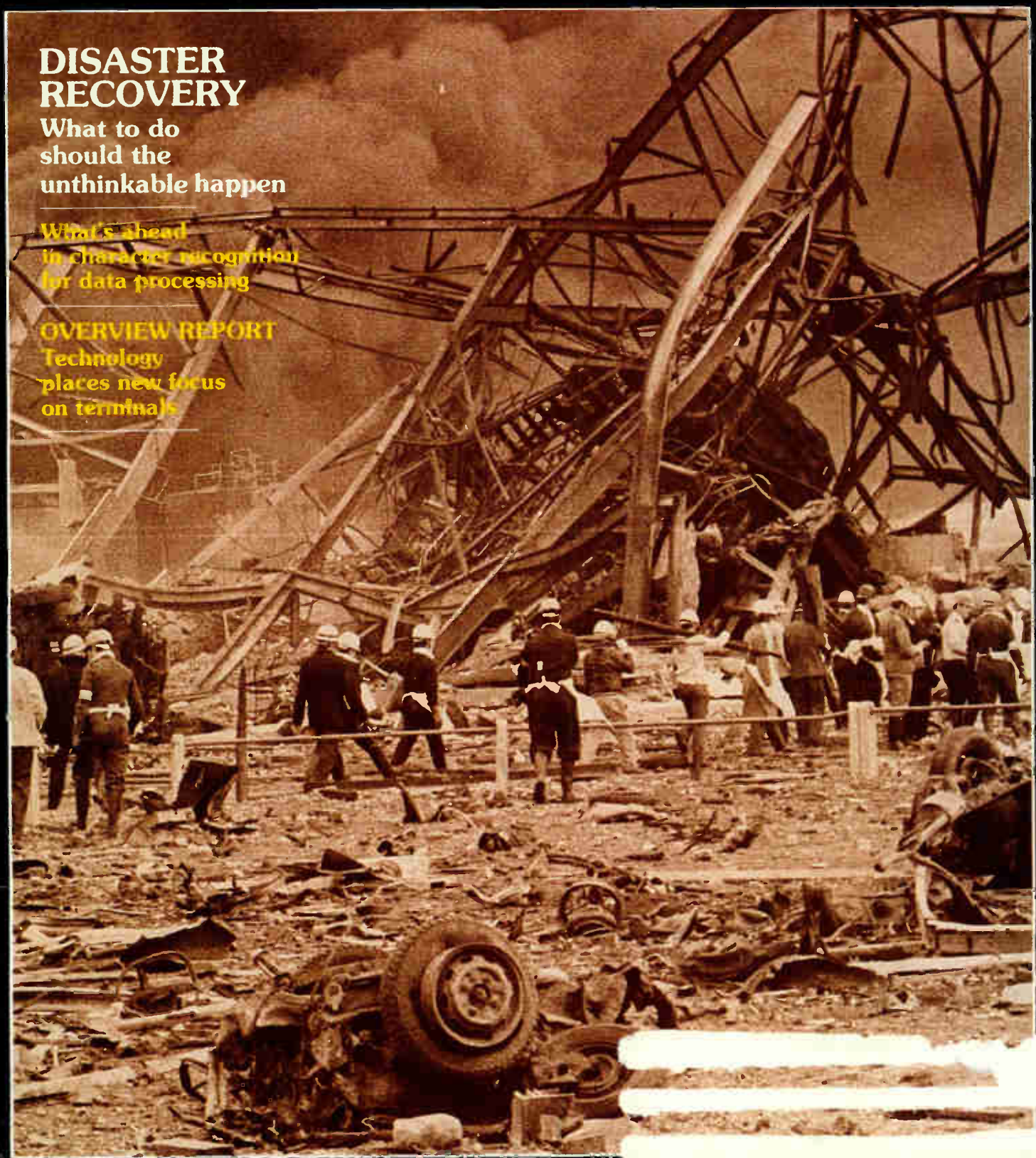
CANADIAN
DATASYSTEMS
AUGUST 1981



DISASTER RECOVERY
What to do should the unthinkable happen

What's ahead in character recognition for data processing

OVERVIEW REPORT
Technology places new focus on terminals

"We have used ten XT 100 Terminals, and we are recommending them to all our existing and future Word 11 clients."

Mr. Ron Dutton
General Manager,
North West Computer Services

"We are pleased with the XT 100 Terminals, as they are fully compatible with RSTS on our 11/70."

Mr. Logan Ragan
Manager, Computer Services
Bridge Brand Food Services Ltd.

"We have been extremely happy with the performance of our sixteen XT 100 Terminals. They are fully compatible with RSX 11M and IAS, on our PDP 11/34-40 and PDP 11/70."

Mr. Lorne Sunley
Operations Manager,
Yamaha Canada Music Ltd.

"The XT 100 Terminal is 100% compatible with our Dec systems, and it allows IST to have better client pricing in new offerings."

Mr. Gerard Briere
Director of Marketing,
IST

AND THAT'S JUST THE BEGINNING!

By using Lanpar's financial power, we leave you free to use your capital in other areas. Lanpar can custom-tailor short term rental and lease-purchase plans to suit your needs. With low, long term rates, and one day cancellations, Lanpar makes it easy.

Once you have put your Lanpar XT 100 Terminal into production, we'll make sure it stays in production. Only Lanpar has Service Power.® Service Power® offers you 14 service centres located all across Canada, and field engineers who will be on site within 2 to 4 hours, on average, should your terminal need servicing.

Lanpar has the technological expertise to customize any of its terminals. Our R & D Team has an impressive record of successful adaptations: Over 1000 custom terminals last year alone.

With Lanpar's financial power, lease-purchase plans, Service Power® and technological expertise, it's easy to see why at Lanpar, terminals are just the beginning!

LANPAR

AT LANPAR, TERMINALS ARE JUST THE BEGINNING.

Lanpar Limited:
Montreal (514) 731-7421, Quebec City (418) 653-1345, Ottawa (613) 238-3966, Toronto East (416) 495-9661 Toronto West & Mississauga (416) 494-8031, Burlington (416) 681-2442, Winnipeg (204) 632-4349, Edmonton (403) 453-5946, Calgary (403) 253-8866, Vancouver (604) 689-1516. Service available from Service Centres located in 14 major cities across Canada.

AT LANPAR, RENTALS ARE JUST THE BEGINNING.

At Lanpar we custom-tailor short term rental and lease-purchase plans to suit your needs. Our "No Stranglehold Lease" offers you low, long term rates, yet with one day cancellations. Most plans offer you generous credits towards purchase. Our lease rates can be adapted to include service, installation and delivery. And that's just the beginning!

Once you have put your Lanpar terminal into production, we'll make sure it stays in production. Only Lanpar offers Service Power™. With service centres located nation-wide, we can have an experienced field engineer on site in an average of 2 to 4 hours. Our meantime to repair (MTTR) averages ½ hour. So you can feel at ease even when setting up your own coast-to-coast terminal network.

Lanpar has established an Application Group to help you interface your terminal with different systems. Our R & D team has an impressive record of successful customizations: Over 1,000 custom terminals last year alone.

You can also look to Lanpar for custom-made equipment, options, cables, modems and switches to help you increase the productivity of your particular unit.

And, by using Lanpar's financial power, we leave you free to use your capital in other areas.

So, by having one company offer you flexibility, service expertise, R & D, Application Support and financial strength, it's easy to see why at Lanpar, rentals are just the beginning!

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Service available from Service Centres located in 14 major cities across Canada

CANADIAN
DATASYSTEMS
AUGUST, 1981 VOLUME 13, NUMBER 8

COVER:
When a business faces as dramatic a disaster as this plant, it need not be all over. Data processing activities can resume if the proper preparations are made. See feature report p. 28.

NEXT MONTH:
New offerings in retail POS automation give users new choices. A feature report will assess current activity, while another major report will review 'computer vision.'

DEPARTMENTS

Data Communications Managers:

Here's a sample of what Dataswitch can do for you ...

Develcon's Dataswitch is an intelligent central switching system which will provide network efficiency for your computer service installation.

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- Over 2,000 subscribers (terminals, ports or modems)
- Over 1,000 simultaneous connections
- 64 classes of service
- 31 programmable messages
- 64 account names

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- Speed — 2.4 Mbps (total)
  — Autobaud to 19.2 Kbps (individual)
- Method — ASTDM

Interface
- RS—232—C
- RS—366—C
- RS—422—C
- 4-wire LDDS

Command Language
- Format — English
- Size — 31 primary commands
  — 29 sub commands

Access Control
- Computer controlled, manually assigned
  — Via parameters
  — Via restrictions
  — Via accounting
  — Via priority

Flexible Connection
Full Statistics Output

Develcon ELECTRONICS

Reader Service Card Number 115

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Company _____

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AUGUST, 1981
VOLUME 13, NUMBER 8

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LETTERS

which praise, castigate, comment and inquire

More on modelling

We read with interest the article "Computer Modelling Regains Popularity" in the April issue.

The article mentions MPS-F as "apparently the only Canadian (modelling) system" of the many available in Canada. Consumers' Gas is heavily involved in computer modelling, using a package called Genmod, which we developed ourselves. This package is used for a wide variety of applications including financial modelling, work measurement, feasibility studies, sales statistics, and forecasting.

Genmod has been available for a number of years, in both Canada and the US. It is currently in use by a number of American public utility companies, though it is in no way "specialized" for utility applications.

The system provides for flexible, user defined report layout and calculations, automatic calculation sequencing, automatic self documentation, and communication among separate models.

We feel our system compares well with all other modelling packages we have seen, Canadian or otherwise.

Barry G. Clegg
Robert Siddall
Systems Planning & Development
Consumers' Gas
Toronto

Radiation issue

Reference is made to your editorial "Radiation Issue" page 27 April, 1981.

Your point is well made that manufacturers' are ignoring the issue of emission from CRT's, maybe hoping it will go away. The contrary is known to happen based on the human assumption that it must be dangerous if it cannot be proven. Information is really what is needed here.

The source of emissions are the high voltage components operating above 5,000 volts and primarily those above 15,000 volts. These tend to act as transmitters and may give off wave lengths past the blue side of the spectrum or so-called soft x-rays which can be contained with appropriate screening. Radiation is a bad word, as it creates mind association with disaster. Your car is equipped with a "radiator" radiating heat away from your engine for your benefit and safety.

If radiation still bothers you, look at a screen without radiation such as COM or microfiche. Microfiche, although created by CRT tube and photographed, can be widely distributed at a fraction of the cost to on-line CRT's. There is no keyboard fear involved either and it represents an excellent supplement for high-quality fast data distribution at low costs with no risk factors such as the above. Why not use more of it? Most on-line data is not instant, anyhow, it's yesterday's data!

Egan Tancre
Sr. Systems Consultant
MICR Systems Ltd.
Toronto

Radiation info program

Re: your editorial in the April issue, "It's time to get serious about the radiation issue," and your suggestion that the data processing industry address itself to the problem via a general information program.

My firm established and operates the *Canadian Microwave Cooking Bureau*, an industry group that was set up to provide factual information about microwave ovens, particularly in regards to the safety of these products.

For many years the popular press has been recycling many inaccurate articles and myths about microwave energy re: microwave ovens. The result was that industry sales were hurting. We met this challenge by mounting a comprehensive information program that has generated over $3 million worth of positive coverage—newspapers, magazines, broadcast—over the life of the program. For a few years the industry did not support the idea and then sales lagged. In late 1979 the program was reinstituted. The result was that in 1979 industry sales of microwave ovens increased by 47 percent after falling behind projections in 1978. The CMCB program in combination with the industries brand marketing thrusts accomplished this dramatic increase in sales.

The data processing industry is facing many of the same problems that the microwave oven industry has had to face up to. Will people refuse to operate terminals because they fear they will be "zapped"? Will governments require unnecessary and expensive technical changes in terminal designs? Will the data processing industry have to spend invaluable time to deal with misinformed critics and "fear" from the general public?

Alan Surpin
Communications-Plus Inc.
Toronto

Not knowing what tomorrow will bring, makes the choice easier today:

CENTRONICS® PRINTERS

Centronics Model 6080 and Model 6081 Band printers are outstanding examples of Centronics engineering. Both models feature high throughput, greater efficiency and the superior print quality of fully formed characters, along with the reliability and dependability of Centronics—long a leader in printer technology and printer service.

Model 6080 incorporates the highest levels of band printer technology and for the first time allows a 750 lpm printer to operate at lower noise levels than the average office typewriter.

The 6080 delivers throughput at speeds of up to 750 lpm, making it ideal for distributed processing applications and use in word processing. It also offers a wide selection of character bands and sizes. (48, 64, 96 or 128).

No matter what system you are presently using; IBM, DEC, Burroughs, Univac, Honeywell, NCR, etc. the Centronics 6080 or 6081 will complement them all. For rent, lease or outright purchase - contact CES Ltd. It's an easy choice to make.

Model 6080 featured above.
Model 6081 to the right.

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Reader Service Card Number 108

WHAT'S NEW

Datapoint 1550

Harris 300

CD Nova M-80

COMPUTERS

Enhanced business unit

The Product: business computer
Supplier: Datapoint
Features: The Model 1550 small business computer is an enhanced version of the firm's 1500 model, but offers a faster Z80A processor, more memory, and wider disc and diskette configurations.

By using a concurrent operations feature, the 1550 can simultaneously serve as a standalone computer and as a component in a telecommunications network. The unit can be configured with double-density diskette drives, in either single or double-sided versions; this allows a choice of one or two-megabyte drives. The 1550 supports up to three extension drives, allowing up to 8 megabytes of storage on one unit.

A 1550 with 64K of memory can support a Datapoint 9310/9320 10-megabyte cartridge drive. The computer can be ordered with either 32K, 64K or 96K of core memory.

Effective August 1981, Datapoint Canada Inc. will take over sales and distribution of Datapoint products, replacing an earlier agreement with TRW Data Systems.

Reader Service Card Number 1

Two models offered

The Product: cassette computer
Supplier: CD Nova Ltd.
Features: The Memodyne M80 is a general-purpose, Z80-based computer coupled with a high-speed digital cassette drive. The standard model includes modem and terminal RS232C and TTY current-loop serial ports, and supports 9600 baud communication. Memory is non-volatile. The M80 is available in two models—either as a single unit or as an OEM panel-mounted module.

Reader Service Card Number 2

Supports many uses

The Product: minicomputer
Supplier: Harris Computer Systems
Features: The Harris 300 48-bit super-minicomputer is designed for scientific, engineering, educational and other sophisticated applications. Real memory is two million bytes, virtual memory is more than 12 million, and an optional unit supports floating point operations.

Features include 80-megabyte Winchester-type disc storage, streaming tape drive storage, and the capacity to handle 48 interactive terminals. Most standard languages are offered, and communications packages emulate common protocols.

The H300, using the Vulcan operating system, supports concurrent multistream, batch processing, interactive time-sharing, data base management, RJE, transaction processing and real-time operations.

Reader Service Card Number 3

TERMINALS

High-quality voice

The Product: voice output terminal
Supplier: Centigram Corp.
Features: The LISA (Logically Integrated Speech Annunciator) is a voice output terminal whose digital speech is said to be almost indistinguishable from recorded analog speech. Its low bit rate (4800 bps compared with the 56,000 bps of other digital methods) is said to reduce the cost of storage and transmission lines. LISA's voice technology is derived from two existing methods—linear predictive coding and waveform analysis—combining the advantages of each.

The terminal interfaces any computer, and can be hooked into the telephone system. The 10-in. board is packaged in a terminal about the size of a standard dictating machine.

Reader Service Card Number 4

Displays 132 columns

The Product: terminals
Supplier: Cail Systems Ltd.
Features: The Concept 108 and Concept APL/8 video display terminals offer the following features: eight pages of display memory; 80 x 132 character display; non-volatile memory; windows and status lines for each attached device/line; buffer overflow control; CTS/RTS protocol for RS232 lines; and three communications ports.

Reader Service Card Number 5

CRT price cut

The Product: CRT terminal
Supplier: Canadian General Electric
Features: Viewpoint, an ASCII terminal manufactured by Applied Digital Data Systems, is said to be priced 30 per cent below other terminals. Its low price has been achieved by reducing the logic electronics to eleven chips and by offering one standard configuration.

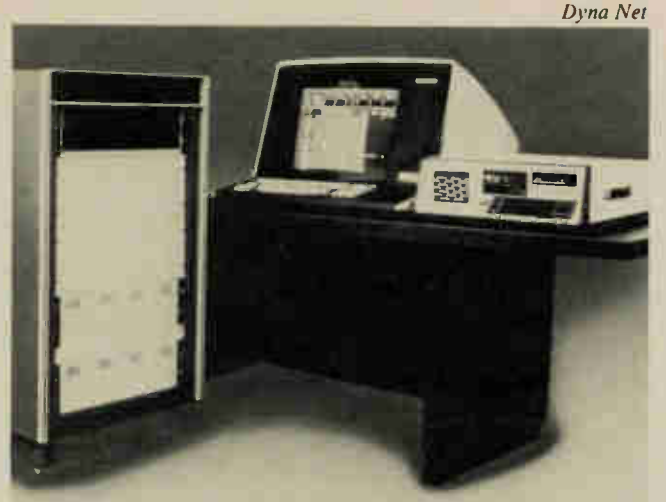
Reader Service Card Number 6

WHAT'S NEW

Centronics 150

VA 3413

Dyna Net



Quantec 2800

PRINTERS/PLOTTERS

For OEM users

The Product: printer
Supplier: Centronics Canada Inc.
Features: The Model 150 desk-top printer is available to OEMs. It offers: 150 cps speed, three-way paper handling, compressed print, bi-directional logic-seeking printing, ribbon cassette, forward tear bar, visual paper supply indicator, and adjustable snap-on tractors.

Reader Service Card Number 7

Speed from micros

The Product: plotter
Supplier: Nicolet Instrument Canada Inc.
Features: The Nicolet Zeta model 3620 (36in.) and 5400 (54in.) digital pen plotters use 16-bit microprocessors to achieve high speed and resolution. They also offer 4G acceleration for fast character printing.

Features include: dual 1K byte buffer memory, arc generator and character shading to minimize mainframe overhead and data transmission times, windowing and inverse windowing, and single vector operation.

Reader Service Card Number 8

DATA ENTRY

Handles 11 EPROMS

The Product: EPROM programmer
Supplier: Quantec Systems Ltd.
Features: The Z.800 is a portable unit which can program single five-volt NMOS EPROMS without the use of personality modules or additional hardware. An EPROM type is selected by a key stroke, then the unit accommodates the device pin-out and algorithm under software control.

The Z.800 is currently programmed for 11 different EPROMS, but software updates will handle future types.

Reader Service Card Number 9

Converts analog

The Product: Analog/digital converter
Supplier: Memodyne Corp.
Features: The M80/DAS data acquisition, processing and storage system accepts eight analog inputs, converts them to a 12-bit binary format plus a bit sign, and stores them on Philips cassettes in ANSI/ECMA formatted tapes. The unit is based on a Z80 microprocessor.

Reader Service Card Number 10

No cables needed

The Product: data entry system
Supplier: MSI Data Corp.
Features: The MSI Route Manager system is designed to give salespeople on-the-road sales documentation, especially for those in such industries as beverage, bakery and snack foods.

The system comprises a hand-held, user-programmable MSI/88 terminal which has a storage capacity of 32,000 bytes; an optical interface which links terminals to printers or communications devices via light waves, eliminating the need for cables; a heavy-duty dot matrix printer which produces three copies without a ribbon and prints a typical 25-item invoice in 50 seconds; and a TM700 terminal multiplexer which collects data from 32 route units for high-speed transmission to a central computer.

Reader Service Card Number 11

DATA COMM

Central control

The Product: network control system
Supplier: Associated Test Equipment Ltd.
Features: DynaNet, produced by Dynatech, is a hardware/software system that gives data communications managers the ability to scan the status of their networks from one point. A color video monitor displays status and traffic activity of any line in the network, and operators may program visual and audible alarms to alert them to malfunctions.

A scratch pad memory is available for each line so the user can store all the information needed for diagnostics and network planning.

Periodic management reports may be generated, and the printer also provides a log of alarms, configuration changes and line interruptions.

Reader Service Card Number 12

Government-approved

The Product: acoustic coupler
Supplier: Canadian General Electric
Features: The Racal-Vadic VA 3413 is said to be the only 1200-baud acoustic coupler which has been approved for telephone lines by the Dept. of Communications under its Terminal Attachment Program.

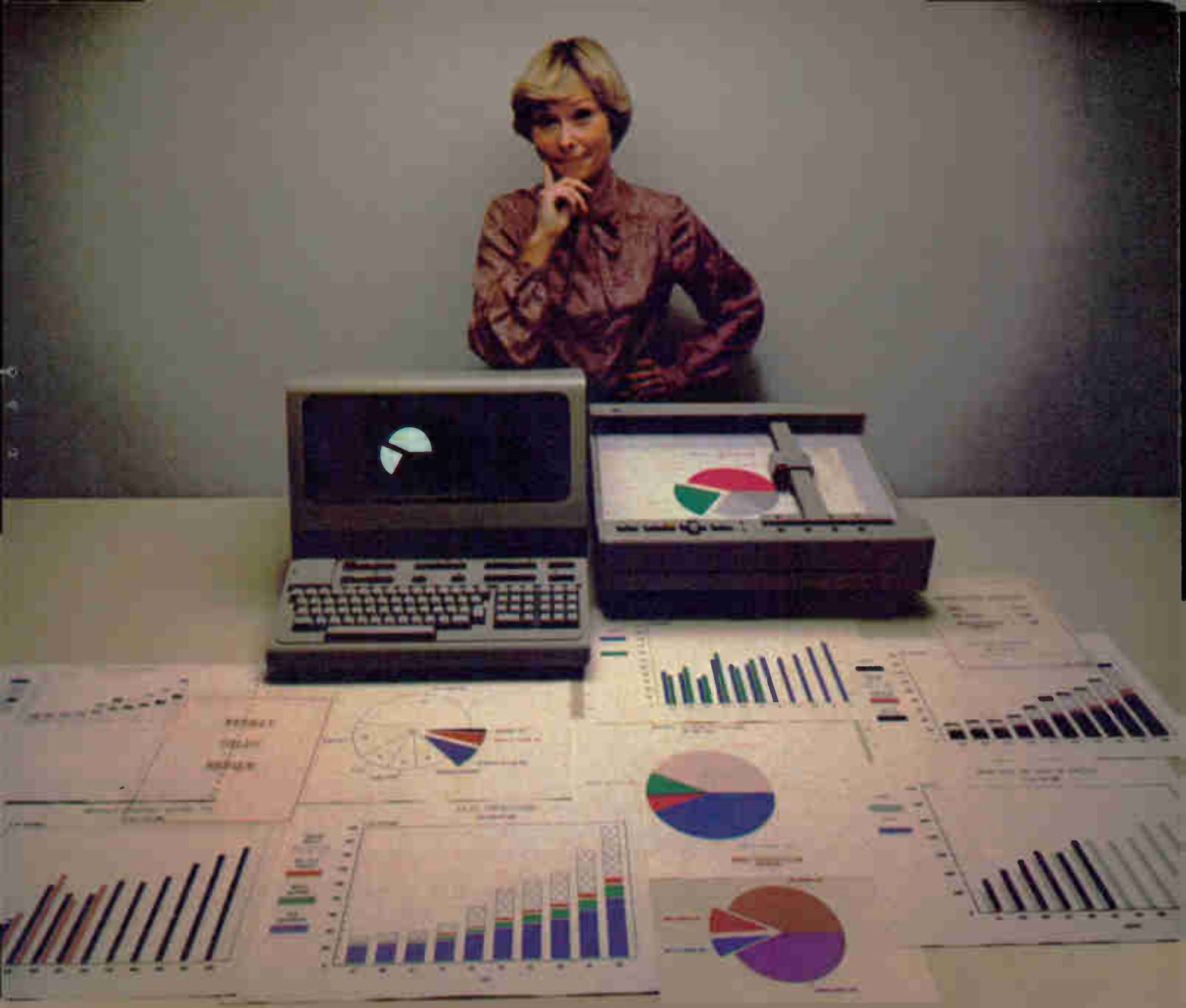
Reader Service Card Number 13

Links Telidon

The Product: modem
Supplier: Gandalf Data Communications Ltd.
Features: The AM1512 modem provides a telecommunications link between a host computer and Telidon terminals. It transmits at 1200 bps and receives at 150 bps over two-wire lines. Care has been taken to eliminate interaction between the transmit and receive channels to ensure accurate performance over the range of signal levels encountered on long distance switched lines.

The transmit channel is compatible with WE-202C, and optional circuitry can convert the asynchronous 150 bps received data to 1200 bps received data.

Reader Service Card Number 14



Not bad for the first day.

This morning, no one in the office knew a thing about making graphs. And now secretaries and managers alike are producing crisp, concise charts and graphs for marketing analysis, industry forecasting and sales presentations. Without writing a single computer program.

Picture your data the way you want it.

The key is a graphics work-station from Hewlett-Packard. Built around our HP 2647A intelligent terminal, it's like putting an entire art department at your staff's fingertips.

Not only can you call up your standard business reports on production performance, sales figures or market trends, but with just a few simple keystrokes, you can turn them into clear and helpful pie charts, line and bar graphs, logarithmic charts, overhead transparencies and more. (It's also easy to tailor to more sophisticated applications.)

Draw your own conclusions.

Invite your secretary along to your nearest HP sales office for a demonstration of our graphics products (we're listed in the White Pages). And bring your company's annual report or other business data—we'll be glad to show you just how professional an amateur artist can be. Or, if you'd like more informatio first, just return the coupon below.

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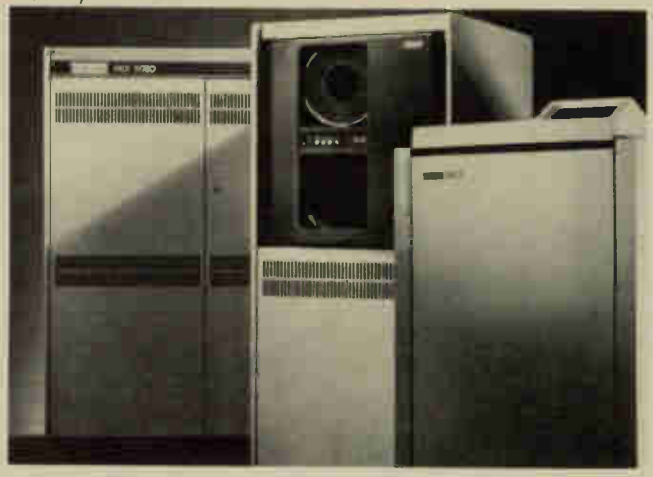
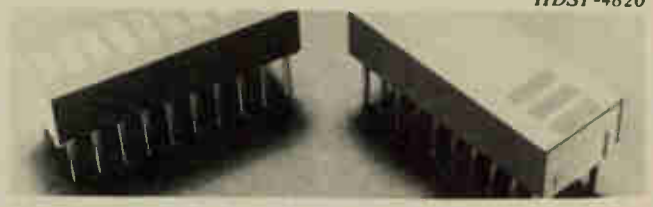
WHAT'S NEW

VAX 11/780 drives



Wabash diskettes

HDSP-4820



COMPONENTS

Controller for DG users

The Product: printer controller
Supplier: Mannesmann Tally Canada
Features: The company's printer controller allows Data General Nova and Eclipse users to interface to Mannesmann Tally serial and line printers. The controller fits into an I/O card slot and requires no software or hardware modification. A self-test capability locates faults to the printer, controller or computer.

Reader Service Card Number 15

Replace 40 chips

The Product: integrated circuits
Supplier: National Semiconductor Corp.
Features: The DP8340 transmitter/encoder and the DP8341 receiver/decoder are said to be the first LSI circuits for equipment using the IBM 3270 information display system standard. These two chips replace the 40 previously needed to perform encoding/decoding functions.

The devices not only save space, but are fast, handling data rates up to 3.5 MHz. They also adapt to generalized high-speed serial transmission over other than coaxial lines, at frequencies higher or lower than the 3270's protocol.

Reader Service Card Number 16

Fastest available

The Product: microprocessor
Supplier: Fairchild Camera and Instrument Corp.
Features: The F9445 bipolar 16-bit microprocessor is said to be the fastest single-chip microprocessor available; it is especially fast for multiplying and dividing. Three speed ranges are available: 16 MHz, 20 MHz and 24 MHz. Register-to-register time for the 24 MHz device is 250 ns.

The component incorporates Fairchild's Isoplanar Integrated Injection Logic technology, making it well suited for high-speed computations in harsh environments.

Reader Service Card Number 17

Brighter than others

The Product: bar graph array
Supplier: Hewlett-Packard (Canada) Ltd.
Features: HP's 10-element bar graph array comes in three models: HDSP-4820 is standard red, HDSP-4830 is high-efficiency red, and HDSP-4840 is yellow. High ambient light problems can be solved by the latter two, and the high-efficiency red is said to be the brightest HER bar graph on the market.

The devices are compatible with other HP front panel products, and the package size is 6.10 mm x 10.16 mm x 25.40 mm.

Reader Service Card Number 18

STORAGE

Supermini storage

The Product: storage peripherals
Supplier: Digital Equipment of Canada Ltd.
Features: A disc drive and tape drive have been introduced for the DEC VAX-11/780 superminicomputer. The RP07 disc drive can store 516M bytes, has an average seek time of 23ms, an average access time of 31.3 ms, and a standard data transfer rate of 1.3M bytes per second (an optional peak rate is 2.2M bytes per second). Using Winchester technology, the drive has nine platters, four heads per recording arm, and two arms per recording surface.

The TU78 tape drive has a capacity of 145M bytes per reel, and a peak transfer rate of 781K bytes per second. It utilizes the Group Coded Recording technique to yield a recording density of 6,250 bpi.

Both units interface to DEC's Massbus for data transfer, and both have provisions for dual access ports.

Reader Service Card Number 19

Protects data

The Product: disc drive
Supplier: Electralert Ltd.
Features: The 7740 eight-inch Winchester disc drive from International Memories Inc. adds a 40M byte drive to the 7000 line of disc drives. All the drives in this series have a safety feature in which the head assembly is automatically retracted when power is shut off or fails. The head touches down in a non-data area, eliminating the problem of lost or destroyed data from too frequent touch-downs in the same place.

Reader Service Card Number 20

Specialized label

The Product: diskette
Supplier: Wabash Tape (Canada) Ltd.
Features: The Wabash 8 in. medical diskette is manufactured in all variations and density formats, and can be used with all major radiological and nuclear medical equipment. It has a special medical label designed for clear recording of patient identification and diagnostic information.

Reader Service Card Number 21

Removable Winchester

The Product: disc drive
Supplier: New World Computer Co.
Features: The Mikro-Disc V is a line of 5¼ in. fixed and removable cartridge drives. The addition of a removable backup cartridge to the drive is said to overcome one of the drawbacks of Winchester units. The fixed/removable package matches industry-standard dimensions for minifloppies and fits in the enclosure of 5¼ in. Winchester drives.

