD

In a multi-system environment, monitoring systems can become a real run-around with an operator going from console to console reading messages, issuing commands, and responding to replies.

GCD®, the Global Console Director, is another valuable and powerful S.I.S. aid that routes all system messages through one console, taking streams of console messages and blending them into one. GCD allows each individual console in your complex access to and information from all systems in the complex, saving operator time, reducing hardware costs and improving operations. As a S.I.S.S.Y, you may find your hardware savings exceeding the cost of Single Image Software!

Single Image Software gives shared DASD users multiple CPU power with the operational simplicity of a single unit system.

It's no wonder more and more shared DASD users worldwide are proud they've turned S.I.S.S.Y. It's why you should, too. For more information on Single Image Software, call 800-237-2057. (In Florida, call (813) 263-5011.) Or be a S.I.S.S.Y free by just calling today for a 30-day trial of Single Image Software in your data center.



cga
Software Products
Group

960 Holmdel Road, Holmdel, NJ 07733

TAPPING TOP PERFORMERS

With some languages, a clerk can hit 'enter' and send the computer on a search that costs more than a trip to London on the Concorde," says H.W. "Barry" Merrill, president of Merrill Consulting, Houston. According to Merrill, who is widely known for his applications of the SAS Institute's Statistical Analysis System (SAS) to performance evaluation, this is more than a hypothetical possibility. Citing one

case in which a database inquiry sent an IBM 3081 on a 16-hour hunt for one report and another case in which a database application developed over several months was abandoned when it ended up requiring as much computer time as the organization's entire batch load, Merrill suggests that those companies might have avoided their wild-goose chases if they'd kept up with trends in performance-evaluation techniques.

End-user computing and online transactions have changed the performance-evaluation game—changing the way it is played and raising the stakes at the same time. As the demands on computer resources increase, more than the bottleneck-busting and fine-tuning techniques of traditional performance evaluation will be required. These activities are still important, of course, and the tools

(Continued on page 54)

CAPACITY-MANAGEMENT SOFTWARE

Vendor	Package	Requirements	Price	Circle
Applied Data Research (201) 874-9000	ADR/Look	IBM 370, 30XX, 43XX, and PCMs under DOS/VS(E), MVS/370, and MVS XA	\$20,000 to \$43,500 (depending on options and environment)	511
BGS Syst. (617) 891-0000	Capture/MVS and Best/1-MVS	IBM 370, 43XX, and 30XX under MVS, MVS/SE, or MVS/SP	\$36,000	512
	Capture/VM and Best/1-VM	IBM 370, 43XX, and 30XX under VM/CMS	\$34,500	
	Crystal	Best/1	\$20,000	
	Info/Base	Capture	\$10,000	
	Best/1-SNA	IBM 370, 43XX, and 30XX under MVS/TSO, or VM/CMS	\$34,500	
BI Moyle Assoc. (612) 933-2885	BIMMontr	IBM systems under CICS/VS	\$54 per month \$540 per yr. \$1,080 per lease	513
Boole & Babbage (408) 735-9550	CMF/Monitor	IBM 370 and up under MVS	\$12,500	514
	CMF/PDB	Same systems	\$39,500	
	CMF/Model	Same systems	\$30,000	
	IMF/Workload Monitor	Same systems	\$13,000	
	IMF/Workload Analyzer	Same systems	\$22,000	
	IMF/Resource Monitor	Same systems	\$13,000	
	IMF/Resource Analyzer	Same systems	\$20,000	

THE 10 MOST IMPORTANT QUESTIONS YOU SHOULD ASK YOUR SOFTWARE VENDOR



"Many questions you would ask prospective application software vendors don't differentiate one vendor from another. The similarities between suppliers are not what's important — it's the differences that count. Here are ten questions you should ask prospective application software vendors before making your selection."

*—John C. Gable,
Vice President of
Corporate Systems and Technology
for American Software, Inc.*

	AMERICAN SOFTWARE	OTHERS
1. Can the application software you are considering be easily delivered in a variety of data processing environments (operating system, teleprocessing monitor, and data base) to permit easy migration and allow system software environmental independence?	Yes	?
2. Can the application software be delivered for VSAM and all popular data base management systems, rather than being tied to the application vendor's data base system — one which could be outmoded by new data base products developed by another vendor in this rapidly-changing high-technology industry?	Yes	?
3. Is the application software implemented using a "native" or direct approach to the operating system, teleprocessing monitor, and data base manager, without the inefficiency associated with "bridges" or the vendor dependencies of a "black box" approach?	Yes	?
4. Is the application product coded in an efficient, widely-used, and industry-standard language such as COBOL, rather than a vendor-dependent language unknown to the general data processing community?	Yes	?
5. Can the application product be "tailored" or streamlined to meet the specific functional and operational needs of a company through purchase of a basic package and selected optional features, thereby avoiding delivery of useless code?	Yes	?
6. Does the vendor retain a source version of each customer's uniquely tailored application software for emergency backup, problem determination, and client assistance?	Yes	?
7. Does the vendor have a broad, completely integrated line of application software which can be demonstrated on a single system instead of merely described?	Yes	?
8. Have all of the vendor's products been integrated by design and developed by a single organization, thus eliminating the need for inefficient interfaces and unknown "black boxes" to tie together unrelated or acquired applications?	Yes	?
9. Does the vendor clearly demonstrate a full commitment to the complex business of application software, rather than offer an incidental addition to its main product line?	Yes	?
10. Has the vendor been in the application software business a minimum of ten years with a successful track record of sustained profits and a strong financial posture?	Yes	?

If the answers to these ten questions make a difference to you, then let us explain the other important differences — the functional differences. Not all solutions are alike!

American Software:

The Power of the Right Decision.™



443 East Paces Ferry Road, Atlanta, Georgia 30305
(404) 261-4381

©1984 American Software, Inc.

Please send me a free copy of your "Software Vendor Checklist" to help us make the best decision. THE RIGHT DECISION.

NAME _____

TITLE _____

COMPANY _____

CITY _____

STATE _____

ZIP _____

APPLICATION PRODUCT INTEREST _____

HARDWARE/SOFTWARE ENVIRONMENT _____

CIRCLE 27



School-Financial
Management

Scientific Subroutine
Package

Sort/Merge

Strategic Profit Model

Structured Query Lan-
guage/Edit

Subscription Fulfillment
Trade Association

Supermarket System-Host
Support

Surgery Reporting
(Patient Care System)

Office Management
System

OFFICE/38 Text
Management

Online Membership
System

Operator Communica-
tion Control Facility

Order Entry and
Invoicing

Fastdraft System

File Transfer Program
(FTP)

Fixed Asset Accounting
and Control

Forecasting and Time
Series Analysis

FORTTRAN

Tape Library Control
System

Telephone Toll
Data Collection-Central

Teleprocessing Network
Simulator

The Information Facility
(TIF)

Thesaurus Retrieval
(STAIRS/VS)

Time Sharing Option
Extensions (TSO/E)

If none of these meets your needs

Whether your company is an industrial giant or a cottage industry, if you have a need for software, chances are IBM has a software solution.

After all, we've been writing computer software for more than 30 years.

Software for almost every industry and almost every kind of application. From manufacturers and banks to lawyers and doctors. For our largest computers and our smallest.

Some IBM software helps you to take

care of basic business needs, such as accounts receivable, inventory control or sales analysis.

Other more specialized systems focus on a particular industry. Do you manage a motel? Run a construction company? Or schedule a fleet of trucks? Ask us.

Most data professionals know IBM for our sophisticated system-level software. And high-productivity packages such as DB2, a full-function relational data base. And Information Center products that

W

Wideband Communication Program

Workstation Search Facility (WSF/38)

A

Advanced Communication Facility/VTAM (ACF/VTAM)

Adventures in Math

Apparel System-Order Allocation

Application Development Facility (ADF)

A Programming Language-2 (APL2)

Audio Distribution System

Auto Dealer Accounting

Automated Information Management Development

R

Railcar Location and Reporting System

Realtime Programming System

Remote Job Entry Facility

Remote Spooling Communication Subsystem (RSCS/SNA)

Resource Access Control Facility

Restaurant Management-Financial Management

Retrieval/36

E

Education Information System-Grading

Electronic Spread Sheet

Energy Management System

Engineering/Scientific Support System (E/S³)

Executive Data Link to IBM Personal Computer

Expandable Level Interactive Application System (ELIAS)

exactly, we have 2,876* more.

help computer users help themselves.

But what's more to the point is that we know the real meaning of software quality. And how to make our programs easy to learn and easy to use.

So when you need a software solution, look first at software available from IBM. It may save you the trouble of looking in 2,876 other places.

Start with the IBM Software Directory. For your free copy, please call 1 800 IBM-2468, Ext. 81. Or return

the coupon. Or call your IBM marketing representative.



IBM	11-84
DRM, Dept 31/81	
400 Parson's Pond Drive, Franklin Lakes, NJ 07417	
Please send me a free copy of the IBM Software Directory.	
Name _____	
Title _____	Phone _____
Company _____	
Address _____	
City _____	State _____ Zip _____

*Programs available as of 9/12/84.

STRICTLY SOFTWARE

(Continued from page 50)

and methods for carrying them out are well established. Resource-utilization enhancements to IBM's MVS operating system, for example, reduce much of the need for fine tuning by improving the way the system allocates main storage space to meet processing needs. Earlier versions did not manage resources efficiently, Merrill points out. As a result, many

users had to modify the operating system to keep it from swiping memory from one application to give it to a perhaps less important one.

With the tools for improving resource utilization already in place, the emphasis on evaluation can—and should—shift to service levels and performance planning. According to Merrill, this means that organizations should pay closer attention to per-

formance considerations during application development and consider past response times and data when projecting future needs.

These new requirements pose challenges for the evaluator. Most online and end-user computing systems provide much less performance data than established batch systems. And the tools for collecting and analyzing

(Continued on page 58)

CAPACITY-MANAGEMENT SOFTWARE

Vendor	Package	Requirements	Price	Circle
Burroughs (313) 972-7000	BAR (Burroughs Activity Reporting)	B5000-B7900, A9	\$2,723 to \$3,420	515
California Software (213) 829-0361	Netman	IBM 370, 43XX, 30XX, and PCMs	\$19,500 to \$37,500	516
Candle (213) 207-1400	Omegamon	IBM mainframes and PCMs under MVS or MVS/XA	\$23,500	517
	Omegamon/CICS	Same systems under MVS, MVS/XA, or DOS/VSE	\$19,500/MVS \$7,500/DOS	
Computer Assoc. Int'l. (213) 333-6700	CA-Jasper	IBM mainframes and PCMs	\$14,000/DOS \$17,000/OS	518
	CA-Jasper/XMF	Same systems	\$6,000/DOS \$13,000/OS	
	CA-Jasper/CICS	Same systems	\$5,500/DOS \$8,500/OS	
	CA-Jasper/IMS	Same systems under OS only	\$12,000	
	CA-Jars/OS	IBM 370, 30XX, 43XX, and PCMs under MVS, SVS, VS(E), or VS1	\$12,000	
	CA-Jars/DOS	Same systems	\$8,200	
	CA-Jars/CICS	IBM 370, 30XX, 43XX, and PCMs under OS or DOS	\$8,500/OS \$6,500/DOS	
	CA-Jars/CMS	Same systems	\$10,000	
Datametrics Syst. (703) 385-8677	Torch PMS	Sperry 1100 under Exec Level 36 and higher	\$24,750	519
Duquesne Syst. (412) 323-2600	QCM Performance Monitor	IBM 370, 30XX, and 43XX under MVS	\$14,000	520
	QCM/SPM	Same systems	\$6,000	
	QCM/SPI	Same systems	\$6,000	
	QCM/PDB	Same systems	\$6,000	
	QCM/JAB	Same systems	\$6,000	
Gejac (301) 864-3700	SRF RSX-11M or RSX-11M Plus	DEC PDP-11 under	\$3,995 to \$4,495	521
Goal Syst. Int'l. (614) 888-1775	Explore/XP	IBM 370, 43XX, and 30XX under DOS/VS(E)	\$5,600	522
	Explore/VM	Systems under VM	\$5,600	

*What do top
computer professionals
usually say when we
tell them about our unique,
completely portable
software?*

"Prove it!"

And actually we are not surprised. After all it took us 5 years to figure out how to do it. And now that we've gotten over that hurdle our biggest problem has been convincing people that Tominy's* completely portable application development system really works.

Tominy allows you to develop completely portable application programs which can be used without modification on micros as well as mainframes and everything in between. That means no more costly and unproductive time spent in developing special systems to fit individual computers. With Tominy one size fits all.

We have such confidence in the system that we offer it with a 90 day no questions asked money back guarantee.

Because it is not possible to tell you here everything our portable application development system does, we have ready to send you a kit that not only offers detailed information on how the system operates but also shows how it is presently being used to increase productivity and reduce costs in over 1000 installations nationwide, including 25 of the Fortune 500 companies. It's yours free for the asking if you send in the coupon or call (513) 984-6605.

We are sure that after reading it Tominy will make a believer out of you too.



Tominy
Once is finally enough.

- ☐ I'd like to be convinced.
Send me your information kit.
- ☐ Have a representative call.

NAME (PLEASE PRINT)

TITLE

COMPANY

ADDRESS

CITY

STATE

ZIP

()

TELEPHONE

02-CD-11-4

Mail to: **TOMINY Inc.**
Dept. B
4221 Malsbary Rd., Bld. #1
Cincinnati, Ohio 45242

*Tominy's completely portable application development system is presently available for IBM's PC, System/34, System/36, Series/1, 43XX, 30XX, 370xxx; DEC VAX/VMS systems, UNIX and XENIX operating systems

TSO/MON MEASURES, MONITORS, MANAGES TSO

Users tell the story.
Researchers verify it.
TSO/MON is vital to the effective management of the volatile, and expensive, TSO environment.

According to *Auerbach Computer Technology Reports*, "Response times will degrade and/or resource costs will skyrocket unless a means is found to assure that TSO will be used in an efficient and productive manner."

A Systems Analyst at a leading Midwestern insurance company, underscores this view of TSO: "TSO is a good learning tool, but there is a natural tendency to misuse it, play with it, and perhaps play games on the system. TSO/MON lets us monitor that."

"JUST THE FACTS, MA'AM."

TSO/MON tells you who TSO users are and what they're doing. It allows you to forecast their future needs. And it does it from the network level right down to the individual terminal.

Yes, TSO/MON can assist you in that often-neglected area of TSO management—the performance of the TSO network. It allows you to monitor both general TSO network activity and TSO network use by specific terminal. By profiling this activity for an extended period, it lets you identify network trends.

With TSO/MON, you can also find out who's using ISPF and for what, which panels are being used and how often, which users are accessing sensitive applications, and what programs and CLISTs are being run under ISPF.

In short, TSO/MON provides the data and the reports that allow you to practice the three key management approaches to the control of TSO: daily review, problem tracking, and ongoing evaluation.

"LET THERE BE LIGHT!"

In any organization, the importance of communication by and among managers is essential to success. TSO/MON makes such communication in a TSO

“As a systematic and readily understood control system for tracking the performance, load, and user activity of the TSO facility, TSO/MON fills a distinct need for those installations that are operating, or are planning to operate, TSO.”

—Auerbach Computer Technology Reports

environment as easy as reading a one-page summary.

You see, TSO/MON maintains a file of historical TSO usage and performance data that can be reported against system and user service objectives. Then, it provides a one-page management summary as one of its standard reports.

At an East Coast utility, the Manager of the Operations Technical Support Division asserts: "As a manager responsible for providing quick, accurate computer service to... TSO users, it is important to me to maintain good communication with other managers. Throughout our use of TSO/MON, I've been able to do this and keep those users happy."

A Project Systems Analyst at a major airlines says of the director of his department: "He sees the backup TSO/MON gives him in terms of dealing with both his management and his users—there's no way to argue with someone who has hard data in hand."

ASK OUR USERS ABOUT TSO/MON!

And ask us about the new TSO/MON ONLINE—now available for realtime performance monitoring.

 TSO/MON at Arkla Gas  Morino Associates, Inc.	 TSO/MON at Lilco  Morino Associates, Inc.	 TSO/MON at Liquid Air Corporation  Morino Associates, Inc.	 TSO/MON at Mellon Bank  Morino Associates, Inc.	 TSO/MON at Northwestern Mutual Life  Morino Associates, Inc.	 TSO/MON at Pacific Power & Light  Morino Associates, Inc.	 TSO/MON at Trans World Airlines  Morino Associates, Inc.
---	---	--	---	--	---	--

TSO/MON Promotes Effective TSO Management

1. Daily review of service and performance
 - Is response time on target?
 - When do problems occur?
2. Problem tracking
 - Is it the user?
 - Is it the system?
3. Ongoing evaluation
 - What are the response trends?
 - What are the workload trends?
 - What are the system availability trends?

TSO/MON Monitors ISPF Problems

- Inadequate application system dialog design
- Poorly-related panel structure and switching
- Ineffective use of ISPF facilities
- Improper language used for the dialog requirement
- Inefficient CLISTs and Dialog Manager programs
- Unauthorized use of sensitive facilities
- Ineffectively-defined table structures for retrieval
- Inefficient use of ISPF edit facilities

"HEAD'EM OFF AT THE PASS!"

Once you have the hard data in hand, you'll be able to balance resources with workload, set service level agreements, monitor unauthorized use, establish equitable charges—and plan for the future. You'll be controlling TSO, rather than being controlled by it.

As the Manager of Computer Technical Services for a West Coast utility observes: "Part of being a good manager involves taking action to head off a bad situation. TSO/MON has made it possible to do just that."

TSO/MON Manages Network Use

- Quantifies TSO network capacity and usage growth
- Measures the results of TSO network tuning
- Identifies excessive TSO network traffic by peak load
- Establishes a TSO network usage profile
- Detects wide fluctuations in TSO network load
- Isolates unused communication paths or TSO terminals
- Allows you to optimize host/NCP/cluster buffer sizes
- Establishes a base for evaluating TSO network performance
- Identifies specific TSO terminal IDs ranked by resources consumed for selected category
- Isolates any problem time period, the TSO terminal IDs within that period, and the resources consumed by each terminal identified

Another user, the Manager of Technical Support at a Southern gas utility, agrees: "With TSO/MON, we can watch things develop and manage pro-actively rather than reactively."

"GIVE ME THE BOTTOM LINE."

Datapro Research Corporation reports that users who responded to its independent survey "unanimously agreed that TSO/MON saves human resources." Story after user story substantiates this fact. Many of them tell of dollar savings as well.

If you would like to read more about the experiences of TSO/MON users, we'll be pleased to send you any or all of their stories. You'll understand, then, why more than 600 MVS and MVS/XA sites throughout the world are taking advantage of TSO/MON's management capabilities.

Before your installation's TSO benefits are eroded, before its TSO costs are escalated out-of-sight, learn about TSO/MON. Call or write *today*.



MORINO ASSOCIATES

8615 Westwood Center Drive • Vienna, Virginia 22180 • U.S.A. • Tel: (703) 734-9494
103 St. Peter's Street • St. Albans • Hertfordshire • England AL1 3EN • Tel: St. Alban's (0727) 37464
Lindemannstrasse 47 • D-4000 Dusseldorf 1 • Federal Republic of Germany • Tel: (0211) 6790034

STRICTLY SOFTWARE

(Continued from page 54)

that data are generally less sophisticated. Adequate performance data is available from Customer Information Control System (CICS), IBM's on-line utility. And tools such as TSO/Mon from Morino Associates will extract useful data from the Time Sharing Option (TSO) under IBM's MVS operating system. But IBM's VM operating system, used widely with the end-user oriented Conversational Monitor System (CMS) from IBM, does not provide easy access to monitoring information.

The major database-management systems (DBMSs) also offer little information about the transactions under their control. Packages, such as Boole & Babbage's IMS System Manager, will go into IBM's Inventory Management System (IMS) to tap performance information. But monitors for other databases are still to come. Performance problems with database applications can be eliminated during development if evaluation is kept in mind as a long-term goal. However this is not easily accomplished. Jeffrey Mohr, technical director of Advanced Technologies Inc., a Washington-based consultancy, sums up the difficulty: "The operating system hides the hard-

ware; the DBMS hides the operating system; the screen generators and query languages hide the DBMS," he says. "The developers are so many software layers removed from the machine that it's impossible to know how their decisions will affect performance."

Developers can predict performance fairly accurately, according to Mohr. If, for example, they are aiming for a one-second response time for a particular query that involves an edit, a data fetch, calculation, and formatting, they can estimate and test the time required for each operation. Developers should then be able to extrapolate how much time each function will take in their other applications, and should be able to see any deviation between their expectations and reality.

This type of analysis requires information about how the existing system has been performing. In addition, tools for modeling the new application and its effects on existing ones are helpful. CMF/Workload Planner from Boole & Babbage and BGS Systems' Best 1 and Crystal provide this kind of help. Crystal includes libraries listing IMS and CICS performance characteristics that developers can factor into their predictions.

With or without tools, performance analyses during development require first that performance analysts and developers talk with one another. In many installations, Mohr says, they tend not to. He contends that applications developers should take performance into consideration and that performance analysts should involve themselves in applications projects early on.

The performance analyst must also communicate with users in order to accurately assess the demands that will be placed on a system. This contact should be ongoing—from the start of a project until after its completion. The analyst should track a range of user considerations, including changes in the economy, reorganization of the business, and a host of other variables that affect system needs.

These recommendations assume, of course, that an organization has performance analysts, which may not be the case. According to J. William Mullin, senior manager at Peat, Marwick, Mitchell and Co.'s advanced-technology group in Houston, there is a shortage of qualified performance analysts. "We have the ability to measure just about any performance

(Continued on page 62)

MONITORING VM

The VM operating system, which allows users to run a variety of guest operating systems as "virtual machines" on the same computer, presents a number of advantages for interactive processing. For example, it allows the user-oriented CMS to run side by side development and batch systems. At the same time, VM poses special performance-evaluation problems. For one, resources must be allocated among the guest systems and the host and the performance each system must be evaluated at the same time. For another, VM itself provides fairly skimpy performance data.

In October, Goal Systems International released Explore/VM, which allows a dp center to monitor

a variety of performance criteria in real time and to collect the data for batch reports and long-term analyses. The package's real-time facilities provide the ability to examine central-processor utilization, paging rates, and several critical performance variables. A "warn" facility allows staff to set exception limits; program-corrective action is taken automatically should they be exceeded. Explore/VM might automatically log off all CMS users who have been idle for a set period, for example.

Batch reports provide both chronologies and averages of system activities. Several variables can be plotted on the same graph for easy comparison. The graphs can cover a

range of time increments—from minute-by-minute to month-by-month. In addition, a "flashback" feature allows the analyst to review activity as if it were taking place in real time.

A user can customize Explore/VM's monitoring, reporting, and warn facilities by writing procedures with the package's own commands and with VM's Exec2 language.

Explore/VM is the first performance-evaluation tool for VM to provide such a range of real-time and batch facilities. As VM gains wider use, more packages are likely to follow. Candle Corp., which produces Omegamon and Omegamon/CICS monitors, is expected to release a VM product next month.

How to tell if you really need an on-line application development system.

To reduce backlogs without adding specialized Command Level COBOL resources... more and more DP managers are installing on-line application development systems. Do you need one? And if so, which one(s) do you need? You'll learn the answers by using our grid.

The Resource Management Grid. It defines your unique needs.

Oxford Software developed the grid based on our experience with more than 2,000 CICS users. In matrix form, it expresses the two basic criteria that affect the management of every on-line application project... Delivery Time Concerns and Performance Concerns. Both factors are vital to consider... because, without exception, every approach to on-line application development asks you to compromise somewhat between them.

How to use the grid.

Using our free kit, define and then plot on the grid your realistic concerns about every on-line application project on your work list. The composite plot will graphically define your application development system needs and your overall management challenge.

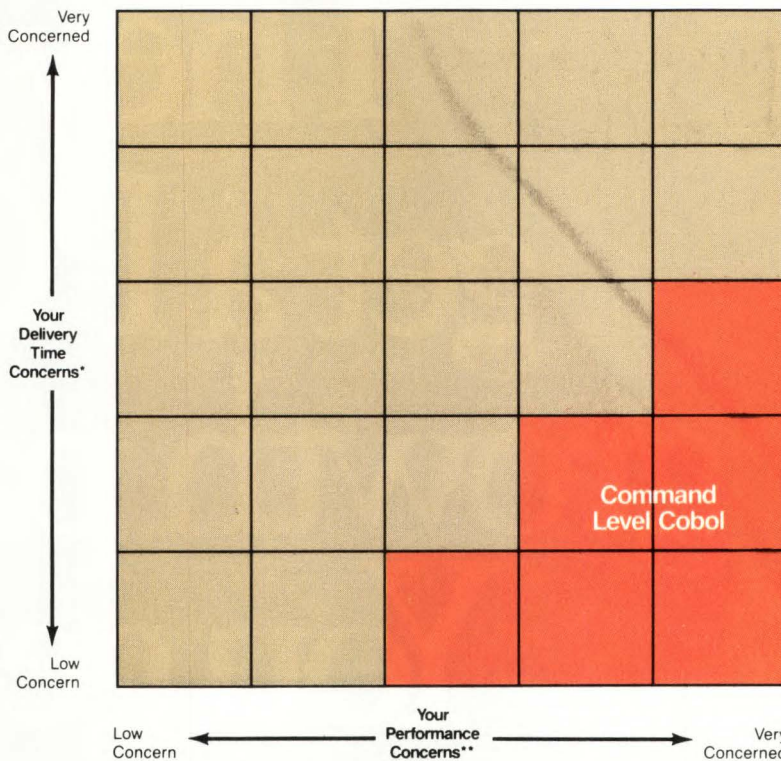
How to tell if you need an application development system.

If many of your plot points cluster outside of the Command Level COBOL "strength area" (shown in orange), you'll benefit tremendously by using an on-line application development system. And, by analyzing the patterns of your plot points, you can tell which on-line application development system(s) will meet your needs best.

Call or write for your Grid Kit.

Our Grid Kit will help you define your own unique parameters... and with overlays it will show you where each of our on-line application development systems perform best. It illustrates and compares two distinct approaches to on-line applications development—

The Application Development Resource Management Grid:



* A Function of—Number of programmers, Number of applications, Skills available, Due dates.

** A Function of—Machine resource availability, Application complexity, Transaction volume.

1. UFO... the fourth generation solution.

More than 1,700 UFO users can tell you it's the fastest way to develop and maintain on-line applications.

2. UFO/COBOL... the COBOL solution.

Now all your programmers who write in ANSI/COBOL can develop on-line applications. It's fast, easy to learn, and its machine productivity is truly exceptional.

One (or both) of these systems could be the best answer to your application development needs. Call or write for details.

**Call OXFORD today
(800) 631-1615**

OXFORD SOFTWARE CORPORATION
174 BOULEVARD/HASBROUCK HEIGHTS, NJ 07604/201 288-1515

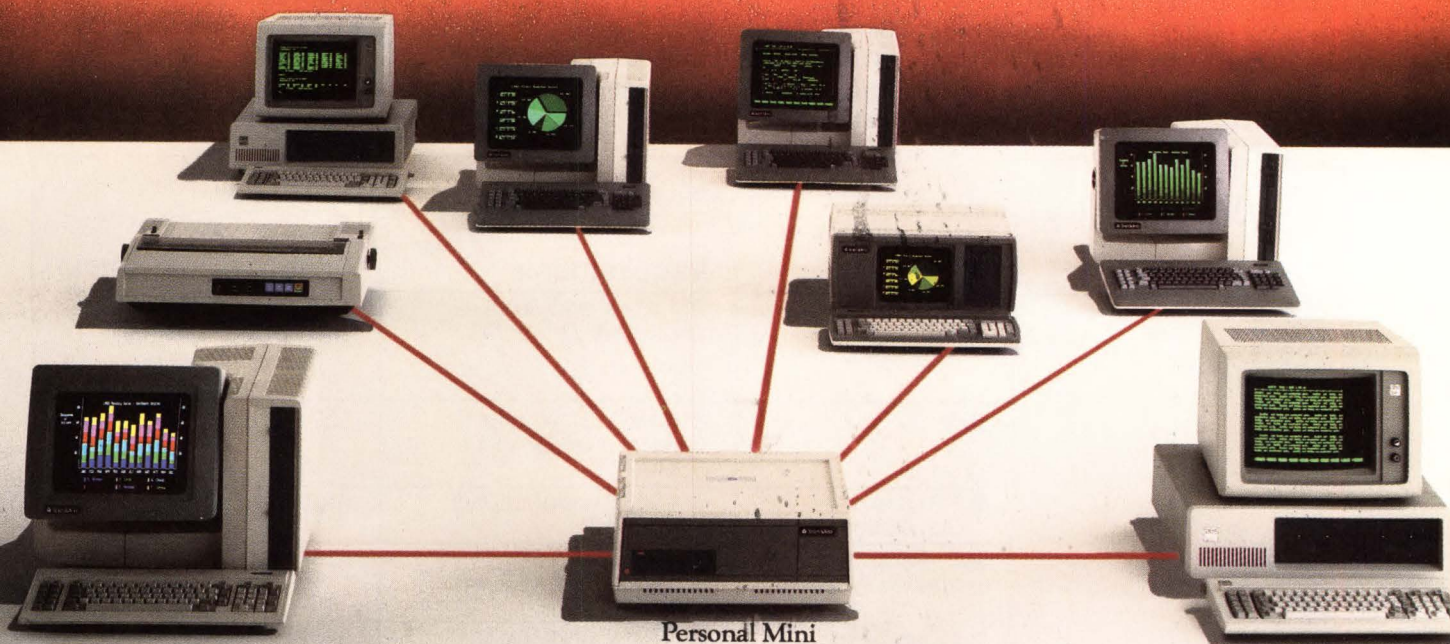
- ☐ Please send me your Grid Kit.
☐ I'd like to schedule a ☐ UFO and/or ☐ UFO/COBOL demo. Please call to set a date.

Name _____
Title _____
Company _____
Address _____
City _____
State/Prov _____ Zip/Code _____
Phone () _____ CD11/84

They
get a PC
growth path.
You get
the control.

See us at
COMDEX Booth 1520

Introducing the TeleVideo Personal Mini.



Personal Mini

The growth path for everyone.

People in your organization realized they outgrew their personal computers the first time they tried to share information or work together on a task. Standard PCs simply fall short of fulfilling their total business needs. Until now.

Until the TeleVideo® Personal Mini.™ It's the next rational step in your PC growth path. Just plug into it and grow.

Increases power and productivity.

It's the simple way to dramatically increase computing power and group productivity without sacrificing system manageability. It's the low cost way to network IBM®, TeleVideo, and compatible PCs, as well as the new IBM PC AT.

Runs PC, multiuser and mini software.

Its powerful operating system easily supports popular PC software, mini-computer programs and especially, multiuser applications development using such languages as RM/COBOL™ or Micro Focus™ COBOL. Without speed or performance tradeoffs. And with its 3270 emulation, any PC can talk to your mainframe. So your original investments in software, hardware and computer training can only become more useful.

Improves system management.

We also paid special attention to DP

concerns. For reliability. System security. Total system manageability. And of course, future growth.

The new Personal Mini. The first PC growth path no one will outgrow. Ever.

Arrange to see it for yourself. Call toll free, 800-521-4897. In California, call 800-821-3774. Ask for operator 10.

Regional Sales Offices: Northwest (408) 745-7760, Southwest (714) 476-0244, South-central (214) 258-6776, Midwest (312) 397-5400, Southeast (404) 447-1231, Mid-Atlantic (703) 556-7764, Northeast (617) 890-3282, East (516) 496-4777, Rocky Mountain (408) 745-7760.



Computers
TeleVideo Systems, Inc.

The TeleVideo Personal Mini. The first PC compatible multiuser system.

IBM is a registered trademark of International Business Machines. RM/COBOL is a trademark of Ryan-McFarland Corporation. Micro Focus is a trademark of Micro Focus Ltd.

STRICTLY SOFTWARE

(Continued from page 58)

characteristics we want," Mullin contends. "What we need are employees to exercise the human judgment that is the basis of evaluation."

Mullin argues that many data-processing shops are "monitor poor," wasting computer resources on measurements that are not absolutely necessary. To reduce this problem, he notes, one trend in performance evaluation is toward having the hardware absorb more of the measurement function. Under IBM's MVS/XA operating system, for example, the machine not only counts inputs and outputs, but times them. As hardware takes over more monitoring chores,

the overhead in performance-data collection will go down and the amount of data collected will increase. But what is to be done with the mass of performance data?

Contributing to the problem is the fact that many performance monitors were developed independently of each other and, therefore, present their data in different formats. Many departments, particularly those running under MVS, have found SAS helpful in organizing the information from their set of monitoring tools. Barry Merrill's MXG package, sold by the SAS Institute, helps translate performance data into the SAS format. His book, *Merrill's Expanded*

Guide to Computer Performance Evaluation Using the SAS System (SAS Institute Inc., 1984), describes the types of reports and analyses users might set up with SAS. The MVS Integrated Control System (MICS) from Morino Associates also translates monitoring data into SAS and provides a collection of reports.

Even with these kinds of tools, setting up an effective evaluation program requires judgment. Analysts must understand their organization's data-processing needs and resources before they can decide which performance characteristics to measure. They must know which data they need for system tuning and ca-

CAPACITY-MANAGEMENT SOFTWARE

Vendor	Package	Requirements	Price	Circle
IBM (contact local sales office)	CICS/VS Performance Analyzer	IBM 43XX and 30XX under DOS/VS or OS	\$163 per month (DOS/VS) \$20 per month (OS)	523
	SMF	IBM 4300, 308X, and System/3 under VS1 or MVS	\$29 per month	
	SMF Trace Correlation Aid	IBM 308X under OS/VS or MVS/XA	\$125 per month	
	SMF Geographic Analysis Program	IBM 43XX and 30XX under OS/VS, MFT, or MVT	\$200 per month	
	SMF Job Data Compression Aid	IBM 43XX and 30XX under OS, OS/VS, or MVS/XA	\$142 per month	
	RMF Version 2	IBM 4381 and 30XX under MVS	\$380 per month	
	RMF Version 3	IBM 4381 and 308X under MVS/XA	\$700 per month \$2,100 (license)	
Information Syst. Consultants (602) 864-0014	Load Generation System II	Honeywell Level 66/DPS, DPS8 under GCOS III	\$11,000	524
Macro 4 (201) 895-4800	System Accounting	IBM 370, 43XX, 30XX, and PCMs under DOS/VSE	\$200 to \$450 per month	525
McAuto (314) 232-0232	IMS/Maps	IBM mainframes and PCMs under MVS	\$20,000	526
Morino Assoc. (703) 734-9494	MICS	IBM 370, 30XX, and 43XX under MVS or MVS/XA	\$28,600 (license) \$8,800 (renewal fee)	527
	TSO/MON	Same systems	\$16,700 (license) \$2,000 (renewal fee)	
	MICS-Basic Capacity Planning		\$6,000 (license) \$2,000 (renewal fee)	

For all your graphics needs— Continental Resources.



Digital Equipment VT241



Digital Engineering HiScan Graphics



Selanar HiREZ 100

If you're looking for **quality, high-resolution graphics**, you need Continental Resources. We offer the industry's leading price/performance products — plus more experience in applying graphics to business than anyone else. Our graphics experts know graphics inside and out and will provide all the help you need — before **and** after your purchase.

With Continental you get it all: monochrome and color terminals, interlaced and non-interlaced models, resolutions up to 1034 × 768, DEC and Tektronix protocol emulations — plus plug compatibility with a variety of printers, plotters, and other devices.

And selection has never been better. If you're looking for immediate delivery on an extremely high-resolution terminal, the **HiREZ 100™** from Selanar is for you. **Digital Engineering's HiScan Graphics™** terminal, housed in a VT220, is the answer when you need exceptional speed and reliability. The **VT240** and

VT241™ from Digital Equipment provide your DEC system with full support of DEC ReGIS and VT220 protocols. And, if economy is a top priority, you can't go wrong with the **GO-140™** from GraphOn.

With any of these leading graphics terminals from Continental Resources, you're only seconds away from quality graphics for all your application needs.

*HiREZ 100 is a trademark of Selanar Corporation.

*HiScan Graphics is a trademark of Digital Engineering, Inc.

*VT240/VT241 are trademarks of Digital Equipment Corporation.

*GO-140 is a trademark of GraphOn.

WE ALSO OFFER
High-resolution upgrade boards
from Digital Engineering and
Selanar to provide 4010/4014
emulation of all DEC terminals
and many others.
CALL FOR DETAILS

We deliver what you need.



CONTINENTAL RESOURCES, INC.

Corporate Headquarters
175 Middlesex Turnpike
Bedford, MA 01730

Boston Area
(617) 275-0850
Chicago Area
(312) 860-5991

New York, NY
(212) 695-3206
**Baltimore-
Washington DC**
(301) 948-4310

Northern NJ Area
(201) 654-6900
San Francisco Area
(408) 727-9870

Philadelphia Area
(609) 234-5100
Los Angeles Area
(213) 638-0454

STRICTLY SOFTWARE

capacity planning. And they must take care to gather the performance information upper management needs to make decisions and to structure it in a format senior managers can understand.

Barry Merrill agrees. The primary benefit of performance evaluation, he asserts, is that it allows the data center to work toward objectives. He adds that the parameters the data center

sets to measure a particular aspect of performance—such as the life cycle of a job—must exclude indirect or extraneous influences so as not to yield misleading results. For example, if an analyst using IBM's TSO considers job turnaround time to begin when a job is requested and end when it is purged from the system—despite the fact that purging occurs only when the user logs on again to retrieve output at

his or her own convenience—the analyst's measure has more to do with user habit than with dp service. A more pertinent measure, Merrill says, is the time between job request and initiation.

To establish performance criteria that serve business, the performance analyst must be in contact with the managers who determine business

(Continued on page 68)

CAPACITY-MANAGEMENT SOFTWARE

Vendor	Package	Requirements	Price	Circle
Pace Applied Tech. (703) 369-3200	Komand/DAS (Data Activity System)	IBM 4300 and up under OS/MVS or VS1	\$16,000	528
	Komand/RBS (Resource Billing System)	Same systems	\$6,000	
	Komand/DIS (Data Inquiry System)	Same systems	\$5,000	
	Komand/DAMS (Direct Access Measurement System)	Same systems	\$9,000	
	Komand/OLC (Online Costing)	Same systems	\$3,000	
	Komand/CCI (CICS Charging Interface)	Same systems	\$2,500	
	Komand/ICI (IMS Charging Interface)	Same systems	\$2,500	
	Komand/VMCI (VM Charging Interface)	Same systems	\$2,500	
	Komand/OBM (Online Budget Management)	Same systems	\$5,000	
	Komand/VCI (Universal Charging Interface)	Same systems	\$2,500	
Programart (617) 661-3020	Strobe	IBM 370, 43XX, and 30XX under DOS, OS, MVS, VS1, SVS, MVT, MFT, DOS/VSE, DOS/VS, MVS/XA, or SSX/VSE	\$9,500 to \$25,000	529
Raxco (301) 258-2620	Rabbit-2	DEC under VAX/VMS, RSTS, or RSX-11M(301)	\$2,500	530
	Rabbit-3	Same systems	\$2,000	
SAS Institute (919) 467-8000	SAS	IBM 370, 30XX, and 43XX under OS, DOS-DSE, SSX, or PM-CMS	\$7,900 (license)	531
	MXG	Same system	\$700 per year	

TURN KEY+™

The Complete High-Speed, On-Line Data Entry System.

"High-speed, on-line data entry." In mainframe environments, that can be a self-cancelling phrase.

So can "immediate response." But these are the capabilities that today's MIS departments must have. At least in order to grow.

Announcing KeyPlus.™ The highspeed, on-line data entry system. Designed to run on IBM and compatible mainframes—directly under VTAM protocols. And that gives you faster response than with any other data entry system.

KeyPlus combines all the benefits of offline data entry and on-line applications programs—with none of the disadvantages. More importantly, it offers fast, direct response to and from data entry terminals. KeyPlus automatically checks all

data at input. Increased editing and verification features reduce the need to re-run or re-enter data.

And extensive HELP screens—with simple English commands instead of cryptic warning codes—decrease the amount of time required to troubleshoot data entry errors.

Because KeyPlus supports local and remote IBM or compatible terminals, expanding outside of the data processing department is easy.

So if you're suffering from "terminal bottleneck," turn to KeyPlus. For more information, call or write The Bridge today at (415) 697-2730, 199 California Dr., Millbrae, CA 94030. We've got the key to data entry performance. Plus a whole lot more.

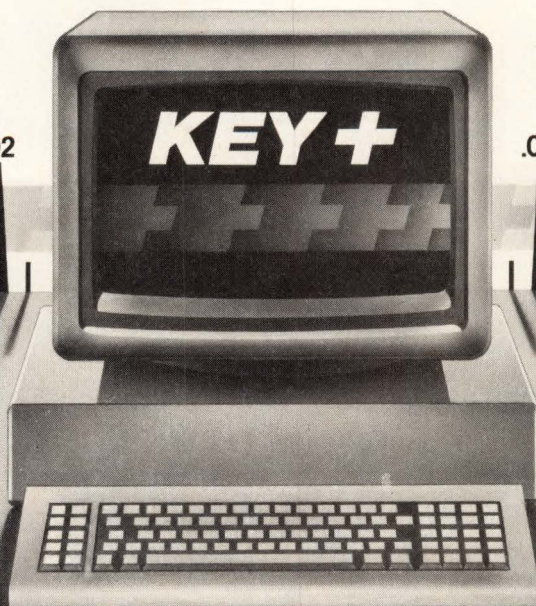


PRESS
ENTER

.00SEC

.01

.02



.08

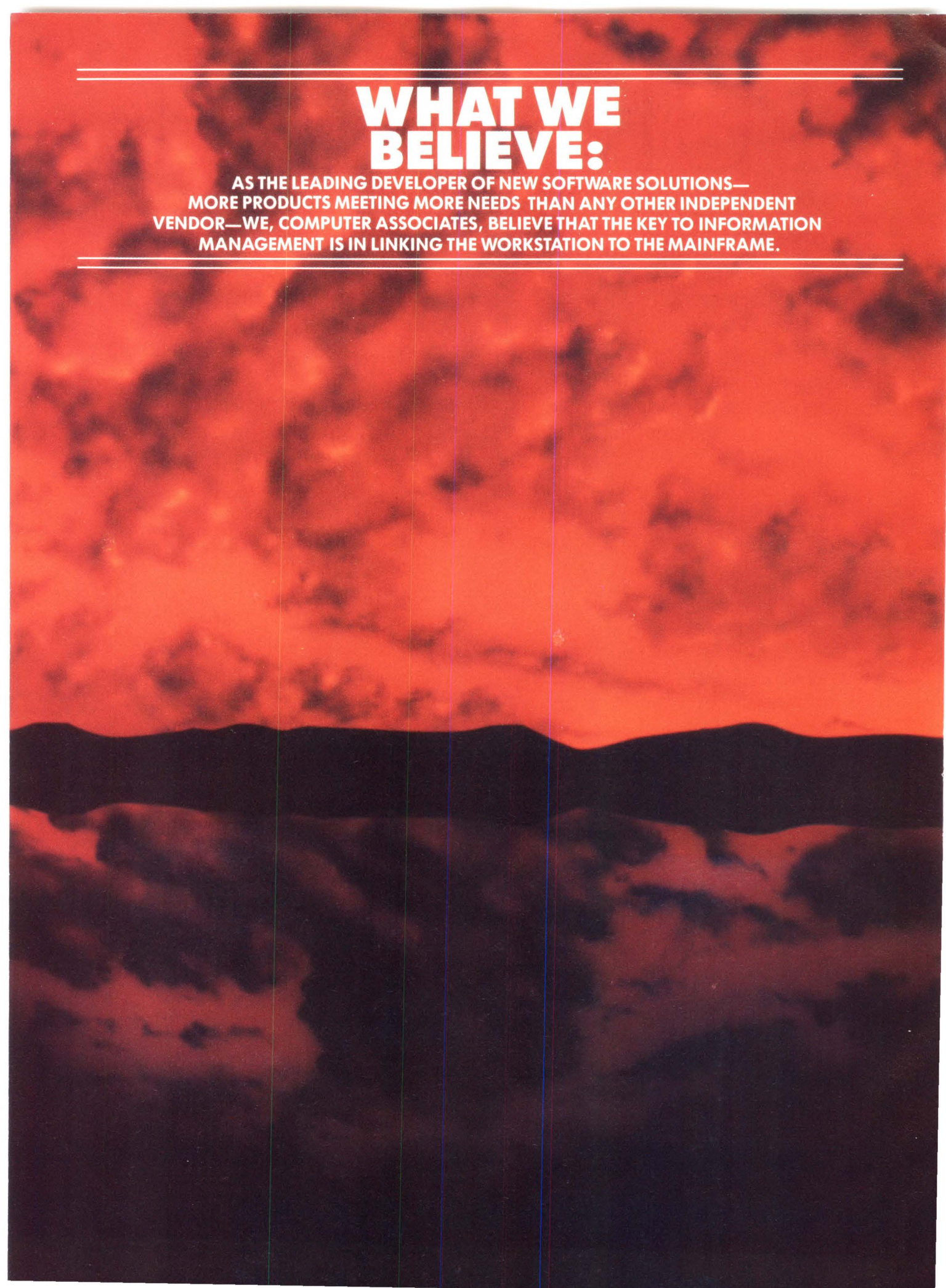
.09

TERMINAL
READY

.10SEC

WHAT WE BELIEVE:

AS THE LEADING DEVELOPER OF NEW SOFTWARE SOLUTIONS—
MORE PRODUCTS MEETING MORE NEEDS THAN ANY OTHER INDEPENDENT
VENDOR—WE, COMPUTER ASSOCIATES, BELIEVE THAT THE KEY TO INFORMATION
MANAGEMENT IS IN LINKING THE WORKSTATION TO THE MAINFRAME.



CA-EXECUTIVE.TM LINKING THE WORKSTATION TO THE MAINFRAME TO CREATE THE MOST POWERFUL INFORMATION MANAGEMENT TOOL THE WORLD HAS EVER SEEN.

For programmers and end users—CA-EXECUTIVE is the most versatile and complete IBM micro/mainframe software system ever created. It's the workstation that works—and works better—for everyone!

CA-EXECUTIVE has a powerful, secure, selective and intelligent link to your IBM mainframe—that can upload, download and reformat all VSAM, sequential and CMS files, as well as perform terminal emulation functions.

No other micro-mainframe product can do so many things so well or so efficiently. The CA-EXECUTIVE window manager expands an ordinary PC into a multi-tasking workstation. The relational DBMS, screen painter, and editor allow programmers to customize end user applications. End user needs are addressed through DBMS, word processing, spreadsheet, graphics, and tutorials. Plus, there's mainframe-style support services and an open-ended PC DOS window to run thousands of additional programs.

CA-EXECUTIVE—extending mainframe power and facilities to your PC's. To put this system to work for you, just call 800-645-3003 or (in NY) 516-333-6700 and ask for Dana Williams. Link up with Computer Associates and link your data center to the future.



**SuperCalc[®] 3
Release 2.0**
World's most powerful
spreadsheet now
available as
CA-EXECUTIVE
option.



COMPUTER ASSOCIATES

Software Leadership Through Excellence

CIRCLE 34

STRICTLY SOFTWARE

(Continued from page 64)

needs. Which departments are growing and at what rates? What effects do an increase or decrease in the number of orders that can be processed each day have on the corporation's income?

Once performance objectives have been set, an installation should assess

how well they are being met. A new tool from Morino Associates, the Critical Index Monitor, will help an MVS shop track its performance against objectives, analyze the cause of any deficiencies, and issue reports on data processing's status.

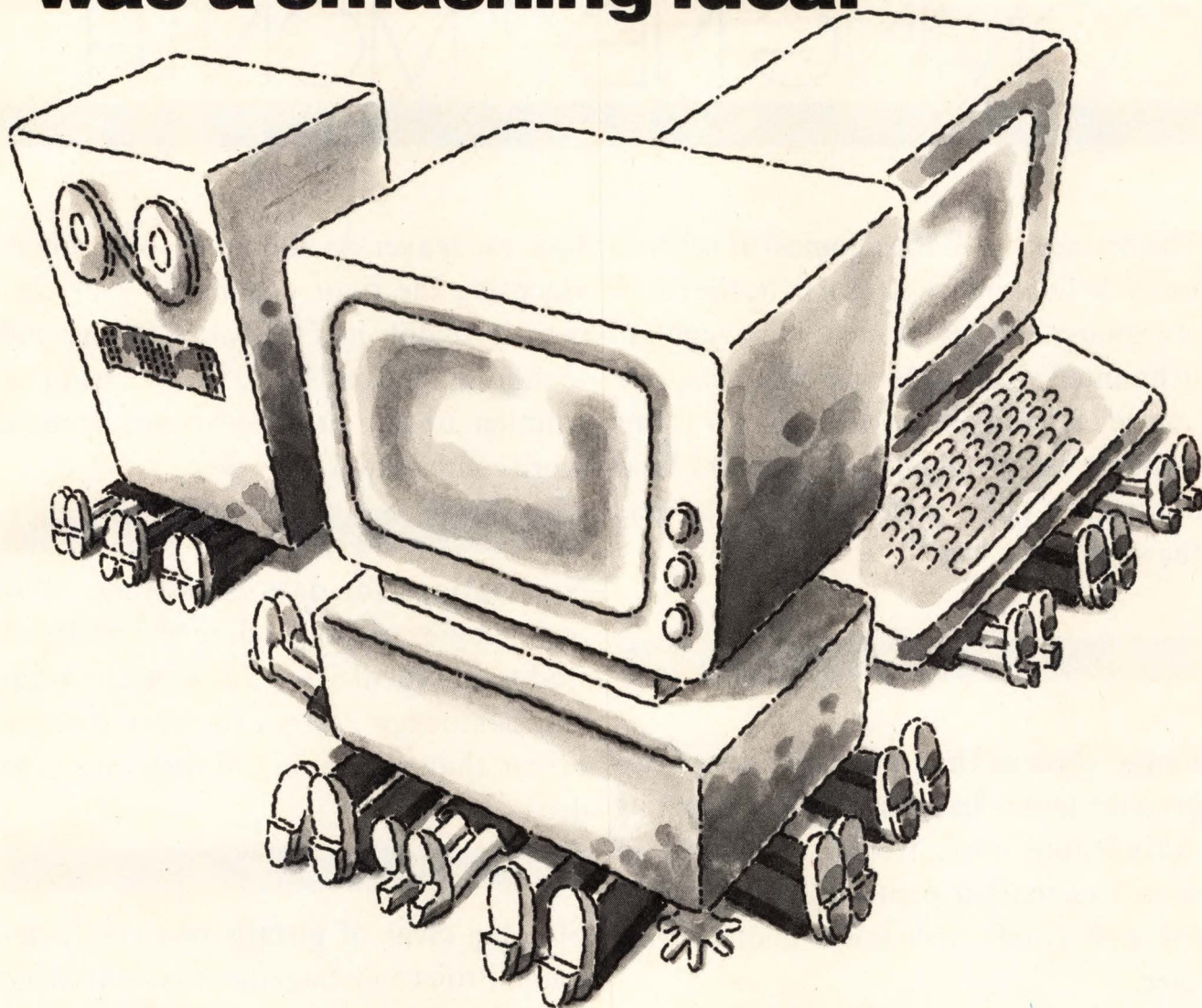
According to Merrill, it may take a data-processing department just be-

ginning an evaluation program 18 months to two years to put together the tools and procedures for monitoring and analyzing the performance data it needs. After the program is underway, however, performance evaluation requires less effort and the department can turn its attention toward business-needs analysis. □

CAPACITY-MANAGEMENT SOFTWARE

Vendor	Package	Requirements	Price	Circle
SDI (415) 572-1200	Performance Management System (SDI PMS)	IBM 360, 370, Series 3000, 4300, and compatible mainframes under DOS, DOS/VS, or DOS/VS(E)	\$5,000 (perpetual license; \$150 per month and up for lease)	532
Software Corp. of America (703) 471-1545	Fast DASD	IBM 360, 370, 43XX, 308X, 303X, and PCMs under MVS, VS1, SVS, OS, or MVS/XA	\$6,500	533
Softworks (301) 868-4221	VIO Plus (VSAM I/O Plus)	IBM 370, 30XX, 43XX/OS/VS, DOS/VS(E)	\$12,500	534
Sperry Information Syst. (215) 542-4011	PAR (Performance Analysis Routine)	Sperry 1100 Series	\$240/month to \$319/month	535
SPSS (312) 329-2400	SPSS-X	IBM mainframes under DOS, OS, or CMS; DEC 20 and VAX; Prime; Sperry 1100; Honeywell under GCOS and Multics; and Data General MV 8000 under AOS/VS	\$7,000	536
Star (203) 529-7128	VSum	IBM mainframes under DOS or MVS	\$4,500	537
Systems Applications (415) 472-4011	Perform	Prime 50 Series under Primos Revision 19	\$1,950	538
Technetronic Inc. (703) 356-2151	Copernicus	Systems under MVS or VS	\$45,750 (includes some hardware)	539
Unitech Syst. (312) 986-0133	U/ACR under OS/MVS	Any IBM mainframe	\$12,000 to \$19,480	540
UCCEL (214) 353-7100	UCC-9/R+	Any IBM mainframe or PCM under OS	\$19,500	541
Value Computing (609) 482-2500	Comput-A-Charge	IBM 370, 43XX, and 30XX under VS1, MVS, or OS Sperry Exec-8 and VS9; Honeywell 66 under GCOS	\$14,000 \$20,000	542
VM Software (703) 821-6886	VMAccount	IBM 370 and up under VM	\$8,500	543
	VMSchedule	Same systems	\$7,500	
Xidak (415) 324-8745	Main PM	For Mainsail programs on IBM 370 and PCMs under CMS; DEC VAX and System 20 under VMS or Unix; 68000-based systems under Unix; Apollo; ELXSI Syst. 6400	\$800 to \$7,000	544

Providing your employees with the latest office technology was a smashing idea.



Now you need one solution to keep them on top of it all.

With all the subtlety of a bomb, technology has arrived in your organization. And its effect on productivity can be devastating. Even your most skilled, most motivated employees may be hard-pressed to keep up.

The solution is comprehensive, continuous education and training. And DELTAK, the world leader in training programs and services, can help.

For your DP professionals, there's a wide range of job-specific multimedia and computer-based skills courses. For managers and end users, we offer micro-courseware and video briefings covering critical business issues.

And to complete your expanding training needs, DELTAK now provides comprehensive consulting, professional classroom instruction and major city workshops.

So call today and find out how DELTAK can help your people stay on top of some very pressing problems.

**DELTAK**

East/West Technological Center
1751 West Diehl Rd., Naperville, IL 60566
(312) 369-3000 (800) 532-7686

COMING NEXT MONTH

The ecstasies (and the agonies) of the fast track: What kind of life is it to be the focus of jealousy and resentment, to be regularly haunted with the feeling that *this time* you're really in over your head? Or is this estimate one-sided, just sour grapes? Find out what it takes to be "the kid who gets the shot at the top."

Fewer choices than ever: A year of aggressive moves by IBM has weakened its mainframe opposition, sending it in search of market niches to develop. But the user is left with fewer choices than ever.

Has GM found the missing link? Is General Motors heralding a new era in factory local-area networks? Manufacturing Automation Protocol, a specification for information transfer on factory LANs, could allow DEC to talk with IBM, and CAD to converse with CAM, paving the way for the much-vaunted "factory of the future."

Buy vs. lease: Avoiding obsolescence. Choosing the right system for your corporation is only half the battle. With rapid technological changes, the decision of whether to buy or to lease can become more complicated than ever.

New options for data crunching: New technologies are expanding the limits of traditional media, so that now the term "mass storage" refers to mass storage rather than the same old disk and tape drives.

Steering clear of pitfalls and costly detours: Project-management systems keep managers on a safe course, avoiding costly and project-threatening problems. They forecast what will happen, who will do it, when it will get done, and how much it will cost.

Outstanding data center: A photographic tour through the subterranean facilities of the Interstate Bank of California, which processes \$30 billion—in checks, global-funds transfers, and remittance banking—per day.

Never Again Choose Between Price and Quality.

The competition says you must sacrifice one for the other. What they're really saying is they can't give you both. Introducing the TeleVideo® 921. Proof that low price and high quality do go together.

But don't let its low price fool you. The 921 is years ahead with features taken from our most expensive terminals. Like selectable embedded or nonembedded field attributes. 32 nonvolatile function keys. 6 fast edit keys. And something we're famous for: indepth support. Including technical assistance, service training and award winning documentation.

One glance at its nonglare green screen with true tilt and swivel. One pass over its low profile, sculptured keyboard. And you know this terminal is built right. In fact, the 921 is built to the highest quality standards in the industry — our own. We use modular subassemblies. All components are pretested and prestressed. Boards are mounted vertically to run cooler, last longer. There's even room to plug in upgrade options. Like our low cost, Tektronix® compatible graphics board.

The point is this. Don't sacrifice either price or quality. Get both. Get the new TeleVideo 921.

Call toll free, (800)
538-8725. In California,
call **(408) 745-7760**.

Regional Sales Offices: California/Santa Ana (714) 476-0244, California/Sunnyvale (408) 745-7760, Georgia/Atlanta (404) 447-1231, Illinois/Chicago (312) 397-5400, Massachusetts/Boston (617) 890-3282, New York/New York (516) 496-4777, Texas/Dallas (214) 258-6776

The TeleVideo 921



Terminals
TeleVideo Systems, Inc.

Tektronix is a registered trademark of Tektronix, Inc.

DATA COMMUNICATIONS

MICRO COMPLEXITIES

by John Seaman, Data Communications Editor

Microcomputer data communications, while endowing personal computers with capabilities ranging from inter- and intraoffice communications to shared resource access, may actually slow down software development in corporations. That's the conclusion of "Personal Computer Data Communications," a 188-page report recently issued by International Resource Development Inc., a Norwalk, CT-based market-research firm.

