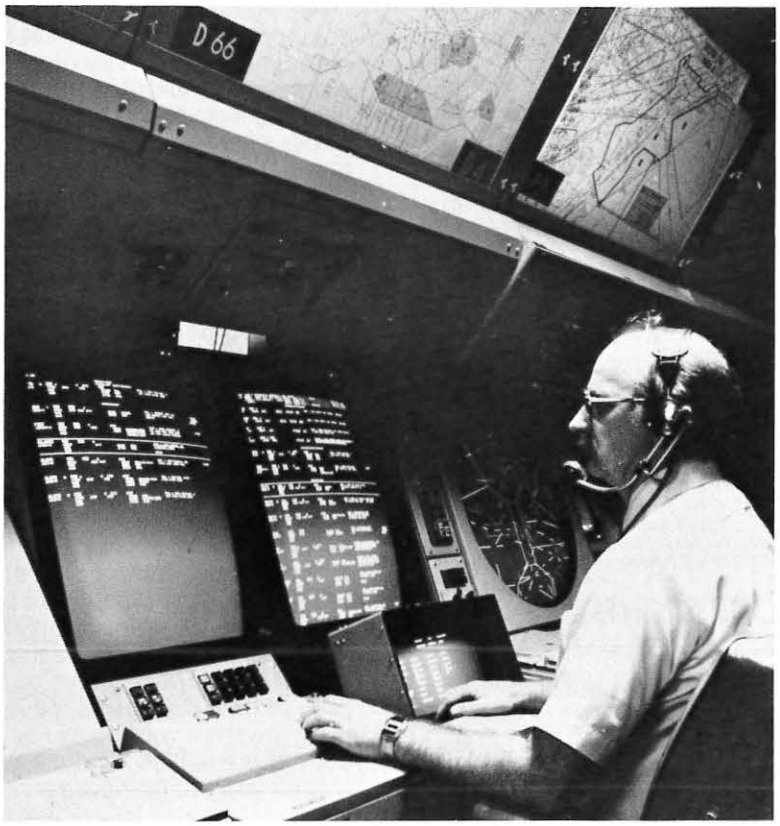
Information Display

The Official Journal of the Society for Information Display

DECEMBER 1982



Engineering models of this Electronic Tabular Display Subsystem (ETABS), designed to help improve the efficiency of air traffic controllers by automating routine manual tasks, are undergoing tests and evaluation at the FAA Technical Center's En Route System Support Facility at Atlantic City Airport on the New Jersey coast.

Developed by Sanders Associates, Inc. of Nashua, NH, the ETABS systems are being tested by using simulated air traffic control information and problems to determine the feasibility of the equipment for air traffic control. When ETABS systems are qualified in automating the display and management of flight information, they will replace the mechanical flight strip printers and computer readout displays and keyboards now used by the manual controller or "D" man.

The ETABS consoles, which perform with a plan view (radar operator) display, are being tested as part of the FAA's 20-year National Airspace System Plan that calls for a standard work station or "sector suite" at all enroute centers as well as at terminals. The systems software and touch entry CRTs will provide automatic updates of all flight data and amendments and will eliminate the need to accumulate large volumes of paper strips as records.

FRONT COVER MATERIAL WELCOMED: Every month **Information Display** usually features one or more active members of SID and the products with which they are most closely associated. Please send a glossy print and appropriate captions so that you, too, can be on our front cover. Send your material to Ted. Lucas, Editor, P.O. Box 852, Cedar Glen, CA 92321, or to our National Office Manager, Bettye Burdett, for Information Display, 654 North Sepulveda Blvd., Los Angeles, CA 90049. Next deadline for material from you is January 10 for the February issue. If you miss it, try for the March issue. NOTE: We also welcome feature articles on interesting projects.

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Guest Column by Bill Mulley SID/DVC Director

Why can't we have the capability of retrieving still TV pictures on command? Andy Mousis of Sony Corporation described a device that will do just that by acting as a random access video disc.

Interactive video can be as simple as employing multiple choice questions or as complex as a simulation which allows a virtual "experience" of a task or a location — from diagnosing a "sick" automobile to learning the exact physical movements of a medical procedure. Andy described many systems where the video disc has been used as a sales aid, corporate training, medical training, information storage and retrival.

For instance, travel agencies, airlines, hotels or any companies that offer travel services can explore the phenomenon of "vicarious" travel. Using video discs programmed with branching techinques, a travel agent can take a customer on a sophisticated tour of any spot in the world, which can allow the traveler to tailor his "trip" to his own likes and dislikes.

The generation of the discs is accomplished by converting the pictorial information (film, slides, vuegraphs, photos, video, etc.) to a Type C one inch video tape with an appropriate time code. Any audio required would also be on the tape. This tape generation is probably the most difficult portion of the development.

Sony will then generate a disc from the video tape. The disc can have up to 54,000 frames and two channels of audio. Unfortunately, any mistakes on the tape cannot be corrected after the disc has been made. Aditional copies of the disc can be easily and therefore cheaply obtained at the time of the original disc development.

Programming the internal microprocessor can be done by Sony or the user can program his own external processor to control the branches of viewing the information on the disc. It is necessary to create a data base and a procedure for handling each sequence or frame and possible alternate decisions. Then the beginning and end of each frame must be linked as a function of the procedures previously developed. This will determine your program requirements. If history is any indication, soon there will be modular programs which will do all of this for you but for now the producer must do this step by step.

As stated, the disc can be controlled externally via an RS 232 interface from your processor or from its own internal microprocessor. Since the screen goes black during the search time (up to 4 seconds from one end of the disc to the other), if semi-continous motion is required from various still pictures, two identical systems, acting in parallel, are necessary.

Sony is not the only manufacturer of this type of equipment. Discovision Associates in Costa Mesa, CA, also has similar equipment and similar disc making capacity except that 2-inch video tape is required.

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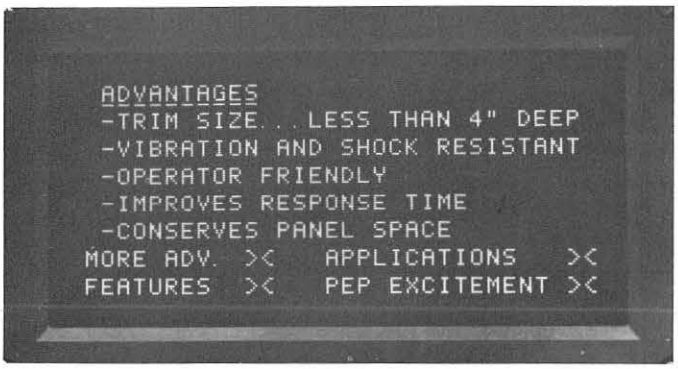
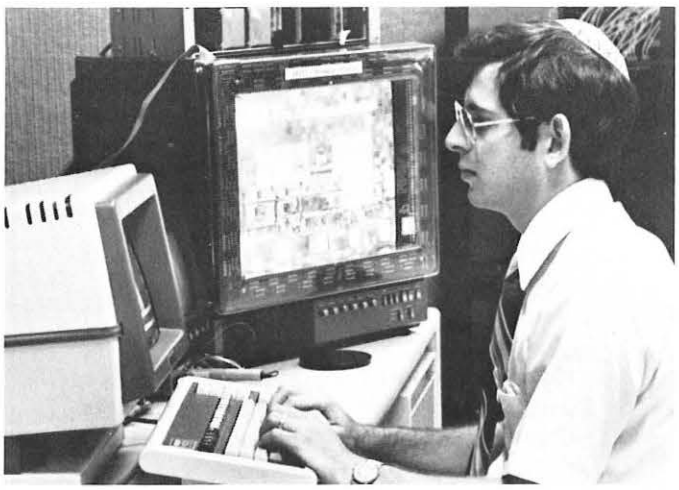
IEE Lowers Price of PEP Interactive Touch Display

The Special Products Division of Industrial Electronic Engineers, Inc. (IEE), Van Nuys, CA, manufacturer of a wide variety of electronic displays is now offering the PEP™ 256 interactive touch display at a price reduction of over 23%.