Reader Service Card Number 22

Financial software so advanced that Canadian General Electric wants to keep it a secret.

Canadian General Electric. And over 1,000 other companies in North America.

Their software is so advanced they prefer we only divulge general information. So let's just say that Canadian General Electric uses their McCormack & Dodge Accounts Payable package to analyze vendors, process invoices, and solve the complex disbursement problems of a high-tech electronics company that serves the entire continent and the world.

The rest of the story is public record. In McCormack & Dodge, Canadian General Electric found a vendor with strong support resources strategically placed throughout Canada. A vendor offering complete user service at centers in Montreal, Toronto and Vancouver. Whose client list includes top Canadian companies in virtually all major industries: banking, broadcasting, construction, consumer products, engineering, food and beverage, heavy industry, municipal government, and transportation. Not to mention over 100 of the *Fortune 500* in the U.S.

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The best financial software. The best financial people.

Reader Service Card Number 131

Introducing the most powerful minicomputer ever.

The new Prime 850 multi-stream processor is the most powerful mini system ever made for multi-user environments. It sets a new standard of technological leadership for our family of high performance 32-bit systems.

The Prime 850 has ultra high density MOS memory that stores 64K on a single chip. This new system supports up to 128 interactive user terminals for outstanding cost effectiveness. And it's right at home working simultaneously on such diverse applications as energy development, product analysis and design, office automation, and general business computing.

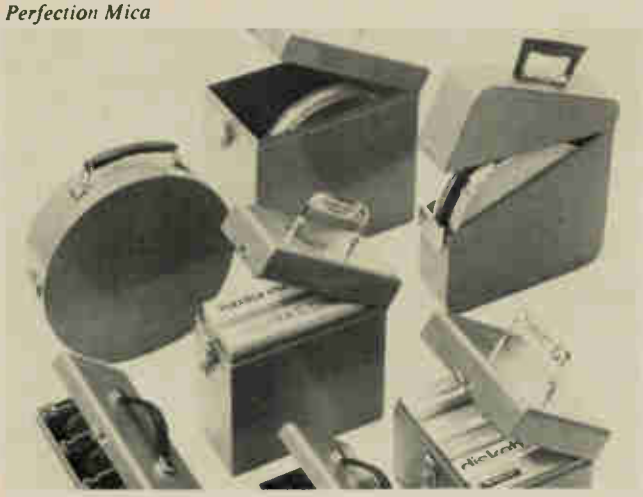
Like all 50 Series systems, the Prime 850 combines power with ease of use. It has 32-bit architecture and virtual memory for speed, efficiency, and economy. Industry standard software for convenient program development and data management. Networking that can extend your system across the office or around the world. And the PRIMOS® operating system that makes the entire 50 Series totally compatible.

In addition to introducing the Prime 850, we've also enhanced the price/performance capabilities of other 50 Series members, including the Prime 250-II and 550-II. To meet the leader, contact the nearest Prime office or write Prime Computer of Canada Limited, 130 Skyway Avenue, Rexdale, Ontario M9W 4Y9, Tel: (416) 675-7870.

PRIME
Computer

Reader Service Card Number 136

Perfection Mica



House of Grids

ACCESSORIES

Packs six tapes

The Product: storage rack
Supplier: Data Packaging Corp.
Features: The Six Pack is a white, plastic storage rack that holds six magnetic tape reels or easy-load cartridges in an upright position. The rack has non-skid rubber bumpers on its bottom to protect surfaces, and is available in cartons of 12.

Reader Service Card Number 23

Canadian-made

The Product: computer furniture
Supplier: ComPro Canadian Computer Products Ltd.
Features: The company has added computer furniture to its product line, and is offering Canadian-manufactured CRT tables in a variety of sizes to suit most applications.

Reader Service Card Number 24

Controls cards or hands

The Product: security system
Supplier: Security Information Systems
Features: The Identimat 5000 microprocessor can control 256 Identimat 200 card reader or Identimat 2000 hand readers, as well as 256 alarm points. The alarms can be used to alert the user to malfunctioning environmental equipment, such as air conditioners.

The 5000 model offers the following features: anti-passback, single use, selective print, an alphanumeric printer which prints in English or French, LED display, recall buffer for more than 1,000 transactions, and cassette tape backup memory.

Reader Service Card Number 25

Shields media

The Product: media storage
Supplier: Perfection Mica Co.
Features: Magnetic Media Preservers are durable metal cases which protect magnetic media from magnetic fields and physical damage. The cases, which can be locked, are available for standard and mini floppies, tape reels, disc packs, cassettes and data cartridges.

Reader Service Card Number 26

Choose paper or film

The Product: design aids
Supplier: The House of Grids
Features: Computer forms design grids are available in vertical spacings of 1/6 in. and ⅛ in. with 10 character-per-inch densities from which to choose. The size of the grids is 12 in. x 18 in., and they are available on paper or stable base film.

All the grids offer numbered print positions, split print position indicators, and standard size indicators for depth of forms.

Reader Service Card Number 27

Keeps out water

The Product: machine covers
Supplier: S/3 Supply Co. Inc.
Features: Heavy-duty vinyl covers are available for the IBM 4300 series computer. They are made to protect the vulnerable areas of the machine from dust and water, such as sprinkler system malfunctions.

Reader Service Card Number 28

TEXT PROCESSING

Provides status reports

The Product: dictation system
Supplier: AES Data Ltd.
Features: The Super-Vision III is an automated central dictation system, designed for users with heavy correspondence or documentation loads, such as hospitals, insurance companies and utilities.

In addition to keeping work flowing, it accumulates data so that supervisors can call up summaries of the amount of dictation handled, location, completion of dictation and performance measurements of personnel and equipment.

Reader Service Card Number 29

Printer added

The Product: word processor
Supplier: Lexitron Corp.
Features: The VT 1201S entry-level word processor combines the company's VT 1201 workstation with a 45 cps daisywheel printer. The printer offers several improvements over the firm's previous models, including easier ribbon cartridge replacement, longer ribbon life, and greater reliability.

A basic system comes with a half-page video display, a 350,000 word single diskette, a typewriter-like keyboard with text editing function keys, and the printer. Such a stand-alone model can be upgraded to higher-performance Lexitron machines on site.

Reader Service Card Number 30

Half or full screen

The Product: word processor
Supplier: Compucentre
Features: The Compuwriter is an entry-level machine, based on the Compucorp 655 series. It provides 30 pages of document storage, a half-page display, and a 25 cps printer which accepts Diablo print wheels.

The unit can be upgraded to other Compucorp 600 systems, and its capabilities can be expanded with optional features, which include a full-page screen, 5500-page document storage, a multilingual dictionary, and a math package.

Processing functions are those provided by the Omega A-level system.

Reader Service Card Number 31

Our basic inventory

Maclean Hunter sells ideas and services. Our basic equipment is our people's talents. Maclean Hunter's 5,000 people have contributed to the success of the company throughout North America and Europe. We are 99% Canadian owned. We are proud that two thirds of our employees own shares in this dynamic communications organization.

We encourage employees to own shares in Maclean Hunter.

We have, in fact, devised plans to help our people acquire shares easily so they can profit by the vigorous growth of the company; for our success is nothing more than the total output of Maclean Hunter people.

We do own presses and TV cameras and trucks and buildings, but to paraphrase a famous advertising man "our basic inventory goes home every night".

People, creating ideas and rendering services, make Maclean Hunter a lively force coast to coast.

We are the largest publisher of magazines serving French-speaking Canada.

We are the largest periodical publisher in B.C.

We radio broadcast in Halifax, Toronto, Ottawa, Kitchener, Chatham, Calgary, and we have TV stations in Calgary, Lethbridge.

We have cable TV systems in Ontario and in U.S. centres.

We print: magazines, books, business forms in plants across North America.

Maclean's, Chatelaine (English and French), Flare, The Financial Post, L'actualité reach two thirds of Canadian minds.

These, and scores of other Maclean Hunter enterprises, depend on the skills and motivation of our employees.

To help enhance a feeling of unity in the entire Maclean Hunter enterprise, with its communications thrust, we have updated our corporate signature to be used by all segments of the organization.

However apt a corporate signature may be, the thing that gives it meaning is the *people* in the organization, and their ideas.

Maclean Hunter

MICROWORLD

Developments in microprocessor technology, applications

Cassette/printer interfaces offered for Sharp pocket unit

The Sharp PC-1211 pocket computer, from Sharp Electronics of Canada, Rexdale, Ont., offers 1.9K of RAM that is programmable through the keyboard or, with addition of the optional CE-121 and CE-122 cassette or cassette/printer interfaces, the user can expand storage by interfacing with a cassette recorder.

The printer option allows making a record of programming, as well as printing out results.

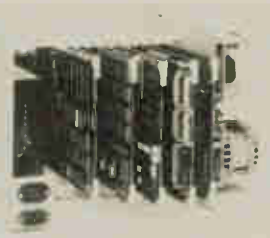
With the use of Basic, the operator has 22 statements and 12 commands at hand, which, in the opinion of the manufacturer, approaches the versatility of some 'conventional' micros on the market. Programs of 60-70 average lines are possible with the PC-1211.

The unit features a program capacity of 1,424 memories with 26 variables. The alpha-numeric keyboard is in the standard 'Qwerty' format, and both characters and numerals appear on the 24-digit dot-matrix liquid crystal display panel.

Reader Service Card Number 32

MicroEngine meets OEM need for portable, custom Pascal

The ME1600 Modular MicroEngine series of microcomputer systems, from Western Digital Corp., Newport Beach, Cal., is intended to meet the needs of system integrators and OEM designers to quickly develop fluent, fully transportable, and customized programs in Pascal for professional, business, and industrial applications.



With Pascal being its 'native language,' according to the manufacturer, Modular MicroEngine eliminates assembly language, interpreters, and the problems of forcing programs and applications into computer architectures that are not efficient for Pascal. Western Digital claims that this unique capability allows execution of Pascal programs up to ten times faster than with other microcomputer systems currently available.

Each of the five boards in an ME1600 micro implements a distinct system function: processing, storage, file management, I/O, and user access to Western Digital's Sentinel/24 bus.

Offered in four modular versions, the basic ME1660 subsystem includes a Pascal processor, a 128K dynamic RAM module, a floppy disc controller, a serial-parallel I/O controller, a boot terminator module, and a 10-slot chassis with 170-watt power supply.

Reader Service Card Number 33

Zilog has plastic DIPs for Z8001, -02 micros

Zilog, Cupertino, Cal., has introduced lower-cost plastic dual-in-line (DIP) package versions of its Z8001 and Z8002 microprocessors and Z8010 Memory Management Unit. Company officials say that the plastic versions will make the 16-bit micros accessible to price-sensitive, high-volume commercial applications that do not require chip operation across a wide temperature range.

"The non-segmented Z8002 is good for many applications that need 16-bit processing power, but want to maintain an 8-bit environment," Zilog director of components marketing Bill Carrico says. "These applications could include device controllers, arcade and strategy games, terminals, stand-alone systems, and some instruments."

Reader Service Card Number 34

'Breakthrough' claimed for OS that replaces CP/M

An operating system that reportedly makes data access ten times faster for CP/M-based applications has been introduced by Computer Service Systems Network, Inc., Boston, Mass. Described as a 'breakthrough' in data management software, the new OS is available on all of the firm's Z-80-based data management minicomputers.

"Until now, OEMs wanting to build transaction and data base management systems couldn't effectively use micros," according to Bernie Wess, vice-president of product development with CSSN. "Operating systems like CP/M are limited in ability to access data quickly; our system replaces CP/M, and provides enhancements in terms of speed and ability to handle large amounts of data."

CSSN says that, in a benchmark test, a cross-reference generator for application development (using the MDBS Codasyl data management system), with seven files of modules and 800 key words, ran in 70 minutes on CSSN's hard-disc System-1000 in CP/M mode. The same generator ran in less than *seven* minutes under the company's new OS.

Reader Service Card Number 35

Overlay linking loader expands micro program size

Westico, Norwalk, Conn., has developed 'Lynx,' an overlay linking loader for Microsoft's Fortran, Cobol, and Macro-80 languages. Lynx features simple commands and a complete 'help' function, and will work with other language translators that produce Microsoft-compatible relocatable files, such as the Basic Compiler.

Lynx is said to allow construction of programs that use all available memory, including that required by Lynx itself. Therefore, programs that have reached the maximum size allowed by Microsoft's L80 linker can now be increased by a minimum of 9K using Lynx, without overlays.

Reader Service Card Number 36

Cincom's Total DBMS to run on Eclipse

Cincom Systems and Data General plan to make Cincom's Total data base management system available for use on Data General's Eclipse system operating under the Advanced Operating System (AOS).

According to T. M. Nies, president, Cincom Systems, "There is a growing number of large corporations designing and building sophisticated distributed processing networks. For many of these companies, Total DBMS is becoming the de facto standard because of its portability across many different hardware and operating systems. Adding Data General's Eclipse commercial information systems to our list of compatible hardware systems gives these corporations even greater flexibility in implementing distributed system or expanding the capabilities of their standalone machine."

With the addition of Data General's Eclipse system, Cincom's Total DBMS operates on 29 computers and 41 different operating systems, states the software supplier.

"We are very pleased to work with Data General on the implementation of Total for the Eclipse commercial systems," says Mr. Nies. "During the development period, we will be working closely with Data General to ensure optimum performance of the combined systems."

Cincom reports more than 4,000 installations throughout the world of its Total DBMS.

Report assesses IBM software users

A recent survey of software usage among the U.S. IBM hardware users has found that most of these computer users are still operating under the DOS/VS systems.

The study, conducted by the market research firm International Data Corp., Waltham, Mass., polled users of the IBM 360, 370, 303X and 4331 hardware. While most users report still operating under DOS/VS, this is a decrease of 20% from 60% of the total population at the end of 1978 to 40% at the end of 1979. This drop is attributed to increased usage of DOS/VSE at 370/115 and 370/148 sites.

The report indicates that about 68% of the 360 users are running DOS, representing a 10% increase over the year. At the same time, use of the MVS operating system grew from 12.8% of all IBM computers in 1978 to 14.4% in 1979. MVS usage was highest among the 370/168 and 3033 computers.

In data transfer, the report indicates that for file access VSAM was the most popular access method. Over 53% of the survey respondents used this method while about 37% chose ISAM.

The survey also reports that nearly 60% of the sample was using telecommunications access methods. ETAM was the software choice with users numbering 62%. VTAM captured 31% of the market.

US computer services mark 21 per cent revenue gain

Computer services industry revenues in the US rose from $12.3 billion in 1979 to $14.9 billion in 1981, an increase of 21 per cent, according to the 1981 annual survey of the Association of Data Processing Service Organisations.

All segments of the industry: professional software services, software products and processing services grew dramatically in 1980. Professional services business increased from $2.7 billion in 1979 to $3.5 billion in 1980 (27% growth); software products companies generated $2.0 billion in revenues in '79 while growing to $2.6 billion in '80 (31% growth); and processing services firms delivered $7.6 billion in products and services in '79 while generating $8.8 billion in '80 (17% growth). Only 19% of the industry wide growth was attributable to price increases. The 56 public companies in the industry grew in revenues 27%, between 1979 and '80, generating an average of 11.6% in pre-tax profits.

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PANSOPHIC

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Job cost forecasting

The Product: job accounting software
Supplier: Microdata Corp.
Features: The Results Job Accounting Application System is designed to keep track of job costs, predict product demand and labor needs, and generate concise reports. It is said to be especially suited to construction firms and custom job manufacturers.

The system features: multi-company processing capabilities; labor evaluation by job, employee and department; detailed cost analysis by job and vendor; profit and loss reporting; invoice entry and corrections; and on-line inquiry capability.

This module interfaces with Results Accounts Receivable, Accounts Payable and Payroll modules, and uses Microdata's English retrieval language.

Reader Service Card Number 37

For ad agencies

The Product: advertising package
Supplier: Microdata Corp.
Features: Ad Pak application software integrates the functions of the accounting, creative, account services, public relations, traffic, and media departments of advertising agencies.

It runs on Reality computer hardware and consists of nine modules: accounts payable, accounts receivable, payroll, general ledger, production expenses/materials (buyouts), labor/time keeping, traffic and mail list management.

Reader Service Card Number 38

Uses Pascal

The Product: data base software
Supplier: Advanced Computer Techniques Corp.
Features: ACT has developed a back-end data base management system which is implemented in Pascal and designed to run on a variety of machines. Initial implementations support a network data model which allows virtually any relationship among records. It also supports concurrent access of several users on one or more data bases.

The product is aimed at resellers and sophisticated users with many machines.

Reader Service Card Number 39

Mail for IBM users

The Product: electronic mail
Supplier: Computer Corporation of America
Features: Comet/204 gives CCA's model 204 data base management system users access to the company's Comet electronic mail system, making it available to IBM host computers for the first time.

The new version can operate under all OS operating systems, can be accessed through CICS, Intercomm, and TSO, and supports 999 users simultaneously. Operation and output can be either hard copy or video.

It can be installed as a model 204 enhancement or as a stand-alone facility for IBM users.

Reader Service Card Number 40

Saves maintenance

The Product: plant maintenance software
Supplier: McDonnell Douglas Automation Co. (MCAUTO)
Features: Permac (plant engineering resources management and control) is said to save a typical plant five per cent of its annual maintenance budget by increasing worker productivity, reducing spare parts inventory and increasing equipment-use efficiency.

The package operates on IBM 4341 and 303X computers or it can be used through MCAUTO's time-sharing computer network. Permac consists of seven modules, but only two—the manager and equipment subsystems—must be used by every application. Users can select only those others that are necessary.

The basic system allows the user to specify all production and process equipment in a plant by description, model number and serial number; identify all spare parts that go with each piece of equipment; cross-reference all the equipment by purchase order, spare parts number, flowsheet number and work centre; and maintain a history of equipment failure and repair.

Reader Service Card Number 41

High-level automation

The Product: Cobol program generator
Supplier: Business Controls Corp.
Features: Systems Builders—5 Cobol program generator is said to produce 100 per cent source Cobol application code with up to 98 per cent automation for any business application. It runs on DEC PDP-11 hardware with RSX11-M, RSTS/E or IAS operating systems, and on DEC VAX hardware with the VMS operating system. Users who migrate from one system to the other can use generated programs without reprogramming.

Reader Service Card Number 42

First-time user

The Product: application software
Supplier: Facilities Management Inc.
Features: FMI's Prime Information data centre offers complete financial software, including order processing, invoicing, sales analysis, and inventory control, which is designed for the first time user, and charged at a flat rate or by the hour.

Reader Service Card Number 43

New in-house use

The Product: application software
Supplier: Nixdorf Canada Ltd.
Features: Nixdorf has introduced three application software packages—general ledger, payroll, and accounts payable—for its 600/35, 600/45, and 600/55 distributed data processing systems. The packages are designed for small to medium-sized companies which have not automated or are using an outside service.

The software runs on the DPEX operating system, and the company has also announced a programming utility package for DPEX users which helps reduce programming time and expense.

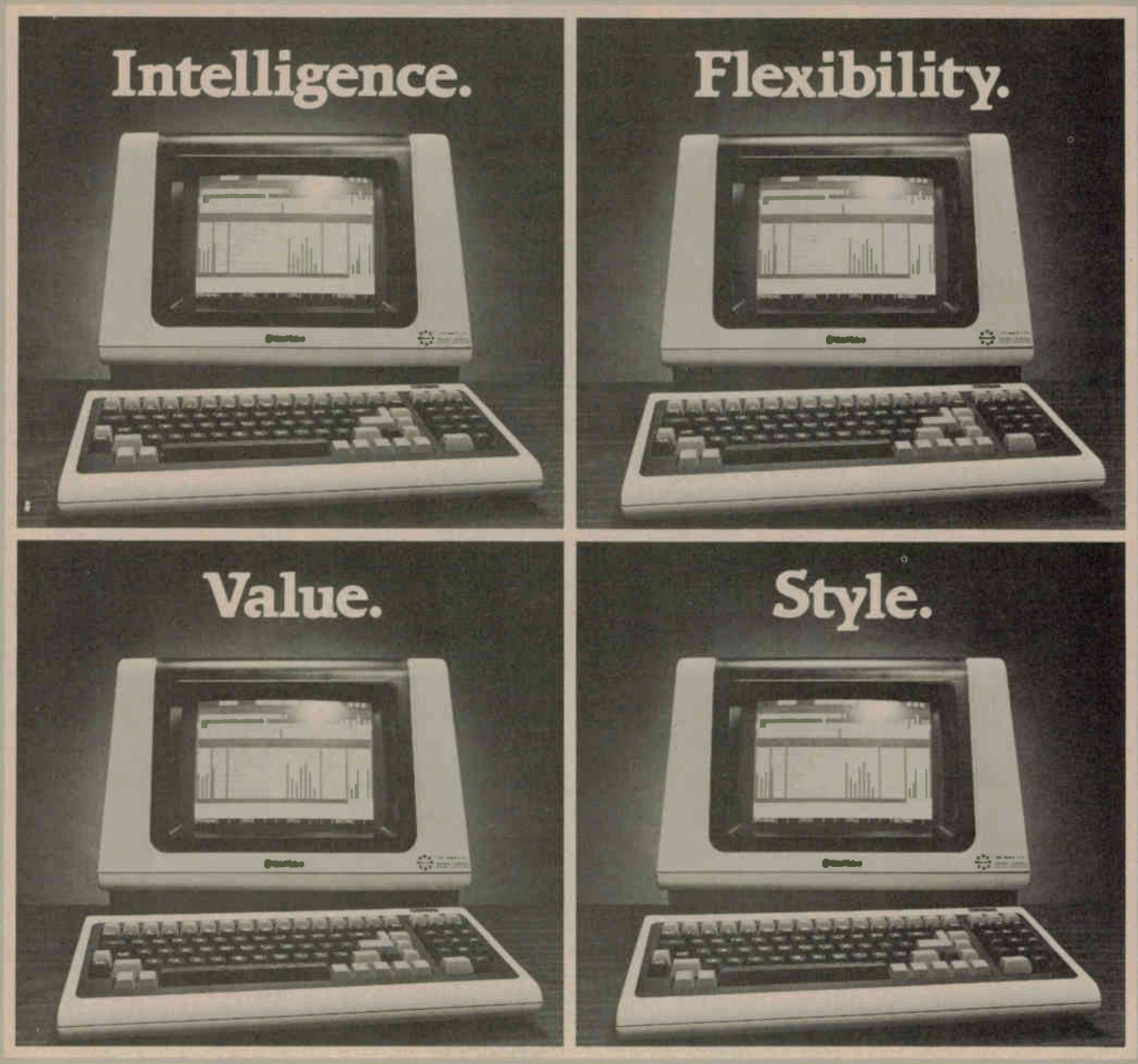
Reader Service Card Number 44

Fortran for micros

The Product: Fortran
Supplier: Apple Canada Inc.
Features: Apple Fortran is the ANSI standard subset of Fortran 77 with the following differences: compiler directives may be included in the source code, subprogram names cannot be passed as parameters, and integer and real data types have different storage requirements.

It will run on an Apple II or Apple II Plus.

Reader Service Card Number 45



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For those who require exceptional sophistication and flexibility in a terminal, Datamex introduces the TVI 950 video display terminal.

TVI 950 outsmarts the competition with its unique scope for customization. Not only is the detachable keyboard fully programmable, the user can change keys, key functions, even keyboard locations to suit particular requirements.

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Reader Service Card Number 116

Innovations, developments and trends in edp technology

New DDP system operates without disc access, storage

The PTS/1210 distributed processing system from Raytheon Data Systems Co. differs from other members of the product family by not requiring disc access and storage.

According to the firm, the new system is aimed at three application environments: as an entry level distributed processing system, as a multi-protocol communications controller, or as a low-cost remote batch terminal. Five comm modes are available: 3270, HASP, Dual 3270 Upline, 3270 and HASP, and Dual 3270 Upline and HASP.

The 1210 can be field-upgraded to full DDP functionality, says Raytheon, with the addition of disc storage.

The system supports up to 24 dual intensity 1920-character displays with 3270-type typewriter or data entry keyboards. Additional peripherals include matrix character and line printers, along with a 300 cpm card reader. Line speeds up to 9,600 bits/sec. are supported.

WP comm capability under way for Infotex service

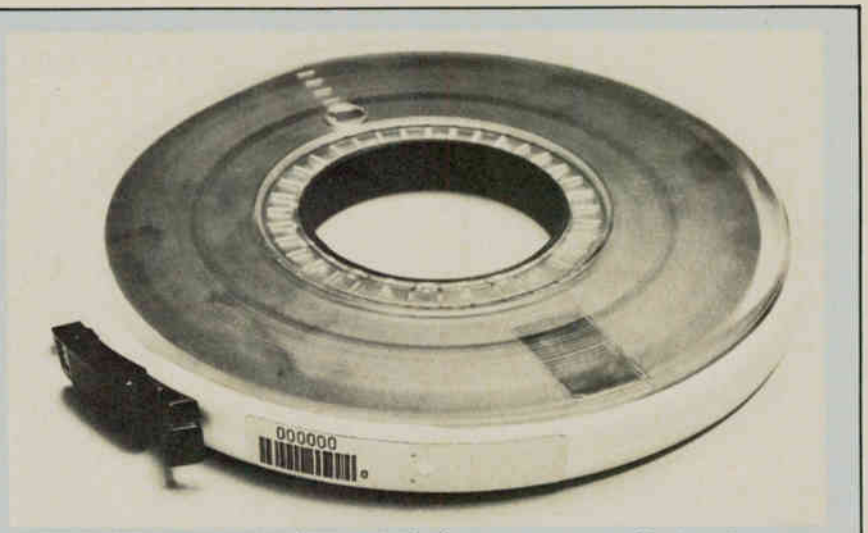
Buying a word processor without communicating capability makes about as much sense as buying a car without wheels, said CNCP's Director of Sales Jim McDaniel at a recent office automation conference in Ottawa.

He was addressing the issue of linking different types and makes of units and he observed that even if the communicating capability is not required immediately, it should be there to enable the word processor to be plugged-in at minimal cost when the degree of office automation has reached the stage where the need to communicate has been established.

To make it possible that word processors are able to communicate with each other he told the audience that CNCP is working with Canadian manufacturers and suppliers so that units on the Canadian market will be compatible with the Infotex service, and through this with the international Teletex standards for communicating word processors.

Mr. McDaniel noted that CNCP had enthusiastic reponse from manufacturers who can see the communication capability via Infotex as being of benefit to customers.

Canadian Datasystems welcomes comments from its readers. Please address letters to: Editor, Canadian Datasystems, 481 University Ave., Toronto M5W 1A7



Tag containing electronic chip is attached to computer tape. Device triggers an alarm when brought near a protected exit. Pliable tags can be affixed to tapes, documents to prevent unauthorized removal.

Surveillance system monitors tapes, printouts

A self-contained system designed to maintain control of computer tapes, printouts and other documents and to detect unauthorized removal of these items from restricted locations has been designed by Sensormatic Electronics Corp., Deerfield Beach, Fla.

Designated 'Safekeeper' it is similar to systems used by retailers for protection against shoplifting. A tag containing an electronic chip is attached to an article, coordinated sensing devices are positioned at exits, and an alarm sounds when a tagged article is detected at an exit.

The tags adhere to any surface, notes the company, and the sensing device is compact and easily installed at a door or exit area in about ten minutes. It provides a protected zone of three feet, states the company.

Eight Mbytes in one drive standard floppy

More than 8 Mbytes of data stored on two completely standard diskettes in one drive the size of an industry standard floppy has been announced by PerSci, Inc.

The Model 899 is described by the firm as the industry's first diskette drive on which track following, embedded servo technology has been successfully implemented. Using techniques adapted from hard disc design, the new device can read 150 tracks/inch on standard off-the-shelf diskettes. No high temperature media or special cartridges are required, notes the company.

PerSci describes the unit as a 'true' track following device in that it employs an embedded servo recorded on the diskette as opposed to temperature compensating servos. The track following system of the drive is said to allow for update and correction of the servos at a rate of 32 times per revolution. As a result, the drive heads can follow even elliptical variations in media tracks, notes the company, assuring reliability and media interchangeability between all its drives.

The speed of the unit's positioner allows a full stroke seek in less than 100 ms.

The Model 899 is dual head/dual diskette drive. It reads and writes data on both sides of two diskettes. In MFM encoding, the drive's unformatted data capability is 8.4 Mbytes.

National Semi ships bubble units, sees 4M-bit device

Prototype quantities of 1M-bit bubble memories are being shipped by National Semiconductor Corp., and volume shipments are expected later this year.

The company has been making volume shipments of 256K-bit magnetic bubble memory systems since 1980 and recently introduced what it calls the smallest, densest 5-chip support circuit set available in the market.

The 1M-bit system is contained on a nine-square-inch card, or a full megabyte on an 81-square-inch standard BLC (Series 80/Multibus) board.

Pierre Lamond, vp and technical director, notes that the company recently demonstrated the feasibility of a 4M-bit device, which it demonstrated at last month's Intermag conference in France.

MANAGEMENT MEMO

with news highlights for corporate management

BRITISH COMPUTER MAKER REORGANIZES, GETS NEW CANADIAN MANAGER

British computer maker International Computers (ICL) is reorganizing its North American marketing activities, making the Canadian operation a self-contained entity. ICL Computers Canada Ltd. now reports directly to its UK head office. It was previously part of the computer maker's North American marketing operation. As part of the restructuring, Graham Bendell, formerly with ICL in South Africa, assumes marketing responsibilities here as VP, Marketing. He succeeds John Nicholls who is moving to the US to head ICL's marketing operation. ICL's Canadian business was at $22 million last year, said Mr. Bendell, and he expects 1981 revenues to be in the same range.

SASKATCHEWAN RETAINS POSITION ON PROVINCIAL TAX ON SOFTWARE

Saskatchewan remains the only province to apply a provincial sales tax on 'canned software' while in other provincial jurisdictions the sale of most computer software is exempt from such a levy.

The Canadian Business Equipment Manufacturers Association (CBEMA) has been making representations to Saskatchewan authorities asking for a reassessment of their position. CBEMA's stress has been that computer programs are not tangible personal property and should not be subject to tax. Saskatchewan's most recent response is understood to be that its position on the questions is unchanged.

CNCP, NORTHWESTEL INC. APPLY FOR TARIFF APPROVAL ON TERMINAL EQUIPMENT

CNCP has applied for approval of tariffs to the Canadian Radio-television and Telecommunications Commission (CRTC) for its Infomode 200R visual display terminal for use on CNCP's Infoswitch network, private line and message switching systems.

Another application has been made by NorthwestTel Inc. for approval of rates for its new Telemode 1000 Terminal, which is a replacement for its earlier Model 32 terminal equipment.

The Commission early in August invited public comments on the application. Interim approval of the proposed tariffs have been granted and final determination will be made after comments have been considered.