Surprised? According to the IRD report, managers' attempts to deal with such difficult problems as micro-to-mainframe file transfers via customized software may cause them to refuse to upgrade last year's software.

File transfer, which in its simplest form involves downloading a file from a mainframe to a personal computer, is an intractable problem for users of personal-computers. It is essentially a datacommunications problem. With

no universal software standards in place and hardware compatibility the exception rather than the rule, standard file-transfer packages rarely allow the user to execute all of his or her operations with the downloaded or transferred data.

For example, while many file-transfer programs allow data to be brought up on the target micro's screen, they often do not allow for the successful integration of that data into the user's applications sessions. According to Jim O'Brien, supervisor of workstation development at AT&T Information Systems, Morristown, NJ, it's not easy for users to include tabular material in a mainframe database file and graphics material from the same database in a report being written on a micro.

"If they use a package such as Framework [from Ashton-Tate], they must stop writing the report, get out of Framework's text-processing

mode, move into the communications section of Framework, establish a communications link to the mainframe, and query the database to get the data," he says. "That procedure puts tabular data on the screen, but users then must integrate them into the text. In some cases, this can only be done by creating a file for the received material and inserting it into the document file.

In order to avoid such a cumbersome and time-consuming process, many corporations have designed their own file-transfer programs around established, widely used software packages such as 1-2-3 from Lotus Development Corp. and Ashton-Tate's dBase II. "In the case of report writing, the micro user should be able to interrupt his or her text at the point where data should be inserted from the mainframe database and, when the database query is

(Continued on page 76)

MICRO FILE-TRANSFER SOFTWARE

Vendor	Package	Suggested retail price	Notes
Ashton-Tate (213) 204-5570	Framework	\$695	File transfer is only one feature of this package
Communications Research Grp. (504) 923-0888	Blast	\$250	Also has mainframe version
Hayes Microsyst. Products (404) 449-8791	Smartcom II	\$149	
Lotus Development (617) 492-7171	Symphony	\$695	File transfer is only one feature of this integrated package.
Microstuf (404) 998-3998	Crosstalk XVI	\$195	
Mycroft Labs. (904) 385-2708	Mite	\$150	

Finally, an on-line COM printer that isn't a pain in the mainframe.

If there's one thing you don't need, it's an on-line COM printer that makes you alter your host computer's software. Unfortunately, that's exactly what most systems make you do.

But not Bell & Howell. We found a way to eliminate the problem completely: Software control of our Series 6600 COM printers is through an intelligent preprocessor. You won't have to make even a single modification to your host software because the preprocessor's minicomputer takes care of everything.

It can handle microfiche production. Create and maintain job setups. And even produce audit trails. All at the same time.

About the only thing your operators need to do is enter a few simple English language commands on the keyboard. If problems occur, the 6600's software tells them what to do next.

Of course, software isn't the only thing that's convenient with Bell & Howell. Since our systems operate off-line, as well as on-line, they give you total flexibility for job scheduling.

What's more, both our 6600 archival processing system and 6650 dry system run up to twice as fast as other in-house COM printers. And since they both have totally self-contained processors, there's none of the mess you get with other types of systems.

For more information on the COM printer that's a pleasure instead of a pain, call our marketing manager toll-free at (800) 538-4000.

In California, call collect, (714) 660-1050.

In Canada, (416) 746-2200.



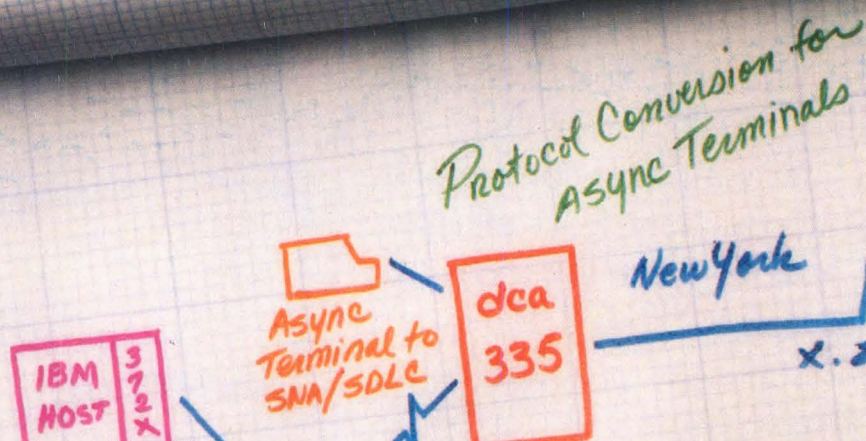
All software for Bell & Howell COM systems is run on a built-in minicomputer. You won't have to interfere with your host computer's software.



BELL & HOWELL

COM DIVISION

A LONG, DRAWN EXPLANATION OF THE DCA



New York

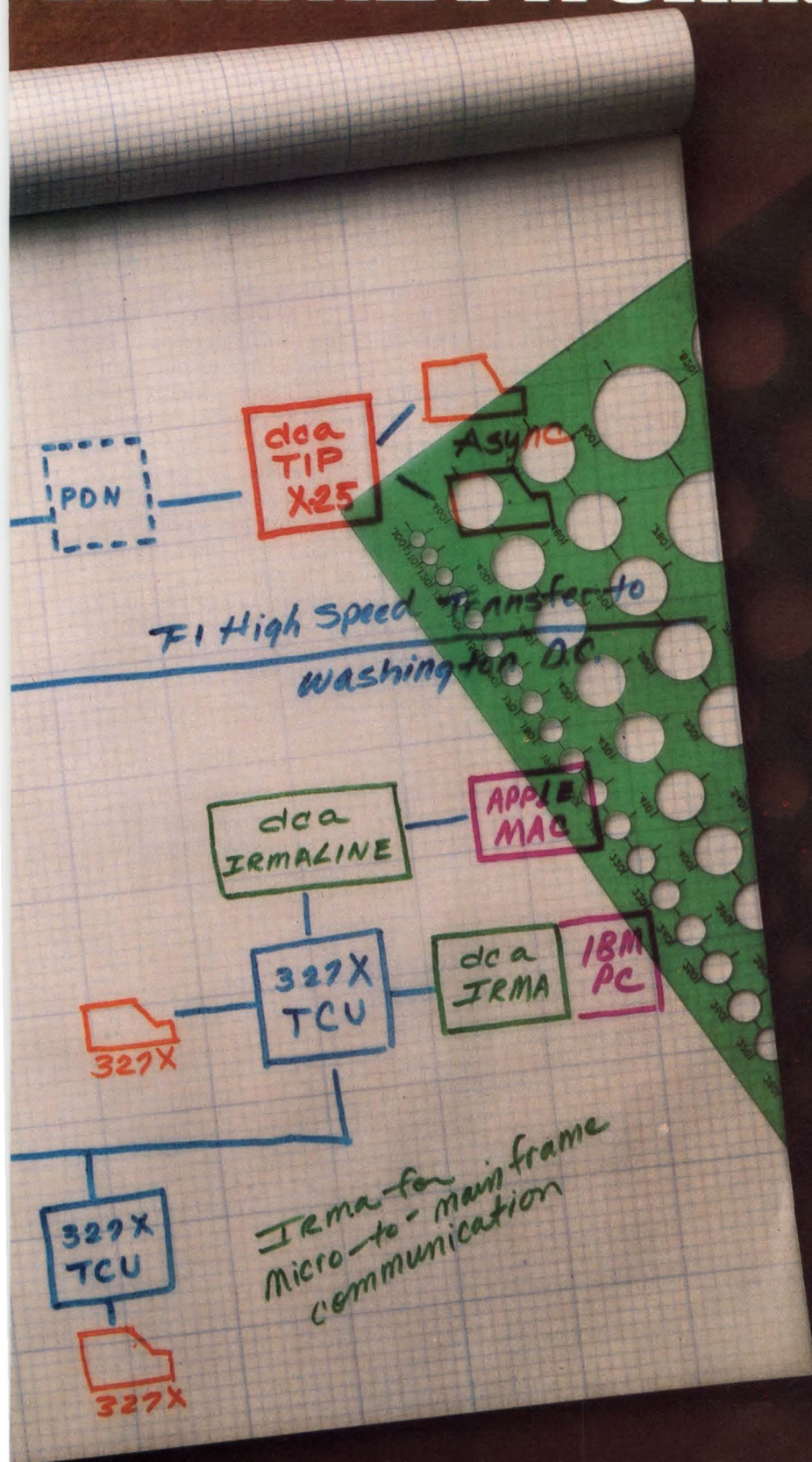
x.25

chicago

Atlanta

Need host selection for Async Terminals

OUT DATA NETWORK.



It's really very simple: A DCA network can integrate all your datacomm equipment — IBM or non-IBM — into one flexible, efficient system. We call it Integrated Network Architecture (INA). And it offers many remarkable advantages.

Like network transparency: Our hardware is compatible with all hosts and terminals — synchronous or asynchronous. So you're free to use less expensive async terminals and modems.

Host selection: With INA, any async terminal in the network can access any host in the network. Including IBM hosts, packet mode hosts and public data networks. And any 327X terminal can access any host running 3270 BSC.

High speed transmission: You can transmit combined voice and data at speeds up to 1.544 MBPS.

Modular hardware: You can upgrade and expand your network simply by adding — instead of replacing — low-cost DCA components.

And since data is routed through a network processor instead of a dedicated host, no host software is involved and no extensive programmer training is required.

Simplicity. Flexibility. Efficiency. Savings. Chalk them up to INA. From DCA, 303 Research Drive, Norcross, Georgia 30092. Call us toll-free: **1-800-241-5793.**



dca[®]

Digital Communications Associates, Inc.
DCA Products Are Available Worldwide.

DATA COMMUNICATIONS

made, the tabular data should come up in the right place in the report. If companies go to the trouble to design the correct custom software, the user can more fully automate the cut-and-paste process."

However, according to the IRD report, this is where the problem begins. Having invested a considerable amount of time and money on custom-made software for established programs, many companies will be reluctant to upgrade because they then would have to scrap or rewrite all their painstakingly crafted programs. "Once customized software is written," says O'Brien, "it becomes very difficult to change to a different micro package. Not only are users pretty much stuck with the customized package, but they may not want to follow the development of software upgrades so closely." Maureen Fleming, IRD researcher, agrees: "A bias toward inertia may be the unexpected consequence of successful personal-computer data

communications."

As more Fortune 500 executives begin to work with micros, the customization problem has become more serious. As Steve Glasgow, senior consultant at Walter E. Ulrich Consulting, Houston, notes: "In the corporate world, some kind of standardization in the selection, acquisition, and installation of personal computers is needed. In the absence of standardization, a need for more customized software is created. And with customized software in place, it will be very difficult to shift to more advanced micro software packages."

Some Fortune 500 corporations are beginning to monitor microcomputer acquisitions. According to Glasgow, office-automation-consulting groups—which may include technical and administrative personnel—are making recommendations to address some of the problems the IRD report describes. As they improve micro-to-mainframe communications, these groups will inevitably break down

barriers like outdated in-house file-transfer packages.

After all, the demand for personal-computer data-communications hardware and software will increase, spurred by increased demand for micro-to-mainframe links. Independent software publishers may come up with packaged solutions to meet this need, but many users, preferring to write their own software, will try to keep much of the work in-house. "The dance will be a three-step," says IRD's Fleming. "First, the general interest in personal-computer data communications triggers a realization that customized software is necessary to make equipment usable and worthwhile. This is where we are today. Second, customized software will be written for a corporation's specific applications. Third will come a huge demand for standardized personal-computer data communications hardware and software as users begin to see the limitations imposed by customized software." □

Check and Compare. ISDM™ Outperforms the Competition.

Before you buy a system development methodology, check the features that make Interactive Systems Development Methodology (ISDM) the most convenient-to-use system devised to date.

For more information, call (215) 265-1550 or write: AGS Management Systems, Inc., 880 First Avenue, King of Prussia, PA 19406. Telex: 510-6603320.

AGS
Management
Systems INC.

The World's Leader in Project Management Systems

Features	ISDM	Competitive Methodology	
		A	B
Interactive (automated) version	✓		
Structured (generic) version	✓		
Standard version	✓		
Integrated automated estimating	✓		
Integrated project management systems from same vendor	✓		
Project administration guidelines	✓		
Quality assurance guidelines	✓		
Extensive tutorials	✓		
Classes held regularly	✓		
Maintenance methodology	✓		
Data dictionary/data base integration	✓		
Full support by consultant staff	✓		



Why people choose an IBM computer in the first place is why people want IBM service...in the first place.

After all, who knows your IBM computer better than we do?

That's why we offer maintenance agreements on computers such as our System/34, System/36 and Series/1. Just another example of blue chip service from IBM.

That means your IBM service representative has a personal stake in the performance of your IBM equipment. It means fast, effective service and IBM parts.

It also means, when necessary, we'll see that you get the benefits of our technical

support network and engineering changes that will help keep your IBM computer running smoothly.

Quality. Speed. Commitment. That's why an IBM maintenance agreement means blue chip service.

To find out more about the specific service offerings available for your IBM computer, call 1 800 IBM-2468, Ext. 81, and ask for Systems Products.

Blue chip service from **IBM**

OFFICE AUTOMATION

SUCCESSOR TO OA?

Office automation—the term and the concept—is a corporate turnoff and should be replaced. So says Honeywell, which is pushing a new concept—“office-management systems”—to replace the well-established notion of automated office systems.

Office-management systems take in what we commonly associate with the term *office automation*, but they go a little farther. Workstations and communications systems that expedite the work of executives and clerical workers are only part of Honeywell's new concept. Honeywell adds the gear needed to manage security and fire-detection systems.

Honeywell is attempting to capitalize on its consistently profitable industrial division, which supplies climate-control and monitoring equipment. Honeywell's other divisions will supply traditional devices for the automated office, including private automatic branch exchanges (PABXs) and the security and fire-detection systems, under an overall contract. The result, says Honeywell, is a “smart building,” which represents much more than what we have

been calling office automation.

Honeywell's proposal is based not only on its ability to supply everything needed for the office-management system. The Minneapolis-based vendor also asserts that it's time to lay office automation to rest—for the sake of office workers and their bosses. Honeywell-sponsored studies indicate that clericals are quite nervous about office automation.

Another Honeywell study revealed that executives are also turned off by “automation,” for a variety of reasons.

A new approach is needed, and the office-management system is it, asserts Honeywell. An office-management system is organized around a powerful small system and designed to serve the needs of a department within an organization. Most corporations would consider the heart of this system to be a minicomputer. However, it's just about impossible these days to differentiate between small minicomputers and the most-powerful multi-user micros.

Honeywell has a strong line of minis. The newest are designed to serve as the driving force behind departmental office systems, bearing a

now-familiar name: the Office Management Systems 40 and 90. Honeywell claims these machines are more cost effective than decentralized office systems. That claim, the vendor believes, will appeal to cost-conscious executives.

However, isn't what Honeywell is proposing just the same old OA? The idea of departmental office systems with extensive communications capabilities is hardly unique: They are available from major vendors like IBM, Wang Laboratories (Lowell, MA), and Data General (Westboro, MA). The difference is the additional office-management features, says Honeywell, which “smarten” an office or corporate headquarters. The other vendors don't offer these embellishments.

Honeywell just might have the staying power and credibility to supplant OA with its new office-management systems. Honeywell finished eighth, with a score of 234, in *Computer Decisions'* “Survivors of 1989” survey of OA vendors (see the December 1983 issue). IBM was the leader with a score of 342.

In the meantime, we choose not to discard the familiar acronym, OA, in spite of studies showing that automation is a turnoff for many office workers and bosses. It's not the designation or the machinery that's the turnoff, but the way in which office automation is implemented. When an unfamiliar automated system is shoved down the throats of users, they rebel, and rightly so. That goes for office workers or those on the assembly line. A thoughtful, carefully paced, and flexible plan is the key to implementing any system—even an office-management system. Honeywell, take note. □



Honeywell's Office Management System is a hardware/software package that coordinates environmental control, security, and office functions.



THE ITT 9236. IT HAS THE FUNCTIONS YOU WANT TODAY, THE FLEXIBILITY YOU'LL NEED TOMORROW.

When it comes to extended functions, our new 9236 display has everything.

For instance, it gives you dual logical units that let you change applications with a single keystroke.

It has selectable screen formats so you can use one display to handle more than one application.

It can use a light pen or operate a display-attached printer so you can make local copies at your workstation.

It offers the ergonomic benefits of a non-glare matte finish. A compact, low-profile keyboard. And a flicker-

free, high-resolution, 14-inch screen that tilts and swivels.

On top of all this, our 9236 gives you extended data stream and programmed symbols for color graphics. Plus a long list of exclusive ITT productivity features, like automated keystrokes, built-in notepad, dynamic color assignment, and auto log off/power off.

But perhaps the most important thing we've built into our 9236 is a flexible, open architecture. The kind of architecture that'll take you into net-

working, the electronic office, or wherever else you want to grow.

Of course it wasn't easy designing in all this and keeping the 9236's price competitive, too.

But, then again, giving you more display for your money has always been what ITT Courier is all about.

For more information, contact your nearest ITT Courier Representative. Or call the ITT Courier Sales Support Dept. at 1-800-528-1400, toll-free.

ITT
COURIER

FOLLOWING THE LEADERS by Lawrence M. Honig

SYMPHONY VS. FRAMEWORK

By now, almost every dp professional has been exposed to this year's hottest micro-software marketing blitz. Since Lotus and Ashton-Tate have been spending record amounts advertising their flagship software products, *Computer Decisions* felt it was time for a systematic comparison.

We put the programs through an identical series of tests, and then recorded the speed and memory used to fulfill each task. While this benchmark series is far from exhaustive, it does serve to illustrate where Frame-

"It's time for a systematic comparison."

work and Symphony differ.

These were the test conditions:

- Symphony Version 1.0 requires 384 Kbytes, two 360-Kbyte disk drives (or one with a hard disk).
- Framework Version 1.0 has the same disk requirements. It requires

256 Kbytes, but we highly recommend 384 Kbytes.

- Both packages were commercial releases, identical to those shipped to early buyers. They were not beta or special test copies.
- IBM PC, 512-Kbyte memory, two 360-Kbyte disk drives, and a color monitor.
- NEC 3550 Spinwriter printer.
- Extended mass storage, in the form of a 20-Mbyte Iomega Bernoulli Box. (With the exception of the Iomega drive, this is a common configuration today. The Iomega drive was used as

SPECIFICATIONS

Task	(1-2-3)	Symphony	Framework
Time to load program from DOS	5	14	14
Max. worksheet size (512 Kbyte memory chart)	424(k)	219(k)	290(k)
With communications installed	n/a	219	247
# Cells in max spreadsheet	11,660	5,350	1,400
1-2-3 file translation	n/a	Native	Foreign
dBase file translation	Foreign	Foreign	Native
DOS program execution	No	Yes	Yes
Telecommunications facility	None	Native	Must be installed; takes 45 K
Full-color display: spreadsheet	Yes	Yes	No
Text	n/a	Yes	No
Edit defaults by menu	Yes	Yes	No
Control over sound	No	No	Yes
Vector drawing	No	No	Yes
Outlining	No	No	Yes

When you move up to color, compare the Tek 4105. There's no competition.

Although others try to "emulate" Tektronix capabilities, few come close to the real thing: Fast, efficient 8-color graphics with full VT 100™ alphanumerics.

High resolution 4096 x 4096 addressability. User-controlled detail magnification. Rapid precise shading of complex

irregular shapes. Plug compatible color hardcopy and transparency output from the Tek 4695 Color Graphics Copier. And an incredible reliability track record: 10,000 hours mean time between failures.

There are some terminals that cost less. But in software selection, system perform-

ance, total reliability, and future expandability—the quality difference pays for itself.

So if you're buying more than one, buy the one others try to emulate, the Tek 4105.

For full information call 1-800-547-1512. In Oregon 1-800-452-1877.



Tektronix
COMMITTED TO EXCELLENCE

CIRCLE 42

FOLLOWING THE LEADERS

a substitute for a hard disk; all I/O tasks used this drive as opposed to the floppies.)

As hardware drops in cost and expands in power, vendors of horizontal software (software not related to any specific industry) are rushing to take advantage of these trends. And users will benefit from this market swing also.

Those who are introduced to computers through Framework, Symphony, or even 1-2-3, will find the learning process much easier than users who were forced to plow through JCL 10 years ago. And there are enough sophisticated software tools in each program to keep the "power user" happy, too.

Symphony is a spreadsheet with some embellishments. Lotus Development carefully avoids calling the program an "environment." They refer to it as "an application best suited for the manipulation of numbers and short-to-medium length documents."

Historically speaking, Symphony and 1-2-3 owe a debt to the pioneer marketing research done by Context Management Systems. In 1982, with MBA, Context introduced five functions: communications, spreadsheet, graphics, word processing, and form

"Programmers know that a high-level language doesn't guarantee a good top-down design."

design. While this was a breakthrough, these functions were poorly implemented and met with little success. In contrast, Symphony, like 1-2-3, is fast, reliable, and logically consistent.

All five of Symphony's operating modes (spreadsheet, document, database, graphics, and communications) are closely tied to the spreadsheet, and you can edit or enter data for eventual use in other modes. Users who are familiar with 1-2-3 (and there are about 600,000 at present) will be able to learn Symphony without forgetting what they already know.

Framework, on the other hand, is a departure from "traditional" micro software. The heart of the program is the *outlining* system, which lets users create independent frames, or data structures. These frames can then be tied into a complex integrated model or report.

On the surface, Framework's outlining capabilities surpass Symphony's more pedestrian spreadsheet functions. In addition, Framework's screen is a model "desk-top" closer to Apple's Macintosh than to Symphony's rows-and-columns display giving Framework a more "state-of-the-art" feel than Symphony.

However, despite Ashton-Tate's claims to the contrary, it takes careful planning to realize the full benefits of outlining. Programmers, for one, know that a high-level language doesn't guarantee a good top-down design. The user is ultimately responsible for the structure of any work. Also, since outlining doesn't have millions of adherents, it seems likely that users who already know 1-2-3 or who are numerically inclined may require some training to come up to speed.

Symphony's documentation is slicker and more comprehensive than Framework's. The biggest problem for the Symphony buyer is knowing where to look for information, since the package comes with four separate books. Symphony defaults are edited on Setting Sheets and stored on a single file while Framework defaults must be edited in a document.

Framework documentation has several errors, some of which are corrected in an addendum called *Change Summary*. For example, in the section called *Read Me First*, the user is instructed to load the electronic tutorial by typing a command which is incorrect. This results in system lock-up.

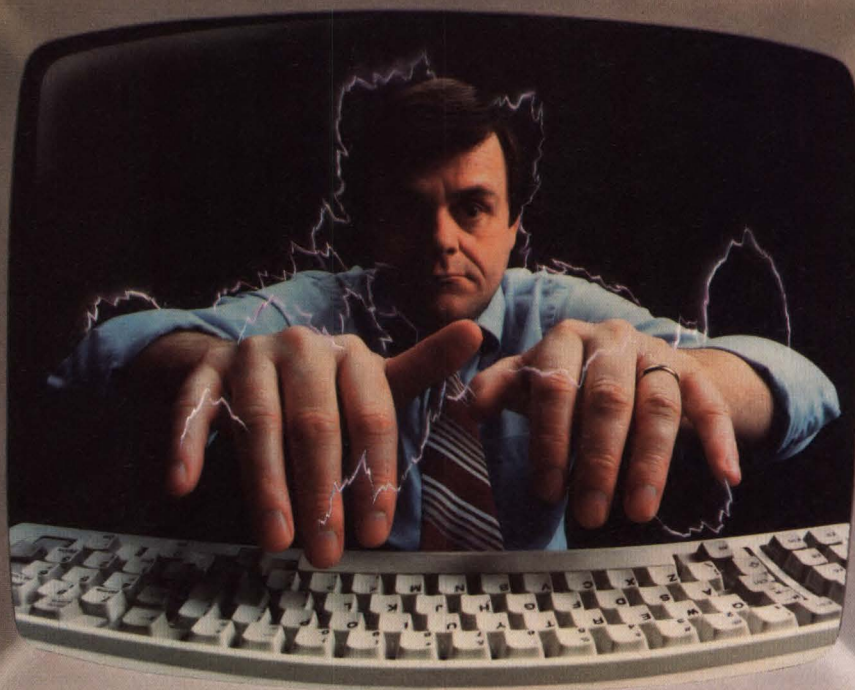
Both programs have online, context-sensitive help systems. Symphony follows 1-2-3's lead, with a "fully navigable" system that allows the user to proceed from any help screen down several related paths, or to the index. Framework's help is "semi-navigable;" once in a topic, the user must move sequentially or out to the index.

While every system has bugs to work out, Framework has quite a few. Several parts of the system don't work as advertised. A glaring example is the utility program *TRANS123*, which is supposed to translate them into 1-2-3 workspace

FILING AND PRINTING

Task	Symphony	Framework
Time to load large model (6 column X 250 rows model)	27	19
Time to save large model	18	30
Storage required	38,175	147,712
400 word-long load memo	2	4
Time to save memo	2	5
Storage required	3,055	2,960
Time to print 50-line memo	47	44
# Keystrokes (Setup extra)	3	3
Setup remains in effect	Yes	Yes
Can you abort in mid-print?	Yes	Yes

The last thing your computer will see before it goes crazy



You or someone else charged with static electricity can drive your personal computer crazy. Garbled data, memory loss, video interference and mechanical malfunctions are among the symptoms of a PC that's "a little touched."

And a little touch is all it takes. Your PC is more sensitive than you when it comes to static. A charge in your finger so small that you can't see or feel it can do the damage.

Static is ever-present. Even when the humidity is up, you can generate a charge by walking on a carpet or vinyl floor. The resulting glitches or downtime could be enough to make you even a little mad.

The first thing to do to keep it sane

Now, a FIRST TOUCH™ Static Control Computer Pad can keep your PC sane. The pad drains away static charge with your first and every touch. The specially formulated 3-layer construction also cushions the equipment, prevents slippage and reduces noise.

The FIRST TOUCH pad is an evolution of a 3M technology created

for the microelectronics industry. Chances are, the circuits in your computer were protected during manufacture and shipment by 3M static control products.

Proven effective in industry, easily installed by you in home or office, the FIRST TOUCH pad is available in 24" x 26" and 9½" x 23½". Look for our packages.

For the name of the dealer nearest you, contact Static Control Systems Division/3M, Computer Protection Products, 225-4S, 3M Center St. Paul, MN 55144



First Touch™

Static Control
Computer Pad

3M Hears You...

3M

FOLLOWING THE LEADERS

files and write out .FW Framework files. This program was documented with only a "Read-Me" file, which means that the users must know how to use Framework fairly well before even reading the documentation. Although we followed the instructions in the file, the system died, requiring us to turn the machine off and on again, instead of merely rebooting it.

Another problem is that Framework erases the old version of a file before it determines whether sufficient disk space is available to save the new file. A catastrophic loss of data could easily result, but no warning or documentation is included.

Both programs support flexible telecom sessions. Although we didn't test these features, users should note Framework's communications are only available once the telecom package (Mite), an add-in option, has been installed. Those who only require this feature intermittently can save the 45 Kbytes of workspace the feature uses by attaching it when needed. Symphony's communications are a native feature. We found that Symphony's relatively small workspace allows the user to create a much larger model than does Framework.

We tried to keep the tasks as consistent as possible. Framework requires that you specify the size of any spreadsheet in advance. A sheet of 5 X 250 empty cells required 104 Kbytes in storage. Adding values to the empty sheet boosted this requirement to 147 Kbytes, roughly 100 bytes per cell. Despite the heavy use of this disk, Framework actually loads and stores files about as fast as Symphony. Symphony requires about 24 bytes per cell to store the same data. (If you often work with expanding applications, this could be a disadvantage—or it may spur you to learn more about outlining, since you can isolate parts of models in different frames and

"Framework erases the old file before it determines whether sufficient disk space is available for the new file."

reference only the answers in your "highest-level" spreadsheet.)

The core of any benchmark is the flat-out speed run, and in this category Symphony dominates Framework. We created a sample spreadsheet, containing 4 columns X 250 rows. We entered a formula into the top cell of the fifth column. Then we recorded how long it took to duplicate and calculate this formula into the remaining 249 cells in the column. It was immediately apparent that Framework's large model has a very slow automatic recalculation mode, so we calculated the new column with recalc set on manual.

We included two string-arithmetic tests, since extensive string parsing is necessary to separate numbers from text in a file received during an ad-hoc download session. Unless users and dp managers can specify what information should be sent from the mainframe to the personal computer, and in what form, the user must frequently convert characters to values before they can be used in calculations.

Both programs include powerful programming languages. Framework's Fred allows the user to define virtually any sort of module, which can then be referenced as a function anywhere in the model. Like Pascal, Fred has various user libraries for functions. Fred also gives the user control over the sound generator and supports vector and space-fill graphics, features not found in Symphony's

Command Language.

Symphony, however, lets the user perform extensive branch-on-error code, and also provides a single-step debug function. Neither feature is supported in Fred, although library functions could conceivably be written to do these jobs. Also, Symphony lets the user record his keystrokes in a "learn range," which can be controlled by a single key.

The software industry is constantly changing. Two years ago, 1-2-3 was a radical development. Now Symphony is considered a conservative, evolutionary product, while Framework represents the cutting edge of user-interface technology (at least for the IBM PC).

The trend is toward more comprehensive products that can perform ad-hoc analysis, serve as word processors and act as electronic mail-drops. In addition, these programs (and future programs that will use the power of the IBM PC/AT line) can be used as powerful development languages in their own right. Before long, fortunes will be made by writing sophisticated applications to run within Framework, Symphony, or their progeny.

Both of these programs should find a large and eager audience. It seems, however, that Symphony may be the safer choice for those dp managers who prefer stability to the latest technology. Some of Framework's rough edges are just bugs that will certainly be corrected in later releases. However, the central issue—how an intelligent, but not terribly sophisticated user copes with codifying a dp problem—will still remain.

Whereas Symphony enjoyed a long gestation period and underwent extensive beta testing, Framework seems to have been hurried into the marketplace. The released Version 1.0 of Symphony is significantly more reliable than the released Version 1.0 of Framework.

For some, the outline/desk-top metaphor presented by Framework will be compatible with the way they think. Others may resist. □

Lawrence M. Honig is president of Thought Products Corp., Newton, MA.

"The heart of Framework is the outlining system, which lets users create independent frames or data structures."



Show your colors.

The new Epson® JX-80™ 7-color printer.

Say more faster. With greater clarity and comprehension. And with a lot more impact. Say it in color.

Join the color revolution.

The revolutionary JX-80 gives you seven vivid colors to breathe life into charts and give soul to text.

But that's just for starters.

The JX-80's exclusive SelecType control panel makes choosing and mixing any of nine popular typefaces (the JX-80 prints 144 different faces in all) as easy as pushing a few

buttons on the printer.

Color it hot.

The JX-80 prints graphics or text in black and white at speeds of up to 160 characters per second exactly like our legendary FX-80™ dot matrix printer. So, like all Epson printers, it's supported by virtually all software and personal computers. Switch to color, however, and the JX-80 is supported by all popular color software such as Lotus® Symphony™.

And of course, the JX-80 is backed by the one-year Number One Warranty, and priced right.

See your nearby Epson dealer. Get the full story in black and white.

And yellow and cyan and magenta and violet and green and orange...

Number one. And built like it.

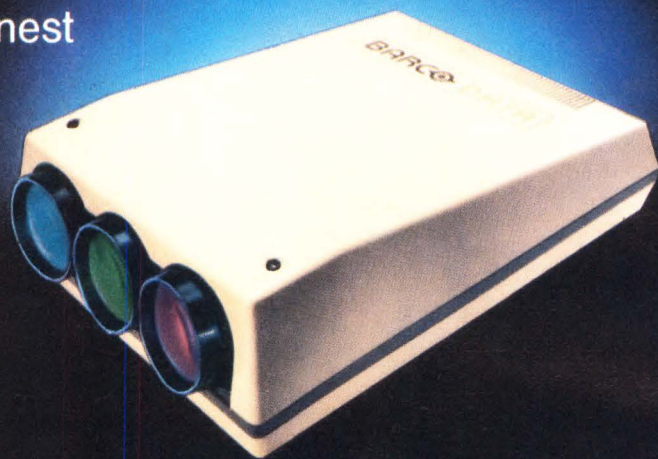
EPSON®
EPSON AMERICA, INC.

2780 Lomita Boulevard • Torrance, CA 90505 • Call (800) 421-5426 for the Epson dealer in your area. In California call (213) 539-9140.

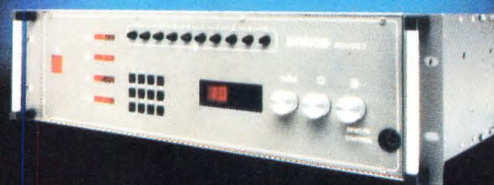
Epson is a registered trademark, and JX-80 and FX-80 are trademarks of Epson America, Inc. Lotus and Symphony are trademarks of Lotus Development Corporation.

Inflight Services' BarcoData 32: **Brilliant color.**

Inflight's BarcoData 32 is the finest large screen video projector available today. Designed for the display of computer generated data and graphics, it accepts input from virtually any signal. Brilliant color. Perfect resolution. Dependable performance. In a word, unparalleled.



Inflight's Switcher is the most versatile video and data source selector ever. Pre-set for up to ten different inputs. Then just use the infra-red remote to access any pre-set input instantly. Total harmony with the BarcoData 32. In a word, incomparable.



OUTSTANDING DATA CENTER

by Theresa Conlon, Staff Writer

WAKEFERN FOOD CORPORATION



Photos by Dario Perla

Wakefern Food Corporation's data center, located in central New Jersey, handles all data-processing requirements for one of the leading cooperative food retailers in the country—Shop Rite Supermarkets.

Each of the 196 Shop Rite stores, located in six northeastern states, is equipped with an IBM Series/1 minicomputer—model 4952 or 4956. Shop Rite stores use the minicomputers to place their orders. The data center receives these orders, processes them on the two IBM 3083 B-16 mainframes, and sends the information to warehouse facilities, where orders are filled and shipped out to Shop Rite stores.

The data center supports a com-



Wakefern Food Corporation's data center, located in central New Jersey, was built by DiGirolamo Construction Company (Newark, NJ).

munications network of 500 online IBM terminals (models 3178, 3278, 3279, and 3287) and 96 telephone lines located throughout the cooperative's four remote warehouse facilities. The center also handles various computer systems located in the Shop Rite supermarkets themselves. For instance, a check-verification system produces courtesy cards and keeps track of the check-cashing history of each customer. Since its installation in 71 stores, there has been a reduction in bad-check losses.

An energy-management system has also proved successful in many Shop Rite stores. An in-store program that automates all aspects of pharmacy operations—from inventory

OUTSTANDING



The data center is secured 24 hours a day. Guards monitor every room through television cameras supplied by Custom Video Systems. Continental Instruments Corporation supplies the center's security-access control.

control to patient record keeping to production of the prescription level—is now available to all Shop Rite pharmacies. In addition, the data center supports 125 point-of-sale barcode scanning systems.

The general contractor for the new Wakefern data center was DiGirolamo Construction Company of Newark, NJ. Wakefern's previous facilities had become inadequate due to the cooperative's continual growth, according to John Baublis, coordinator of technical services. "Our major needs were increased computer capacity and expansion of the computer room. Also, computer operations and the technical staff were located in separate buildings, and we wanted to consolidate these functions." (Continued on page 90)



DATA CENTER

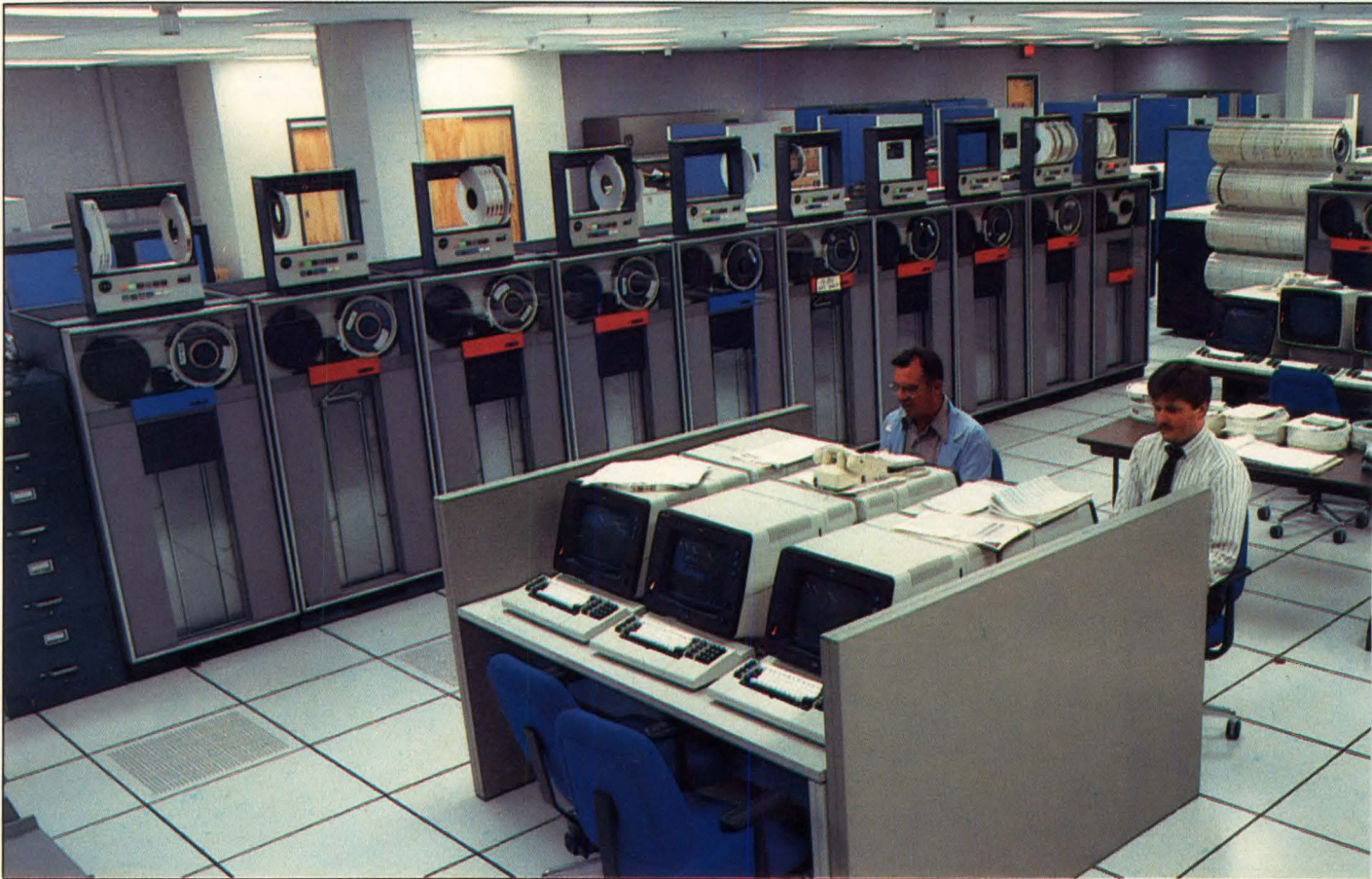
John Baublis (below), coordinator of technical services, works in his new office. Furniture for management offices was supplied by New Jersey Office Supply.



The print room (left), equipped with four IBM 3211 printers, each with a speed of 2,000 lines per minute, is set off from the main computer room to mask the noise of the printers. The walls are covered with a special sound-absorbing material, supplied by Conwed.

Robert A. Evans (left), vice president of the communications information-systems division, reviews a company report.

OUTSTANDING



The console area (above) is located in the center of the main computer room. Here, operators monitor the computer systems. Two IBM 3083 mainframes support a network of 400 IBM 3178, 3278, and 3279 terminals with 100 online 3287 IBM printers as well. Twenty-four IBM 3420 tape drives surround the operators, giving them easy access to their work.

LIST OF SUPPLIERS

Air conditioners
Liebert
(614) 888-0246
Circle 492

Power converters and diesel generator
Emerson Electric
(714) 545-5581
Circle 493

Caterpillar Tractor
(309) 673-3252
Circle 494

Power distribution
Emergency Power Engineering
(714) 557-1636
Circle 495

Security access
Continental Instruments
(516) 334-0900
Circle 496

Custom Video Syst.
(201) 625-0200
Circle 497

Fire detection
J.W. Syst.
(201) 561-0500
Circle 498

Firetek
(201) 427-9804
Circle 499

Fiquench
(816) 229-3405
Circle 500

Mainframes, drives, terminals, and printers
IBM

(Contact local sales office)
Circle 501

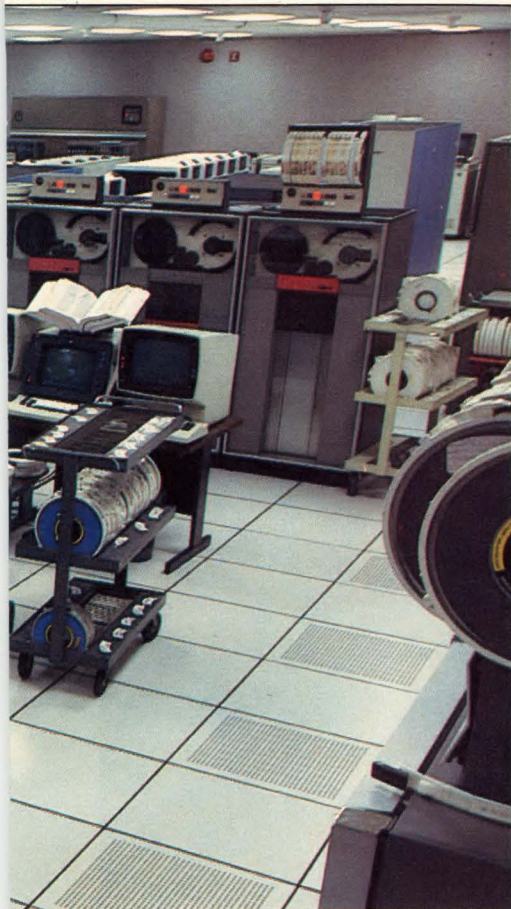
Furniture
New Jersey Office Supply
(201) 386-8900
Circle 502

Conwed
(612) 221-1100
Circle 503

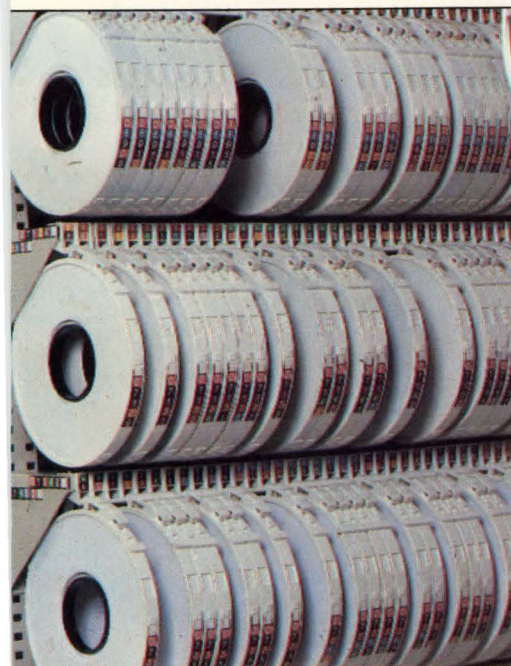
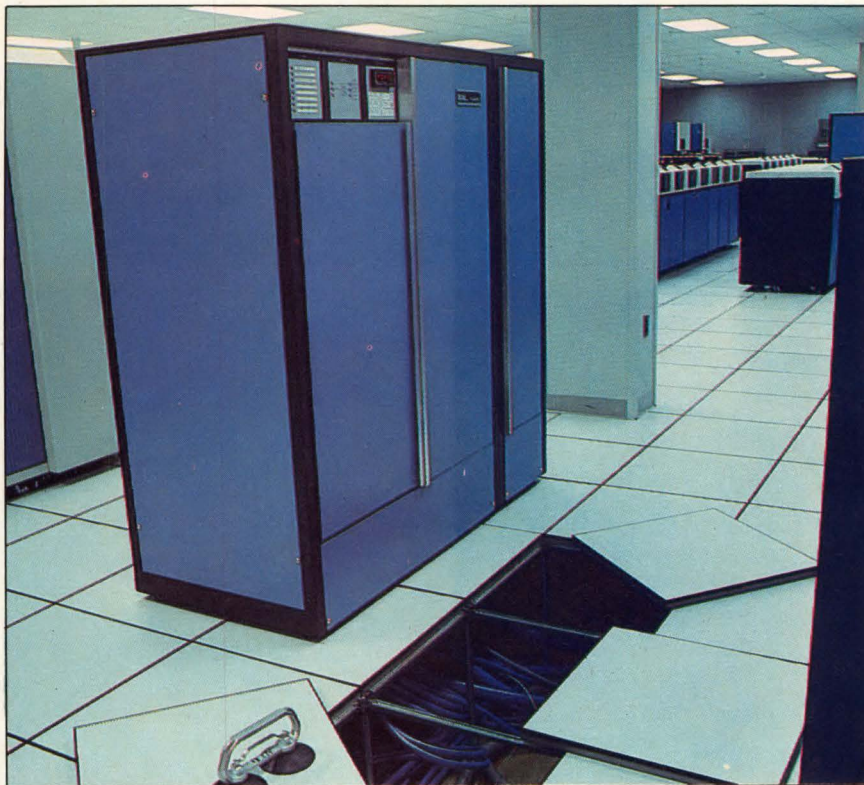
Access floors
Tate Flooring
(201) 777-5404
Circle 504



DATA CENTER



Two computer-power distribution systems (below), supplied by Emergency Power Engineering, are located in the main computer room. Instead of hardwiring the entire room, cables can be connected to this system, bringing power to many processors and peripherals.



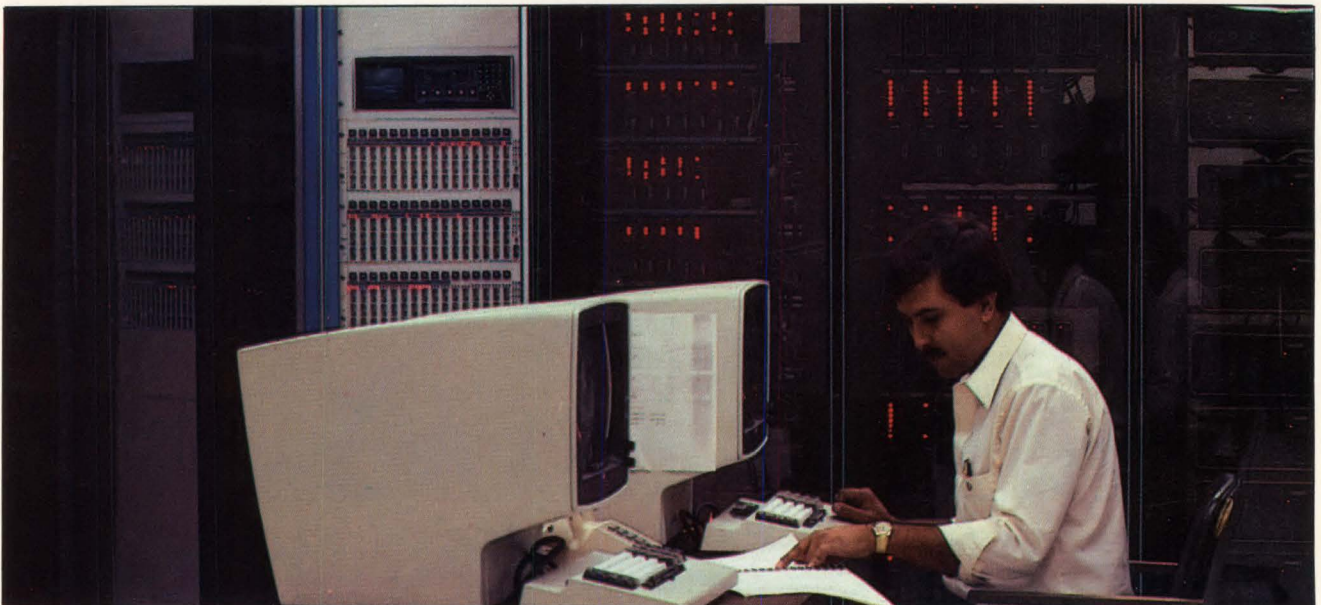
Two 415Hz static frequency converters (left), supplied by Emerson Electric, power the two IBM 3083 mainframes. If one of these 415Hz units goes down, the other can support both computers. This uninterruptible power system (UPS) will keep systems running for 15 minutes.
(Continued on page 92)

The data center's tape library (left) stores over 8,500 tapes. As a disaster-recovery measure, master files are routinely taken off-site. The tape room has the same Halon and sprinkler fire-suppression system as the main computer room.

OUTSTANDING DATA CENTER



Ed Foundos, senior analyst (left) works on an information-center application. The open-office landscape provides room for future growth.

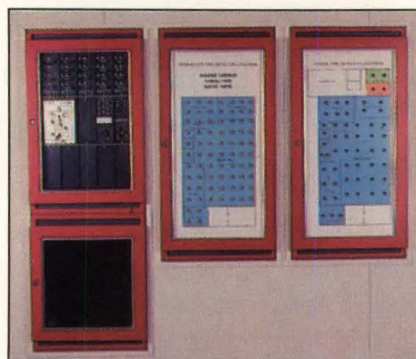


The telecommunications room (above), handles a communications network of 96 telephone lines, with 500 online terminals, four remote job-entry facilities, 196 IBM Series/1 minicomputers that are located in each supermarket for order preparation, and 125 point-of-sale scanning systems.

To solve these problems, Wakefern management decided to acquire two new IBM 3083 mainframes and install them in a new facility. Data-sphere Inc., dp-facility engineers located in Cranford, NJ, worked closely with Wakefern's data-processing staff to design the data center.

Approximately six months after ground breaking, the Wakefern data center became operational. "We had six months to make the move," says Baublis. "It was a very ambitious schedule, but we came in on target."

The building is 50,000 square feet. The computer room occupies 10,000 square feet, and the remainder is used by the technical staff. □



A security-control panel (above) in the main computer room displays the Halon protected zones of the entire computer room. If detection devices sense smoke or fire, the panel reveals the source.

AT&T IS IN MUSIC.

In the music business?
AT&T! How? With our people.

People who can show record companies how to use our AT&T Long Distance Network to fill orders from their distributors all over the country.

Electronically.

And for their distributors to place those orders the same way. So, in the store, a hot record is never out of stock and the music never stops.

The people of AT&T Communications are thinking about your business in ways you never thought of.

We can help improve the accuracy of the orders you place or fill.

And the time it takes to place or fill them.

We can help you get instant access to inventory information so you're almost never overstocked or understocked.

The fact is that our people can help you in your business, no matter what kind or size of business you're in.

Account teams assigned to larger businesses. Or Account Reps who can help smaller businesses over the telephone.

Or Operators to help set up a teleconference or place collect calls.



They can help you tailor a full range of long distance services based on your company's needs, including:

AT&T Long Distance Service for low-volume data transfer of purchase orders.

AT&T 800 Service for a toll-free data link with customer terminals.

The ACCUNET* family of innovative digital services such as DATAPHONE* Digital Service and ACCUNET* Packet Service to address your more sophisticated distribution system requirements.

To find out more about how we're thinking about your business in ways you never thought of, call your Account Executive at **AT&T Communications.**
Or 1 800 222-0400.

DALLAS...
STORE 168... READER 75 MARISSA...
BOISE...
STORE 14... READER 124 MARISSA...
CHICAGO

*A Service Mark of AT&T Company
©1984 AT&T Communications



SOFTWARE— WHAT'S AHEAD

by David Kull, Software Editor

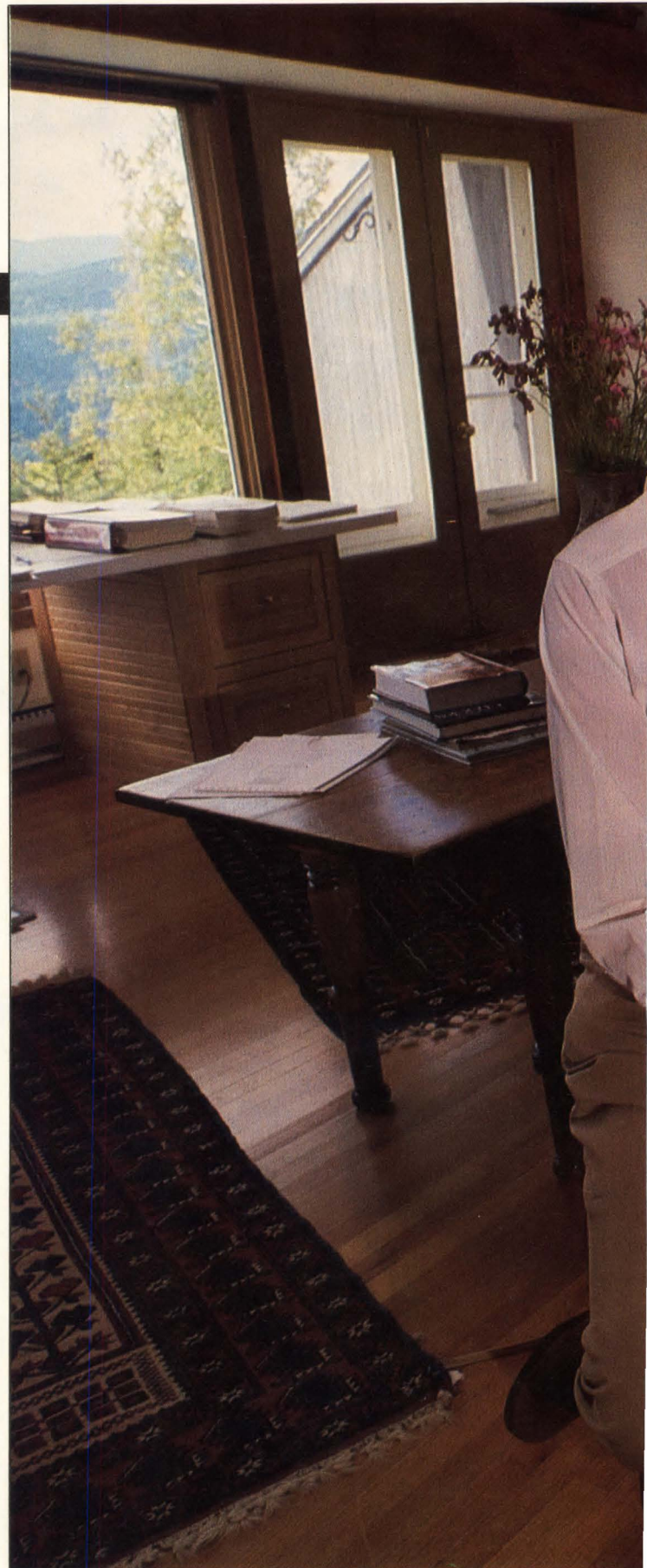
There's a DEC VAX 11/730 in the basement, an IBM PC in the guest suite, and a variety of personal computers grouped in a work loft above the living room. It's an impressive computer arsenal for a private residence. But the advanced equipment fits quite naturally in the home of a man who has built a successful career around his ability to look beyond technology's leading edge.

As James Martin—noted consultant, writer, and lecturer on information technology—shows visitors through his house on a hill in Vermont, he's really showing the machines. The VAX runs software for evaluations, he says. A device attached to the piano follows tape-recorded instructions to drive the motorized keys with a master's touch—in this case, Rachmaninoff's, lifted eerily across time from an early record. In another room, a stereo system plays the most modern records—laser disks. In a year or so, Martin remarks offhandedly, laser-equipped personal computers will read data from similar disks.

One of the microcomputers upstairs displays a prototype CAD/CAM package for systems analysts. Automated design particularly interests Martin these days. A company he founded, Database Design Inc., recently released a personal-computing package for creating action diagrams (see "The action in diagrams" accompanying this article). These diagrams rely primarily on bracketed statements to structure designs ranging in complexity from general ideas to detailed specifications that can generate source code. Martin also serves as a director of Higher Order Software Inc. (HOS), which sells a program, Use It, that automates a design methodology based on binary decomposition. The method breaks down each system function into two more-detailed functions, using a binary tree graph to organize the work. The resulting designs, Martin says, generate executable code that can be mathematically proved to be correct—in effect, bug-free code.

Martin's bookshelves, dominated by tomes on computer languages and manuals on operating systems (with a few spy thrillers on the side) also contain some of his own works. Prominent among them are *Application Development without Programmers* (Prentice-Hall, 1982), which discusses highly productive development tools and techniques, and his most recent book, *An Information Systems Manifesto* (Prentice-Hall, 1984), which describes actions Martin believes organizations should take to improve their use of computers. Another recent work, *Recommended Diagramming Standards for Analysts and Programmers* (Savant, 1984), details the types of diagrams and notation that he believes

INTERVIEW WITH



Among other predictions: Work gets easier for users and systems developers, expert systems come to the fore, and Unix proves to be a passing fancy.

will be the basis of very high-level languages of the future. Martin travels and lectures in the fall and spring, and writes during the winter and summer. He interrupted his work on the last stages of a book on fourth-generation programming languages to talk with *Computer Decisions* about the future of software.

Computer Decisions: Where will the most important software developments come over the next few years?

Martin: One development that is going to affect all the others is the automation of the jobs of programmers and systems analysts. They will be able to create programs much more quickly. After that, some of the other developments will follow.

CD: Organizations have not been quick to adopt fourth-generation languages. Will their acceptance accelerate?

Martin: It is accelerating. There's no question that you can get results more quickly from fourth-generation languages compared with Cobol or PL1. The message is getting out. Remember, the introduction of third-generation languages took 10 years. Cobol was first used toward the end of the 1950s. It wasn't until the late

INTERVIEW WITH JAMES MARTIN

"Applications packages will be much more practical when they're connected to fourth-generation languages."