The PEP display system consolidates discrete switch, indicator, keyboard and display functions into a powerful interactive information center, according to Frank Coppa, IEE technical sales manager. With PEP, the operator reads the menu-driven information and indicates a decision by touching the appropriate answer on the screen. Panel touch areas can be anywhere, any size.

PEP is built around DC plasma technology with an invisible optoelectronic switch system, on-board character generation (ADCII), and sequential and random data load. The unit comes complete with a finished bezel assembly and polarizing filter at no additional charge. The entire system measures 11.8"W x 6.64"H x 3.5"D. Options include a choice of four interfaces (parallel, serial RS232, differential TTL and 20mA loop) and audible feedback. PEP installations include military, industrial, commercial and medical applications.





Final touches on Epcot Center's electronic information system, known as the WorldKey Information Service (WKIS), are applied by David Himber, a software specialist at Bell Laboratories. WKIS is an interactive video and audio communication system that provides computer-based information on Epcot attractions with the touch of a visitor's finger on one of 29 sensitive television monitors (rear) located throughout the park. The WKIS System permits anyone to get information without the traditional keyboard that Himber is using.

New High-Speed 1024 x 1024 Display System

A raster graphics display system with 1024 x 1024 resolution, vector generation at speeds to 200 ns/pixel and full alphanumerics is now available from Grinnell Systems Corporation, San Jose, CA.

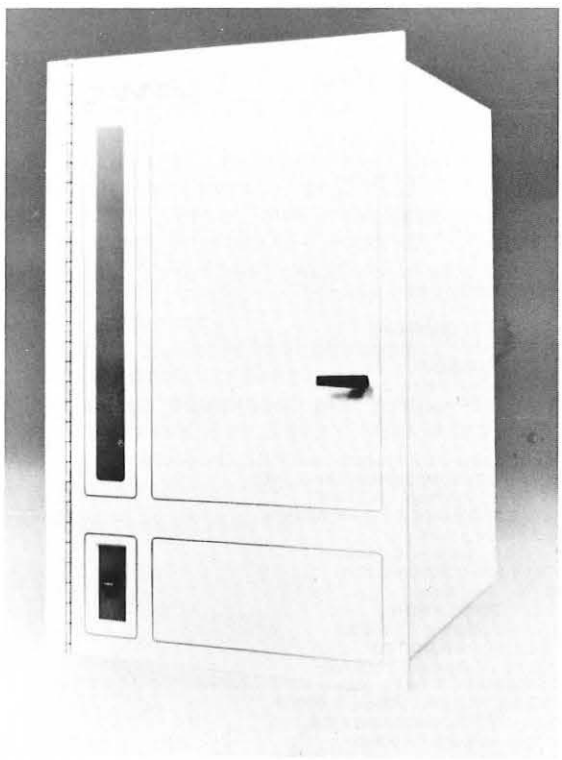
Called the GMR 27-68, the new system produces a 1024 x 1024 interlaced 30 Hz black-and-white or color display. Up to 16 colors, or 8 colors with blink, can be displayed from a palette of 4096 colors.

The GMR 27-68 consists of a display generator and power supply, 8 bits of refresh memory, a high speed vector generator, alphanumerics, and rectangle and image generators. The standard system also includes complete pan and zoom, and a combined 10 x 12 lookup table/video card. A DEC DR11W Unibus interface is available as an option.

The alphanumerics set in the GMR 27-68 features a 7 x 9 character font in an 8 x 12 block, and has a capacity of 256 characters. Zoom and pan capability includes zoom factors, of 1, 2, 4, and 8; pixel by pixel panning; and a zoom cursor. The GMR 27-68 system generates standard RS-343 compatible video signals which drive standard black-and-white or color video monitors.

A full range of options is available for tailoring the GMR 27-68 to specific application requirements. Software options include a FORTRAN-callable subroutine package, DEC RT, RSX and VMS device drivers, and an extended graphics subroutine package with circle generator and area fill. Hardware options available are joystick or trackball controls, a quad independent cursor, and two 1024 x 1024 overlay memory planes.

The GMR 27-68 is housed in a 19 inch wide, 19¼ inch high rack mountable chassis. The chassis is prewired and pretested so that options can be added in the field by plugging in logic cards.



GMR 27-68 high speed graphics display system from Grinnell Systems.

Convergent Technologies Introduces New Workstation Version with Four Times the Performance of Earlier Units at No Increase in Price

Convergent Technologies, Santa Clara, CA, has introduced a new version of its low-cost AWS workstation line that offers up to four times the performance of earlier units at no increase in price. Called the AWS Turbo Workstation, the new line matches the parameters and packaging of the original AWS line introduced in November, 1981, with a significant boost in processing power and peripheral storage.

The new product demonstrates a key commitment of Convergent to its OEM customers, according to Pauline Alker, Vice President-Marketing. "The AWS Turbo illustrates our commitment to exploit technological advances in support of current product lines — and to pass these advances on to our customers immediately. Further, we are making these advances available at no additional cost," Alker said.

"We want to show our customers that by choosing Convergent products, they will maintain a strong competitive edge in their markets. Our customers can concentrate on their strengths — knowledge of the market and understanding of applications — while Convergent backs them up with leading edge system technology and advanced manufacturing processes. The partnership between system integrators and a focused supplier like Convergent, is an ideal arrangement for achieving success in the fast-paced computer systems industry."

The new AWS Turbo multiplies processing performance through the use of an 8MHz 16-bit Intel 8086 processor, and through a proprietary memory management scheme that increases the speed of memory access cycles. All CPU electronics and up to 512 bytes of RAM are on a single circuit board.

In addition, the AWS Turbo line offers double the disk storage capacity in equivalent workstation units by introducing double-sided, double-density floppy disk drives.

Up to 5 megabytes of mass storage are available in a combination of mini-floppy and mini-Winchester desk drives mounted on a single desktop pedestal with the processor and display. The new units are fully compatible with all members of the Convergent AWS workstation family, as well as the complementary IWS family. All Convergent products can be used as either stand-alone workstations or clustered in various configurations that share common peripherals and data bases.

The advantage of the higher performance offered in the AWS Turbo is especially significant to office applications that are highly interactive, and to systems that must incorporate multifunctionality, according to Alker. "The Turbo is available with Convergent's Multiplan financial planning software and with our flexible word processing package that integrates work processing with financial planning. Applications like these, that integrate with a high level of user interaction with other processing-intensive application programs, place heavy demands on the CPU. Thus, the high performance of the AWS Turbo is a significant boost for the implementation of such office functions."