TEXAS INSTRUMENTS CUTS PRICES ON SEVERAL DS900 COMPUTER SYSTEMS

Price reductions of up to 13 per cent were recently implemented by TI on its DS990 computer systems, Models 7, 8, 9, 20 and 29. Major contributor to the price reduction is a decrease in the price of the disc storage used with the systems. Disc subsystems affected by the price reductions include the 32-megabyte versions of the CD1400 disc and the DS50 50-megabyte drive. Prices have been reduced as much as 25 per cent on the CD1400 and up to 22 per cent on the DS50, states TI.

The company also notified customers of additional price changes which include a decrease in the price of the optional DS10 10-megabyte disc drive subsystem, and a nominal price increase for the Model 911 display terminal. The increase on the Model 911 averages $345 per terminal, notes the company.

A new policy on customer furnished equipment has also been announced, which reduces the fees charged for installing and maintaining customer-furnished equipment.

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Reader Service Card Number 122

IBM CANADA'S DP DIVISION CHANGES PRICES ON EQUIPMENT, SERVICES, PROGRAMS

IBM Canada's Data Processing Division announced price changes as of June 26, 1981. Some equipment purchase prices were increased by 7 per cent, and hourly per call maintenance rates went up by 18 per cent.

Other increases, to be effective October 1, 1981, include a nine per cent increase for most rental and lease charges. Selected licensed program charges are to be increased 10-20 per cent, and monthly maintenance charges for selected equipment will be increased by 5-15 per cent.

The price changes are the result of normal business review, states IBM, which includes the impact of inflation on the cost of doing business.

COST OF INDUSTRIAL SELLING SOARS, AVERAGES $104.37 PER CALL

The cost of selling is a major company expense and continues to rise. Sales costs vary by type of industry but generally larger companies have lower average sales costs than do smaller ones. These are the findings from the sixth nation-wide survey in Canada of the average cost of an industrial sales call, conducted for the Maclean Hunter Busines Publishing Co. by the Maclean Hunter Research Bureau.

Among the 368 companies who provided data, the average cost of an industrial sales call reached $104.37 in 1980. Among companies selling exclusively direct to industry, the 1980 cost per sales call increased to $124.19 from $60.66 in 1978. The cost for companies employing 15 or more salesmen was $87.32 compared to $107.11 for those employing fewer than 15 salesmen. The cost of the average sales call in the electrical products category reached $153.37.

AES DATA BUYS DUTCH WP/SMALL COMPUTER MAKER TO STRENGTHEN SOURCING

Montreal-based AES Data Ltd. is buying Daisy Systems of Wijcken, Holland to ensure a secure source of printer components in Europe and for its worldwide distribution.

The Dutch firm manufactures Daisy Wheel printers and small business computers. The latter are sold in Europe. The Dutch firm will be operated independently with its own R&D, manufacturing and marketing divisions, said AES president John Leng. At the present time there are no plans to market the Dutch computer product line here, he said.

According to Mr. Leng, the acquisition gives AES its first hardware manufacturing base in Europe which supplements the firm's existing software products development and manufacturing in West Germany. He also sees the addition of the small business computer line as an important growth step for AES.

The computer business of the Dutch firm will be operated separately for a while, said Mr. Leng, but is expected to become a springboard for more business growth.

IN BRIEF

Cullinane Database Systems Inc., reports revenue of $29,351,000 for the fiscal year ending April 30, 1981, an increase of 66 per cent over the previous year. The software producer reports a net income for the year of $4,554,000, an 89 per cent increase over the 1980 fiscal year.

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Reader Service Card Number 140

The spectre of 'exemplary damages' is real

The experience in the US indicates that the EDP industry can expect to spend much energy and time in courtrooms during the 1980s.

By DAN MERSICH

Americans call them "punitive damages"; the English terminology is "exemplary damages" and Canadian law, not surprisingly, contains both terms. In fact they are the same.

Before we connect this point of law with the world of EDP, let us examine some background on the law of damages.

From earliest times, courts have ruled that someone who has suffered injury at the hands of another (whether a broken arm or a broken promise) should receive a damages award which compensates him for his loss.

But the award must not cross the line between compensation for the victim, and punishment of the wrongdoer. The latter of these is strictly a matter for the criminal laws—not civil laws, which deal with contracts or negligence.

While such a policy makes sense, and in fact works quite well in practice, the courts have found it wanting in certain circumstances. For example, if a person believes that he stands to gain far more by, say, breaking his contract than he stands to lose in a judgment against him, he might be tempted to ignore his obligations. In such circumstances the court may elect to inject a degree of punishment as a deterrent to such conduct by awarding damages that go beyond mere compensation.

Recently, a number of computer cases have come out of the US courts where juries awarded very substantial punitive damages against hardware vendors for misrepresentation. In one instance a judgment of $500K was composed of $400K punitive and $100K compensatory damages.

A number of very important, but not obvious points, should be considered.

First, the misrepresentation in question was oral and therefore (one might think) difficult to prove. Not so. The presence of a jury, whose job it is to determine what is fact and what is fiction, has a rectifying effect on any witness. Even without a jury to face, only the most accomplished of liars is able to successfully deceive while being cross-examined. Centuries of fine-tuning have developed a witness box that is truly a kind of X-ray chamber. Such apparently small things as not permitting a witness to sit, or indeed even lean against the rail while testifying, serve to make the whole experience very unpleasant unless the truth is being spoken.

Second, the court was not impressed with the saving language in the supplier's contract. It ruled that misrepresentation comes under a different body of law called torts (negligence law) which stands independently of contract law. Therefore the disclaimers in the contract amounted to nothing.

The reader perhaps might wonder about the difference between a representation and a contractual promise. The latter attaches an obligation, usually to do something, while a representation is merely a statement of fact (it does not contain any promises) and so rarely appears in a contract.

While the well-known doctrine of caveat emptor says that the vendor is not under any obligation to speak and that the buyer must beware, the doctrine of misrepresentation says that if a vendor does speak, he had better be telling the truth—contract or not!

Third, juries are not just a creature of criminal trials; they can be used in civil cases also. It is a jury's job to decide on fact and also to set the amount of damages. Typically, a lawyer would elect trial by jury, if he wished to capitalize on the human sympathy sometimes not present in case-hardened judges.

Very few areas of the law permit the size and wealth of litigants to be considered in setting damages. In fact, mistrials are often called when, for example, it becomes known that the defendant in an auto accident case is covered by insurance. However, exactly the opposite is true when punitive damages are being awarded. The size and wealth of the defendant should be considered and taken into account so as to ensure that a clear sting is felt.

If all of this has served to send vendors scrambling for legal protection, or caused aggrieved users to drool at the prospect of a fat judgment, then a word of comfort and moderation is due.

Typically, Canadian courts have been more reluctant than others in awarding punitive damages and when they have done so, the size of the awards was moderate.

As smaller, application-type systems proliferate and the "down end market" opens up, a certain danger exists where hardware vendors paint rosy applications pictures and where neophyte users expect too much.

Whether this growth will be accompanied by a like growth in the ranks of litigation lawyers remains to be seen. The experience south of the border sadly indicates that the EDP industry can expect to be spending a significant part of its time and energy in courtrooms during the 1980s. □

Dan Mersich is a Toronto lawyer whose private practice is restricted to computer-related matters.

DISASTER RECOVERY

Planning ahead makes all

This first segment in a two-part series provides a practical approach towards coping with a major disaster affecting data processing operations.

A DISASTER recovery plan is a logistical plan to provide smooth, rapid restoration of EDP operations following physical destruction or major damage that has caused an interruption in processing. The disaster plan should be in enough detail to *remove* as much decision-making as possible immediately following a disaster—corporate management will be under enough strain if a disaster should occur, without having to make decisions about who does what and how!

A disaster recovery plan is, in fact, an accumulation of many mini-plans put together in a concise, easy-to-understand manual.

Off-site storage

The first and most important of all plans is your daily backup of valuable data records going to off-site storage. Generally, daily backup procedures address the problem of data being destroyed and/or lost, or for that matter just inability to read a tape due to carelessness or equipment failure.

The popular 'grandfather-father-son' technique should be used for backup of valuable data. The frequency of rotation, for the most part, is dependent upon the requirements of the organization. However, every data processing facility should be assured that they can reconstruct all master files and transaction files if and when the need arises.

Having just valuable tapes and disk packs rotated off-site is by no means the entire solution to the daily backup plan. There are many records in addition to tapes and disk packs that should be retained off-site. Some of these records are not updated daily, or even monthly. However, periodic inventories should be made to ascertain that the proper records are, in fact, backed-up and current.

Following are the types of data records that should be included at your corporation's off-site storage location:

JACK CURRY is vice-president and manager at Rainier National Bank, Seattle, Wash. This article is adapted from a presentation provided for a Toronto data-security seminar produced by Total Assets Protection Inc., Arlington, Tex.

By JACK P. CURRY

A U.S. study has indicated that, following a catastrophe such as destruction of data centre by fire, only one-third of all stricken firms are still in business three years later. The key to recovery is to plan *now*.

PART I

the difference

- System, Program and Operating System documentation;
- Program source and object decks;
- Job control language tapes for applications programs;
- Operating system tapes or disk packs;
- Data master and transaction files;
- Supply of custom and/or pre-printed forms;
- Disaster plan manual;
- Hardware inventory listing.

Since a considerable number of these records might be in loose-leaf notebook form and are not updated on a daily basis, I suggest microfilming the material. This method will reduce the storage space needed and facilitate classification and freshness.

Let me digress a minute to underscore one vital assumption that I have made: *it is absolutely essential that top management be fully supportive of the effort to construct and maintain a disaster-recovery plan.* Without such top-level interest and backing, your efforts will likely fail.

Once given the authority and responsibility to proceed with the design of a disaster plan, where do you start?

Here are the major areas of interest:

- Disaster Plan Team;
- Application Program and Job Classification;
- Personnel;
- Equipment;
- Supplies;
- Distribution;
- Facilities;
- Miscellaneous.

For each one of the above elements of a disaster plan, top management will want to know how long it will take to develop their 'corporate insurance policy'. It is not uncommon to spend 140 to 150 man-weeks developing a disaster plan. This, of course, depends a great deal on the size and complexity of the organization.

Team approach

The importance of a disaster planning team approach cannot be over-emphasized. No one person has the expertise to develop a viable disaster plan. There is a great deal of brain-storming involved, therefore you need team members made up from the various EDP departments. Your users must comprise an integral part of the team. For the most part, they are the ones who establish the priorities of what applications are the most critical in case of disaster.

After a team has been selected, it is beneficial to spend some time educating them on disaster planning before the project begins. It is important that everyone is headed in the same direction. Two areas have been found to be the hardest to get across to both team members and users alike:

1). A disaster plan is *not* a plan that will reproduce a 'business-as-usual' environment. It must be understood by everyone involved in the decision-making process, that the corporation will, in fact, lose time and money during a disaster. The object of a disaster plan is to minimize this potential loss of assets, and therefore keep the corporation solvent.

2). The *most critical* applications are those that will at least keep the corporation solvent during the time of a disaster. There are hundreds of applications deemed important by both EDP and the user. However, many of these applications will *not* run during a disaster. The lack of computer time at another site, or the unavailability of resources, i.e., TP, hardware, terminals, etc., all constitute reasons for not running certain applications.

The key word for all team members to understand is *most*-critical applications.

Application classification

As mentioned previously, the unavailability of resources is the prime reason for classifying applications. What are the classifications and how do you determine this?

There are three classifications for applications and jobs within applications.

'Priority-1' jobs are jobs that *must* be run according to existing schedules. 'Priority-2' jobs are jobs that will be run if time and equipment allow. 'Priority-3' jobs will *not* be run in the event of a disaster.

Determining the priority of an application/job is, without a doubt, one of the most important aspects of the disaster planning project. This activity will in fact set the stage for all of the remaining phases of your plan. Once you know exactly the most critical applications/jobs it is possible to proceed with the backup arrangements for personnel, equipment, supplies, facilities, and distribution to support Priorities 1 and 2.

There is one critical pitfall you must avoid. Be sure that Application A, determined a Priority-3, is not the input for Application B, which is a Priority-1. Without Application A, you cannot run Application B. The same analysis must be used for jobs. Once this determination is made, the JCL and scheduling can be modified to reflect the application/job changes.

Determining priorities

Each member of the disaster planning team will be required to interview the user to determine the priority of each application job.

Following are some of the questions that the user should answer. The answers to these questions will help both EDP and the user arrive at the appropriate priority classification for the specific job in question.

- Dependencies—are there other users outside of the user department who are dependent upon this application/job?
- Dates and Time—what are the critical dates or time periods associated with this job?
- Data Creation—where is the data for this application/job created? What time of month?
- Recovery Mode—is manual processing possible? For how long?
- Run Cost—running cost of manual system per quarter? Period of time after which manual recovery becomes unfeasible.
- Operation—Is application/job submitted remotely? If so, where?
- What would be the result if this application/job were not run for one day, one week, or one month?

There are most likely other questions not included here that are important to your specific organization. Questions concerning manufacturing, distribution, sales, production, etc., should be included where appropriate. The object is to have as much information as possible so that the proper priority can be placed on the job in question.

There are two questions not included in

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Planning for disaster recovery

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the preceding list that require special consideration.

- Revenue estimate—revenue per quarter earned by the corporation with this job.
- Cost—cost per quarter of loss to the corporation associated with this job if *unable* to support computer processing.

The answers to these questions are beneficial when the user is unable to arrive at an appropriate priority classification. If this should happen, a cost/risk analysis would be warranted to put the job in perspective. There are various methods used in a cost-risk analysis, but that area is too large to treat satisfactorily here. For those of you who might be interested, I would suggest James Martin's book *Security, Accuracy and Privacy in Computer Systems*, published by Prentice-Hall.

What about application jobs that have multiple users? You might have job X going to the accounting department and a copy going to the credit department. What happens if the accounting department decided job X is a Priority-1 and must be run according to existing schedules, and the credit department decides that they can do without job X, therefore placing the job in Priority-3? The answer to this problem is to place job X in the Priority-1 category for the accounting department, and leave the option open to suppress the distribution of job X to the credit department, pending availability of resources.

Following the completion of the application/job classification phase, it is recommended that a complete list of applications and jobs that will be run in a disaster situation be distributed to all users for sign-off.

Personnel and notification

The disaster recovery plan assumes that the data processing facilities are completely destroyed or rendered inoper-

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Defining 'vital records': this checklist may help

While agreeing on the importance of safeguarding a firm's vital records, many executives—and even some security consultants—may be less certain about just what records should be classed as 'vital.' The following subject list comes from a pamphlet produced by the Toronto Chapter of the Association of Records Managers and Administrators, and may prove useful in making such classifications.

Accounts Payable/Receivable
Accounting Statements/Work Papers
Acquisitions
Agreements
Annual Reports
Applications to Regulatory Agencies
Audits

Bank Balances
Balance Sheet (monthly)
Bills of Material
Bills of Lading
Blueprints (originals)
Board Minutes
Building Ledgers
Bylaws

Cancelled Cheques
Capital Assets
Certificates of Incorporation
Charters & Amendments
Consolidated Statements
Consolidated Working Papers
Copyrights
Corporate Seals
Cash Books
Contracts
Construction & Maintenance Ledgers
Customer Lists

Data Processing Programs (tapes/cards/manuals)
Debentures
Deeds
Depreciation Schedules
Distribution (names)
Directives
Dividend Formulae/Resolutions
Dividend Payments

Employee Savings Plans
Engineering Drawings/Notebooks
Equipment Specifications
Executive Orders
Expense Ledgers

Financial Statements
Forms (copies of important)
Fixed Asset Summaries
Formulae
Franchises
Finished Goods Statement

General Ledgers

Historical Documents
History Reports

Income Tax Computations/Returns
Inventory Control Records
Inventory Value (by product)
Insurance Policies & Schedules
Invoices

Journal Entries
Journal Vouchers

Laboratory Notebooks
Labor Contracts
Leases
Legal Documents
Licenses
Loan & Trust Agreements

Manning Tables
Manuals
Manufacturing Processes
Master Part Number Tapes
Master Price Books
Mergers
Mortgages

Office Equipment Records
Officers (list of)

Patent Authorizations
Payroll Registers
Patterns
Personnel Records
Plant Layouts
Plant Ledgers
Promissory Notes Receivable
Production Reports
Profit/Loss Statements
Purchase Orders

Rate Books
Real Estate
Receiving Reports
Reorganizations
Research/Development Records
Retirement Plans
Rulings (gov't agencies)

Sales Correspondence
Securities
Stockholders (names)
Stock Certificates (cancelled)
Stockholders' Proxies
Stockholders' Meeting Minutes
Stock Transfers
Stock Purchase Plans (in-house)
Standard Practice Instructions
Standard Control Procedures
Subsidiary Ledgers
Succession of Management List
Suppliers (names)

Tax Returns
Technical Reports
Tool Records
Trademarks
Trial Balances (monthly)

Union Matters

Vouchers

Wage Rates
Warehouse Inventory Tapes
Workmen's Compensation

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DISASTER RECOVERY

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able. Recovery from anything less than complete destruction can be made by utilizing one or more parts of the master plan, depending upon the severity of damage.

This section concerns how to make the disaster recovery plan operable in the event of a disaster.

An emergency organization chart outlining the major responsibilities for the recovery operation should be included in every disaster recovery manual. How you accomplish this will be dependent in part upon the size of your organization and the thoroughness of your disaster recovery plan. However, the following list of responsibilities should at least be spelled out. The object here is to reduce the amount of decision-making in the event of a disaster. You can include employee names or, if your employee turnover is high, you can indicate responsibilities by job function.

SAMPLE:

1) Transportation arrangements from the off-site storage location to the backup site will be made by _____.

2) _____ will contact backup site to arrange for processing time.

3) Employee transportation arrangements will be made by _____.

4) Off-site documentation, tapes, etc., will be delivered to the backup site by _____.

5) Arrangements for extra tapes, disks needed for reconstruction will be made _____.

6) Bring up and test operating system and production programs at the backup site _____.

7) Distribution arrangements will be made by _____.

This is by no means a complete list of responsibilities, but it does express the flavor of who does what. There are many other responsibilities that need to be included. Facilities, employee housing, vendors, supplies, communications, processing time schedules, storage, security, etc., all constitute areas that will be included in the organization chart of responsibilities. In addition, prior arrangements must be made for the availability of funds on a minute's notice. It will be too late, after a disaster has occurred, to call your local banker and ask for a loan. In any event, don't overlook travel and subsistence expenses and the responsibility for arrangements.

It is advisable to provide for alternates in the disaster organization chart, since there is a definite possibility that key employees may be incapacitated as a direct result of the disaster.

Notification that a disaster has occurred at the data processing facility sets the disaster action plan in motion. This includes emergency phone numbers for the fire department, hospitals, police, all EDP facility staff, corporation staff, users, vendors, and key support departments.

A disaster recovery manager should be appointed. This individual should be a key member of EDP management, who, in the opinion of corporate management, can best handle the situation. It is assumed that both rapid and adequate recovery will best be served by vesting the total responsibility for recovery in one individual. The initial notification to data processing management will most likely come from one of these people: security guards, fire department, operations personnel, building management or the security officer. At this point, the disaster notification schedule can be put into action.

If the EDP facility is totally destroyed, where do you tell employees to meet for instructions? If you have hundreds of employees in EDP, this could cause mass confusion if prior arrangements were not made. Include in the disaster plan a specified meeting place, possibly another building owned by the corporation, warehouse, etc., as long as telephone communications are available. From this initial location the disaster plan responsibilities can begin.

The notification schedule should include, but not be limited to, the following departments and employees, in addition to the individual who has the authority and responsibility to activate the disaster recovery plan: data centre management; corporation management; data centre personnel (supervisors notify subordinates); users (who in turn activate their own recovery plan); and supporting departments including: finance, legal, security, auditing, insurance, personnel, public relations, unions, vendors, and engineering.

It goes without saying that the notification list must always be current. Alternates should be indicated in the notification list to account for unavailability of key employees due to illness, vacations, business trips, etc.

Arrangements should be made for employee safety, transportation to and from the backup site, lodging if the distance is too great from the disaster site to the backup site; union authorization if needed, insurance for protection of employees away from their normal routine, and substistence allowance for employees—just to name a few other considerations.

Part II of this series will be presented in next month's issue.

The day IBM activated a disaster-recovery plan

Disaster-recovery plans are not just for 'the other guy'—especially in the data-processing industry. On Sept. 10, 1972, IBM Corp. suffered a major (and potentially disastrous) fire at its Program Information Department (PID) in Hawthorne, N.Y., a facility responsible for distributing software programs and updates to all U.S. customers.

Starting in a packaging area, the 12-hour blaze spread to parts of the computer room, destroying a 1442 and a 2311, with radiant heat knocking out another 2311. Flames partially destroyed a System/3 unit, and heat and smoke wreaked havoc with other equipment and hundreds of tapes stored in the same area.

Although the department's disaster plan was only three pages in length, it summarized everything that needed to be done. Soon after the fire alarm was turned in, all IBM executives with control over any resource that might be needed for recovery were notified.

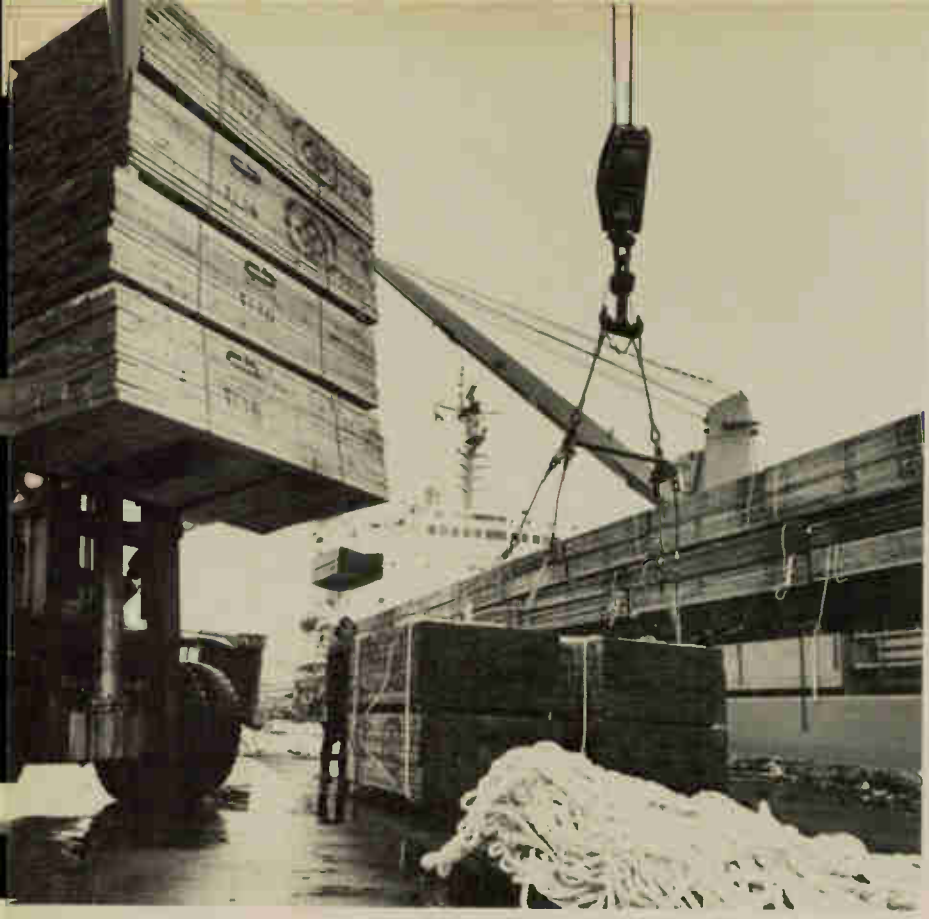
By 3 AM on the Sunday morning of the fire, the PID management team was on-site, and within an hour a temporary control centre was set up in a nearby motel. By 2 PM, available offices at IBM's Mahwah, N.J., installation (30 miles away) had been chosen for the new temporary home of the department.

Two System/360 computers, in the process of being moved out of other offices at Mahwah, were re-installed, and by Thursday all the necessary order-processing hardware was in place. During the same period, emergency orders for office furniture, packing materials, and necessary forms were placed, and the damaged tapes were salvaged as much as possible.

The department's 2000-tape Program Master Library, kept in a basement vault, contained back-up of all but the most current activity. These tapes were undamaged except for 121, kept on bottom storage racks, which had been immersed in water during the fire-fighting. The damaged-item information was made available from a duplicate Master Library that existed in Toronto (and even a third was available in Paris, France).

By the Friday afternoon after the fire, PID was operational again. Eight days after the fire, customer orders were being shipped, and on Sept. 29—nineteen days after the disaster—the backlog was clear and PID was completely current.

The recovery plan had made it all possible.



APPLICATION REPORT

Opting for DB/network helps gain flexibility

BC lumber supplier applies data base/network concept to ship products worldwide and to retain operating flexibility

"We went with the data base concept on a very small system in the days when data base was just a buzzword. And it has paid off because some of our competitors are fighting to get the kind of flexibility we enjoy today."

The speaker is Gordon H. Landahl, Manager, Information Services, for Vancouver-based Seaboard Lumber Sales Co. and Seaboard Shipping Co. Ltd. He is describing Seaboard's management information system which includes an international network, embracing subsidiaries in major cities around the world.

Established in 1935, Seaboard is one of the world's largest waterborne exporters of lumber and plywood. Seaboard Lumber Sales handles the marketing of B.C. lumber, plywood and value-added products, while Seaboard Shipping arranges the movement of goods from the mills to customers around the world. Together, they provide a complete service for 22 shareholder firms, which include 68 mills with an estimated 18,000 employees.

In 1980, Seaboard shipped just over one billion fbm (foot board measure) of lumber to 45 countries. This included what is believed to be the first sale of B.C. lumber to the People's Republic of China.

Retaining Flexibility

"Our major problem in pre-computer days was in obtaining and maintaining flexibility," Mr. Landahl says. "When you deal with lumber you deal with different species, grades, thicknesses and lengths. In our case you also have constantly changing requirements in dealing with a number of foreign countries. Most companies start their computer operations at the accounting end; we went with the marketing and sales aspects because these areas were our major concerns."

In 1968 the company started development of an in-house integrated data base. It was decided to use the data base concept in order to provide prompt access to inter-related data elements serving multiple applications. At the same time Seaboard wanted to avoid the duplication of information and the rigidity common to traditional file systems of that time.

The following year, after a detailed look at all relevant factors, management decided that a Burroughs B 500 system would best meet its needs: "Burroughs head per track disc was the answer to our problems," says Mr. Landahl. "It had the flexibility and retrieval capability that would allow us to structure a data base information system, even though this technique was only being developed for use on large-scale systems. Looking back, we know that if we had tried a tape system at that time we would not have made it."

Opting for a data base

In December 1969, Seaboard's new data base system on the B 500 (with 19.2KB of memory core) commenced operation. Since that time the company has progressed through a number of systems: A B 2500 with 64KB of core in 1972; a B 3731 with 150KB of core in 1975; and a B 3910 with 2MB of core in 1981.

Seaboard's operating methods and programs, with their low overhead, have allowed the company to stay in the range of a medium-sized computer installation with minimum operating personnel (15 people in Information Services).

"There's no doubt that without our data base system we would have more staff, higher costs and less control and accuracy," Mr. Landahl points out.

In 1972 the company got involved with its first communication system, a plywood order entry system in which various data communications devices (visual display screens, remote printers) were interfaced with the B 2500 mainframe computer. When this approach proved both economical and flexible, data entry

and inquiry facilities were extended to other company departments.

Establishment of this secondary data base permitted users of remote terminals to create, manipulate and store independent data—but under control of the central computer (by now a B 3731). This coincided with the implementation of an inventory control, invoicing, and reporting system for the company's U.S. subsidiary, Seaboard International Lumber and Plywood Inc. in New York. This system, although running independently on a time-sharing network, obtains order and vessel information transmitted to it in the form of data files created by the secondary data base system, which in turn are extracted from order and invoices resident in the main Seaboard data base.

The datacom net

Using the network, Seaboard Inc. sales personnel can look at what is enroute to them and prepare to sell from that. Before, lengthy telephone calls and pages of Telex transmission were required to find answers to a sales person's questions about just a small portion of the total shipment.

"The ability of the system to keep accurate, up-to-the-minute records of every order entered and portions not received is a major benefit," says Mr. Landahl.

"Salesmen send their sales data to an entry clerk in New York and, from that point on, the system is automatic. It posts transactions and provides immediate invoices. Current purchase/sales position reports can be requested on demand."

In addition, the system allows the firm's long-position planners to determine where shipments should be distributed to meet sales demand, since lumber may be on order at up to 10 eastern ports. As market conditions change, status reports on the current average value of both on-the-water and on-hand inventory can be obtained for each destination.

The experience gained on the New York operation encouraged Seaboard to extend its information transfer system worldwide. Today, the datacom network takes in the following major world cities: London, Paris, Utrecht, Sydney, and Hamburg.

Here, briefly, is how the data base/network is involved on a daily basis:

- Sales personnel negotiate with buyers via Telex. When an agreement is made, and the order is confirmed, a contract is prepared in the Plywood Department (using visual display terminals) or in the Lumber Department (using a keypunch system).
- The relevant data is entered into the B 3910 data base. Various files and buyer contracts are produced plus purchase orders for the mills concerned.
- Data communications commence and data is relayed to the subsidiary involved.
- A foreign exchange position report is produced, enabling the Cash Flow Department to hedge and verify the company's exchange exposure. In today's highly volatile exchange market this information is critical.
- Purchase orders are now assigned to a vessel position. Because fairly lengthy lead times are involved with orders, the actual vessel the order will travel on is not known at this time. But with a "Position" in the data base, Seaboard's Traffic Department is aware of it and can assign the order to a specific vessel when it becomes known. B/L instructions and lineups are produced just prior to vessel's arrival. Seaboard has 10 ships on long-term charter and, when necessary, also charters other vessels on the open market; the three main ports it ships from on the B.C. coast are Vancouver, Nanaimo and Victoria. With the order in the data base, management not only knows its footage requirements for each month but the system can sort these requirements according to the availability of vessels as they become known.
- When a vessel is ready to leave, the system prepares the buyers' invoices, and export documentation. In an average month Seaboard ships to up to 20 different countries and each of these countries has different import requirements. Since these are constantly changing the data base has to be periodically updated with the new information.
- Shipment advice is communicated via the network to the various buyers and agents so that they are fully aware of what is arriving at the port of entry.

Terminals access DB

Assisting in the day-to-day workflow are nine computer terminals linked to the B 3910. These are located in U.S. lumber sales (order entry system); plywood sales; Seaboard International Terminal (for traffic work, including an on-site printer); and in data processing, for use by a number of departments.

"We have a very intricate reporting system," says Mr. Landahl. "Not only does everything entered in one department show up elsewhere, but the data base has a lot of control checks and balances. Our aim has always been to achieve optimum efficiency from the equipment with ease of operation and the minimum of operator intervention on a 24-hour basis. Several in-house monitoring routines are functioning to provide this capability."