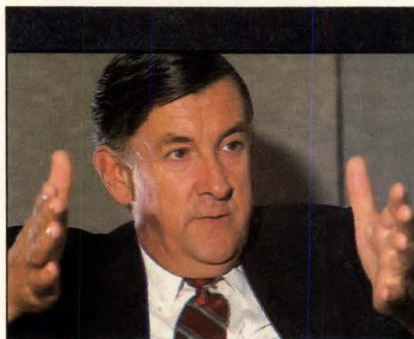
1960s that it became predominant. Fourth-generation languages like Ideal from Applied Data Research or Mantis from Cincom came into use in the early 1980s. By the early 1990s, they'll be among the fourth-generation languages that will predominate. **CD:** Will fourth-generation languages become easier to use?

Martin: Yes. There's no fourth-generation language in existence that I wouldn't want to completely redesign. We know that we can make them much easier to use. For example, we can make them faster to use by putting in more constructs. Some of the widely known languages, such as Mantis and Ideal, don't have a function for taking averages. If you're analyzing data, you always want to take averages. Each fourth-generation language has something good about it, but the good features differ from one language to another. Natural from Software AG, for example, has numerous functions for manipulating data. Many of those functions don't exist in other languages. But Natural has a very clumsy structure. The structure in Ideal is much cleaner. We'd like to take the good features from the various languages and combine them into one language. Researchers are working on that.

CD: Will end users apply these higher-level languages?

Martin: While the fourth-generation languages are much easier than Cobol, they're still not easy for the typical accountant. A bit further away from fruition than the fourth-generation languages are a set of computer languages that will become very important—those that use human language. These include Intellect

from Artificial Intelligence Corp. and Ramis II English from Mathematica. These have lexicons and complex knowledge bases that enable them to interpret English syntax and react sensibly. The goal is to do away with the need for any alien syntax. The problem is that human language is very vague, so we can use it to express only very simple ideas to the computer. Consequently, these English-like languages have been used only for queries, not for complicated data processing. But languages like Ramis II English can be combined with diagrams, which have no syntax at all. You don't need to know any syntax when you read a map, for example. So if you select the right types of diagrams and connect them to something like Ramis II English, then suddenly you can build a very complex comput-



"We're going to see a major breakthrough in automating the systems analyst's job as we improve diagrams."

er program without having to know any programming languages.

CD: How will systems design change?

Martin: Today, most systems analysts write specifications as they did in the 1970s, mostly in English but sometimes using general diagrams as supplements. They should be able to create specifications that are rigorous enough to be automatically converted into code, perhaps fourth-generation. If I ran a company producing a fourth-generation language, such as ADR, Mathematica, or Information Builders, I'd think about the effects on my customers of providing systems analysts with tools that generate code in Ideal, Ramis, or Focus. There are many different ways to develop specifications that will generate code, but a very powerful way is to use diagramming techniques. We're going to see a major breakthrough in automating the systems analyst's job as we improve diagrams. At the same time, analysts will be able to build and modify those rigorous diagrams on personal computers. They'll have a tool that's fun to use, and with it they can rapidly build very complex logic into applications.

CD: When will these design tools be available?

Martin: There are many variations on this theme either already on the market or coming to the market. A relatively simple and easy-to-use product is Action Diagrammer from DDI, which enables you to do top-down design and functional decomposition on a crt screen. The package runs on a personal computer and provides relatively simple assistance. At the opposite end of the complexity spectrum, the HOS package lets you create specification designs that are provably correct. It runs on a DEC VAX, but they'll release an IBM-mainframe version early next year. Your average data-processing shop will not be interested in it. It's for organizations that are



S O F T W A R E A G

One perfect action creates a perfect reaction that grows and grows.

A pebble dropped into the water creates circle after circle, each growing from the one before it—and each one reaching out farther than the last.

At Software AG, each product in our integrated system grows naturally from your center of data.

- Our relational data base management system readily adapts to meet your current and future needs.
- Our data dictionary defines how that data is used throughout your organization.
- Our communications system provides a secure network to give your users precisely the data they require.
- Our fourth generation language system transforms the data into information.
- Our end-user products deliver up-to-the-minute data to support better and faster decisions.
- And tomorrow's products will meet your needs by putting information power into wider and wider circles of users.

Every Software AG product comes naturally from the one before it, and all products in our system speak the same language. That's because at Software AG, each product has been created as part of a master plan.

When we introduce a new product, we don't have to spend time struggling to make it fit with the rest of our products. We just move quietly on to prepare the next product to meet your needs.

We don't believe in surprises—we believe in anticipating the trends of the future and meeting them with new products today.

Now, it's up to you. You can take the one perfect action that will lead to perfect solutions. Call us today.

1-800-336-3761

 **SOFTWARE AG**
ADABAS • NATURAL • COM-LETE

Where the future
comes as no surprise.

CIRCLE 47

© 1984 Software AG of
NORTH AMERICA, INC.
ADABAS and NATURAL
are trademarks of Software AG
of NORTH AMERICA, INC.

CD1184



INTERVIEW WITH JAMES MARTIN

developing unusually complex specifications. Halfway between the Action Diagrammer and the HOS product in complexity, there are products like Intech's Excelsator. With this program, analysts can use graphics on a personal computer to employ diagramming techniques they are familiar with today—the dataflow diagrams and structure charts developed by Yourdon, and Gane and Sasson.

CD: How can an organization evaluate these design tools?
Martin: The principle is this: Simple tasks should have simple tools. On the other hand, very complex jobs with tortuous specifications should have more complicated tools. I regard

these interactive graphics packages as tools for computer-aided thinking. Analysts need many ways of approaching problems, so they need a variety of tools and diagrams. But for all of them, if you design the graphics so that they are rigorous, you can express yourself graphically in such a way that you can automatically convert the diagram into executable code. You have to be able to express logic, conditions, multiple conditions, mutually exclusive branches, and so on. You want to have diagrammatic conventions to express those ideas. Today, the chip designer builds up a circuit's logic on a crt screen, and the computer checks it. Systems analysts

"We're going to see database machines with high performance and flexibility."

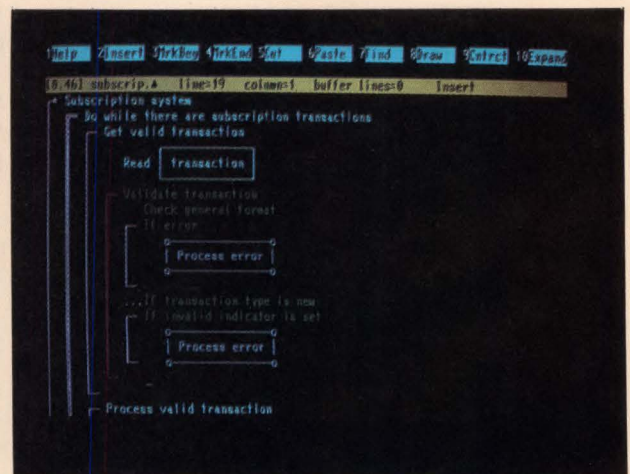
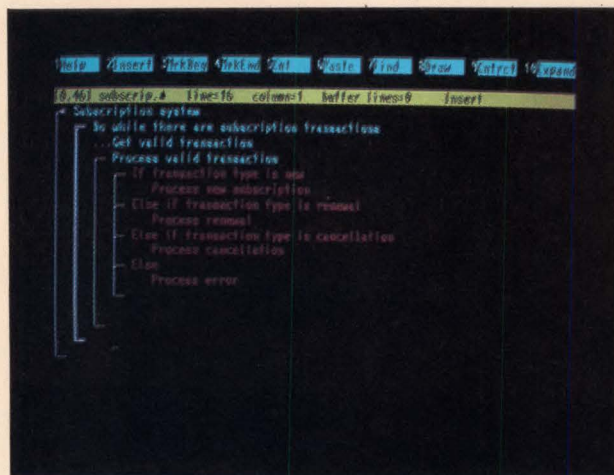
should be able to do that, too, to create the logic on the screen with the computer checking it as they go along. But for that, we've got to have a precise diagramming language.

CD: How will database management systems evolve?

Martin: If we could turn the calendar

(Continued on page 102)

THE ACTION IN DIAGRAMS



System design and programming diagrams developed in the 1970s presented either an overview of a program's structure or a detail of its logic but not both, according to James Martin. Action diagrams, created more recently, allow easy transitions between overview and detail, he contends. Vertical brackets enclosing listed statements represent the basic building blocks. Each bracket begins with a control statement and encloses a sequence of operations. As designers add detail,

they can add operations to brackets, begin new modules with new brackets, or nest brackets to indicate hierarchical structure. At the most detailed level, an action diagram represents executable code in any language the developer decides to use.

Action Diagrammer, a software package from Martin's Database Design Inc., provides a range of editing capabilities to aid in action-diagram creation. The designer builds a system with an action diagram by adding detail to earlier ideas, as

shown in the Action Diagrammer screens above. The package generates control statements in any of several third-generation languages, including Pascal, PL1, and C. Users can also customize the package to generate whatever control language they desire. The package, which runs on the IBM Personal Computer and compatibles, costs \$495. Contact Database Design Inc., Department C-100, Ann Arbor, MI 48104, (313) 971-5363.

Circle 491

COMPUTER DECISIONS READS MANAGEMENT

We know what the decision makers want from a user magazine and we give it to them every month

- Practical Application Stories
- Incisive Columns
- Vital Product Information
- Thorough Software Coverage
- Management Strategies

Because we deliver what they need for managing their information resources more effectively—

Management
Reads

**COMPUTER
DECISIONS**

THE ONLY MANAGEMENT MAGAZINE OF COMPUTING

ADABAS

Our relational data base
management system.

NATURAL

Our fourth generation language system.

COM-PLETE

Our communications system.

At Software AG, each product in our integrated system grows naturally from the one before it, and all of our products speak the same language. We don't believe in surprises—we believe in anticipating the trends of the future and meeting them with new products today. And that's the proper plan for the world leader in systems software. Call us today.
1-800-336-3761.



**Where the future
comes as no surprise.**

© 1984 Software AG of North America, Inc.
ADABAS and NATURAL are trademarks of Software AG of North America, Inc.

CD1184

CIRCLE 48



...because MICS offers the one unified approach to: two sides of a single coin... MICS and MVS Installation Management:

- DB/DC System Analysis
- Network Activity Analysis
- Performance Management
- TSO Management
- MVS Activity Analysis
- Installation Accounting
- Critical Index Management
- Capacity Planning
- Software Maintenance Management
- System Reliability Analysis
- VM/CMS Activity Analysis
- DASD Space Management

Unity from diversity

The MVS Integrated Control System (MICS) provides a single process to analyze many unlike MVS measurement sources. Then, its interactive and batch reporting facilities allow you to generate periodic or ad hoc reports that "slice the data" any way you want it for:

- Graphics Presentations
- Service Level Reporting
- Exception Reporting
- Problem Analysis
- Special Studies

And for those of you who want to "manage by the numbers," and focus on critical problems first, MICS introduces the Critical Index Management (CIM) technique.

Simplicity from complexity

The MICS 4500 data element dictionary and online documentation further simplify MVS Installation Management by providing you installation with fast access to a comprehensive body of common information.

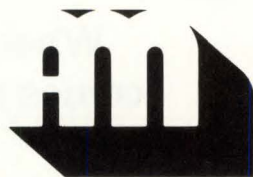
This means you can substantially cut costs, because your installation can standardize:

- Management
- Administration
- Procedures
- Documentation
- Staff Training

Control from confusion

More than 475 user organizations know us as the developers of the software that helps them control the complicated MVS environment. Their daily use of MICS has made the two terms—MICS and MVS Installation Management—synonymous.

So if you want to learn how MICS can unify and simplify the management of your installation, we urge you to ask our users. For copies of their stories, call or write us today. We'll also send you information about all the MICS capabilities, including Critical Index Management—the brand-new technique that lets you run your installation as a business!



MORINO ASSOCIATES

Indemannstrasse 47 • D-4000 Düsseldorf 1 • Federal Republic of Germany • Tel: (0211) 6790028
103 St. Peter's Street • St. Albans • Hertfordshire • England AL1 3EN • Tel: (0752) 37464
8612 Westwood Center Drive • Vienna, Virginia 22180-2212 • USA • Tel: (703) 734-9494



**MICS and MVS Installation Management:
two sides of a single coin...**
...because MICS offers the *one unified approach* to:

- Installation Accounting
- MVS Activity Analysis
- TSO Management
- Performance Management
- Network Activity Analysis
- DB/DC System Analysis
- DASD Space Management
- VM/CMS Activity Analysis
- System Reliability Analysis
- Software Maintenance Management
- Capacity Planning
- Critical Index Management

Unity from diversity

The MVS Integrated Control System (MICS) provides a single process to analyze many unlike MVS measurement sources. Then, its interactive and batch reporting facilities allow you to generate periodic or ad hoc reports that "slice the data" any way you want it for:

- Special Studies
- Problem Analysis
- Exception Reporting
- Service Level Reporting
- Graphics Presentations

And for those of you who want to "manage by the numbers" and focus on critical problems first, MICS introduces the *Critical Index Management (CIM)* technique.

Simplicity from complexity

The MICS 4500 data element dictionary and online documentation further simplify MVS Installation Management by providing your installation with fast access to a comprehensive body of common information.

This means you can substantially cut costs, because your installation can standardize:

- Staff Training
- Documentation
- Procedures
- Administration
- Management

Control from confusion

More than 475 user organizations know us as the developers of the software that helps them control the complicated MVS environment. Their daily use of MICS has made the two terms—MICS and MVS Installation Management—synonymous.

So, if you want to learn how MICS can unify and simplify the management of your installation, we urge you to ask our users. For copies of their stories, call or write us today.

We'll also send you information about all the MICS capabilities, including *Critical Index Management*—the brand-new technique that lets you run your installation as a business!



MORINO ASSOCIATES

8615 Westwood Center Drive • Vienna, Virginia 22180-2215 • USA • Tel: (703) 734-9494
103 St. Peter's Street • St. Albans • Hertfordshire • England AL1 3EN • Tel: (0727)37464
Lindemannstrasse 47 • D-4000 Dusseldorf 1 • Federal Republic of Germany • Tel: (0211) 6790058

INTERVIEW WITH JAMES MARTIN

(Continued from page 98)

back to 1970, we would never build a Codasyl database. We would take a relational approach. The fact is, though, that there is now a vast financial investment in Codasyl and other hierarchical databases. You can't get rid of that very quickly. One of the problems with the older databases is that once you've been using them for five years, you're trapped. You can't escape from IBM's IMS very easily. By 1990, only a small percentage of major database systems will be relational. There will still be a lot of Codasyl around.

CD: Will there be tools to help salvage the older systems?

Martin: We're beginning to see tools that do a little bit toward that. What we're learning from these tools is that if you've made a mess of the past, there's no good, automated technique to clean it up. There are structuring engines to convert spaghetti Cobol code to structured code. But having done that, your data are probably still a mess. You can impose structure on unstructured programs, but that doesn't solve the problem.

"If we could turn the calendar back to 1970, we would never build a Codasyl database. We would develop a relational approach."

CD: What role will relational machines play?

Martin: We're seeing some good relational machines. The Japanese have just developed one as part of their fifth-generation project. Machines like the Teradata system have a high level of parallelism; that is, several microprocessors read different sections of the database at the same time. One of the most important benefits is in machine performance. Conventional hardware looks at one record at a time, which is time-consuming and relatively expensive. With IBM's IMS, for example, maximum throughput is slightly less than 100 transactions per second. Some of the big banks are going to have to handle 1,000 transactions per second by the end of the decade. If you want artificial-intelligence applications or extensive searching and joining of data with relational languages, then

you need even better machine performance. By the end of the decade, we're going to see database machines with very high performance and flexibility.

CD: How do you expect artificial intelligence to develop?

Martin: We're going to see applications that are much more complex than we're used to with present dp techniques. Expert systems that help users work through pretty complex logic will probably be the most important applications. But building an expert system is a very complex task. By the end of the decade, there probably won't be more than about 5,000 professionals in the United States who can do it, which is a very small number compared to the million programmers and analysts who build systems with traditional characteristics.

CD: What artificial-intelligence languages and tools will expert-systems builders use?

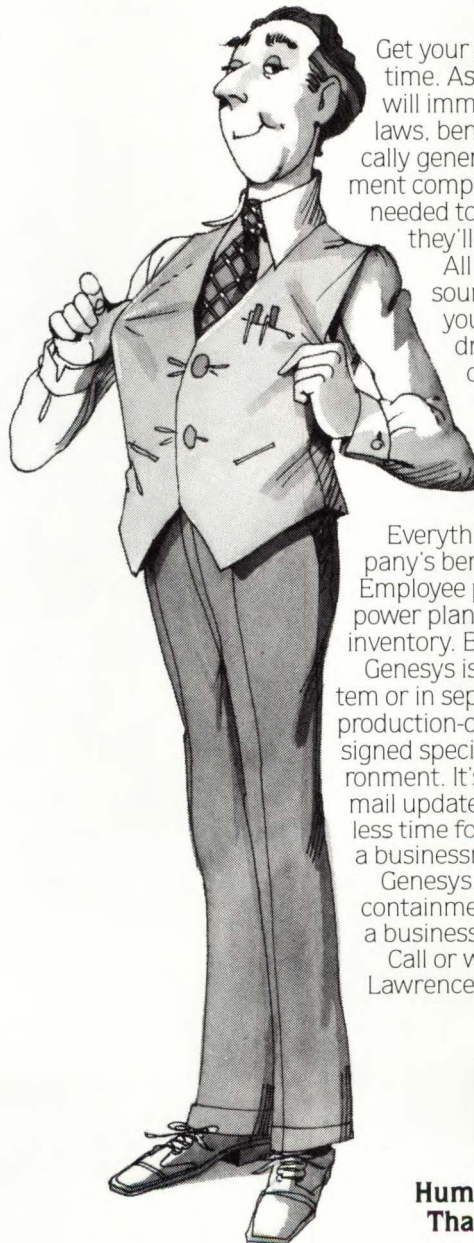
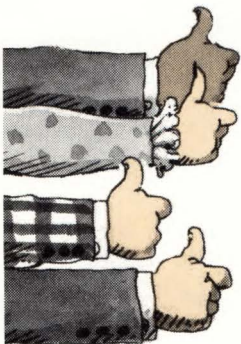
Martin: Lisp is the predominant language in the United States; Prolog is the predominant language overseas. Comparing Lisp with Prolog is a little like comparing assembly language and SQL, IBM's database language. You can do many things in assembly language that you can't do in SQL. But if you happen to be handling chores in assembly language that fit SQL, you can get results from it much faster. So we'd like fifth-generation languages that are higher-level, like Prolog. But Prolog by itself doesn't give us the logical power to do everything that's needed. We'll begin to see languages that have the expressiveness of Lisp connected to the high-level constructs of Prolog. You really need more than



On a Texas Instruments Professional Computer, James Martin demonstrates a prototype CAD/CAM-like tool for systems analysts.

(Continued on page 106)

EVEN IF YOU CHOOSE THE GENESYS HRMS FOR STRICTLY TECHNICAL REASONS, YOU'LL STILL LOOK LIKE A BUSINESS GENIUS!



Get your company's 401(k) up and running on time. Assure payroll that employees' paychecks will immediately reflect any changes in tax laws, benefits, or union settlements. Automatically generate all the reports required for government compliance, as well as all the information needed to respond to discrimination suits. And, they'll call you a business genius.

All it takes is Genesys. The human resource management system that shows you how to contain costs and add hundreds of thousands, even millions, of dollars to your company's bottom line.

Genesys is the only human resource management system to offer a comprehensive benefits module, as well as leading edge personnel and payroll packages.

Everything you need to manage your company's benefits program. Minority tracking. Employee promotions. Applicant control. Manpower planning. Training and development. Skills inventory. Budget analysis. And more.

Genesys is available as a fully integrated system or in separate modules. With or without a production-oriented IMS/database system designed specifically for your IBM mainframe environment. It's also the only HRMS with electronic mail updates. Which means it'll take that much less time for management to see just how smart a businessman you are.

Genesys. It's more than an HRMS. It's a cost containment system that makes you look like a business genius.

Call or write today. Genesys, 20 Ballard Way, Lawrence, MA 01843, (617) 685-5400.



**Human Resource Management
That Helps Your Bottom Line**

WHAT WE BELIEVE:

AS THE SOFTWARE COMPANY WITH THE LARGEST
INSTALLED BASE OF ANY INDEPENDENT VENDOR—75% OF
THE FORTUNE 500 ARE OUR CUSTOMERS—WE, COMPUTER ASSOCIATES,
BELIEVE THAT INTEGRATED OPERATIONS MANAGEMENT SOFTWARE
IS ESSENTIAL TO OPTIMIZE DATA CENTER PERFORMANCE.



CA-SCHEDULER.™ IT WILL PUT YOUR ENTIRE DATA CENTER ON AUTOMATIC... AND AUTOMATICALLY MAKE YOUR DATA CENTER RUN BETTER.

Computer Associates has become the software leader by creating and supporting the integrated Operations Management Software Series—and the reasons for this leadership are superior systems such as the remarkable CA-SCHEDULER.

Here is the most advanced scheduling, planning and tracking tool ever developed with power and capabilities far exceeding anything else available. CA-SCHEDULER is the easiest and quickest of all such systems to install. You'll see results in days—not months. Reruns will be cut by 50%, the number of jobs that can be run at any one time greatly increased, and manual operator involvement significantly reduced.

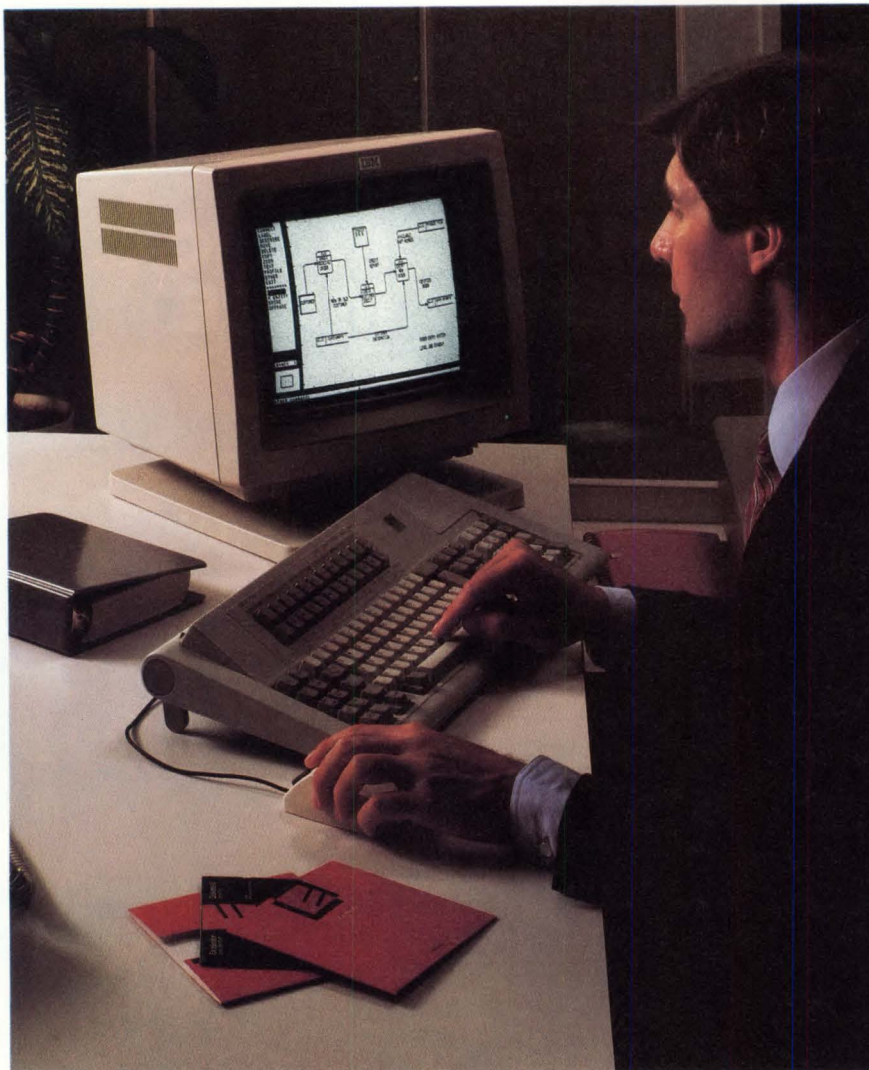
CA-SCHEDULER is just one of a series of superior products addressing the needs of resource management, performance measurement, and production control. Each of these products can stand alone and be added as needed. Each is fully integrated with the others in the series so they can talk together and maximize efficiency.

And that is what Computer Associates can do for you—fully automate every aspect of your data center operations. No other company offers such a complete range of products to meet your data center needs. We really do believe we can make your whole company run better. Try us and see. It's not for nothing that we're the leader. Call 800-645-3003 or (in NY) 516-333-6700 and ask for Dana Williams.



COMPUTER ASSOCIATES

Software Leadership Through Excellence



The future of systems analysis Now!

Computer Aided Design (CAD) has finally come to software engineering.

With *Excelerator*, you can improve the effectiveness of your systems analysts and software designers by providing a tool that automates the job of developing systems specifications. *Excelerator* provides facilities for creating and validating data flow diagrams, data model diagrams, structure charts, report mockups, and screen mockups. The extended data dictionary stores all the information about your specification, including record and file layouts,

data elements, and relationships. Now, you can cross-check all aspects of the system specification for completeness and accuracy. An integrated report writer and document preparation facility allow analysts to generate mini-specs for project reviews or the complete specification ready to deliver to clients.

Your specification is more complete and consistent than using manual methods—and finished in a fraction of the time.

Excelerator is the most complete workbench for the systems analyst available on the IBM PC-XT, 3270-PC, and PC-AT.



Excelerator™

Index Technology Corporation Five Cambridge Center Cambridge, MA 02142 617 491-7380

West 18662 MacArthur Blvd. Suite 200 Irvine, CA 92715 714 955-1160

Southeast 7927 Jones Branch Dr. Suite 400 McLean, VA 22102 703 442-8202

Midwest Citicorp Plaza 8410 West Bryn Mawr Ave. Suite 400 Chicago, IL 60631 312 380-1226

CIRCLE 52

MARTIN

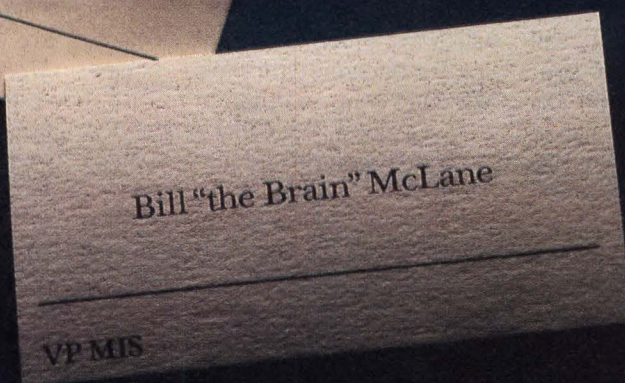
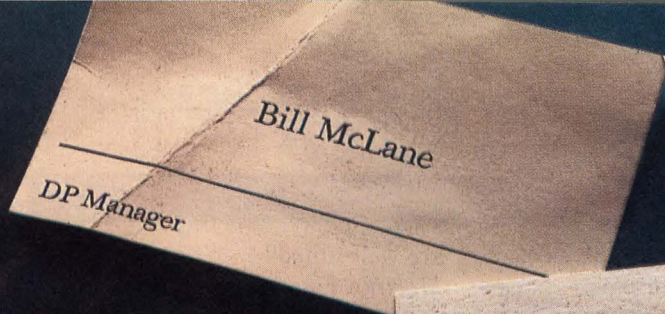
(Continued from page 102)

a language. You need a shell that gives you a set of tools for expressing the knowledge base and the logical inferences that you're going to use with the knowledge base.

CD: When will tools for building expert systems become generally available?

Martin: We're already seeing shells for building expert systems. Companies providing them include Teknowledge, Intellicorp, and Xerox. In some cases, designers will use these shells without actually knowing a language like Lisp. A shell may be written in Lisp, but you won't have to be a Lisp programmer to use it. This is rather like the fourth-generation world, where you can build applications without knowing a procedural language. There are already software products today that make it easy to develop rather simple expert systems. Some of these packages—the Knowledge Engineering Environment package from Intellicorp, for example, and some personal-computer packages from Texas Instruments, are pretty nice, with some beautiful capabilities. At the same time, we're seeing machines that greatly increase the ease with which you can develop expert systems—and they're dropping in cost. Texas Instruments is about to announce a small computer—a bit too big to be called a personal computer, but designed as a one-person workstation—for building artificial-intelligence systems. It's a Lisp machine called Explorer with a very

"Executives should start thinking about tasks in their companies that would benefit from expert systems."



SYSTEM 2000® DBMS. WHEN YOU BOUGHT IT FIVE YEARS AGO, THEY THOUGHT YOU WERE SMART. TURNS OUT YOU WERE A GENIUS.

In the beginning, you bought your SYSTEM 2000 DBMS because it was the best anywhere.

You also figured Intel simply wouldn't be able to leave well enough alone.

You were right.

And, thanks to a continuing program of product enhancements, our DBMS keeps getting better and better.

While you keep looking smarter and smarter.

Now, in addition to all of our previous improvements, the SYSTEM 2000 DBMS also offers Relational Database Access (RDBA).

RDBA is an enhancement of our system's query and report languages which gives relational access to multiple databases. Which, in turn, enables users to greatly re-

duce programming time, perform database modeling and engage in "what if" analyses. Some very noteworthy user benefits in any-

body's book.

It all adds up to the broadest, deepest functionality of any DBMS anywhere.

The kind of functionality that allows virtually any pc to share data with virtually any mainframe. We call it the

Data Pipeline™ system.

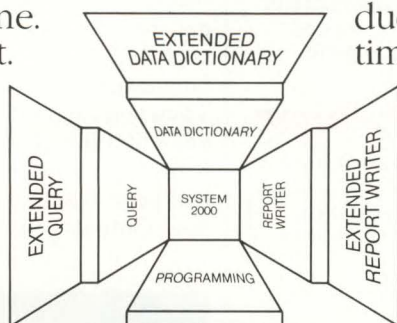
The ingenious SYSTEM 2000 DBMS.

Backed by a billion-dollar-plus, technologically-renowned company which continues to support each and every SYSTEM 2000 DBMS with complete training, documentation and hotline services.

If you don't already have our SYSTEM 2000 DBMS working to keep you looking smarter, call us today at (800) 538-1876. In California, call (800) 672-1833. Or write: Intel, Lit. Dept. H21, 3065 Bowers Ave., Santa Clara, CA 95051.

There's still time to go to the head of the class.

intel®



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

INTERVIEW WITH JAMES MARTIN

high-density graphics screen. It will be used primarily by Lisp programmers, but it will also run the shells so nonprogrammers can use it, too. Again the analogy with fourth-generation languages is quite appropriate. We move from procedural languages to nonprocedural languages,

which are much faster and easier to use. It's the same with expert systems. We don't want to program in Lisp if we can avoid it. We'd like better ways to express the rules and the knowledge base.

CD: Can you describe some typical applications for which expert systems

are well suited?

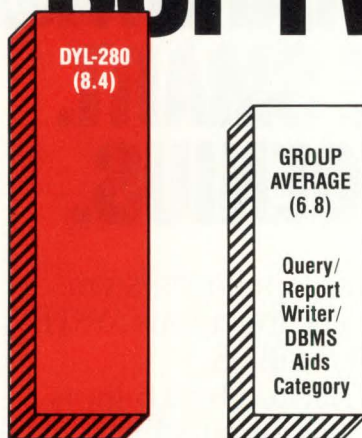
Martin: Financial-planning and investment analyses will be among the bread-and-butter applications. The systems will help plan the flow of goods through a factory, give advice to salespeople on complex products, and so on. There will be an infinite variety of applications. One of the most powerful existing expert systems is one used at DEC for configuring VAX systems, a very complicated job. Not all expert systems will be complex, however. When we thought of expert systems in 1972, we usually imagined very intellectually difficult systems to build, the kinds of advances students got Ph.D.s for at Massachusetts Institute of Technology and Stanford, like Mycin and other medical systems. Today, it's clear that you can use expert systems for much more basic applications. Once you start thinking in terms of the applications needed in the factory, the bank, the insurance carrier, you're completely surrounded by activities that need better decision-making and more complex logic. Computer-involved executives should start thinking about tasks in their corporations that would benefit from expert systems. Very few have started to think in those terms.

C D: How will large-scale applications packages evolve?

Martin: Applications packages are getting better all the time. Packages will be much more practical when they're connected to fourth-generation languages, particularly report and graphics generators, query languages, and database managers. Then you can easily modify the package's output. Today, 80 percent of software maintenance results from end users wanting to change the output. Output generators will provide

(Continued on page 112)

WHY USERS RATE DYLAKEOR SOFTWARE #1



Latest Data Decisions Systems Software Survey Shows Dylakor is Overwhelming Choice of Users...Again

Survey after survey, year after year, Dylakor products are rated number 1 for IBM mainframes. Why? Because Dylakor software has the versatility, flexibility and reliability that provide outstanding performance... and Dylakor provides the support and service that assures continuing satisfaction.

Now, Dylakor continues this tradition of excellence with DYL-280 II, its newest, most advanced mainframe software.

Versatility. DYL-280 II is a total file and information management system. It is also a letter and report writer, an extended utility, table and array processor, and it supports PDS and SSL libraries.

Flexibility. Three-stage capability enables end-users without computer experience to write reports with simple commands, while programmers use DYL-280 II for program development and file management. And the structured approach includes commands such as CASE, DOWHILE and DOUNTIL.

Reliability. Over 2,000 installations on six continents and a company with over 15 years of specialization in mainframe products.

Learnability. Outstanding documentation and ease of use gets you up and running faster and easier.

Find out today why users prefer Dylakor. Return the coupon, or call (818) 366-1781, and get complete information on DYL-280 II.

Dylakor

A Sterling Software Company

Send me more information about DYL-280 II, Dylakor's newest, most advanced software for IBM mainframes.

Name _____
Title _____
Company _____
Address _____
City _____
State _____ ZIP _____
Phone _____
Computer _____

Mail to: Dylakor, 17418 Chatsworth Street,
P.O. Box 3010, Granada Hills, CA 91344

CIRCLE 54

"The personal computer is getting more powerful all the time."

Financial Software Problems Solved.

20¢

That's all it will cost you to mail us the coupon below. But it will be a giant step toward solving your financial software problems. A step that has already been taken by finance and accounting managers at hundreds of major corporations. They have since found they can totally rely on financial software systems by Data Design.

Why? Our Financial Applications Software Packages—all of which are developed by Data Design—are given the most extensive reliability testing in the industry, guaranteeing ease of use and trouble-free installation.

No wonder, then, that Data Design was rated so highly in the latest *Datamation* software survey. In fact, in the ratings of General Accounting packages, Data Design's Fixed Assets and Accounts Payable/Purchase Control finished above all other packages studied. Ahead of MSA, McCormack & Dodge and Software International. Our General Ledger and Capital Project Management System were too new to be included in the survey. We're dedicated to achieving the same results with these systems.

Data Design was rated higher in terms of overall satisfaction with product performance as well as service and support. The service and support ratings are especially significant in that they polled user votes in the categories of vendor responsiveness, training and documentation—areas critical to trouble-free system operation. Data Design has consistently been rated the best in these categories in nationally recognized independent software surveys.

Follow-up maintenance (each customer is assigned their own personal Account Manager), telephone consultation and a 24 hour emergency hot-line service are included with the purchase of each system. So are full installation assistance and in-depth training (at Data Design or at your facility).

So you see, our reputation for excellence has been built on providing only the highest quality mainframe software for:

- ☐ General Ledger Financial Control
- ☐ Accounts Payable/Purchase Control
- ☐ Fixed Asset Accounting
- ☐ Capital Project Management

To learn how these systems have solved financial software problems for a broad range of medium to large size companies on most major computer systems, complete and mail the coupon below. Better yet, save the 20¢ and call us today at 800-556-5511 (408-730-0100 in California). We'll do the rest.



1279 Oakmead Parkway, Sunnyvale, CA 94086

Please send me additional information on your:

- ☐ General Ledger System
- ☐ Accounts Payable/Purchase Control System
- ☐ Fixed Asset Accounting System
- ☐ Capital Project Management System

My need is: ☐ Immediate ☐ Short Term ☐ Long Term

☐ I am interested in attending a free seminar on financial application software.

Name

Title

Company

Address

City, State, Zip

Telephone ()

Computer Brand Model

CDS 5

When you see for yourself what the New Cincom Systems is all about, you'll understand why the words "Excellence In Software Technology" fit so well under our name.

reasons why we're number one you'll ever need.

technology. A complete closed-loop system, MRPS is improving the productivity and profitability of over 125 IBM and DEC VAX manufacturing environments around the world.

#4 Financial Control Software

CONTROL: Financial is our sophisticated financial accounting and control system which molds to the way you do business. Integrated directly with MRPS, **CONTROL:** Financial includes Accounts Receivable and Credit Management systems with Accounts Payable soon to follow.

#5 Advanced Network Management

NET/MASTER™ is one of the most recent additions to the New Cincom family of integrated products. Very simply, **NET/MASTER** is an advanced network management system that takes the complexity out of managing a sophisticated IBM computer network and lays the groundwork for distributed data base processing.

#6 The Interactive Mainframe—Micro Link

Further expanding the capabilities of our software information network is **PC CONTACT**, our mainframe-micro link which enables users to interactively upload/download data between the mainframe and IBM PC's. **PC CONTACT** gives the PC user the ability to access multiple file types stored in the corporate data base for Decision Support manipulation.

#7 Micro Decision Support Software

For comprehensive micro-level Decision Support we offer **SeriesOnePlus™***. **SeriesOnePlus** includes file management, spreadsheet, graphics, reporting and word processing components that are all integrated through a unique "BUS" architecture. Because the system is designed exclusively for business situations, **SeriesOnePlus** complements any mainframe-micro network strategy.

#8 Mainframe Decision Support Software

The recently introduced **MANAGE USER SERIES™** provides powerful Decision Support capabilities for the mainframe user. The **MANAGE USER SERIES** combines graphics, spreadsheet, text processing and application development tools to enhance the use and display of corporate data.

#9 Client Support

The one thing that isn't new about Cincom is our unrivaled commitment to service, support and user education. When you choose Cincom you can be assured of the highest caliber of support.

#10 Software Excellence

Why the New Cincom? Well, we like to think of ourselves as the New Cincom because every product in our software information network has been released since 1981. And, quite frankly, we

believe our new products provide the highest degree of reliability, integration, performance and value in the industry. As proof, just look at our sales. From 1982 to 1983, **TIS** sales rose 136%, **MANTIS** sales rose 50%, and **MRPS** sales rose by 45%. For even more proof we invite you to personally compare our products with what our competitors are offering. Then you'll understand why the words "Excellence In Software Technology" fit so well under our name.



To Learn Even More
About Cincom Call
Or Write For Our
Brochure: "THE
NEW CINCOM:
WHAT EVERY
INFORMED SOFTWARE
BUYER SHOULD KNOW."

Cincom Systems Inc.
2300 Montana Avenue
Cincinnati, Ohio 45211
Attention: Marketing Services Department

1-800-543-3010
In Ohio: 513-661-6000
In Canada: 416-279-4220

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip _____ Phone _____



**Cincom
Systems**

Excellence in software technology.

INTERVIEW WITH JAMES MARTIN

(Continued from page 108)

much more flexibility. We're going to see packages become much more usable.

CD: Management Sciences America just released a report writer, Information Expert, that allows users to easily pull information from databases cre-

ated by MSA applications. Is that the kind of capability you mean?

Martin: Yes, exactly. There are a few examples. The manufacturing system from Xerox Computer Services offers a pretty powerful combination of basic applications and fourth-generation tools.

"In 10 years, we may standardize on an entirely different operating system, one without a Unix pedigree."

CD: Generally, though, haven't these combinations been slow to develop?

Martin: Perhaps, but that will change. Applications are going to be much more sophisticated. They'll be too complex for users to build, yet they'll require more customization than the current packages allow. Once some good products emerge with the power of applications and the flexibility of fourth-generation tools, all the software vendors will have to copy them. Quite a few of the software houses are already making deals with vendors that offer powerful languages. They're adopting a particular database or a particular specification language for building their own software. UCCEL has adopted the HOS methodology, for example.

CD: Will Bell Labs' Unix become a standard operating system?

Martin: We certainly need a standard operating system. The lack of program portability is very inconvenient and expensive. Unix is perhaps the only operating system that gives a substantial level of portability today. From that point of view, I'm very strongly in favor of Unix. However, Unix was created 10 years ago, and it is a very research-oriented operating system. Those who get excited about machine performance don't get excited about Unix. Those who get excited about human factors think Unix is just terrible. At any time, you can look at the current set of products and say you want something much better. One of the nice characteristics of the computer industry is that products always get better. I would like to see an operating system that pays more attention to human factors and has much better machine performance. Maybe Unix can evolve into that

(Continued on page 116)

Turns Spaghetti Code COBOL Into Structured COBOL Automatically

SUPERSTRUCTURE takes your unstructured COBOL programs and automatically produces structured COBOL programs that are easy to understand and maintain.

SUPERSTRUCTURE provides a simple and cost effective alternative to manually rewriting those unstructured programs that are a maintenance nightmare. Of course you can't believe it. Let us prove SUPERSTRUCTURE works, using your programs at your location. SUPERSTRUCTURE — the breakthrough you've been waiting for.

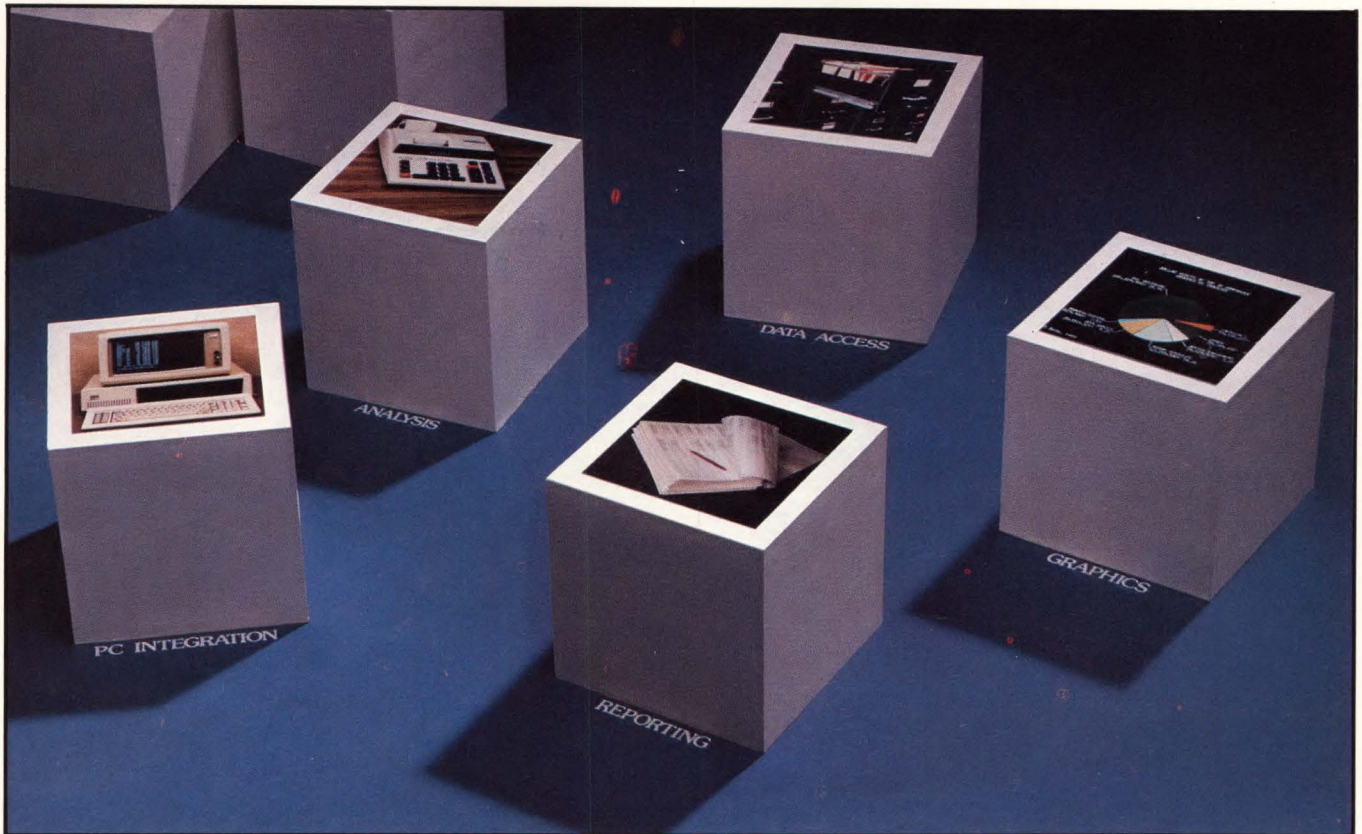
Call today: Marketing Director —
SUPERSTRUCTURE.

Group Operations, Incorporated
1110 Vermont Avenue, N.W.
Washington, D.C. 20005
(202) 887-5420

Offices in Boston, Chicago, Dallas,
Los Angeles, and New York



THE RAMIS® II INFORMATION CENTER GIVES YOU FREEDOM OF CHOICE.



RAMIS II MAKES YOUR INFORMATION CENTER WORK... FOR EVERYONE.

RAMIS II is the comprehensive software system developed with the Information Center user in mind. It meets the needs of both end-user and computer specialist,



allowing each to be significantly more productive.

The key is *freedom of choice*. For instance, end-users have not one, but *three* ways to produce reports, depending on their computer expertise and preferences. Intelligent menus for the novice; everyday English at the executive level; and

a powerful fourth-generation language for the experienced user.

But that's just the beginning. RAMIS II provides additional choices for data access, graphics, statistics, operating environments, PC integration and more.

And, the choices RAMIS II offers do not stop with end-users. Your Information Center staff may select their own options in education and training, user assistance, and data security.

FIND OUT ALL ABOUT FREEDOM OF CHOICE AT A RAMIS II SEMINAR.

Only RAMIS II integrates the choices that both end-users and computer specialists need to make the Information Center work... for everyone.

Learn more about the power of RAMIS II at a free Mathematica Seminar on Information Centers.

To receive a seminar schedule, call today 1-800-257-5175, or return the coupon below. Take the first step to greater productivity with RAMIS II's freedom of choice.

MATHEMATICA

P.O. Box 2392, Princeton, NJ 08540

- ☐ I'd like to attend a RAMIS II Seminar on Information Centers. Please send me a schedule.
☐ Please send more information describing RAMIS II.

Name

Title

Company

City State Zip

Telephone

Computer Operating System

CD11

RAMIS® II... THE LEADER BY DESIGN

MARTIN MARIETTA



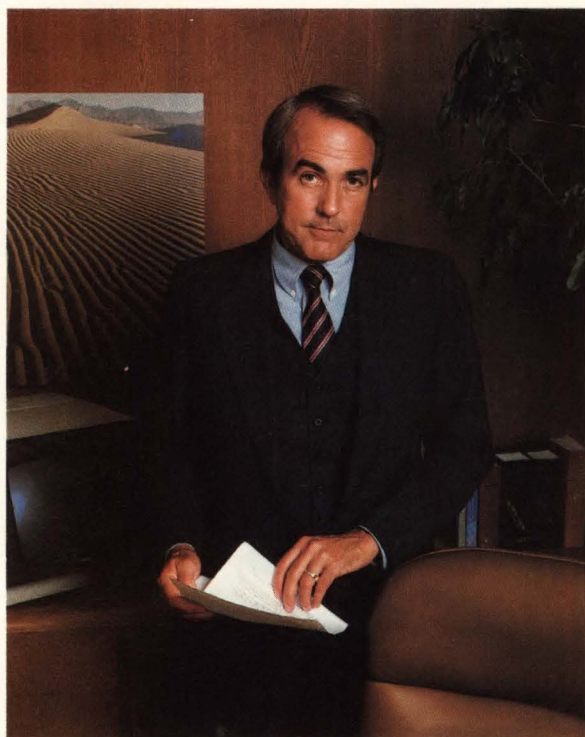
Execucom Introduces Stress Free Decision Making.

The stress never stops. Pressure to be the best—to be perfect—doesn't let up. In a multi-million dollar company like yours, financial decisions must be dead-center correct. Every time. You need all the right facts...figures...and "what if's"—for each level of operation—before you make decisions. In short, you need information, not data. Knowledge, not guesswork. Integrated models, not hand-done analyses.

Now, using Execucom's unique family of decision support systems, you have the ability to closely examine any number of financial scenarios. At the touch of a fingertip, you and your staff build powerful, responsive, realistic models of specific business situations. Our integrated IFPS® and IFPS/Personal® (micro-to-mainframe) system provides you total planning and forecasting support. Now, you develop complex financial applications—quickly and efficiently—which provide greater understanding of relationships among the segments of your company and different markets it serves.

Execucom systems give you more usable information. Faster than ever before. You now have the opportunity to fully analyze each "challenge", each critical circumstance. And because you're better prepared, your performance under pressure becomes even cooler, more proficient—and your recommendations are right on the money.

Decision support software from Execucom. The number one choice, nationwide, of companies just like yours. Put your pressure on *us*. Call 1/800-531-5038 (In Texas or Canada, 512/346-4980). Or write Execucom Systems Corporation, 3410 Far West Boulevard, Austin, Texas 78731.



 **EXECUCOM**

A **CONTEL** Company

CIRCLE 59

*When it's up to you...
to make the financial decisions.*

INTERVIEW WITH JAMES MARTIN

(Continued from page 112)

system. But the way the computer industry tends to evolve is that new things come from new directions. Unix itself came from a surprising direction. So I would guess that in 10 years we may standardize on an entirely different operating system, one

without a Unix pedigree.

CD: Will Ada be adopted for commercial uses?

Martin: That would be an absolute disaster. It was not originally designed for commercial use. It was designed for the types of work that are so complicated

"There's no fourth-generation language in existence that I wouldn't want to completely redesign."

that you'd otherwise use assembly language. We have other languages that are very powerful and have constructs directly designed for commercial use, with good database facilities; good report, screen, and dialog generators; and the capability to create procedural code very easily. The Department of Defense is throwing vast sums of money at Ada, though, so lots of riders are on the Ada bandwagon. CD: What developments do you expect in end-user computing?

Martin: There's going to be massive growth in end-user computing. Sometimes what the end users will be doing won't look like normal programming. They'll be using a query language, a report writer, or, most commonly, a spreadsheet tool. Spreadsheets will become much more comprehensive, with far more functionality. The spreadsheets we have now are two-dimensional, but most of the data we want to analyze have more than two dimensions. Sales over time would be two dimensions, for example. But I'd like to break sales down into different types of products. That's three dimensions. And I'd like to break that down into sales in each region. That's four dimensions. It will be a natural extension of today's spreadsheets to handle several dimensions. The next step will be three-dimensional spreadsheets, which will represent information graphically with cubical structures. Multidimensional spreadsheets will follow.

CD: What personal-computing developments do you expect?

Martin: As the spreadsheets evolve, you'll want to connect them to the new analytical tools. There are some wonderful tools for forecasting and for financial anal-

(Continued on page 120)



Environments which are user friendly produce friendly users. Make a friend!

How to stop the grumbling

MANAGER SOFTWARE PRODUCTS' CONTROLMANAGER™ rids your users of the never ending task of having to learn how to interact with yet another software product. It enables them to match the functionality of a software product with their specific requirements, while at the same time removing the need for them to become 'syntax' knowledgeable.

Meet the MANAGER family

CONTROLMANAGER is truly integrated and being a member of MSP's MANAGER Family, is totally dictionary driven. CONTROLMANAGER is initially available exclusively for the other members of the MANAGER Family. These include DATAMANAGER®, the data and information resource management system, DESIGNMANAGER™ the logical data base design and information modeling system and SOURCEMANAGER™ the Cobol application development system.

Interface with ease

CONTROLMANAGER is the interactive interface between the person, the machine and the software. It provides automatic navigation for the user to get where he wants to be. It is simply and logically tailorable.

Lets get together

Find out how CONTROLMANAGER can help you make friends with your users.

Send the coupon today or call (617) 863 5800 (Telex 710 326 6431).

mSP

MANAGER SOFTWARE PRODUCTS INC

Offices worldwide: Australasia, Benelux, Canada, Italy, Japan, Scandinavia, Spain, Switzerland/Austria, U.K./Eire, U.S.A., West Germany.

Send me more information about MANAGER SOFTWARE PRODUCTS' family of integrated, dictionary-driven products:

☐ CONTROLMANAGER	☐ DESIGNMANAGER
☐ DATAMANAGER	☐ SOURCEMANAGER

Name _____ Title _____

Company _____

Address _____

City/State/ZIP Code _____

Telephone Number () _____

Send coupon to MANAGER SOFTWARE PRODUCTS INC,
131 Hartwell Ave., Lexington, MA 02173-3126.
Or call (617) 863 5800, Telex 710 326 6431 CM/CD/11-84

DATAMANAGER is a Registered Trademark of MSP Limited

CIRCLE 60



THIS YEAR, WARE THE HOTTEST NUMBERS IN SYSTEMS SOFTWARE.

Ware UCCEL. And step into the future with systems software so complete and totally integrated, you'll never again ware anything else. Because this year, more than ever before... UCCEL's got your number.

UCC-7. Incredible. A production workload management system that surpasses all others. Real time feed-back responds to your immediate needs and addresses all areas of production control. Designed to fit all data

centers, UCC-7 is available in three different sizes: small (UCC-7 Basic), medium (UCC-7) and large (UCC-7 with RPT). And there's more. UCCEL makes another hot number especially designed to work with UCC-7.

UCC-11. An automated job management system that provides comprehensive job tracking and makes reruns and restarts a breeze.

UCC-1. The tape management industry standard. A companion to UCC-1, UCC-1/VM TAPE extends all facilities of UCC-1 to the CMS user.

UCC-3. A comprehensive DASD management sys-

tem designed to work with UCC-1.

UCC-9. A unique hardware management product that helps you get the most out of each hardware dollar.

UCC-10. A Data Dictionary/Manager which automates the communication and control needed to effectively manage the IMS data base operation.

UCC-8. An online, integrated system designed to manage the complex support activities of today's data centers.

UCC-2. (DUO). In a class by itself. UCC-2 helps you move from DOS to MVS with minimal effort.

UCC-20. An OS JCL Gen-

erator which works in conjunction with UCC-2 to ease the transition to OS.

UCC-4. The hottest new number in the UCCEL line, UCC-4 is a hardware accounting system so advanced... it's taking the industry by storm.

So ware the hottest numbers in systems software. Ware UCCEL. Because this year, more than ever before... UCCEL's got your number.

UCCEL

Systems software
that makes you
look good.

FORMERLY UCC UNIVERSITY COMPUTING COMPANY.

UCCEL Corporation, UCCEL Tower, Exchange Park, Dallas, Texas 75235 UCCEL is a servicemark of UCCEL Corporation. 1-800-527-5012.

CIRCLE 61

THE NEW COMPUTERS FROM AT&T. FLEXIBLE. RELIABLE. AND VERY COMPATIBLE.



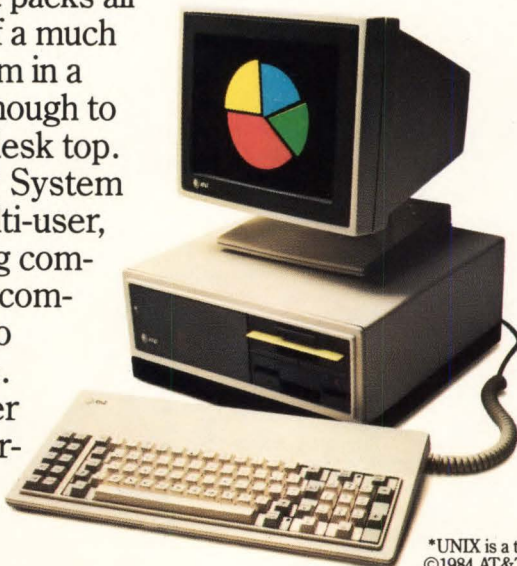
They're new in every sense of the word. New in conception, new in design, new in their ability to deliver unprecedented levels of computer performance. After over 40 years of designing and manufacturing computers, AT&T is proud to introduce a whole new line of innovative computers for business...AT&T Computers.

MEET THE FAMILY

The 3B2, 3B5, and the AT&T Personal Computer make up the new AT&T family of flexible business computers.

The AT&T 3B2 is one of the most advanced super microcomputers you can buy today. It packs all the power of a much larger system in a size small enough to sit on your desk top. This UNIX* System V-based multi-user, multi-tasking computer can accommodate up to 18 terminals.

For larger family gatherings, the AT&T 3B5 mini-



computers make great hosts, because they can accommodate up to 60 users.

And meet the new AT&T Personal Computer. What makes it special is its ability to combine high performance with excellent



graphics capabilities, an adjustable display monitor, and non-glare screen. Its flexibility allows it to operate as a stand-alone unit or as part of an integrated computer network. And its compatibility allows it to run most popular business software, including most available MS-DOS** applications.

THE FAMILY THAT WORKS TOGETHER

One big advantage of AT&T Computers is that when there's work to be done, everyone pitches in.

Each family member works together in a coordinated system, making tasks easier

*UNIX is a trademark of AT&T Bell Laboratories. **MS-DOS is a trademark of Microsoft Corporation.
©1984 AT&T Information Systems.

and users more productive. All AT&T Computers are based on our Information Systems Architecture, an open, communications-based structure that can accommodate and integrate not only our products, but also those of other manufacturers.

Another reason

between terminals, workstations, and computers of all sizes. This local area network allows you to connect departments, buildings, industrial parks, or even campuses. And gives you fast response time and centralized administration and control.

Regardless of the equipment you might own or

acquire, with AT&T Computers it will be like one big happy family.

BUILT-IN RELIABILITY AND SERVICE

Judging by the way they're made and cared for, this family will be around for generations. AT&T Computers meet the toughest design standards and most rigorous testing procedures.

And should you ever require service, we offer around-the-clock maintenance, and one of the industry's largest service forces.