The new desktop units can be interconnected into a local network via a high speed data link. Workstation configurations serve either independently as stand alone units, as master stations controlling a cluster providing resources such as disk storage and printer services to other AWS workstations, or as cluster stations which use the resources of the master stations.

The AWS Turbo incorporates Convergent's CTOS™ Operating System for real time, multitask operation and supports four standard high level languages: COBOL, FORTRAN, BASIC and PASCAL; plus Assembly language.

Data management facilities include multi-key ISAM with record-level locking for flexible access to records, a Forms Facility for easy design of screen formats that accept operator-supplied data, and a Sort-Merge Facility that sorts multiple files of unordered records and merges files of unordered records into a single ordered file.

Four industry standard communications protocols are supported: 3270 Terminal Emulator, 2780/3780 Remote Job Entry Terminal Emulator, Asynchronous Terminal Emulator, and X.25 Emulator. Two RS-232C communications channels may be programmed for a variety of tasks with software-selectable baud rates from 110 to 19.2K. An RS-422 channel operates up to 615K baud. All three channels may be programmed to support a number of synchronous and asynchronous protocols, including BiSynch, ADCCP, SDLC and HDLC.

Convergent Technologies new low-cost AWS Turbo Workstations offer up to four times the performance of earlier AWS units at no increase in cost.

ShareData Announces Omny System

ShareData, Inc., St. Paul, MN, has just started demonstrating its "Omny" integrated office system. The Omny is a Motorola 68000 based minicomputer with a design concept that supports numerous full-page proprietary WP terminals in heavy volume text editing environments. The ShareData CPU has an extensive dual memory system — 256K local, 256K global — expandable to multiple CPUs and up to four 300 Mbyte drives.

Norman Flaaten, president of ShareData comments: "The Omny fills a void in the overwhelming computer market because of its capability to handle multiple word processing terminals with demanding WP applications with its task sharing concept." Both DP and WP software are available on a Unix-like operating system. The basic system includes a full-page WP terminal, DP terminal, 30Mbyte disk and ½-inch magnetic tape system for backup and on-line archiving. Installations have begun late in 1982. ShareData, which markets its product through independent dealers and to systems integration firms, is also providing both accounting system and legal software.

New Very Large Alphanumeric LCD Opens New Markets for Unique Information Display Products

UCE, Inc., Norwalk, CT, recently announced a new, very large, flat, ultra-low power alphanumeric LCD display offering engineering managers new information display applications. The UCE 4345 consists of five 16 segment characters in a single display, with each character 3" high. The display draws only 5a at 5 volts, is CMOS compatable, and offers a wide viewing angle (typically 130°).

The overall glass dimensions are 4" high, 10" wide and 0.110" thick. The introduction of a production-compatible LCD of this size is significant in this standard product or in a customized design as a digital replacement to analog formats. The standard 4345 is designed for high visibility to 150 feet for airport terminals, moving message signs, etc. A custom, high information density display of similar size can be used in applications from automotive dashboards to portable electronic games for group participation.

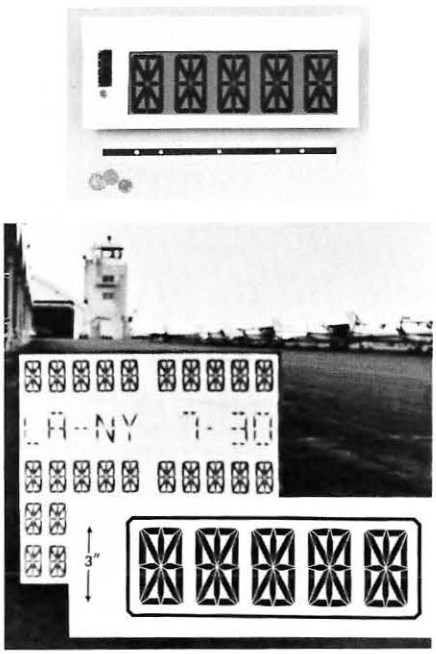
The 4345 is available with electronics and can be used singly or in easily buttable and cascadeable formats for multi-display and multi-line requirements. It is designed for simple serial interface to a microprocessor through a 5-bit port.

Arthur D. Little, Inc., on Future of Flat-Panel Electronic Displays

Electronic display panels as thin as one-half inch will soon compete with CRTs in electronic equipment including microprocessors, according to a study by Arthur D. Little, Inc., Cambridge, MA. How soon is one of the questions addressed in a new multiclient study, "Large-Area, Flat-Panel Displays: Markets and Technology 1982-1992." The consulting firm's study also identifies the types of equipment most likely to adopt such displays and which technologies best suit their requirements.

Large-area, flat-panel electronic displays, with a diagonal measurement ranging from three inches to 100 inches, can employ either active or passive technologies. Plasma gas discharge (PGD) or conventional CRTs are examples of the active, or self-illuminating, technologies being explored; passive types (e.g., liquid crystal) require either front or back ambient lighting.

The Arthur D. Little study examines the economics of mass producing competing technologies for flat-panel displays. "This information is vital for the planning strategies of U.S., Japanese, and Western European firms currently developing these types of displays," says Dr. Mahbub U. Alam, the Arthur D. Little electronics display expert directing the study. "PGD displays are already challenging CRTs for use in bank teller terminals, and in military command, control, and communications," Dr. Alam points out. "But no one is producing flat-panel displays in large quantities for any part of a world CRT market that is approaching annual shipments of $2 billion." Dr. Alam believes that lower power requirements, as well as compactness and lighter weight, make a strong case for the expanded use of large-area, flat panel displays. He predicts that flat-panel displays will penetrate the office initially, where they will be used in word processors, computer terminals and other equipment. The latter part of this decade and the early 1990s will witness their general use in such consumer products as wall television sets, personal computers and electronic mail, he says.



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Color Character Generator Model 801C

The Quantum Model 801C is a programmable RGB video test generator for use in development and manufacture of color monitors and terminals. The unit can be programmed to duplicate the video signals of a given CRT terminal or specific video application. Formats for many CRT applications may be stored in the Model 801C's EPROM, making it an excellent production test generator for companies who manufacture color display monitors for use in terminals. The 801C has all the features of the Model 801A plus color capabilities with sixteen selectable color patterns. These patterns allow testing for purity, convergence, gun tracking, geometry, bandwidth, focus, and brightness. Video amplifier characteristics may be accurately determined as color is switched on a dot basis.

FEATURES

- Sixteen selectable color patterns
- Two level grey scale for color tracking measurement
- Auto-sequencing-color-pattern changes character and background colors to assure equal phosphor usage for life test applications.
- Four selectable monochrome patterns (including crosshatch).
- Lockout switch inhibits unauthorized format tampering.
- Character set containing 68 characters.
- Up to 256 characters/row by 128 character row/frame (includes blanking).
- Custom characters programmable from the keypad.
- Interlace and non-interlace modes.
- Negative video capability.
- Non-volatile CMOS memory stores and recalls four color or monochrome formats.
- EPROM Storage of up to 141 user formats.
- Internal frequency synthesizer for variable dot clocks with crystal accuracy.
- Programmable dot clock range of 1.024-32.768 MHz color. 1.024-65.520 MHz Monochrome.
- Both video and sync timing are entirely programmable by the user.
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- Coded error messages to help identify invalid formats.
- Resident performance check formats.