The data base holds a considerable amount of statistical information which can be accessed at any time: Reports on unshipped orders (what's coming up in the near future); projections, or forward orders, which go to the Traffic Department and assist them in determining future shipping requirements; and a great deal of historical data which assists in the day-to-day decision-making process, such as past performance by country, by customer, by product, or by mill. □

At Seaboard's computing centre, Gordon H. Landahl, Manager Information Services, in conversation with Linda Fraser, Manager, Programming and Systems.

OVERVIEW REPORT

Technology places new focus on terminals

As advances in technology make terminals increasingly 'user-friendly,' new capabilities are being explored. Here's a review of current and emerging trends.

By A. HIRSCH and G. SILBER

As computer systems became interactive in the late 1960s and early 1970s, the teletypewriter was the only interactive device capable of communicating with digital equipment and computers in general. Then, in the mid-1970s came the development of the CRT and the rise of distributed data processing, which led to the need for more intelligent terminals.

Most of the early CRT devices (with the notable exception of a few diskette-based word processing systems) had little built-in or programmable intelligence. However, with the advent of lower-cost microprocessors and inexpensive memories in the late 1970s, manufacturers began to incorporate increasing amounts of "smarts" into terminal devices.

Research and development

At first, intelligence was limited to the programming functions, but R&D is now beginning to experiment with the display capabilities of these devices in terms of how information is displayed on the screen. Sophisticated text formatting capabilities similar to those of dedicated word processors are now being built into general purpose terminals so that the screen is becoming more like the electronic version of a piece of paper.

Computer manufacturers are emulating print media by offering a variety of type styles and sizes, different characters and symbols and methods of display for use in specific industries and professions. Manufacturers are also borrowing techniques from other visual media such as television and the movies and are incorporating them into their new products.

New techniques

New techniques such as continuous controlled-speed horizontal and vertical scrolling, split screen and windows that can be used independently, angular text presentation, text rotation, variable character height and width, highlighting, fixed and proportional spacing, high resolution color graphics using scores, hundreds or even thousands of shades, and automatic presentation of charts and graphs with automatic curve fitting, fill-in areas and linear regression trend line plotting are being incorporated into the new terminals.

Such techniques are apparent in some of the latest terminal offerings by the major manufacturers, including IBM's 3279, Digital Equipment's PT 100, Hewlett-Packard's HP 2626A and Data General's Dasher G300. There are many such products in the laboratories of the manufacturers. However, there's likely to be a transition period of several years before many of these features become commonplace on most terminals.

With the availability of these techniques and improvements in graphics and raster color technology, the stage is now set for graphics terminals, particularly color devices. The cultural experience and easy familiarity with color television is having a wide impact on how users relate to computers and is certainly driving the demand for interactive dynamic graphics and color graphics.

While the demand for graphics has been strong in the engineering and scientific communities, it is now spilling over into the business and financial areas as business managers and analysts are discovering the truth of the old adage: "a picture is worth a thousand words."

Hardware limitations on how information can be presented are rapidly disappearing , making graphics terminal screens more like a blank canvas on which users are able to present more information more creatively and more effectively.

This is the direct result of the availability of lower cost, high-performance microprocessors. Many of the new sophisticated alphanumerics/graphics terminals are equipped with two or more microprocessors and this trend is increasing their flexibility and performance characteristics.

Self-help facilities

In addition to higher speeds of operation, the new microprocessors are also being used to provide easier-to-use systems. Self-help facilities in terminals are becoming much more common and this is now a key consideration in the design of new products because of the growing number of users without previous EDP experience.

Data General, for example, has incorporated self-help facilities as standard on all its new interactive products, including networking, data base querying, word processing, graphics/plotting, etc., and has established a means whereby an end-user can add to these self-help files in terms of using the same conventions for programming his own applications. "HELP" key for example, is incorporated into the keyboard of

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Abraham Hirsch is Marketing Manager, Graphics Products, and **Gabrielle Silber** is Marketing Manager for Alphanumeric Display Terminals, Data General Corp.

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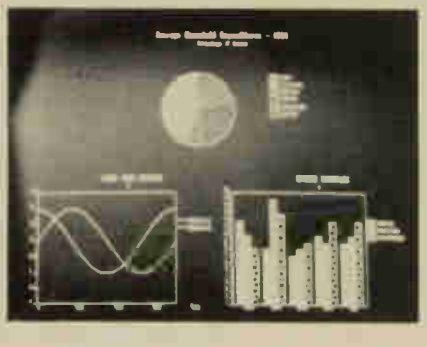

Focus on terminals

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new products to enable users to call up assistance files.

All the manufacturers are moving towards making their systems less intimidating and therefore more productive for the user.

Another emerging trend is online self-help multi-level tutorial display programs acting as electronic instructional manuals. This means that users will be able to study and learn how to operate the terminal by calling up pages from the manual onto the screen. Such built-in electronic manuals will become more popular as paper costs continue to rise and as the need for energy conservation becomes more critical.

Embryonic stage

In terms of new graphics software, the industry is however still in an embryonic stage. Manufacturers are developing separate technical graphics English command type languages—building-block languages with sub-routines which make it far easier for the user to program. Eventually, we will see graphics terminals that can also be used for word processing and data processing. A user will be able to create reports, add tables, charts and even illustrations, then transmit the documents to others.

In the short term, the raster technology in graphics terminals will continue to dominate. The raster concept basically consists of scanning the screen at a constant rate in a constant pattern.

The steep decline in the price of 16 kilobyte RAMs has enabled manufacturers to produce high-performance medium-resolution raster graphics terminals for under $5,000.

Obviously, the home and personal computer graphics have much less resolution because of the price barrier, but as the price of RAMs comes down—especially later in this decade when the 64-kilobyte RAMs come into high volume production in the 1984-85 period—much higher resolutions will be available in lower priced terminals both for the office and the home.

Integrated office systems

During the next two decades we will see the universal implementation of integrated information systems, creating a massive demand for all kinds of new specialized office terminals. However, this will take time. The office hasn't changed much in the last 40 years and is still a bastion of much conservatism. Even companies that have been using word processors for the past five or 10 years are only now beginning to see what can be achieved with office automation systems.

The first step in implementing an integrated office system is to get the end-users, including the professional managers, accountants, analysts, marketing and sales executives, active in the planning process. Until now, end-users have tended to deal only with the data processing department, but this is changing. Many of today's managers have college computer science experience and are using low-cost personal computers to handle such applications as budget and portfolio analysis and financial planning and modelling.

The terminal is opening a window on a new world of information and graphics, and is becoming a key tool to users in every conceivable area of activity.

This is just the beginning. Eventually, they will use their small microcomputers as terminals to the corporation's information resources in the corporate computer system.

A critical element in any automated office will be the organization of the information data bases. A great deal will depend on how these can be changed in order to adapt to the new patterns of access to the data. There will be a synergy: The computer systems will eventually allow companies to enter new markets, develop new products and form new businesses because of the range and power of the information they can provide and access.

Managers will be asked to make much more critical decisions much more rapidly. And the only way they will be able to do this is to have instant access through terminals to a large volume of data and have it presented in a form which is conducive to sound managerial decision-making.

All this means that the terminal/micro product market will continue to explode. The terminal will become as common as the calculator. We are going to see a tremendous variety of specialized industry and job type terminals custom-designed and tailored for specific workstation activities. All will be designed to allow the user a window into a world of information both from within the computer systems to which they are attached, and also from other computers and data bases.

However, as terminals proliferate, security measures and techniques will become more critical. Increasingly sophisticated security devices will be built into the terminals of the future so that each can be uniquely identified, matched to a user's name and password, and perhaps even to some type of security code. The use of encryption techniques will be much more prevalent.

Human engineering

Human engineering and environmental factors are becoming increasingly important in the design and operation of terminals today.

Some European countries, notably Sweden, have imposed legislation regulating the daily number of hours a person can work at a CRT terminal screen. Standards have been set for keyboard angles and adjustment capability.

External lighting is another consideration. For example, some research findings recommend that fluorescent lighting should be perpendicular to the angle of the CRT screen. Many apparently negative factors such as eye strain have been shown to be caused by environmental factors such as lighting and proper seat-to-desk height and are not an intrinsic fault of the terminal. A great deal of attention is being paid to eyesight factors in the use of CRTs, culminating in research that shows, for instance, that green phosphor displays are easier on the eyes.

Office interior designers are becoming more aware of CRT terminal environmental requirements. Lighting design, intensity and layout; noise levels; the creation of a sense of privacy for the operators—even the colors used for carpets and walls—are all factors now being

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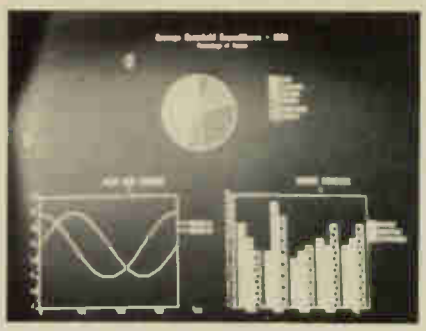

Focus on terminals

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taken into account as the CRT terminal reaches into every corner and activity of business and industry.

Radiation emissions

A topic of discussion in recent years has been the possibility of danger to human operators from radiation emissions from CRT terminals. Radiation can be precisely measured in the laboratory, but researchers have not yet determined at what levels such emissions are harmful, if at all. TV sets give off radiation and human beings are subjected to a continual bombardment of background radiation from space and the sun.

Manufacturers are, naturally, concerned and have been working to reduce radiation by decreasing the amount of power required to operate terminals. All manufacturers of terminals have to comply with strict Government regulations concerning radiation emissions and frequency interference. In October, 1981, a new U.S. Federal Communications Commission regulation will go into effect imposing even tighter restrictions on all newly manufactured products, including CRT terminals.

Prices to rise

Although prices for the teletypewriter and 'slave' types of terminals will probably drop in terms of inflation in the future, prices of the more sophisticated data/graphics-oriented terminals will likely rise over the long-term.

High resolution color CRT technology is not yet mature, therefore economics of scale will not apply for some years as manufacturers make heavy R&D commitments to this technology. The manufacturing cost of the cathode ray tube itself—particularly for color devices—is increasing, while the cost of plastics for the terminal housings grows with the rising price of petroleum. However, higher performance, reliability through built-in diagnostics, ease-of-use and specialization will offer cost-effective benefits.

The user will have to make a much more difficult choice between price and performance in the future. The price of the standard teletypewriter terminal will come down because there is still an on-going mass market for these machines.

Many companies have made huge investments in large central processors and cannot afford to acquire significant numbers of highly sophisticated terminals. In addition, depending upon the nature of their business, many organizations require a large number of terminals for straightforward applications. Therefore, the slave-type devices will continue to be in demand both from applications and security standpoints, and also because of the difficulties in finding and training a large workforce in the operation of intelligent terminals.

The market for simple batch mode data entry terminals, however, is rapidly disappearing due to the fact that an increasing amount of information is being captured at the point of generation. Point-of-sale terminals, banking terminals, graphics terminals and other data capturing devices on the factory floor, in airline offices and travel agencies, for example, are entering information directly and interactively into computer systems. The costs involved in implementing and maintaining a comprehensive computerized communications network make the use of more sophisticated terminals much more cost-effective. The issue of communications costs, as well as frequent over-loading of the main processor were major considerations in the movement from the centralized mainframe to minicomputer-based distributed networks.

The next two decades will witness an incredible surge in the use of terminals, particularly advanced color graphics and audio-activated systems.

However, despite rising communication costs, the advantages of instant retrievel and transmission of data for immediate decision-making are often paramount as can be seen by the growing popularity of the small low-cost hand-held terminals that can be linked to a computer by telephone line. Even the telephone companies are getting into the act with the introduction of telephone terminals incorporating small displays.

Dial-up terminal systems and small personal computers with communications will become more common for away-from-office use by managers and executives. Some of the hotel chains now offer dial-up terminals for rent to businessmen on out-of-town trips.

Voice terminals by 1984

One of the next major steps in terminal development will be commercially available voice-activated terminals. Serious experiments have been taking place in this technology over the past several years by a number of companies and research institutions.

Most of the fledgling voice recognition systems still only recognize the voice of one or two people from the 'voice data base' held in the computer. However, some semiconductor companies have recently developed chips that will recognize limited vocabularies.

It is probable that by as early as 1984, there will be a number of commercially available terminals in use that are capable of reacting to simple voice commands, eliminating the need to enter those commands on a keyboard. Although the range of activation may be somewhat limited, users will be able to make data base queries and receive answers to those queries on the screen in table and graph formats. Users will be able to voice-command the computer to display and send electronic mail and reminders and print documents.

Therefore, audio techniques are definitely a part of the near future for terminals in terms of executing voice commands. It is also quite possible that such rapid developments will take place in voice-activated systems that the keyboard may be virtually obsolete by early 1990.

Japan may be one of the first countries to eliminate the keyboard in terminal devices. Japan is spending considerable sums on voice-recognition systems simply because of the difficulties encountered in designing keyboards to accommodate the 8,000 character Japanese language.

Information as a product

Meanwhile, other technologies will also come into play. For example, the ability to interact graphically by means of light pen, the finger or use of a data tablet will be-

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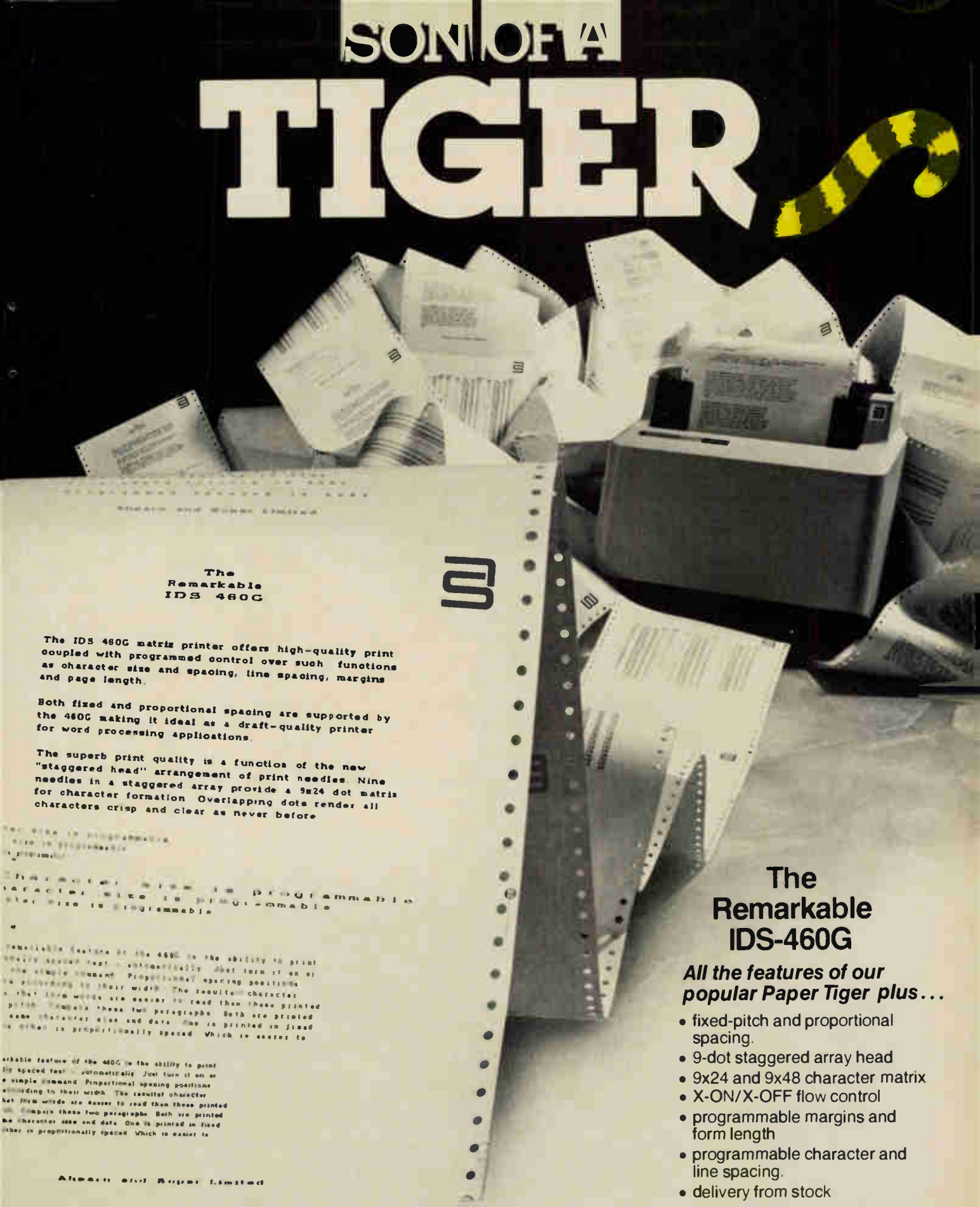

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come very common within the next few years.

With the advent of more flexible and more intelligent terminals, information will itself become a product. The new graphics technology is already starting to impact the print and TV media in terms of the communication of information to sell goods and services. The broadcasting networks, newspaper and magazine publishers are well aware of what is at stake and they are rapidly embracing computer technology in all its forms as they realize the immense potential of information as a product.

The recent introduction and implementation of field trials in videotex technology is a harbinger of what is to come. Even the home TV set is destined to become part of an interactive terminal system for a variety of services.

The next two decades will witness an incredible surge in the use of terminals—particularly sophisticated color graphics and audio-activated systems. The younger generation will take these developments for granted and will fuel the market demand.

Somewhere in the future—perhaps by the end of the decade—flat-screen terminals and other products and technologies still in the experimental or "ideas" stage, or not yet thought of, will make their appearance . . . There can be no doubt that the terminal is here to stay well into the 21st century. □

New security technology can thwart computer crime

Automated, technologically sophisticated safeguards by themselves are not the answer to preventing computer crime. But to enhance security a combination of technical safeguards and proper management and administrative responsibility and control will be required.

This was one of the key observations by D.G. Farmar, Peat, Marwick and Partners, at a recent computer security seminar in Toronto, conducted by the Ontario Provincial Police.

Looking at likely developments in security technology, Mr. Farmar notes that we will see more applications systems designed with controls to prevent or detect fraudulent use of the system. He also expects better control over access to computerized data using hardware features such as fingerprint or voice print identification, as well as software improvements to identify authorized users to a data base and to restrict their access to only that data to which they have a right.

Other likely developments will include:

□ The development of better and easier-to-use software to make inquiries of computer systems and to record and analyze who has accessed the system.

□ Increasing use of encryption or coding of data as it is passed along communication lines.

Mr. Farmar notes that for the next decade however, we will be in a situation of a real skills shortage in the areas of computer audits, security and control, and this will take resources within organizations to keep skills current.

Prevention of computer crime is a company-wide effort, said Mr. Farmar, one that is not restricted to the data processing department or the DP professional.

"A combination of technological safeguards and proper management and administrative responsibility and control is the answer."

He suggests that management commitment and involvement are needed to accept responsibility and accountability; to identify and evaluate risks and to make business decisions trading off costs and risks in computer security. He also suggests that a well-managed and controlled EDP organization is important and that organizational changes may have to be implemented to divide responsibilities. Control and security strategies need also to be developed.

"While computers not only create opportunities for crime, they also create opportunities for the development of properly designed systems which can enhance the competitive position of an organization and offer even better control than previously possible," he said. □

Canada's rules hostile to computer services

The Canadian environment is hostile to the development of computing, said R. G. Taylor, president, Datacrown Inc., at the recent Data 81 Conference in Winnipeg.

"The economic and political rules under which we operate tend to make data processing more costly and economically less attractive in Canada than in other countries," he said.

Mr. Taylor noted three problems facing the Canadian industry:

Tariffs and federal sales taxes make computer hardware costs higher in Canada; the depreciated Canadian dollar adds a further burden to the cost of imported machinery and equipment; and the transfer of large volumes of data processing to U.S. corporate centers deprives the Canadian industry of job development opportunities. Mr. Taylor maintained that each of the problems can be solved.

"The federal government could move more rapidly to eliminate tariffs on imported computer hardware that cannot be obtained in Canada," he declared.

He noted that the view of "most of us in this industry is 'don't protect us.' Don't propose artificial barriers, which can after all work both ways."

Mr. Taylor pointed out that "more than 75 per cent of the computer services industry is Canadian owned." This relatively high percentage was achieved, he added, "independent of any special protection or legislative favouritism."

His second proposal would have the Canadian government "provide assistance to its exporters of data service through offering an abatement of the federal sales tax on imported computers, when those computers are used to deliver export services."

He suggested reductions in tariffs and sales taxes, along with tax incentives for companies to keep their EDP functions in Canada, would be the most effective way of stopping the flow of personal, computer-stored data across borders.

"I can well understand, and support, the need for Canadian control over data relating to privacy, to security, to national defense," he said.

"But I would hope we never get to the stage where it would be impossible for any data on Canadian citizens to be maintained outside the borders of Canada. I wonder for example, what this would do to the use by Canadians of international credit cards when they travel outside Canada. We don't think we could want or could afford the kind of closed society that a total ban on trans-border data flow would create."

Third, he suggested offering employment tax credits to Canadian corporations "to induce them to provide more data processing jobs by handling their data in Canada, rather than moving it across the border for processing at U.S. head office sites."

Mr. Taylor also called on government and the common carriers to take steps to reduce telecommunications costs, which he said were up to one-third higher in Canada than in the U.S. He said data could be transmitted more cheaply from Western Canada to Washington, D.C., than from Western Canada to Toronto. As long as this situation exists, he said, "there will be a great temptation among multi-nationals to continue to have their data sent to the U.S." □

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BCS enhances system to provide dial-up access using SNA

Boeing Computer Services, with some 2,000 customers for its time sharing operations in the US, Canada and England, is opting for the full implementation of the IBM Systems Network Architecture (SNA), claiming to be the first remote computer services company to provide such dial-up access using SNA.

The company announced the move at a recent press conference, at which it also introduced several service offerings said to provide significant productivity gains to data processing professionals.

"These time-tested tools have been available previously in a limited way," states the company, "but now BCS becomes the first time sharing company to make their full power available on a telephone dial-up basis."

The full implementation of SNA opens the door for BCS support of all 3270-type and other SNA-compatible terminals. The action also enables the firm to offer several powerful software packages that previously were unavailable via dial-up access.

BCS also announced: Mainstream-EKS/VSP, a special-purpose scientific/engineering data processing service based on the Cray-1 computer; Terminal Service Unit (TSU), a proprietary hardware device that improves data transmission reliability, and System Language/One (SL/1), an automated systems language to which the company has obtained marketing rights.

SL/1 is available in Canada through Probe Software Sciences Ltd., Montreal.

With the announcement of Systems Network Architecture, BCS becomes the first remote computing company to provide dial-up Synchronous Data Link Control (SDLC) network capability, notes BCS, and supports bi-synchronous and asynchronous telecommunications protocols.

According to BCS, the introduction of SNA "provides customers with the opportunity to take advantage of the newest data transmission technologies such as satellite communications, yet remain within the framework of existing service offerings."

Adopting SNA also provides a philosophy of data communications networking that recognizes such technologies as intelligent terminals and distributed data processing. The new SNA facility also enhances the existing network through the implementation of two Advanced Communications Function (ACF) components: Virtual Telecommunications Access Method (ACF/VTAM) and Network Control Program (ACF/NCP).

According to the company SNA offers customers an efficient way to support advanced terminals such as the IBM 8775, and to access its Mainstream-TSO remote computing service via dial-up using IBM 3270s and 8775s. In addition, SNA provides the base for supporting distributed data processing applications using the IBM 8100 and 4300 processors.

The new network capabilities permit BCS to offer on its Mainstream-TSO service a new series of software packages that are said to be particularly productive when using the full-screen data transmission facilities of 3270-type terminals. Included are: IDMS (Integrated Database Management System), a database management system that simplifies application development and data access for all users while eliminating data redundancy and inconsistency; Panvalet, a direct access library system that provides positive, flexible, data security while eliminating card storage of programs; SPF (System Productivity Facility), a subsystem that provides a variety of programming and editing functions and that takes advantage of the capabilities of the 3270 display terminal; DL/I (Data Language/I), a database management system that allows users to manage large amounts of information; CICS (Customer Information Control System), a transaction-oriented system that controls the resources used in an on-line environment; SDF (Screen Definition Facility), an application development tool that simplifies the process of screen (map) definition, and DMS (Development Management System), an application development tool that is said to require little traditional programming skills.

For scientific and engineering computing, the company introduced its Mainstream-EKS/VSP service. This service is based on the Cray-1 computer and relies on the Cray's vector processing capabilities to handle large-scale computational programs up to 16 times faster than previous systems.

For users of low-speed data terminals dependent on local dial-up lines, BCS announced the Terminal Service Unit (TSU) offered as a complement to its new timesharing service. The TSU is designed to solve line noise problems such as static and interference and to eliminating reruns of data caused by faulty transmission. □

Billed as a first in the industry, Terminal Service Unit (TSU), designed by Boeing Computer Services for use with low-speed terminals uses local voice-grade telephone lines. Device provides error control, data quality monitoring and terminal usage statistics.

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OVERVIEW REPORT

What's ahead in character recognition for data processing

New character recognition systems offer new capabilities, and their lower cost and smaller size make them increasingly attractive for decentralized applications.

Advances in microelectronic technology and a strong need for more effective communication are the driving factors leading to new systems and services for character recognition.

An overview of this technology and its prospects was recently provided by Dr. Christoph Maier-Rothe, European Director, Arthur D. Little International Inc., at the Fourth Executive Forum in International Telecommunications, held in Paris, France. Here's a summary of his observations:

Character recognition systems can read characters from typed, printed, or hand-printed documents, forms, and regular pages. Their output can be either a character code in some standard format (such as ASCII) or the input documents themselves, sorted according to some sorting criteria on the basis of characters read from the documents. The only purpose of many systems is to sort documents into a large number of stackers.

The principal components of a character recognition system are a document transport device, a scanner, a recognition unit, and a processor (Fig. 1). The most critical components are usually the scanner and the recognition unit. The document transport device moves the input documents past the scanner. The scanner then passes the digitized image to the recognition unit, which extracts the characters. The processor controls the different components, including the document transport and various types of support subsystems such as storage devices, printers, output sorters etc.

The technology, applications, and markets of character recognition systems are fairly mature. New character recognition systems will offer more powerful and versatile recognition capabilities, and will be smaller and less expensive. We distinguish four broad categories of character recognition systems: document readers/sorters, page readers, handheld readers, and direct input devices (Fig. 2).

Document readers/sorters

Character recognition systems have been particularly successful in applications that require processing extremely high volumes of standard documents, the quality of which can be fairly well controlled. For this reason batch processing of standard payments documents such as cheques is by far the biggest application area for character recognition.

Both magnetic (MICR) and optical (OCR) character recognition methods are commonly used in this application. Large systems read at a rate in the order of 10,000 characters per second and can process over 100,000 documents per hour.

Other applications markets for document readers/sorters are much smaller, but some are growing faster, such as transaction processing systems, which typically operate in a start-stop mode with human operator input (e.g. processing of turnaround documents at a service counter).

Page readers

Whereas document reader-and-sorter systems normally read only one or several lines of selected fonts, high-speed page readers are often much more versatile in terms of acceptable fonts and character sets. General data entry systems, for example, can read information from order forms, invoices, packing lists, social security forms, etc. Smaller page readers in OCR and other forms capture text prepared on typewriters for subsequent processing by word processing, text editing, and photo composition systems. In another application, page readers capture text for subsequent communication by Telex or TWX.

Handheld readers

Stationary handheld readers are used mostly in department stores to read product labels imprinted with OCR font. Portable systems are also used to read preprinted item tickets and labels, in warehousing and distribution applications. Handheld readers currently represent the fastest-growing segment of the market for character recognition systems.

Direct input devices

The market for direct input devices is still embryonic. These systems do not use a scanner, but a sensitized pad onto which the operator writes the characters to be read.

Markets and technologies

The worldwide market for character recognition systems is currently in the order of $400 million. We anticipate that this market will evolve without dramatic breakthroughs in terms of technology. The industry is fragmented, and current market volumes and growth prospects do not offer participants sufficient inducements to allocate large R&D funds to this area. Development work is aimed at:

- improving recognition capability to allow more fonts (particularly handwriting),
- reducing costs by using advanced microelectronics, and
- increasing speed and reliability by improving complicated mechanical subsystems and partly replacing them with electronics (Fig. 3). Most improvements will probably focus on the scanner and the recognition unit, since both can benefit substantially from progress in microelectronics.

Scanners. Most scanners are based on various types of linear photodetector arrays. We expect to see more use of integrated solid state detector arrays with large-scale integrated circuits. Either charge-couples devices or charge injection

devices could be used. Interrogation logic, buffer storage, and switching are expected to be integrated into the scanner circuitry. Another interesting development is the solid-state-based flying spot laser scanner, which, with digital controls, could lead to a very flexible and powerful device for a number of applications.

Recognition units will benefit from the availability of more powerful and inexpensive processors. Use of such processors would allow the implementation of more complex algorithms for processing the image and recognition of characters. Of particular interest are algorithms that can be trained to recognize a wide variety of character fonts, including handwriting.

New system

Over the next ten years we will probably see a movement away from today's very large, centralized document batch processing operations, toward a more decentralized approach. The following systems are likely to appear on the market over the next ten years:

- A small document transaction processor with limited font capability and slow reading speed, to be used as a decentralized terminal in counter-type operations in banks and post offices.
- Low-cost multifont page readers with medium speed, to be connected to word processors and text-oriented telecommunications terminals as part of the trend in office automation.
- Compact and truly portable readers with slow reading speeds and exchangeable fonts, to be used as stand-alone units or as attachments to mobile data entry terminals.
- Omnifont readers that can be trained to read most typed and printed fonts and hand-print at medium-to-high speeds to capture general text for input into information banks.

Later in the decade recognition systems may become available which can be trained to read individualized, connected handwriting. Even though current technology is far from achieving this, there is little doubt that it can be done, if a supplier is willing to engage in a major software development program. The key question is whether there would be sufficient demand for such a capability.