For more information call your AT&T Information Systems Account Executive or 1 (800) 247-1212. Then make arrangements to meet the family: the 3B2, 3B5 and the AT&T Personal Computer. When it comes to meet-

ing your needs, AT&T Computers couldn't be more compatible.

**AT&T INFORMATION SYSTEMS.
WHEN YOU'VE GOT TO BE RIGHT.**

THEY GET ALONG FAMOUSLY WITH MOST EVERYONE

AT&T Computers get along so well with each other, they can't help but get along with just about everyone else. The AT&T Information Systems Network links AT&T Computers with those of other manufacturers. It's a flexible, cost-efficient link



INTERVIEW WITH JAMES MARTIN

(Continued from page 116)

ysis. The person using sophisticated financial-analysis tools on a personal computer today can do faster, more accurate, more complex calculations than most accountants. In fact, traditional accounting looks very crude compared to analyses possible with

personal-computer software. But today, those products don't connect with the spreadsheets so you can feed information from one to the other. That will come. The personal computer is getting more powerful all the time. It has enough power now to run most of the mainframe software. And

most of the mainframe software, which was developed to be used with dumb terminals, will be more attractive on the personal computer, with its subsecond response time and color graphics. There are some good decision-support tools for the mainframe today, such as Express from Management Decision Systems and System W from Comshare. Their facilities don't need a mainframe. They're just fine on a personal computer.

CD: Why keep the mainframes?

Martin: Very often, you'd want to link your personal computer to a shared database. The main function of a mainframe will be to handle anything that many people want to share. But the micro-to-mainframe links will have to get better. [See the Data Communications column in this issue.] We need standards for data representation so a user can download information from the mainframe, and the personal computer will automatically know what it is. We don't have anything that looks like a standard, although we have the DIF facility for Lotus. The technical capability exists. You might see IBM adopting an internal standard for data representation. Once that happens, every competitor will probably copy it. Once there is that logical software connection, there'll be people with computers on their desks accessing decision-support and production databases on the mainframe. Eventually, users won't know whether they're using data on the personal computer or on the main-

Don't get **Zapped**
by the true
high cost of
false UPS
protection.

COMPUTERSAVE™ is the low cost way to protect your sensitive equipment.

Computersave is the only true uninterruptible power system to provide 500 to 1000 VA. And in the long run, it costs much less than inadequate power protection afforded by imitation UPS systems.

The secret's in our exclusive sub-modular design

Only Computer Power, Inc. can offer this exclusive design feature. Our modular approach puts CPI way ahead in terms of competitive prices and ultra-flexibility in deliveries with shorter turn-around time virtually guaranteed.

- 500 to 1000 VA
- Automatic operation during power failure
- Absolutely no interrupt
- Reliable, experienced factory service



Complete power protection in a cost efficient system.

Before you get zapped by the high cost of other power protection systems, contact Computer Power, Inc. For the exciting details on Computersave uninterruptible power systems write or call today.

Computer Power, Inc.
124 W. Main St.
High Bridge, NJ 08829 U.S.A.
(201) 735-8000 Telex: 847481

**COMPUTER
POWER INC.**

"You might see IBM develop an internal standard for data representation. Once that happens, every competitor is likely to copy it."

Madicare.TM To insure a healthy manufacturing software implementation.



If you're looking at manufacturing software, you already know the implementation process can be a traumatic experience.

That's why we created the Madicare program. And made a company-wide commitment to provide a complete spectrum of support services.

With Madicare, you and your staff can manage your new system transplant without disrupting your business or frustrating your employees.

And with implementation successes in both discrete and process industries, Madic Corporation is the most successful software company in the business. With the distinction of being a leading authorized distributor for Prime Computer.

Much of the credit rightfully goes to The Madic System, itself. This highly adaptable, integrated manufacturing software is designed for people. To speak their language. To readily adapt to their existing procedures. To provide up-to-the-minute information so they can do their jobs more efficiently.

So if you are looking for software — from a basic MRP system to a closed-loop corporate information system — call our toll free number, 800-821-2799. Inside California, call 800-354-4083. We'll answer all your questions. And you'll begin to see why we are the leader in successful system implementation, nationwide. Madic Corporation, 3960 Freedom Circle, Santa Clara, CA 95054 Phone: 408-988-8311.

TheMadicSystem

The only corporate information system you'll ever need.

TM Madicare is a trademark of Madic Corporation.

INTERVIEW WITH JAMES MARTIN

frame. The only way they'll know is if they have a slow phone-line connection to the mainframe, because response time will be slower on the mainframe tasks. But if they have a local-area network, they won't notice any difference. The problem today is that, until very recently, most developers perceived the personal computer as a stand-alone machine. Now they see it as a workstation connected to the mainframe database. But the stand-alone developments have given us many capabilities that we never had on mainframes. They've made computing much easier.

CD: What is user-friendliness?

Martin: The most important aspect of friendly software is the avoidance of alien syntax. Nearly all mainframe software requires some sort of syntax, which takes quite a bit of learning and a good memory. It's the programmer's job to memorize that syntax, but busy executives have their minds on other things. If they ever learn the syntax at

all, and they usually don't, they'll forget it in 24 hours. Therefore, you need to be able to communicate with computers without a programming-like or other nonhuman syntax. We're beginning to see good examples of products that do that—Apple's Macintosh is an example and so are the programs that run on Lisa [also from Apple Computer]. We're also beginning to see incredibly fast pop-on menus on personal computers. You've got a menu on the top of the screen, and as you make your selection, another menu very quickly pops on. Menus will become more sophisticated. They might list a number of instructions. To give the computer fairly complicated directions, the user would use a mouse to check off boxes next to several of them. We might call these sophisticated menus "instruction panels" or "pop-on instruction panels."

CD: How will distributed data processing be organized?

Martin: That's a complicated question that dp departments should think

about. For the foreseeable future, we're going to need some centralized mainframe databases. We'll need departmental databases, probably on minicomputers. Personal databases will be on micros. We'll need a network that makes those three levels as transparent as possible. We'll also need a common data representation. We're going to see integrated product sets designed for the distributed environment. And data administration will become a very important function.

CD: Who will deliver fifth-generation computing?

Martin: There are huge opportunities in the fifth-generation, artificial-intelligence, expert-systems world. They'll be seized by small startup companies. In spite of all the talk about the Japanese taking over the world with fifth-generation systems, I suspect the big money will be made by some small, entrepreneurial company backed by venture capital. □

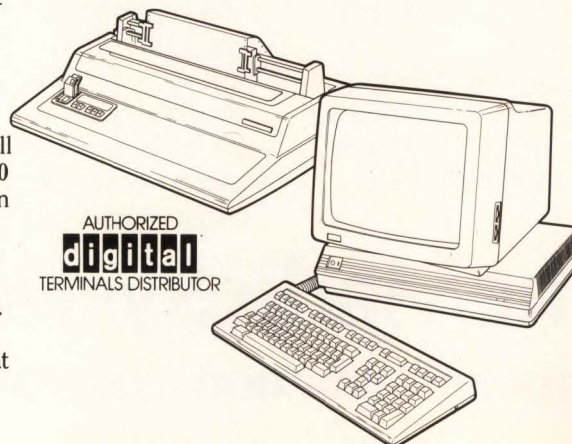
DJC Recommends Digital Terminals

For Video Display And Printers There's No Name Like Digital

The VT 200 family sets a new standard in video terminals. Included are the VT 220 a conversational text only terminal; the VT 240, for text and interactive monochromatic business graphics; and the VT 241, featuring full color graphics. All are compatible with the popular VT 100 series.

Digital's family of printers can fill all your needs. The Letter Print 100 (LA 100) gives you three printers in one—draft quality, letter quality and graphics. The LA 50 Personal Printer adds efficient, low cost printing to any personal computer. These new Digital printers feature the same quality and reliability that made the LA 120 the top rated heavy duty Matrix printer in its class.

DJC stocks Digital, both videos and printers—so call DJC, the leader in peripheral distribution, and ask for Digital.



DJC CORPORATION
5700 Buckingham Parkway
Culver City, CA 90231

New Jersey	(201) 780-0802 (800) 526-2823
Illinois	(312) 790-4466
Texas	(713) 541-9611
Colorado	(303) 233-9236
Hawaii	(808) 943-1944
California:	
San Francisco	(415) 254-9550 (800) 227-2610
Los Angeles	(213) 410-9250 (800) 421-3960
Irvine	(714) 851-5011
Florida:	
Orlando	(305) 629-1595 (800) 321-0800



CIRCLE 64



Computerize your text files with **BASIS**.

Now you can take one to ten million documents from your file cabinets and put them into an instantly accessible electronic database. Save manual searching through your files and find important information when you need it.

BASIS is a proven, interactive software system that probes to find the key words you're looking for within seconds. Next, it displays a list of records containing the specified words. Then BASIS displays records you request and prints hard copy on demand.

Best of all, BASIS is extremely easy to use. Information is retrieved through "FIND" and

other simple commands, using menus and helpful prompts. No programming is needed. And your application can be up and running in days. See how easy it is to computerize your text files with BASIS.

**CALL FOR A BASIS BROCHURE
1-800-328-2648**

In Ohio, call collect (614) 424-5524.

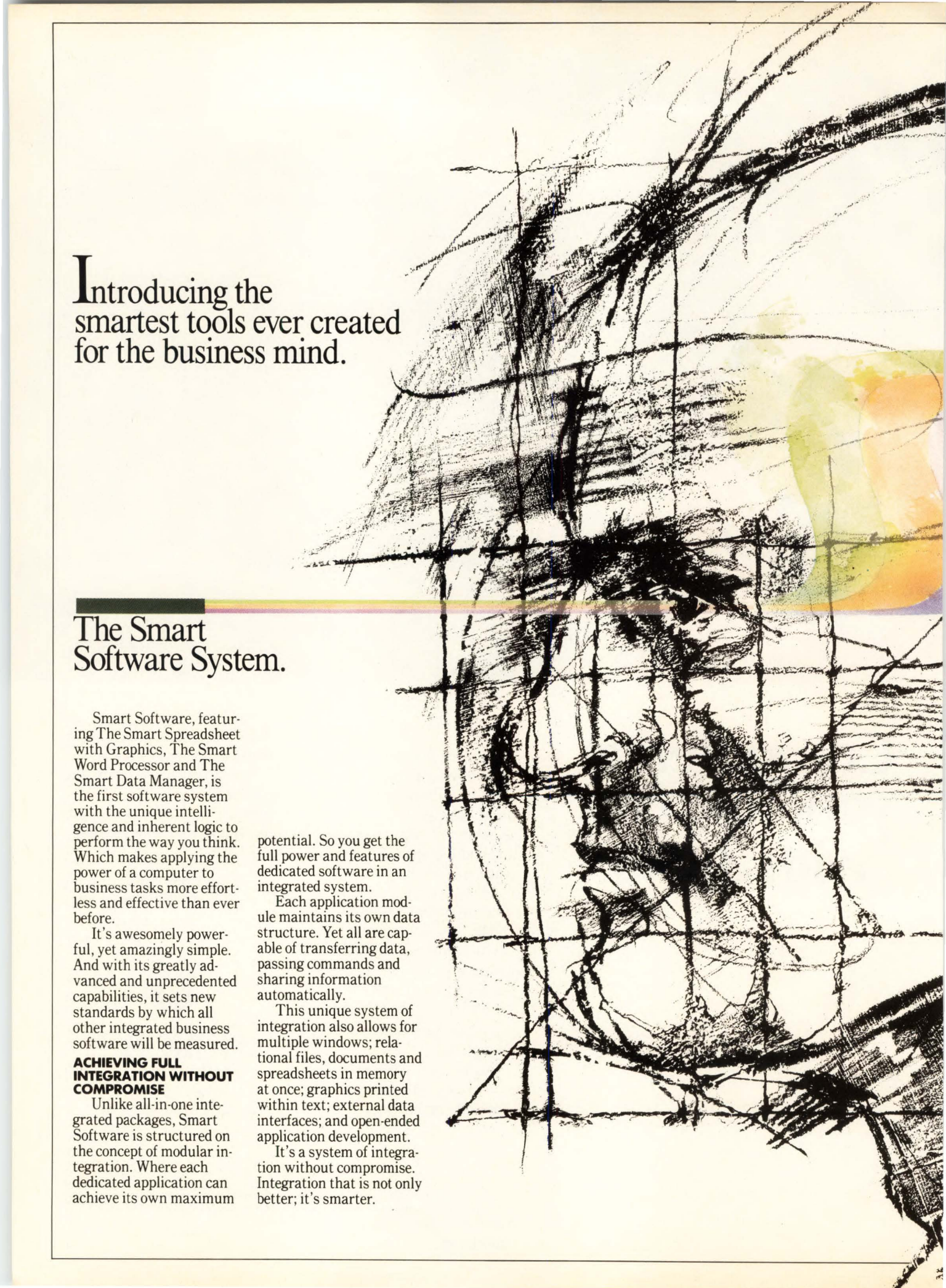


Battelle

Software Products Center
505 King Avenue
Columbus, Ohio 43201-2693

BASIS runs on DEC VAX®, IBM, Prime and Wang VS mini and super minicomputers; on IBM, CDC and DEC® mainframes. UNIX version of BASIS available mid-1984. DEC and VAX are trademarks of Digital Equipment Corporation.

CIRCLE 65



Introducing the
smartest tools ever created
for the business mind.

The Smart Software System.

Smart Software, featuring The Smart Spreadsheet with Graphics, The Smart Word Processor and The Smart Data Manager, is the first software system with the unique intelligence and inherent logic to perform the way you think. Which makes applying the power of a computer to business tasks more effortless and effective than ever before.

It's awesomely powerful, yet amazingly simple. And with its greatly advanced and unprecedented capabilities, it sets new standards by which all other integrated business software will be measured.

ACHIEVING FULL INTEGRATION WITHOUT COMPROMISE

Unlike all-in-one integrated packages, Smart Software is structured on the concept of modular integration. Where each dedicated application can achieve its own maximum

potential. So you get the full power and features of dedicated software in an integrated system.

Each application module maintains its own data structure. Yet all are capable of transferring data, passing commands and sharing information automatically.

This unique system of integration also allows for multiple windows; relational files, documents and spreadsheets in memory at once; graphics printed within text; external data interfaces; and open-ended application development.

It's a system of integration without compromise. Integration that is not only better; it's smarter.



CREATING CUSTOM APPLICATIONS BY SIMPLE MENU SELECTION

Perhaps the most significant aspect of Smart Software is its unique "project processing" capability. It allows the user to set up customized projects, like a monthly sales report system or multi-year business plans, simply by doing them once.

There's no need to learn a complex programming language. The user merely makes simple English command selections. Smart Software then remembers to complete the project in the same way again at the touch of a button. Not by memorizing keystrokes (like a macro), but by automatically learning your custom sequence of commands and freely adjusting to changes and edits.

No other integrated system has a capability that even comes close to Smart Software's project processing.

HELPING PEOPLE TO WORK SMARTER, NOT HARDER

Smart Software was created to work for you, relentlessly. Structured to integrate between applications, automatically. And designed to perform multi-faceted business projects, brilliantly.

See your local computer dealer for a demonstration, or call 800-GET SMART to order a Smart demonstration disk.**

SETTLING THE EASE OF USE VERSUS POWER DILEMMA

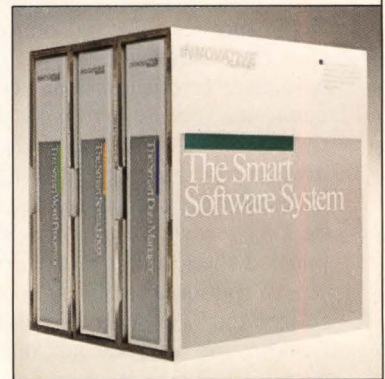
Smart Software puts to rest the ease of use versus power dilemma with an exclusive feature called "confidence levels."

At confidence level one, beginners don't face intimidating options; yet level three provides experts with all the power they want.

This feature enables Smart Software to grow in sophistication as the user's confidence increases or needs expand. Even more importantly, a variety of users in the same company, with different experience, can each work comfortably at their own level of ability with the same applications.

This one, innovative idea could revolutionize the way all business software is designed to work. And only Smart Software has it.

Smart Software is currently available for the IBM PC, IBM PC/XT, the new IBM PC/AT and IBM compatibles.



The Smart Software System
INNOVATIVE
Software

CIRCLE 66

*Lotus 1-2-3, WordStar and dBase II are registered trademarks of Lotus Development Corporation, MicroPro International Corporation, and Ashton-Tate, respectively. In Kansas, call (913) 383-1089.

**The \$10 charge for the disk is refundable with the purchase of any Smart Software.

© 1984 Innovative Software, Inc.

GROWING OLD IN DP

by Martin Lasden, Western Editor

"That direct stare which passes between the young and the old is high up among the classic confrontations. It prefaces one of the great dialogues of opposites, and contains a frank admission of helplessness on either side, for nothing can be done to blot out the detail of what has been, or block in the detail of what is to come."—from *The View in Winter: Reflections on Old Age* by Ronald Blythe.

The computer, a relatively new device, is still evolving, still shaping our collective visions of the future. But for the men and women who began that future, who first operated the machines that propelled us down the road to mass computerization, a good chunk of life has already gone by. Thirty, maybe even 40 years have elapsed since the first dp-ers logged on to those electronic behemoths from which all present-day computers have descended. Some have already retired, and many more soon will, as the revolution they founded—the computer revolution—sees its first generation of veterans leave the field.

As the programmers, systems analysts, and managers who made it all happen, who turned (or at least tried to turn) the theories of automation into practical realities, it would not be hyperbole to say that they have held front-row seats to some of the most startling technical innovations in the history of mankind. They have seen the power contained within roomfuls of electronic paraphernalia squeezed into a container smaller than a breadbox. And they have seen their jobs evolve from number crunching to database management to decision support. Some have even seen the first applications of artificial intelligence come to fruition.

That's quite a lot to see within one lifetime! But while there's a tendency to focus on the machine side of the story (the smaller-faster-more-powerful side of it), there is yet another side that demands at least as much attention: the human side. Have those who faithfully served the computer revolution been served well in return? Looking back, are veteran dp-ers at peace with their pasts—with their failures as well as their successes? And what of the present? Is growing old in dp a good place to be?

As we near the turn of the century, these questions will be asked with far greater frequency as those who have planted their stakes in the dp field, along with everybody else of the so-called baby boom generation, draw closer to retirement. The attitudes a generation develops as it hurtles through time cannot, of course, be predicted with any certainty. And yet, even for the young, getting to know their seniors cannot be considered an academic exercise, for it is by understanding what was that we derive our best insights into what will be.

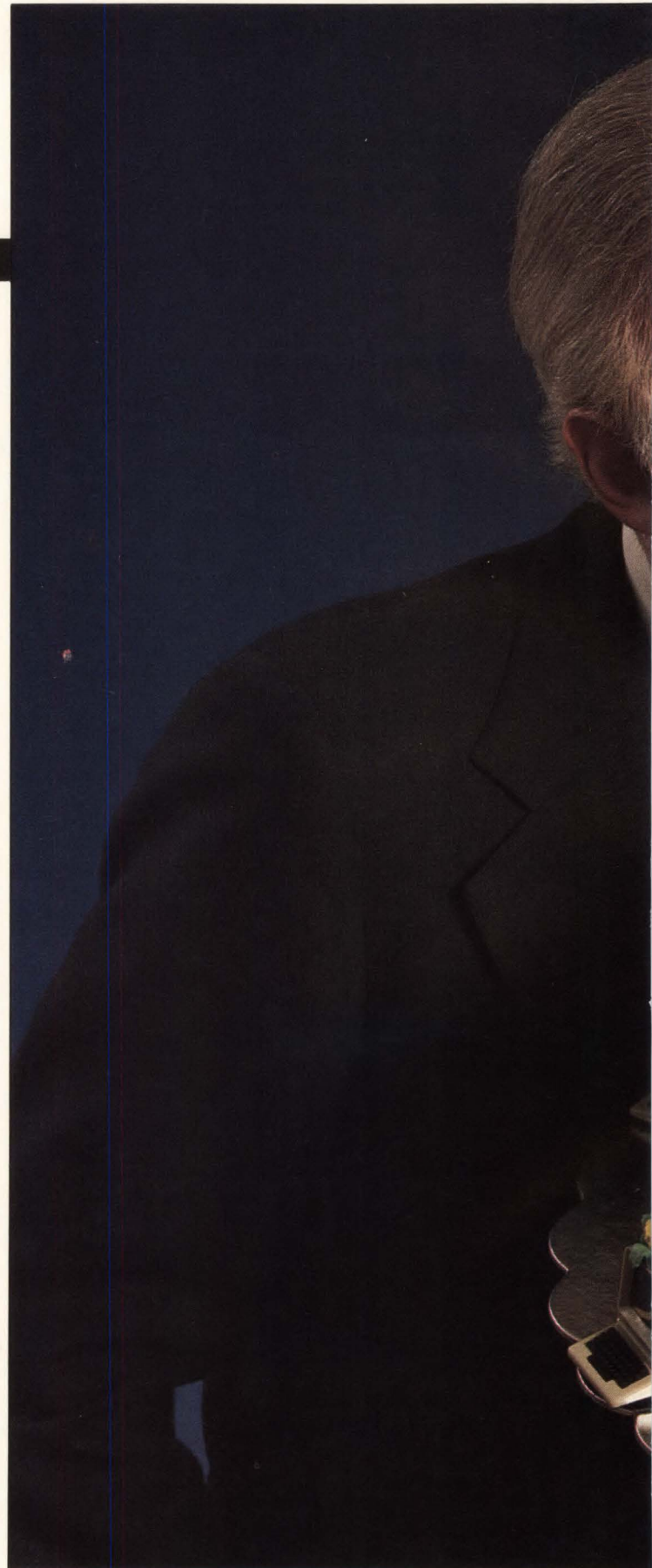


Photo by Ted Hardin

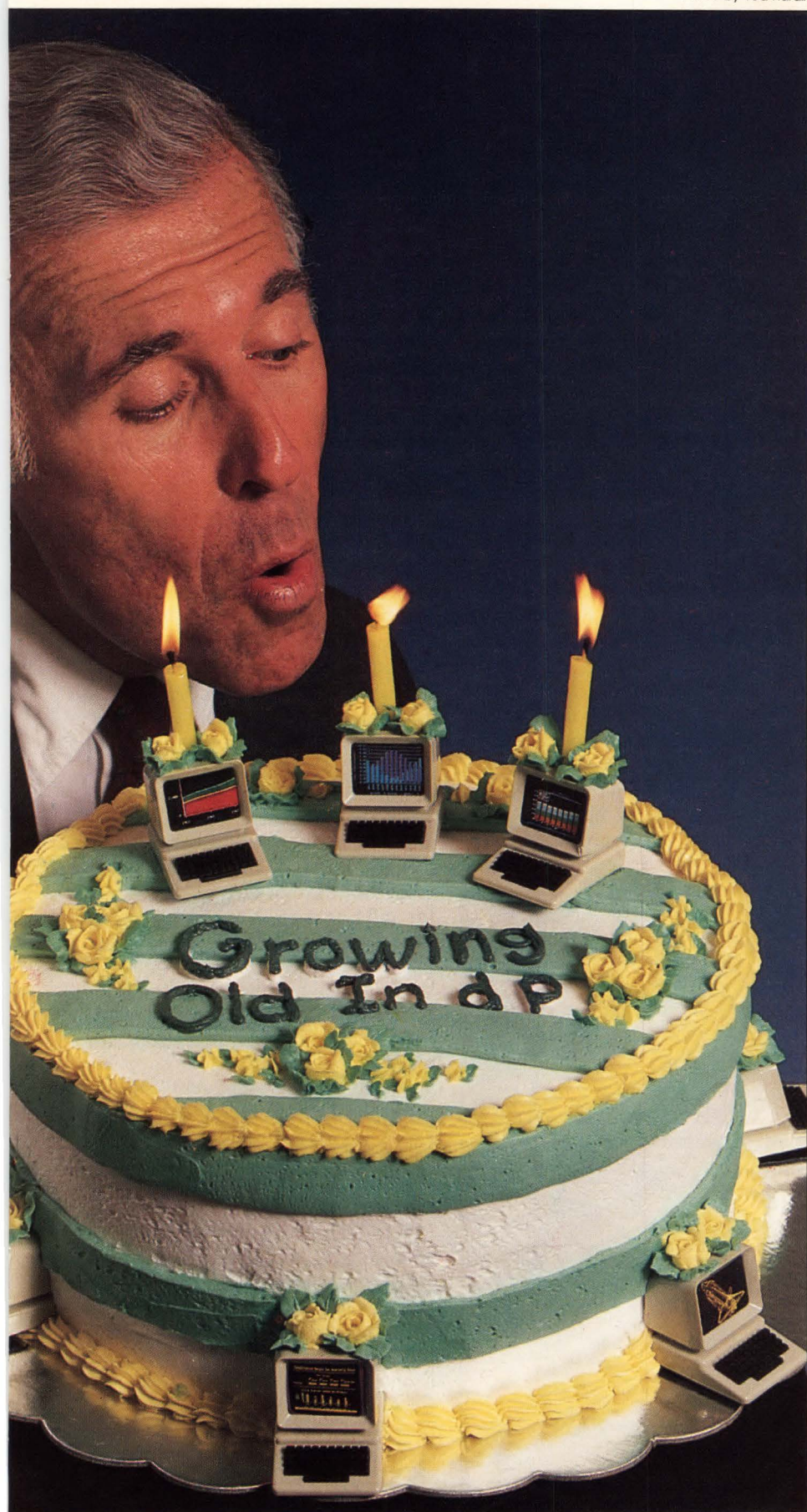
As first-generation dp pros look back on their groundbreaking careers, they share insights, regrets, and some sage advice.

Talk to old-timers who have worked long and hard in dp, and you'll learn that they have found mixed blessings during their careers.

The fast pace of technological change is one factor that has brought both wonder and chaos, serving as an ongoing source of stimulation to keep active minds perpetually young. But those who can't keep up are subject to symptoms of future shock. Here lies the danger of frustration, alienation, and regret.

Has the allure of retirement waned? As independent surveys show, the notion that most workers go kicking and screaming into retirement just isn't so. In fact, most welcome the prospect. However, many retirees, it appears, would welcome the opportunity to take a part-time job if the hours were flexible and the work not too demanding. Typically, these are people who've overdosed on travel, golf, and relaxation—or those who never really learned how to relax.

There is another double-edged factor to consider, and it has to do with the latest gerontological research. Researchers are discovering that, contrary to the stereotype of the senile old-timer, the aging mind is capable of continued growth. To underscore this point, Werner Schaie, an eminent researcher on the aging process was recently quoted in a *New York Times* article: "Those who don't



THE PAST AND THE PROMISE

accept the stereotype of a helpless old age, but instead feel they can do as well in old age as they have at other times in their lives, don't become ineffective before their time." Good news, yes, but those words also offer a foreboding challenge: We cannot count on diminished brain capacity to rescue us from unsatisfying lives. As Malcolm Morrison, a Columbia, Maryland-based retirement expert urges, we must plan not only for our financial securities but for our emotional securities as well.

When data processing began to flourish during the 1940s, '50s, and early '60s, degrees were neither necessary nor particularly expected. Back then, data processing wasn't something you aspired to. It was something you more or less fell into. James Dorsey fell into it some 20 years ago. Sixty years old now, with two years of retirement under his belt, Dorsey spent most of his working life at John Deere Inc., where he rose to the level of dp man-

ager. "Considering what I started with, I feel that I did pretty good," he says.

As one who came to data processing when the field was still in its infancy, Dorsey is a classic example of how rapidly changing technology can work both as a curse and a blessing. Dorsey left high school to join the Air Force where he studied accounting. He eventually jumped into dp to escape his accounting job which he found tedious.

As the years went by Dorsey's good feelings about his work began to sour. These feelings intensified during the last few years before his retirement. "The job was getting to me," he says. "The users were demanding services that required more complicated systems. I couldn't keep up. I felt obsolete. I guess as the job evolved it started to go over my head."

Still, if he had it to do all over again, Dorsey says he would once again choose data processing. "In retrospect," he admits, "I would have

taken more technical courses instead of wasting so many years on accounting."

Among the old-timers who never got the degrees they felt they needed, there is, understandably, a heightened awareness of the need for education. Stay in school; get as much knowledge as you possibly can, they repeatedly advise. But because these older workers started with so little and ended up with so much, they have the luxury of being able to congratulate themselves for succeeding without the benefit of higher education.

In a field that was as new and wide open as dp, even without college prerequisites people had a shot at opportunities that previously didn't exist. Women, especially, succeeded in dp at a time when they were discouraged from entering many other professions.

Consider Dorothy Maynard. In 1943 she graduated from the first keypunch class ever given at Hunter College. Later, at International Harvester in Chicago, she was able to rise far and fast enough to become one of their first female employees to break into management ranks. Now, at 63, she is in good health and, after a brief retirement, has returned to work part-time, setting up personal computers for a machine-tool supplier. When asked why she went back to work after a fulfilling career, Maynard says simply: "It gets into your blood."

Another keypunch-to-management story comes from Marion Morse. "Data processing has been good to me," she says. "It's a field that keeps you young because there's always something new. And working with younger people keeps you young, too." On this last point, however, Morse adds that although she enjoys working with younger people, she finds that they don't seem as dedicated or hard-working as her generation. Morse, 55, is still working and, as of this writing, has no plans to re-

Photo by Mary Ann Carter



Dorothy Maynard then and now. She was a 1943 graduate of Hunter College's first keypunch class. At International Harvester in Chicago, Maynard went on to become one of the first women to break into dp management ranks.

WE'RE ALWAYS HAPPY TO PUT IN A PLUG FOR IBM.

The IBM plug-compatible CIE-7800.

IBM introduced the 3178 as a less feature filled, less expensive alternative to their old 3278 Model 2 terminal.

The CIE-7800 is a far better alternative.

Because in one CIE-7800, you not only get the 3178 but all *five* models of the 3278. Yet, it is even lower priced than the 3178.

And when it comes to human engineering and design, there is absolutely no comparison.

The CIE-7800 is far more user oriented and compact. It has a footprint of only one foot by one foot. It has a larger, more readable 14-inch screen. Among its unique features are a printer interface and a bi-level, software activated security lock. Plus, it is designed to meet European standards. And it also offers international character sets.

Even more, depending upon your system's requirements, the CIE-7800 is available with concurrent alternate personalities, such as

DEC® VT100, IBM 3275/3276-2 (bisynch single station) and HP® 2622A, while still retaining IBM 3178/3278 capability.

The CIE-7800 is, indeed, setting whole new standards for the industry. It's a terminal that could come only from manufacturing experience and the financial resources of

C. Itoh & Company Ltd., with over \$60 billion in sales throughout the world.

To learn more about the

CIE-7800, just contact our Exclusive Sales Representative, Alternative Channel Marketing, Inc.

Call toll free 1-800-854-5959.

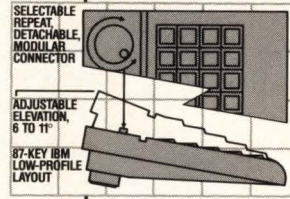
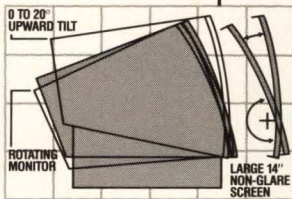
In California, call 1-800-432-3687.

In Europe, phone (022) 29-8384.

DISTRIBUTED SYSTEMS DIVISION OF
CIE SYSTEMS
A CITOH ELECTRONICS COMPANY

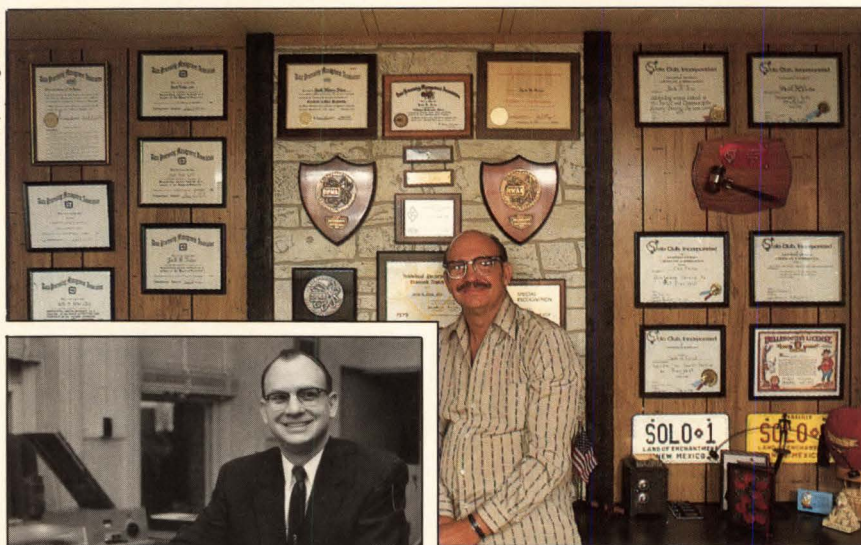
* IBM is a Registered Trademark of International Business Machines Corp. DEC is a Registered Trademark of Digital Equipment Corporation. HP is a Registered Trademark of Hewlett-Packard.
© CIE Systems, Inc. 1984

**See us at
Comdex Booth
#920-East Hall**



THE PAST AND THE PROMISE

Photo by Greg Sorber



Jack Feise, a dp veteran of almost 40 years, says he experienced burnout when his work claimed priority to the exclusion of all else. Feise is considering rejoining the work force, but he has no plans to return to dp.

tire from her dp position at Mohawk Data Sciences in Herkimer, NY.

Like Morse, veteran dp-ers frequently refer to the death of the American work ethic. With mixed emotions, they mourn what they perceive as its passing, and perhaps even resent the younger generations that dealt it its final blows. But they also remember times during their own careers when spouses were neglected, aches and pains were ignored, and—after all that hard work was done—bosses still seemed unappreciative. “I was dedicated,” says Jean Schoentrup, who started out as a keypunch operator 36 years ago to become dp department head before retiring, “but perhaps if I had it all to do over again, I wouldn’t be *quite* so dedicated.”

The risk, of course, is that working to the exclusion of all else leaves little left to sustain you if or when a job turns sour. It’s a trap that Jack H. Feise, a 39-year dp veteran fell into. Over the years the 59-year-old has been employed by two universities, a

city government, and even served as dp director for the Navaho Indian Reservation in New Mexico. But somewhere along the line, Feise burned out. “There was a time in my life,” he recollects, “when I thought I’d work until I dropped dead. In those days, the field was a lot more glamorous. Thirty years ago, no matter what function you performed on the computer, you amazed everyone. Today, no one is amazed.”

But Feise was also experiencing disappointment in his personal life as he began to feel alienated from his work: His marriage fell apart (he’s now divorced), his ability to set goals for himself waned, and a general feeling of malaise set in. “I’d go to the trade association meetings, and they’d be saying the same things they’ve said for the last 25 years: ‘I’ve got a bigger, better, faster something-or-other.’ I guess I just got tired of listening to it.

“You know,” Feise continues, “I look around my living room where I have all these awards and plaques

from the Data Processing Management Association, and I wonder sometimes what they’re all about. You can’t even trade them in for a cup of coffee. But I guess they were milestones in my life. They meant something to me. At the time, I was very happy to receive them.”

Time passes and interests change. Because enthusiasms wane and flutter, a totally unforeseen burnout can happen to anyone—at any age. That’s why pursuing one’s career to the exclusion of everything else is a hazardous strategy. Feise, who retired two years ago, says he’s starting to enjoy single life, and while he doesn’t write off the possibility of taking a part-time job at some later date, he has no particular desire to return to dp.

When looking at the aging process, psychologist Mortimer Feinberg, chairman of BFS Psychological Associates in New York, draws a parallel between the heart and the mind. Like the heart, the mind, he points out, is most vulnerable during middle age. Typically, those years are a time of turmoil and crises, when we run smack up against the limits of our perceived potential. But as we get older, our bodies—and minds—adjust. As Feinberg puts it: “We develop these alternative psychological circuits that help us cope, that give us a sense of balance and perspective, and guard against depression.”

In data processing the potential for disappointment often arises when an ambitious manager tries to make the jump to general management—only to discover that it is a terrible handicap to be viewed as an outsider. Even today, with computers central to the corporate welfare, managers who rise through the ranks of dp are not accorded the same degree of recognition as managers in finance or marketing.

Considering how depressing this can be, it’s nice to know that a guy like Fenwicke Holmes, 65, can retire

FIRST CHOICE TO THE SUN. PRINCESS CRUISES.

Warm sands are waiting. So let us take you. Come bask in the warmth of our hospitality. Come sail with the cruise line rated number one by top-selling travel agents and passengers alike.

Aboard your gleaming white ship, there'll be British officers to charm you. Attentive Italian waiters to cheer you. And master chefs to delight you with the creamiest Fettuccini Alfredo. The juiciest prime rib. The lightest chocolate soufflé. The finest dining five times a day.

When the sun goes down, the stars come out! Top singers and dancers in glittering costumes. Dazzling you with a new Broadway-style extravaganza virtually every night.

It's all as close as a Princess Cruise, so call your travel agent and come to the sun with us. Or write for a Cruiseguide to Princess Cruises, Dept. CWO114, 2029 Century Park East, Los Angeles, CA 90067.



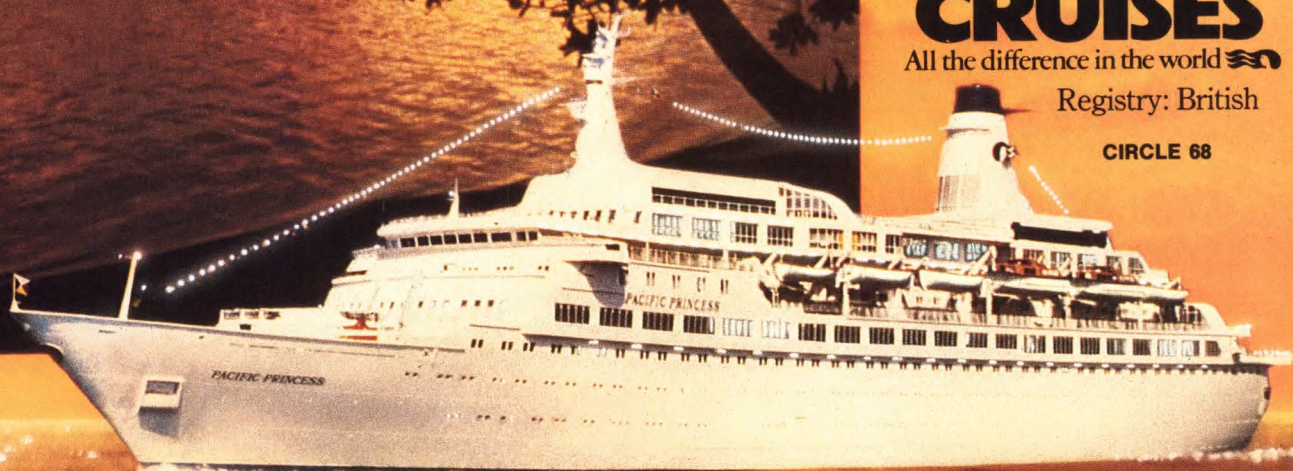
MEXICO • TRANSCANAL • CARIBBEAN • ALASKA

PRINCESS CRUISES

All the difference in the world 

Registry: British

CIRCLE 68



THE PAST AND THE PROMISE



without bearing any grudges. A former president of the Association of Systems Management and a nationally recognized expert in the field of dp management, Holmes spent 19 years of his life at Del Monte Corp.'s information-services department in San Francisco, before retiring last year. For years he was in line to become a vice president but never received the title. Ironically, Holmes had walked away from a promising 20-year career in the U.S. Marine Corps, where he was in line to become a brigadier general, when he opted for civilian life. "I suppose it would

have been fun to be a general," Holmes reflects. "But, between any job and the top spot there are lots of rooms, and each one looks attractive until you get there. Then, when you get to the top, you know what you often find? An empty room where all you're handling are protocol ploys, and nothing of substance."

Although this philosophy sounds reasonable, you have to wonder how Holmes felt when Del Monte's personnel department notified him they were making his replacement a vice president. Holmes recalls, "He [the personnel employee] asked me how I

felt about the news. I told him that I was delighted, that the position needed someone with that kind of clout. And then he said to me: 'Fen, I guess we did you a disservice by not making you a vice president.'"

Regrets? Holmes maintains that he has none. "You know," he says, "the service teaches you how to move away from a job. You're supposed to leave a tidy ship, let your conscience be clear, and not look over your shoulder."

Psychologist Srully Blotnick would tend to agree with Holmes' live-and-let-live attitude. Blotnick has devoted 25 years of his life to studying the business careers of 5,000 Americans. His book, *The Corporate Steeplechase: Predictable Crises in a Business Career* (Facts on File Inc., \$17.95), was published last year. On the mentor-apprentice relationship Blotnick says: "Those who play the mentor, who are willing to take their younger subordinates underwing are, generally speaking, much more content." It is, he notes, a relationship where the feedback goes both ways, where the mentor is able to learn as well as teach and tap the energy of youth as well as impart the wisdom that comes with age.

With technological advances continuously upon us, it is nearly impossible to predict the future. What will life be like for tomorrow's aging dp managers? One trend is apparent: In a society where a larger proportion of the population is over the age of 65 than ever before, the line between workers and retirees promises to become ever finer.

Already, the wave of the future is taking place at Polaroid Corp. in Cambridge, MA, which offers a "rehearsal-retirement" option, allowing workers to take a three-month leave of absence—minus pay—to see whether they can adjust to life without work. Those who prefer to work are guaranteed their old jobs back.

And Varian Associates in Palo Al-

"The pressure is on like never before. Rather than writing older workers off, businesses are forced to come up with new ideas to best use their talents."

—Root, University of Michigan



Lear Siegler Proven Quality and Reliability. Now More Versatile Than Ever.

Now your best buy in general purpose video display terminals is even better.

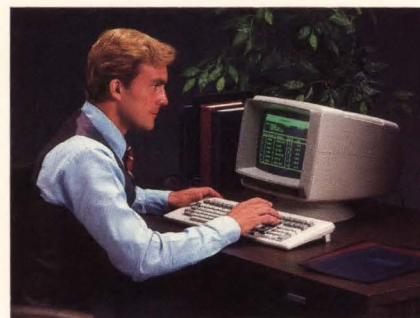
Lear Siegler's popular ADM 11 conversational and ADM 12 block mode terminals are available with more design flexibility and system compatibility.

In addition to standard compatibility with Lear Siegler terminals, you can now get compatibility with ADDS Viewpoint and Regent 25, Hazeltine

1400, 1420 and 1500, DEC VT52, and TeleVideo 912/920, 925 and 950.

You can enjoy Lear Siegler's superior performance and reliability, ergonomic design and High Touch™ style in more applications than ever before.

Call your local distributor or contact us directly for complete information on the ADM 11 and ADM 12 video display terminals.



LEAR SIEGLER, INC.
DATA PRODUCTS DIVISION
901 E. Ball Road, Anaheim, CA 92805
(714) 778-3500

CIRCLE 69

THE PAST AND THE PROMISE

to, CA, has a "phased-in" retirement program. Employees can gradually reduce their work hours over a two- to three-year period rather than quitting cold turkey.

At Levi-Strauss in San Francisco, a 58-year-old business-systems manager, Peggy Gillette, found a way around the system when health problems cropped up that could easily have resulted in early retirement somewhere else: Gillette "shared" her job for a year with a young woman who wanted more time at home with her baby. Working as a team, each woman put in a 32-hour workweek to get the job done. "It was a nice way to ease back," says Gillette. "I do plan to retire next year, but the difference is that I will be making the decision—not the company—and that feels good."

In Hartford, CT, Robert Lawless, returned to do part-time clerical work two years after retiring from Travelers Corp., where he was assistant di-

As surveys have shown, the notion that most older workers go kicking and screaming into retirement just isn't so.

rector of dp. "When I first retired, I didn't think I'd ever come back here," Lawless, now 68, confides. "But after a while, I found that I needed something else to do—especially during the winter. Money is no problem with me," he adds. "I've got enough money. It's finding things to spend it on that's the problem."

The fact that these programs are the wave of the future is underscored by the findings of Lawrence S. Root, a professor at the University of Michigan's Institute of Gerontology. By

contacting over 150 companies, he has collected information on more than 300 programs that relate to older workers, which he has subsequently arranged into a comprehensive, computerized database. "The pressure is on personnel managers as it never has been before," Root declares. "Rather than writing older workers off, they now are compelled to come up with new ideas to best use their talents." (A compendium of such ideas is available through the Institute. Write for the "NOWIS (National Older Worker Information System) IDEAPAC: Personnel Practices for an Aging Workforce," Institute of Gerontology, The University of Michigan, 300 North Ingalls St., Ann Arbor, MI 48109.)

So, in a society where retirees can reenter the workforce, and where, increasingly, the old will be working alongside the young in varied, flexible arrangements, what sort of contributions should older workers make? To put it another way, what valuable lessons do the old have to teach the young?

First, psychologist Blotnick says, older workers know that business isn't about money, it's about people. The young might think that if you're talented enough you'll be promoted, but older managers know better. They know that if you're too abrasive, if you don't get along with people, you're not going to get anywhere. Second, Blotnick says, the older manager knows that there are two basic categories of people: those who want to help you and should be confided in, and those who don't want to help you and should be avoided.

While our country is just beginning to discover that the old have much to share, it's not a new idea. Other cultures have known this for thousands of years and have revered their elders accordingly. Perhaps the real question to ask here is not: "Do the old have anything to teach?" but, "How quickly can the young learn?" □

BABY-BOOM BLUES

As the baby boom generation approaches middle age, more dp-ers are expected to break into general management, which means many workers will be competing for the same positions at the same time. Promotions, for the vast majority, will be fewer and farther between. In fact, within the next 10 years, it's estimated that the supply of middle managers will outstrip demand by over 25 percent. Thus, career plateaus will be hit sooner than ever before. (For more on the subject see *Computer Decisions*, September 1983, "Must Career Growth Stop?")

One way managers will fight the plateau blues will be through career switching. We may, for example, see more programmers becoming artists and more systems analysts becoming entrepreneurs. While a radical career switch may afford a welcome break from the past, here, too, there are hazards.

Psychologist Srully Blotnick warns that when workers move from one field to another, they may very well retard the mellowing process that can save them from late-life despair. "There is a certain euphoria that comes with switching careers," he observes. "Expectations soar, and pressures are brought to bear all over again." But Blotnick points out that the chances of realizing one's expectations the second time around aren't any better. His study indicates that of those who switched careers, 70 percent went on to make yet another career change. Thus, in pursuit of a new dream, workers on this plateau may be trading in, at least to some degree, their future peace of mind.

Test drive our Strategy.



Network Systems Corporation, the HYPERchannel® Company, invites you to check out our strategy.

THE RIGHT NETWORK. At Network Systems Corporation, our products are designed for a total networking strategy. With the right network, you can interconnect computer hardware from different manufacturers: super computers, mini and personal computers, workstations and terminals.

You've probably been told that a local area network lets you hook-up all types of computers and terminals, and everybody can then talk to each other. In the real world, it just isn't that simple. We offer what it really takes; hardware, software and system integration.

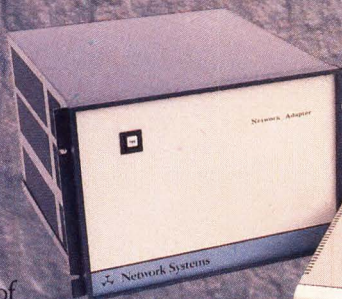
HYPERbus®, our 10 megabit network, will serve your user areas, providing the interconnection of mini-computers, PCs, workstations and terminals. Next, the user area should be linked to your larger mainframes to give users direct access to your integrated data bases. This is where HYPERchannel, our 50 megabit network, comes in. HYPERchannel gives you the power to move vast amounts of data between mainframes. The result is a truly responsive access path to the user area, which is the key to increased employee productivity. Finally, the different computers and terminals must be

able to talk to each other. NETEX™ is our software product that lets them communicate in a common language.

With HYPERchannel, HYPERbus and NETEX applied to your **total** networking strategy, users can access and manipulate data like never before. Your data processing systems will work harder, faster and in unison.

THE RIGHT COMPANY WITH THE RIGHT STRATEGY. Networking is our only business and we want to be your networking company. We have the products, the experience and a field service organization that's there when you need them.

There are over 400 customers using our systems. If you are planning a network, call or write Network Systems Corporation. You'll see how our strategy can help you with your strategy.



Network Systems Corporation

7600 Boone Avenue North
Minneapolis, Minnesota 55428
612/425-2202

Accept no limitations.™

Offices in most major cities.
NETEX, HYPERchannel, HYPERbus
are registered trademarks of
Network Systems Corporation.
© 1984 Network Systems Corporation

The new IBM DisplayWrite



Little Tramp character licensed by Bubbles Inc., s.a.

*Prices apply at IBM Product Centers and may vary at other stores.

**Available in July, 1984.

Series is here. Spread the word.

In 1980, IBM introduced the Displaywriter System. Today, it's become the best-selling stand-alone text processor in the world. One reason for this success is the Displaywriter's function-rich software.

If you're looking for software like that, but working on an IBM personal computer, you don't have to look any further. Because the IBM DisplayWrite Series is here.

And it will put many of the features and capabilities of a dedicated word processor to work for you when you're writing.

It runs in the family.

You'll find two word processing programs in this series: There's DisplayWrite 1, for IBM personal computers — including PCjr. And DisplayWrite 2, with added functions for your PC, PC/XT or Portable PC.

You'll also find DisplayWrite Legal, a dictionary of about 16,000 words that a lawyer might need to check.

And you'll find DisplayComm, which lets your IBM PC send and receive text to and from other IBM PCs. If you're writing at the office, this program could also let you send text to an IBM Displaywriter down the hall. (From there, it could be sent on to an IBM host computer for distribution.)

Some words on high function.

The DisplayWrite word processing programs give you the time-saving features you'd expect from IBM. Justified margins, centered lines and pagination, for example. You'll even have prompts and messages to help guide you along.

But there are also some features in DisplayWrite 2 you might not expect. Like easy column formatting, four-function math capability *plus* a spelling checker based on a dictionary of about 100,000 words.

Yet the biggest surprise of all may be the price.* DisplayWrite 1,** \$95. DisplayWrite 2, \$299. DisplayWrite Legal, \$165. DisplayComm, \$375.

Where you can find all four.

Get more information about the IBM DisplayWrite Series at your authorized IBM Personal Computer dealer or IBM Product Center. To find one near you, call 800-447-4700. In Alaska or Hawaii, 800-447-0890.

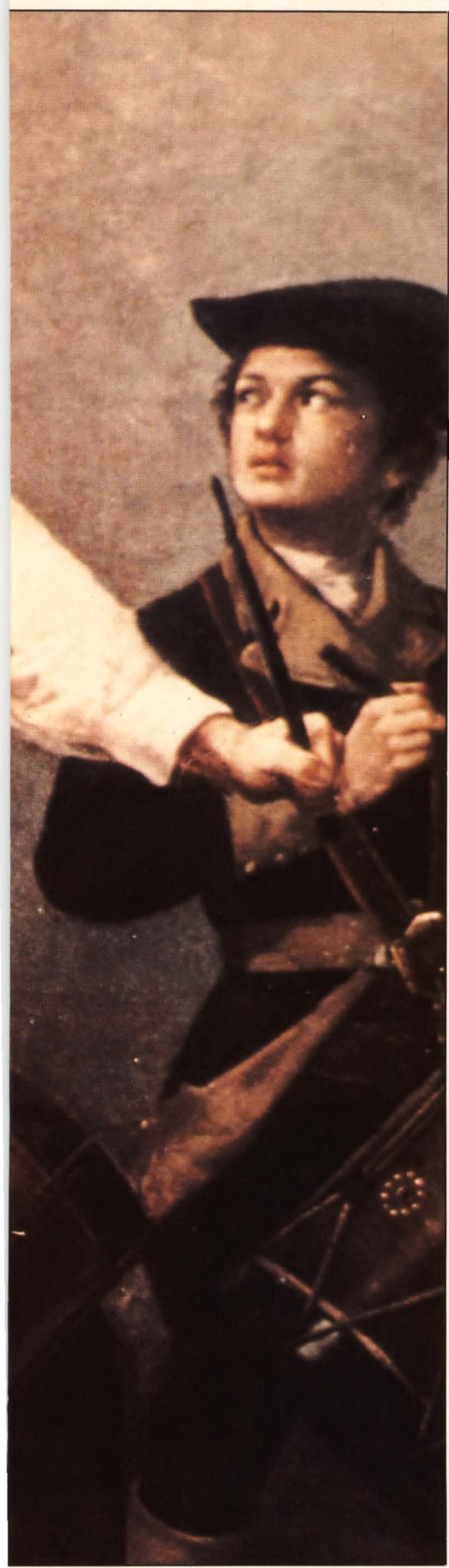
Stop there first and get the last word.



Personal Computer Software

PROFILES OF THE HEROES





THE LATEST REVOLUTION IN FINANCIAL- MODELING SOFTWARE: PART II

Although financial-modeling software packages relieve busy executives of tedious manual calculations, the sheer number of choices makes the buying decision an art form.

by Robert Perry

Computerized financial modeling has come a long way since Visicalc's spreadsheet made the accountant's by-hand calculations virtually obsolete. Fast, easy to use, and designed to execute a variety of tasks, these micro-based packages offer users many of the benefits of and sometimes more flexibility than mainframe or timeshared packages. Some observers predict micro packages will soon become as powerful as their mainframe counterparts. But with dozens of packages on the market, which one should you choose?

Whether for budget planning, projections, consolidations, sales or cash-flow forecasting, capital-investment analysis, or product-performance evaluation, there are packages suited to every user's needs. To complicate matters, users must decide if they want a stand-alone modeler or spreadsheet like Visicalc or Supercalc; an integrated package, such as

Context MBA or Lotus 1-2-3, that builds a common command environment for several applications running at the same time; an operating environment that allows data to be transferred between programs or that has micro-to-mainframe communications; a universal workspace that places all applications functions on the same screen; or a package, such as Ashton-Tate's Framework, that has database integration.

To help demarcate the different generations of software, Part I of this article offered users a general description of how these packages work and what to look for when purchasing a package. Part II is a series of in-depth profiles of some of the packages available.

Access Technology Inc.

Access Technology has scaled down its advanced mainframe- and minicomputer-based electronic

PROFILES OF THE HEROES

spreadsheet, Supercomp 20, for the IBM PC. The micro-based package, 20/20, is fully compatible with Supercomp 20, shares data, files, and templates, and allows the mainframe to be used as the central node in a distributed data-processing (ddp) environment.

One of the package's strongest points is that any model from one 20/20 version can run on any other 20/20 version without modification, from mainframe and minicomputer operating systems such as VM/CMS and Bell Lab's Unix to micros such as the DEC Rainbow and AT&T's 3B2 series. In a move toward "transparency" among different programs, 20/20 can interface with different data-interchange modes, including Lotus 1-2-3, Multiplan, dBase II, Visicalc, and Datatrieve.

Equipped with a limited data manager, a limited word processor, a basic project scheduler with Gant charts, critical-path and slack-time planning, and simple business graphics, 20/20 allows users to consolidate information through linked spreadsheets, template overlays, or three-dimensional models. Its modeling command structure, which uses conditional branches, prompting, and error-trapping procedures, can be driven by simple menus.

Addison-Wesley Publishing Co. Inc.

Last year, in an effort to compete with more popular financial planners, such as Lotus 1-2-3 and Context MBA, Addison-Wesley Publishing Co. Inc. reduced the price of its Micro-DSS/F package for the IBM PC from \$1,500 to \$995, and to \$795 for the Apple IIe and III. Although DSS/F, the original financial-modeling program for micros, has not been significantly modified since its introduction in 1981 and is not an integrated package, it still ranks high for power and functionality.

Although DSS/F's cell total, 1,919, is small in comparison to what

is available on mainframe and mini modelers, a special command for "virtual" storage on disk increases cell capacity to 32,000. At the heart of the system are its logic files, which use a logic analyzer to convert commands into financial equations, such as depreciations, paybacks, tax-loss carry-forwards, and 12 comparison operators. With DSS/F, users can do data manipulations, multiple "what-ifs," and simultaneous equations. They can also work backward from various assumptions using the system's goal-seeking capability to help clarify the steps that lead to a desired result.

DSS/F is of most use to those who have some experience with time-shared modeling systems, but its English-language commands allow administrative and clerical staff to run models or templates after professionals have developed them, an increasingly important consideration for many corporations.

Ashton-Tate

Framework, touted as Lotus 1-2-3's most-likely-to-succeed competitor, is an integrated product based on a word processor and a database-management system (DBMS) rather than on a spreadsheet or a financial modeler. Priced at \$695, its spreadsheet capabilities are not as extensive as those of dedicated modelers. But Framework does offer users a choice between row-and-column format and English-like

cell-command addresses. While Framework's spreadsheets, which can be joined to other files, do not advance the state of the art, its "frame" technology does enlarge the window concept, allowing related frames to be "nested," resized, and relocated on the display.

Business Solutions Inc.

Jack2, one of the few packages for the IBM PC that uses UCSD p-System as an operating system, has several advantages for novice or occasional microcomputer users: Its spreadsheets are fairly easy to set up; it recalculates spreadsheets more rapidly than many integrated competitors; and it uses common words instead of arcane symbols and row-and-column locations to specify formulas.

Jack2's spreadsheet capabilities are not designed to compete with those of DSS/F- or Encore!-type modelers. Nor are its business graphics—bar graphs, scattergrams, and pie charts—very sophisticated. Jack2 may handle a small-business executive's occasional requirements well, but corporate users may find it to be a limited, though functional product. Price: \$395 for IBM PC, PC XT, and compatibles.

Chang Laboratories Inc.