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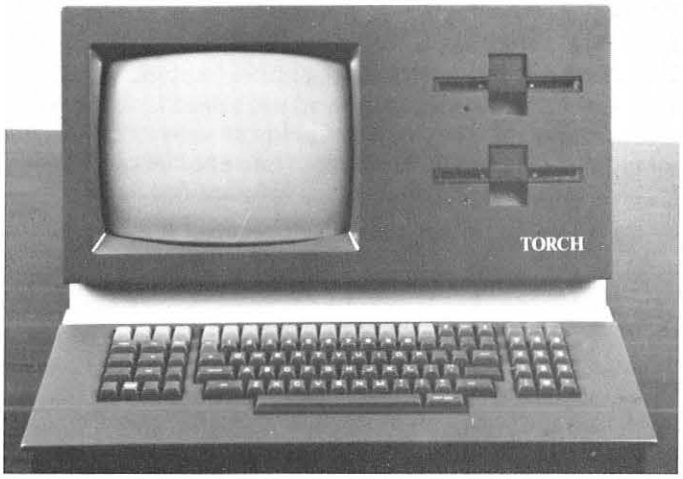
Microcomputer Handles All Office Procedures

The first of a new breed of microcomputers from Britain can handle all office procedures, including word processing, data processing and high-level communications with other computers, using a local area network, or internationally, using standard telephone lines which may include satellite links. In 10 seconds the Torch computer can send a full screen of information down a telephone connection at less cost than a letter or telex, according to the manufacturer, Torch Computers, LTD., Cambridge, England, with a U.S. office in Boston.

The system incorporates two microprocessors (aZ80 and 6502) with access to 800K of disk storage and a high-resolution color display in a single desk-top unit. One processor handles such applications programs as word processing, financial planning and general ledger systems; the other simultaneously handles communications with other computers via its built-in telephone, Prestel/Videotex interface, and network connections.

The Z80 processor delegates disk handling, screen driving and keyboard operation to the 6502 peripheral controller which allows the CP/M compatible operating system high speed and flexibility, freeing a large amount of space for user programs. The Z80 has 64K bytes of user memory with 63K available to the user. Reportedly this gives 20% more processing than other Z80 microprocessors.

Serving as a powerful peripheral controller, the 6502 handles communications with other computers via Videotex, dial-up, Econet or RS423 (serial line) interface, which are standard. Messages can be received without interrupting the current operation mode, although a note on the screen indicates that a message is being received. The message is stored until recalled and can be converted into hard copy or sent to another station using the local area network. A speech synthesizer, which enables the microcomputer to speak, notifies when the electronic message is received or warns of an appointment stored in an electronic diary.



REFAC Electronics Corporation, Barkhamsted, CT, recently announced its 32 character dot-matrix liquid crystal display module. The Model LCDM-1620 features 2 rows of 16 characters, 5 x 7 dots with cursor, an on board controller for direct interface to 8 bit microcomputer data bus. The 96 character ASCII set is provided by internal on board character generator. This LCD module is available with transflective polarizer for backlighting applications.

Desktop Computers Sold into Scientific/Technical Markets in W. Europe to More Than Quadruple to $3.4 Billion by 1992

The so-called scientific desktop computer and its associated peripherals and software, used in scientific/technical and data acquisition and control applications, with the advent of networking are becoming increasingly popular with many companies to handle their processing needs.

Such a trend is one reason why a newly-issued report by Frost & Sullivan Inc., New York City, projects scientific desktop computer sales will be $1.2 billion in 1984, 41.6 billion in 1986, and $3.4 billion by 1992 — up from only $733 million in 1981.

The main factor governing growth will simply be "the availability of suitable software," F&S says. Sales in this arena are "critically influenced by quality software," the report continues, "the greatest success will go to those companies that can develop innovative software programs on a consistent basis."

The study defines a desktop computer as one having a color CRT display and color graphics firmware, interactive light pen, up to 499K bytes of memory, two 217K byte cartridge tape drives, and a built-in 80-column, 480-line-per-minute thermal printer. The system is small enough to sit on a desk or side table and sells at retail between $28,000 and $40,000.

A "streamlined, entry-level" configuration has only 56K bytes of memory, one tape drive and neither a light pen nor internal printer. Its price range: between $20,000 and $32,000.

According to the F&S report, the market is already served by some 65 manufacturers. By the end of this year, it continues "almost every major office equipment manufacturer and/or marketer will have introduced a desktop computer line." Adds the F&S Study: The Japanese especially are "poised to attack."

The CPU is not the only beneficiary of the forthcoming boost in demand. Associated peripherals will become increasingly important as such hardware accounts for an increasingly larger share of systems cost — namely 61 per cent of sales in 1982, increasing to 74 per cent in 1987, and 82 per cent in 1992. These devices include floppy disks, hard disks, other magnetic storage units, add-on memory, printers, terminals, graphic displays, and digital plotters, all of which are individually studied in the F&S report. Storage units alone, for example, will wind up accounting for 43 per cent of the market value by 1986.

SID CALENDAR
JANUARY to OCTOBER 1983

January	11, 12	SID 1983 International Symposium Program Committee Meeting, Hilton Hotel, San Francisco
	11	Executive Committee Meeting, Hilton Hotel, San Francisco
March	4	Post-Deadline Papers for SID 1983 International Symposium
April	12	National Ballot Return Deadline
May	8	Executive Committee Meeting
	9	National Board Meeting, Phildelphia, PA
	9-13	SID 1983 International Symposium, Mariott Hotel, Phildelphia, PA
October	3-5	Japan Display 83, 3rd International Display Research Conference, Kobe, Japan

OTHER EVENTS

February	21-23	1983 Office Automation Conference, Philadelphia, PA
	22-25	INFO '83, Barbican, London, England
March	10-12	International Computer Color Graphics Conference, Tallahassee, FL
	14-17	Comp 83, Computer Graphics Applications for Management and Productivity, Berlin, Germany
April	11-15	Intergraphics 83, Tokyo, Japan
June	6-8	1983 National Education Computing Conference (Towson State University host, Baltimore, MD)
	26-30	National Computer Graphics Association, Chicago
September	19-23	9th World Computer Conference, Paris, France

SynSat Communications Represents ABC Systems "Desk-Top Terminals"

A new concept in desk-top terminal packaging has been developed by ABC Systems, Minneapolis, MN. A typical system consists of a CRT unit which occupies virtually no desk space and whose 80 x 24 character, 9-inch display can be read at distances of 8 or more feet and a small, well-proven serial ASCII electronics package which can be placed in the desk knee well and provides all connections to computers, printers, and other associated equipment. A choice of keyboards is offered the user.

All models in the line are microprocessor controlled. They perform a full range of edit and transmit operations, and display any combination of five field modifiers. Their high-resolution readability results from the use of an 18.6 KHz horizontal scan rate which is approximately 18 percent higher than conventional alphanumeric display terminals.