Another interesting idea would be to develop an interface device for character and facsimile code. Such a device would apply character recognition algorithms to high-resolution facsimile code and translate it into character code. Conversely, it could explode character code into facsimile code. Such an interface device could be used in a mixed mode communications environment and would also be extremely useful for eliminating redundancy and data compression. □

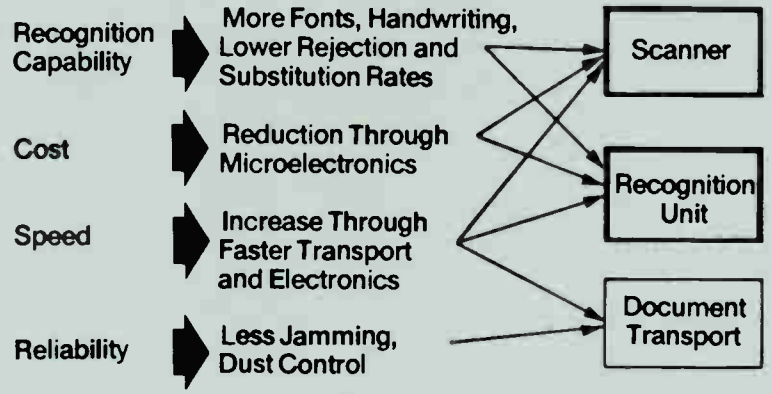


Fig. 3—Development of character recognition systems

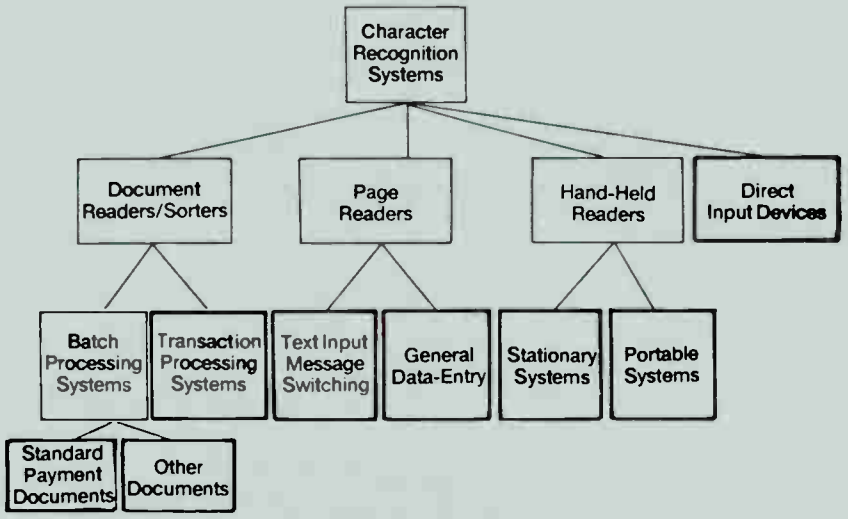
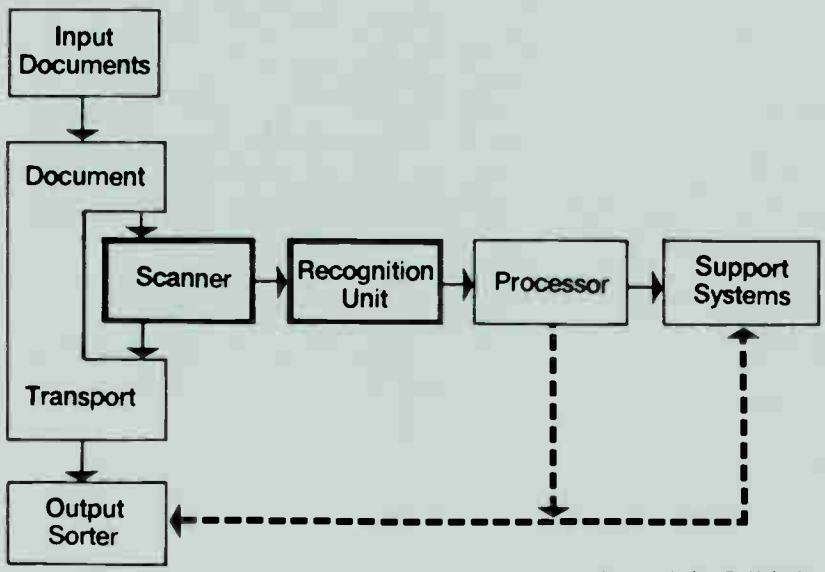


Fig. 2—Principal character recognition systems



Source: Arthur D. Little, Inc.

Fig. 1—A typical character recognition system

Honeywell's Micro Switch division introduces the world's first sealed, solid state membrane keyboard. The membrane is a six-layer polyester film "sandwich", about 32 mils thick (0.032 inch), or thinner than a fingernail. The dots and lines are conductive ink patterns, screened on two of the tissue-thin plastic layers. The dots are capacitive plates that transmit electronic signals when the membrane is flexed by the touch of a traditional keytop. A completed membrane keyboard unit is in the foreground.

Membrane technology applied to new keyboard

Honeywell's Components Division lays claim to being the world's first full line supplier of keyboards with the introduction of three new Micro Switch keyboards using variations of membrane technology.

The new offerings include the first sealed, full travel capacitance keyboard; a sealed, full travel contact keyboard and a flat, touch panel keyboard. All three use unique venting and sealing procedures to protect the signal-generating elements, said Ken Lynch, market manager for the firm's solid state products.

The new membrane keyboards have been designed for newer, lower cost terminals now being introduced, he said.

Everett A. Vorthmann, Micro Switch's director of engineering for manual products, said the sealed capacitance membrane keyboard virtually eliminates a serious problem of most capacitance keyboards, unpredictable signal generation due to dust and moisture. Additionally, because of a patentable capacitive network, the membrane keyboard actually offers superior overall performance characteristics, he stated.

Membrane keyboards are constructed from thin sheets of polyester film. Polymer ink networks of pads and connecting lines have been screened onto two of the Mylar sheets. These two plastic sheets are separated by a spacer sheet with holes cut out corresponding to contact pad locations. Depressing a keytop brings the two screened ink networks together to generate appropriate signals.

According to Vorthmann, all membrane keyboards should be vented to relieve internal pressure built up during storage at temperature extremes or through multiple key actuation. Both full travel membrane keyboards utilize a unique six-layer sealing sandwich for internal venting, which permits full sealing against fluids, moisture and dirt.

"To the best of our knowledge, these are the only full travel membrane keyboards that are internally vented and completely sealed," he said.

The traditional problem of stray capacitance has been minimized, according to Vorthmann, through unique "floating pad" capacitor plates that fit between the normal screened-on drive and sense pads. This arrangement permits utilization of a well defined fixed capacitor in series with a variable capacitor. Additionally, a matrix encoder automatically grounds unused sense and drive lines to provide "shielding", which reduces the impact of electrical noise and stray capacitance.

The capacitive membrance keyboard also offers multi-key rollover (NKRO), an electronic procedure for accommodating the burst-speed typing that characterizes batch data entry and word processing applications.

The second full-travel membrane keyboard line is a hard contact version. The contact keyboard will be offered as a wired-only product and as an encoded keyboard with a two-key rollover (2KRO) option.

Both the capacitance and contact membrane keyboards offer standard or low profile key modules that meet the newest European standards for display work stations. Human factors testing to date indicates that operators react well to the tactile response built into both key modules, states Honeywell.

When high throughput is not a factor, the flat, touch panel keyboard is recommended. There are no key modules or keytops since legends are screened directly onto the embossed panel surface. The touch panel keyboard is designed for adverse environments where panel sealing is critical. The touch panel keyboard is channel vented from the spacer layer and the lower circuit layer through baffles to screen out contaminants.

A typical fully-encoded, 70-key capacitance membrane keyboard sells in Canada for about $85 in quantity orders. A wired-only, 70-key contact membrane keyboard will sell for about $60 in quantity orders. A typical touch panel keyboard will sell for under $40 in quantity.

A 70-key wired and encoded Hall effect keyboard sells for about $115 in volume. □

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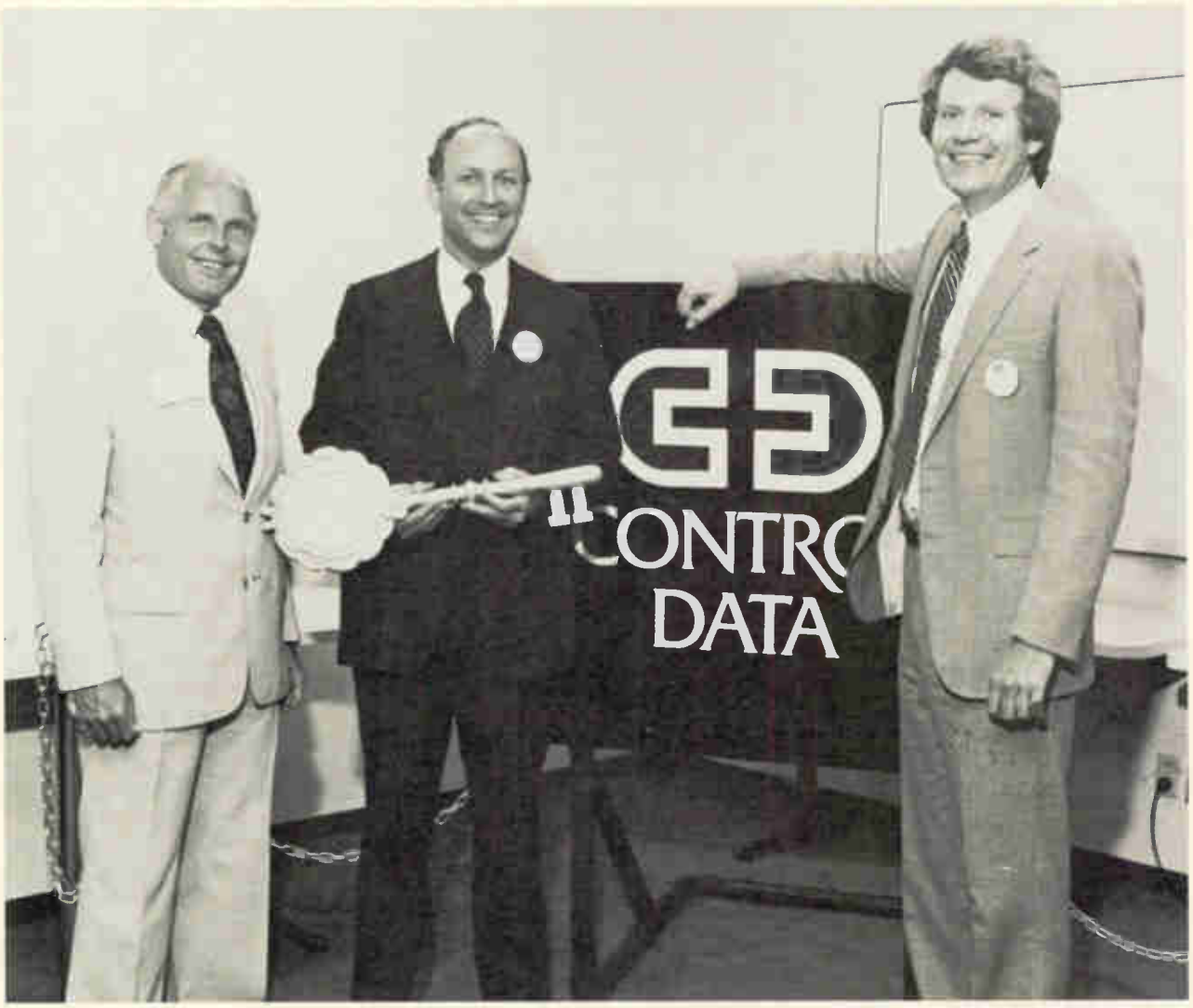
INFO

CONTROL DATA



***Education Centre Offers Computer Skills**
***CYBER 171 Installed at Historic Acadia**
***CYBER 205 Installed at Meteorological Centre**
***CYBER Workstation**
***New Press for Business Products**

Downtown Education Centre to Meet Urgent Need for Computer Skills

The implications of the 110 Bloor St. site are many. It's downtown and "store-front" where people and jobs meet (business oriented).

"Traditional education methods are a barrier in themselves to meeting today's job market needs," says George Hubbs, president of Control Data Canada, Ltd.

Speaking at the official opening of Control Data's Education Resource Centre at 110 Bloor St. West in the heart of Toronto, Mr. Hubbs said, "Traditional methods don't fit because the curricula can't change fast enough to meet specific demands.

"On the positive side, at the college and university level, extensive data processing facilities are supporting various curricula. As a result, graduates in many different disciplines encounter data processing at university. Unfortunately, Canada's needs won't wait for them. It just isn't sufficient to rely on these future products of the educational system. More data processing people are required sooner. So, Control Data is acting now to meet the need for computer operators, programmers and technicians in business and industry," Mr. Hubbs said.

"The students we expect to attract to the 110 Bloor site are young people who realize the realities of Canadian life today, people who know that the best personal security lies in possession of a transferable skill. Their Control Data credentials will be accepted everywhere. We intend to give them the kind of training that they can use to launch their careers, and plug back into our personal development and advanced training courses whenever they wish to upgrade or change direction, Mr. Hubbs said."

Control Data sees its newest site, in the heart of Toronto, as having many advantages. It's downtown and 'store-front' where people and jobs meet; the hours are flexible (morning, afternoon, evening) to suit student schedules; and it provides a total curriculum whether it's career entry, personal development or an advanced seminar.

"I think our Centres are a unique approach to filling the need in industry and business for people with computer skills," said Mr. Hubbs, "because we offer a total career package."

Mr. Hubbs sees the integrated delivery of career entry (Control Data Institute), personal development and new skills (Learning Centre), and seminar operations (Institute for Advanced Technology, Institute for Management Training) in a downtown location as part of Control Data's continuing leadership in computer industry training.

He explains that while many computer companies train their own employees, Control Data has enjoyed a great deal of success in training people for computer jobs in general. The first Control Data Institute opened in Toronto in 1970 and since then has placed over 5,000 people in the computer industry.

It takes three months of study to become a computer operator, six months to become a programmer and seven and one-half months to become a computer maintenance technician capable of maintaining increasingly sophisticated computer equipment.

"Traditional methods have meant that everyone learns at the speed of

Front Cover

Control Data has officially opened the new facilities for its Education Resource Centre at 110 Bloor Street West in the heart of Toronto. The ceremonial "unlocking", with the key to the future - Education, was conducted by Walter G. Pitman, President of the Canadian Association for Adult Education; George J. Hubbs, President of Control Data Canada, Ltd.; and A. Bruce McKelvey, General Manager, Education & Computer Services Division of Control Data Canada.

Control Data offers individualized, computer-based instruction.

the class they're in," said Mr. Hubbs. "Here, at our Education Resource Centre, a student is self-paced and education is individualized so that one progresses at his or her own natural rate."
Control Data operates education services branches in Montreal and Willowdale, in addition to the 110 Bloor site, and is opening an Education Resource Centre in Vancouver in September of 1981.
The Education Resource Centre in Vancouver will also have full individualized facilities, based on Control Data's PLATO computer-based education system and other techniques of instruction.
Walter Pitman, President of the Canadian Association for Adult Education joined with Mr. Hubbs to ceremonially open the 110 Bloor site with the turn of a giant key - the key to the future - education. □

Students have to complete assignments by a certain deadline so they'll get the feel of what it's like in industry. They're subjected to much the same pressure they will encounter when they enter the working world.

Education Resource Centre Aims Computer Courses at Industry Needs

The courses offered at Control Data's Education Resource Centres (Control Data Institute, Learning Centre, Institute for Advanced Technology, Institute for Management Training) are aimed at industry needs rather than just theoretical study. While university courses often direct training to scientific and engineering, Control Data emphasizes the more practical, business demands of computers and personnel.
The opening of Control Data's newest Education Resource Centre signals another victory in the fight against the shortage of computer programmers, operators and technicians in Canada.
While a person can train in the three primary job roles of computers at any number of universities and community colleges, there are few reliable sources of training that concentrate just on the subject at hand - computers.
Many computer companies train their own employees, but Control Data is having a great deal of success in training people for computing jobs in general.
Students have to complete assignments by a certain deadline so they'll get the feel of what it's like in industry. They're subjected to much the same pressure they will encounter when they enter the working world.
Perhaps it is this touch of realism that led one employer who prefers to hire Control Data graduates to say, "I don't know what they're doing differently but their graduates are able to work on their own sooner, with little or no supervision, than graduates from any other institution."
Many of Control Data's placements are through referrals. After 11 years in the education business, Control Data is very established and trusted by employers across Canada who often telephone to give the criteria for a particular position and rely on Control Data to send them a selection of students who can best perform the prescribed duties.
Control Data uses its own make of equipment for training but the objective is to prepare students to work on anyone's equipment. Emphasis is put on some of the larger computer manufacturers with whose equipment students are likely to come in contact. However, if a person knows how to operate one computer they can operate another make as well.
The instructors at Control Data are industry trained and experienced. Not only do they have the necessary credentials (university degree or several years in the industry), they must also have a feeling for the industrial need in the computing field and be able to relate that to the students in order to better prepare them.
Control Data operates education services branches in Montreal, and Willowdale and in addition to a new location in Toronto is planning to open in Vancouver in September of 1981. At present there are 20 centres in the U.S. and 10 in Europe. □

New Vancouver Institute fills need in Local Business Community

Control Data Institute the local branch of the Education Services Division of Control Data Canada, Ltd., has been established to meet a growing need in the Vancouver business community.
The fourth Institute in Canada, and one of nearly 40 around the world, Control Data Institute offers training in computer operation, computer programming, and computer technology.
A computer operator physically controls the computer during operation. A programmer creates the instructions that tell a computer what to do. And a technician installs, maintains, and repairs computers.
Control Data Institute can train qualified personnel in any of these three areas in about six months of study, or 650 hours. At the Institute, computers are for all training, and courses are divided into individual modules, so that each student learns at his or her own pace.
"For the student who does not wish to spend the several years involved to complete a computer science course at university or in a community college, the CDI program offers some very real advantages," according to Vancouver's CDI director Mike Stein.
"Our program is practical, and concentrates on job skills" Stein said. "And we are not subject to cutbacks in government spending."
CDI is a learning centre accredited by the BC Ministry of Labour under the Apprenticeship and Training Development Act. As such, tuition fees are tax deductible, and students are eligible for government loans and grants. □

Cyber 171 is the Modern Heart in Acadia's Historic Setting

Students, staff, and faculty at Nova Scotia's Acadia University now have a Control Data CYBER 171 at the heart of their historic university, famous for its contribution to society of eminent scholars and leaders in government, business, and industry.

The major use of the CYBER 171 is for academic purposes; there are over 330 students who are studying computer science as their major subject while approximately 250 business students take an introductory course in computing as part of their training. Add this to research work being done and input from the professors, a continuing education program that offers some very popular computer courses, student registration in more than 100 programs, library services, alumni records, chemistry inventory, and a growing amount of research and Acadia has a definite need for a computer system that is upgradeable in the 1980's.

Demands on computing time at the University have increased by 25 per cent per year as enrollment grows by the same percentage and administrative demands become heavier.

A Student Information System makes extensive use of the CYBER system. Student admissions and registration information is stored, statistical student reports are prepared, examination timetables are generated and student mark reports are printed.

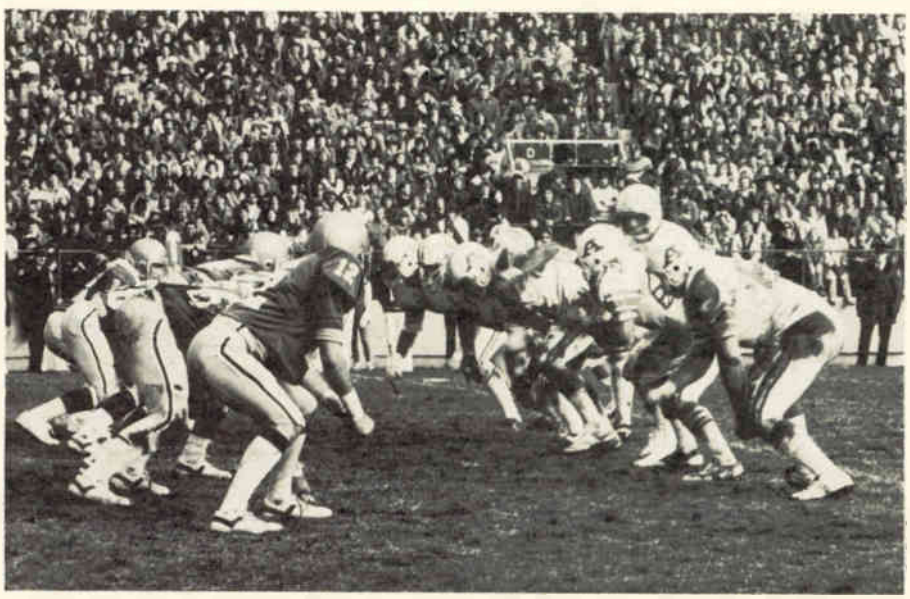
This is a computer site? Many a customer engineer has scratched his head upon first glance at Acadia's University Hall, the site for computing services on campus. Opened in 1925, the hall stands near the site of the original administration building built by Baptists in 1843. There are presently 64 terminals on campus hooked up to the CYBER 171 compared to the 32 terminal limit on the previous system. The previous system was experiencing response times measured in minutes but this has been substantially lowered on the CYBER system. Acadia boasts the only School of Computer Science in Nova Scotia. In September, 1981, Acadia will initiate a new co-op study program in computer science which aims to keep new graduates of computer science in Nova Scotia and at the same time raise the general level of computer applications within the province.

A direct spinoff benefit of this type of usage is the publication of the University's student telephone directory. Once all the registration information is fed into the computer, a camera-ready copy listing all students names, local addresses and home address can be printed in 20 minutes.

The Vaughan Library, now housing over 350,000 items, utilizes the computer for all accounting procedures in relation to the acquisition of new books and binding orders. The future also holds the possibility of cataloguing and circulation records being computerized.

The office of alumni affairs has also found the computer to be of great assistance. All alumni records are stored on computer with new graduates' names being added each year. The system permits ready access to alumni by geographical location, year of graduation and degree. The availability of this information saves a great deal of time in sending out notices and relieves the alumni from receiving unnecessary mail.

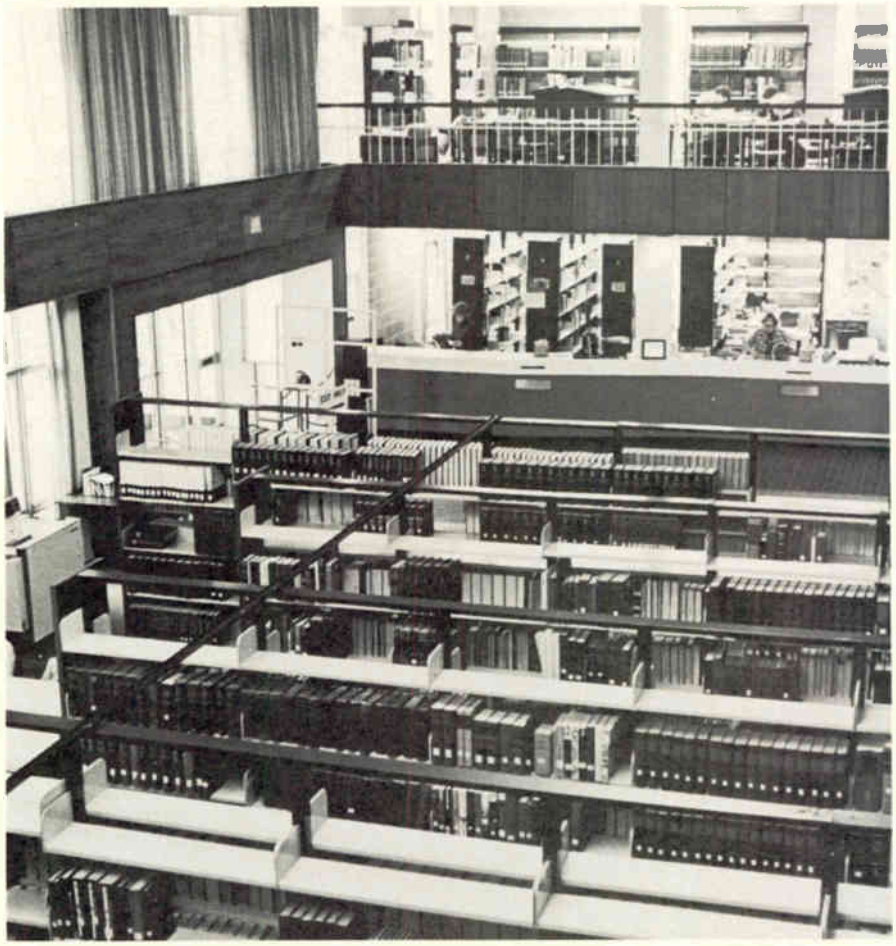
The Control Data system consists of a CYBER 171-6 with two 7152 tape/disk controllers, four 844 disk drives, two 669 tape drives, one 405 card reader, one 580 line printer, a 2550 communications network processor and a 6671 multiplexor which is



The Acadia Axemen won the 1979 College Bowl symbolic of Canadian college football supremacy. This season the team's plays and programs are computerized with the players receiving printouts.

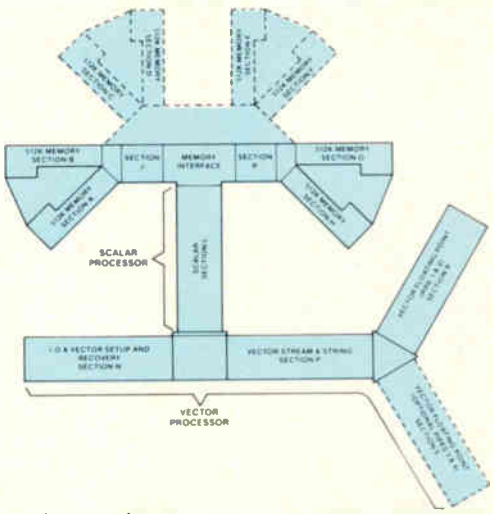
used to link up with Dalhousie University's CYBER in Halifax. There are presently 64 terminals on campus hooked up to the CYBER 171 compared to the 32 terminal limit on the previous system. The previous system was experiencing a response time of minutes but this has been substantially lowered to approximately five seconds on the CYBER system. This gives the computer users the sensation of being the only user on the system when, in fact, 63 other users can be working at the same time.

With this kind of versatility and flexibility, computer application possibilities in the '80's are almost limitless at Acadia. □



The Vaughan Library, housing over 350,000 items, utilizes the computer for all accounting procedures in relation to the acquisition of new books and binding orders.

CYBER 205 Installed at Meteorological Centre



One of the most advanced computer systems in the world was recently installed at the headquarters of the United Kingdom Meteorological Office in London, England.

The system, a Control Data CYBER 205 will be operated as an integral part of the meteorological office's existing computer complex, and used to study the atmospheric processes which determine global weather patterns. This is the first CYBER 200 series supercomputer to be installed outside the United States, and during pre-delivery trials it closely approached its theoretical performance limit of 400 million arithmetic operations per second.

The system comprises a CYBER 205 mainframe with one million words of memory and two pipelines for executing vector instructions, disc storage and network devices to link up with the rest of the computer complex. □

Control Data Announces the CYBER 18 Intelligent Workstation

Control Data has announced the CYBER 18 Intelligent Workstation - a cost-effective solution to interactive terminal support at remote user centres. The CYBER 18 Intelligent Workstation is a comprehensive software product which combines the capabilities required for interactive job preparation, on a small machine, with a flexible communications capability for the transfer of information to a remote host computer system. The Workstation application complements the computation power of a central host system by providing a local capability to perform text preparation in a hospitable environment. This environment can be tailored to the level of computer experience of an individual user. The product is offered on Control Data's small computer system - CYBER 18 - and supports a full complement of peripheral devices including mass storage, magnetic tapes, card readers, line printers, matrix printers, and standard ASCII terminals.

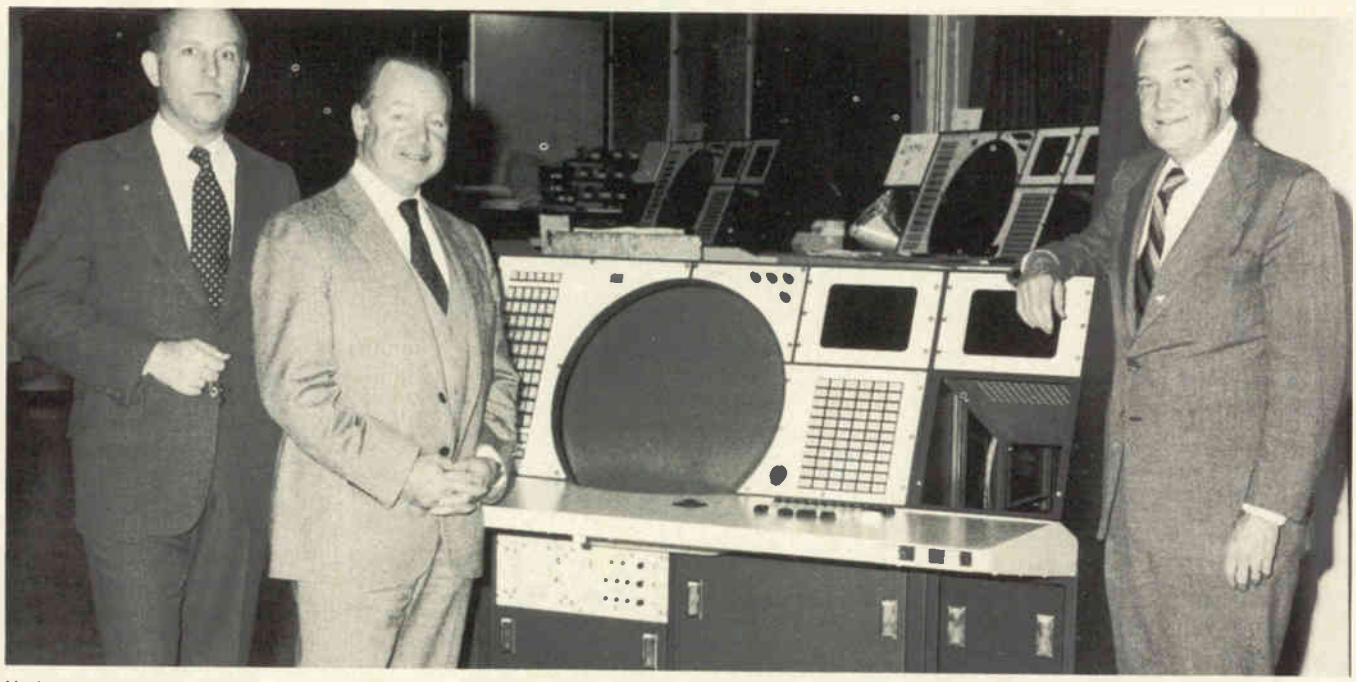
The CYBER 18 Intelligent Workstation provides the interactive terminal user with an extensive set of applications to perform the tasks of:

- Text editing and job preparation
- Data collection
- Local file manipulation and maintenance
- Keypunch replacement
- Remote host communications
- Document preparation and generation

Users operate in a fully interactive timesharing environment. The system emphasizes ease of use. This capability is supported by a powerful multi-user, multi-tasking operating system.

The Workstation provides both interactive terminal and remote batch communications. Up to sixteen local interactive ASCII terminals can access the system at data rates up to 9600 baud or remotely at available modem speeds. Remote hosts are accessed using the industry standard HASP protocol. A host may be any mainframe which supports this communications protocol or another CYBER 18 Intelligent Workstation. Multiple simultaneous remote host communications links at data rates up to 19200 baud provide a flexible and efficient data communications network. □

Computing Devices Company Working on Joint Surveillance System



Under contract with Hughes Aircraft Ground System Division, Computing Devices Company, in Ottawa, is manufacturing Regional Operational Control Centres for a Canada-U.S. Joint Surveillance System.