Microplan, priced at \$495, is one of the most widely used CP/M-based packages despite the fact that its spreadsheets are small by Symphony's standards. It has a maximum of 200 rows and 60 columns—about 1,000 entries per sheet. A new version, Graphplan, which costs \$395, runs on both CP/M-based micros and the IBM PC and integrates Microplan functions with one-key graphics execution. Microplan is available for the Hewlett-Packard HP 150, modified for the micro's touch-screen capability, and Graphplan-86 is available for the DEC Rainbow running

(Continued on page 142)

"Fast, easy-to-use micro-based packages offer many of the benefits of timeshared or mainframe packages."

The pc software to use if you have IDMS/R.



At last count, there were more than 50 integrated personal computer software packages. But for companies with IDMS/R, we'd like to suggest that

only one really makes sense.

GOLDENGATE™, Cullinet's pc software package, integrates seven components: database, spreadsheet, graphics, document processing, 3270 terminal emulation, asynchronous communication, and information manager. While the software is exceptional on a standalone basis, it offers an added benefit to pc users in an IDMS/R environment—true micro-to-mainframe integration.

Through the Information Database (IDB), the Cullinet software product that serves as a foundation for corporate information management, a GOLDENGATE user can have direct "transparent" access to all data stored in the IDMS/R database. Indeed, with GOLDENGATE, accessing corporate data is indistinguishable from accessing data on a diskette.

**The
Complete
Software
Solution**

Decision Support
Applications
Database

To find out more about GOLDENGATE, IDB and other components of our complete approach to information management, attend a Cullinet Seminar. To make arrangements, phone, toll-free, 1-800-225-9930. In MA, the number is 617-329-7700.

The pc software to use if you don't have IDMS/R.



How does GOLDENGATE™ stack up against the more than 50 competitive integrated pc software packages on the market today? With all due

respect to those other packages, we'd like to suggest that it stacks up best.

GOLDENGATE's superior functionality results from its unique architecture. Each function in the program is designed to provide an optimum working environment. And each is linked to the others through core software.

The result is a functionally rich integrated pc package for business professionals. GOLDENGATE integrates spreadsheet, database, word processing, graphics and telecommunications capabilities. For use with databases other than IDMS/R, GOLDENGATE has a unique capability in combination with a standalone version of the Information Database (IDB) from Cullinet, a remarkable ability to effect effortless micro-to-mainframe integration. Integration so direct and transparent it allows the user immediate access to corporate data as needed.

GOLDENGATE, the integrated software that works better, because each of its components work better.

To find out more, we encourage you to attend a Cullinet Seminar. To make arrangements, phone, toll-free, 1-800-225-9930. In MA, the number is 617-329-7700.

Cullinet

**We understand business better than
any software company in business.**

© 1984 Cullinet Software, Inc., Westwood, MA 02090-2198
GOLDENGATE is a trademark of Cullinet Software, Inc.

CIRCLE 72



PROFILES

with several basic conditional statements, and allows consolidations at two levels.

Target does have a very large RAM and can create a hardware-dependent matrix of 1,000 rows by 5,000 columns, but its conditional features and built-in financial formulas—net present values and internal rates of return—are not extensive. An 8-bit version is available for most CP/M-based computers.

Comshare's System W, a mainframe decision-support package priced between \$55,000 and \$100,000 for IBM mainframes with MVS/TSO and VM/CMS, also has a version for the IBM PC and PC XT under PC-DOS. Micro W, as the PC version is called, costs \$995 and is essentially Target with mainframe-communications capability.

Context Management Systems

Corporate MBA, the latest version of Lotus 1-2-3's long-time competitor, Context MBA, has sophisticated telecommunications and word-processing features. A considerably faster package than Context MBA, Corporate MBA's spreadsheet capacity is 95 columns by 999 rows, with four windows and built-in trigonometric, general, statistical, logical, and financial functions. Price: \$895 for Corporate MBA; \$695 for Context MBA.

Users can send complete worksheet models with formulas intact through 1,200-baud asynchronous communications, and can create spreadsheets through consolidation.

Corporate MBA's nine types of graphs, custom-forms design, IBM 3270-emulation function, macro-

command programming, and PC-to-PC data-interchange feature should make the package appealing to Fortune 1,000 users.

Cullinet Software Inc.

Cullinet Software's Golden Gate PC-based package is based on micro-to-mainframe communications links with Cullinet's mainframe IDMS database system. It requires an IBM PC XT or compatible, 256-K RAM, a color-graphics board, and a 3270-emulation Irma board from Digital Communications Associates Inc.

Golden Gate's spreadsheet is not its strong point. The package, designed to be sold with or as an adjunct to IDMS, lists for \$995 and requires a \$295 mainframe-communications option and a modem. Golden Gate's micro DBMS is based on MDBS' Knowledge Manager; its word processor is from Mark of the Unicorn's Final Word Inc.

EPS Inc.

The MicroFCS modeling package—one of the first mainframe-style decision-support systems for microcomputers with logic and data transportable on a network of micros, minis, and mainframes—is available for the IBM PC, PC XT, and many compatibles for \$2,000. Recent enhancements for the micro version include a full-screen data editor, user-definable functions and commands, and user programmable keys.

MicroFCS-EPS, which ranges in price from \$55,000 to \$100,000, has built-in communications and graphics functions with compatible syntax between micro and mainframe EPS packages. Users can upload and execute micro models on the mainframe without having to alter the program.

Execucom Systems Corp.

IFPS/Personal, a version of Interactive Financial Planning System (IFPS), one of the most popular

under CP/M-86.

Microplan's command structure is very English-like and includes built-in formulas for complex depreciation, loan analysis, internal rate of return and tax computations, and rolling forecasts. On the other hand, consolidations, variance analysis, and statistics are costly options that raise the price of the package.

Comshare Inc.

Target Financial Modeling, an upgraded version of a package introduced in 1981, is one of the easiest-to-use modeling packages available. At \$325, it offers users a choice of a modeling command structure through which professionals can build model logic with command files, or a user-oriented structure with a spreadsheet format.

In addition to English-like commands and logic files, Target has a well-developed report manager with an interface to Wordstar, offers three-way split-screen capability, comes

"One of the least expensive packages, T-Maker, can solve most modeling problems for all but the most sophisticated user."



Mega Group takes IBM® mainframes off the endangered species list.

You hear people say that mainframes are a dying breed. They believe the micros are taking over.

But what they don't know is that Mega Group software is dedicated to keeping mainframes alive and well. It's personal software that spreads mainframe power to everybody's individual workstation.

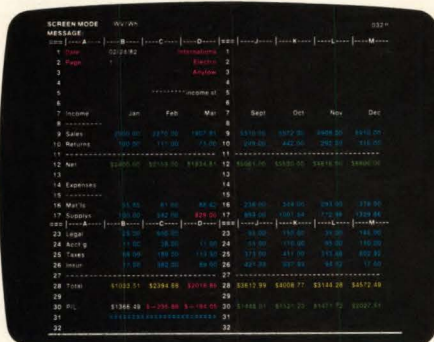
So that now, with any 3270-type terminal, you can do even more than you can do with a micro. Just as easily. Just as fast. And for a whole lot less money.

Mega Group's campaign to preserve the mainframe began with MegaCalc,™ the first full function electronic spreadsheet for IBM and compatible mainframe systems.

Next came MegaFile™ and MegaGraph.™ MegaFile allows you to join data from more than 35 MegaCalc spreadsheets. MegaGraph gives you presentation-

quality graphics for "picturing" MegaCalc data with eight different types of graphs.

With MegaCalc, you get up to 702 columns and 9,999 rows for entering an enormous amount of data. You can update it, change it, perform instant "what if" analysis, all on your CRT.



With full color capability and up to 100 windows, MegaCalc makes work sheets simple to set up and use. MegaCalc also has over 100 functions built in for advanced applications.

All of your microcomputer data and models from Lotus 1-2-3®, VisiCalc®, or SuperCalc® can also be up or down loaded directly into MegaCalc with a single command.

As far as cost goes, your data processing dollars have never gone further. MegaCalc will support every terminal and user on your mainframe for about the cost of a single microcomputer workstation. And we'll give you a 30-day, no obligation trial to prove it.

Send for our free poster. A 17" x 23" poster of our endangered species illustration above is yours for the asking. Just write or call to join the cause to Save the Mainframe.

Mega Group, 17701 Mitchell Avenue North, Irvine, CA 92714. (714) 474-0800.

MegaCalc by
MEGAGROUP
 SAVE THE MAINFRAME

™ MegaCalc, MegaFile and MegaGraph are Trademarks of Mega Group. © IBM is a Registered Trademark of International Business Machines Corp. Lotus 1-2-3 is a Registered Trademark of Lotus Development Corp. VisiCalc is a Registered Trademark of VisiCorp. SuperCalc is a Registered Trademark of Sorcim Corp.

PROFILES OF THE HEROES

decision-support systems for minis and mainframes, is available for the IBM PC. It uses the same modeling language, commands, and processes as the mainframe package.

At Eastern Gas and Fuel Associates, Boston, all divisions use IFPS on a Prime 750, an IBM 3083, and a Honeywell 6620 and 8244 to do large-scale projections and analyses, and to simulate large capital investments. "We often simulate the development and operation of a coal mine from the sinking of the shaft to the gas-company level," says Louis J. Volpe, MIS director. "We also run a lot of 'what-if' variables and recalculations. Not only has IFPS worked well for us in these applications, but we've found the training, documentation, and hot-line service provided by Execucor quite helpful."

Ferox Microsystems Inc.

Encore!, introduced in 1983, is designed for professionals who have time-shared modeling experience, IBM PC-spreadsheet users, in-house corporate decision-support users, and novice modelers.

Originally priced at \$1,500—between micro packages such as DSS/F, Lotus 1-2-3, Symphony, and Framework, and mainframe modeling links such as IFPS/Personal and MicroFCS—Ferox Microsystems reduced Encore!'s price to \$695, a comparative bargain among financial modelers considering it is one of the most feature-packed programs available for micros.

Encore! has eight interactive sections:

- A full-screen editor.
- A spreadsheet with 500,000 cells, multiple windows, regression, and goal-seeking for PCs with hard-disk drives and data-input screens.
- An English-like modeling language with more than 50 commands and functions, including 12 conditional operators and 19 logic functions.
- A function library with U.S. tax

tables, types of depreciation, statistics, regression, loan amortization, and more.

- An executive programming language, which can be used as an application developer's toolkit, with special screens for menu-driven decision-support features.
- A report writer with custom formatting.
- A graphics editor with on-screen slide-show capability.
- Computation and analysis with unlimited hierarchical consolidation.

Lotus Development Corp.

Lotus 1-2-3, with sales of about 250,000, has had remarkable success. Popular with corporate planners, 1-2-3 is well known for its speed of execution of its spreadsheet. The price is \$495.

Symphony, Lotus' newest integrated personal-computer package, adds to 1-2-3 a new windowing system, a vastly improved and easier-to-use word processor, a form letter and form-oriented information manager, and an asynchronous-terminal emulator for telecommunications. Like 1-2-3, the package can run on 25 different microcomputers. It uses Symphony Command Language for custom applications, supports a number of operating environments including Microsoft's Windows and Quarterdeck's Desq, and allows users to choose between overlapping or side-by-side windows. Price: \$695.

Symphony's financial-modeling features include an enlarged spreadsheet, with 8,192 rows and 256 columns; a spreadsheet text editor; look-

up and index functions; the ability to hide and protect cells; and configurable currency formats. Corporate users may find its improved macro-command structure most useful.

Microsoft Corp.

With such features as on-screen command menus, naming cells, an on-line help feature, a spreadsheet linking data from different models, automatic recalculations, and sophisticated manuals and documentation, Multiplan has brought major advances in user-friendliness to spreadsheets.

The lead product in Microsoft's Windows line, Multiplan works with the vendor's "tiled" or side-by-side windows and allows users to consolidate and link information from one application to another through those windows. A superior spreadsheet, but not a financial modeler, Multiplan may be used by a broad spectrum of users. The package costs \$275.

Noumenon Corp.

Intuit includes a spreadsheet, a letter-writing word processor, an information manager, graphics, a calculator, a list manager, and a forms generator. The package also swaps information with MS-DOS files. Because all commands reside in memory, Intuit presents users with what resembles a blank sheet of paper on which to build spreadsheets.

Although Intuit is easy to use and, at \$395, costs less than many other integrated packages, its spreadsheet and modeling capabilities—200 rows by 65 columns, shared English-language command format, 30 verb commands for loops and conditionals, customizable command sequences, and choice of row and column coordinates or cell names—are adequate only for occasional users.

Ovation Technologies

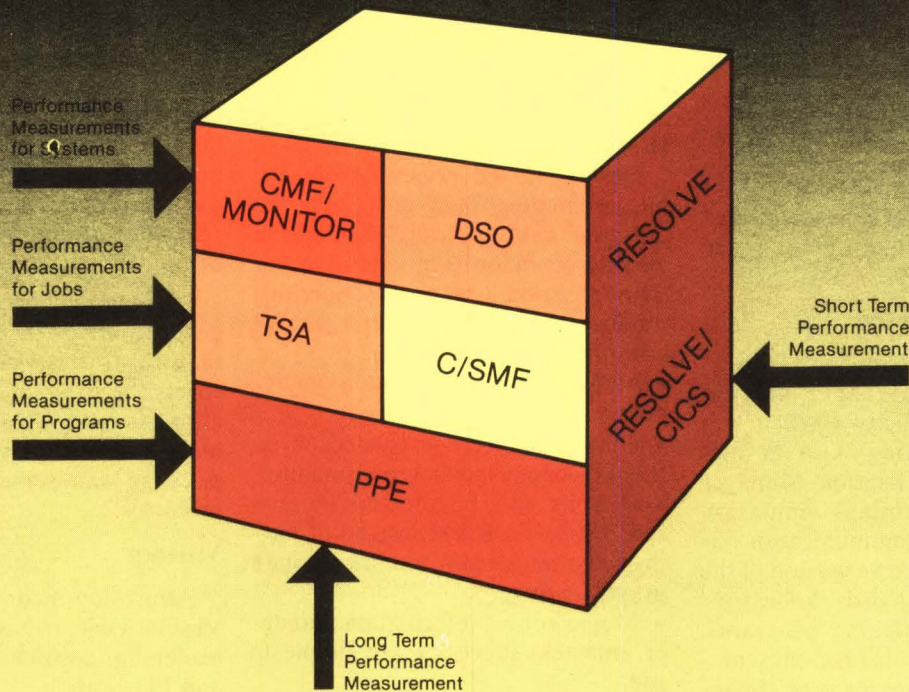
Ovation, a nonwindow operating environment, or universal workspace,
(Continued on page 146)

"Lotus 1-2-3, with sales of about 250,000, has had remarkable success."

Calder's Cube: Your Key to Performance Management

Calder's Cube: diagram (ca. 1984—orig. attributed to leading performance management cubist J. Calder) demonstrating the link between performance management needs and a selection of high

quality modular software tools designed to meet those needs. (Also often described as a demonstration of the solidity of a unified, integrated, modular approach to performance management.)



Truly effective performance management means constantly monitoring and tuning the performance of your system—for both the short and the long term.

That requires specific information about your system. And not just about the overall system but also about particular jobs and even programs.

But if you're like most users of large IBM and IBM-compatible computer systems, you never seem to be able to get the system-performance specifics you need.

With Boole & Babbage products, you can.

Our products let you take the "cubic" approach—unified, modular, and solid. We address your ongoing needs at the system level with Capacity Management Facilities (CMF)/MONITOR and DATA SET OPTIMIZER, at the job level with TOTAL SYSTEM ANALYZER and CONTROL/ System Management Facilities (SMF), and at the program level with the PROBLEM PROGRAM EVALUATOR; and address your immediate needs at all levels with RESOLVE and RESOLVE/CICS.

Performance management has always been necessary. But it's never been quite as easy or effective as Boole & Babbage now makes it. Make Boole & Babbage your performance management partner.

For more information call Boole & Babbage today
510 Oakmead Parkway, Sunnyvale, California 94086 (800) 538-1893

The Information Resource Management Company
CIRCLE 74

PROFILES OF THE HEROES

in which all functions share the same RAM workspace and commands, allows users to combine data from graphs, text, or spreadsheets on the same screen or workspace.

Ovation's spreadsheet, with a capacity of 7 million cells in 702 columns by 10,000 rows, allows ranges of cells to be linked between spreadsheets. The package, which costs \$795, has trigonometric, logarithmic, natural log, statistical, financial, logical, and string functions; various font styles and formatting capabilities for reports; 10 types of user-controlled graphs; and immediate graphing to reflect data changes.

Peachtree Software Inc.

Unlike Lotus' Symphony, Peachtree's Decision Manager did not receive much publicity when it was introduced last spring. Also an integrated package, Decision Manager features 3270-terminal emulation and synchronous communications as well as a stripped-down version of the Peachtext 5000 word processor/interface to mainframe programs. Priced at \$625, it also has presentation-quality graphics for several plotters and 20 windows, with 10 running at the same time.

Softrend Inc.

Introduced this year, Softrend's Aura has integrated functions based on an information manager. The package, which costs \$695, includes spreadsheet, DBMS, word processor, and business graphics.

Aura's spreadsheet, limited in size to 25 rows by 63 columns, has more than 50 common spreadsheet-editing functions. It can link as many spreadsheets as the disk can store, and can share or retrieve data from the DBMS and graph the results or put them into text.

A completely menu-driven package, Aura requires neither a mouse nor a command language. According to Anthony A. Sabatini, vice presi-

dent of systems development at Telerate Systems Inc., New York, Aura's menu prompts allow occasional users and novices to operate the system without having to study or memorize a complex series of commands.

Sorcim Corp.

Supercalc3, Sorcim's latest integrated version of the popular CP/M-based spreadsheet, Supercalc, requires MS-DOS or PC-DOS, and the IBM PC. Price: \$395.

Despite mixed reviews from the microcomputer-trade press and the criticism that Supercalc3 should have been designed for 16-bit micros rather than for slower 8-bit micros, Sorcim's product does afford users several advantages:

- Eight kinds of presentation-quality graphs.
- Graphs can be constructed on either a color or a monochrome monitor.
- Graphs can be plotted from a spreadsheet in RAM instead of having to be retrieved from disk through graph routing.
- Memo editor, information manager, and text processor are simple to use.

Here are some of Supercalc3's disadvantages:

- A limited number of plotters are supported, although dealers should be able to provide customized plotter routines.
- Its spreadsheet capacity of 254 rows by 63 columns is small compared with Symphony's 8,192 rows by 256 columns.
- The package runs fairly slowly, makes poor use of the IBM PC's func-

tion keys, and does not efficiently handle the execution of difficult interactions within a spreadsheet.

T/Maker Corp.

T/Maker III, the integrated version of the original T/Maker modeling package introduced in 1981, is one of the least expensive packages in the field at \$275. Based on a spreadsheet that includes 20 built-in financial and logic functions, a word processor, and built-in graphics, T/Maker can combine text, graphs, and spreadsheet data into one document without requiring information to be reentered or files to be combined.

Designed to accommodate first-generation, 64-K machines rather than the 16-bit world, T/Maker restricts the size of its spreadsheet, but allows for easy combinations. For all but the most sophisticated users, the package can solve most modeling problems.

Visicorp

After only moderate success with VisiOn, Visicorp has tried to regain its leadership position with Visicalc IV and Flashcalc.

Although Visicalc IV, like Visicalc Advanced Version, runs more slowly than the original Visicalc, it does include several new features, such as sorting, a macro-command structure, and added graphics. The package's graphic "what-ifs" allow users to graph a spreadsheet in one of eight different ways with a single keystroke. Price: \$250 for Visicalc; \$400 for Visicalc Advanced Version; \$250 for Visicalc IV.

Flashcalc, Visicorp's newest product for the IBM PC and Apple IIe, is designed for the occasional user. Working with up to 512-K RAM, the package has pull-down menus; supports eight types of RAM cards, three 80-column cards, two disk emulators, and the Profile hard-disk drive; and is compatible with Visicalc. Price: \$99. □

"Encore! is one of the most feature-packed programs available for microcomputers."

STERLING STANDS OUT

STERLING STANDS OUT IN SYSTEMS SOFTWARE

Sterling Software Marketing is the leader in systems software for IBM mainframe and IBM PC's — and over 2000 worldwide users of Sterling Software products agree. They agree, because they all benefit from the SSM concept of teamwork between developer, sales service, and technical support that is behind every SSM product.

Whether your immediate data center concerns are in the area of operations, communications, or quality assurance, Sterling Software Marketing has a system that will give you more control, more productive work time, and more operating economy.

In **operations software**, we offer DMS/OS — for DASD management with unbeatable reporting, data compression, and archival to disk or tape features. Plus, modular enhancements able to meet any DP center need.

For **data center production control**, you should look at ESP to give you comprehensive job submission and scheduling — no matter how complex the job.

We can expand your **communications** capability from

mainframe-to-mainframe and mainframe-to-mini, with software like TRACS, that gives you teleprocessing remote access control for batch data transfer, and our new SUPERTRACS — an online batch teleprocessing monitor. For batch transfer from PC-to-mainframe/mini/micro we offer an economical networking solution with PC-TRACS.

SSM meets the challenge of the growing concern for **quality assurance software** systems with COMPAREX, an accuracy assurance utility for data/text comparisons.

For detailed information on any SSM product, or a free no-obligation 30-day evaluation, call us TOLL FREE **800-824-8512**. In California, Hawaii, Alaska, and Canada, call collect, **916-441-7234**.

You'll see why STERLING STANDS OUT.



**STERLING SOFTWARE
MARKETING**

1007 Seventh Street, Suite 500
Sacramento, CA 95814

International Offices: Duesseldorf, London, Paris.

FEATHERWEIGHTS CARRY CLOUT.



PORTABLE COMPUTERS: LIGHT AS A FEATHER

The ongoing parade of portables is the fastest-growing segment of the micro market. To properly select from this diverse group requires vigilance and a keen eye for a computer that will fulfill your needs.

by Jennifer E. Beaver, Southwestern Editor

The ultimate portable device isn't here—yet. It still requires a Herculean effort to lug around the 20-pound-plus machines that contain the storage and display capacity most business applications demand. Less weighty models frequently sacrifice functionality for movability. Should you wait for that perfect portable that always seems to be just around the corner, or should you tap the rich vein of on-the-go computing power already available?

This is the year that portables became legitimate business tools as veteran vendors IBM and Apple entered a market formerly composed of start-up vendors. Although on-the-go computing has already captured the hearts, minds, and dollars of many progressive corporations, the portable's rise from toy to tool has only begun.

Creative Strategies, a Cupertino, CA-based market-research house, predicts \$17.3 billion in portable-computer sales by 1989, up from \$782 million last year. These figures in-

clude all types of movable computers: transportable, briefcase, and handheld. Market researchers who are less bullish expect portable sales to increase tenfold by 1987, to well over \$7 billion.

Such growth is unprecedented even in the computer industry. But before being completely dazzled by these figures, consider that "portable" is frequently a misnomer. Would you really want to carry around a 25-pound machine? Can a computer without a battery option be considered truly portable?

The functionality of the heaviest class of portables—transportables—makes it the current favorite. This category includes the Compaq, IBM's Portable PC, Kaypro, and Seequa's Chameleon, among others. Because of their small footprints and low price tags (compared to traditional micros), these transportables are frequently used as stationary desk-top units. A Compaq study found that 80 percent of its portables are used in this way.

(Continued on page 150)

FEATHERWEIGHTS CARRY CLOUT



Here, James S. Broder, director of MIS for the Women's Tennis Association, is entering data at the recent U.S. Open (New York) on a Hewlett-Packard 110 portable.

(Continued from page 149)

To survive competition and be welcome in an office environment domi-

nated by Big Blue, a transportable must be IBM-compatible, according to Jill Morganthaler, a Creative

Strategies analyst. The best of this bunch will have low prices and built-in features like modems and printers.

By next year, the lighter, smaller briefcase-size portables will be sophisticated enough to climb into first place, says Morganthaler. The full-screen, 24-line display needed to run most off-the-shelf software will soon be available in a lap-size package, predicts Morganthaler.

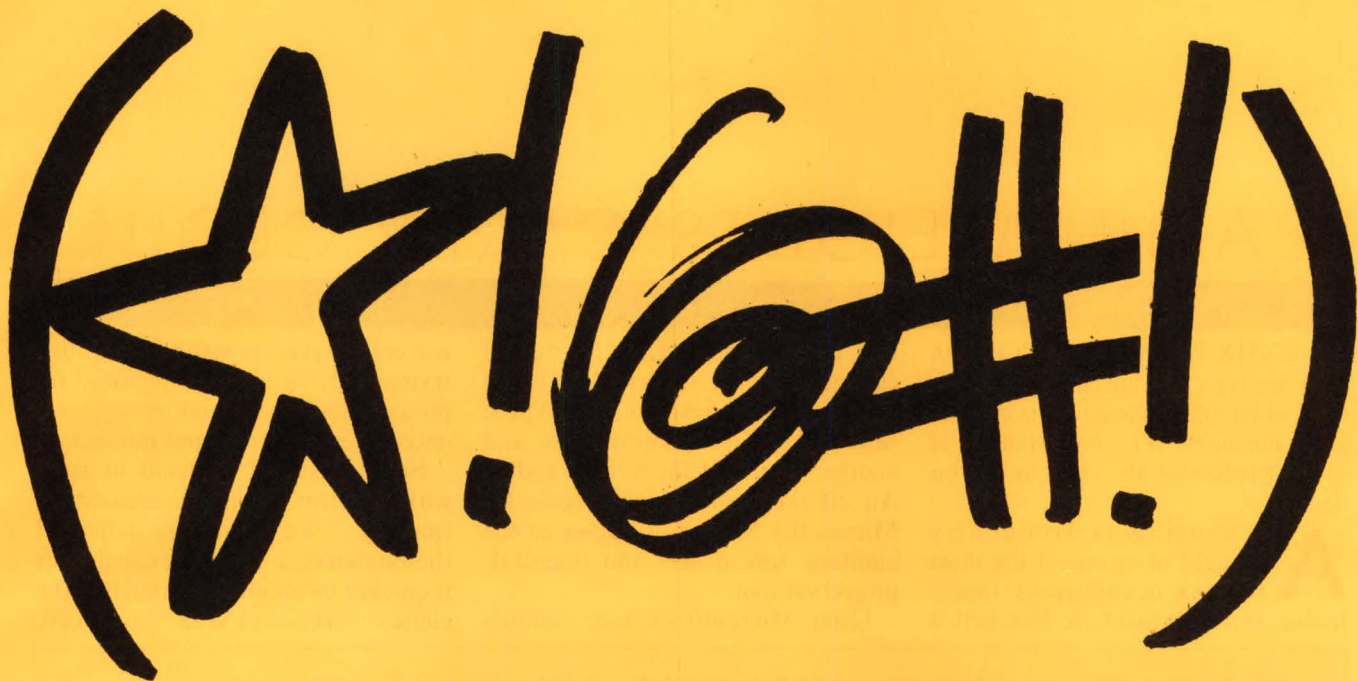
Handheld computers remain favorites for order entry, inventory, and collating data from remote sites. Ranging in weight from 9 ounces to 2 pounds, these diminutive portables are getting progressively more sophisticated.

Portables currently available suffer from limited displays and storage capacities. However, their low price—under \$1,000—and light weight—between 8 and 15 pounds—make many lap-tops an attractive buy. The category includes Sharp's PC-5000,

(Continued on page 152)

HANDHELD AND MID-SIZE TERMINALS

Vendor	Product	Features	Price	Circle
Axlon (408) 730-0216	Datalink Series 1000	10 oz. Battery operated	\$299	432
Azurdata (206) 881-5100	Scorepad	1.5 lbs. 64 to 256 K 1 or 2 line display	\$1,850 to \$975	433
Casio (201) 575-7400	FX-802	9 oz. Battery operated	\$149.95	434
Computerwise (816) 765-3330	TransTerm I	2 lbs.		435
	TransTerm II	2 line, 32 char. display	\$449	
	TransTerm III	1 line, 80 char. display	\$549	
		2 line, 40 char. display	\$499	
		Battery operated Printer option		
GR Electronics (213) 395-4774	TransTerm IV	8 line, 40 char. display	\$749	436
	TransTerm V	2 line, 24 char. display	\$249	
	Handheld VDU	26 oz.	\$795	
	PT 8	8 oz. (8 char. LED)	\$375	
	PT 12	8 oz. (12 char. LED)	\$385	
Hewlett-Packard (contact local sales office)	14 B	8 oz. (14 char. LED)	\$425	437
	HP-75C	26 oz.	\$1,095	
		Battery operated		



Swear by your modem. Not at it.

Living with errors in computer communications is a little like playing Russian Roulette. Sooner or later you're going to get into trouble.

If mistakes are waiting to happen in your business, you need the Microcom SX/1200™ modem. It's the only modem that gives you error-free communications on anybody's phone service—even the discount ones you've been afraid to use. It will even give you error-free access to UNINET and Telenet.

The SX/1200 implements a machine-independent, error-correcting protocol called MNP™. In normal service, you would have to wait six years for it to make its first mistake. That's 10,000 times the reliability of any other modem. It detects transmission errors and keeps sending the data until what you send is what they get.

This error correcting ability makes the SX/1200 the stand alone modem that stands apart. It also stands apart because it's the world's only modem that can also be inexpensively upgraded to 2400 baud two-wire, full duplex operation.

In addition, it's Bell 212A compatible, supports RS-232 devices and can be rack mounted. It stores up to nine telephone numbers (36 digits each) with a battery back-up. And it has a simple, character-oriented command structure, with control of all modem functions from local devices.

All of this error correcting wizardry can be yours for about the same price as modems that make an occasional innocent mistake.

If you would like toll-free information about the SX/1200, please call 1-800-322-3722. Microcom, Inc., Norwood, MA 02062.

SX1200TM MODEM

MICROCOM

FEATHERWEIGHTS CARRY CLOUT

Epson's HX-20, and NEC's PC-8200.

What type of transportable, briefcase, or handheld computer is best for your business? The experiences of other professionals may help you decide.

Accounting is frequently thought of as one of the most tedious occupations imaginable. Peat, Marwick, & Mitchell, a

Big Eight accountancy, is out to change all that. The New York-based firm just purchased 4,000 Apple Macintoshes for domestic use and another thousand for foreign audits. An off-the-shelf software package, Microsoft's Multiplan, serves as the auditors' spreadsheet and financial-projection tool.

Using Microsoft's Chart, auditors

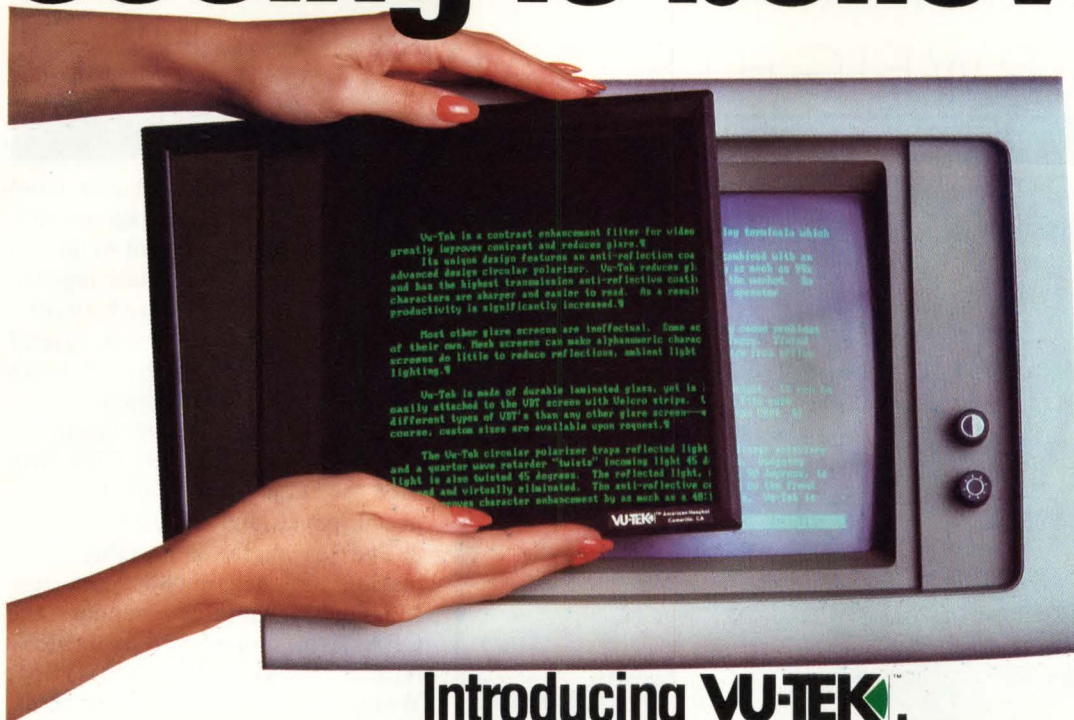
will enliven reports with graphic illustrations, giving clients a pictorial representation of information segments once mired in letters and numbers.

Such measures go hand in hand with the firm's goal of increased efficiency. "We've always delivered thoroughness, and now we can deliver it quicker by eliminating much of the clerical work," says Mike Macdonald,

HANDHELD AND MID-SIZE TERMINALS

Vendor	Product	Features	Price	Circle
Integrated Office Syst. (408) 257-0171	Unity 100 Unity text, voice, data communications system	6.5 lbs., 8 line by 40 char. LCD, battery-operated terminal that can be used in stand-alone mode to create messages or fill out forms but must be connected to Unity Control, a message exchange and data storage unit	\$5,000 to \$7,000 per user	438
IXO (213) 417-8080	Telecomputer	13 oz.	\$300 to \$450	439
Lexicon (305) 792-4400	Lex-21 Lex-31	5 lbs. 5 lbs. Built-in printer Battery operated	\$595 \$995	440
Matsushita Electric (contact Quasar, Panasonic, or Olympic dealers)	HK 2500	18 oz. Battery operated		441
Microwriter (212) 288-8863	Microwriter Mark IV	1 lb., 12 oz. 16 char. LCD Battery operated		442
MSI (714) 549-6000	88s	1 lb. Battery operated	\$1,200 to \$2,450	443
Novation (213) 996-5060	Infone	2.5 lbs. Battery operated	\$945 to \$1,150	444
RCA Microcomputer Products (717) 295-6000	APT	4 lbs. IBM PC compatible	\$498 \$698 w/display monitor	445
Sharp Electronics (201) 265-5600	PC-1260 PC-1261 PC-1500	4 oz. 4.4 RAM 10.4 RAM .83 lb. Battery operated	\$129 \$195	446
Tandy (contact local Radio Shack outlet)	Pocket Computer PC-3 PC-4 PC-2	4 oz. Battery operated 4 oz. 14 oz.	\$99.95 \$69.95 \$199.95	447
Texas Instruments (contact local sales office)	Compact Computer 40	22 oz.	\$300	448

Seeing is believing.



See us at
COMDEX '84
Booth #M1243 at the MGM Grand
November 14-18, 1984 Las Vegas, Nevada

Introducing VU-TEK.

No other glare screen does more to increase productivity.

A glaring problem VDT operators face.

More than 90% of all employees who regularly use VDT's may suffer from eyestrain.* And that can make your business suffer, too.

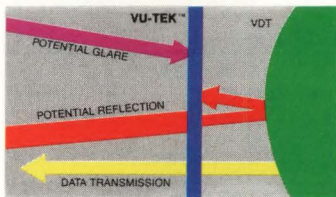
The cause of eyestrain? Glare. Reflection from office lights. And hard to read characters.

The result. Impaired vision. Headaches. Fatigue. More work breaks and absenteeism.

And reduced office productivity.

VU-TEK™ reduces glare up to 99%.

VU-TEK contrast enhancement filters help increase operator productivity by eliminating up to 99% of reflected VDT glare while also improving character clarity. VDT operators can now work more efficiently and comfortably.



VU-TEK's dramatic effectiveness is due to an advanced circular polarizer that traps glare preventing it from reaching the VDT operator's eyes.

No other glare screen is more effective than VU-TEK.

VU-TEK increases character legibility.

VU-TEK uses a special distortion-free anti-reflective coating on the front glass surface to improve character contrast and clarity.

The result...bright, clear, easy to read VDT's.

Fits leading VDT's. Easy to install.

VU-TEK fits more than 800 different VDT types. Custom sizes are also available.

VU-TEK is lightweight, durable and attaches in seconds.



"See for yourself" free trial.

End the glaring problem with computer automation — with VU-TEK.

To order your VU-TEK or arrange a 30 day free trial, call collect 1-805-987-5026. Or mail the attached coupon for more information.

VU-TEK is the result of research by American Hoechst, a member of the Hoechst Group of companies, with worldwide sales of \$14.5 billion, and annual research expenditures of over \$630 million.

*National Institute For Occupational Safety and Health Study, August 1981.

American Hoechst Corporation
Specialty Film Products

CIRCLE 77

VU-TEK™ The difference is clear.

© American Hoechst Corporation, 1984.

For additional information on VU-TEK™ contrast enhancement filters mail to:
American Hoechst Corporation
Dept., 805 Via Alondra, Camarillo, CA 93010
Name _____
Company _____
Street _____
City/State _____
Zip _____
Phone () _____

FEATHERWEIGHTS CARRY CLOUT



Grid Systems' Compass is one of the few lap-top portables with a full-size screen. Thanks to its internal luminescence, the flat panel display is easily viewable in spite of any external light source.

an auditor and partner in the firm.

Proprietary software also plays a large part in the Macintoshes' travels for Peat, Marwick, and Mitchell. In-house programmers are developing a

private database of audit manuals so they will have less paraphernalia to lug around. Now, when visiting a client, an auditor packs his or her case with a Mac and keyboard (combined

weight 19 pounds), a 1,200 baud modem, and a wide-carriage printer. Altogether, this equipment weighs 50 pounds—hardly appropriate luggage for a quick dash through an airport.

After using the Apple III, several pounds heavier and far harder to set up, the auditors find the briefcase portable almost svelte. Before the limited run of the Apple III, the CPA firm used the standard tools of the trade: pencil, paper, and calculator.

The search for a portable automation tool began two years ago. Macdonald contacted vendors the CPA firm considered reliable—Apple, Hewlett-Packard, IBM, Wang—and told them of his needs, which included portability, ease of use, and a large screen.

Apple allowed him a peek at the Macintosh prototype, and the deal was forged. Peat, Marwick, and Mitchell's clients reacted favorably. "They expect their CPAs to be as up-to-date as possible, and this demonstrates that we're on the leading edge of technology," says Macdonald.

The Macintosh has proved to be

ACCESSORIES FOR PORTABLE COMPUTERS

Vendor	Product	Features	Price	Circle
American Tourister (401) 245-2100	Computer Travelling Case for popular micros	Plastic outer shell Steel frame Foam interior Diecast & combination locks	\$105- \$147.50	401
Arthur IV Micro Totes (818) 798-1745	Universal Computer Tote 22×16×9 inches Universal Printer Tote 17×15×6 inches Macintosh Tote	Nylon outer shell Foam interior Removable shoulder strap	\$70 \$60 \$80	402
ATS Cases (617) 653-6724	Light and heavy-duty cases for all portables	Plastic shell Plywood frame - 1/2-inch light duty, 1/2-inch heavy	Light: \$125-\$210 Heavy: \$150-\$400	403
Curtis Manufacturing (603) 924-7803	Ergonomic base for Compaq & IBM Portable	Elevates 2 inches, rotates 360 degrees	\$50	404
Jensen Tools (602) 968-6241	Computer Carrying Case	16×11×3 1/8 inches (interior) Nylon outer shell Foam interior	\$69	405

In the overnight air express business, it's axiomatic: It's people, not planes that deliver. So improving worker efficiency is critical. That's why Burlington Northern Air Freight uses Davox integrated workstations. In customer service, for example, they found Davox systems help people work about "twice as fast" as the previous system.

The reason: Davox voice/data integrated workstations feature 16 "Smart Buttons" that can access data or perform multiple commands with a single keystroke. In the case of Burlington Northern Air Freight, that meant almost double the productivity.

In addition, Davox is both 3270 (SNA/SDLC or BSC) and Async so it's totally flexible, able to work in any IBM or IBM-compatible main-frame environment.

DavoxNet—our networking design that transmits voice and data simultaneously over existing twisted pair telephone lines—eliminates expensive coaxial wiring, as well. And, as a Value-Added Dealer for the IBM PC, Davox offers PC resource sharing throughout a network.

Today Davox systems are at work in Fortune 1000 companies in a broad variety of applications, from securities trading to telemarketing

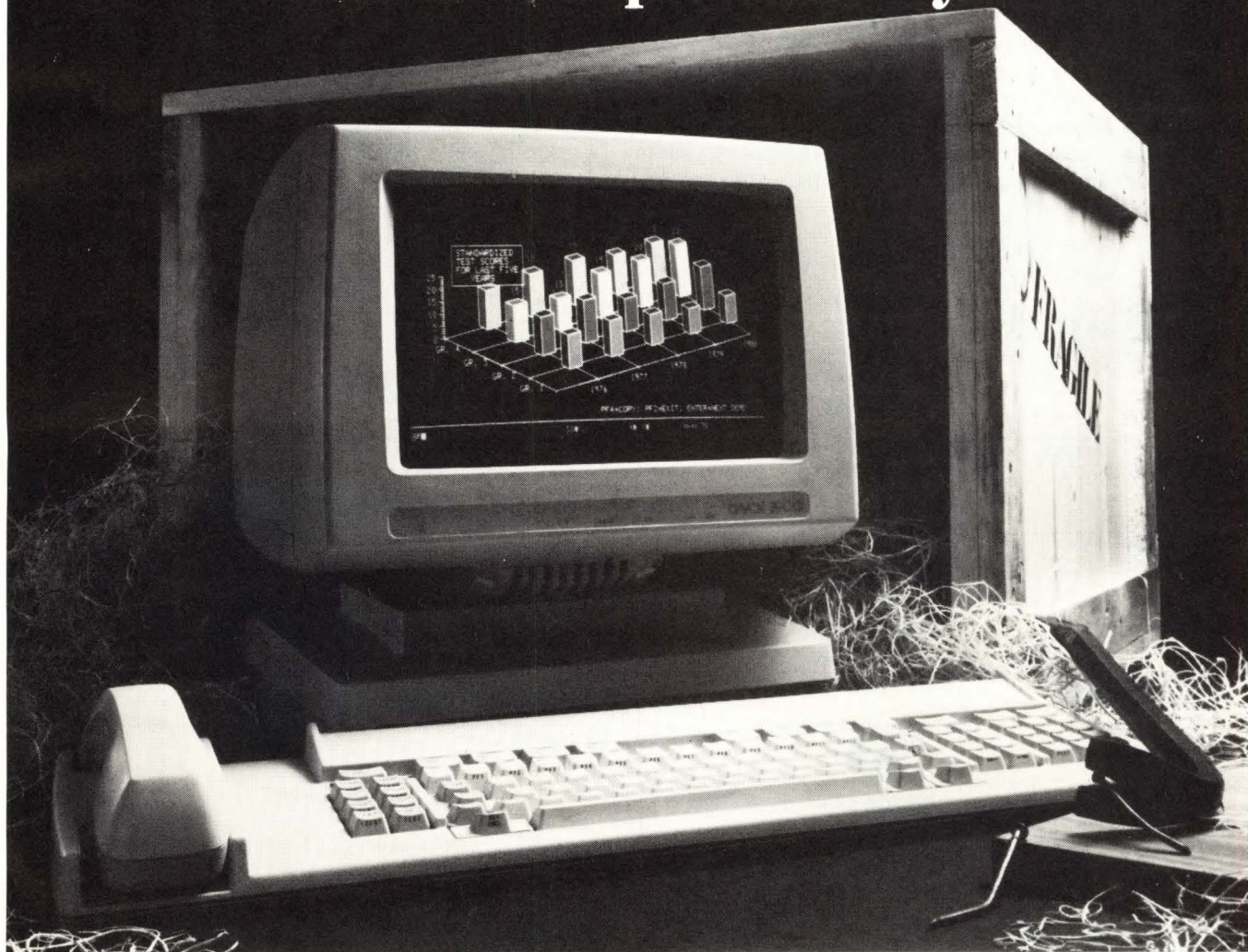
to customer service. Chances are we can help you, too. Because we're the one company that has everything you need. Right now—not three years from now.

For complete information, call John Flint, Marketing Manager at (617) 667-4455 or toll-free at 1-800-343-1152. Or write him at Davox, 4 Federal Street, Billerica, MA 01821.

DAVOX™

We *are* data and voice systems.
We do it all. And we do it all now.

In a single delivery, we helped Burlington Northern Air Freight double their productivity.



FEATHERWEIGHTS CARRY CLOUT

popular among employees as well. Each auditor gets custody of a portable much as he or she would receive a company car. To promote personal improvement, Peat, Marwick, and Mitchell lends the Macs out for home use. Such practices generate enthusiastic responses. Manager Joe Garpolpo says, "I've had a Mac on my desk for two years, and every morning when I turn it on, I still say, 'Wow!'"

The Mac's interface is so friendly that it practically begs users to come and play. Since the CPA firm wanted its auditors to use the tool as much and as comfortably as possible, user-friendliness played a large part in its selection of the Mac.

Two criticisms leveled at this computer—relatively small storage capacity and lack of software—haven't hampered its use at the Big Eight accountancy. Although the Macintoshes' 128 Kbytes of memory is less than some transportables, it's still enough for numerous applications. "If

there were more memory available, we'd certainly take advantage of it," says Macdonald. "We designed our software to exploit what's there." Analysts predict that a 256-Kbyte chip, which would double the Mac's memory, will be available from Apple as early as next year.

Portables and auditors may indeed be a marriage made, if not in heaven, at least in Silicon Valley. At the Worcester/Springfield, MA, branch of the Internal Revenue Service (IRS), 16 agents have teamed up with 16 Grid Compasses to evaluate how portables can speed and improve auditing. The goal of the government tax collectors is to computerize revenue agent reports, currently prepared by calculator. If the pilot is successful, the Compass portable may be used by IRS agents nationwide.

If the thought of IRS agents investigating your tax claims with Compasses doesn't make you nervous, it

should. Compass boasts 256 Kbytes RAM, a built-in, 1,200-baud modem, a full-screen flat-panel display, and remarkable communications, all packed into a 9-pound computer. Unfortunately, the Compass is one of the most expensive portables—the low-frills version costs \$4,250.

That's about half the price Compass was selling for last year when it gained the dubious distinction of becoming the first computer to be featured in the exclusive Nieman-Marcus catalog. In addition to being the darling of the upscale set, Grid has also found a niche in military quarters. An especially rugged Grid portable, the Tempest, was designed for military and defense applications. With 512 Kbytes of memory, the Tempest weighs 14 pounds and costs \$12,500.

But will the business world foot the bill for such an expensive tool? According to Evan Moltz, manager of micro services at International Data

ACCESSORIES FOR PORTABLE COMPUTERS

Vendor	Product	Features	Price	Circle
Kensington Microware (212) 486-7707	PC Saver - Portable surge suppressor for portables such as Compaq, Kaypro, Eagle, Corona, Columbia	Surge suppressor built into power cord reduces surges, spikes, filters common and transverse mode noise	\$50	406
Lifeline Designs (801) 262-7302	Computer Stand	20×14×5 inches Elevates 2 inches, rotates 360 degrees	\$179 - Oak \$229 - Walnut	407
Madson Line (415) 465-3760	Carrying cases for portables Seven styles that fit 20 computers from transportable to briefcase	Nylon outer shell Foam interior	\$65 to \$155	408
Southern Case (919) 821-0877	Carrying case for Apple IIC	Plastic outer shell Foam interior	\$82.50	409
TSE (215) 825-8202	Carrying cases for portables LF series: 14×21 inches, choice of 4-, 5-, 6-inch height LC series: 9½ inches × 14 inches, choice of 4-, 5-, 6-inch height	Plastic outer shell Foam interior	\$165-\$173 \$109-\$120	410 411

DISPLAY TERMINALS

Vendor	Product	Features	Price	Circle
Krown Communications (213) 641-4306	Portaview Jr.,	3.5 lbs. Battery operated	\$329	429
I/O Com (415) 463-1073	QT5	23 lbs. Built-in modem		430
Teleram Communications (914) 694-9270	Portabubble	15 lbs. 300 bps acoustic coupler 62 K to 256 K	\$3,500 to \$4,200	431

Corp., the Framingham, MA-based market-research house, the answer is no. Moltz considers the Compass too high-priced for general corporate use.

Not everyone would agree with Moltz. The World Bank finds the Compass' extreme portability, easy-to-read screen, and MS-DOS operating system worth the extra expense.

When World Bank's financial analysts travel from Washington to remote spots like Hungary and Africa, they usually have a Compass to guide them.

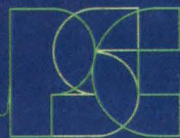
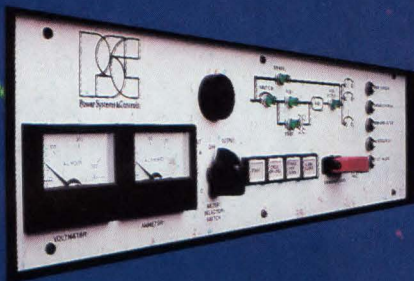
In countries where any computer is an anomaly, the Compass is especially valuable. India is an example. There, 100 clerks would have to work all

night collecting the necessary data for an audit, according to Tom Russo, one of World Bank's financial analysts. One Compass does the same job, with more accuracy, in about an hour.

In addition to placing fewer demands on the host country's time and resources, the Compass also improves

(Continued on page 192)

CLEAN WAVES



Power Systems & Controls, Inc.

Design/Manufacturing/Installation/Service

Power Systems for Computers

Silenced Motor Generator Power Conditioners 25 KVA to 95 KVA

Silenced Frequency Converters (415 Hz) 12 KVA to 75 KVA

Rotary Filter—Ride Through Motor Generator Sets 25 KVA to 1000 KVA

Rotary Uninterruptible Power Systems 100 KVA to 1000 KVA Single Modules

P.O. Box 27306 / Richmond, Virginia 23261
Lanvale Avenue / Richmond, Virginia 23230
Telephone: (804) 355-2803 / Telex: 828348

INFORMATION MANAGEMENT: BECOMING A SPECIALIST'S GAME?

by Mary Miles, New England Editor

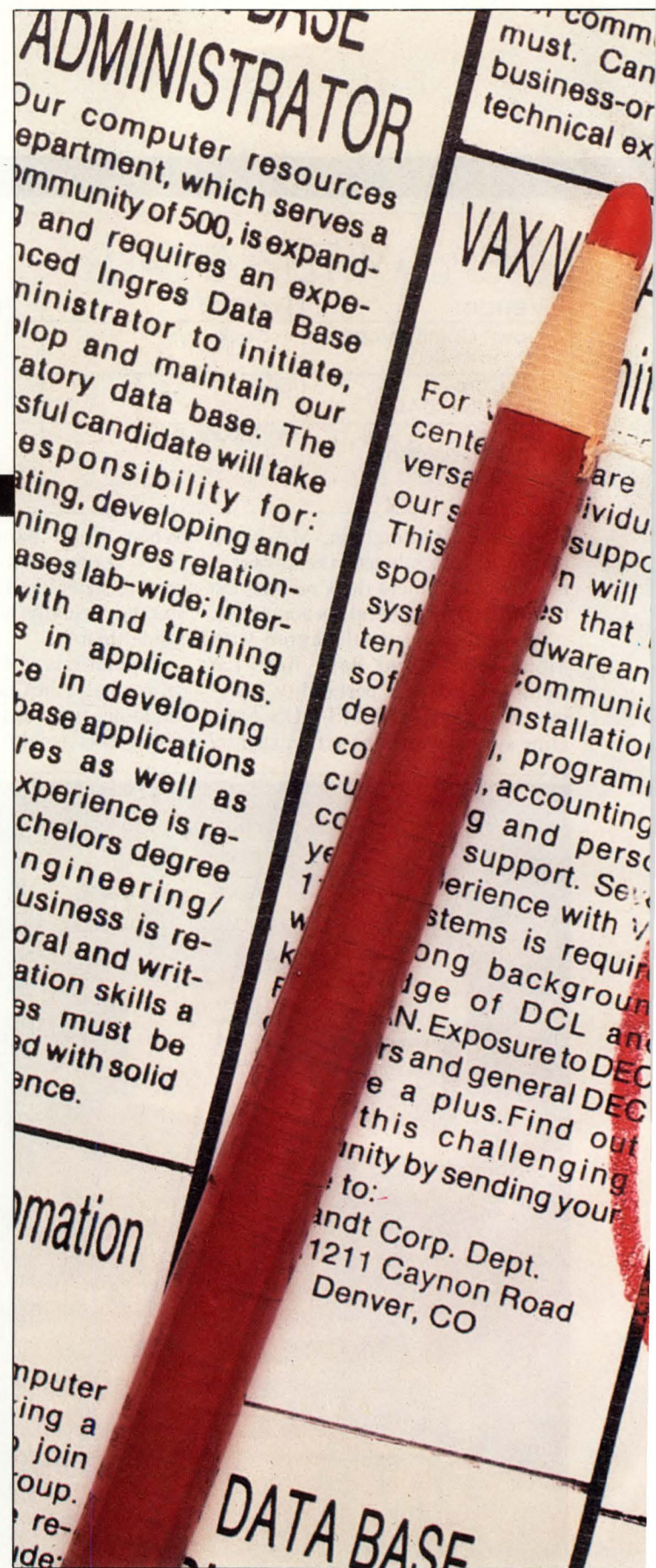
Just think: A couple of decades ago there was only one dp pro on the scene—the lonesome programmer. Today, look at the want ads. Organizations are shouting for micro experts, systems analysts, software engineers, database administrators, network specialists, automation architects . . . the list goes on.

Who are these specialists? Are they scarce or merely elusive? Should you develop the new pros yourself or swipe them from other organizations? Once you have them, how on earth do you keep them? How, and by whom, are they to be managed? And the most basic question: How does an organization anticipate and plan for the specialists it will certainly need?

One answer is for organizations to pay attention to the requirements of new technologies vital to their future business as fresh developments, succeeding generations of something-or-other, and hot new products stir the hearts of many with the glowing promise of more efficient and productive use of corporate information. Source Edp (Mountain View, CA) notes that these data will likely expand sevenfold in the '80s, pressing the development of new approaches to storage, structuring, and management—creating conditions for the proliferation of specialties. But at this point, the questions about developing and managing them outnumber the answers.

Many of the pros who are being hotly pursued are not new—they are updated versions of relatively familiar staff—systems analysts, for example, and current generation programmers—whose evolution is outpaced by fast-changing technology. "It's difficult to enumerate the most sought-after types of specialists, since at this point many of them aren't really clearly defined—some don't even have titles," was the way one interviewee put it.

Moreover, there's a lot of confusion about interrelationships and levels of authority: Is information-resource management (IRM) an outgrowth of the data-management field, or a very high level (VHL) specialty more closely aligned with particular corporate strategy and planning? Does someone who specializes in integrating and managing the information resource have the same mission as an MIS director? Do data admini-



Leaps of technology demand their place at all levels of the organization—and the specialists to tame them.

Timesharing Technical Consultant
PC Programmer Analyst
 Estab. needs experienced project leaders in fourth-generation languages (SAS, FCS, INQUIRE) and PC software (BASIC, C, 1-2-3 or PASCAL). Both positions involve hardware and software evaluations and user support.

SOFTWARE ENGINEER
 Responsible for design, development and verification of multi-disciplinary software for operational manufacturing products. Qualified applicants must have BS/MS in Computer Science plus a minimum three years experience with: Systems architecture hardware/software design Algorithm design and evaluation. Electromagnetic environmental effects Human factors Send resume to:
 S.Y. Borg Inc.
 3765 Alameda Circle
 San Antonio, TX

ADMINISTRATOR
 Our computer department community of ing and require experienced Ingres Administrator develop and laboratory data successful candid full responsibility Generating, developing, maintaining Ingres al data bases lab-wide acting with and t end-users in applic Experience in devel large data base applica using Ingres as we years of experience required. A bachelors degree in math, engineering science, or business is required. Good oral and written communication skills must. Canidates must be business-oriented with solid technical experience.

strators report directly to MIS heads or to *their* superiors?

No need to feel especially uninformed if you can't answer these questions; most managers are confused. To better understand the increasingly significant impact of specialties—the new ones and the changing older ones—we'll first focus on the two primary categories into which these sought-after individuals fall: data management and communications.

In its 1984 *Computer Salary Survey and Career Planning Guide*, Source Edp's personnel-services division includes a list of important new career opportunities, among them the following: "Data Base Specialists—*responsibilities*: Design and control the use of an organization's data resources. Analyze interrelationships of data usage and define physical data structures and logical views of data elements. Utilize facilities of data base management systems and data dictionary software to control data usage. Responsibilities range from design and creation of data structures to procedures to insure data security, backup/recovery, and to eliminate data redundancy. *New trends*: Demand is increasing due to projected growth in DBMS installations. Needs exist for persons with knowledge of programming and systems methodologies to design data-base-oriented application systems. Career path leads to Corporate Data Base Administrator, a

HIGH-TECH HYPE OVER EXPERTS

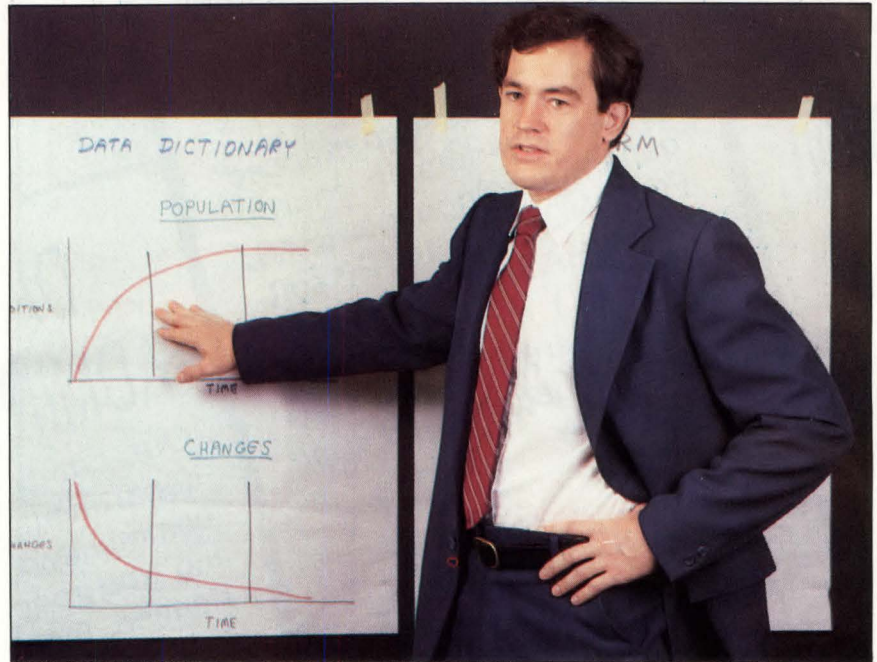
management position responsible for control of the entire data resource."