The green phosphor display measures 9" x 9½" x 10" and weighs 9¾ pounds. The logic power unit weighs 5 pounds and is intended to be mounted remotely, either by magnets or screws. Keyboard choice is a standard 97-key unit (including function and edit keys and numeric pad), a retractable unit that mounts beneath a table or desk top, or a tip-up unit that occupies less than 35 square inches of desk space when not in use.

SynSat Communications Inc., Minneapolis represents new terminal concepts from ABC Computers. Compact, rugged, the new terminal system can be placed in a variety of positions and locations that are not suitable for larger desk top terminals. Keyboard and ASC II Modem constitute the total package.

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Certified Collateral's Computerized Match-Making Service Uses Portable Terminals to Save Auto Insurers Time and Money

Certified Collateral Corporation, Chicago, provides a sophisticated computer and automated telecommunications system that is saving the auto insurance industry considerable time and money. It does this by quickly matching insurance companies in need of replacement vehicles with auto dealers in need of customers. Using portable terminals made by Computer Devices, Inc., Burlington, MA, the Chicago-based service organization can locate and arrange for the sale of a vehicle of equal value, to the satisfaction of all parties involved — all within 48 hours.

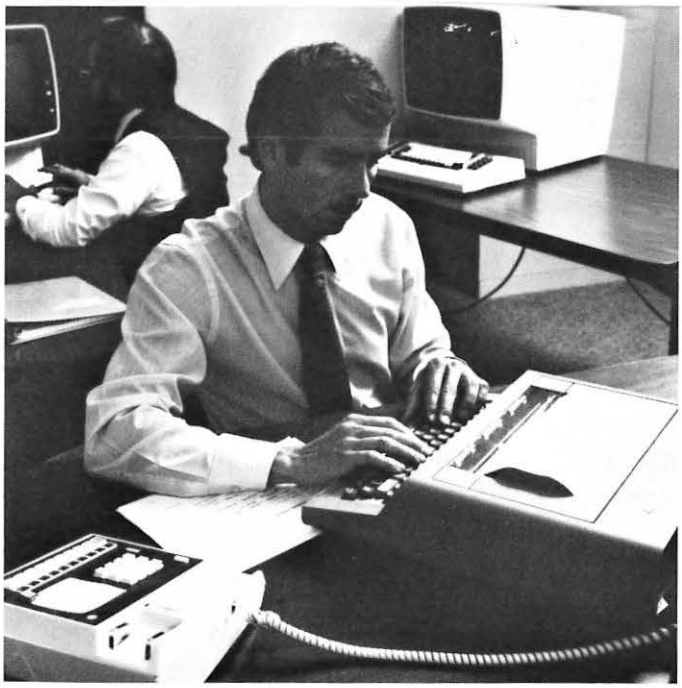
"The beauty of the system is that it gives adjusters access to our information from any location," explains Howard A. Tullman, CCC's founding president. "The Computer Devices terminals save our personnel in the field from wasting time and gas traveling to the office three or four times a day to punch information into the computer. That's why the terminals are so valuable to our operation."

In fact, the system works in as little as five minutes. Insurance adjusters in the field plug into the CCC data base by simply putting a regular telephone handset into the portable terminal's built-in acoustic coupler. After logging relevant data about the original car into the system, the adjuster enters a "Buy" request. Dealers respond with "Sell" offers detailing available vehicles and prices which the adjuster compares and/or accepts for best cost and location. Then CCC's computer sends the data back to the adjuster, whose portable terminals produce hardcopy output on the evaluation and transaction. Through competitive dealer bidding, the system often finds vehicles at less than the typical average values quoted in standard automobile price-list manuals.

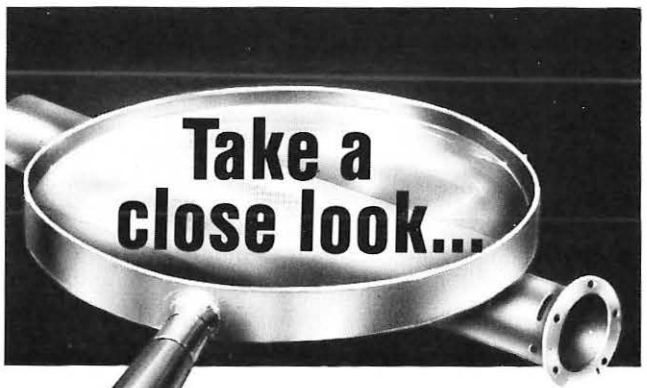
From these Computer Devices printouts, the adjusters can also quickly determine the current state of the market and the vehicles' actual cash value. Moreover, while the prices quoted by the CCC dealers essentially create a ceiling amount for settling a claim, adjusters can still negotiate directly with dealers for lower prices.

Thus, by cutting the time and expense involved in settling routine claims, the system frees the adjuster to handle complex cases. Adjusters save the hours normally spent locating specific vehicles; recording detailed information; and summarizing telephone conversations with dealers, used car brokers, "vehicle replacement specialists," or other sources.

However, these portable terminals do more than just retrieve auto replacement information for the insurance adjuster. The machines also perform calculations that adjusters are not usually equipped to handle in the field. For example, Tullman says, "When the adjusters can't locate a comparable vehicle, they often must calculate the proper value of the lost vehicle from a price-list manual. If the adjusters are unfamiliar with the various computation procedures, their error rates can be enormous. The Computer Devices terminals let them put that information into our system and have our computer do the calculations for them. Within moments, the terminals provide them with printed results."



Certified Collateral Corporation's president, Howard A. Tullman, enters a "Buy" request into the Computer Devices portable terminal to locate replacement vehicles of equal value. According to Tullman, the Computer Devices terminal gives him five-minute access to CCC's data base from any location.



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Human Designed Systems Introduces Two New 132-Column Video Terminals with ANSI X3.64 Functionality, DEC Software Compatibility

Two new 132-column display terminals that combine ANSI X3.64 functionality, DEC software compatibility, and the industry's most extensive series of user-friendly, applications-oriented capabilities in DEC VT-100 software-compatible terminals have been introduced by Human Designed Systems, Inc., Philadelphia, PA.

The *concept* VT108 terminal is a unique "package of performance" that includes four pages of memory standard (expandable to eight pages), 43 programmable functions, windowing, and multiple computer capabilities . . . and at a price lower than the VT-100 video terminal itself, as well as many other VT-100-compatible terminals, "even those which offer fewer capabilities," the maker says. The *concept* VT-APL8 has the same capabilities and supports APL with full, true overstrike.

The new terminals offer switchable 80/132-column format; 128-character upper/lower case ASCII (*concept* VT108) and APL/ASCII, with full, true overstrike (*concept* VT-APL8); non-volatile memory; setup mode; up to four user-selectable character sets (total of 512 characters), including as standard VT-100 graphics (32 characters), continous curve approximations, forms drawing, and math symbols (32 characters) and communications control symbols (32 characters); high-resolution, high-quality monitor with etched faceplate for glare reduction; amber phosphor; a "CRT Saver," that is timed to automatically reduce CRT brightness, thereby increasing phosphor life; self-test; detached keyboard with retractile serial cable; and advanced text editing, data entry/retrieval, and business graphic functionality.