Left to right, George J. Hubbs, President of Control Data Canada, Ltd.; T.S. Allan, President of Computing Devices Company; and William R. Keye, Vice Chairman of Control Data Corporation.

Computing Devices Company, a division of Control Data Canada, Ltd. is a major research, development and production facility with an international reputation for designing systems and equipment to exacting requirements for defence in air, sea and ground environments.

CONTROL DATA

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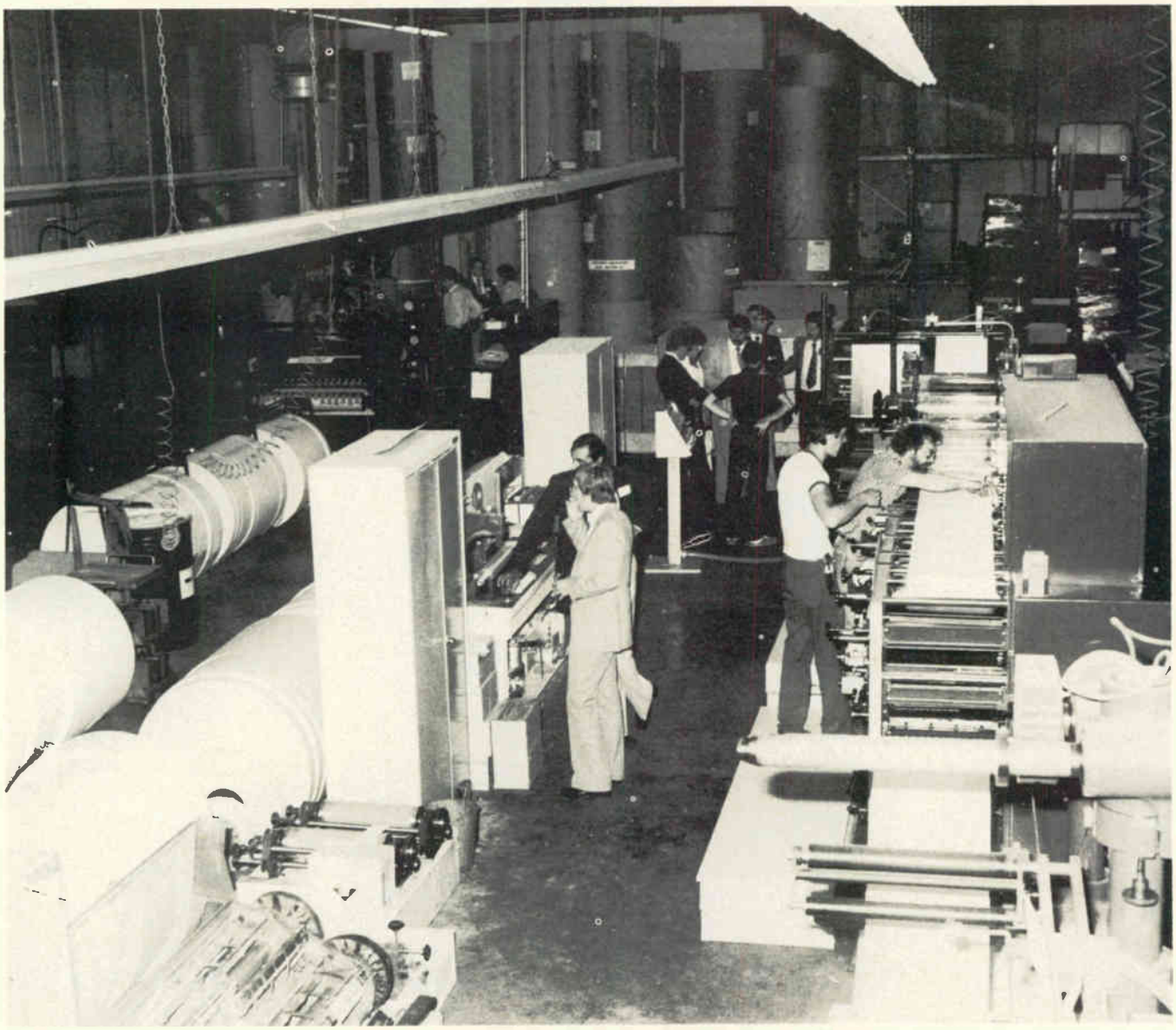
New Forms Press Meets Demand for Business Products



Control Data has installed a new PCM printing press for the production of continuous forms at its Ville St. Laurent site in Quebec to better serve the company's many customers in Eastern Canada.

The new equipment will be used exclusively for the production of continuous forms for the business community. The forms and carbon paper are collated, printed and perforated in a single, fast and efficient operation. In full use, the PCM press can produce forms at the rate of 4,000 feet per minute. With the future addition to the press of other types of equipment, its usefulness will be even greater.

Business Products has 30 employees in the greater Montreal area to serve Quebec, the Ottawa region and the Maritime Provinces and offers truck service to Ottawa and Quebec City, as well as in Montreal. In addition to continuous forms, the St. Laurent manufacturing plant produces computer cards and printer ribbons, and is an important distribution centre for disk packs, flexible disks and computer tapes. In addition to the Ville St. Laurent plant, the Business Products Division has manufacturing centres in Toronto and Vancouver and distribution centres in Calgary and Winnipeg. □

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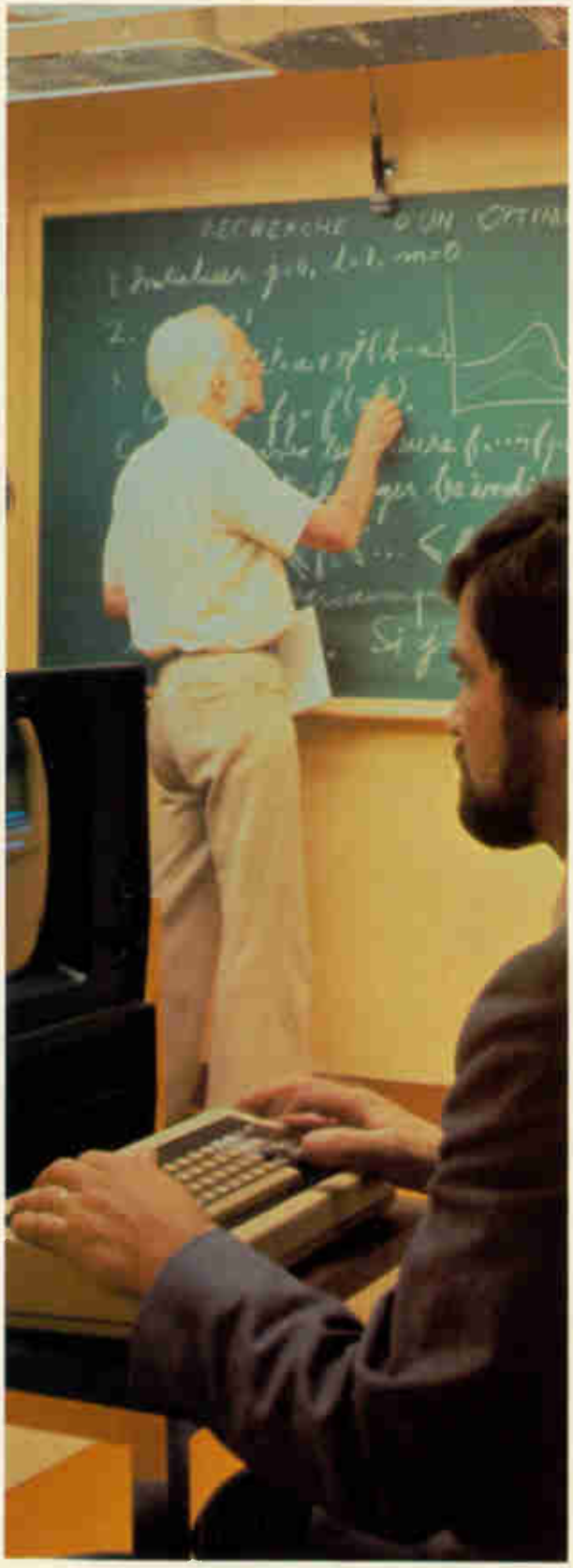
Through seminars and on-site training programs, our Institute for Advanced Technology helps computer professionals and management personnel develop new skills and keep abreast of the latest developments in computer usage.



In Canada, as around the world, Control Data is an acknowledged leader in designing and manufacturing computers and providing data services.

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Reader Service Card Number 119

By HARRY NELSON

It pays to emphasize people in systems

Developing a successful system needs more than attention to machine-related problems. Considering the 'people factor' substantially increases the chances for success.

A review of failures in installing computer systems, indicates a major and basic cause: almost everyone involved seems to have the wrong view, or no view at all, of what a system is. A wrong view stresses the wrong aspects and often leads to problems, while a basic systems understanding leads to smooth flowing operations.

A workable definition of a system is: A set of People, Actions, Communications, and material things which operate according to agreed upon procedures to obtain certain results.

The 'material things' in this definition include desks, pens, paper, forms, telephones, cabinets, typewriters, computers, buildings, . . . anything and everything which pertains.

One common misunderstanding is to think of a system as its specialized machinery. Consider this for a moment: when you hear 'computer system' you picture machinery, the computer. And if you hear 'word processing system', you think of machinery, perhaps like an IBM Magcard Selectric typewriter. Or if you hear 'accounting system' you might picture such things as ledger cards or posting machines.

When the machinery is complex we find people who specialize in operating them, selling them, using them and designing systems with them. We see, for example, specialists in 'computer systems' or 'merchandising systems', but these specialists seem to specialize in a class of equipment. Their solutions are typically machine-oriented: get more or different gadgets, write different computer programs, and so on.

People solutions

Machines are an important part of systems and definitely should not be neglected. But there are other elements to systems which are also important, and the parts that relate to *people* are typically not stressed and often missed entirely.

When the people-side of systems is not appreciated the result is frequently a methodology and equipment that people cannot use, and this means confusions, delays, errors, duplication i.e., costly and troublesome systems.

The definition mentioned for a system lists People, Actions and Communications. The manner in which these elements are to be integrated is referred to as a methodology or systems design, and should include considerations for such things as:

- Forms design (forms are mediums of communication)
- Forms flow
- Layout of people and equipment
- Information requirements
- Availability of qualified people

It is fairly routine to see operations where significant improvement can be achieved in a relatively simply way. People seem to get into a habit of doing things a certain way and frequently continue doing them that way without thinking. Having too much or not enough information on a form or report, having too many or not enough carbon copies of a form or report, having a flow that is too slow and/or too complex . . . are all situations that make systems not work as smoothly as they could.

Written procedures

As an example of some of these principles, consider the necessity to send a magnetic tape file to a computer centre other than the one that produced the tape. (The example could also have been non-computer related, such as a pile of invoices, etc.) A systems analyst would be concerned with creating the tape file in a compatible computer-readable format and merely specifying "send the tape to . ."

The procedural details of actually sending the tape, in comparison, can seem like a trivial concern, and yet it is the area that often causes confusions.

If the tape is packaged poorly it can become damaged. If the package is not labeled properly it can be delivered to the wrong address and result in delays. If the receiving computer centre is not expecting the tape, confusions and delays can occur; also, the receiving centre needs proper identification and instructions so that the tape is used in the correct way. If appropriate names and phone numbers are not provided to the people involved, then problems may not be remedied quickly and further delays and confusions can occur.

Each of these considerations has been taken from actual problem situations and resulted in corrective actions far in excess of what should have been required to prevent the situation.

The solutions amounted to simply

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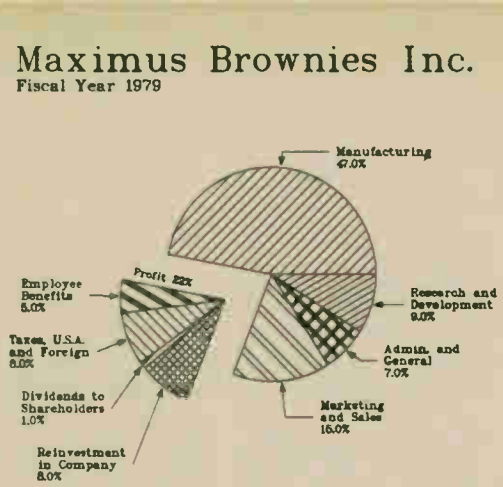
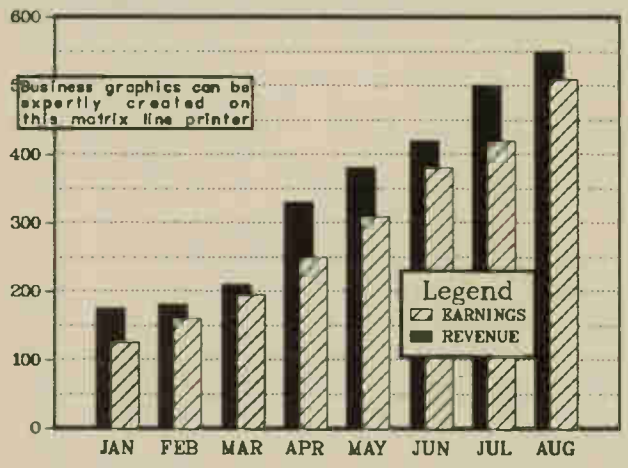
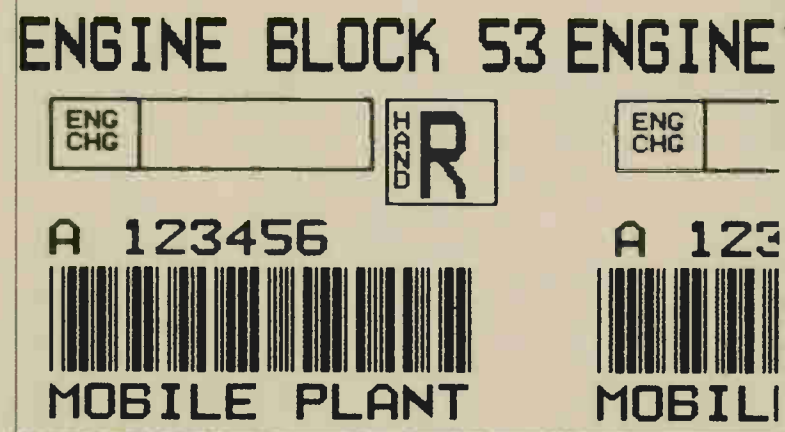
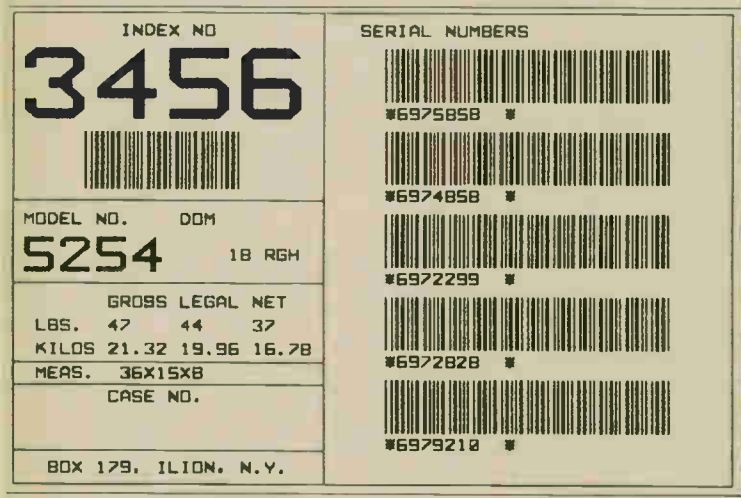
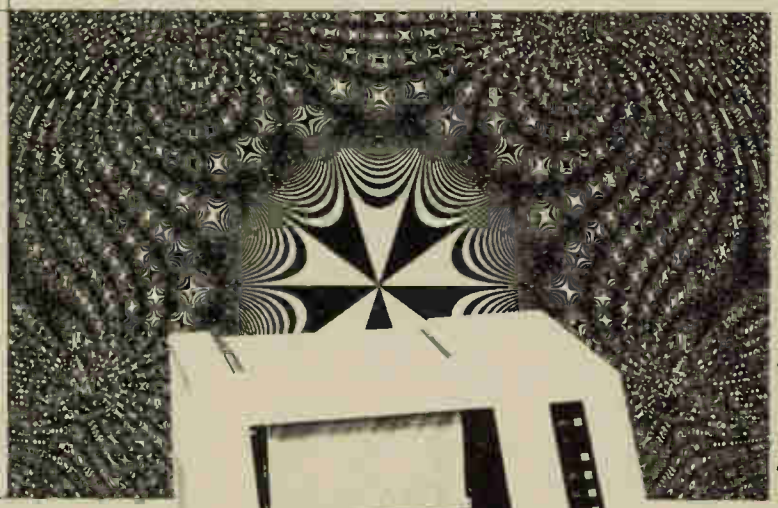
Harry Nelson heads the management consulting firm of Ways and Means Ltd., Toronto, which specializes in business and computer systems. He has recently written the book "How to Select the Right Minicomputer."











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It pays to emphasize people in systems

From page 57

providing written instructions in sufficient detail. The detail required, in general, depends on the individuals involved and the similarity of the new instructions to their routine activities.

The methodology must consider how the people interact and what the optimum communications are. These factors in the methodology translate into the need for:

- Written instructions for each person's job, which documents the methodology of the system to some extent.
- Training, with the objective that each person understands and performs the job proficiently.
- Management, to ensure that: written instructions are meaningful, accurate and up-to-date; and that written procedures are being followed.

This list puts an emphasis on written procedures. Having the system's rules in writing has many advantages:

- It removes any reliance on a person's memory as to the hows and whys of each job.
- It removes the liability of having a great deal of valuable information solely in the mind of one or a few people.
- It provides a way of firmly establishing the researched experience of the designer of the system. Good systems are often the result of years of costly experience, correction of flaws, and gradual refinement. Documentation is maintenance of a valuable asset.
- It allows the manager to put his or her attentions elsewhere while ensuring that the correct procedures are being maintained.
- It stabilizes the procedures and thereby provides a good setting where the need for further improvements can be observed.
- And most importantly, it provides a way of establishing understanding and agreement among the people working within the system.

Value of documentation

One of the many things that happens with no written procedures is that the people must individually decide how to handle situations as they occur. In effect then, we often find systems being designed by clerks, secretaries, bookkeepers and others who have little understanding of the elements of a system (and who should not be expected to have such understanding or responsibility).

The value of documentation applies as well to computers as to people. The rapid and continuing increase of computers is due to a large extent to the computer's ability to execute a list of instructions flawlessly and rapidly. The computer demands that its instructions (programs) be written precisely. People do not likewise demand such precise instruction. The result is that computer systems cause trouble most often because good procedures are lacking for the *people* working with the computer.

Among the problems with mechanized systems, only a small percentage are machine-related, and these are easily solved; these are what the so called "experts" are expert in. The majority of problems are the people-related ones, which are also easy to solve, but only if they are understood. □

Senior execs need to get involved in EDP

Many senior executives are terrified of their company's data processing because they do not know enough about it, said R.G. Taylor, President, Datacrown Inc., at the recent annual meeting of the Grocery Products Manufacturers of Canada in Toronto.

Senior executives should insist that their DP managers explain computing in the language of the executive suite and not in computer jargon, he said.

"The effective management of data processing will enable you to do a better job, and help your companies to make more money," he noted. "But no organization can realize the full benefits of computerization or avoid the costly pitfalls sometimes associated with poor computer planning, without the active participation and understanding of senior management.

"Too often, senior management looks on the EDP department, and on their organization's computer systems, as functions that merely support other corporate activities. The reason for this, I'm firmly convinced, is that many chief executive officers are actually terrified of data processing. The reason is they don't understand it. Frankly, this terrifies me."

Mr. Taylor noted that today's organizational activities are dependent, to a greater or less degree, on the computer for corporate data and the day-to-day running of many phases of the business. Any interruption to the processing cycle can be disruptive and paralyzing, he said.

Citing instances of companies which had suffered losses because of mistakes associated with the computer, he said "a very real prospect facing many major corporations is the possibility of a disaster to their large central computing facilities." The time is past when an organization can depend on a friendly arrangement with some other company for relief under such circumstances.

He said the practice of divisional or department managers of making end-runs around their DP departments by installing mini or micro computers, creates concerns about end-user inexperience, the lack of standards, redundancy, and lack of accountability and auditability.

It can be a fatal mistake to concentrate on hardware costs, while neglecting to account for costs of system maintenance, staff, space, environmental protection, security, and other expenses.

Most EDP problems are management problems, he said, not technical problems, and the DP manager must have the calibre and capability of a senior operating executive. "He must be able to contribute effectively to the general policy and strategic planning functions of the company."

In suggesting steps that senior executives can take to gain better control of corporate computer strategies, he said it must first be realized how dependent companies are on their computer operations. They should also ensure that there is a focus on security associated with the company's computer systems, and he recommended a periodic audit of security back-up and procedures.

It is important to set priorities, realizing that the company will not be able to afford to finance all the computer service that users demand. Formation of a steering committee, with the CEO as chairman, can be helpful in controlling priorities and budgets, said Mr. Taylor.

"The choice of DP manager is very important," he noted. "If he or she cannot communicate to you on your terms, in a language that you can understand, then you are not the one who should feel guilty. If he can't speak your language, then he is probably in the wrong job." □

By ALLAN C. STOVER

How to improve the quality of programs

Assuring the quality of a program is a difficult task. But there are ways of coping and this methodology suggests how to improve program quality.

After programmers finish writing a program of any length, they can expect to spend about as much time to check and debug it.

Each time they go through their program, they find errors that are more subtle than the last ones they found. But still a few errors persist in many of the programs that they pronounce as being finished. They can only hope that those errors will cause few problems later on.

How can programming supervisors assure the quality of their programs? Here are a few reasons why they should be concerned:

□ In all but a few organizations, programmers do all of their work alone. Whatever programs they write, they write alone. They have the responsibility for their programs from writing through debugging. They may ask other programmers for advice on how to write an intricate subprogram or to help find why a program fails, but the rest of the time they work as independent agents. And if they write an error into a program, it is human nature for them to be blind to it when they recheck their work.

□ A program is a complex maze. A programmer has a tough time when he tries to verify the correctness of someone else's program in a reasonable time. As a result, few programs are checked in any organization.

□ Once the programmer completes his program, he moves on to other things. As time passes, the details of the program drift from his mind. When someone uncovers an error, the programmer will be assigned to something else and cannot spare the time to clean up the program. The supervisor will ask someone else to find a solution. That programmer will probably throw in a "quick fix" to rid himself of the problem so he can get back to something of his own. In his haste, he may introduce another error that is more subtle but more devastating than the one he eliminated.

Even if the original programmer has the time to do the job, he has been away from it for so long, that he has few advantages over anyone else. As things work out then, no one is familiar with the program anymore.

□ Few organizations have a group that works to assure the quality of software in its programming groups. Only the original programmer checks his program for errors.

A design engineer, on the other hand, can expect others to review, check, and tear apart his circuit design. The engineer may have to suffer through three or four design reviews before the design makes it to the production floor.

During the production phase, the quality control department takes over. The inspectors scrutinize every specification, test procedure, and test result to assure themselves that the circuit and the assembly of which it is a part are free of defects that degrade performance.

The hazards of autonomy

Few programming groups have anyone at all check their work, at least not directly. Probably no other group enjoys such autonomy.

They enjoy their autonomy because no one else wants to get involved. Quality control inspectors hesitate to tackle the direct inspection of programs because of what they see as a monumental task and because few of them have more than a casual knowledge of programming.

But as reluctant as programmers will be to admit it, they need at least a random check of their programs by an independent group. A slip in a program can cause disaster later. The lack of a punctuation mark in a program years ago caused a multimillion-dollar failure of a space probe. The programmer's image suffered in the public discussion that followed

Checklist for program quality

Here's a simple guide to monitoring the quality of computer programs:

Programming practices

□ Programmers maintain a central file of information on their programs, including flow charts, program description, annotated program listing, and notes.

□ Programmers insert an adequate number of comments throughout their programs.

□ Program comments are brief and understandable and can guide a programmer unfamiliar with the program through each section.

□ Programmers use program and subprogram names that clearly show their purpose.

Management of program quality

□ The organization has a procedure that documents programs and stores them in a central file.

□ A procedure exists to document all program changes, update programs, and maintain a history of changes.

□ The organization has a group that works to assure program quality. □

that disaster.

An error in the software of automatic test equipment (ATE) could result in the ATE passing hundreds of units that are defective. The company would have to recall for retest the thousands of units that the ATE tested over the last few years. And the lack of at least an attempt to assure software quality will weigh against a corporation in any product liability suit.

Implement procedures

Organizations with programming groups must do something to assure the quality of their software. The first thing is to implement policies that encourages quality in software but avoid strangling the creativity of the programming groups. Here are suggestions:

□ Insist on an organized approach to programming. As much as possible, programming groups should use a single programming language. They should select a particular language because of need and efficiency rather than select a supervisor's favorite or one that someone happens to know best.

Programmers should also insert brief, clear comments at key points throughout the program to guide others who must work with it later. They should select names for their subprograms that clearly indicate their function. Fig. 1 shows examples of comments and subprogram names.

□ Implement a procedure that documents and publishes programs, and stores them in a central file open to others to check or use as a guide. Each program should have a name that clearly states its purpose. Each program should be accompanied with a synopsis of a paragraph or so to explain what it does.

□ Establish a Software Quality Assurance Group (SQAG) independent of the programming groups, but manned by experienced programmers. SQAG can recommend additional policies that improve software quality, and can even assign programmer-inspectors to check program listings. Because of the time limitations, they would have to limit themselves to a random check of a few program listings. They must be careful in their work to avoid stifling the programmers' creativity by bogging them down in useless paperwork and rewriting.

The best hope for software quality, of course, lies in the programming groups themselves. Since programmers hate to make mistakes as much as anyone else, most of them work hard to avoid any errors. The supervisor can still remind them of the need for quality to keep them aware that others depend on them for product quality.

The supervisor can also establish a central file where programmers should deposit their flow charts, pertinent notes, a synopsis of what the program does, and an annotated program listing that explains each step in more detail than the comments can give. Although everyone dislikes extra paper work, the bit extra for the file will make things easier on the next person who has to work with that program.

The programming group should also cooperate in any effort to establish a SQAG. If they get involved in the beginning, they can help assure that the SQAG improves quality without stifling creativity. To do so, the programmers will have to spend some time training and assisting the programmer-inspector.

Although people resent outsiders intruding on their work, the stakes are too high for the programmers to fight the effort. After all, SQAG will be there to protect the programmer from that big goof, the one where the company must recall ten thousand assemblies or the space probe that heads for the ocean instead of space. □

```
15
   "ELEVATION ANGLE TEST":
16
   c11 'Read Frequency'
17
   "Read Reference Frequency":
●

●

78
   "READ FREQUENCY":
79
   red "FREQ COUNTER", F
80 if F= 410 and F 390;gto "WITHIN
SPEC"

81
   prt "REF FREQ OUT OF SPEC"
82
   prt "REF FREQ=",F
83
   ret
84
   "WITHIN SPEC":
85
   prt "REF FREQ IN SPEC"
86
   prt "REF FREQ=",F
87
   ret
```

(a)

```
15
   "ELANST":
16
   c11 "REFER"
●

●

78
   "REFER":
79
   red "REFER",F
80
   if F= 410 and F= 390; gto
   "JACK"
81
   prt "FAIL"
82
   ret
83
   "JACK":
84
   prt "PASS"
85
   ret
```

(b)

Fir. 1. Programmers should insert clear, brief comments and subprogram names to explain the program so others will have an easier time understanding it. The name "ELEVATION ANGLE TEST" in program (a) corresponds to the name of that test in the test procedure, thus giving others a reference point for that program. The comment in step 17 clearly shows the purpose of the previous statement, which is to read the reference frequency. The subprogram that does it is called in step 16 and its name, "READ FREQUENCY" clearly states that a frequency will be read. In step 79, even the equivalent name is given so as to show what happens in that step, i.e., a frequency is read. The subprogram name in step 80, "WITHIN SPEC," shows that the subprogram will handle readings that are within specification. Contrast these names with the equivalent names in program (b). The names "REFER," "ELANST," and "JACK" give no indication as to their purpose. Notice also the lack of a comment and the abrupt information given in the printout.

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Comm front end links diverse terminals to IBM mainframe

A new communications front end concentrator which solves the problem of connecting a large number of different terminals to an IBM mainframe running CICS, TCAM, BTAM, or similar software, has been successfully installed at FDS Inc., San Antonio, Tex.

The system, FEC/1, was designed by Argos Computer Systems (New York, NY) to run on IBM Series/1 hardware.

"The FEC/1 is particularly useful in banking and financial applications where large terminal networks already in place must communicate with a mainframe running application software," said Aric Rosenbach, President of Argos. "The FEC/1 separates the problem of running the network from that of running the application."

FDS Texas, a financial institution which emphasizes real time in providing on-line services to a growing network of some 80 member credit unions throughout the state, needed a high capability front end when the company replaced its Univac with an IBM 370/158 in 1978. Already in place was a terminal network whose protocols were foreign to the IBM mainframe, so an IBM System/7 was installed to serve as the communications front end.

"However," said James Aston, President of FDS, "We grew much faster than we expected—from less than 200 terminals on the network to more than 500 today. We needed a front end that could handle a large and rapidly growing network, and I was always fascinated with the idea of using a small front end computer to take the communications load off the host. The people at Argos understood what we were talking about, and the Series/1 proved to be the answer."

The FEC/1 system running on the Series/1 now enables the 370/158 host to communicate with a 500-terminal network comprising Bunker-Ramo 2001 teller terminals, Hazeltine general purpose CRTs, ISC Teller Terminals, and Docutel ATMs by presenting the network to the host as two 3270 terminals.

Larry Adler, FDS systems programmer, said the network was adding about 10 terminals a month, and would number 650 terminals by the end of the year and 700 soon thereafter. "We expect the present system to handle at least 500 terminals, and an additional PCS will double that capacity," he said.

Presently FDS is migrating the network a circuit at a time to the Series/1, with about 200 terminals already switched over.

Besides providing hardware immunity, the FEC/1 has the advantage of increasing the efficiency of the host by assuming network polling duties, and offers the capability of handling local transactions during host downtime. The system can also include a "negative file" of unauthorized bank cards, balances, and individual credit limits for reference during evenings and weekends when the data center is closed.