William Durrell, founder of the consultancy Data Administration, Inc. (Cypress, CA), and author of *Data Administration: A Practical Guide to Data Management* (McGraw-Hill, \$32.95), enumerates an impressive handful of specialties: *data administrator* (or *DA*)—responsible for management, control, and documentation of information; *database administrator*—whose job it is to design, implement, and maintain individual databases and DBMSs; *data librarian*—the "change-control" person who creates and distributes reports and enters data; *data dictionary technician*—controls and monitors use of data elements throughout the system; *data analyst*—does logical database design, the complement of the systems analyst; and *data modeler*—works with the data administrator and top management to develop long-range strategic planning of data use.

Technology trackers, or "technology assessment personnel," as they are sometimes called, are closely related to VHL information pros. Some observers see them as essential to study and evaluate fifth-generation (and beyond) technologies, such as artificial intelligence. In this capacity, they could conceivably be peers of high-level decision-makers.

"People are slowly beginning to realize that you can't have integrated systems unless you have integrated data," says Durrell, "and organizations' mistake is to think the problem can be solved by machines, when it's a people and management problem."

"The particular problem with specialists in data management is that they may have greater loyalty to their field than to their employer," says Lee Humphrey, president of the consultancy Boston Associates, Inc. (MA). "I've never seen such a high turnover rate within dp," says Durrell. Why? For one thing, data specialists, it



"People are slowly beginning to realize that you can't have integrated systems unless you have integrated data," says William Durrell of Data Administration Inc. "And organizations' mistake is to think the problem can be solved by machines, when it's a people and management problem."

seems, are adamant about data issues, filled with an almost missionary zeal for doing their thing. They have a distinct data orientation, which runs counter to the traditional orientation of MIS to process. As is true of many trailblazers, they tend to be outspoken—sure that their way is *the* way. This not only narrows their outlook, but seriously limits their communication with the rest of the company, especially high-level decision-makers.

The fault does not lie entirely with the specialists, however. Entrenched corporate management often fails to look deeply enough into the need for data management. Frequently data specialists are hired in recognition that "something needs to be done" and then are not given the authority or clout that will enable them to be effective. Or they are expected to *immediately* solve all the problems posed by super-abundant data and ever more complex systems. "Sometimes," says Durrell, "the deci-

sion-makers set very unrealistic expectations of data administration managers and staffs."

Another problem to be worked out concerns plain old politics. "The DA position is politically sensitive for several reasons," says Durrell. "Primarily, it challenges the way systems have been implemented for the last 20 years. The data administrator has the audacity to ask some very sensitive and gut-wrenching questions, like: 'How many databases should we have in this company?' The fact is, everybody has his own, and wants to keep it, and wants to keep it secret from everybody else. That makes for inefficiency. The DA may say, 'Hey folks, there's a high degree of redundancy here—we're wasting a lot of effort, not only in storing the information, but in the systems to support it. Let's design *one* employee database, instead of having one for both payroll and personnel. . . . That's a slap in the face to the payroll and the personnel people. But more significantly, it

requires a top-level-approved joint funding of the analysis and design of one central database.

"There are other nagging questions the DA asks," continues Durrell. "What are the basic characteristics of the information of this company? What information is most critical to our success that can put us above and beyond our competition? Then, the more fundamental questions: What is the business for? Where are we going? What separates us from the competition, makes us better or different? What data do we need to support our business successfully? Finally, how can we design databases to reduce future maintenance?"

It's easy to see how this combination technocrat and seeming busybody could engender antipathy within an organization. This is where a mollifying concept called information resource management (IRM) comes in. Says Donald R. Hollis, senior vice president, systems and MIS at First Chicago Corp. (IL): "IRM is saying that information itself has value, and that we have to manage it better. It's treating information as a resource, rather than as a by-product, or a necessary evil."

The move to viewing data as a corporate resource as a whole rather than as bits and pieces "belonging" here and there is at the root of some fundamental changes that must occur in the organization. Says Christopher Coulson, publisher of *Data Base Newsletter* (Marblehead, MA): "The more you get into examining data and what it's used for, the more you are in essence analyzing the business of the corporation as a whole. As this notion takes hold, the top levels in the organization are gaining new insights into the business."

"Today's advanced technologies—minis/micros, terminal devices and communications networks—have made computer decentralization much more commonplace," according to Source Edp's career-planning

guide. "The full impact this wealth of information and networking possibilities brings to bear on professionals will be major. Certainly, those with expertise in networking and data communications will be called upon to develop new approaches to information handling and management. Those who understand the software technology needed to convey information from computer to consumer will be at the cutting edge."

Current technologies, the guide continues, will emphasize microwave and satellite data transmission with emphasis on global networking. Among the hot new career possibilities listed are datacomm programmers and programmer analysts. And telecommun-

ications expertise is cited as highly desired in most organizations.

In telecommunications alone, according to Jay Jacobson, president of Personnel Resources (NY-based headhunters), corporations are actively looking for network planners, operations supervisors and technicians, datacomm systems analysts, and programmers—particularly those with experience in message switching and datacomm software.

Like data management, this burgeoning new field is having a profound effect on the traditional MIS function. There is evidence that communications technology is becoming a major part of the operations situation, with the line

YOU CAN'T LIVE ON TECHNOLOGY ALONE

Some specialists are just plain hard to find; others aren't, but they're awfully hard to keep. Here are just a few clues for dealing with the difficulties:

- If you don't know precisely what to do with them, and where to put them, specialists may have to work under conditions of divided authority. They should know to whom they report and what their role is; otherwise, they may move on.
- Related to this, make very sure the specialists are reporting to the right person. To ask an information-resource developer to report to the controller, who's loath to part with the bucks, is a glitch-maker for certain.
- Specialists are usually a gung-ho breed; they especially like professional challenge, direction, career movement. Better give it to them!
- Don't let specialists stay in ivory towers; help them relate what they're doing to the purpose and goals of the business as a whole.
- Don't expect the impossible. Hiring a data dictionary expert does not guarantee immediate solutions to all your data-management problems.
- Keep a weather eye on your future needs; this will allow you to train the specialists you may need down the line.
- Give specialists the authority and clout their position and level of responsibility demands; if they don't feel they're getting sufficient respect and acknowledgement, they know they can probably find another job without much trouble.
- Give some thought to weeding out or re-educating managerial types who are "risk-averse" stuck in the traditional ways of doing their thing. Those who don't keep in step may trip up the organization.
- Don't be too surprised if the salary scale for specialists isn't in line with the rest of your compensation policies. You can expect to pay more for them—and possibly, they're worth it.

HIGH-TECH HYPE OVER EXPERTS

between MIS and communications increasingly blurred. In the shift to end-user autonomy, MIS may well become more consultant than controller of the dp organization. At present, however, it appears that the MIS manager is the one who is taking responsibility for communications—when someone clearly is in charge.

Industry-watchers believe there is a growing differentiation between the physical integration of equipment into networks and the integration of data and applications into a cohesive corporatewide system of information processing. This points to the tapping of not only technical communications pros but also higher-level people—communications managers—to oversee the effective integration of the technology as well as the management and planning necessary to successful future networks. High-powered specialists, they must possess technical expertise as well as an understanding of the role of communications in terms of

overall corporate strategy—truly super integrators.

But at the same time, many companies don't seem to know quite what to do with the communications pros they have. "A lot of telecommunications people," says Jacobson, "complain that they are buried in some department where they plainly don't belong and no one listens to them. Sometimes they're stuck under 'administration' or 'office services,' for example, and that can be a problem. In fact, it explains why so many move quickly from job to job."

Donna Tarbania, an associate with The Diebold Group research program, holds that this problem points up the need for MIS to "develop a whole new way of thinking about its role in the corporation, as well as its relationship with user groups. And the organization just hasn't come to grips with this yet." Just recognizing the need for specialists, she says, isn't nearly enough: "You could hire the

most up-to-date professional, who would then come into your shop and be astounded at the discrepancy between what he or she has been taught and the reality of the MIS world. There are a host of constraints that operate in MIS departments. MIS people have tended to utilize the philosophy of 'It's working fine, so why fix it?' They just don't look as far ahead as they might."

My opinion," Tarbania continues, "is that it is an exceptional MIS director who can play both sides, who is technically strong and knowledgeable but who can talk the business language—who is perceived as a peer by other managers—which is not the case now. Why? Many MIS directors have been in the job for a long time and are sort of risk-averse. They're tired of fighting battles."

And intra-corporate communication is itself an issue. Terry Bogue, vice president of advanced technology at Zytron, a provider of computer-output services (Menlo Park, CA), sums up the challenge to MIS: "The key [for the MIS director] is to understand the value of the information and to share the view that *it is only worthwhile if you can get it in the right person's hand in the right format at the right time.*"

David Dell, director of research services at The Diebold Group, NY, puts it this way: "You don't need people who can just patch boards and plug wires together. They must also have a good grip on user-relations-type *management* skills. It's relatively easy to find teckies and bring them up to speed. However, the scarcity of professionals skilled in both communications and management is acute."

"Headhunters are prowling through the woods with \$200,000+ offers, looking for individuals who understand the technology, can manage the technologists, sort out the skills and at the same time understand the business problems," says Warren F. Mc-

THE TOWER OF BABEL PROBLEM

Specialties are rising in corporate visibility and the communication and political problems are becoming significant. These are, to some extent, rattling the cage of traditional MIS thinking. The ideal is to increasingly define specialists' responsibilities and relationships to the rest of the organization, to formulate clear policies for their development, management, and even career direction. But as specialists proliferate, confusions abound.

It's a brand-new management problem, says Malcolm Beaverstock, senior automation architect at The Foxboro Co. (Foxboro, MA). "It's the 'Tower of Babel' problem. That mythical edifice was a phenomenal engineering feat—but also a fiasco. In a nutshell, those guys had everything going for them, but they (1) lacked the commitment and approval of upper management and (2) found they could communicate—but couldn't understand each other!" That's exactly the problem with specialists, says Beaverstock. They're not speaking the same language; often, they're even calling the same concepts by different names.

Consequently, a challenge for today's decision-makers is to define ways to manage a burgeoning group of specialists and improve the communication at all levels. No one individual can handle that; it must be a corporate effort. But no one said building something wonderful would be easy.

Get a clear picture on all your leasing needs.

With all the high-tech equipment available, making a decision about what's right for your company isn't always easy.

That's why Greyhound Capital Corporation works with you to make those decisions. Whether you want to lease or purchase, we'll work with you to customize your equipment requirements. And we'll also work with you to customize a financing schedule that meets your financial requirements.

We've been leasing, servicing, refurbishing, maintaining and providing financing for computer and other equipment for over 20 years.

So if you have questions regarding your equipment-leasing system, call Greyhound Capital Corporation. We'll make the picture perfectly clear.

Regional Offices

Mike Flannery
Dave Hyland
John O'Shea
Ron Geil

Eastern Regional Headquarters
Western Regional Headquarters
Central Regional Headquarters
Southern Regional Headquarters

(617) 272-8110
(415) 283-8980
(312) 789-9100
(512) 451-0121

Sales Offices in:

Atlanta, Austin, Boston, Chicago, Dallas, Houston, Los Angeles, New York,
Philadelphia, Phoenix, Pittsburgh, San Francisco.

Canada Group

Gordon Clarke

Canadian Headquarters

(416) 366-1575

Greyhound Capital Overseas Corporation

Don Haworth

International Headquarters

(214) 233-1818

Offices in London, Paris, Geneva, Munich

GREYHOUND CAPITAL CORPORATION

A subsidiary of The Greyhound Corporation



HIGH-TECH HYPE OVER EXPERTS



"The MIS director must know the theory and be able to convert that into practice," says Terry Bogue, vice president of advanced technology at Zytron (Menlo Park, CA). "He or she must also know when to call in the experts."

Farlan, a professor at The Harvard Business School. Finding high-level specialists of this type, he adds, is much more difficult than attracting, say, database and telecommunications pros, "who are scarce—but at least there are known sources for that kind of talent."

How are organizations finding these VHL specialists? One way, says McFarlan, is to "draft people from within the MIS organization—individuals who are technically good—and try to expand their scope so they can understand the company's strategic mission. They have to feel comfortable with the products and what really matters in the marketplace—but they also have to understand the technology. They must be real switch-hitters." Another tactic is for the decision-makers to "pick general managers in whom they have a lot of confidence—dropping them in on top of the MIS organization and hoping that they'll be able to organize and integrate the necessary technical skills to keep themselves honest. It's a genuinely tough problem."

Increasingly, organizations are realizing that getting a grip on information-management problems may mean setting a place at the senior management table for information specialists—or at least providing clear reporting lines to the president. So says Terry Bogue. This can be initiated by a forward-looking MIS director who says, "I want out of this box I'm in with a huge backlog of applications. This company needs to change the way it works."

But not all MIS directors are that savvy or progressive. And it's important to remember the rapidly changing nature of MIS itself: "The MIS facility is probably the most unstable of any part of today's organization," says Leslie Ball, professor of information systems at Babson College (Babson Park, MA). This is due to decentralization of information processing, booming technology, and that growing cadre of specialists, many of whom threaten to take away pieces of the long-guarded turf of MIS.

Herbert Halbrecht, president of Halbrecht Associates, a recruiting firm in Stamford, CT, says there is "an emerging dichotomy between what can be called the blue-collar dp manager and the new participatory information manager. Not all MIS people are able to move with the rapid changes that are taking place," Halbrecht says. "With microcomputers revolutionizing computer usage, even more of the computing resource will function at separate levels. That will leave the corporate data center capable of doing more of the heavy number-crunching that only big computers can do." Which would seem to suggest that some MIS managers will remain strictly in charge of "number-crunching," some will fulfill a role as generalists in charge of specialists, and some will don the mantle of VHL information-resources specialist.

It's the shift toward more and more

specialized hardware, says David Dell, that is creating this need: "You no longer have general-purpose computers. You now either use software to 'specialize' a computer or have machines that exist specifically for, say, database, computer-aided design/manufacturing, or networking personal computers. There are so many more ways to deploy computers today that the interest is high in finding people who can track new developments and help plan for future advancements."

There may be a serious shortage of systems analysts and programmers within the next three years, says the National Science Foundation, Washington, D.C. Both micro managers and experts who can understand and unite micro and mainframe technology—and successfully apply this knowledge to business needs—are hot properties, say recruiters, harried MIS directors, and industry gurus.

Ask "Where do you get the specialists for data management, telecommunications, information-resource management?" and inevitably almost everyone sighs and says, "You steal them, of course!"

Plundering the professional resources of other companies has been the traditional way organizations have filled their needs for specialized personnel, says Ernest Kallman, professor of computer information systems at Bentley College (Waltham, MA) and co-author, with Leon Reinharth, of *Information Systems for Planning and Decision Making* (Van Nostrand Reinhold, \$36.95). "Getting the specialist you want is relative to the total expenditure for information systems," he explains. "Most companies operate on the idea that to steal someone and pay him or her an extra \$10,000 a year is not going to make that much difference. And the in-house training process in most companies has simply not been orderly enough to produce desired specialists." (Continued on page 166)

ONE SIZE FITS ALL VS. CUSTOM TAILORED

Remember the item you bought with the "one-size-fits-all" label? Maybe the arms were too long. Or it bagged at the waist. Or you buttoned it at the neck and found you couldn't swallow. So you vowed to choose more wisely next time.

Computer Decisions knows that "one-size-fits-all" doesn't fit anyone well. That's why we're not an all-purpose computer magazine. Or a general business publication. Or a newsweekly for the entire industry.

We custom-tailor our editorial to fit a single audience. Management. The MIS director who has come out of the back room into the boardroom. The corporate exec who's becoming more deeply involved with information resources. The financial vp who's suddenly buying not only his own personal computer, but a whole corporate information system. The Computer Decision Maker with purchase power for what you sell.

We tell our 100% management audience one thing: how to manage their human and information resources for greater profit and productivity.

With practical, non-technical application features on MIS strategies, data communications, software, office automation, mainframes, personal computers, peripherals. And they read us consistently, from cover to cover. Because we tell them better than any other publication.

So when you think of buying a "one-size-fits-all" publication, think again. And remember that *Computer Decisions* is custom-tailored for management.

**Your Advertising
And 160,000 Computer Decision Makers
A Perfect Fit**

HIGH-TECH HYPE OVER EXPERTS

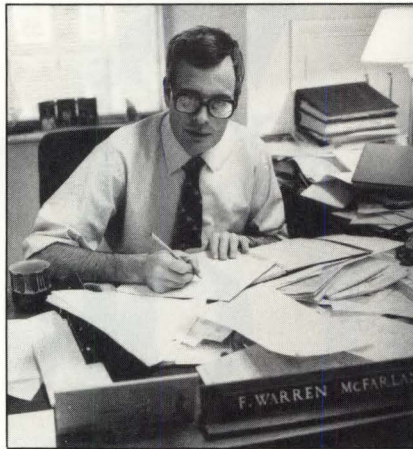
(Continued from page 164)

The "I-want-it-now" mentality breeds short-term solutions that lead to an irrefutable conclusion: Both general management and MIS need to stop relying so heavily on purloined professionals and give serious thought to filling the present and future skills gaps through dedicated efforts, such as training and development programs, a continuing-education initiative, and career-pathing strategies.

Kallman believes that the failure of organizations to think ahead in this respect will only make the specialist-scarcity problem more acute. If your senior-analyst types are too busy to play technology catch-up, and if your newer people show promise, but lack the breadth of experience that comes with time, you may be in trouble. And luring the professionals you need away from other companies, though a common way to cope, may only be a stopgap solution.

"What you need," says Herbert Halbrecht, "is a critical mass. This requires a major commitment on the part of the corporation. You have to buy special hardware and software to keep up with the technology. And you have to dedicate real, honest-to-goodness experts who understand a particular technology to work with the people you want to develop into specialists." Long enough, he adds, to allow a legitimate transfer of knowledge, combined with ongoing experience. This is a big investment that requires phenomenal patience and a well-thought-out, long-term strategy.

Suppose you decide to mount that ambitious effort to develop present employees for the vital slots. Where do you look? It goes without saying that young and talented newcomers should be watched and cultivated carefully. But those employees who've been around for a while may also be a rich source of special capabilities. "To develop specialists, it's more practical, sometimes, to take a senior technical



"Headhunters are prowling with \$200,000+ offers, looking for individuals who really understand the technology, can manage the technologists, and at the same time understand the business problems," says Warren F. McFarlan, of Harvard Business School.

expert—who has an MBA or a strong business background and has been in the corporation for a long time—and make him or her aware of corporate strategy and overall direction than it is to try to make a technical expert out of a senior business manager," says Hollis of First Chicago.

However, finding technical people with the business background might be difficult. Most organizations "do a very poor job of taking technicians and giving them enough training to allow them to step into higher-level opportunities when they're available—or even of encouraging them to seek courses and advanced degrees in business and management," says Leslie Ball. "Any company worth its salt *ought* to set aside some money in the budget to help promising employees learn more."

James Webber, executive vice president and a founder of Omicron, an information-exchange organization based in Morris Plains, NJ, agrees: "A lot of organizations pay little more than lip service to establishing and supporting career paths for dp professionals. These companies have to get much better at developing honest-to-

goodness career directions for technical professionals that move them effectively up into specialist and/or managerial responsibilities. Ultimately, they are going to have to develop a sense of the larger picture—the business as a whole."

What kinds of people should be tapped for specialty positions? Says Christopher Coulson: "You should look for those who already have displayed a substantial interest in the way the corporation works, and in particular, the puzzling structure of data. These are people who have chosen their own paths, to a certain extent; who may have requested the chance to take courses in the specialty that intrigues them. These will be individuals," he goes on, "who have ambition, curiosity, and ability that sets them apart. They typically have not been content to put up with what is currently available; they are people who need to feel that they're stretching their intellectual legs, if you will."

Alfredo Eloy, manager of systems and procedures in the Polyfibron Division of W.R. Grace (Lexington, MA), agrees that those qualities describe a potential specialist. He added some, too: "This person can't be average. He or she will probably work three times as hard as others. Intellect, creativity, initiative, and a certain level of intuition are important . . . and a sense of discipline, too. When I find bright and creative people like this, I don't care where they're coming from; if they have any instinct, any insight into that particular specialty, I will grab them and train them."

Although Eloy admits that he occasionally employs consultants "because of a valuable cross-pollination of new technologies and new ideas," he prefers to develop and train internal staff who have greater loyalty and dedication to the company, and whose long-term value to the organization is thus enhanced. (Continued on page 168)

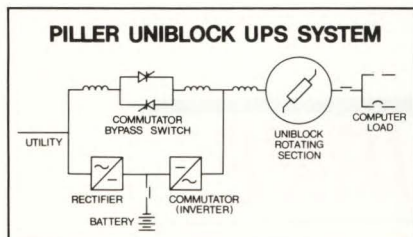
Announcing the most advanced UPS system ever designed!

Even before its formal introduction, the new Piller UNIBLOCK Uninterruptible Power System (UPS) was already being installed at major telephone, television, and telecommunications installations, banks and financial institutions, data services companies, and automated manufacturing installations worldwide!

A state-of-the-art breakthrough

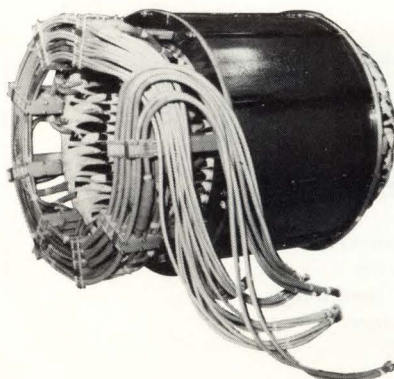
$$1 \text{ STATIC UPS} + 1 \text{ STATIC UPS} = 1 \text{ UNIBLOCK UPS}$$

The Piller UNIBLOCK is the first UPS system that offers dual power paths, each capable of supplying full rated power to the computer. That means built-in redundancy in a single module. (So a single UNIBLOCK UPS System provides the same protection as two static UPS systems!)

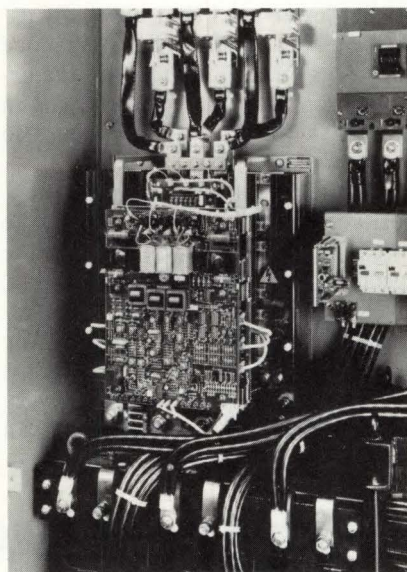


Superior efficiency

It's the first rotary UPS to offer efficiency equal to and even superior to that of static UPS



systems. (No other rotary-based UPS even comes close!) That's the result of the exclusive Piller rotating power conditioner...the first ever to combine primary (motor) and secondary (generator) windings on a single stator with a common rotor.



Superior reliability

It's the only UPS system to offer four times the reliability of a static UPS system. (The UNIBLOCK's simple commutator (inverter) is only a fraction of the size of a static UPS inverter and has only 25% the parts count!)

Total power protection/plus system flexibility

It's the only UPS system to offer up to 100ms ridethrough, plus complete isolation of the load from the utility, and protection against, voltage spikes, voltage

sags, brownouts, even without a battery.

The right system for your power requirements

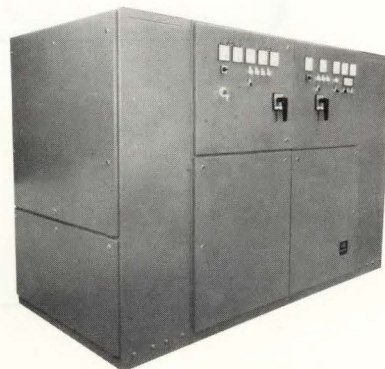
It's the only UPS system available in KVA ratings to cover the entire range of mainframe power requirements from 40 to 500 KVA...plus an off-line battery, constant-voltage battery charger, automatic bypass switching, power distribution system, and diesel-electric emergency power generation capability...all from a single source!

Nationwide maintenance and service

And it's offered with a 24-hour-a-day, 365 days-a-year nationwide service agreement from K/W Control Systems, Inc., the leading supplier of power systems for computers, with more than 3,000 systems installed coast-to-coast.

Now there's UNIBLOCK, so you won't have to worry about lightning and thunder.

No wonder we're taking the UPS market by storm!



CONTROL SYSTEMS, INC.

South Plank Road, Middletown, New York 10940
Phone: (914) 355-6741 TELEX No. 13-7428

HIGH-TECH HYPE OVER EXPERTS

(Continued from page 166)

Another option for developing specialists is to select the best and brightest right out of universities and nurture them. But one of the reasons the demand for specialists is exceeding supply is that there is a huge educational bottleneck. Enrollment in computer courses is swelling and the bright young computer-savvy generation is having trouble getting into the classes they want because those who can teach the new technologies are all too often seduced from the campus into industry, where the pay and the perks are greater. "The teachers are as rare as the specialists themselves," Ernest Kallman says. Moreover, even when the graduates arrive at industry's door, they just don't have the experience to become effective quickly.

Wherever you get the specialists—growing your own, drafting whiz kids right out of universities, or snatching them from competitors—it's essential to do

"With so many more ways to use computers today, the interest is in finding the people who can track developments and plan for the future."

—Dell, The Diebold Group

all you can to *keep* them. One way is to make sure there are enough respected gurus within the fold to attract lower-level (but upwardly aspiring) specialists. Their presence convinces job candidates that the organization is serious about staying in tune with technology and they also serve as mentors.

Another tactic is to "provide a supportive internal climate and make sure that the projects you assign to the specialists are really valid, exciting, and will develop these people professionally," says Prof. McFarlan. "The notion of being able to do a job that is challenging and worthwhile has very high leverage. If an organization can

treat people with respect and dignity and give them job satisfaction, the turnover rate stays low. The first instinct is to try to keep good people with money, but I don't think that's primary."

While it may not be a primary consideration, it's certainly one that elicits a lot of anxiety. Here's Halbrecht the headhunter's advice: "The way to keep guys like me from grabbing your specialists is to recognize their value and contributions. As much as possible, give them more responsible management-level tasks. Make them greater participants in the business decision-making process. If you believe they are a valuable resource, you

*"If you are wondering
why Berlin is the*

CENTER OF SOFTWARE

*in Germany,
let us enlighten you."*

Economic Development

BERLIN

*11% of all people engaged in R+D in the Federal Republic of Germany work in the City of Berlin. As a center for the conversion of scientific knowledge into economic practice Berlin has the leadership position, e. g. within the field of software, CAD/CAM and laser.
By the way: The City of Berlin is the only location in the European Community, where you get a bonus up to 14% for Berlin products and services.
Ask for the free software leaflet or mark the code number.*

Wolfe J. Frankl, Berlin Economic Development Corp., 767 3rd Ave., New York, N.Y.
10017-2079, Tel. (212) 980 1545.

Providing data and reports the personnel department doesn't have access to can be a full time job. It doesn't have to be yours.

Profiles/PC is easy to use. It runs on the popular IBM PC/XT and it is microcomputer personnel software specifically designed for the non-data processing end-user. They simply follow the menus and fill in the blanks, with no computer language to learn.

Profiles/PC provides the end-user help personnel needs. Once personnel completes a pre-installation workbook and our optional three day training course, they're essentially self-sufficient. When they do need an explanation they needn't call you. More than 200 help messages provide the answers. Fast. And if the need to get verbal assistance should arise, the Comshare hotline and local support people are available.

Ten years experience writing personnel systems for large computers has given us the capability to create a microcomputer software package as powerful as a mainframe at one-tenth the cost.

You'll also be interested to learn that Profiles/PC is written in Pascal and builds on a relational database management design. With transaction-based updating and three levels of security forming the backbone of the system. Along with a micro-mainframe link to keep all your offices well connected.

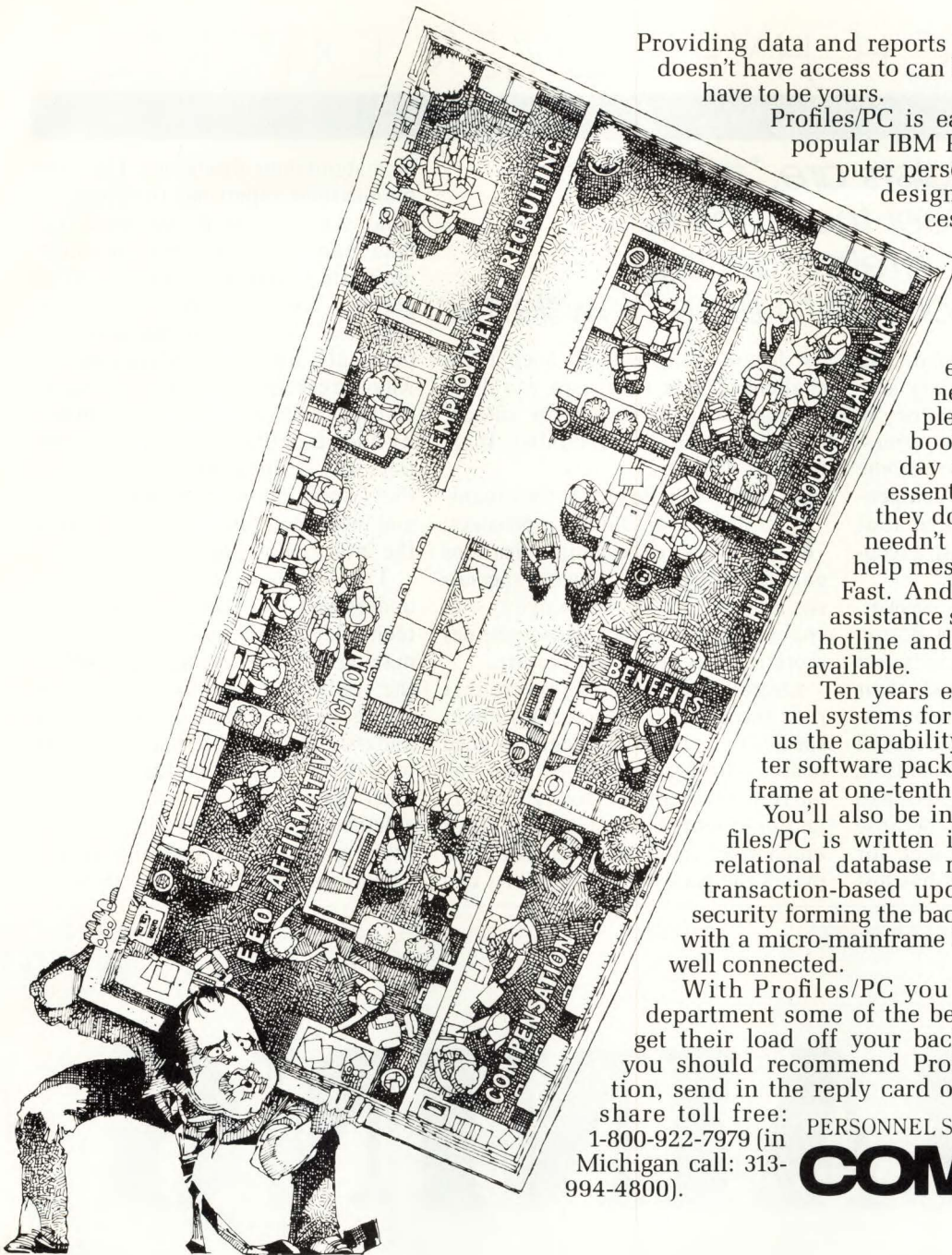
With Profiles/PC you can give the personnel department some of the best help they can get. And get their load off your back. For more reasons why you should recommend Profiles/PC to your organization, send in the reply card or call Chris Kelly at Comshare toll free:

1-800-922-7979 (in Michigan call: 313-994-4800).

PERSONNEL SOFTWARE AND SERVICES

COMSHARE®

©1984 Comshare



Get the personnel department off your back and on to Profiles/PC.

HIGH-TECH HYPE OVER EXPERTS

Potential specialists are "the people who need to feel that they're stretching their intellectual legs."

—Coulson, Data Base Newsletter

should use them, exploit them, and pay them. Ignore all the salary surveys and pay specialists what they're worth." Webber of Omicron agrees: "Corporations will have to become much more flexible in their compensation. They must recognize that specialists' salaries fall into an exceptional compensation scheme."

But that's not the total answer. Comments Lee Humphrey of Boston Associates (MA): "Specialists are more apt to change jobs to satisfy their need for challenge, their sense of mission. Especially in a high-demand field, such as data administration, specialists have more options than most. They may accept a job because there's an interesting project for them—and move on when it has lost

its dazzle. You have to keep them challenged, give them new worlds to conquer. Also, give them the authority, clout and responsibility their projects deserve."

The real challenge for the organization, Humphrey emphasizes, is to bridge the communications gap that often exists between specialists and the rest of the company—to enable them to relate their sometimes esoteric tasks to the big picture.

Overall, the continuing theme that runs through most discussions about specialists is that organizations need people who focus on more than one narrow problem. In today's information-oriented business climate a much wider view is essential. Kallman makes the point that no specialty can

be a standalone discipline. The communications expert has to appreciate what the systems people need; the data manager cannot structure information in a vacuum; the microsystems planner must be able to integrate ideas and corporate needs as well as personal computers. This may explain why the career tracks of so many specialists lead to higher levels of authority and accountability in the corporation; why at this point in time there is that confounding plethora of titles and interlaced responsibilities among the information professionals.

The search is on for people who understand and can unite computer technology and business decision-making. The new specialist, as well as the traditional one, assumes an exciting and significant charge—to understand and fulfill user needs and to deliver the computer power to meet those needs—in a way that will enhance their organization's productivity, profit and competitive stance. This is a heady challenge indeed. □

TRAINING

SYSTEM V

For 15 years, we've taught our own people to use the UNIX™ System. Now we can teach yours.

WHY AT&T FOR UNIX SYSTEM TRAINING?

AT&T offers the most current and comprehensive training on UNIX Systems.

AT&T provides the best learning environment; one terminal per student; evening access to facilities; and expert instructors.

AT&T has the breadth of courses your staff needs to unlock the full power of UNIX System V.

AT&T courses signal your commitment to improving productivity with high-quality training for your employees.

AT&T COURSES OFFER:

The same training and methods we use to

teach the UNIX System to our own people.

Rigorous classes designed to teach specific skills for job-specific applications.

Five areas of instruction ranging from introductory to advanced levels for Managers/Supervisors, Users, Systems Administrators, Applications Developers, and Systems Programmers.

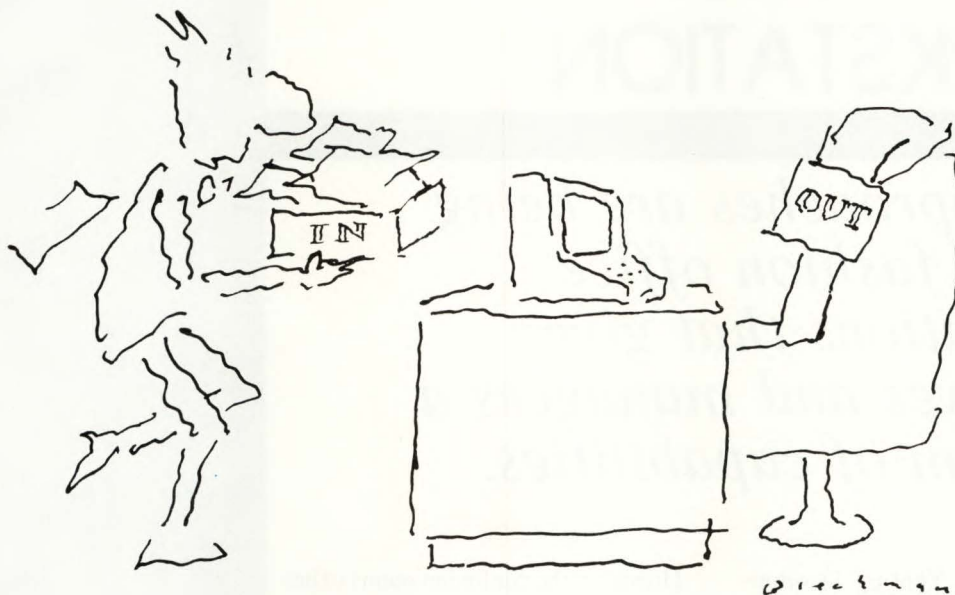
Frequent class offerings so you won't have to wait for the courses you want.

Conveniently located training centers in Princeton, NJ; Columbus, OH; Lisle, IL; and Sunnyvale, CA. Or we'll bring our courses to your company and hold the training at your convenience.

For more information, a catalogue, or to register for classes, call 1-800-221-1647, Ext. 33.



Everybody is making marvelous
new office machines.
Manpower is training marvelous
new temporaries to run them.



And we're doing it the best way...with hands-on training on real equipment — not "gadget" simulators. Using popular-make word processing systems.

And for those of our temporary workers already experienced, we test to verify their levels of skill. Not only for word processing, but data entry as well.

So when you need to replace a skilled operator...for a short time or a longer-but-limited time...call the people at Manpower.



MANPOWER[®]
TEMPORARY SERVICES

OA UPDATE: CONVERGING ON THE MANY- SPLENDORED WORKSTATION

Two approaches are being used to fashion office workstations that give executives and managers a spectrum of capabilities.

by Rick Cook

Last summer, Venture Development Corp., Wellesley, MA, released the results of a survey of executive-workstation use in U.S. corporations. According to that survey, more than 60 percent of the corporations not owning workstations identified IBM as the market leader in the field.

"This would not be especially surprising," a press release on the survey noted dryly, "except that IBM is not yet a participant in the executive-workstation market."

Clearly, there is a lot of confusion about workstations. The confusion extends farther than just knowing who the players are. There are still questions about what an executive workstation is and which office functions it should perform.

Workstation has entered the lexicon of data-processing hucksters in the same way as have *integrated* and *user friendly*—it is a buzzword that helps sell equipment. To some, even a Commodore 64 home computer is a "workstation." So, for that matter, is a desk designed to house a personal computer.

However, the confusion seems to be clearing as office automation continues to mature and the players and products sort themselves out.

Promotional hype aside, a generally accepted definition of an executive workstation is emerging. According to the definition, an office workstation provides a variety of communications and decision-support services to an executive or manager. A workstation should support word processing and some data processing, and provide decision-support tools (like spreadsheets), an electronic filing system, and an electronic-mail system. The user should also be able to switch between functions quickly and simply.

This is a pretty minimal definition. Other definitions may include voice communications, business graphics, or other features as necessary components of the workstation. Most of the definitions agree, however, on defining a workstation in terms of *function*. A product is an executive workstation because of the jobs it does, not because of the hardware or software it includes.

Today, the choice of an office work-



OR ALL REASONS

Photo by Rick Barrick



LIFETIME WARRANTY!

WHO CARES?

DataTech cares...because you do!

We're so sure of the premium quality of DataTech Diskettes, that we give you a **lifetime warranty!** *That's confidence!* DataTech cares so much, we insist on these extra quality features that meet or exceed industry specifications as outlined by ANSI.



— **Flat jackets**—for maximum diskette alignment with the head ensuring a strong, consistent signal.

— **Jackets feature radius edges** to insert easily in the disk drive, minimizing jamming and head damage.

— **Pillowed jacket liners** cushion the diskette for constant cleaning action and quiet operation.

— **Certified 100% error free**

— **Unique easel-back case** functions as a library box for convenient, permanent storage and easy diskette access. Index label is packed inside each box for content identification.

Call 1-800-323-9868 for compatibility information and the name of your nearest dealer.

wabash
DATA TECH
A KEARNEY-NATIONAL COMPANY

State-of-the-Art Magnetic Media

A CHOICE FOR ALL REASONS

station boils down to a personal computer connected to a local-area network (LAN) or some other means of sharing data, or a dedicated workstation expressly designed for office tasks. Typically, the dedicated workstations are terminals for a minicomputer that provides most of the processing power—a concept known as shared-logic processing.

Both the personal-computer and shared-logic approaches involve tradeoffs, and the companies that are installing office workstations today are basing choices on specific needs. Some organizations are even taking different approaches in separate offices or departments depending on their varying needs. For instance, the General Services Administration, which acts as the housekeeper and office manager for the federal government, has several different systems in place.

"If you go to San Francisco, you'll see a system that has IBM Personal Computers as workstations, an Arcnet [an LAN from Datapoint Corp., San Antonio, TX], and a central electronic file," says Frank Carr, assistant administrator of the GSA and the director of the Office of Information Resources Management. "In Fort Worth, we have about 50 workstations. But they are terminals, not personal computers, and they operate as part of a shared-logic system."

In four or five years, when office-automation products have evolved and further matured, choosing the right workstations may be easier. For example, some of the more advanced dedicated terminals do most of their processing with microprocessors built into each workstation, much like a personal computer. The line between personal computers and these advanced workstations is fuzzy and will probably get fuzzier as both products evolve. Advanced dedicated terminals are attractive because they offer the best of both worlds—potentially. But they are only beginning to enter the

picture for most corporations.

For now, however, the choice is between less-than-perfect alternatives. Personal computers are somewhat less expensive for small- and medium-sized installations and much more flexible than dedicated office workstations. In addition, personal-computer software is generally more innovative. But personal computers are not designed to work as part of a larger system. Although LANs, advanced terminals emulators, and other approaches can tie personal computers to one another and to larger computers, at minimum, these links require at least some extra work and expense for the purchaser, and the result is not universally satisfactory.

Consultants say that making the right workstation choice depends on the specific needs of the corporation. As a rule, the company that needs a large, tightly integrated system supporting a lot of workstations with limited, well-defined software needs is probably better off with dedicated workstations. A company that needs a smaller system to perform a broader range of tasks would probably be more satisfied with a network of personal computers.

For example, E.F. Hutton, the New York-based brokerage, chose to go with a shared-logic system of dedicated workstations because of the need for large numbers of stations and a high degree of integration.

"We're going to be installing about 10,000 terminals," says Bernard A. Weinstein, first vice president in charge of communications and branch-information systems. "It's going to be a big enough responsibility to maintain 400 computers in a network, much less 10,000."

The 400 computers in the E.F. Hutton system are Data General minis, MV 4000, 8000, and 10000s. Data General is also supplying the terminal workstations. Weinstein cites the maintenance of the corporation database and the centralization of control among the advantages of this approach. "We maintain the database as a by-product of doing business. We're massaging the same data a broker wants if he or she is looking at things like customer positions and buying power. We take the responsibility away from the broker for maintaining the database. Our solution integrates that function into the prime data-processing base of the firm."

Not only does this relieve the brokers of maintaining records on their own customers, but it also gives the company greater control over the way the data are used. "If a broker develops an algorithm he or she thinks can beat the market, but which isn't certified by the firm, and sends out letters to clients making a claim that isn't warranted, people who lose money won't sue the broker, they'll sue the firm," Weinstein says.

The centralized system also makes it harder for a departing broker to take along information on clients' accounts because the system can alert managers to unusual patterns of data access.

Although the price difference between a network of personal computers and dedicated executive workstations is often cited as a reason for choosing personal computers, the savings may not be as great as they first appear. A personal computer suitable for most businesses sells for \$3,000 to \$5,000, while a shared-logic system can cost \$7,500 to \$15,000 or more

"There are still questions about what an executive workstation is and what functions it should perform."

A CHOICE FOR ALL REASONS

"A company that needs a large integrated system with limited functions is better off with dedicated workstations."

per station. However, there are other costs to be considered. Connecting personal computers to an LAN usually requires an adapter card at a cost of \$400 to \$2,500 per computer. In addition, to be really effective, an LAN usually needs a large-capacity hard disk with an associated processor to act as a file server. This isn't as expensive as the central unit on a network of dedicated workstations, but it adds several thousand dollars to the cost of the installation.

There is also the cost of the software to consider. Site licenses, which allow a corporation to use software on all the workstations in an office, aren't yet common for personal computers. In some cases, being legal means buying copies of each application program used for all the personal computers on the network. This arrangement can entail a considerable expense, not to mention the difficulty of keeping all the licenses on file.

Moreover, the economic advantages of a network of personal computers evaporate when the system reaches a certain size. The unit cost of personal computers remains constant, but the cost per user of a shared-logic system drops sharply as the cost of the central-processing unit is spread over a broader base.

When comparing products, vendors of dedicated workstations prefer to talk about personal computers without LANs. In such a comparison, the dedicated office workstation wins hands down. However, the comparison isn't appropriate. When comparing dedicated workstations with a network of personal computers, the difference between the products narrows considerably. With an appropriate LAN, personal computers can do

most of what even the most expensive dedicated workstations can do. Nevertheless, they're problematical for other reasons.

The biggest problem managers face when they deploy personal computers as executive workstations is turning a bunch of stand-alone devices into an integrated system, especially when that system has to be tied into a larger computer.

Although several manufacturers, such as Corvus Systems Inc., San Jose, CA, and Xerox Corp., Stamford, CT, offer LANs, it is very difficult for these vendors to offer the kind of close coupling that is standard on a system of dedicated workstations. First, the machines these LANs connect weren't designed with close coupling in mind. Also, non-proprietary LANs have to be able to support many kinds of computers.

Most LANs allow users to send and receive messages and access remote resources such as printers and hard disks. Some of them also let users communicate with a larger computer. But access is only part of integration. The ability of computers to use the data and resources varies from LAN to LAN. For example, some LANs, such as Omninet from Corvus Systems, do not include file- or record-locking features. File or record locking is critical to business applications because it prevents more than one

user from working on the same piece of data or file at one time—and corrupting it. If file and record locking isn't included in an LAN, the feature must be added to the system elsewhere—usually in the applications software. Since most microcomputer software is designed for single-user systems, it doesn't feature this protection, which limits the kinds of software that can be used effectively on an LAN.

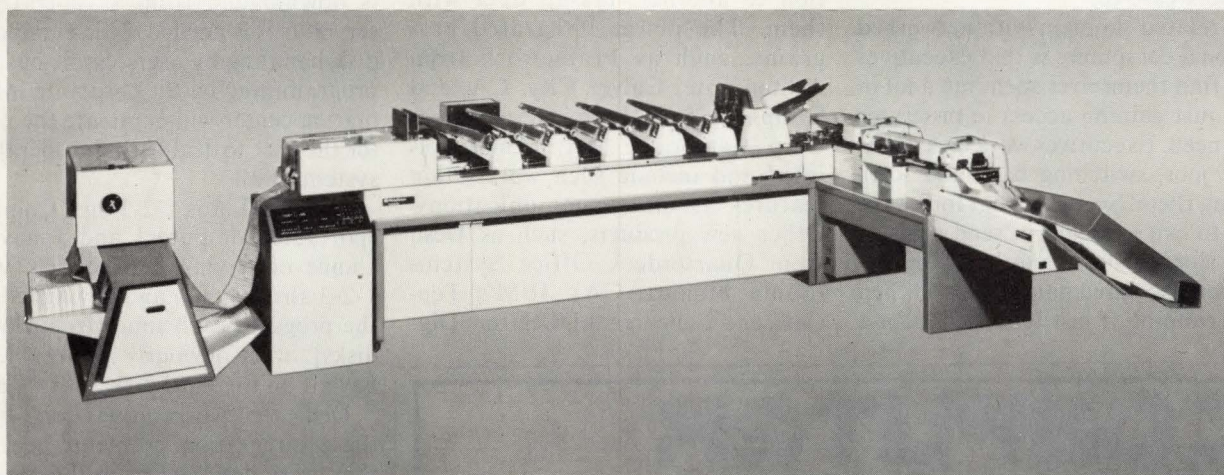
On a more sophisticated level, there is the problem of data integrity on networked micros. If a user downloads and modifies a file from the network's database, which copy is the "official" version of the data? If there are a half dozen users modifying and updating the same file, how does the system ensure everyone has the same data?

These problems can be solved, but their solutions aren't easy to achieve. The most common solution is to buy software in versions suitable for use on networked micros and maintain the files in the file server as the official files. Several popular programs offer such versions. However, it takes thought and effort by the user making the installation to make such a system function as effectively as dedicated office workstations.

A secondary problem is obtaining the kind of integration that makes the various features of software packages easy to use. Traditionally, personal-computer users switch tasks by closing out the old application and loading the new one. This procedure is cumbersome and can require more skill with the computer than the average executive or office worker possesses.

"The choice of an office workstation boils down to a personal computer on a network or a terminal designed for office tasks."

THE SHORTEST DISTANCE BETWEEN YOUR COMPUTER AND THE POST OFFICE.



The Electronic Computer Output Mailing System.

There are two ways of getting material out of the computer and into the Post Office. The usual way is slow and labor-intensive. The better way, the Pitney Bowes way, is fast and cost-effective. Here's why:

Computer-generated material requires trimming, bursting, slitting and folding before inserting and mailing. Handled in the usual way, this processing is done in a series of stop-and-go operations that require considerable time and handling. But with the Pitney Bowes Electronic Computer Output Mailing System, the processing is done in a single non-stop sequence. The operator simply threads the computer-output into one end of the system, presses a button and gets postage-metered envelopes ready to go into the mail at the other end. One pair of hands controls the entire process, producing in minutes what used to take hours.

Modular design and feature options permit custom configuration for virtually any application. Systems can be equipped for group feeding, cut-sheet feeding, multiple inserting, optical scanning, document verification and selective collating. Output arrangements can include single or dual mailing machines, code-triggered exception sorting, zip-code marking or deflection and in-line electronic postage accounting.

For full information, including our excellent leasing arrangements, call toll free anytime 1-800-621-5199, in Illinois 1-800-972-5855. In Alaska call 1-907-562-2264, Hawaii 1-800-521-7453. Or write to Pitney Bowes, 4867 Pacific Street, Stamford, CT 06926-0700.

 **Pitney Bowes**

A CHOICE FOR ALL REASONS

It may mean learning how to navigate through a tree-structured directory of disk files to locate the program and its associated data files and knowing enough to recognize the difference between a ".BIN" and a ".SRC" file. It also means that the user has to become much more familiar with the micro's operating system than many workers care to.

A related problem with networked personal computers is that executives may find themselves spending a lot of time just gaining access to programs they need. Executives work on a variety of jobs, switching back and forth among them. Software that forces the user to exit a program, send a file to disk storage, load another program and its associated data files, and then start running it just to switch from a

spreadsheet to a memo pad is not suited to their work.

With the continuing development of integrated software, easy switching between tasks has become less of a problem. Such software provides most of the common decision-support tools in a single package, which makes it easy for users to move from one function to another, taking data with them. The newer integrated programs, such as Framework from Ashton-Tate, Culver City, CA, and Symphony from Lotus Development Corp., Cambridge, MA, are more polished and include such workstation features as data communications. Other new products, such as Desq from Quarterdeck Office Systems (Santa Monica, CA), IBM's Topview, and Concurrent DOS from Dig-

ital Research Inc. (Pacific Grove, CA), integrate ordinary applications packages, letting a company tailor the software on each workstation.

One way to make personal-computing office workstations easier to use is to use personal computers without floppy-disk drives. Software is either preinstalled on a built-in hard disk or is downloaded from a central file server as it is needed. This eliminates disk handling by users. Some custom programming by the corporate information center will eliminate the need for the user to deal with the operating system at all.

"If I use Lotus 1-2-3 on a Compaq [portable computer] and I have a choice of having a hard disk with 1-2-3 already on it and having to load the program each time [from floppy disks], it is obviously preferable to have it on the hard disk," says Carr.

Dedicated workstations don't have these integration problems because they were designed from the ground up to be part of a network. The software is written or adapted with integration in mind.

Of course, that fact severely limits software availability. The only packages available for dedicated workstations are the ones supplied or approved by the workstation vendors. Many dedicated workstations will run personal-computer software written for popular operating systems like MS-DOS, but most of them require special versions of these programs. Some vendors offer licensed versions of popular microcomputer programs, but this software is usually more expensive than the personal-computer versions of the same programs, and the selection isn't nearly as broad.

In fact, some dedicated workstations will only run these packages as stand-alones, defeating the purpose for buying them in the first place.

Usually, the amount of local intelligence in a dedicated workstation is limited. Many systems use standard

(Continued on page 183)

COMPUTER DECISIONS Reads Management

We know what the decision makers want from a user magazine and we give it to them every month

- Practical Application Stories
- Incisive Columns
- Vital Product Information
- Thorough Software Coverage
- Management Strategies

Because we deliver what they need for managing their information resources more effectively—

Management Reads

**COMPUTER
DECISIONS**
THE ONLY MANAGEMENT MAGAZINE OF COMPUTING

RELIABILITY RUNS IN OUR FAMILY.

Face it. A computer terminal is like an employee of your company. You have to be able to count on it to do its job. Not just its first day on the job, but every day for years to come. Because reliability translates to productivity, and productivity relates directly to profits. That's why at ADDS we design reliability into all of our products. And our years of engineering and manufacturing experience translates to a quality record that is unsurpassed in the industry.



You can count on ADDS to have a Viewpoint™ for any job that requires a terminal. For example, the ADDS conversational Viewpoint + gives you dynamically allocated function keys, visual highlighting and keyboard adjustable screen contrast — all at an extremely competitive price.

What's more, you can count on the ADDS Viewpoint to get along with everyone in your company. Its plain language menu allows you to select operating characteristics from the keyboard so quickly and easily, time-consuming operator manual references are practically eliminated its first day on the job. And the Viewpoint + is an ergonomic study in how to comfortably match man with machine.

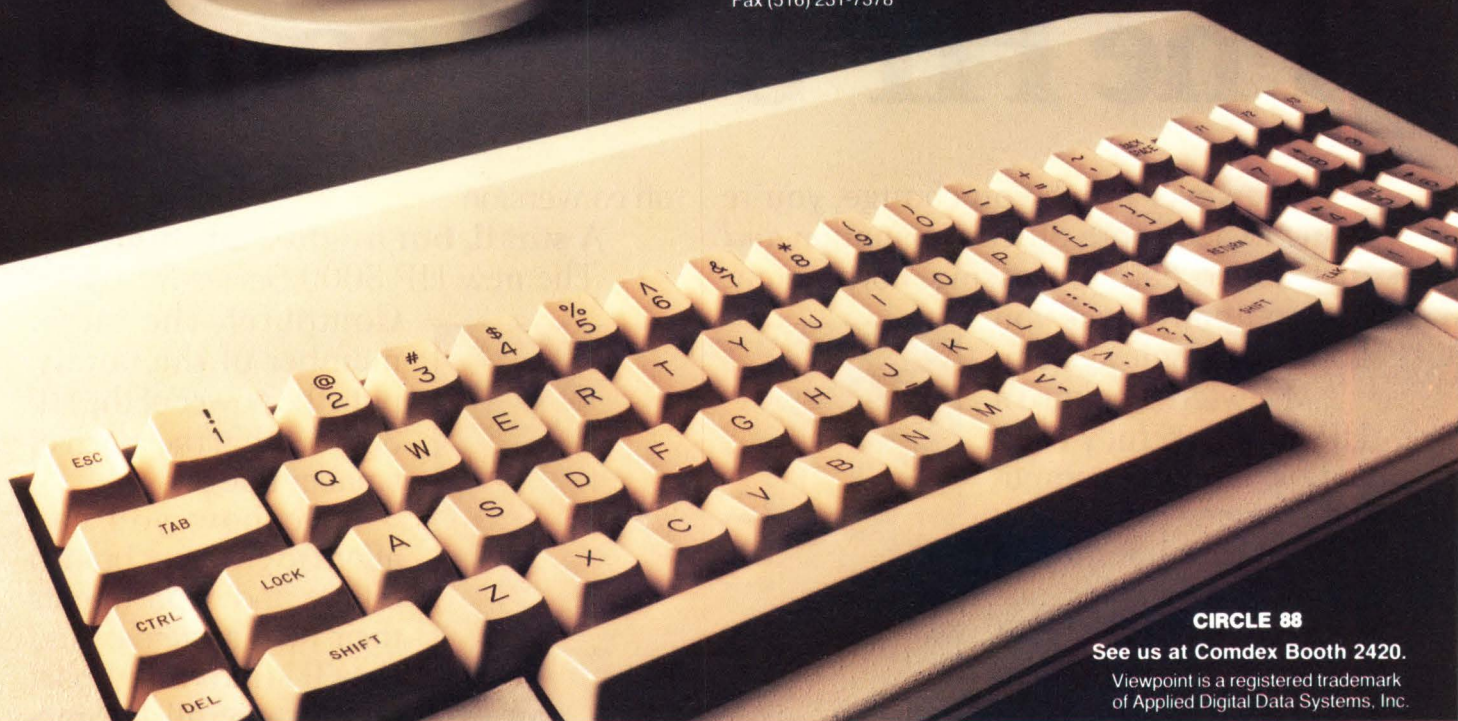
So if you're considering a terminal purchase for your company, consider the ADDS Viewpoint. Give us a call. We'll share even more of our family secrets with you. You'll find how beneficial it can be to have Viewpoint reliability run from our family to yours.

IT ALL ADDS UP.

ADD S

Applied Digital Data Systems Inc.
A Subsidiary of NCR Corporation

100 Marcus Boulevard, Hauppauge,
NY 11788 USA
Tel. (516) 231-5400 • Telex 510-227-9886
Fax (516) 231-7378



CIRCLE 88

See us at Comdex Booth 2420.

Viewpoint is a registered trademark of Applied Digital Data Systems, Inc.