The eight pages of display memory can be used by the interactive user to eliminate the need to generate unnecessary hardcopy printouts. In addition, it facilitates data entry/retrieval applications (for multiple formats) and work processing applications (for storage of large volumes of text).

Windowing provides multiple subscreen capablity for simultaneous multifunction performance. It allows a user to divide the screen into four separate subscreens, or windows — each attached to a different workspace in the terminal's memory — and check a program listing in one window and access a file in another, fill out a form in one window, while the computer loads the nest form into another, or do text preparation and editing in adjacent window.

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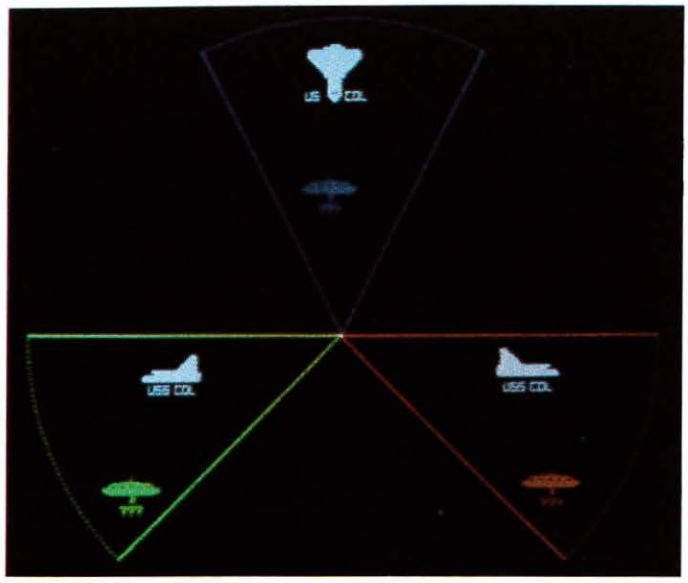
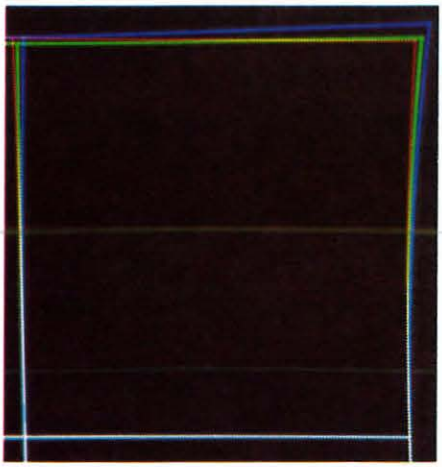


Celco's in-line color Yoke for perfect black & white.

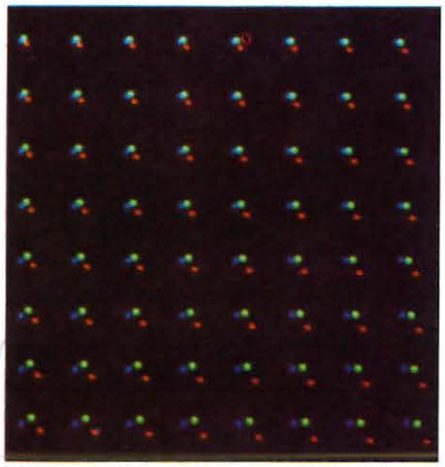
The CELCO Color Yoke Produces Perfect B&W

Engineers who design color displays requiring low inductance look for **perfect black and white** on their test patterns for best convergence. They do not want to see the beautiful colors illustrated in the error patterns — just black & white.



Typical Convergence Error Problem

CELCO color yokes provide complex magnetic fields to be compatible with your color CRT. The Yoke-CRT combination is optimized to achieve color purity and best convergence for your display applications. A precision color yoke is required to deflect the beam to the correct apertures in the shadow mask. These impinge on the proper phophors to produce the blue, green, and red patterns.



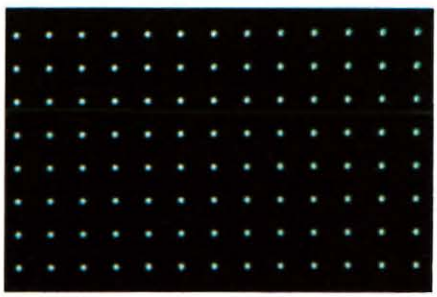
Typical Dot Pattern Error Problem

Over twenty years ago CELCO designed and built low-inductance color *Deflectrons® for delta gun CRTs for military color information displays. Today's new generation of cockpit, air traffic control, flight simulation, ground and ship based radar and graphic displays, require precision deflection of the three in-line electron beams to produce the required colors **anywhere** on the CRT face!

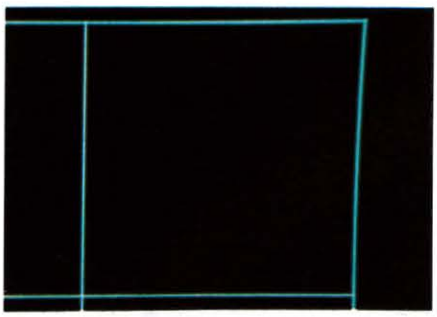
CELCO supplies color yokes with a wide range of inductances and specializes in **low**-inductance color yokes for high-speed, random positioning and vector displays.

*CELCO Low-Inductance Color Yokes may be used with your own amplifier designs. They are also compatible with CELCO High Speed X-Y Deflection Amplifiers for wide bandwidth, ultra-linearity, and high stability. CELCO Deflection Amplifiers are available in ranges from 20 to 75 volts with a change of 4 to 40 amps.

For every CRT face size and neck diameter for In-Line, Delta, or Color Penetration Yoke requirements call John Constantine, Jr. Yoke Designer or Dr. Sam Christaldi, Engineering Sales Manager, Mahwah, New Jersey at (201) 327-1123. (Or call Michael Constantine, President or Bus Reese, Manager, in Upland, California at (714) 985-9868.)



Typical CELCO Color Yoke Solution



*Deflectron® is our registered trademark for Delta-Gun Deflection Yokes in the 1950's.

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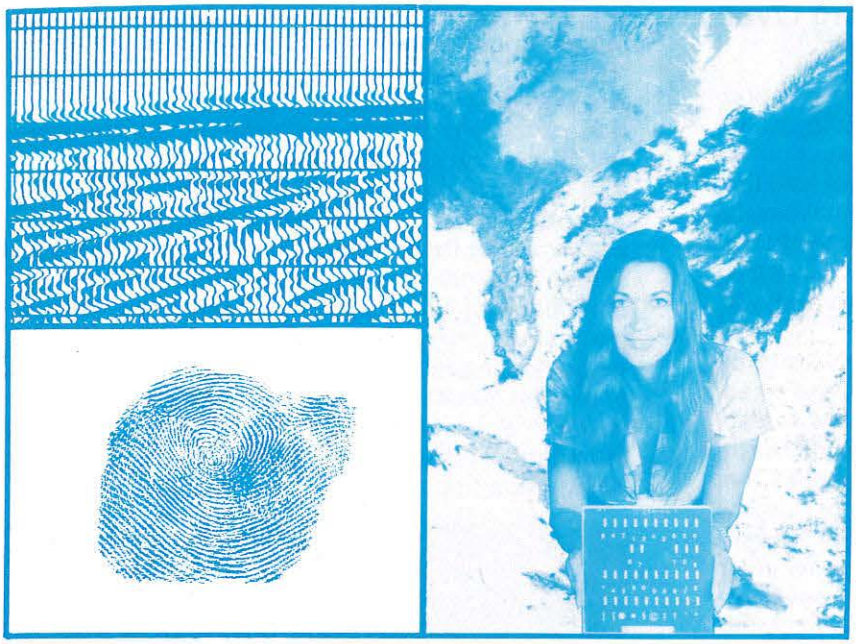

Produce State-of-the-Art Output at the Highest Resolution and Fastest Speeds on Celco Flying Spot Scanners and Cathode Ray Tube Display Systems

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4. Landsat B & W Weather System Recording.