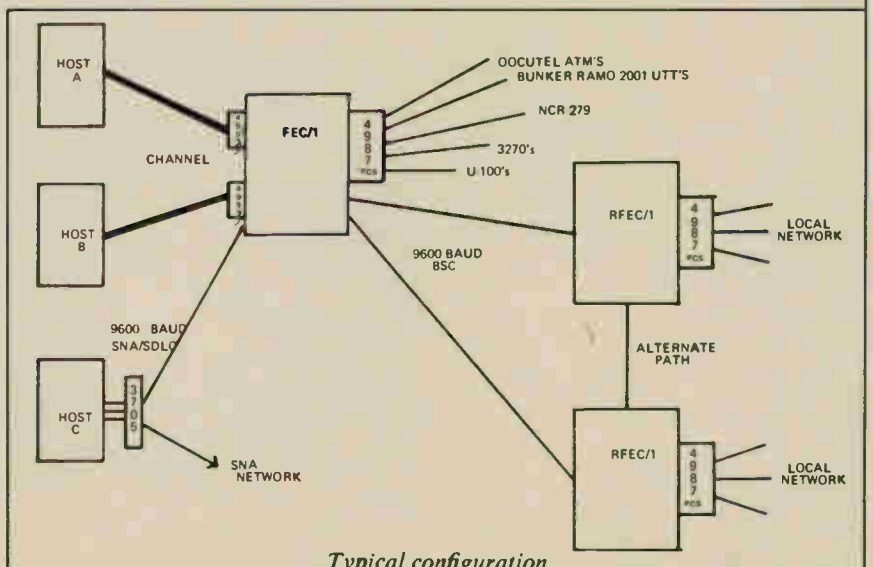
FDS is preparing to add dual channel support for an additional 370/148 central processor so that a single Series/1 equipped with Argos software can communicate with two 370s at the same time, or switch manually from one to the other if one is down. "This will provide us with additional backup and balance the load on the mainframes," said Mr. Adler.

FDS also has plans to support other line protocols including IBM 3270 and NCR 279 for other hardware either in place now or expected in the future, Adler said.

Noting that "we are growing at a phenomenal rate, much faster than we originally anticipated," Mr. Aston said that FDS plans to use the Series/1-based system as a remote concentrator in at least two other Texas cities, which will mean $5,000-$6,000 a month in telephone line savings alone.

The savings FDS looked at when deciding to install the $140,000 FEC/1 system were considerable, said Aston. "We had two possible alternatives. One was to go to a larger mainframe at a cost of $450,000—$310,000 more than we spent on the Series/1 system. The other was to install a standard, off-the-shelf front end. But that would have cost twice what we spent on the Argos product, without nearly providing us with the hardware flexibility that we have with the Series/1 system."

Although the FEC/1 is primarily a banking package, Argos Executive Vice President Jack Gostl noted that the system has potential application in any situation wherein a large network of various kinds of terminals have to communicate with a host mainframe. □



Typical configuration

More DP training centres opened by Control Data

Referring to the growing shortage of well-trained data processing personnel and the fact that ". . . traditional methods of education don't fit because the curricula can't change fast enough to meet specific demands," George Hubbs, president of Control Data Canada, officially opened the firm's Education Resource Centre in downtown Toronto.

The Centre, intended to complement two other CD schools in Toronto and Montreal, and a fourth set to open in Vancouver shortly, will offer a three-month course in computer operation, a six-month course in programming, and a 7½-month class in becoming a computer maintenance technician. Tuition fees will vary from $2,000 to $4,000 per course.

The Toronto location, at 110 Bloor St. West, will offer three 'shifts' of classes daily (morning, afternoon, evening), to accommodate as wide as possible a variety of student schedules. There will be 50-55 students per shift. The curriculum uses 'Plato' self-instructional software and is arranged to allow the student to proceed at his or her own pace.

"The students we expect to attract," Mr. Hubbs adds, "are young people who realize the realities of Canadian life today, and know that the best personal security lies in the possession of a transferable skill. Their Control Data credentials will be accepted everywhere. We intend to give them the kind of training they can use to launch their careers, and they can plug back into our personal development and advanced training courses whenever they wish to upgrade."

Internationally, Control Data has 20 similar educational institutes in the U.S. and 20 in Europe.

Kombi buys into Dynalogic to strengthen office division

Ottawa-based Kombi Corp. has purchased a majority interest in Dynalogic Corp., Ottawa, a supplier of microcomputer systems and disc storage devices, to augment its recently formed Office Automation Systems Div.

Kombi was established in 1978, and is a supplier of office furniture. The firm recently expanded into office automation with the introduction of its System 8000 electronic information processing centres. Dynalogic Corp. was founded in 1973 and has been selling microcomputer products throughout Canada, the US and Western Europe.

"By adding Dynalogic to the Kombi Group we are in an excellent position to capture a share of the integrated electronic office market in North America," said Edwin Morton, Kombi president.

IBM boosts System/38 performance, cuts prices on low-end

A new mid-range processor for the System/38 and a price reduction on the low-end Model 3 have been announced by IBM Canada. Prices of the Model 3 have been reduced from 8-16 per cent. A typical Model 3 configuration supporting four work stations sells for under $175,000 or can be leased for about $5,500 a month.

The new processor, the System/38 Model 4, features control storage rated at 200 nanoseconds, the same as the top-of-the line Model 5, and is available with a maximum main memory of two million bytes. Internal performance of the Model 4 is about 35 per cent greater than that of the Model 3, notes IBM.

Purchase price of a typical Model 4 configuration will be under $250,000 and will lease for about $7,100 a month. Customer shipments are to begin in September. Currently installed model 3s can be upgraded to Model 4s, and the latter can be upgraded to Model 5s, states IBM, allowing a system to grow.

IBM also announced that all three System/38 models will support the IBM 5224 and 5225 matrix printers, and Models 4 and 5 will support attachment of 3370 direct access storage devices.

The table-top 5224 printer comes in two models with speeds of 140 or 240 lpm at the regular 10 characters per inch density, and 95 or 175 lpm at the condensed 15 characters per inch density. Condensed printing permits the use of 8½ inch x 11 inch forms.

The four models of the 5225 printer offer speeds ranging from 280 to 560 lpm at the regular density, and 195 to 420 lpm with condensed printing.

Both printers can be used as local or remote work station printers, notes the company. The 5225 can also be attached to the System/38 as a system printer.

The 3370 is a fixed media disk file that provides 571.3 megabytes of auxiliary storage. The 3370 previously was available with Model 5.

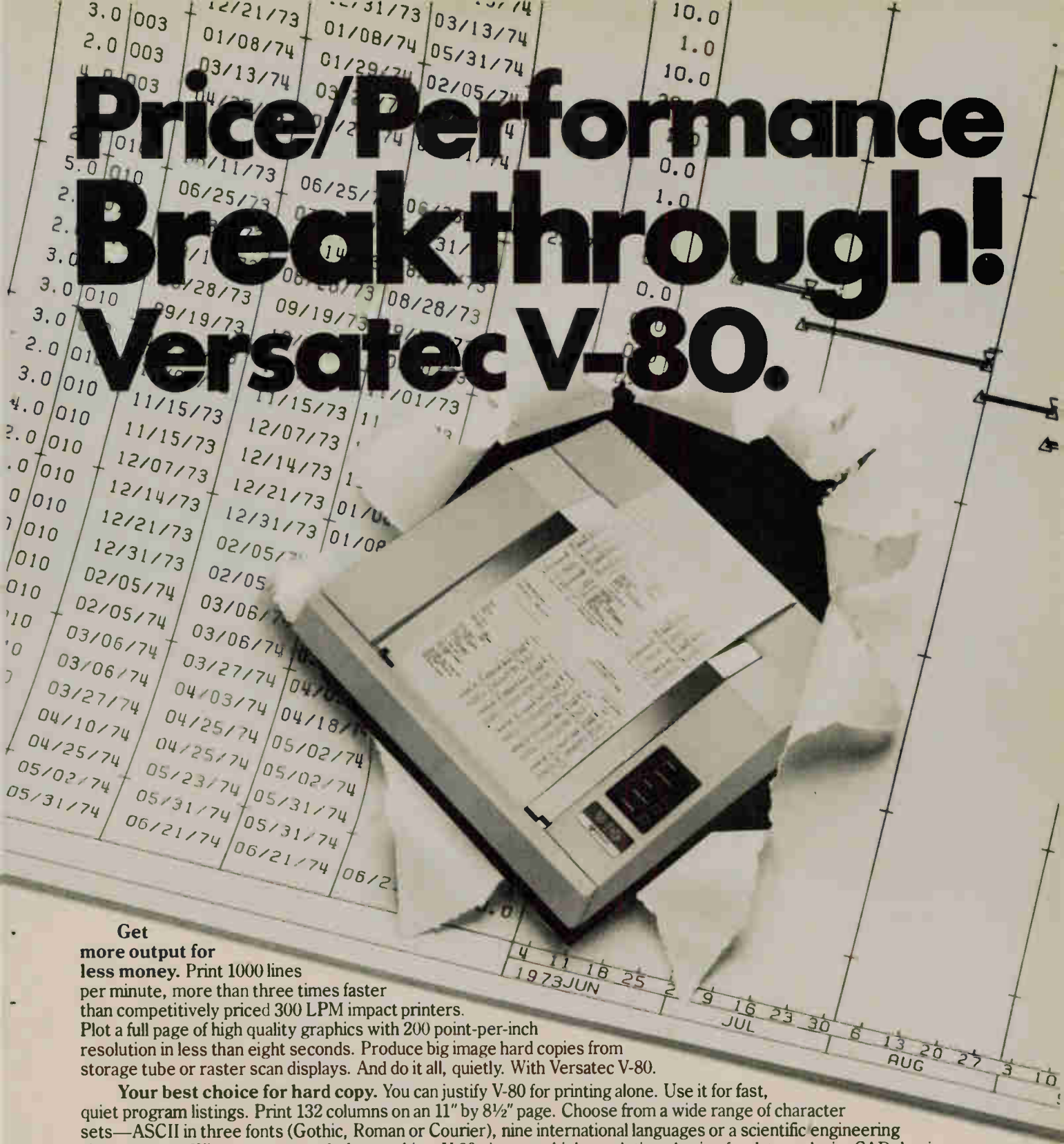
Vancouver CIPS elects board, plans 1986 National Conference

The Vancouver chapter of the Canadian Information Processing Society has appointed its board of directors for 1981-82. They include Leslie Ann Ingram, president; Sunny L. Kae, vice president; John Ross, secretary and membership; and Mike Fox, treasurer.

The CIPS Vancouver chapter will also host the National Conference in 1986. Tentative arrangements are in place with two local hotels for April, 1986. Volunteers are required and should contact Sunny L. Kae at Insurance Corp. of B.C., 1055 West Georgia, B.C. V6E 3R4. Tel. (604) 665-5814.

Bell-Northern Research, at its recent 10th annual patent award dinner, issued patent awards. Shown in front of a DMS-200 digital telephone switching machine incorporating their patents are (from left) Stan Rosenbaum, Real Gagnier and John den Otter.

Price/Performance Breakthrough! Versatec V-80.



Get more output for less money. Print 1000 lines per minute, more than three times faster than competitively priced 300 LPM impact printers. Plot a full page of high quality graphics with 200 point-per-inch resolution in less than eight seconds. Produce big image hard copies from storage tube or raster scan displays. And do it all, quietly. With Versatec V-80.

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BNR circuit software now marketed by IBM

A circuit board design system software originally developed for in-house use by Bell-Northern Research Ltd., Ottawa, is now being marketed by IBM under licence. The new software assists in the design of printed circuit boards for use in home computers, calculators and TV units. The product was announced at the recent International Printed Circuits Conference in New York.

The software consists of three subsystems:

- Circuit Pack System, which performs the functional and physical design of printed circuit boards;
- Design Verification System, which simulates the operation of a board to check for design flaws prior to manufacture; and
- Data Storage System, which keeps design information on file for recall and alteration.

The package was adapted under contract by BNR and is being marketed by IBM as a series of Installed User Programs. The contract between the two firms called for the system to be developed within five months and it had to be adapted to IBM hardware requirements. The system is still used by Bell-Northern Research and its parent, Northern Telecom.

Government aids CCI, plans shares sale by year end

The federal government will refinance loans carried by financially-troubled Consolidated Computer Inc., Ottawa to enable the computer equipment maker to carry out its business plan.

As a step towards facilitating the restructuring of the company, the government has decided that the sale of Crown-owned shares in CCI to the private sectors would be the most cost-effective solution to the problems faced by the company. The plan is to transfer shares to the private sector by the end of the year. The federal government holds 49 per cent of CCI shares, the government of Ontario has 12 per cent, Fujitsu Ltd. of Japan has 24 per cent, and the remainder are publicly held.

In a press statement issued in Ottawa, Industry Minister Herb Gray said that the sale of shares would be the best solution to the problems faced by the company over the years and would preserve the benefits of an important member of the Canadian computer industry.

Mr. Gray expressed confidence in the present management of the company and said that it has achieved the major elements of a turnaround with a three-year business plan; a cost cutting program and sales stimulation; and technical, marketing and manufacturing subcontracts with major OEM customers.

CCI specializes in data entry systems and small business terminals. In mid-1980, CCI's management was released and an interim management team was installed.

Scotiabank, CCG ready satellite datacomm trial

The Bank of Nova Scotia and the Computer Communications Group of TCTS are readying a three-city satellite data communications trial between Toronto, Halifax and Calgary for June 1982.

The trial is intended to test a technology called time division multiple access which allows voice, data and video to be converted to an integrated digital bit stream for transmission via satellite. Signals will be carried between the bank's offices in the three cities.

Purpose of the trial is to demonstrate the new technology system and other new satellite communications equipment and to determine their benefits for business applications.

The trial is expected to determine the most suitable features for the business and financial community, and help in the future development of a complete family of satellite business services for medium and large communications users.

Before the trial begins, technical activities will include detailed design, pre-trial assessments, equipment installation and measurements, satellite sub-system checks and a complete end-to-end system test.

High priority uses being considered by the bank are data communications for remote batch and on-line banking as well as voice communications. There are also plans for testing video conferencing, document transfer and encryption services for data communications.

Govt. branches to test electronic mail via satellite

Start-up of a field trial using satellite channels to provide communications services between certain federal government services is planned for late this year, with completion scheduled for September 1982.

Via satellite, the Government Telecommunications Agency will connect an experimental communications network already established within the Dept. of Communications. The agency will evaluate electronic distribution of documents and personal messages. It will also test satellite services for voice, computer communications and teleconferencing.

The trial will use satellite capacity already assigned to a pilot project sponsored by DOC and CNCP Telecommunications.

Part of the trial will be to test the combination of telephone, facsimile and communicating word processor traffic for transmission between branch offices, and the handling of large volumes of telephone and computer data traffic between major metropolitan areas.

Infomart buys Gandalf modems

Gandalf Data Communications Ltd., Ottawa, reports the sale of 200 Gandalf AM3150 Telidon modems, at a value of $200,000, to Infomart, a Toronto-based information service firm. Initial installation of the modems has begun at Infomart's computer centre which provides terminal access to major data bases for Telidon users.

The balance of the equipment is scheduled for delivery and installation throughout June and July, 1981 and includes the installation of Gandalf PIN 9103 and PIN 9102 multiplexers.

Ont. gov't datacomm test combines lasers, Telidon

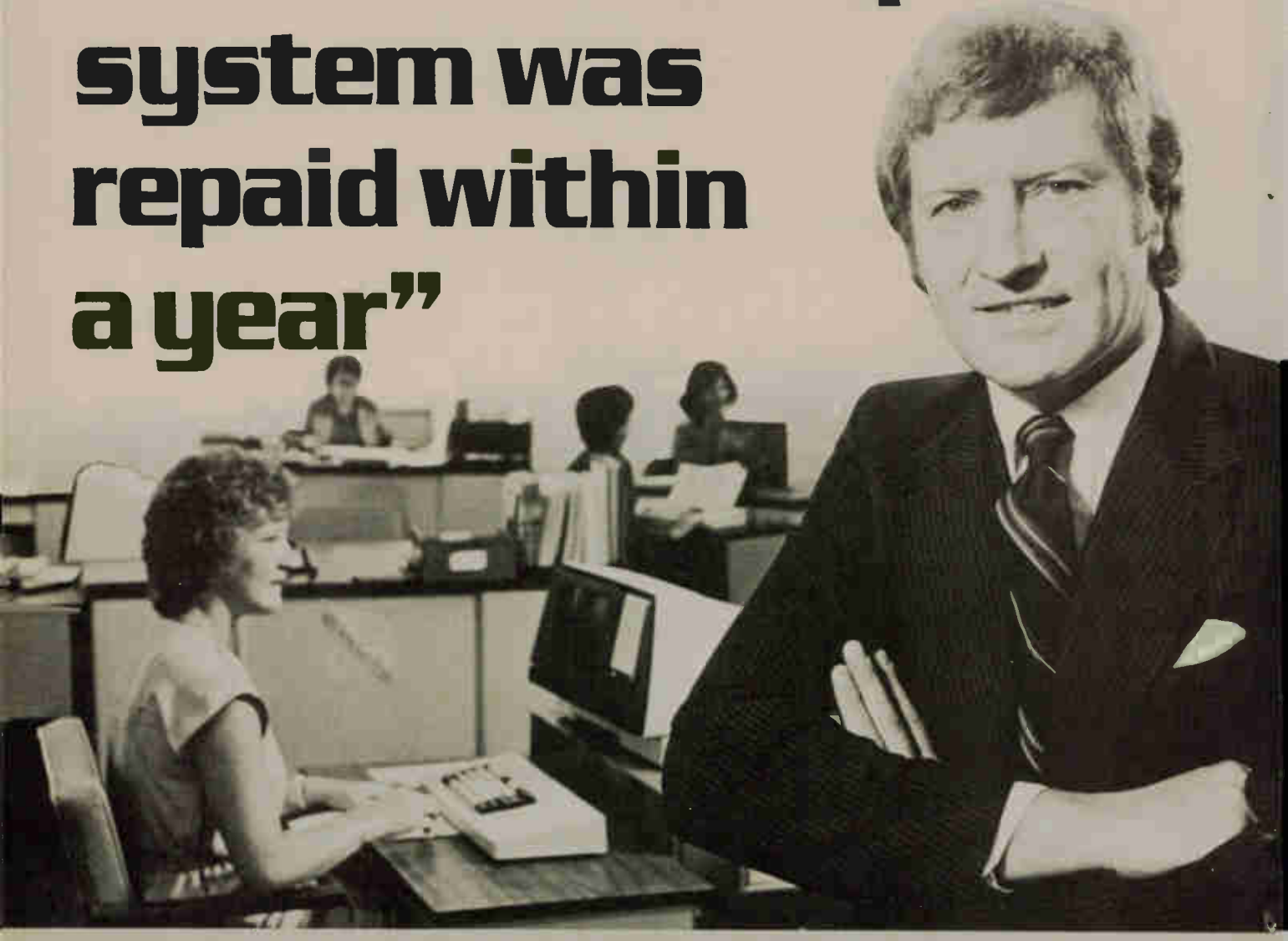
A first-ever datacomm test joining the technologies of Telidon and optical lasers is now under way in Toronto. A facility has been set up in an office of the Ontario provincial government (Queen's Park) that receives data via a line-of-sight laser beam transmitted from atop the waterfront CN Tower to a Telidon terminal in the office.

The data being accessed is located in Ottawa at the Communications Research Centre, and is transmitted to Toronto by CNCP's Infoswitch packet-switching network. The information will be used by the Ontario Ministry of Transportation and Communications, in whose offices the laser receiver/transmitter and Telidon terminal have been set up.

The experimental laser link will be tested to determine its appropriateness for other applications. Tests to date indicate that laser communications can transmit voice, video and data signals without problems of radio interference or other electrical impediments. Only dense fog can affect the link, while rain or electrical storms will not.

The laser system is a development of Canadian Laser Systems, Willowdale, Ont. For details on this technology, see *Canadian Datasystems*, Oct. 1979, p. 13.

"Royal's investment in PCC's XL40 computer system was repaid within a year"



Director of Life Operations, Terry Freeman, of Royal Insurance Company Limited.

Computer automation of its data capture function has meant annual savings of more than 30% for the Canadian Life Branch of Royal Insurance, which handles 750,000 records a year. Time savings. Reduction of forms and temporary help Increased productivity.

Diane Manning, systems analyst, says "Now our clerical staff — who did not know the basics about computers — have in effect also become input operators." After the first phase of collecting data, uses of XL40 were expanded to include bonus cheque issuing and letters with special offers to lapsed policy holders. Savings on other cheques range from 5 to 7¢ each

XL40 is a product of Pertec Computer Corporation, a major international company that designs, manufactures and services computers and computer equipment.

For more information on how the XL40 can serve you, call or write Pertec Computer Corporation (Canada) Ltd., 2 Lansing Square, Willowdale, Ontario M2J 4P8 (416) 498-9540.

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Institute established to boost EDP quality

To help improve the quality in the data processing environment a Quality Assurance Institute is being established in the U.S. It is intended to be a catalyst to promote quality within the DP profession, and to vendors who produce DP products. The new organization is dedicated to assisting and gaining recognition for professionals specializing in quality assurance.

According to the Institute, quality assurance is a vehicle to help achieve productivity and quality objectives. The lack of quality in formation systems is estimated to cost industry billions of dollars per year, notes the institute.

Membership is available to organizations committed to producing quality DP products and other individuals supportive of improving EDP quality. Details are available from the Institute at 9222 Bay Point Dr., Orlando, Fla. 32811, Mr. William E. Perry, (305) 876-4292.

CSC adds Japan to Infonet time-sharing

Computer Sciences Canada Ltd., Toronto, has recently expanded its Infonet time-sharing services to include Japan. The service now serves customers in more than 50 countries.

Computer Sciences Canada's parent in the US has entered into an agreement for Mitsui Knowledge Co. to provide marketing and technical support functions for the Infonet service in Japan. Primary market for the service is expected to come from multi-national firms operating on an international basis.

IBM, FLoating Point enter joint marketing accord

A marketing arrangement enabling reps of IBM and Floating Point Systems Inc. to propose joint meetings with engineering and scientific data processing users has been concluded in the US market only. IBM indicated that there are no plans to extend this arrangement to Canada.

Under the arrangement, either firm's reps may propose and coordinate joint meetings in which equipment alternatives, specs, and solutions can be discussed with users who have array processor requirements.

Array processors are specialized systems which attach to CPUs to carry out high-speed arithmetic operations. Main users of array processors are in the petroleum industry.

"This arrangement should simplify users' evaluations of the wide range of solutions offered by IBM and Floating Point Systems," said Jack Hughes, Division Director of Engineering and Scientific Marketing for IBM's DP Div.

Robert Schuhmann, VP Marketing for Floating Point Systems Inc., noted that the arrangement "will help identify those engineers and scientists who can benefit from the use of array processors, and facilitate their understanding of the interrelationship of IBM and Floating Point System data processing offerings."

Floating Point announced that its new FPS-164 array processor will attach to IBM System/370, 4300 and 3000 series systems. The firm also offers the AP-190L, which can be attached to these systems.

IBM will continue to actively market and support the IBM 3838 Array Processor, its primary offering for petroleum exploration application. This device can be attached to the System/370, 4341, and 3000 series systems.

MFE improves design on floppy disc drives

Two design improvements for controlling the head load and unload process on its floppy disc drives are being incorporated by MFE Corp., Salem, NH.

The new floppy drive systems consist of an improved head design, and electronic damping circuitry. The first feature compensates for head movement, minimizing corner contact with the media and thus reducing the chance of the head gouging the media during loading.

Electronic damping circuits regulate the rate of load and unload, avoiding a heavy impact on the media during load, or a rapid unload which may actually pull apart the media.

After durability tests, which repeatedly load and unload the head at the same spot on the media, MFE now can guarantee a specification of 40,000+ taps with no media damage. Actual test results showed the drives will achieve two to four times this specification without damage, using the proper media, states the company.

'Scotch' diskette for B80, Mini-Disk 2 announced

A diskette for use on Burroughs B80 or Mini-Disk 2 systems is being introduced by 3M Canada Inc., Data Recording Products.

Designated 'Scotch' 743-32 Burroughs, the diskette provides 32 hard-sector holes and 64 tracks per inch for Burroughs Mini-Disk 2 operation. Capacity is one megabyte, says 3M. The diskette is encased in polyvinyl chloride jacket lined with a non-woven wiping fabric and it has a reinforcement hub.

ITC Dep't announces support for microelectronics centres

The federal Department of Industry, Trade and Commerce has announced a five-year program of support for the establishment of centres at six Canadian universities that will serve as sources of technical expertise to private industries wishing to automate and computerize their operations.

Each 'Microelectronics Centre of Technology'—to be established at the U. of Toronto, U. of Sherbrooke (Que.), U. of Manitoba, U. of Alberta, U. of British Columbia and an as-yet-unnamed location in the Maritimes—will receive $1 million in federal money over the five-year period. This is intended as 'seed' money only, and each Centre will charge a fee for its services, with the intention of developing to full economic self-sufficiency by the end of the period.

The universities chosen as sites for these Centres—with each Centre likely to be set-up as a wholly-owned subsidiary company already have capabilities in the industrial application of microelectronics that lend themselves to this type of service.

This program is part of the larger ITC Microelectronics Support Program, designed to help Canadian companies with the initial use of microelectronics in their operations or products. Another part of the program can make a grant of up to $10,000 available to pay for a firm's consultant's study into the feasibility of switching to microelectronic processes.

Dealers assume wider role in computer sales

Computer products dealers and other Independent Sales Organisations (ISOs) are marketing a steadily increasing share of the hardware, software and media sold every year," said Sherman Silverman, Director of Marketing, Computer Products Div., Nashua Corp., at a recent conference in New York.

"As customers place greater reliance on their local dealers for advice in computer and media selection, the quality of support becomes critical to marketing effectiveness and user satisfaction."

Citing statistics compiled by International Data Corp. Mr. Silverman indicates that in two years ISOs will sell 60 per cent of all desktop computers and supplies, up from just 25 per cent three years ago. The trend to independent marketing channels is evident throughout the small computer industry. He indicates that the enormous variety of hardware and media available can make product selection difficult without informative and easy-to-use reference materials from vendors.

Nashua is responding to that need with a new Compatibility Guide to disc products. It is a pocket-sized book that contains a complete list of disc drives in use and the Nashua disc products developed for each of them.

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Flexible Discs: Each track of each disc is individually tested and 100% error-free. A wide selection covers the entire spectrum of applications.

Disc Packs, Disc Cartridges and Data Modules: Data integrity redefined. With the new Memorex™ M Formula magnetic coating, these disc packs and cartridges ensure performance and productivity at its best. Data Mark™ modules are the most advanced rotating memory devices available today.

This superb group of magnetic media products complements KOMPRO's already existing line of data processing supplies which includes computer ribbons, data processing cards, stock forms, magnetic media maintenance and certification equipment.

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Dorval, Québec H9P 2R2
(514) 631-7022

Noranda, federal monies add to Norpak's capital

Norpak Ltd., Ottawa, has been the recipient of funding from two sources that will aid the graphic-display manufacturer to proceed even further with its active research and development program.

Noranda Mines Ltd., through its wholly owned subsidiary Maclaren Power and Paper, has committed the investment of $30 million into Norpak's operations. The capital will go to increase manufacturing capabilities and also for product and market development of Telidon home information system products.

"This investment will create 100 new jobs at Norpak over the next year, and an additional 400 jobs in the year after next," according to Norpak president Mark Norton.

At almost the same time, the federal Ministry of Industry, Trade and Commerce announced the award of $1.7 million to Norpak through its Enterprise Development Program. The money will support development of a family of core products for the Telidon system, including new-generation ('Mark-4') Telidon decoder modules and terminals, communication interfaces, and information provider terminals.

ComputerLand store owners set Toronto conference

Owners of ComputerLand franchise stores from 13 countries are due in Toronto Aug. 13-17 for the annual meeting of the owner's group. A spokesman for the company noted that it is appropriate to have this year's meeting in Canada, since the stores here generally outperform those in the U.S.

ComputerLand currently has eleven Canadian stores, with locations in Vancouver, Calgary, Edmonton, Winnipeg, Toronto, Ottawa, Burlington (Ont.), Waterloo (Ont.), Mississauga, Montreal, and St. John's.

Micos Computer now offers peripheral products unit

Micos Computer Systems Inc., Mississauga, Ont., has announced formation of a Peripheral Products Division. The branch will handle minicomputer equipment including disc storage or memory expansion for DEC computers, plug-compatible video terminals emulating the DEC VT100 or Data General Dasher-200, and plug-compatible processors that emulate the Data General Nova instruction set.

More details are available from Wayne Thompson at Micos, 1295 Eglinton Ave. E., Mississauga, Ont. L4W 3E6, tel.-(416) 624-0320.

Canadian-designed unit programs EPROMs simply

Quantec Systems Ltd., Scarborough, Ont., has designed and manufactured a portable, compact unit that is intended to program single five-volt NMOS EPROMs without requiring personality modules or additional hardware.

The unit, called the Z-800, is currently programmed for use with the 2758, 2508, 2716, 2816, 48016, 2732, 2732A, 2532, 2764, 2564, and 68764 styles of EPROM. Selection is made by key-stoke entry, after which the unit accommodates device pin-out and algorithm, all under software control.

Software updates are planned that will handle future EPROMs up to 512K in density. The unit's two 28-pin sockets allow two different EPROM types to be used simultaneously for direct duplication and verification without any intermediate steps. The 'master' socket does not have programming voltages hooked-up, to protect the master against accidental programming or alterations.

Quantec is located at P.O. Box 832, Stn. A, Scarborough, Ont. M1K 5C8, tel. (416) 291-8761.

Toronto firm gets order for electrical-grid relays

Tele-Radio Systems Ltd., Toronto, has received an order from the Mexican Federal Electrical Commission for fifty solid-state frequency-trend relays that will be installed at key points through that nation's electrical power grid.

Equipped with a microprocessor that will be custom-programmed, each relay will be able to automatically initiate commands for dropping of load blocks in the event an imbalance is sensed between electrical demand and supply. This reaction helps avoid damage to machinery, and limits the geographical extent of black-outs.

AES Data's robot, 'Lani', was one of the attractions at the recent Eastern Canada Business Show in Halifax. It helped demonstrate the uses of word processing systems. Shown with the robot is Mike Saulnier, (left) Manager, AES Atlantic Canada, and Richard Ward, Oracle Information Services.

Package designed to handle mini screen formatting

A proprietary production and development software package for implementing formatted screen control, has been introduced by Canada Systems Group, Mississauga, Ont.

Called SMS-11 (Screen Management System for PDP-11 mini computers), it runs under the RSX-11M(M+) operating system to simplify the design and implementation of programs.

Developed by CSG, it is said to be the most advanced formatted CRT control package available for RSX-11M. It allows rapid application and development without the overheads of imbedded CRT control logic. Installed at several user sites, it results in superior screen handling and data entry response over traditional methods, says the company.

Applications can be written in PDP-11 COBOL; BASIC-PLUS-2; FORTRAN IV+; or MACRO-11.

For the user of non-Digital Equipment CRT's, the package allows the user to create a master description of all CRT types employed in the system and associates a type to each port to be used by SMS-11 applications. The package is warranted for 12 months after shipment.

Computers in foodservice are studied at workshop

More than 60 foodservice managers from across Canada attended the recent annual Computer-Assisted Foodservice Management Workshop at the University of Guelph, Ont. The seminar is sponsored by the university's School of Hotel and Food Administration, the Canadian Dietetic Assn., and the Canadian Organization for Advancement of Computers in Health.