VIEWPOINT + GRAPHICS
Low Cost 4010 Graphics



VIEWPOINT 60 +
Smart Editing Terminal



VIEWPOINT 78
3278-2 Compatible



VIEWPOINT 78 COLOR
3278-2 Compatible and Color





The HP 3000 compu

However much you change, you're going to need both office automation *and* distributed data processing. Fortunately, one company gives you both in a single system.

Hewlett-Packard's HP 3000 is a fully compatible family of computers, ranging from a new system that handles as few as two users to a distributed mainframe that connects up to 400. You can run the same software right up the line.

And our systems can change and grow as you do. When you're ready for upgrades and additions, you simply plug your existing programs into the new systems. No recompiling. No time and money wasted

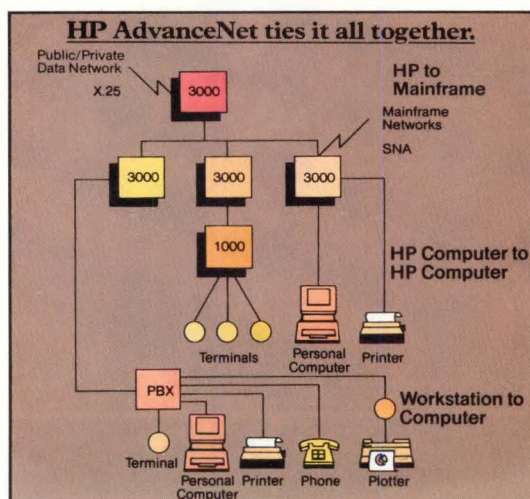
on conversion.

A small, but mighty, addition.

The new HP 3000 Series 37 Office Computer, the latest member of the family, puts the power of the HP 3000 within the reach of smaller budgets.

So now you can afford to give your branch offices and departments their own systems. And they'll still remain part of your overall DP picture with links to other systems.

In the office, the HP 3000 is the heart of our Personal Productivity Center. This integrates the information people need to get their jobs done more productively.





ter. One family fits all.

It provides an interface for a wide range of workstations, peripherals and personal computers, including our Touchscreen Personal Computer and The Portable, as well as IBM PCs. And it allows them to interact directly with the HP 3000. So your people won't have to learn DP commands.

You'll communicate better with HP AdvanceNet.

Our communications go well beyond this office network. With HP Advance Net, they extend to links with other HP 3000s, in the same building or on the other side of the world. And to your mainframe computers, ours or IBM's.

Currently, more than 10,000 HP 3000 systems are working in networks so effectively that our communications were voted #1 in a national survey.

A Datapro poll also rated our service

#1. So you get more than office automation and data processing in a single system. You get all the support you need from a single company.

For a demonstration of the single solution for both sides of your company, contact your local HP office listed in the white pages. Or write for complete information to Susan Curtis, Hewlett-Packard, Dept. 027203, 19055 Pruneridge Ave., Bldg. 46T, Cupertino, CA 95014.

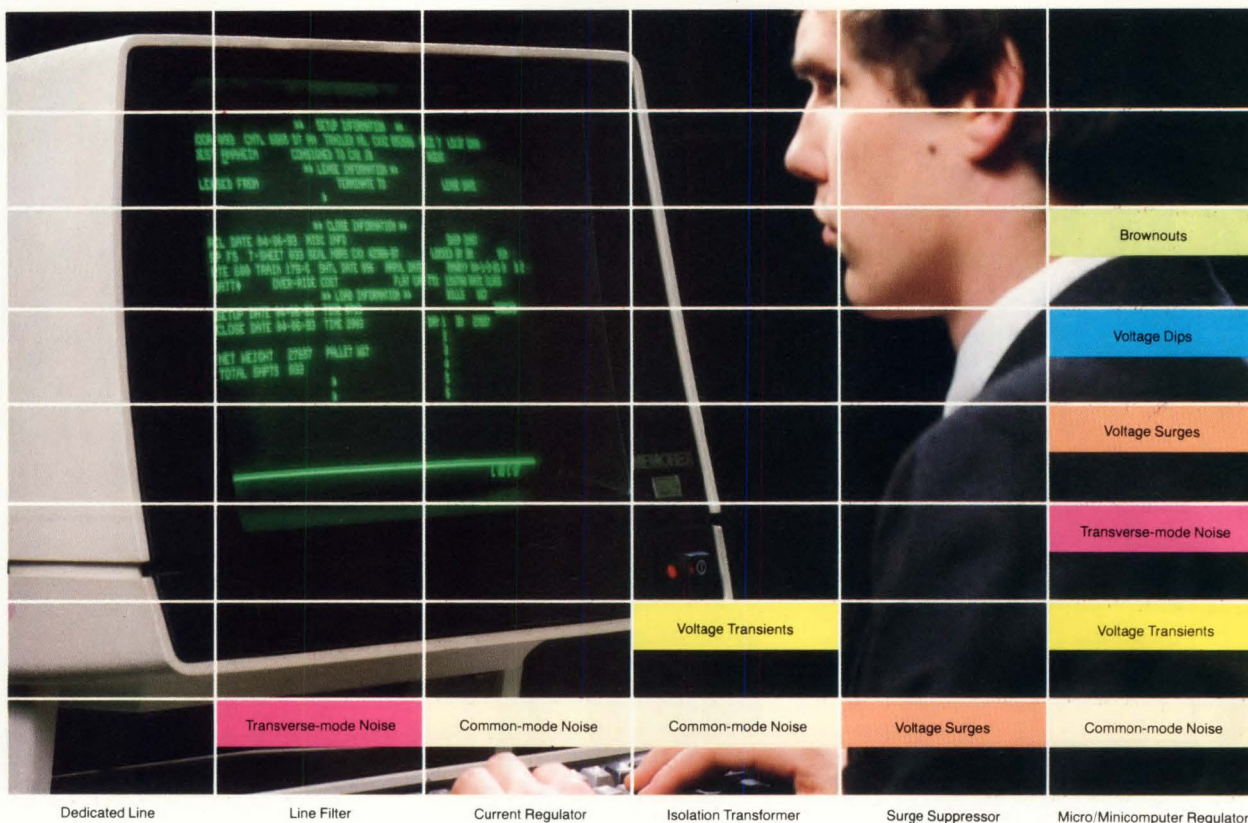
In Europe, write Michael Zandwijken, Hewlett-Packard, Dept. 027203, P.O. 529, 1180 AM Amstelveen, The Netherlands.

We'll fit you no matter how much you change over the years.

Productivity. Not promises.



**HEWLETT
PACKARD**



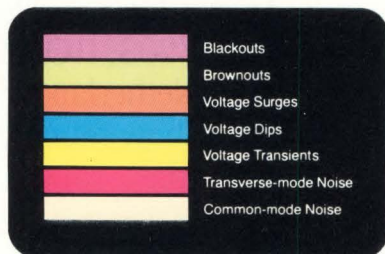
If you think an isolation transformer gives you “true” power conditioning...

think again.

When it comes to complete power protection, an isolation transformer leaves a lot to be desired.

A standard isolation transformer only provides line-to-ground noise protection. It stops a long way from providing *true* power conditioning.

The same goes for dedicated lines, common- or transverse-mode noise line filters, surge suppressors and current regulators. They're all only partial solutions.



Today's computers and sensitive electronics need more than just partial solutions.

They need precise, conditioned power that combines protection against all



kinds of problems — from line noise (common and transverse) and transients, to voltage fluctuations (dips and surges) and brownouts. Without it, you can expect periodic system malfunctions, lost computer memories and costly reprogramming, burned out computer chips, premature damage to circuitry.

For *true* power conditioning, plug in a portable Sola Micro/Minicomputer Regulator. In addition to clipping spikes and attenuating common and transverse noise, a Sola responds to input voltage fluctuations, raising or lowering output voltage smoothly and instantaneously holding output within $\pm 3\%$ with a sine wave.

And for power conditioning plus blackout protection, we also offer a UL-listed Mini-UPS.

Sola: The leader in power protection... in more ways than one.

We've been in this business over fifty years — longer than anyone else. We also offer the nation's largest network of stocking distributors.

When you think of power conditioning, think of Sola. For more information on our complete line of power protection equipment, contact:

Sola Electric, 1717 Busse Rd., Elk Grove Village, IL 60007. (312) 439-2800.



A CHOICE FOR ALL REASONS

(Continued from page 178)

terminals for workstations; almost all processing is done in the central computer. This helps ensure data integrity and security, but at the expenses of speed and response time. Although vendors selling dedicated workstations usually argue the point, most users and experts say terminals respond more slowly than personal computers. This is especially true when changing the information on the screen. Most personal computers treat their screens as part of memory, making for very fast changes. Further, since the processor in a personal computer is dedicated to serving a single user, other input-output, such as keyboard response, is very quick.

Response time on a dedicated office system, of course, depends in part on the number of users on the system. That means that the response time on a system of dedicated workstations can change from moment to moment as users log on and off. Users are very sensitive to these changes. Even short delays can make a workstation significantly less convenient to use, and this is doubly true when the delay varies. Bill Gates, the chairman of Microsoft Corp., Bellevue, WA, claims studies show that delays of even a tenth of a second make a computer harder to use.

"The difference [between networked personal computers and dedicated workstations] is like the difference between buying a personal computer and buying remote-computing services," adds Frank Carr. "The principal advantage of the micro is the ability to cut your communications costs. You have your computing power and storage available at the micro and you might want to access a number of different systems to pull in data and manipulate them. You can think of applications where you want to retrieve many files from different sources, where you're going to work on something over a period of time and expect to be interrupted, or where there aren't any great advantages to

"Micros and dedicated workstations are being blended in response to user needs."

being tied into a central processor."

GSA's latest approach to office automation is to standardize on a word processor, a terminal, and a personal computer, all of which can access a minicomputer and run centrally stored software. Managers and workers can be equipped with a personal computer as a stand-alone device, a personal computer tied into an LAN, or a terminal serving as a dedicated workstation. All will run the same software.

Carr says the GSA chose the arrangement as a result of competitive evaluations and will buy \$80 million worth of equipment over the next five years. The personal computers are being made by Convergent Technologies.

"It gives us the advantage of being flexible enough to meet the needs we understand now and it simplifies our training and maintenance," Carr says. "It also makes it easier for employees to move from one part of the organization to another. The same software that operates on the personal computers can be accessed by dumb

"The cost advantages of networked micros evaporate when the network reaches a certain size."

terminals."

Ease of use is an important consideration for almost all users of workstations. "The ideal," Carr says, "is to have a system that allows a worker, manager, or executive to simply sit down and begin to work. The quicker the person can begin to do useful work, the more desirable the system is." On this score, the choice between personal computers and dedicated workstations is a toss-up.

Workstations, whether they are networked personal computers or dedicated devices, are intended to be used by nearly everyone. Ideally, users shouldn't even need an instruction manual to use one, at least on a rudimentary level. Commands should be simple, intuitively obvious, and structured according to what the user wants to do rather than the imperatives of the system. However, few products meet these criteria. Most systems use command menus to make them easier to use, but a menu system slows down an experienced user.

The best examples of a well-integrated user interface are the Xerox Star, a dedicated workstation, and the Lisa personal computer from Apple Computer. Both the Star and the Lisa have high-resolution black-on-white screens, a system of standardized commands for most applications, a mouse, windows to display several programs or parts of programs, and icons to represent commands.

This approach to the user interface is controversial because, among other things, it drains a lot of the workstation's power. Even on computers using advanced processors, such as the Lisa, the approach demands much of the chip's power to make the machine perform. The Motorola 68000 that powers the Lisa is often used as the heart of multi-user microcomputers that support six to eight users. On the Lisa, the processor works hard to handle a single user.

Not all experienced users like the

(Continued on page 189)

YOU ASKED.

"Can't someone
come up with a way
to interconnect
all my PCs
and provide
real office
functionality?"



WE ANSWERED.

"SOMEONE HAS.



US."

We call it the OASys 64. And it does the most important thing any computer-based system can do: save time and improve your people's productivity.

With the OASys 64, you can interconnect up to 100 IBM or NBI PCs. To let them share and exchange information. Without exchanging diskettes.

To let them use the same storage, printers, and software. And with our shared software plan, you no longer have to buy expensive software for each additional user.

And the OASys 64 doesn't stop there. It gives PCs the best word processing in the business. Or flexible communications options like 3270, for access to your mainframe information. All with the security options you know you need in today's PC environment.

It's a time-saver. A work-saver. And a people-saver.

You couldn't ask for much more. And if you could, chances are, if we haven't already built it, we're already working on it.

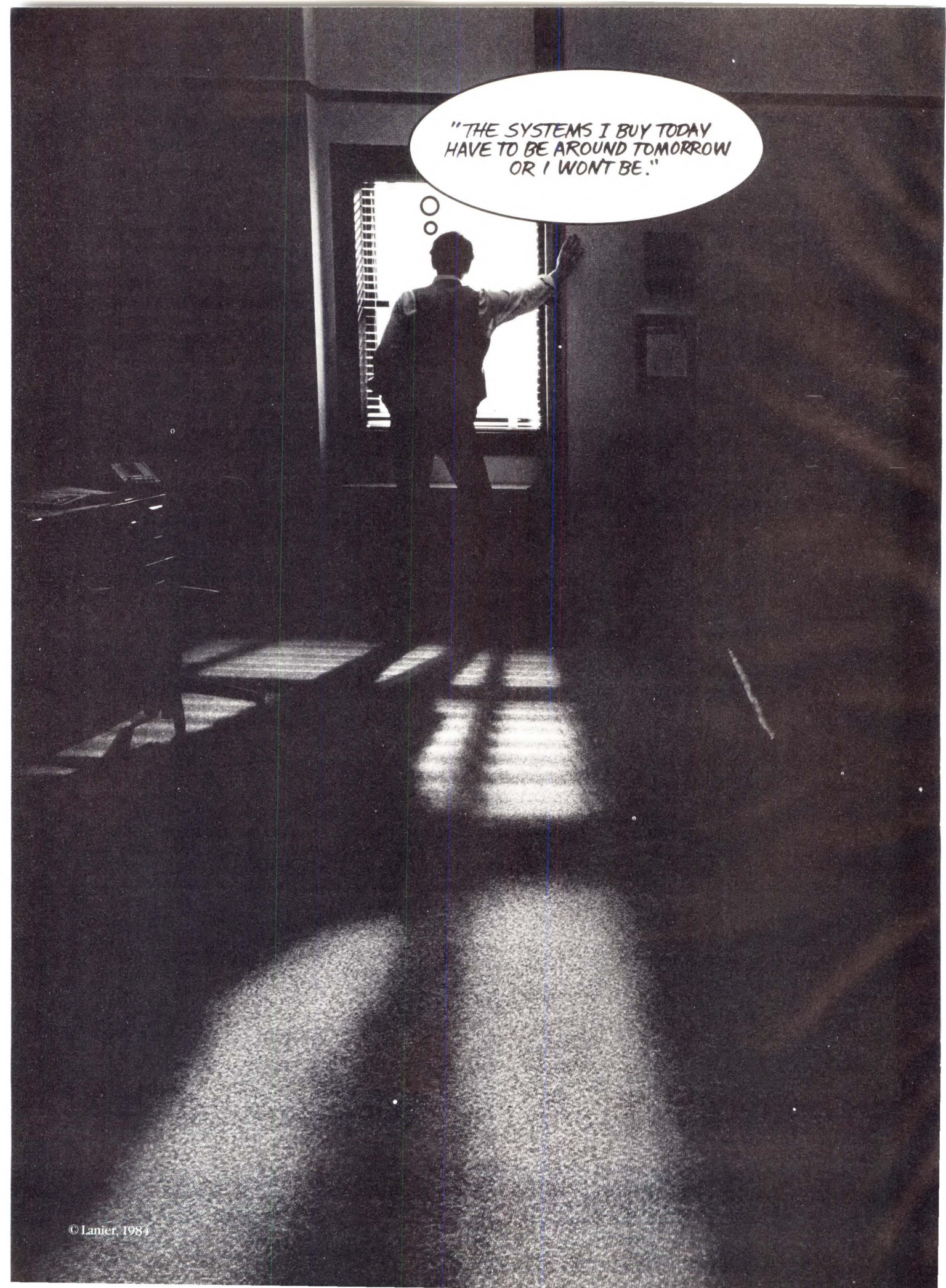
For you.

For more information write: NBI, Inc., Advertising Dept., 3450 Mitchell Lane, Boulder, CO 80301.

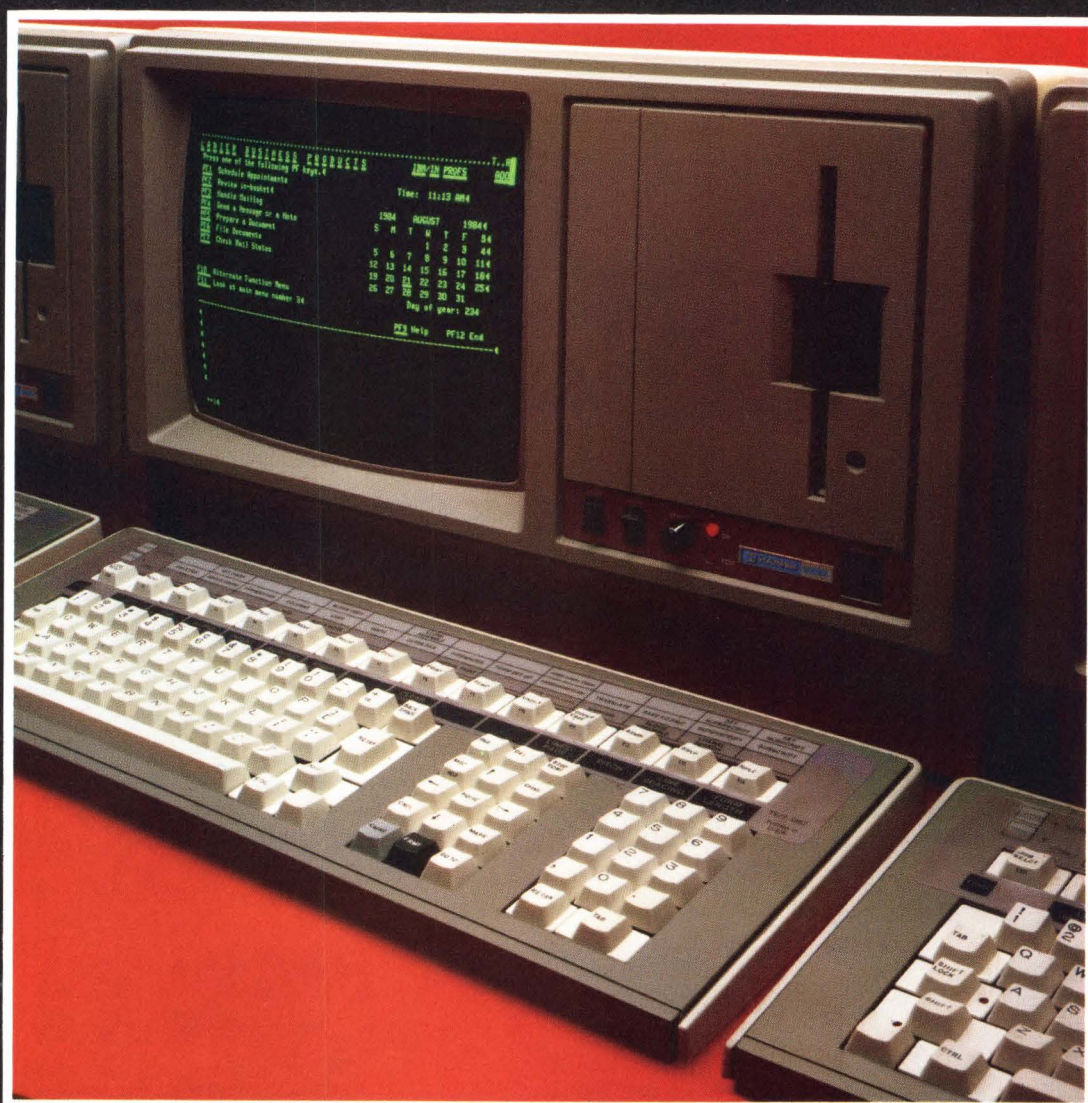


NBI

OFFICE AUTOMATION SYSTEMS



"THE SYSTEMS I BUY TODAY
HAVE TO BE AROUND TOMORROW
OR I WON'T BE."



SEE LANIER.

The Business System™ 5000. It's versatile. Expandable. A network that links workstations and keeps information flowing quickly.

Smoothly. And it's backed by customer training and service second to none. High technology?

Absolutely. Lanier is now part of Harris Corporation, a world leader in Information Technology.

For a demonstration, call us at 800-241-1706.* Or send the coupon. Today.

**FOR YOUR INFORMATION,
WE'RE NOW PART OF HARRIS.**

*In Georgia call 404-321-1244 collect.
Lanier, A Harris Company
Electronic Office Systems Division

SEE LANIER. For the Business System (TM) 5000 network. For a demonstration, circle #92.

Electronic Office Systems Division
1700 Chantilly Drive, N.E.
Atlanta, GA 30324

LANIER
A Harris Company

Name _____

Firm _____ Title _____

Address _____

County _____ Phone _____

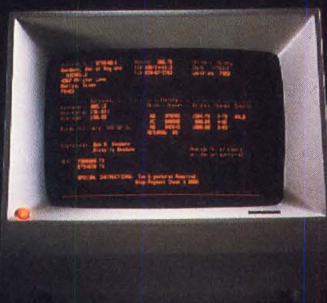
City _____ State _____ Zip _____

 **HARRIS**

Nov. '84, Computer Decisions 494 H K4

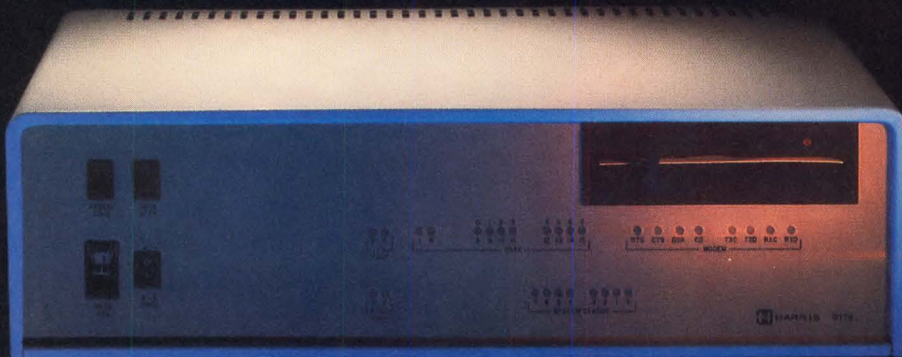


REMOTE 3270 SYSTEM



It fits.

Space, Budget, Function — and Future.



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 or BSC mainframe

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

CIRCLE 117

214/386-2017

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

In Canada: Canadian Sales Manager
Information Terminals Group
Harris Corporation
19 Les Mills Road
Don Mills, Ontario M3B2T3

We're ready for a perfect fit! Send more information on 9116.

NAME _____	TITLE _____
COMPANY _____	PHONE () _____
ADDRESS _____	
CITY _____	STATE _____ ZIP _____

For your
information,
our name is
Harris.

A CHOICE

(Continued from page 183)

user-friendly features of the Star and the Lisa, but new users are generally enthusiastic. Many begin doing useful work with the machine in a matter of minutes. This kind of ease of use will be critical to acceptance of workstations, say analysts. "There is a lot of executive fear and lack of time," says Leone Pease, a market analyst for Venture Development. "Executives want to know from the first day which buttons to hit to get what they want."

The advantage of workstations built around advanced processors like the 68000 and the Intel 286 is that they offer an easy-to-use interface and still perform acceptably. One of the problems with the earlier generation of personal computers, such as the IBM PC, is that the limits of the hardware make it extremely difficult to combine an intuitive interface with reasonable performance.

Although the Star and the Lisa were designed around their software packages, similar user interfaces are beginning to appear on the other computers. Applix Inc. of Southboro, MA, is offering an integrated package called Alix that features a Lisa/Star-style user interface for workstations running on Bell Lab's Unix operating system. Similar packages are appearing for personal computers.

Eventually, analysts say, an executive workstation will become the only tool an executive or manager needs on his or her desk. Among the features they predict will be standard on executive workstations are voice and data communications, electronic mail, corporate and outside-database access, and most of the functions of a high-powered personal computer.

"Workstations are evolving toward including voice communications," says Pease.

One example of the convergence is the Watson voice-mail system from Natural Microsystems of Natick, MA. The device provides a modem, voice mail, and an electronic tele-

It fits.

See if the description fits.

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.

The Harris 9116 fits your world.

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.
- 12" display terminal with 1,920-character screen.
- 132-column display terminal.
- Amber and green phosphor displays.
- Color display terminal.
- Terminal Multiplexer.

- Personal computing option.
- Harris Connection for the IBM® Personal Computer.
- Matrix printer.
- Band printer.

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.

Fit in a call to Harris today.



HARRIS

For your information, our name is Harris.

214/386-2017

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

In Canada: Canadian Sales Manager
Information Terminals Group
Harris Corporation
19 Les Mills Road
Don Mills, Ontario M3B2T3

We're ready for a perfect fit! Send more information on 9116.

NAME _____ TITLE _____
COMPANY _____ PHONE () _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

PREVENT "DP VS. END-USER" THINKING



Face it. End-users are no longer strangers to the world of computing. They have mainframes and PCs, software and data. Now, more than ever before, end-users need the support of their company's data processing professionals.

Help in using technology to satisfy end-users' individual information needs is not enough. To succeed in supporting end-user computing, you've got to manage your company's information resource. And you've got to prevent "Us versus Them" thinking. That takes teamwork—and software from TSI International.

Teamwork—within your own company. MIS and end-users working together productively to use one of your company's most valuable assets—information used for decision making. MIS has the responsibility to solve the tough, wide-ranging information problems. When you solve the problems shared throughout your company, all users of your information resource are more effective. Your company is more successful. Success requires a well-managed information resource—and that takes software.

Software—that's where TSI International fits in. We're specialists in information management software. TSI software supports end-user independence while providing the control MIS needs to ensure quality information. TSI software helps your company plan, capture, control, access and deliver good information.

TSI is part of Dun & Bradstreet's ongoing commitment to design and deliver innovative software and services. As your needs evolve, so do our products. Along with NOMAD2, the premier 4th-Generation-Language/DBMS from D&B Computing Services, and DunPlus, the PC that reflects the way you do business, you can trust TSI for service and innovation in helping you manage end-user computing.

Call 800-227-3800, Ext. 7005 for the facts about TSI software.

TSI: INNOVATIONS IN MANAGING END-USER COMPUTING FROM DUN & BRADSTREET

TSI International

DB a company of
The Dun & Bradstreet Corporation

For more information drop your business card into an envelope and mail it to Marketing Services, TSI International, 187 Danbury Road, Wilton Ct 06897.

CIRCLE 94

A CHOICE FOR ALL REASONS

phone book/database on an IBM PC. Speech is stored on the PC's floppy disks. Although Watson is intended as a voice-mail system for small companies, it can also work with an executive workstation for which a central voice-mail system is impractical or too expensive.

On a broader front, several companies have announced or introduced advanced workstations that integrate the personal computer, the shared-logic workstation, and the telephone. One example is the Centerpoint 1000 from Santa Barbara (CA) Labs. Centerpoint 1000 is a high-priced system designed to support upper-level executives and their secretaries and assistants. The basic unit has a processing unit built around the Intel 186 16-bit microprocessor and two special terminals. The executive terminal has high-resolution color graphics, a touch screen for data input, and a telephone. The secretarial/assistant unit has all those features and a second monochrome monitor for word processing and similar tasks.

There is one other obvious difference between the secretarial and executive terminals. The secretarial terminal has a keyboard; the executive's terminal usually doesn't. The executive calls up information by touching the screen. To modify a spreadsheet, he or she touches the cell to be changed and the image of a calculator appears in a window. The new numbers are entered by touching the "buttons" on the image and the spreadsheet is automatically recalculated.

Although this approach is expensive—\$15,000 to \$30,000 per user, depending on options—it recognizes an important fact about the design of executive workstations. The needs of managers, even those who work in the same office, can vary considerably. As a result, each executive and manager emphasizes different workstation features. For some executives, notably those toward the top of the corporate pyramid, the most important work-

station feature is communications. High-level executives tend to prefer workstations that stress electronic and voice mail. Middle-level managers, on the other hand, often need more computing power and better access to corporate information.

Products like the Centerpoint 1000 are difficult to classify in terms of the traditional personal computer/shared-logic dichotomy. These machines have all the parts of a personal computer and they can work alone, but they are primarily designed to function as part of a network. The Centerpoint 1000, for example, will connect to Palo Alto, CA-based Hewlett-Packard's office-automation network and share the same software.

Another example that presents the same difficulty in classification is NGen from Convergent Technologies Inc., Santa Clara, CA. Like the Centerpoint, NGen is based on the Intel 186 processor. The NGen is supplied by Convergent Technologies to original-equipment manufacturers. It is, in fact, the personal computer being used in the GSA office automation network.

Although the NGen comes close to being a personal computer, it is actually designed to work as part of a cluster of workstations. Thus, it avoids many of the integration problems facing networked personal computers.

Another product that offers significant potential as the basis for advanced executive workstations is the new IBM PC AT. The machine uses the Intel 286 processor and comes with a built-in 20 Mbyte hard disk. IBM is also offering an optional high-resolution graphics package for the computer and now has an LAN for its PC line.

What the PC AT doesn't have is the software of an advanced workstation, including the user interface. However, several of the personal-computer integrated packages will run on the PC AT, and software of the advanced workstation type will probably be

"Micros are less expensive and more flexible than dedicated office workstations."

quickly forthcoming either from IBM or independent houses.

Meanwhile, the IBM LAN is well-suited to office automation, and several vendors and analysts believe it may be an important step toward making LANs a more attractive option to managers. They reason that software companies will be more willing to provide versions of their products that are compatible with the IBM LAN and that most or all of the major LAN vendors will quickly adapt their networks to handle software designed to IBM's standards.

"Software companies will start developing network versions of their products for IBM's product," says the executive of another LAN vendor. "When they do that, everyone's software will run on a local-area network." That could hasten the day when the two major workstation choices become one.

As more software for personal-computer networks becomes available and as personal computers evolve, it will become easier to use personal computers as workstations. At the same time, the shared-logic systems are being equipped with more local intelligence and even local storage for files in use, while the central file server, which may double as a gateway to the corporate mini or mainframe, is becoming a more important part of the personal-computer net. Vendors are outfitting both products with voice-communications features. In short, the products are blending together in response to the users' needs. □

Rick Cook is a free-lance writer based in Phoenix, AZ.

FEATHERWEIGHTS CARRY CLOUT

(Continued from page 157)

international relations. While in Hungary, Russo needed an interpreter to communicate—but his client perfectly understood the universal language of numbers “spoken” by the Compass.

World Bank's analysts also tote Hewlett-Packard's Thinkjet printers to leave behind hard copies of their findings. This, too, promotes good client relations. The borrowers can immediately see if the data given to the lender has been interpreted correctly. They no longer have to wait for the analyst to return to Washington, write a report, file it, and send it.

The Hewlett-Packard 110, a 9-pound briefcase portable with 272 Kbytes of memory, was the Compass' main competitor at World Bank. At \$3,000, the HP-110 costs less and comes with attractive features such as proprietary Lotus 1-2-3, word pro-

cessing, and a communications package. But the HP's 16-by-80 character liquid-crystal display (LCD) was “too glarey” for Russo. Also, the HP-110's battery option would have been a useful addition. The Compass' screen draws so much power that it's limited to two hours of battery time. For World Bank auditors, however, the clarity is worth the inconvenience.

Russo isn't the only one who thinks the Compass is out of this world. The Johnson Space Center in Houston chose it as the on-board computer for the space shuttle. By relaying data on the temperature, mass, and transfer rate, the Compass aids the crew in tracking the potentially explosive orbital refueling system. The portable's graphics show the crew where the shuttle is in relationship to the earth.

Before the Compass came on board, 99 percent of all data collection and analysis were done by ground

control, according to Tim Brown, a programmer at the center. If communication failed, the ground crew wouldn't receive the information needed for judgment calls. The Compass helps give the space travelers the confidence and ability to return to earth safely.

When used as a training device, the portable has few equals. Tucked under an arm, it can be taken anywhere. There's no need for a company to maintain a single-function training room filled with deskbound micros that are used only occasionally. When World Bank's auditors are stateside, they frequently bring their Grid Compasses to class to update and learn new skills.

The dual functionality of the Compass as an office and traveling computer helped Russo convince his skeptical dp department that these machines are a worthwhile addition.

PRINTING TERMINALS

Vendor	Product	Features	Price	Circle
Computer Devices (617) 273-1550	Miniterm 1203	17.5 lbs.	\$795	449
	Miniterm 2320	18.5 lbs.	\$2,195	
Computer Transceiver Syst. (201) 261-6800	Execuport 4120	Built-in 1,200 bps modem 9×11" and 5×7" fonts		450
	Execuport 4120 BSR	Same as above, with 43 K buffer and six editing keys		
Computone (404) 393-3010	SST	28 lbs.	\$2,500	451
Data East, USA (408) 727-4490	Datafax 2000 facsimile machine	14 lbs. Battery operated	\$995	452
DEC (617) 897-5111	Correspondent	20 lbs.	\$1,445 to \$2,095	453
Krown Communications (213) 641-4306	Portalink	6 lbs. Battery operated	\$779	454
	KSR745	18 lbs.	\$1,195	455
Qwint Syst. (312) 498-5060	MSR745	18 lbs. 16 K buffer	\$1,795	
	PT-210	15 lbs. Built-in printer IBM compatible	\$495	456
Texas Instruments (214) 995-2011	Silent 707	6.5 lbs. Battery operated	\$695	457
3M (612) 733-1852	Whisperwriter	20 lbs.	\$1,145	458

DISTRIBU-DATA/PLUS™

The Global Solution: SOFTWARE THAT FITS

Unlimited expandability, total system integration, and ready adaptability to the way you run your business—make Global's Distribu-Data/Plus™ the SOFTWARE THAT FITS for your company.

Design the ideal distribution system for your firm—don't hold anything back—and what you'll be creating is Distribu-Data/Plus.

How do we know? For the past 14 years, Global research and development teams have been working closely with major manufacturers and distributors, like you, all over the country. We asked these professionals to help us develop SOFTWARE THAT FITS your distribution needs. And from every report received to date, we've succeeded!

With Distribu-Data/Plus, you get a comprehensive, user-friendly business system which includes order processing and billing, inventory control, sales analysis, purchasing, and accounts receivable—all in a single real-time, on-line, fully integrated system.

Like to start small and work your way up? Distribu-Data/Plus is completely modular. So you can choose any individual sub-system you want. Then, all you have to do is add what you need when you're ready to grow.

Because every firm that ships a finished product has its own special way of conducting business, Distribu-Data/Plus is both parameter-driven and code-modifiable; i.e., totally adaptable software to fit your unique business needs *right now*. And when your future arrives, Distribu-Data/Plus will still be the only software system you need—with virtually unlimited expandability to meet your evolving business demands.

Distribu-Data/Plus is a trademark of Global-USI.

Technical specifications:

Distribu-Data/Plus is written in Cobol, uses CICS and runs under VSE, VSI, or MVS on IBM (or compatible) mainframes. If you prefer, Global will supply—and *totally support*—a complete turnkey solution, using our own highly praised ULTIMACC USX hardware series.

Distribu-Data/Plus is truly the state of the art in distribution systems software today—providing a total business solution for large-scale, multi-user,

multi-company distribution companies. Finding the best possible solutions to your growing business needs isn't an easy job. But that's exactly what Global-USI is doing every day—with innovative systems like Distribu-Data/Plus.

Call Global today at 1-800-624-0041. And find out for yourself why Distribu-Data/Plus is the software that fits for the way you run your business today and tomorrow!

GLOBAL TURNKEY SYSTEMS

A Division of Global-Ultimacc Systems, Inc.



FEATHERWEIGHTS CARRY CLOUT

"There was a lot of resistance at first," he says. "They thought the portable was just an expensive toy."

To prove the Compass' worth, Russo completed a project at home on his own portable. He presented it to the dp department and documented that the Compass had saved three months' time and provided more in-depth analysis than the conventional tools of the auditors' trade—paper, pencil, and calculator. Another point in the Compass' favor was its MS-DOS operating system, which allows

auditors to trade disks and software with the IBM PCs used elsewhere within World Bank.

Jim Flanders should be relieved that there's no such organization as the Society for the Prevention of Cruelty to Computers. If such an organization existed, it certainly would have cited him for his treatment of his first Husky/Hunter handheld portable. First, he put data in it and hurled it to the ground; next, he took it home and put it in the freezer; and last, he used it beneath

the strong magnetic field of 500 kilovolt electric lines.

That was the portable's survival test. Assigned to duty in the Ozark-St. Francis National Forests, where dirt and erratic temperatures would fell more finicky computers, the Husky/Hunter passed with flying colors.

Flanders was the computer expert charged with finding a rugged computer to handle the automation of the timber-sale tally program. Information on six random samples collected from thousands of trees helps the for-

BRIEFCASE

Vendor	Product	Features	Price	Circle
ACT (408) 727-8090	Apricot Portable	13 lbs. Screen: 25x80 LCD IBM PC compatible voice recognition	\$2,695	412
Canon USA (516) 488-6700	TX-10	15.4 lbs. Built-in printer Battery option		413
Docutel/Olivetti (214) 258-8610	M10	4.3 lbs. Screen: 8x40 LCD Battery powered Built-in 300 bps modem	\$799 to \$999	414
Datec (303) 579-0166	Electronic Notebook	4 lbs. Battery operated		415
Epson America (213) 539-9140	HX-20 Notebook Computer	3 lbs. 13 oz. Screen: 4x20 LCD Battery operated Built-in printer	\$800	416
	PX-8 Geneva	4 lbs. Screen: 8x80 LCD Battery operated	\$995	
Grid Syst. (415) 961-4800	Model 1100	10 lbs. Screen: 25x80 flat panel IBM PC compatible 256 K RAM	\$5,995	418
	Compass (1101)	Same as above with 300/1,200 bps modem	\$6,795	
	Model 1109	Same as above with 512 K RAM	\$7,995	
	Tempest	13.5 lbs. 512 K RAM magnesium case shields radio transmission signals	\$12,495	
Hewlett-Packard (contact local sales office)	The Portable	8.5 lbs. Screen: 16x80 LCD IBM PC compatible Battery powered Built-in 300/1,200 bps modem Integrated software	\$2,995	419

Simple as pie.

GraffHopper is designed to reduce chart building to a simple process. The user simply looks through his ChartBook catalog of over 100 formats, selects the chart he prefers and responds to a few simple screen prompts.

GraffHopper formats range from straight lines to sophisticated report/curve combinations which can be completed in a matter of seconds.

GraffHopper also offers the more traditional approach to chart building through the use of a simple menu structure (including

on-line help) or command word method. Whatever the mode of chart creation, the objective of the software is the same: to produce complicated charts with as little user interaction as necessary.

GraffHopper also includes a unique feature — Chart Connect. Using

Chart Connect the user can access data already stored in LOTUS 1-2-3*, MULTIPLAN*, or dBASE II* files. With Chart Connect, spread sheet data may be retrieved through a series of simple user prompts and need not be rekeyed.

For more information call or write:

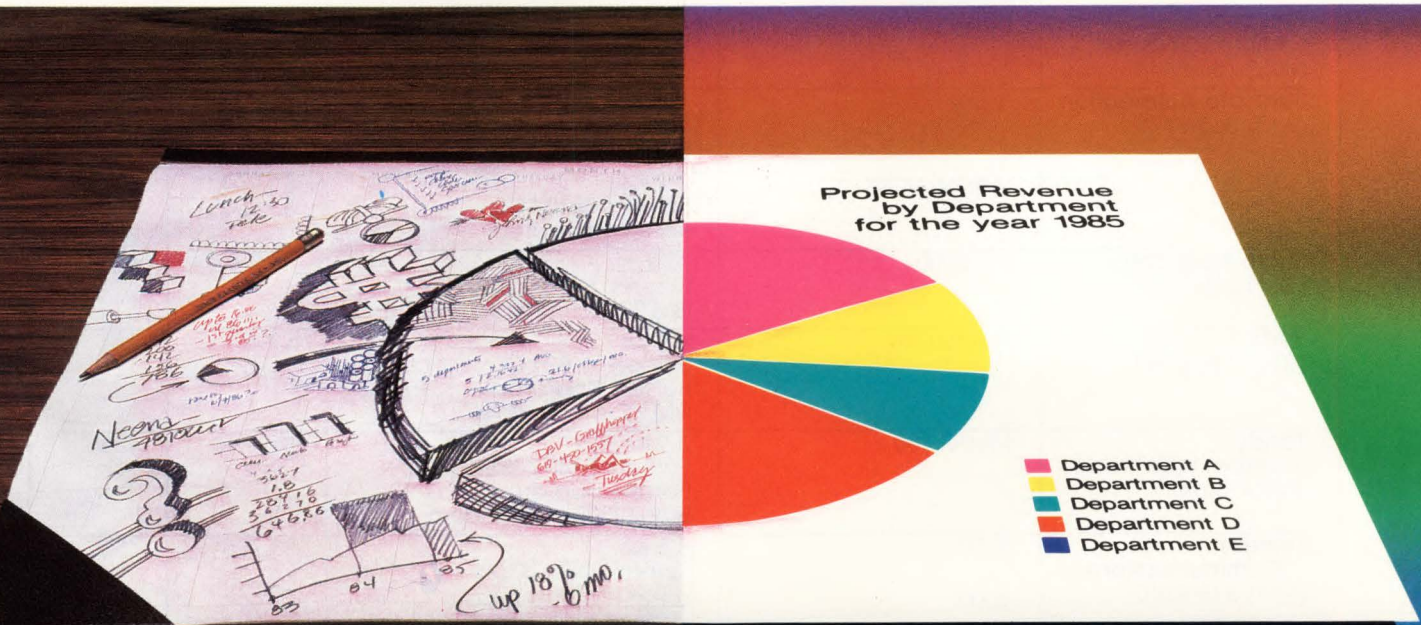


Data Business Vision, Inc.
3510 Dunhill Street, Suite B
San Diego, CA 92121

619/450-1557
800/321-6828

*LOTUS 1-2-3 is a copyright of Lotus, Inc.; MULTIPLAN is a copyright of Microsoft, Inc.; dBASE II is a copyright of Ashton-Tate.

©1984 Data Business Vision, Inc.



FEATHERWEIGHTS CARRY CLOUT

est service track the quantity and quality of available lumber. The 2.2-pound portable, with 208 Kbytes of memory, 8-by-40 character LCD display, and battery power, proved to be the perfect choice. The forest service opted for the Husky Special Performer, which contains the Hunter CP/M operating system in an especially rugged carrying case.

Before the Husky arrived, workers recorded data by hand on forms.

These forms, with all their errors and hard-to-read handwriting, went to the Fort Collins Communication Center for keypunching. It took from two to six weeks for managers to receive the tally-sheet printouts.

The Husky makes the whole process significantly faster and more accurate. The turnaround time, from the point at which the marking crew submits the data to the delivery of the printouts, is one day. Special in-house

software edits entries as they're made, making it impossible to record incorrect data. Keypunching is totally eliminated.

Another branch of the U.S. Forest Service chose the battery-operated Teleram T-3000 for a similar program. The 9-pound, 128-Kbyte, briefcase-sized computer helps gather statistics on the condition of felled logs and growing trees.

(Continued on page 198)

BRIEFCASE

Vendor	Product	Features	Price	Circle
Informer Computer (714) 855-3112	Informer 207	13 lbs. IBM PC compatible Built-in modem	\$1,990 to \$2,900	420
Micro Office (203) 366-1850	Roadrunner PC	5 lbs. Screen: 8x24 LCD Battery operated	\$1,995	421
NEC (617) 862-3120	PC-8200	8 lbs. Screen: 8x40 LCD Battery operated	\$599	422
Personal Microcomputers (408) 737-8444	Micromate	8 lbs. 5 oz.	\$1,295	423
Sarasota Automation (813) 366-8770	Husky	4.4 lbs. Screen: 4x32 LCD Battery operated	\$2,900	428
	Husky/Hunter	2.2 lbs. Screen: 8x40 LCD Battery operated	\$1,974 to \$3,800	
Sharp Electronics (201) 265-5600	PC-5000	12 lbs. Screen: 8x80 LCD IBM PC compatible		424
Sord (212) 759-0140	Consultant	4.5 lbs. Screen: 4x80 LCD Battery operated IBM PC compatible	\$995	425
Tandy (contact local Radio Shack outlet)	Model 100	3.9 lbs. Screen: 8x40 LCD Battery operated Built-in 300 bps modem	\$799 to \$999	426
Teleram Communications (914) 694-9270	3000	8.5 lbs. Screen: 4x80 LCD	\$1,795	427
	4000	9 lbs. Screen: 8x80 LCD	\$1,995	
	5000	10 lbs. Screen: 16x80 LCD	\$2,495	
	Dulmont Magnum	8 lbs. Screen: 8 or 16 x 80 LCD IBM PC compatible All battery operated	\$2,495 to \$3,095	



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.

Get the printer that makes for better information systems. For more information visit your nearest TI authorized dealer or write Texas Instruments Incorporated, P.O. Box 809063, Dept. DPF-00000, Dallas, TX 75380-9063. Or call toll-free: 1-800-527-3500.

**TEXAS
INSTRUMENTS**
Creating useful products
and services for you.

FEATHERWEIGHTS CARRY CLOUT



Data General's new battery-operated briefcase portable (9.1 pounds) operates software written for the MS-DOS, CPM-86, and Xenix operating systems. With 256 Kbytes of memory and two disk drives, the portable costs \$4,095. The liquid-crystal display is 80 columns by 25 lines.

(Continued from page 196)

The territory managers for Standard Oil of Indiana (Amoco) are a modern-day version of the

old-fashioned door-to-door salesmen. Each of the 300 managers calls on 50 service stations accompanied by an Epson HX-20. In addition to helping

Amoco track profits, the 4-pound briefcase, battery-operated portables help spread computer awareness as each service-station manager gets to see a computer in action.

Running software developed by Amoco, the HX-20s help dealers figure profit margins per gallon based on four variables: product, payment method, mode of service, and taxes. Before using portables, it frequently took managers half an hour to perform the 75 calculations on a worksheet. The HX-20 does it in a few minutes. The territory manager saves time, and the dealer gets an accurate assessment of the impact of price and volume changes.

The HX-20 also helps dealers figure their monthly profit-and-loss statements so they can see where money is coming in and where it's

TRANSPORTABLES

Vendor	Product	Features	Price	Circle
ACT (408) 727-8090	Apricot	17.5 w/o monitor (keyboard includes LCD display) IBM PC compatible also runs under CP/M	\$2,495	489
Anderson Jacobson (408) 286-7960	AJ Passport	22 lbs.	\$3,690	459
Apple Computer (408) 973-2042	Macintosh	19 lbs. w/keyboard	\$2,195 (128 K) \$3,195 (512 K)	460
Centron (602) 994-8170	Teletalker	26 lbs. 300/1,200 bps modem IBM PC compatible	\$4,995	461
Colby Computer (415) 493-7788	Colby PC-3	26 lbs. IBM PC compatible	\$2,495 to \$4,500	462
Columbia Data Products (301) 992-3400	VP	32 lbs. IBM PC compatible; also runs under CP/M	\$1,995 (128 K) \$2,695 (256 K)	463
Compaq Computer (713) 370-7040	Compaq Compaq Plus	28 lbs. IBM PC compatible	\$2,240	464
Compucorp (213) 829-7453	Omegamite	25 lbs. IBM PC compatible	\$2,995 to \$5,795	465
Comp-U-Save (704) 274-3003	Alex-500A	14 lbs. Built in printer Apple compatible also runs under CP/M	\$1,399	466

New—Just Released! The Most Valuable MIS/dp Salary Study You Can Buy

Compensation in the MIS/dp Field

Sponsored by

Computer Decisions, this tightly-packed, 346-page report provides the most intensive study of salaries, salary ranges, and bonuses ever attempted in the MIS/dp field. For 35 job functions, ranging from Junior Key Entry Operator to Top MIS/dp Officer, it reports all compensation data:

- By 16 levels of supervisory responsibility
- By geographical location—total U.S., U.S. by seven regions (including & excluding major metropolitan areas), and 25 metropolitan areas & states
- By 25 types of employer
- By total MIS/dp budget
- By number of employees
- By annual sales of manufacturing/extractive and non-manufacturing organizations and utilities
- By total assets of financial organizations

Compensation in the MIS/dp Field

Sponsored by
Computer Decisions

- By insurance policies in force
- By education, experience, & sex

An *invaluable* tool for determining the "right" salaries in the MIS/dp field. \$195.00

Complete & mail today for your 15-day FREE Trial Copy—No Obligation!

Abbott, Langer & Associates • *Computer Decisions* • 10 Mulholland Drive • Hasbrouck Heights, NJ 07604

Yes! I certainly can use Compensation in the MIS/dp Field in my work. Please rush my copy to me immediately! (If I'm not satisfied, I'll return it within 15 days and not be charged for it.)

- ☐ Check No. _____ for \$195.00 is enclosed. (IL residents add 6¼% sales tax.)
☐ Bill my employer, adding a small charge for shipping and handling.

Signature _____ Name _____

Title _____ Employer _____

Street Address of Employer* _____

City _____ State _____ Zip _____

*U.P.S. will not deliver to a P.O. Box. Please give street address

FEATHERWEIGHTS CARRY CLOUT

going out. Since the dealers are independent and simply lease from Amoco, acceptance of computer aid is not compulsory.

Amoco researched available portables for two years before choosing the Epson HX-20. Although the Tandy 100 was considered, the Epson won

out because of its built-in microcassette printer and cash-register-like tape. The device allows the territory managers to leave the dealer with a hard copy of calculations. At \$800, the 16-Kbyte memory portable with its 4-line-by-20 character display is ideal for Amoco's needs.

When communicating with a home base is especially important, as it is at Raytheon Semiconductor in Mt. View, CA, salespeople require a different kind of portable tool. The beta site for Integrated Office Systems' Unity, Raytheon equipped 18 salespeople in three regional offices with

TRANSPORTABLES

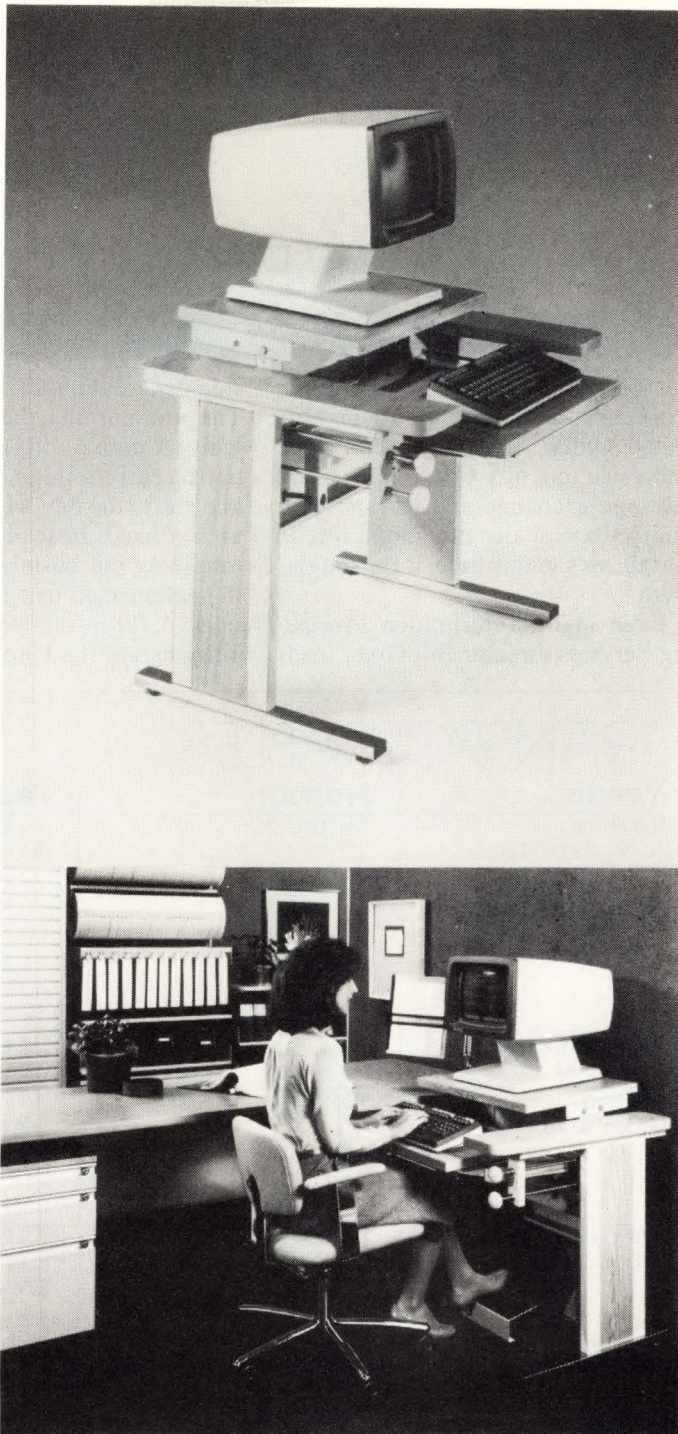
Vendor	Product	Features	Price	Circle
Computer Devices (617) 273-1550	Dot	30 lbs. IBM PC compatible	\$2,000 to \$3,500	467
Computer Shop (617) 661-2670	Starlite	34 lbs. Optional battery pack	\$2,695 to \$3,495	468
Computer Transceiver Syst. (201) 261-6800	Execuport XL Execuport XL Plus	27 lbs. IBM PC compatible also runs under CP/M	\$1,995 \$3,495	469
Corona Data Syst. (805) 495-5800	PPC PPC-XT	28 lbs. IBM PC compatible Same as above	\$2,195 \$4,095 (10 Mbyte Winchester)	470
Docutel/Olivetti (214) 258-8610	PC P-1	IBM PC compatible; also runs under CP/M	\$2,895 to \$3,295	471
Digital Microsystems (415) 261-1034	Fox	30 lbs.	\$3,350	472
Eagle Computer (408) 395-5005	Spirit Spirit XL	33 lbs. IBM PC compatible; also runs under CP/M	\$2,695 \$3,995 (10 Mbyte Winchester)	473
Franklin Computer (609) 488-0600	CX-1 CX-2 CX-2C CX-2M	25 lbs. single disk dual disk Same as above additional 64 K RAM, runs under CP/M additional 128 K RAM, IBM PC compatible All models Apple compatible	\$1,395 \$1,695 \$1,995 \$2,295	474
IBM (contact local sales office)	Portable PC	30 lbs.	\$2,595	475
International Systems Marketing (301) 279-5778	Unisystem PC Unisystem XT	35 lbs. IBM PC compatible	\$2,705 \$3,995	476
Jonos Ltd. (714) 999-6661	C Series Series I	28 to 33 lbs. 26 to 34 lbs. IBM PC compatible	\$3,295 w/640 KB to \$5,895 w/10 MB \$3,695 w/760 KB \$5,995 w/10 MB	477

Media-Flex Adjustable Workstations.

The new Media-Flex workstations from Acme Visible Records. The ultimate in value, quality and comfort. Precisely engineered to consider the ergonomic factor. Because, with even the most sophisticated automated office equipment, productivity suffers if the people who operate it are uncomfortable.

Adjustable. The Media-Flex adjustable workstation is a terminal station that provides five separate adjustments for an almost infinite variation of height, tilt, angle and computer viewing distance. And all adjustments are easily made from the correct sitting position.

Modular. As part of the Media-Flex workstation system, the terminal station joins together with other units for both terminal and non-terminal tasks. Storage modules provide convenient access to materials and supplies, and side extensions offer additional space for writing and other work requirements.



Toll Free:
800-368-2077
(In Virginia, collect, 804-823-4171)

ACME VISIBLE

First in putting information in its place.

Canadian Sales: Acme Seeley, Inc., Renfrew, Ontario. Offices in principal cities.

For more information on how the Media-Flex adjustable workstation can increase your office efficiency, call or write today.

CDNYCT3

Name _____

Title _____

Address _____

City _____ State _____ Zip _____

Phone _____

Acme Visible Records
1000 Allview Drive, Crozet, VA 22932

FEATHERWEIGHTS CARRY CLOUT

battery-operated terminals. Each workstation, a handheld portable called Unity 100, relays text, data, and voice to Unity Control, a central message exchange and storage unit. Unity Control also provides a link to Raytheon's mainframe, a Burroughs' 3890.

Each night, Information Processing Services director Bill Greer loads

shipment data into the mainframe. The next morning, the sales force dials Unity Control, downloads information on current shipment and backlog, and starts the day with facts and figures at hand. Instead of wasting time rehashing old business with a client, the salesperson can move on to new sales. A fill-in-the-blank forms capability makes the Unity ideal for field

orders and order entry. The portable terminal also eliminates telephone tag. One salesman returned 90 calls in one day thanks to Unity.