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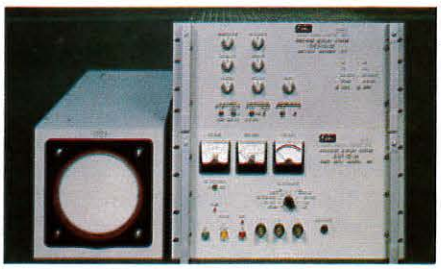
CELCO High Resolution CRT Displays provide to 6000 lines resolution a 7" CRT, and 4200 lines on a 5" cathode ray tube.



CELCO DS7-10-1A 7" High Resolution CRT Display System.

FASTEST SPEEDS

CELCO Precision CRT Deflection Amplifiers used in CELCO Display Systems are available from ± 2 Amps at 20 volts to ± 20 Amps at 75 volts. CELCO high-speed, X-Y Deflection Amplifiers allow a large range of scan and retrace times to 6 microseconds.

CELCO X-Y Deflection Amplifiers

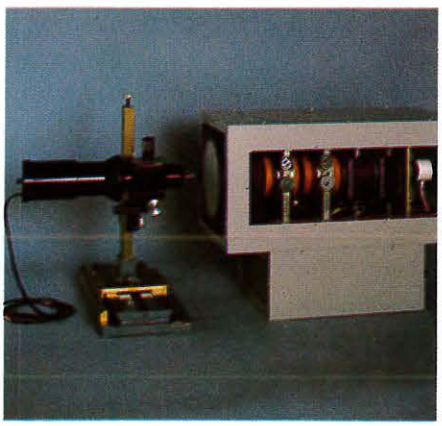
CELCO Dual-Axis Ramp Generators provide 10μsec to 100μsec ramp output signal periods, and are extremely linear (0.05%) linearity and stable.

CELCO RG 116 Dual-Axis Ramp Generator

THE CELCO CRT DISPLAY IS CELCO

The inherent quality of CELCO High Resolution CRT Displays and Flying Spot Scanners is the result of development of CELCO precision engineered components for two generations.

CELCO CRT Displays include electron beam lenses, astigmatism correctors, high resolution deflection yokes, highly stable deflections amplifiers and high voltage power supplies, analogue and digital circuitry and precision electro-mechanical assemblies.



CELCO CRT Spot Analyzer, CRT Display, w/Deflection Yoke, Focus Coil, Lens Assemblies, Correction Circuits, Micro-positioners and Magnetic Shielding.

All CELCO Components are designed and manufactured at CELCO factories. State of the art performance with exceptional reliability in the field is achieved by in-house inspection and long term burn-in times prior to shipping.

FOR FURTHER INFORMATION

Write or call Michael Constantine, President and Display System Designer at 714-985-9868 in Upland, CA. (TWX: 910-581-4301). Your plant is only hours away from CELCO Air Fleet.

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CONSTANTINE ENGINEERING LABORATORIES COMPANY

Ad Hoc "Video" Teleconferencing Over Telephone Lines

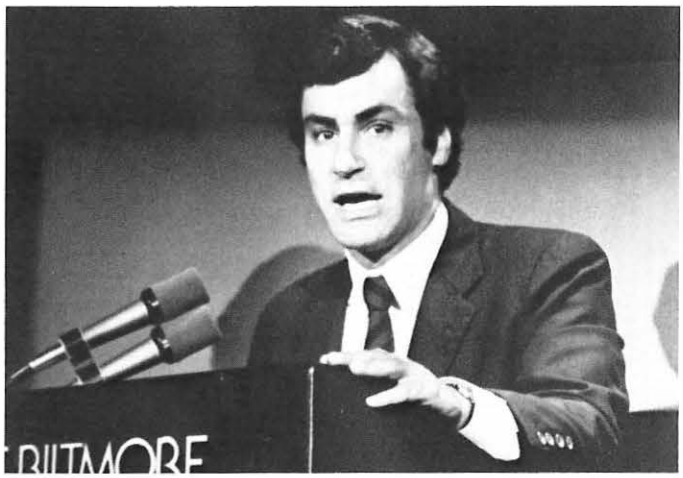
The practicality of one-time teleconferences using Slow-scan TV has been demonstrated by a series of experiments over the last nine months. Costs are dramatically lower than "real time" video conferences, and the time required to arrange for transmission facilities is minimal. Conventional CCTV equipment connected to the dial-up telephone system through a scan converter provides still image intercommunication, while audio is handled by a separate phone line.

Experiments by Dr. David Swift at the University of Hawaii have not only confirmed the effectiveness of ad hoc Slow-scan TV teleconferencing, but have also demonstrated that trained technicians are not required at conference locations to either operate or install the equipment. In Dr. Swift's project, students or faculty members do all of the setup at the University of Hawaii, while guest lecturers on the mainland are shipped a small suitcase containing a TV camera, monitor, scan converter, and telephone. A simple sheet of instructions explains how to connect and operate the Slow-scan TV system, and for safety's sake, the guest speaker is asked to call a special phone number at Colorado Video in case any problems arise.

During the last six months, Dr. Swift and his students have had access to world renowned authorities at the Jet Propulsion Laboratory, Ames Research Center, NASA, and the Smithsonian Aerospace museam via Slow-scan Television. Dr. Swift's projects include intra-island and inter-island communications, and he foresees important and rapidly expanding uses for this form of audio-graphic teleconferencing.

Colorado Video, Boulder, CO, a manufacturer of Slow-scan Television equipment has been "practicing what we preach" since the fall of 1981, according to Glen Southworth, and has been doing an increasing number of TelePresentations since that time. Audience size has ranged from 20 to nearly 200 individuals, and while most "real-time" teleconferences are only one-way video with two -way audio, there is no problem in providing two-way video with a captured frame system, and the speaker can readily see the size and composition of the audience as well as the faces of individuals who may ask questions.

Southworth uses essentially the same equipment package that Dr. Swift does, but often asks that a large screen TV projector be provided locally in order to meet the needs of large audiences. The rapid increase in interest in teleconferencing has led to many more requests for talks and presentations at communications and management meetings, and captured frame television makes an ideal way of presenting valuable information to an audience when schedules do not permit being there in person.



Chrysler Corporation used satellite teleconferencing and video displays in 22 regional locations to introduce its 1983 automobiles. Shown here is John Damoose, director of merchandising, talking from Los Angeles.