This year's session included a presentation on point-of-sale terminals, which emphasized the desirability of such equipment being both programmable and upgradable.

The workshop also included 'hands-on' exposure to three dietary systems, with the delegates working out assignments on the HCSO Dietary System, the NCR Interactive Dietary/Food Inventory System, and the Sentry System.

Computerized dietary systems are still relatively new in Canada, but decreasing hardware costs and increasing availability of dietary software packages are bringing these systems within reach of more foodservice operations.

'DAINEV' software package introduces system to U.S.

Canadian European Systems Ltd. (CES), Vancouver, is now actively marketing the DAINEV integrated planning and reporting system in the United States, with plans to open an office in California this fall.

Intended for use by non-DP personnel, the system incorporates more than 125 routines including consolidations, allocations, present value, internal rate of return, amortization, depreciation, scrolling and regression analysis. It has model merge and append features, linking (batching), extensive reporting capabilities, graphics, directory of models, and interface capabilities.

DAINEV operates on DEC 11, 20, and VAX units, HP-3000s, and will soon be released for IBM environments (CMS and TSO).

CES Ltd. is located at P.O. Box 2884, Vancouver, BC V6B 3X4.

OEM software sales to assist Intel users

Intel Semiconductor of Canada, Willowdale, Ont., has entered the OEM software market, making it possible for its System 2000/80 data base management system users, who have developed or acquired application software for the DBMS, to sub-license that software directly to their own customer bases. This is intended to provide the end-user customer with all the advantages of System 2000/80 DBMS included in the application product without having to purchase a full copy of the DBMS through Intel.

Under the new arrangement, Intel's customers can market their System 2000/80 applications as fully integrated products rather than as two separate items and pay Intel a royalty fee each time they install the product on their customer's hardware. This fee is a small percentage of the full list price of the system, enabling the customer to price his application product competitively.

Because no programming language precompilers or data base define capabilities are delivered to the end-user customers, the system can be used only for that application. However, the user can upgrade to a full-function version of the system by obtaining a license directly with Intel. The company will apply a portion of royalties previously paid to the lease price.

New approach converts paper file to electronic

Batch-oriented paper filing systems can be updated to electronic filing and retrieval by combining two devices developed by 3M Canada's Micrographic Products Div.

The devices are the EF 5000 document camera and the EF 6000 page-search reader/printer. Document marks, or blips, can be added in any one of seven different ways, states 3M, to accommodate virtually all batch and item indexing in use with today's paper filing systems.

The two units combined, form a new electronic filing system, in which three different sizes of document mark differentiate the filing rank of documents. This facilitates selective retrieval of documents with minimal indexing.

According to 3M, the camera can accept up to 90 documents per minute. Filing is done on a 4,000-frame cartridge of 16mm film. A cartridge need not be filled in one operation, but may be removed temporarily to allow use of another cartridge for a different file.

The page-search reader/printer accepts cartridge or open spool microfilm produced in a variety of blip encoding configurations. It permits a choice from among seven different search modes for image retrieval.

Software extends function of Micom word processor

A text storage and retrieval (TSR) communications software, recently developed by Micom, Montreal, allows any document to be transmitted from the WP diskette to a computer, and to be retrieved without loss of data or format.

According to Micom's Stephen Jeffries, the new Bisync/TSR program transmits wide texts, has an improved terminal-host interface, and a simpler mechanism for automatically naming received texts. It will be available in September.

The program allows hard disc storage of texts in large computers, using the Micom word processor as a remote job entry station. According to the company word processors equipped with the new program will be able to provide these services:

- Text can be deposited on a computer by a Micom unit in one location and retrieved by others in different locations.
- Depending on storage facilities of the computer being used, thousands of pages of text can be archived.
- Once text is stored on the computer, it can be manipulated by user-written programs, to make it compatible with other WP manufacturers' formats.

The company notes that Micom diskettes can be backed up on discs or mag tapes attached to the computer.

Toronto ad systems firm moves into U.S. market

Advertising Management Systems (AMS) Ltd., Toronto, a service bureau specializing in handling the needs of advertising agencies with in-house, on-line terminals, has expanded into the U.S.

AMS has now set up an office in New York City at the site of Inter-public Group, the world's largest ad agency conglomerate. AMS uses Hewlett-Packard 3000s in support of its custom-designed software.

"It's a specialized field," president Bill Wylie says, "and unless you've worked in an agency and understand the terminology, you're not likely to be able to design or program the system."

200,000 exec workstations seen in U.S. use by 1985

By 1985 more than 200,000 executives are expected to be equipped with computer-based workstations which will provide electronic mail, personal calendar features, and access to electronic filing systems, says a report by International Resource Development Inc., a Norwalk, Conn. management consulting firm. The first major introduction of this type of equipment will be from Xerox Corp. in a product to be announced this spring, the report adds.

Although the early executive workstations will be priced in the region of $15,000 to $20,000, volume production and more efficient cluster configurations will lead to average prices as low as $2,000 by the end of the decade with as many as 30% of executives using the equipment.

The IRD report includes an analysis of the expected time savings, which indicates that the executive workstation will probably pay for itself in four years on the basis of the time saved by executives earning about $35,000 per year.

More than a dozen companies are expected to build executive workstations. The report forecasts the key competitors in the market place of the late 1980's to be Xerox, IBM and AT&T. Total shipments of executive workstations are projected to exceed one million units per year by 1990, worth more than $2 billion.

Micro-based input device enhances typewriters

A microprocessor-based device that connects to IBM electronic typewriter Models 50, 60 and 75, developed by Northern Telecom Inc., is designed to provide enhanced text manipulation and communications capabilities.

Called IRIS, for Intelligent Remote Input Stand, it attaches to the typewriters and converts them into electronic mail terminals and also lets them function as computer enquiry devices, high-quality output printers, memory typewriters and as a facsimile substitute.

The triangular-shaped unit replaces the standard secretarial copy stand. It has a forty-character, single-line, 5x11 dot matrix liquid crystal display and controls to adjust the text on the display for different viewing angles. All components, including the microprocessor, memory display, modern power supply and communications controllers and interfaces are packaged in the desk-top unit.

The device has about 16,000 characters of text memory (48,000 optional), comm capabilities to transmit or receive data at speeds to 300 baud using an internal modem or up to 9,600 baud using an external modem.

Development of the device was prompted by the firm's interest in integrating proven products from other established vendors into a total office environment. Initially the device will be sold through a special Electronic Office Systems sales force in selected mayor cities in the US with main customers expected to be among Fortune 500-type companies, financial institutions and other organizations having a large number of geographically dispersed typewriters.

Triangular-shaped Intelligent Remote Input Stand (IRIS) (right) replaces secretarial stand. Device links with electronic typewriter to provide text manipulation and comm interfacing.

Patent issued for algorithm for natural language use

A program that allows a user to 'converse' with a computer in a new way is reported to be the first pure software patent ever to be issued by the US patent office.

The patent No. 4,270,182 was issued in May to S.P. Asija, Shelton, Conn., and unless challenged will expire May 25, 1998. The patent permits a user to ask a general purpose digital computer imperfect questions in a natural language in a human like manner.

According to Mr. Asija the system is very forgiving to a user who makes errors in spelling, punctuation, syntax and grammar. In addition it requires no knowledge of computer programming on the part of the user. The inventor notes that production of the patent took seven years.

The invention is described as the first algorithm that allows man/machine communication in a natural language. An abstract from the US patent office provided to Canadian Datasystems by Mr. Asija describes the invention thus:

"Swift-Answer, which is an acronym for Special Word Indexed Full Text Alpha Numeric Storage With Easy Retrieval, is a system of full text, free-form, narrative, information input, storage and retrieval. The system comprises an input device, a storage device, and an output device each capable of handling free-form text in any language. The stored information is retrieved by asking free-form, unpreprogrammed, narrative questions in a predetermined language, for which the system presents relevant logical information units of the stored information, which most likely contain the answer to the user's question."

CBEMA adds members, copes with many industry issues

The Canadian Business Equipment Manufacturers Association is attracting new members as the association becomes increasingly active in presenting its case on industry issues.

In the past year 21 new members joined, bringing total membership to 69, representing nearly every major manufacturer in the industry. Annual revenues of member companies are approaching the four billion dollar mark, and export revenues exceeded $600 million. Member companies now employ over 34,000, said an association official.

The association continues to be active in making representations on a range of issues. Citing some of its recent activities outgoing CBEMA president G.G. Murray told the association's annual meeting "We have taken and will continue to take a very activist role on a wide variety of issues."

Citing recent issues he noted for example that the association's representation to the Post Office was instrumental in preventing the new Post Office Corp. from acquiring a monopoly over electronic mail.

As a result of other efforts, the Manitoba legislature is presently considering an amendment to its consumer protection act which will exempt sales to unincorporated business from the provisions of that particular legislation.

Gains on the telecommunications front are also being made with representations to the CRTC in regards to the attachment of equipment to telecom lines.

According to CBEMA, the whole subject of telecommunications is the single most critical issue it faces and the association is an official intervenor in 13 different regulatory proceedings and is actively participating in seven legislative or policy studies, all related to telecommunications.

Disc and tape added to HP desktop computers

A 12 megabyte Winchester disc and an ANSI-standard half-inch tape drive are now offered for use on four Hewlett-Packard desktop computers. The two devices can be used simultaneously or separately on the HP 9800 Systems 35A, 35B, 45B, and the colour 9800 System 45. First customer deliveries began earlier this year.

The HP 7910H disc has built-in self-diagnostics and uses 50 routines to verify proper operation. Head, magnetic disc and actuator are contained in a sealed module. Formatted capacity is 12.09 megabytes. Each of the two disc surfaces uses 735 tracks plus three spares, with 32 sectors per track and 256 bytes per sector. Average track-to-track seek is 11 ms, states the company, and average random seek is 70 ms. Disc rotation is at 3,000 rpm, and average rotational latency is 10 ms.

The tape unit for the desktop computer is the HP 970E, with a new Option 826 HP-IB (IEE-488) interface. One 2,400 ft reel can accommodate 46 megabytes. Data may be exchanged between desktops and larger computers, notes HP. When used in combination with any HP disc memory device, such as the new 7910H, and using utility programs that are part of the package, the new tape unit enables users to back-up disc data bases, assuring against loss of data.

The disc device lists at C$12,760 and the Option 826 at $20,174.

The Pacesetter.

781 RO
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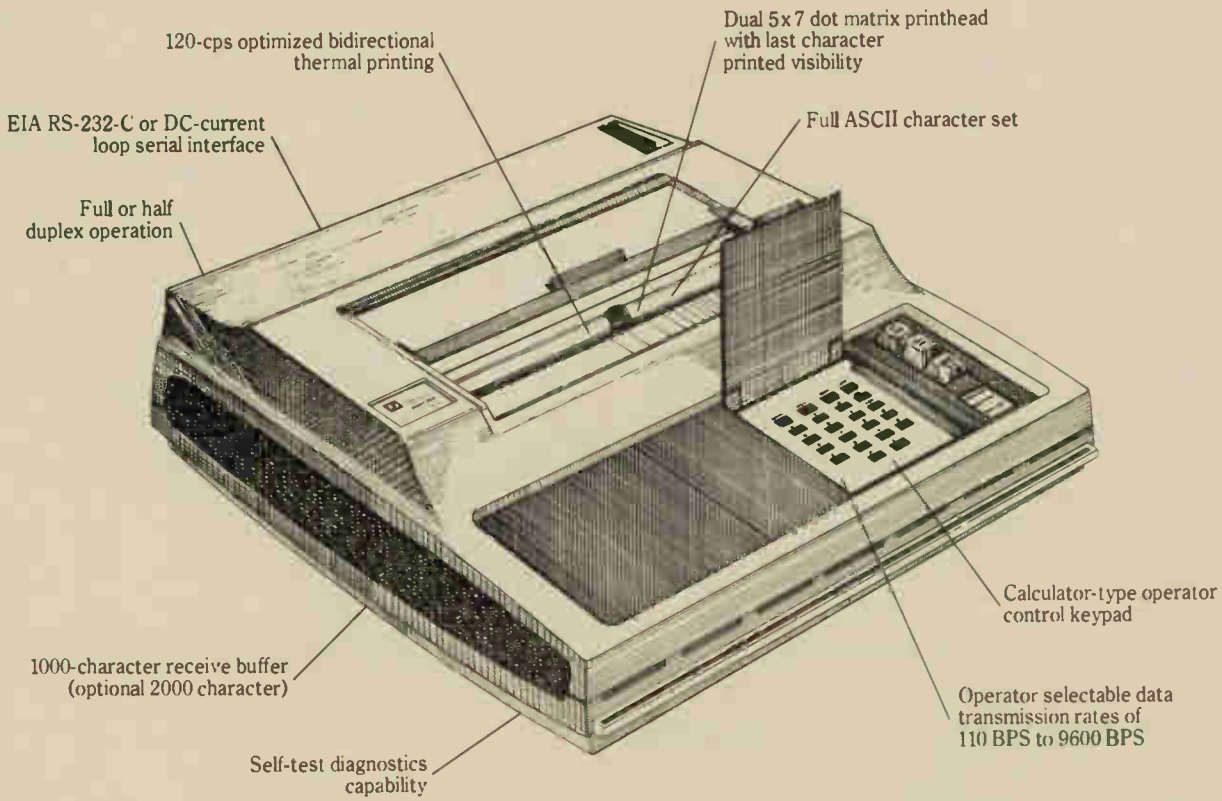

Fast and virtually silent, TI's *Silent 700** Model 781 RO Printer speeds through the toughest printing applications. The 781 RO's unique 120-cps dual-matrix thermal printhead cuts down on print cycle time to improve your printing capabilities. And its compact design makes it ideal for work areas, especially when space is limited. With its innovative standard features, the flexible 781 RO has set the pace for expanding high output silent printing.

TI is dedicated to producing quality, innovative products like the Model 781 Receive-Only Printer. TI's hundreds of thousands of data terminals shipped worldwide are backed by the technology and reliability that come from 50 years of experience, and are supported by our worldwide organization of factory-trained sales and service representatives.

For more information on the 781 RO, contact the TI sales office nearest you:

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Richmond, B.C.
604-278-8474
or Ville Saint Laurent, P.Q.
514-334-3511.

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Plotter option challenges matrix impact printers

A 1,000 lpm electrostatic printer/plotter designed by Versatec, is said to offer more than three times (3.3×) faster printing speed and almost five times (4.7×) more character resolution than competitively prices 300 lpm matrix impact printers.

Designated the Versatec V-80, it prints a 132-column 11-in. by 8½-in. page in seven seconds. The column format can be printed without character compression or

reduced resolution. A 16 by 24 character cell provides 384 points to define a character. According to the designers competitive matrix printers are said to offer no more than 9 by 9 character cells with 81 points available to define a character.

New V-80 options include RS-232C serial interface, long line drivers and receivers, underline capability, 96 ASCII character sets in three fonts, 124-character set for scientific/engineering applications, and plug-in PROM configurations for nine languages.

The unit prints 1,000 lpm, plots an 11 x 8½-inch page with 200 point-per-inch resolution in seven seconds, and with optional controller, produces a hard copy from CRT or video source in 20 seconds or less.

A negative pressure toning system maintains image contrast and dries output. Toner is drawn across three developer channels in series. A vacuum channel removes excess toner and dries the paper before the paper exits the machine. The back plate electrode, a conductive plastic membrane, is pressed against the back of the paper by a plastic foam strip that maintains positive paper/head contact without adjustment.

Toner and concentrate are packaged in sealed cartridges. The seal is pierced when the cartridge is inserted into the machine. A flexible membrane reseals the opening when the cartridge is removed. Concentrate is added by an electrically operated valve. A LED indicates when paper is low.

The unit is designed to meet UL 114 specifications. Versatics products are marketed in Canada by Ahearn & Soper Ltd.

A. R. Kaye appointed to office automation chair

Carleton University, Ottawa, has appointed A. Roger Kaye as first holder of the 'Mitel/Systemhouse Chair in Office Automation', a newly formed position in the school's department of systems and computer engineering that is totally devoted to office automation studies.

Systemhouse Ltd. and Mitel Corp., two Ottawa-area high-technology software and datacomm firms, are funding this Chair at a combined cost of $60,000 per year for five years, subject to a renewal at the end of the term.

Development system, emulator to aid designers, programmers

To aid design engineers and programmers and to provide support for stand-alone or add-on development systems, Millennium Systems Inc., Cupertino, Calif., has developed two systems: the 9520 Microprocessor Software Development System and the 9508 MicroSystem Emulator.

According to the designers, the 9500 family divides development systems into separate software development and debug stations to distribute the debug task and offload the software development

system.

The 9520 is designed to be expanded to a two-user system as an organization's needs grow, also provides high-level languages and a total microprocessor software development system in a single enclosure.

The 9520 is provided with 64K of memory (all memory includes parity), four serial ports (three RS 232, one RS 422) and an IEEE 488 parallel port. It is also provided with two dual-density floppy disc drives for total working storage of one megabyte. DMA access is provided for overlapped processor and disk activity.

U.S. information services to reach $35 billion by 1985

An $11-billion increase in expenditures for software products, professional and processing services is expected in the U.S. by 1985, says a report by Input, a California-based consulting firm.

According to the "Annual Report on the Information Services Industry," expenditures will reach $35 billion by 1985, up from a current level of $14 billion.

The report reveals that product/service specialization continues to be an important industry issue. Users perceive that specialized offerings are "better" than generic offerings. As computer manufacturers increase the software and services component of their sales, the separate role of vendor becomes less clear. The companies which emphasize "enhanced consulting" with solution-oriented, specialized product/services will be the most successful in the 1980s, the report predicts.

IN BRIEF:

TEDAC Computer Services Inc. (formerly Teachers' Data Centre Ltd.), Toronto, has opened a new division office at 2287 Kaladar Rd., Ottawa. The expansion is a result of increased demand by the firm's association clients in the region.

Datamex Ltd., Toronto, has opened a branch office at 1615 Tenth Ave. SW, Calgary, Alta. T3C 0J7, tel.-(403) 245-2732. Chuck Armitage is appointed branch manager.

A shift of head office personnel from Ottawa to Toronto has been announced by **General DataComm Industries (Canada) Ltd.**, in a move said to be prompted by a desire to gain more direct access to the end-user datacomm market. The firm's Toronto facility is at 2255 Sheppard Ave. E., Suite W-410, Willowdale, Ont. M2J 4Y1, tel.- (416) 498-5100.

Digital Management Group Ltd. has moved to Suite 208, 4800 Yonge St., Willowdale, Ont. M2N 6G5, tel.- (416) 225-7788.

Zentronics has relocated its headquarters and Toronto branch operation from Mississauga to 8 Tilbury Ct., Brampton, Ont. L6T 3T4, tel.- (416) 451-9600.

Penik Management Ltd., a Toronto systems consultancy firm, has recently added a records management and a procedural writing division to the company.

MLPI Sysnet, 2255 Sheppard Ave. E., Suite A-110, Willowdale, Ont. M2J 4Y1 has been appointed exclusive Canadian distributor for all products of Protocol Computers Inc., Irvine, Ga.

"I'll give you an estimate on computerizing your operations as soon as I evaluate these notes I've jotted down."

PEOPLE

WAITE

EMOND

William B. Waite has been appointed president and chief executive officer of Siemens Electric Ltd., Pointe-Claire, Que. He was most recently vice-president, electrical equipment group.

W. Robert Emond has been appointed director of marketing, business computers at Philips Information Systems, Div. of Philips Data Systems Ltd., Scarborough, Ont. He brings 20 years of business equipment and data processing industry experience to his new position.

Joe Aucoin has been named vice-president of MCM Computers Ltd., Rexdale, Ont. He will be responsible for domestic and international marketing and field service for the company.

Appointed as part-time members for five-year terms to the Canadian Radio-television and Telecommunications Commission (CRTC) are **Marc Gervais** associate professor of film studies at Concordia University, Montreal, and **Marke K. Kaines** of Burnaby, B.C., a media consultant.

SEGAL

ROWLEY

Harry Segal has been named national sales manager for Astra business systems at NEC Information Systems Inc., Lexington, Mass. He will be responsible for sales activities of the company's Astra computer systems in the U.S., Canada, and Mexico.

Ken G. Rowley has been named head of marketing for Prism, Toronto. He has been a member of the data processing community for over nine years.

Kombi Corp., Kanata, Ont., has named **Ranald L. Muir** director of marketing for the office automation systems division.

Desmond Cunningham and **A. de Lotbiniere Panet,** Q.C., have been appointed to the board of directors for Epitek Electronics Ltd., Kanata (Ottawa), Ont. Mr. Mr. Cunningham is co-founder and chairman of the Gandalf Group of companies. Mr. Panet is a partner in the Ottawa law firm of Perley-Robertson, Panet, Hill and McDougall.

F.G. Bendell has been appointed vice-president, marketing of ICL Computers Canada Ltd., Downsview, Ont. Prior to his appointment he was marketing manager of ICL Computers in South Africa for four years.

WILSON

AALDERS

Larry Wilson has been named branch manager of Quasar Systems Ltd., Winnipeg office. He has eight years experience

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as a consultant in data processing and financial systems. **Kenneth Aalders** has been named branch manager of Quasar's Halifax office. He has been with the company in a management capacity for the past four years.


BROWN

Ralph Brown has been appointed director of corporate systems and services of the Toronto Star, Toronto. He will be responsible for directing the Star's future computer development and services. Prior to joining the Star, he held the position of manager, data processing and telecommunications at Xerox Canada Ltd.


PARKER

David E. Parker has been named western region manager, Canada Systems Group, Mississauga, Ont. Located at CSG's Calgary office, he will be responsible for all marketing functions within the processing services group's western region.


SMITH

Morley J. Smith, vice-president and general manager of Victor (Canada) Ltd., Cambridge, Ont., has been elected president of the Canadian Business Equipment Manufacturers Association (CBEMA). Immediate past president is **Grant G. Murray,** vice-president, general counsel, and secretary of IMB Canada Ltd. Thirteen directors of CBEMA have also been elected.


ST. JULES

Maurice St. Jules has been named area sales manager of the transmission group of Northern Telecom Canada Ltd., Montreal, for Nova Scotia and Prince Edward Island.

Brian Flippance has been named national sales manager for Webster Instruments Ltd., Mississauga, Ont. He will be responsible for sales activities in Toronto, Montreal, Ottawa, Edmonton, and Vancouver. **Larry Bushey, Joseph Labonte,** and **Bob Portelance** have been named sales representatives.


OSTLERE

Kerry Ostlere has joined Gandalf Data Communications Ltd., Ottawa, as sales representative for the company's Calgary office.


TEMPLETON

Diversified Business Communications Ltd., Mississauga, Ont. has named **George Templeton** national dealer sales manager. He joins the company from 3M Canada Inc. with several years experience in dealer management positions.

Michael A. Conlin has been named manager for Canada at Plessey Peripherals Systems, Mississauga, Ont. He will be responsible for Canadian operations with emphasis on marketing the DEC-compatible computer systems and add-on peripherals.

CALENDAR

SEPTEMBER

9-11. Chicago
2nd National Symposium on Office Automation. Under the theme "Strategies for Implementation," topics include: conducting office automation feasibility studies; installing electronic mail and message systems; data communications; and teleconferencing applications and trends. Contact: Conference Manager, U.S. Professional Development Institute, 12611 Davan Dr., Silver Spring, MD 20904. Tel. (301) 622-0066.

14. Washington DC
Four Conferences preceding COMPCON Fall '81. Sponsored by the IEEE Computer Society. The tutorials are as follows: 'Productivity: A Systems Solution'; 'Software Design Techniques'; 'Office Automation Systems'; and 'Database Management in the '80s'. Contact: COMPCON Fall '81, P.O. Box 639, Silver Spring, MD 20901. Tel. (301) 589-3386.

14-16. Las Vegas
Fifth Annual Data Entry Management Conference & Exhibit, sponsored by the Data Entry Management Association. The conference will focus on reducing costs and improving quality and productivity. Contact: DEMA, Ms. Marilyn S. Bodek, P.O. Box 3231, Stamford, CT 06905. Tel. (203) 322-1166.

21-25. Montreal
International Switching Symposium. Topics covered include: switching systems, networking, and technology. Sponsored by the IEEE. Contact: ISS '81, P.O. Box 56, Station "Ile des Soeurs", Verdun, Que. H3E 1J8.

21-24. Mexico City, Mexico
International Micrographic Congress. The congress will include two full-day tutorials on 'Fundamentals of Micrographics' and 'Systems and Technologies'. Contact: IMC '81, 100 East 14th St., Minneapolis, MN 55403.

23-24. New York
Word Processing Systems & Management Seminar. The seminar covers word processing concepts, centralized and decentralized configurations, evaluating equipment, interfaces, and human considerations. Contact: Thomas Wilds Associates Inc., 516 Fifth Ave., New York, NY 10036. Tel. (212) 986-2515.

24-25. Vancouver
Northwest Systems Conference, sponsored by the Association for Systems Management. Topics include: office of the future; designing systems for auditability; resolving the resource riddle; computer crime; communications; automated design; and office productivity. Contact: Conference Chairman, Alan Hyde at (604) 270-5008 or Ian D. Lambert, c/o MacMillan Bloedel Ltd., 1075 West Georgia, Vancouver, B.C. V6E 3R9. Tel. (604) 683-6711.

28-30. Toronto
1981 Annual Datapac User Group Conference. Topics include: proper network management, cost-effective solutions, and interface between suppliers. Contact: Kay Hunt, Conference Co-ordinator, Datapac User Group, Floor 2-Systems, 2 Bloor St. E., Toronto, Ont. M4W 3H7.

OCTOBER

7-8. Ottawa
Ottawa Computer Show. Sponsored by the Computing Equipment Association. Contact: Whitsed Publishing, 55 Bloor St. W., Suite 1201, Toronto, Ont. M4W 3K2. Tel. (416) 967-6200.

12-15. New York
Info 81: The Information Management Exposition and Conference. The conference will emphasize software including pre-packaged systems, applications, contracting, and a look at different packages. Contact: Clapp & Poliak Inc., 245 Park Ave., New York, NY 10167. Tel. (212) 661-8410.

13-16. Montreal
1981 Conference and Telecommunications Exposition. Sponsored by the Canadian Industrial Communications Assembly. Contact: CICA, 15 Toronto St., Ste. 702, Toronto, Ont. M5C 2E3. Tel. (416) 362-4500.

28-29. Calgary
Western Computer Show. Sponsored by the Computing Equipment Association. Contact: Laurie Whitsed, 55 Bloor St. W., Suite 1201, Toronto, Ont. M4W 3K2.

Is the DP/telecom merger fact or fiction?

Today's realities include tremendous opportunities for corporations to take control of their telecom expenditures and to manage their own destiny.

By DENIS A. HERARD

The evolution of data processing and telecommunications in recent years is showing signs of merging the technological and corporate supremacy enjoyed by DP in the last two decades, with the largely unmanaged telecom discipline.

Historically, telecommunications has lagged behind, while unprecedented growth in virtually every aspect of computer technology has had a massive impact on our lives.

Competition in telecommunications products and networks has existed for barely a decade but has resulted in a massive new industry that is gaining momentum. Where does DP end and where do telecommunications begin in the so called "Office of the Future" or in recently announced PABX's? It is becoming increasingly difficult to determine how these two merging technologies and their diverse disciplines will be managed in the '80s.

Unfortunately for telecommunications buffs, DP is better prepared to control corporate information resources. The reasons are quite simple: professionalism and visibility.

DP management in recent years has developed virtually in step with the technology because of the educational support given by universities and technical schools. But where in Canada today can you graduate from a university with a degree in Telecom Management? You can count them on one hand worldwide.

DP is very visible in most large corporations, while telecom is a necessary evil. Large DP empires have been built and will not yield easily to the telecom intrusion. But must it be viewed as an intrusion? Is it not a merging of technology and discipline?

The merging of technology is evident. The leading mainframe and mini manufacturers are positioning themselves for deregulation and an all-out assault on the traditional common carrier and telephone equipment markets with products that will merge voice and data, messaging, electronic mail, facsimile, word processing, networking and teleconferencing. A.T.&T., on the other hand, is rumored to have such an advanced network, (A.C.S.) that they apparently don't want to risk blowing our minds by telling us about it.

The merging of telecom and data processing disciplines is not so evident. Telecom is highly regulated and still largely monopolistic in many countries. DP is mainly unregulated and highly competitive. Telecom is highly standardized while DP has evolved with few standards.

So how do you manage these seemingly opposite disciplines and with whom? The lack of trained telecom professionals will result in missed opportunities and horrendous over-spending in information resources. Today's telecom decisions can impact corporations for a decade or more in an area where costs are rising faster than any other single business expense. The key to successfully manage the information explosion in the '80s and '90s will be to merge DP and telecom into a single information resource. But what about today's realities?

We are still a copper bound society and will continue to be so until the Space Shuttle delivers on the promise of 20 new communications satellites by 1985. This will increase the number of transponders available to North America to over 600. These telecom super highways are the key to the success of business communications and the information age, but will we be allowed to use them?

There remains a large number of political and regulatory matters to be resolved: Trans-border dataflow, interconnection of Canada-U.S. satellites, competition in systems and networks, national vs. regional regulation and others. All of these issues will greatly influence what technology will be allowed to do in the decades to come.

There is generally very little user interest in telecommunications policy making. This is due, in part, to years of belief that the telephone companies were providing the best possible products and services at the least possible cost. Many of these views will continue to prevail simply because of the lack of corporate telecom visibility and professionalism.

Today's realities include tremendous opportunities for corporations to take control of their telecom expenditures and to manage their own destiny. Equally large opportunities exist for career development in professional telecom management. But progress will take place slowly due to the lack of telecom management training available in our universities. Very few professionals will be available for quite some time to come.

The '80s and '90s will see telecom expand and merge with DP in well-managed corporations. These organizations will then come to realize that the key to information management is a skillful blend of two technologies and their diverse disciplines. □

Denis Herard is a telecommunications specialist with Genstar Ltd., Calgary.

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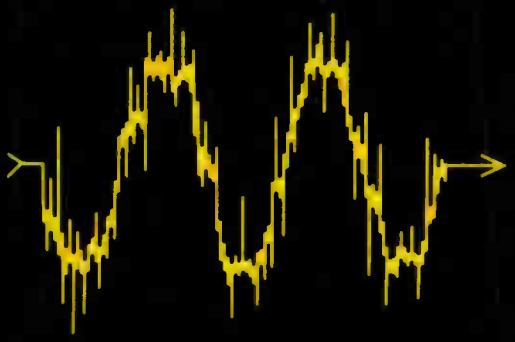

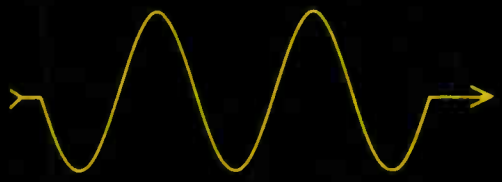

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Series 600 - Super-Isolation Transformers
Series 700 - Line Voltage Conditioners
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