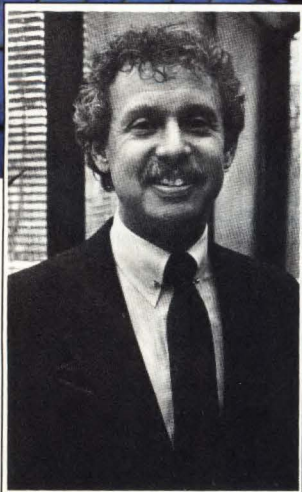
Greer is so pleased with Unity's performance in the field that he's considering ordering more units for internal use, especially for electronic mail. The system can accommodate up to

(Continued on page 204)

TRANSPORTABLES

Vendor	Product	Features	Price	Circle
Kaypro (619) 481-3424	Kaypro 2	26 lbs. 300 Kbyte runs under CP/M	\$1,295	478
	Kaypro 4	26 lbs. 800 Kbytes 300 bps modem built-in	\$1,995	
	Kaypro 10	31 lbs. 400 Kbyte floppy 10 Mbyte hard disk	\$2,795	
Morrow Computer (415) 430-1970	MD3	24 lbs.	\$1,599	480
Otrona (303) 444-8100	Attache	18 lbs. Battery option	\$2,995 to \$3,795	481
	2001	19 lbs. IBM compatible Battery option	\$2,495 to \$4,495	
Panasonic (201) 348-7000	Sr. Partner	33 lbs. Built-in printer IBM compatible	\$2,145 to \$2,595	482
	Super Sr. Partner	Same as above with 10 Mbyte hard disk	\$5,000	
Seequa Computer (301) 672-3600	Chameleon	28 lbs. IBM PC compatible; CP/M option available	\$1,994 to \$2,895	483
Sperry (215) 542-4011	SP line	38 lbs. IBM PC compatible	\$2,685 to \$4,985	484
STM (415) 326-6225	Portable PC	17 lbs. IBM PC compatible 300/1,200 bps modem Built-in printer	\$3,449	485
Televideo Syst. (408) 745-7760	TPC II	IBM PC compatible 16 bits	\$2,395 to \$2,695	486
	TPC I	8 bits		
Texas Instruments (contact local sales office)	Portable Professional Computer	34 lbs. IBM PC compatible; also runs under CP/M Built-in 300/1,200 bps modem	\$2,295 to \$3,790	487
Visual Computer (617) 480-0000	Commuter	16 lbs. IBM PC compatible	\$1,995	490
Zenith (contact local sales office)	Z-160	37 lbs. IBM PC compatible		488

Man Bytes Dog



Steven Swartz, CEO,
Drumbeater Corporation:
Advertising, Marketing,
Public Relations, Corporate Design.
(617) 246-0782

Now *that's* news.

Drumbeater Corporation has been helping companies across the country make news and create sales for more than a decade.

We do it with high-impact, convincing advertising, marketing and public relations programs that put hardware, software, and other highly technical products in the public eye. And keep them there.

We back it all up with knowledgeable, effective media plans, targeted to decision-makers, so that good news develops into outstanding response.

That's why Computer Decisions is included in our media planning process. With 100% management circulation, it's the publication read by the people our clients need to talk to. People respond to what they see in Computer Decisions.

That means results . . . good news in any business.

**COMPUTER
DECISIONS**
THE MANAGEMENT MAGAZINE OF COMPUTING

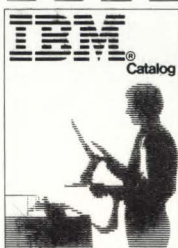
IBM talks savings on DP supplies

Get 5% off with the IBM DIRECT prepayment discount

Free 44-page color catalog. Just mail coupon or call IBM DIRECT toll-free 1 800 IBM-2468, Ext. 81

Use the convenient Fall/Winter 1984 catalog to order wide and narrow print ribbons, diskettes, and more.

Save up to 30% on quality supplies with our quantity discounts — and get IBM's free advice by phone on the best supplies for your needs.



IBM DIRECT, One Culver Road, Dayton, New Jersey 08810
Please send me a free IBM DIRECT Fall/Winter 1984 Data Processing Supplies Catalog.

Name (Mr/Mrs/Ms)
Please Print

Title

Telephone

Company Name

Address

City

State

Zip

☐ CHECK HERE if you would like a copy of the current IBM DIRECT Word Processing Supplies Catalog.

PBD/ 81

IBM

We make it easier to do business

CIRCLE 98

TOUGH LOCAL NETWORK PROBLEM:

"How can our department get our six computers and three printers to work together efficiently? We also want to be able to access outside data services and our future company LAN."

SIMPLE NETWORK SOLUTION: NetCommander

NetCommander is a smart, small Local Area Network manager. It lets you link from four to 40 computers and peripherals — in any mix of models and makes. A 50K buffer (expandable to 250K) makes sure that productivity is high — keeping fewer printers humming — while computer and PC users do their thing, without waiting for a printer, modem, or shared disk. Those devices can be specified with names defined by users — and allocated on the basis of availability and capability. And NetCommander handles multiple protocols and different baud rates simultaneously — without modifications to hardware or software. It will also tie into your company's LAN. The latest in a family of products in use since 1979, NetCommander is a smart, small, efficient network manager.

For more information, call or write:

NetCommander

Digital Products Inc. • The Simple Network Solution Company
600 Pleasant Street • Watertown, MA • 02172
(617) 924-1680 • Outside Mass., call 1-800-243-2333
And check out our 30-day trial evaluation.

CIRCLE 99

CLOUT

(Continued from page 202)

1,000 users, according to the vendor.

Portables don't have to travel far afield to be useful tools. Sandy Gant, a senior analyst at Cupertino, CA-based Infocorp, a market-research house, believes portables have a promising future as peripherals to stationary micros. "Those of us who have access to big systems want to take that power with us when we leave the office," says Gant. "To serve that need, the successful portable will require data compatibility with popular desk-top micros and easy-to-use interface between the two devices."

When the word-processing department of Pepsico became overtaxed, the conglomerate could have installed more permanent machines and hired more operators. Instead, the Purchase, NY-based vendor of beverages, food products, food services, transportation, and sporting goods supplemented its deskbound equipment with handheld Sony Typecorders. These 3-pound, battery-operated terminals have full-sized keyboards and store up to 100 pages of text on a microcassette tape. The Typecorders have eased the department's data backlog, allowing employees to do their own word processing when on the road, working overtime at home, or even during regular hours when the stationary equipment is in constant use.

MIS frequently wants to control the acquisition of portables because it fears loss of security, according to Ruth Hudson Lankford, an office-automation consultant in Indianapolis. "Dp has the same fear with deskbound micros, but it's even worse

"I've had a Mac for two years, and every time I turn it on, I still say, 'Wow!'"

—Garppolo, Peat, Marwick, and Mitchell

TRAVELING THROUGH CUSTOMS

In some foreign countries, a portable computer can be a real attention-grabber. A local official in one of these places, especially third-world countries, has about as much experience with a computer as the average traveler does with revolutions and rain forests.

When business takes you to an out-of-the-way site, be prepared for frequent delays and lots of questions. Curious or suspicious officials may even confiscate your portable if your answers and credentials are unsatisfactory.

Tom Russo, a globe-trotting analyst with the energy department of

the Washington-based World Bank, has traveling down to a science. "I always allow 15 extra minutes to go through customs because I know the guards will be curious," says Russo, who totes a Grid Compass.

Russo also carries a letter from his employer stating that the machine will be used solely for business. The diplomatic passport he sometimes travels under makes delaying questions even less likely. Such documentation is crucial, even to get past U.S. Customs officials. In the past they seized any micro bound for an Eastern bloc country. Now, thanks to pressure from businesses and

computer manufacturers, a traveler can take a portable through customs as long as he or she can prove it's for business.

A carnet, or equipment passport, furnishes the necessary proof. Provided by the Washington-based United States Council for International Business, a carnet aids transport of business machines across the borders of 40 or more participating countries. Carnets cost \$100 per year for equipment valued between \$500 and \$5,000, and the applicant must provide a security deposit equal to 40 percent of the declared value.

with portables," says Lankford. "If the machine is small enough to fit into a briefcase, you definitely have a security problem."

Lankford, however, cautions against fighting the flow of portables,

which she calls "the wave of the future." Like stationary micros, portables will simply come in the back door if the need for them is ignored. She recommends that dp try to keep up with new technology so it can sug-

gest the best machines for each job.

A few years ago, a portable was only for the very rich or the very powerful. Today they're for anyone who wants to get work done fast and efficiently. □

THE IMPERSONATOR: FLEXIBILITY IN COMMUNICATIONS.



The most adaptable asynchronous communications tool and terminal emulator written. Built-in communications language allows you to modify the emulations provided or custom design your own. For IBM PC/PC-XT, PC-AT and compatibles. **Pre-configured emulations for:** ADM-3A, VT52 & VT100, IBM 3101 (Model 10 & 20), Hazeltine Esprit, Televideo 912 & 950, Teletype, Dasher D 210. **Features:** XMODEM protocol, captures and transmits files, 60 help screens, 9600 Baud w/o data loss and easy to use.



**FOR MORE INFORMATION
CALL 1 800 443 8080**

Also available at participating ComputerLands.

Direct Aid P.O. Box 4420 Boulder, CO 80306 (303) 442-8080

TERMINALS FROM TRANSNET

PURCHASE PLAN • 12-24 MONTH FULL OWNERSHIP PLAN • 36 MONTH LEASE PLAN

Authorized Distributors — Carry the COMPLETE lines of:			MONTHLY RATES			OR Purchase
			FULL Ownership 12 mo.	Lease 24 mo.	Lease 36 mo.	
DEC 	LA50	Personal Printer	\$ 62.	\$ 35.	N/A	CALL FOR DETAILS
	LA120KSR	DECwriter III	220.	122.	83.	
	VT101	CRT Terminal	115.	64.	43.	
	VT102	CRT Terminal	137.	76.	51.	
	VT220	CRT Terminal	115.	65.	45.	
	VT240	CRT Terminal	130.	75.	50.	
	VT241	CRT Terminal	190.	109.	73.	
TI 	TI707	Portable Terminal	62.	35.	N/A	
	TI820KSR	Terminal Pkg.	211.	117.	80.	
	TI850	Printer w/Tractor	57.	32.	N/A	
	TI855	Dual Mode Printer	86.	48.	32.	
TELE-VIDEO 	TV914	Tilt/Swivel CRT	62.	35.	N/A	
	TV950	CRT Terminal	103.	57.	39.	
	TV970	Tilt CRT Terminal	115.	67.	43.	
NORTHERN TELECOM	NT6K00	Displayphone	124.	69.	47.	
	NT6K55	Modem 212/A	47.	26.	N/A	
C.ITOH	CIT101	VideoTerminal	105.	58.	39.	
	CIT414A	Graphics Terminal	134.	74.	50.	
	CIT500	W/P Terminal	191.	106.	72.	
	CIT600	Line Printer	537.	298.	201.	

ON-SITE TECHNICAL SUPPORT & SERVICE

PERSONAL COMPUTER SYSTEMS

Visit our computer stores in Union and Ocean, NJ

AUTHORIZED RETAIL DEALER

APPLE® IIe, IIc, MAC, III and LISA — DEC RAINBOW — TI PROFESSIONAL

SUPPLIES — FREE CATALOG — CALL

DEC is a registered trademark of the Digital Equipment Corporation.

APPLE is a registered trademark of Apple Computer Inc.



TRANSNET CORPORATION

1945 ROUTE 22 — UNION, NJ 07083

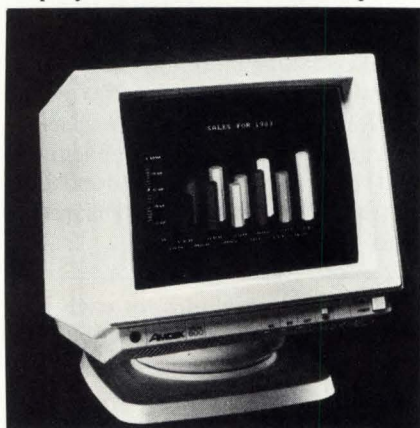
In NJ (201) 688-7800 • (800) 526-4965 • TWX 710-985-5485

CIRCLE 102

MICROSYSTEMS PLUS

COLOR MONITOR

The Amdek Color 600, an RGB video-input color monitor compatible with most personal computers, offers high-line resolution and high-contrast color for graphics. Priced at \$650, it provides 80 columns by 25 lines of text display and features a front-panel



switch, which changes text color from white to green; a switchable color matrix, which provides 16 IBM or Apple colors; a built-in speaker and audio amplifier; front-mounted controls with LED display; and an optional tilt- and swivel-base stand.

Amdek Corp., 2201 Lively Blvd., Elk Grove Village, IL 60007.
(312) 595-6890. *Circle 207*

ARRAY PROCESSOR

A software option for the Marince APB-3024PC array processor enables it to handle 32- and 40-bit floating-point arithmetic on the IBM PC and compatibles. Price: under \$4,000.

Marince Computers Products Inc., 11760 Sorrento Valley Rd., San Diego, CA 92121.
(619) 268-4814. *Circle 208*

TI WINCHESTER

A 10-Mbyte Winchester disk, compatible with MS-DOS 1.25 and 2.11, is available for the Texas Instruments Portable Professional Computer as a field-installed kit or a factory-installed option. Price for kit: \$2,295.

Average access time is 85 milliseconds.

Texas Instruments Inc., Data Systems Group, P.O. Box 809063, Dallas, TX 75340.

(1-800) 527-3500. *Circle 209*

PRODUCTIVITY TOOL

PFA Micro, an automated process-flow analysis technique for the IBM PC, helps simplify business processes by reducing inefficiency and duplication. Training can be either computer-based or done by workshop and textbook. Prices are \$950 for facilitator kit, \$950 for software, \$450 for training module, and \$45 per training manual.

Control Data Business Advisors Inc., 3601 W. 77th St., Facility Code MNBO5A, Minneapolis, MN 55435.

(612) 921-4251. *Circle 210*

MULTI-USER SYSTEMS

The System 816/G and 816/Gg 32-bit systems can be configured with 20-, 40-, or 80-Mbytes of hard-disk storage, or with a 2.4-Mbyte dual 8-



inch floppy subsystem. Eight models range from \$12,495 to \$23,995. A network board for Datapoint Arcnet and S-100-compatible systems supports four System 816 nodes with a passive hub; 255 nodes can be connected for four miles with an active hub. Price: \$395.

Compupro, 3506 Breakwater Court, Hayward, CA 94545.
(415) 786-0909. *Circle 211*

CUSTOMIZED FORMS

Microform, a design-it-yourself kit, provides step-by-step instruction on how to create invoices, purchase orders, checks, letterheads, and other customized forms based on your own design and hardware specifications. Price: \$206 and up for 500 9½-inch by 3½-inch one-ply forms; \$323 for 5,000; \$275 and up for 500 checks.

Microform, 7059 Huntley Rd., Columbus, OH 43229.
(614) 888-8056. *Circle 212*

DATABASE MANAGER

Xtrieve, a data dictionary for retrieving information from an IBM PC database, is completely menu-driven and has a query tool for easy use. Price: \$195. Requiring no memorization of special commands, Xtrieve can be operated by keyboard or by mouse. A local-area network version is \$395.

Softcraft Inc., P.O. Box 9802, Austin, TX 78766.
(512) 346-8380. *Circle 213*

PROTOCOL CONVERTER

The PA100 Turbo IBM PC and PC XT plug-in allows users to transform data from IBM mainframes for PC applications. Price: \$1,195 for PA100 Turbo; \$1,395 for PA1000 Turbo stand-alone for remote IBM PCs. Mainframes can be accessed by terminal emulation, data capture, or file transfer. Data can be captured in a format accessible to Lotus 1-2-3, VisiCalc, or word-processing packages.

Avatar Technologies Inc., 99 South St., Hopkinton, MA 01748.
(617) 435-6872. *Circle 214*

Kaypro network: The Web Local Area Network System from Adecco Inc., Camp Hill, PA, can address up to 100 Kaypro micros. It supports all major CP/M programs for up to 2,000 feet. *Circle 215*

STREAMER TAPE

The SP-65 and SP-140 hard-disk systems for the IBM PC and compatibles hold 57 and 121 Mbytes of formatted information respectively. Price: \$4,995 for SP-65; \$6,995 for SP-140. The SPT-65 and SPT-140 streamer-tape backup models feature 45- or 60-Mbyte capacity; nine recording tracks; and an average read/write transfer rate of 86.7 Kbyte/sec. Price: \$2,000. Stand-alone version costs about \$2,500.

Dragon Industries, 11 Grove St., Hopkinton, MA 02139.
(617) 435-6841. *Circle 216*

MAINFRAME LINK

When resident on a 32-bit micro, Unipath, running under Unix Systems III and V, will permit 32 asynchronous terminals and printers to communicate with a variety of IBM hosts. Priced at about \$1,000, it is transparent to the user; offers value-added concurrent emulation of 3270, 3770, 3780, and 2780 devices; and includes modularized software components to facilitate porting.

Pathway Design Inc., 177 Worcester St., Wellesley, MA 02181.
(617) 237-7722. *Circle 223*

IBM TAPE DRIVES

The Targatape stand-alone backup subsystem for the IBM PC comes in 25- or 55-Mbyte configurations. Priced at under \$2,000 per unit, it works in either a streaming or incremental mode. The Targa II subsystem, which consists of one hard disk and five expansion slots with 25- or 55-Mbyte backup option, costs under \$3,500.

CMC International Inc., 1720 130th Ave. N.E., Bellevue, WA 98005.
(206) 885-1600. *Circle 224*

COMPATIBLE WP

M-Script, a low-cost word-processing package, has versions for more than 10 systems, including IBM PC, Zenith Z-100, and Epson QX-10. Price: \$80. Only the command and function keys vary for different systems. The package can duplicate sections of documents and has several formatting options.

Micro-Systems Software Inc., 4301-18 Oak Circle, Boca Raton, FL 33431.
(305) 983-3390. *Circle 225*

XT PERSONNEL PACK

Profiles/PC, personnel record-keeping and reporting software for the IBM PC and PC XT, analyzes employment and termination patterns and salary practices; notifies managers of pending and overdue actions; and produces profiles of employees, jobs, and benefits. Price: \$5,995.

Comshare Inc., 3001 S. State St., Ann Arbor, MI 48106.
(313) 994-4800. *Circle 226*

SCHEDULING, NATURE'S WAY.

**Our Scheduling System Does
Something Nature Doesn't Do.
It Schedules Jobs For MVS
Environments The Same Day
It's Installed.**

With ADC2, Automated Data Center management information system, your company is just a day away from getting its computer operations under control. That's because Cambridge designed ADC2 to be fully productive the day it's installed.

ADC2 builds schedules and makes all data center management information readily available, ensuring increased control and throughput. It can also cut processing time by more than 25%.

Users find this high-performance system software simple to learn and easy to use.

ADC2 monitors all jobs automatically. Performance statistics are dynamically gathered and maintained as current and historical data for quick on-line access.

For even more convenience, a decentralized scheduling feature allows different departments and remote sites to simultaneously create and manage their daily job schedules with simple commands.

So if you're wrapped up in scheduling problems, find out how to emerge with more control over your data center's activities.

Call or write The Cambridge Systems Group. Ask for an on-site, on-line ADC2 demonstration with your own data.

The Cambridge Systems Group



24275 Elise, Los Altos Hills, CA 94022, U.S.A.,
(415) 941-4558 • Telex 357437

London Paris Munich



CIRCLE 100

OFFICE EQUIPMENT

CONVERSION DEVICES

The Converter allows 41 different word processors and computers to become diskette compatible. It reads and transfers from both hard and soft,



single- and double-density, single- and double-sided, 5¼-inch and 8-inch diskettes. Price: \$11,995. A Compatibility Plus option handles format changes and costs \$1,500. The Konnect 2 is a portable device that records data from one system and transfers it to another. It has built-in code and string-translation capability. Price:

\$2,450. The Typereader Model TR3 Plus is an OCR page reader that transfers data from typed pages to office-automation systems. Price: \$11,995. It supports up to eight fonts, detects page formats and transfers formatting codes to the host.

Hendrix Technologies Inc., 670 N. Commercial St., Manchester, NH 03101. (603) 669-9050. *Circle 201*

INTEGRATED OFFICE

The Prod-net office-automation system integrates computers, peripherals, and word processors into a single communications system using existing hardware. Host/Net, the mainframe software, manages widely used applications such as electronic mail, and stores and distributes information through its Information Library. Price: \$125,000. The Work/Net microcomputer software module

connects personal computers into local networks, allows users to share peripherals, provides personal-computer printer spooling and mainframe data transfer, and offers office-automation applications. It costs \$55,000 for 10 workstations and \$17,500 for each additional five. Dart ties together word-processing systems, allowing documents to be transferred from one type to another. Price is \$10,000 for each word-processing interface and \$10,000 per distribution system interface.

Computer Corp. of America, 4 Cambridge, MA 02142. (617) 492-8860. *Circle 202*

PDP-11 memory board: The SMSV11 dual-height memory board from Webster Electronic (Sunnyvale, CA) has block-mode DMA, parity control, and status register. It's for the PDP-11/23, 11/73, and compatible systems and is available in 256-Kbyte, 512-Kbyte, and 1-Mbyte capacities.

Circle 203



THE IDEAL COMBINATION IBM 3083 & MPLTQ5

The TQ5 power unit is the optimum 400 Hz power source for all IBM 308X computers. It is a more flexible alternative to the IBM 3089 power unit and may also be used with Amdahl 580 series, NCR 8600 computers and other 400 Hz computers.

- Single or Parallel redundant configurations
- Occupies less than half IBM 3089 floor space
- Front access only, installation back to wall
- Noise levels less than 58 dBA
- Purchase or lease



MPL Power Systems plc
3011 Lincoln Avenue, Richmond, VA 23228, USA
Telephone (804) 2626068 Telex: 756842

CIRCLE 106

PROTECTIVE COVERS

Use a clear 1/8" thick plastic cover to protect your CPU, DISK DRIVES AND KEYBOARDS from accidental input or shutdown.



\$15.00

DATACOVERS are available for immediate shipment for the following systems:

- IBM 3370 & 3375 DISK DRIVES — \$15.00
- IBM 5381 CONSOLE — \$17.00
- IBM 4331 & 4341 CONSOLE — \$15.00
- IBM 4300 SIDE SWITCH — \$13.00
- IBM SYSTEM 38 CONSOLE KEYBOARD — \$15.00
- IBM 5251 & 5291 KEYBOARD — \$15.00
- IBM 3880 CONTROLLER — \$19.00
- IBM 3350 & 3340 DISK DRIVE — \$15.00
- IBM 3274 CONTROLLER — \$15.00
- IBM PC TO 5251 EMULATION KEYPADS — \$7.95
- IBM 4381 COMPUTER — \$15.00
- STC 3670 MAG TAPE DRIVE — \$15.00



Special COVERS made on request.
Call or write:
Dept. R
3657 HiDale • Lake Orion, MI 48035
(313) 362-4013

CIRCLE 107

MULTI-PRINTER FEEDER

Model 430 multi-feed single-sheet feeder works on both daisywheel and dot-matrix printers. Price is \$395 and additional brackets are \$50 each. It includes a universal snap-on feeder plus a customized bracket for each printer. **Multimatic Inc.**, 2030 Upland Way, Philadelphia, PA 19131. (215) 878-9600. *Circle 204*

MICROFICHE READERS

The 800 Series is a line of readers and reader/printers. Eleven models range in price from \$245 to \$360. Features are: energy-efficient optical system; wide selection of magnifications; power-drawer module for electrical components; spare lamp bracket, and a dual-lens option. **Micro Design**, 857 W. State St., Hartford, WI 53027. (414) 673-3920. *Circle 205*

LETTERPRO FEEDER

Proofreader LP, a single-bin paper feeder for the Qume Letterpro 20 printer, works without special software; feeds common paper sizes; and collates documents faceup in the order printed. Price: \$465. **Qume Corp.**, 2350 Qume Dr., San Jose, CA 95131. (408) 942-4176. *Circle 206*

Accepted Industry-Wide

The Standard MRP II System

The original Standard System was published in 1976. It quickly became accepted industry-wide as the standard for a Closed Loop MRP System.

Now an updated version is available. It contains the additional functions of MRP II: production planning, financial planning interfaces, simulation, performance measurement, tool planning and scheduling, vendor scheduling, DRP, final assembly scheduling, etc. Don't worry about unproven theories or "might work" functions. The new standard is entirely based on actual practice over the past four years in Class A MRP II companies.

The new Standard System was developed to help you in:

- Choosing MRP II Software
- Educating MRP II Users
- Developing or Modifying MRP II Software

The MRP II Standard System is immediately available @ \$800.00 to new customers, and @ \$125.00 for owners of

the original version. Order now by calling: 800/343-0625 or 802/878-8161.



Manufacturing Software Systems, Inc.

an *Chia Light*™ company
85 Allen Martin Drive
Essex Junction, Vermont 05452

MSS services: MRP II Software Evaluations and Audits; the MRP II Standard System; a live class: MRP II Systems, Data Processing and Software Vendor List; Evaluation Consulting Support.

U.S. Postal Service STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION Required by 39 U.S.C. 3685		
1A. TITLE OF PUBLICATION COMPUTER DECISIONS		1B. PUBLICATION NO. 7 1 - 0 4 0
2. DATE OF FILING 9/24/84		3A. NO. OF ISSUES PUBLISHED ANNUALLY 15
3. FREQUENCY OF ISSUE Monthly Ex 2 in Mar, June, & Sept		3B. ANNUAL SUBSCRIPTION PRICE \$35.00
4. COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION (Street, City, County, State and ZIP+4 Code) (Not printers)		
10 Mulholland Dr., Hasbrouck Heights, NJ 07604		
5. COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OF GENERAL BUSINESS OFFICES OF THE PUBLISHER (Not printers)		
Same As Above		
6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, EDITOR, AND MANAGING EDITOR (This item MUST NOT be blank)		
PUBLISHER (Name and Complete Mailing Address) Don Huber (address same as above)		
EDITOR (Name and Complete Mailing Address) Mel Mandell (address same as above)		
MANAGING EDITOR (Name and Complete Mailing Address) John Rymer (address same as above)		
7. OWNER (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given. If the publication is published by a nonprofit organization, its name and address must be stated.) (Item must be completed.)		
FULL NAME Hayden Publishing Co., Inc. James S. Mulholland, Jr.		
COMPLETE MAILING ADDRESS 10 Mulholland Dr., Hasbrouck Hts, NJ 07604 Same as above		
8. KNOWN BONDHOLDERS, MORTGAGEES, AND OTHER SECURITY HOLDERS OWNING OR HOLDING 1 PERCENT, OR MORE OF TOTAL AMOUNT OF BOND, MORTGAGE OR OTHER SECURITIES (If there are none, so state)		
None		
9. FOR COMPLETION BY NONPROFIT ORGANIZATIONS AUTHORIZED TO MAIL AT SPECIAL RATES (Section 422.12 DMM only) The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes (Check one)		
(1) HAS NOT CHANGED DURING PRECEDING 12 MONTHS ☐ (2) HAS CHANGED DURING PRECEDING 12 MONTHS ☐ (If changed, publisher must submit explanation of change with this statement.)		
10. EXTENT AND NATURE OF CIRCULATION (See instructions on reverse side)		
A. TOTAL NO. COPIES (Net Press Run)		168661
B. PAID AND/OR REQUESTED CIRCULATION		2133
1. Sales through dealers and carriers, street vendors and counter sales		2133
2. Mail Subscription (Paid and/or requested)		2212
C. TOTAL PAID AND/OR REQUESTED CIRCULATION (Sum of B.1 and B.2)		2133
D. FREE DISTRIBUTION BY MAIL, CARRIER OR OTHER MEANS SAMPLES, COMPLIMENTARY, AND OTHER FREE COPIES		166619
E. TOTAL DISTRIBUTION (Sum of C and D)		166752
F. COPIES NOT DISTRIBUTED		1909
1. Office use, left over, unaccounted, spoiled after printing		1443
2. Return from News Agents		none
G. TOTAL (Sum of E, F.1 and 2—should equal net press run shown in A)		168661
H. ACTUAL NO. COPIES OF SINGLE ISSUE PUBLISHED NEAREST TO FILING DATE		174655
11. I certify that the statements made by me above are correct and complete		
SIGNATURE AND TITLE OF EDITOR, PUBLISHER, BUSINESS MANAGER, OR OWNER <i>M. Mandell, Editor</i>		

PS Form 3526, July 1984

(See instruction on reverse)

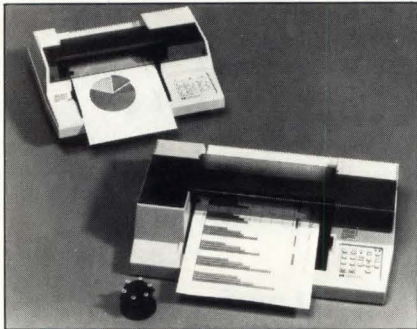


CIRCLE 103

PERIPHERALS

GRAPHICS PLOTTERS

The HP 7550A 11-by-17-inch plotter features automatic cut-sheet paper feed; 31.5-ips plot speed; 6-g acceleration; liquid-crystal display for reporting plotter status; and the ability



to draw up 99 copies without rerunning the program. A wide array of color and pen combinations are available as well as 20 international character sets in two fonts. Price: \$3,900. The HP 7475A six-pen

graphics plotter for the engineering and scientific personal-computer user produces pie, bar, line, and text charts at speeds of up to 15 ips with .001-inch resolution. It features area-fill commands for solids, a pen slow-down control and a view mode that stops plotting. Price: \$1,895; HP 7470A, \$1,095.

Hewlett Packard. (Contact local sales office.) *Circle 220*

PRINTER FOR PC AND DEC

Dot-matrix serial printer CI-3500 Model 20 is compatible with the IBM PC and can be used for letter-quality printing, data processing, and graphics. Cartridges can be easily changed to accommodate multiple fonts and character sets and to provide DEC LA100 printer compatibility. Price: \$1,995. The CIT-220+ desk-top terminal emulates the DEC VT-220 and VT-100, offers 11 enhancement

menus in setup mode, six visual indicators, variable-speed smooth scroll, regional-screen erasing, and alternates between two hosts. Price: \$1,195.

CIE Terminals Inc., 2505 McCabe Way, Irvine, CA 92714. (714) 660-1421. *Circle 221*

HANDWRITTEN INPUT

Scriptwriter interprets handwritten characters, transmits them to a computer as standard ASCII codes, and fills out forms loaded into a computer. Price: \$1,200. Mistakes may be corrected by writing over characters. Scriptwriter can be used as a graphics digitizer and as a terminal when multiple Scriptwriters are used with one computer for simultaneous data entry. LCD display is optional.

Scriptwriter Inc., 806 Governors Dr., Huntsville, AL 35801. (205) 533-9699. *Circle 222*



... ARE APPLICATIONS PROGRAMMING TOOLS, A COMPREHENSIVE SET OF SOFTWARE DEVELOPMENT TOOLS FOR THE VAX11/7XX SERIES.

APTTOOLS IMPACTS AN ORGANIZATION AT EVERY LEVEL:

PROGRAMMERS will respect APTools' ability to absorb application design complications with a powerful pre-processor and central data dictionary.

DP MANAGERS will find assurances in APTools' total programming environment that offers complete control over the software development process.

END-USERS will appreciate APTools' easy, rapid prototyping that ensures that final product will meet design specifications.

SENIOR MANAGEMENT will bank on the savings in software development costs.

Write to us today for more about APTools. Or call. We've got quite a story to tell you. All of you.



Mitchell Management Systems Inc.

Westborough Office Park
2000 West Park Drive
Westborough, MA 01581
(617) 366-0800 TWX: 710-347-1054

VAX is a registered trademark of Digital Equipment Corporation.
© 1984, Mitchell Management Systems, Inc.

Real
Looking For WORD PROCESSING For 3270s?

QWIK-DRAFT IIIe

Uses Existing 3270 Terminals
For Company-Wide Office Automation

Efficient, Expandable, Easy-to-Use Software Package For All IBM or Plug-Compatible Mainframes—Under OS/VS1, MVS, DOS/VSE or VM

- True, Interactive Word Processing
- Lower Per-User Cost
- QWIK-MAIL Electronic Mail Option
- VTAM, CICS, TSO and Other Options
- Communicates With PCs and Other Word Processors

QWIK-DRAFT/QWIK-MAIL

A System You Can Grow With

Top Down Systems

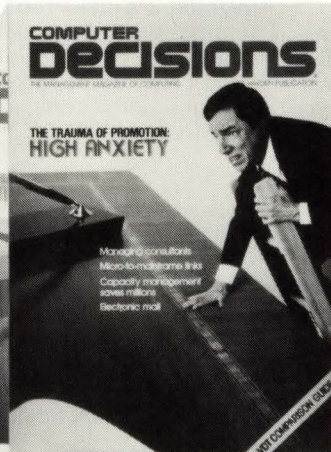
Software from
OFFICE EXPRESS, INC.

Call or Write Today:
(301) 251-9400

Suite 236, 414 Hungerford Drive, Rockville, MD 20850

CIRCLE 105

Computer Decisions Delivers 26 Issues Starting in January



Soon there will be only 10 business days between issues. Because starting in January, 1985, Computer Decisions will be bi-weekly. A new frequency with no change in editorial thrust. Just more of everything our 100% management audience has come to expect from us.

More...award-winning editorial from a larger staff of top writing talent.

More...timely news and product information.

More...in-depth features and incisive columns.

And 26 crucial opportunities for you to reach our Computer Decision Maker audience when timing can make or break an ad campaign.

**COMPUTER
Decisions**
Reaching the Computer Decision Makers
Every 10 Business Days in 1985

MIS AND DATABASE DEVELOPMENT PROFESSIONALS

NEXUS Associates has been retained by a nationally recognized "Fortune 100" financial services industry leader to locate and recommend 40-50 highly qualified MIS and database software professionals for career opportunities available over the next few weeks.

THE PROJECT WE ARE TALKING ABOUT— "TOMORROW'S IDEAS TODAY"

The hardware environment is IBM 3083 under MVS. The on-line interactive database projects are being developed primarily on IDMS. This project involves creating an entirely new network architecture and building prototype systems that will become industry standards.

THE KIND OF PEOPLE WE WANT

We want people who love challenge, who thrive on change, are creative and self-starting. For most positions a Bachelors degree or equivalent experience in data processing is preferred. Candidates should possess top notch organizational, oral and written communication skills.

POSITIONS: Programmer Analysts/Applications Development, Technical Analysts/Development Support, Senior MIS Analysts/Data Processing Planning, Senior Technical Analysts/Configuration Management, Senior Database Administrators, Project Managers, Senior Systems Analysts/Applications Development.

AREAS: Database Design & Development, Requirements Analysis, Configuration Analysis/Management, Data Communications Analysis, Network Architecture, Performance Monitoring & Evaluation, Quality Assurance & Standards, Applications Systems Development, Documentation, Training.

For interested and qualified candidates, initial interviews will be arranged in your local area. For immediate consideration, please call or forward your resume in confidence to George A. Ridenour, President, NEXUS Associates, 5881 Leesburg Pike, Suite 101, Falls Church, Virginia 22041. Telephone: (703) 998-6363.

REWARDING EXCELLENCE

Talent and effort are rewarded both financially and with increased responsibility. *The compensation package is extremely competitive*—and includes company-paid benefits, savings and stock ownership plans, credit union, educational assistance, relocation, and free parking.

THE EXPERIENCE WE ARE LOOKING FOR

We are especially interested in professionals with 2-4 years of IDMS experience including hands-on knowledge of ADS/O, CULPRIT, and other Cullinet software enhancement tools. A strong background in COBOL is required for most positions and a solid working knowledge of TSO/SPF and IBM MVS JCL is preferred.

Computer Decisions Delivers 26 Issues Starting In January

Soon there will be only 10 business days between issues. Because starting in January, 1985, *Computer Decisions* will be bi-weekly. A new frequency with no change in editorial thrust. Just more of everything our 100% management audience has come to expect from us.

More ... Award winning editorial from a larger staff of top writing talent.

More ... Timely news and product information.

More ... In-depth features and incisive columns.

More ... Four-color graphics.

More ... Management strategies.

More ... Information resource applications to help boost profits.

**COMPUTER
DECISIONS**

**Reaching The Computer Decision Makers
Every 10 Business Days in 1985**

GENERAL EMPLOYMENT ENTERPRISES, INC.

**WE KNOW OUR BUSINESS AND OUR BUSINESS IS FINDING . . .
THE RIGHT PEOPLE, THE RIGHT SKILLS, RIGHT NOWSM**

We specialize in The Kind of People you are. . . Data Processing People

TAKE Your Pick we can help you right now! If you wish to remain local or satisfy that urge to relocate, General Employment's North American coast-to-coast network referral system can satisfy your personal career desires. We can do the job. We can help you. We can back up our Talk with action.

D.P. CORPORATE UNDERSTUDY \$32,000-\$45,000

A high visibility opportunity as the company liaison with Corporate Headquarters! Use your IBM Systems 38 - RPG III to be in on the decision making in Planning, Implementation and Project Executions! There's Corporate Management here!

"THINK TANK" PROGRAMMER ANALYST \$30,000-\$32,000

Train for project leader while involved with research applications! Team environment! Utilize your VM/CMS-SAS on IBM 3033. An excellent spot for personal achievement and visibility.

FIELD SERVICE TROUBLESHOOTER \$25,000-\$28,000

All expenses plus company car! Local travel. Home nights. Install, maintain and troubleshoot company's micro and mini-based computer systems. Take formal training at company headquarters.

FIELD SERVICE ENGINEER \$29,000-\$33,000

"Hands-On" expertise plus being a self starter are the keys. DEC/PDP 1134 or VAX 750 is the equipment. Software diagnostics an extra plus! Company car.

ASSISTANT TO D.P. MANAGER \$35,000-\$40,000

Ideal for the person who has come up through the ranks with good supervisory and administrative aptitudes! Staff status for the individual schooled in DP/58 and H.I.S. software package. Variety and action plus here.

WESTERN TERRITORY MARKETING PRO \$60,000-\$80,000

IBM 3270 of IBM plug compatible exposure it your building base. Image, strong communication skills and a "go-getter" attitude will open new marketing horizons for you.

PROJECT LEADER \$40,000-\$44,000

Assume the responsibility of the marketing projects. Exposure to IBM Systems 38 Mod 7 and Mapics are the stepping stones. The future holds promotion to MIS manager.

PRODUCT PLANNER \$60,000-\$65,000

Knowledge and experience are the door-openers. Participate and direct full product cycle development! Draw on your mainframe architecture and strategic product planning expertise.

MANAGER DIGITAL SYSTEMS \$40,000-\$50,000

A staff executive with a versatile background is needed! Draw on your expertise in computer architecture, computer science and, your exposure in electronics! Be the key in this corporation's hardware and software programs "in-house."

M.I.S. DIRECTOR \$60,000-\$75,000

A challenging opportunity for your management skills and DEC software background! You will direct and coordinate all D.P. functions within the company.

LIAISON SYSTEMS ENGINEER \$33,600-\$45,600

Your knowledge of Micro Computers coupled with personal communications skills fills "The Bill." Provide technical support "In-House" and the field. Be involved in sales/marketing too.

CAD DIRECTOR UNDERSTUDY \$45,000-\$55,000

Experience in software development of applications in placement, routing and logic simulation ideal! Utilize the Z8000 and VAX. Experience in a PCB design environment a big plus.

**A network of Professionals To Service your Local or
Relocation Career Desires.**

CENTRAL AND MIDDLE WEST

Columbus, OH 43215
88 E. Broad St.
614/228-5192

Indianapolis, IN 46204
5 E. Market St.
317/636-2261

Chicago, IL 60606
150 S. Wacker Dr., Ste. 600
312/346-7001

Phoenix, AZ 85012
3443 N. Central Ave.
602/265-7800

San Francisco, CA 94111
444 Market Street
415/981-6440

San Francisco, CA 94105
One Market Plaza
415/896-0511

St. Louis, MO 63101
720 Olive Street
314/231-7400

Naperville, IL 60540
350 W. Shuman Blvd.
312/357-8005

Chicago, IL 60606
150 S. Wacker Dr., Ste. 512
312/782-1024

Palo Alto, CA 94303
2471 E. Bayshore Rd.
415/494-3441

San Jose, CA 95126
1550 The Alameda
408/288-8700

Woodland Hills, CA 91367
5930 Varnei
213/703-6908

Louisville, KY 40207
Executive Park #616
502/897-5347

Detroit, MI 48226
1200 Sixth St.
313/963-8470

Chicago, IL 60606
150 S. Wacker Dr., Ste. 775
312/782-6062

Woodland Hills, CA 91367
5930 Varnei
818/704-4600

Los Angeles, CA 90010
3699 Wilshire Plaza
213/386-4630

Fremont, CA 94538
39175 Liberty St.
415/797-5680

Independence, OH 44131
6100 Rockside Woods Blvd.
216/524-4444

Arlington Heights, IL 60005
85 W. Algonquin Rd.
312/364-9450

Huntington Beach, CA 92648
2130 Main Street
714/960-2431

SOUTHWEST

Dallas, TX 75206
5501 LBJ Frwy.
214/788-4462

Dallas, TX 75206
8350 N. Central Exp.
214/987-0762

Dallas, TX 75201
Plaza of Americas
214/742-1117

Houston, TX 77008
1235 N. Loop West
713/861-6588

Houston, TX 77057
2640 Fountainview
713/977-3677

CANADA

Hamilton, ONT. L8P-1A2
100 King - Stelco Towers
416/527-9201

Etobicoke, ONT. M9C-4Z5
One Eva Rd., Suite 100
416/622-9711

NORTHEAST

Boston, MA 02116
545 Boylston St.
617/267-9119

Philadelphia, PA 19103
8 Penn Ctr. Plaza
215/564-3101

Philadelphia, PA 19102
3 Penn Ctr. Plaza
215/569-3226

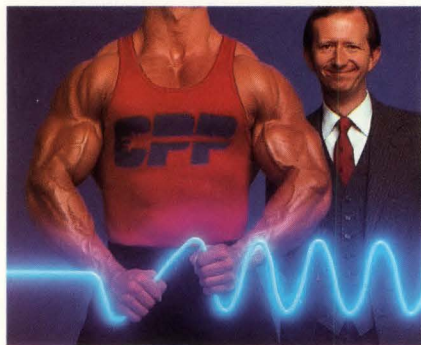
SOUTHEAST

Orlando, FL 32804
600 Courtland St.
305/629-9222

Atlanta, GA 30303
225 Peachtree St.
404/681-3810

General Employment Enterprises, Inc.
Corporate Offices 150 S. Wacker Dr. Chicago, IL 60606
Listed on American Stock Exchange

Put CPP between you and power problems.



Computer Power Products is a major supplier of Power Conditioners and UPS Systems from 1 KVA to 1000 KVA. Our products include:

- RUPS® Rotary UPS
- Diesel Backup UPS
- Power Conditioners
- Load Isolators
- Frequency Changers
- Power Distribution
- Line Regulators

For information, call
TOLL FREE 1-800-421-6102
or 1-213-277-6937 or write
Computer Power Products
227 East Compton Blvd.
Gardena, CA 90248

Send me your new Power Line
Brochure

Name _____
Company _____
Title _____
Street _____
City _____
St _____ Zip _____



A Division of Sweinhardt Electric Co., Inc.

CIRCLE 108

ADVERTISER INDEX

Abbott Langer & Assoc.	199	Inmac	4
Acme Visible Records	201	Innovative Software	124-125
ADDS	179	Intel Systems	107
ADR	1	ITT Courier	79
AGS Management Systems	76	K/W Control Systems, Inc.	167
American Hoechst Corp.	153	Land Berlin	168
American Software Corp.	51	Lanier Business Products	186-187
AT&T Communications	93	Leading Edge	Cover 3
AT&T Information Systems/Data		Lear Siegler, Inc.	133
Products	12-13	Lee Data	39
AT&T Information Systems/System		Liebert Corp.	36-37
85	118-119		
AT&T Technologies	170		
Battelle	123	3M Data Recording Products	40-41
Bell & Howell	73	3M Static Control Systems	83
Boole & Babbage, Inc.	145	Madic	121
The Bridge, Inc.	65	Manager Software Products, Inc.	116
Burroughs Corp.	47	Manpower, Inc.	171
		Manufacturing Software Systems	209
Cambridge Systems	207	Mathematica Products Group	113
CGA Software Products Group	48-49	The Mega Group	143
CIE Systems/DSD	129	Micom Systems, Inc.	Cover 4
CIE Terminals	45	Microcom, Inc.	151
Cincom Systems, Inc.	110-111	Microstuf, Inc.	11
Compaq Computer Corp.	Cover 2	Mitchell Management Systems, Inc.	6, 210
Computer Associates	66-67, 104-105	Morino Associates, Inc.	56-57, 100-101
Computer Power, Inc.	120	MPL Power Systems	208
Computer Power Products	214		
Comshare, Inc.	169	National Product Marketing	33
Continental Resources, Inc.	63	NBI, Inc.	184-185
Cullinet Software	141	NCR Comten, Inc.	29
Cyborg Systems, Inc.	43	Network SystemCorp.	135
		Nexus Associates	212*
		Northern Telecom, Inc.	26-27
Datacover, Inc.	208		
Data Design Associates	109	On-Line People, Inc.	211*
Davox Communications Corp.	155	Otrona	165
D&B Computing Services	15	Oxford Software Corp.	59
DBV	195		
Decision Data Computer Corp.	25	Pitney Bowes	177
Deltak	69	Power Systems & Controls	157
Digital Communications Assoc.	20-21, 74-75	Prime Computer, Inc.	30-31
Digital Equipment Corp.	3	Princess Cruises	131
Digital Products, Inc.	204		
Direct Aid	205	Signal Technology	19
DJC Corp.	122	Software AG	97, 99
DunsPlus	17	Sola	182
Dylakor	108	SPSS, Inc.	7
		Sterling Software Marketing	147
Epson America, Inc.	85		
Excelsior/Intech	106	Tact Technology	46
Execucom Systems Corp.	114-115	Tektronix/I.D.G	81
		TeleVideo Systems	60-61
General Employment Enterprises, Inc.	213*	TeleVideo Terminals	71
Genesys Software Systems	103	Telex Computer Products	23
Global-Turnkey Systems	193	Texas Instruments	197
Greyhound Computer Leasing Co.	163	Tominy	55
Group Operations, Inc.	112	Top Down Systems	210
		TransNet Corp.	205
Harris Corp.	188-189	TSI International	190
Hewlett-Packard/Office auto. div.	180-181		
		Uccel/SSD	117
IBM Corp.	136-137		
IBM Direct	204	Ven-Tel Corp.	5
IBM-ISG/D.P. Professional Software ..	52-53	Visual Computer	8-9
IBM-ISG/Service (Small Systems)	77		
Illbruck/usa	6	Wabash DataTech	174
Inflight Services, Inc.	86		
Information Builders, Inc.	35		

*Regional Ad

INFLUENCE MANAGEMENT

How do you get things done? Not by yourself, unless you work under very unusual conditions. You need others, and you may "manage" them in any number of ways, according to the demands of the situation and your own style. But whatever that style has been, chances are that it's subtly changing as the balance of power between management and the workforce continues to shift.

The new emphasis on technology and employee participation in management decision-making is causing confusion and conflicts at all levels. The traditional hierarchical management model of planning, leading, organizing, and controlling is increasingly less effective in today's work world. Orders and decisions no longer come straight from the top.

Don't lose hope—there are ways of coping with the new demands and challenges. The Forum Corp., headquartered in Boston, has come up with an alternative in its Influence training program. Forum has published a report entitled *Influence: Building, Using, Sustaining* on the findings of a six-year research project. The report concludes that the skills of influence, "long thought to be associated with personality, in fact comprise a process that involves analytical and logical behaviors and creativity, as well as good interpersonal skills."

The management consultancy studied 4,000 managers at more than 500 organizations, analyzing the behaviors that distinguish those who manage others successfully from those who don't. Twenty-three specific "practices" were identified as typical management behaviors of successful bosses. These behaviors include skills such as "being consistent

in communicating priorities," "seeking creative ways to resolve conflicts," and "striving to set team or group goals as well as individual goals." The study concludes that managers who succeed in influence situations tend to recognize that:

- Problems should be anticipated and mutually solved by professionals, rather than reacted to on a daily basis.
- Decisions should be made through collaboration, not by a single authority.
- Relationships should be based on trust, rather than loyalty, obedience, or authority.

The Forum Corp.'s Influence program was designed to help managers learn to cope with the changing corporate structure, the shift to a new attitude that recognizes that communication and sharing of power can give subordinates a constructive sense of involvement, commitment, creativity,

and motivation. To find out more about influence management, *Computer Decisions* spoke to Jane Carroll Jackson, vice president of management development and supervisory markets for Forum.

Question: What led to the development of Forum's Influence program?

Answer: As management consultants, it's critical for us to keep on top of what's happening in organizations. In the late 1970s, it became clear that employees were beginning to think differently about what they wanted, what the organization wanted, and how things were going to get done. One of the key changes we noted was that some managers were spending a great deal of time getting tasks accomplished through people who weren't necessarily their subordinates.

This realization stimulated the creation of Forum's research project, which ultimately led to the identi-



Jane Carroll Jackson, vice president of management development at Forum Corp. (Boston), believes that influence management is essential in today's fast-changing work world. "By using the influencing process," she explains, "decisions are made by the group through consensus. Problems are anticipated and solved through collaboration. And relationships are built on trust."

YOUR CAREER

fication of the 23 specific practices that form the basis of our Influence management program. We were interested in differentiating successful performers—those who were able to achieve goals through their management of others—from mediocre performers.

Q: Are the traditional management skills still best for some organizations?

A: There are some very traditional organizations out there, but we have found that they, too, are beginning to break the mold. There's a saying that's relevant here: "That sound you hear is the pyramid cracking." It refers to the old hierarchical model, which isn't falling down but is certainly undergoing enormous changes. The new pattern of management to accommodate these changes isn't meant to supersede the old pattern but to be used in conjunction with it.

Q: But this means that people have to be able to change. Aren't some employees resistant to change?

A: It's true that you have to change what you do as well as how you look at the management process. You have to develop a different perspective before you can affect the behavior of others. Nobody likes change.

Employees are also increasingly unwilling to put up with authoritarian leadership. Today, many kinds of decisions are being made by people who aren't in top management. Of course, this, too, represents a change.

Q: What kinds of decisions are being made at lower levels?

A: For example, new-product decisions, marketing decisions, matters concerning how to better serve customers—there's also a whole

group of issues that involve developing systems and making the company more productive. Here, decisions aren't necessarily coming from the chairman anymore. Today, about 70 percent of the interactions of corporate bosses aren't necessarily with their subordinates. They spend a lot of time and effort trying to get things done through others whom they don't directly control. This requires some radical changes in attitude and behavior.

Naturally, individuals who tend to be more creative and open to new ideas find it much easier to accept a concept like influence management. Those who are more closed, who may be grounded in organizational discipline, are likely to say, "I do everything by the book. It's worked in the past, so why change?" These executives need to understand that even if a certain management style has worked for them for the past 10 years, they are going to have to manage differently if the corporation is going to work effectively, compete, and survive.

Q: What about the 23 influence-management practices that Forum has identified as crucial to effectively accomplishing organizational tasks and coping with this ambiguity?

A: These practices are discrete behaviors that tend to fall into clusters of skills. The specific patterns of behavior that we identified from the study fall into three major categories: building influence, using influence, and sustaining influence.

To manage effectively, you must first *build* influence. This involves three major components. First, you need to formulate reliable ground rules. The reason for this is that when you don't have the hierarchy to define roles—what people are supposed to do and how they should do it—you have to create a framework. Good influencers make sure that employees understand the roles they are playing, where they fit, and what they are doing. The second component involves acting as a catalyst. This means that you must get colleagues to communicate with one another. You have to provide data and make sure that there is that vital feedback loop.

Third, you must be perceived as supportive and helpful to others.

Once you've built a structure, a way in which employees can work together, you must *use* influence. The three components of this category are (1) getting people to try on new ideas; (2) influencing them to work through those alternatives in a way that will produce good decisions; and (3) being able to share power in the interest of the overall goal. That's one of the hardest tasks to accomplish. Sharing power means using the unique talents of others and capitalizing on them to make high-quality decisions after a thorough examination of a wide variety of options.

The third part of influence management is sustaining influence. It's the glue that holds the process together. This category also consists of three components. First, you have to gain consensus. This doesn't mean that you haven't been gaining it all along, but at this point it is critical to get everyone to agree on and commit themselves to ideas and decisions. Second, you must demonstrate and encourage openness and flexibility about change. Third—and this is the killer—you must establish mutual trust within the network.

The output, or benefit, of the building stage is faster, more efficient startup, less time wasted, and fewer false starts. The output of using influence is more creative, higher-quality decisions. And the output of the sustaining component is implementing the work as planned.

In influence management, employee involvement is an ongoing arrangement—it's forever. And it's not just a matter of being nice to people, having good interpersonal skills. It's much more. You need many other skills to make management work today. Influencing can be an unbelievably powerful tool, and more organizations—even conservative ones, like banks and investment houses—are beginning to realize this. □

To find out more about Forum Corp.'s Influence training seminars, contact Cass Olsen, Forum Corp., 84 State St., Boston, MA 02109, (617) 523-7300.

"Sharing power means using others' unique talents and capitalizing on them." —Jackson, Forum Corp.

THE GREAT UNKNOWN

The Leading Edge
Personal Color Computer.
At only \$2,995 standard,
it's the great new color
PC that everybody is just
starting to hear about.

It's fully covered by a full
one-year warranty
backed by a nationwide
network of service
centers, and a lifetime
HELP HOTLINE
800-343-6857

It's far faster than the
IBM PC (50%), and more
powerful (256K standard,
expandable to 640K).
Comes with dual 5 1/4"
disk drives; (also available
10 Megabyte hard disk).

It's compatible with
industry standard soft-
ware (like Lotus 1-2-3,
Leading Edge™ Word
Processing, dBASE II,
Nutshell,™ etc.), and
comes with MS DOS and
GW Basic to get you up
and running instantly.

THE LEADING EDGE PERSONAL COLOR COMPUTER, ONLY \$2,995. STANDARD WITH COLOR MONITOR, KEYBOARD, CPU WITH 256K, PARALLEL PORT, SERIAL PORT AND SOFTWARE TO GET YOU RUNNING.

LEADING EDGE PC DIVISION, 225 TURNPIKE STREET, CANTON, MA 02021, 800-343-6833, (617) 828-8150

STOP!

Don't put in more lines for your terminals.

Put more on the lines you already have.

Are you installing new terminals faster than you can string new communications lines for them? Don't bother to put in more lines. Chances are that your existing wires can carry several times as much data as they do now — with a little help.

The INSTAMUX470, one of the components of MICOM's INSTANET™ "instant" local network, can give them the help they need by providing:

Local Multiplexing

of up to eight asynchronous terminals on the same double twisted-pairs of wires conventionally used to support only a single terminal or telephone.

Data Rates to 19,200 bps

Each terminal operates as if it has its own dedicated 19,200 bps line to the computer or data PABX, and all terminals can operate simultaneously — without interference.

Integral Line Driver

To eliminate the need for modems or line drivers for each individual terminal.

No Transmission Delay

Unlike regular multiplexors, the INSTAMUX is designed specifically for in-house use. As a result, it doesn't introduce transmission delays of any kind, and the multiplexed system's response "feels" the same to the terminal operator.

And for users of MICOM's INSTANET Local Networks, there's still another advantage: INSTAMUX is available as an integral plug-in module for the Micro600 Data PABX.

What's more, INSTAMUX costs less — *much* less — than the line drivers you'd need if each terminal had its own set of wires.

Don't get strung out. Call or send today for literature describing the INSTAMUX470 and its applications.



Faced with stringing miles of wire for new terminal clusters?



INSTAMUX™ brings speedy relief from that local networking headache.

MICOM®

MICOM Systems, Inc. • 20151 Nordhoff Street • Chatsworth, CA 91311 • Telephone (805) 583-8600 • TWX 910/494-4910
Regional Sales/Service • Atlanta, GA • (404) 435-2999 • Boston, MA • (617) 527-4010 • Chicago, IL • (312) 964-0551
Dallas, TX • (214) 258-0774 • San Francisco • (415) 327-0890 • St. Louis, MO • (314) 576-7626 • Teaneck, NJ • (201) 836-4000
MICOM-Borer Ltd. • Reading RG20JT, England • (0734) 866801 • Micom Europe • Newbury RG13JU, England • (0635) 832441

For literature please call: (800) "MICOM U.S."

AVAILABLE NOW FROM THESE STOCKING REPS... AK: Anchorage (907) 561-1776 / Juneau (907) 789-4101 • AL: (800) 327-6600 • AR: (214) 620-1551 • AZ: (602) 994-5400
CA: Anaheim (714) 635-7600 / Lodi (209) 334-1961 / San Diego (619) 565-1557 / San Jose (408) 298-7290 • CO: Denver (303) 777-8070 • CT: (617) 235-5520 • DE: (609) 779-0200
FL: (800) 432-4480 • GA: (800) 327-6600 • HI: (808) 537-9758 • IA: (402) 895-5850 • ID: (801) 466-6522 • IL: (312) 255-4820 • IN: (317) 846-2591 • KS: (816) 252-3700
KY: (502) 228-5401 • LA: (800) 327-6600 • MA: (617) 235-5520 • MD: (301) 340-0600 • ME: (617) 235-5520 • MI: (313) 588-2300 • MN: (612) 425-4455
MO: Independence (816) 252-3700 / St. Louis (314) 721-0401 • MS: (800) 327-6600 • MT: (801) 466-6522 • NC: (800) 327-6600 • ND: (612) 425-4455 • NE: (402) 895-5850
NH: (617) 235-5520 • NJ: North (201) 589-2353 / South (609) 779-0200 • NM: Albuquerque (505) 292-1212 / Las Cruces (505) 524-9693 • NV: (714) 635-7600
NY: Albany (518) 459-5891 / Buffalo (716) 662-4568 / New York City (201) 569-2353 / Rochester (716) 424-7492 / Syracuse (315) 455-5841 • OH: Cleveland (216) 524-5930 / Dayton (513) 434-7500 • OK: (405) 478-5000 • OR: (503) 224-3145 • PA: East (609) 779-0200 / West (412) 892-2953 • RI: (617) 235-5520 • SC: (800) 327-6600
SD: (612) 425-4455 • TN: (800) 327-6600 • TX: Dallas (214) 620-1551 / Austin (512) 327-8600 / El Paso (915) 542-1762 / Houston (713) 353-7728 • UT: (801) 466-6522
VA: North (301) 340-0600 / South (800) 327-6600 • VT: (617) 235-5520 • WA: (206) 454-2383 • WI: (414) 784-9379 • WV: East (301) 340-0600 / West (412) 892-2953
WY: (303) 777-8070 • Washington, DC: (301) 340-0600 • Puerto Rico: (809) 753-1771

MD003