Clarkson First College to Require Computer Literacy; Issues Each Freshman Own Personal Computer

Each of 1,000 freshmen at Clarkson College of Technology, Potsdam, NY, will be issued a Zenith personal computer during his/her orientation next fall. Every aspect of Clarkson's curriculum will be redesigned to capitalize on the new computing and word-processing power in each freshman's room. The program will continue so that every one of Clarkson's 3,800 undergraduates has his or her own desk-top computer.

When each student graduates, he or she will be able to take the computer home or to a first job.

"The computer is clearly the same kind of tool now that the slide rule and calculator have been in the recent past," said Robert A. Plane, president of 86-year-old Clarkson, a private college in upstate New York. "Our goal has always been to provide our young people with the skills, knowledge and cultural openness that are important for their total development. Our trustees decided two years ago that we should integrate personal computing into every aspect of our education at Clarkson."

The selection of the Zenith personal computer was an academic decision that resulted from research done by a faculty committee.

"It was immediately evident," said Plane, "that the computer we selected should have the broadest possible base of available software. We know our students and faculty will develop a large number of special uses for these computers, and want them to have a large library of programs and languages from which to choose.

"The committee decided that the computer we would select should use a microprocessor from Intel Corporation's 8085 8-bit and 8086/8088 family of 16-bit devices. The Zenith Data Systems' Z-100 personal computer uses both an 8085 and 8088, which allows it to run either eight-bit or 16-bit computer programs."

The financial ramifications of the decision were studied by William A. Dempsey, Clarkson's vice president.

The retail value of the machine and software is in excess of $5,000. The cost will be subsidized by restricted grants so that students will pay only $200 per semester and a one-time $200 mainenance deposit fee. At the end of four years, title to the computer passes to the student.

David Bray, professor of electrical and computer engineering, was named to a new post, dean of educational computing systems, to oversee the application of the personal computer to all phases of the Clarkson curriculum.

ONTEL Introduces Personal Computer for Business and Home Use

Ontel Corporation, Woodbury, NY recently introduced AMIGO™, a personal CP/M-based computer system designed for business and home applications, according to Bruce Stephens, vice president/marketing.

AMIGO™ uses a Z80A microprocessor with 64K bytes of RAM functioning as a central processor and I/O controller, and a 6502 microprocessor to control 44K bytes of RAM handling the high quality bit mapped graphics and character display. The graphics resolution is 640 x 300 points. The CP/M 2.2 operating system provides access to a wide variety of commercially available applications.

The system features a 12-in non-glare display screen and is available with dual 5¼ inch floppy disk drives with up to 400K bytes of formatted storage. Optional dual floppy disks with 800K bytes and a 5MB Winchester disk drive expand performance and storage capacity. The AMIGO™ system features an 83 key low profile detachable keyboard. The keyboard layout is similar to IBM's Personal Computer.

A parallel printer port will interface to a dot matrix, 80-column or 132-column impact printer with graphics capability; an RS232C interface is also standard.

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Powerful VisiCalc® Advanced Version for Corporate-Wide Planning and Analysis

VisiCorp, San Jose, CA, recently announced VisiCalc® Advanced Version, a second-generation "electronic spread-sheet" program for the Apple III personal computer.

The original VisiCalc program is said to be the most widely used application program available for personal computers. Industry analysts credit it with creating the business market for personal computers, according to Jeff Walden of VisiCorp.

Corporate-Wide Standard

Using VisiCalc Advanced Version, managers can create sophisticated, preformatted spreadsheet models (templates). These templates, easily used by the novice, are said to provide a uniform approach to forecasting, budgeting, and planning tasks that can apply across an organization.

Thus the knowledge of a corporate financial officer can be applied to create the templates needed for complete and consistent financial reporting. Users without extensive financial knowledge or computer expertise can use the preformatted models to provide consistent information to meet organization-wide requirements. This data, perhaps from many divisions or sales regions, can then be consolidated into a final document or report.

"VisiCalc Advanced Version will greatly increase the role of personal computers in corporate-wide business applications," says Terry Opdendyk, president of Visicorp. "It will leverage the training and experience of managers in their areas of expertise to develop tailored programs that are easy to use by less experienced staff members.

Additional Power — Ease of Use Provided

Using VisiCalc Advanced Version's features, such as complex formulae handling and built-in financial functions, the knowledgeable user can build sophisticated templates. In addition, with VisiCalc Advanced Version's unique help and protection facilities, a new user is guided step by step through the templates and cannot inadvertently change the model.

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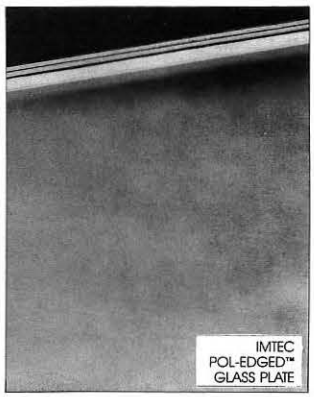

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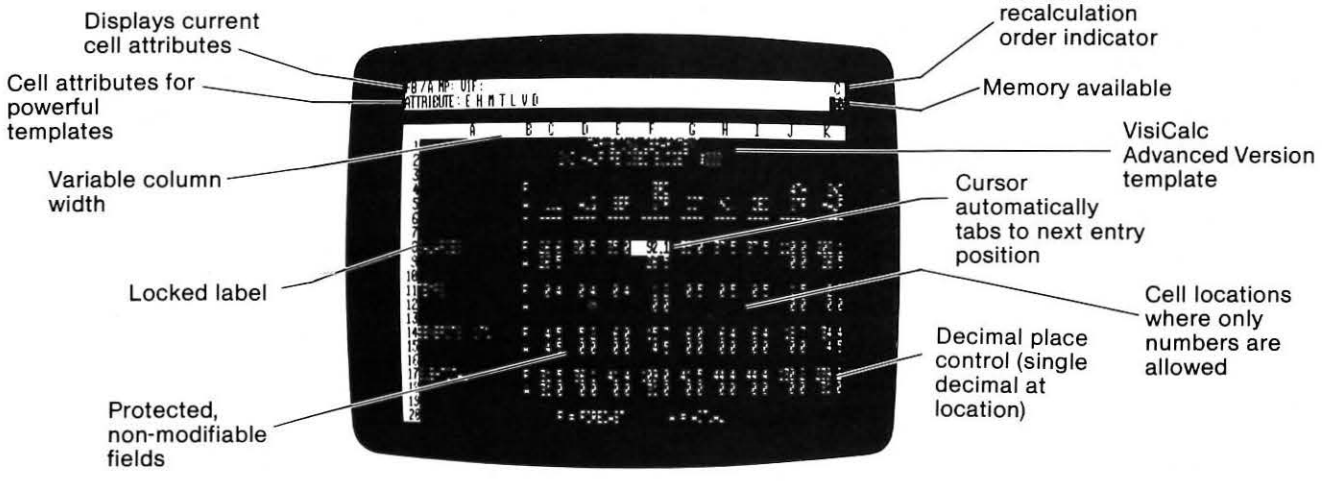

The VisiCalc Advanced Version templates are easy to use because the user is guided from one step to the next. Data can be protected or hidden from view. Also, user input to the template can be validated.

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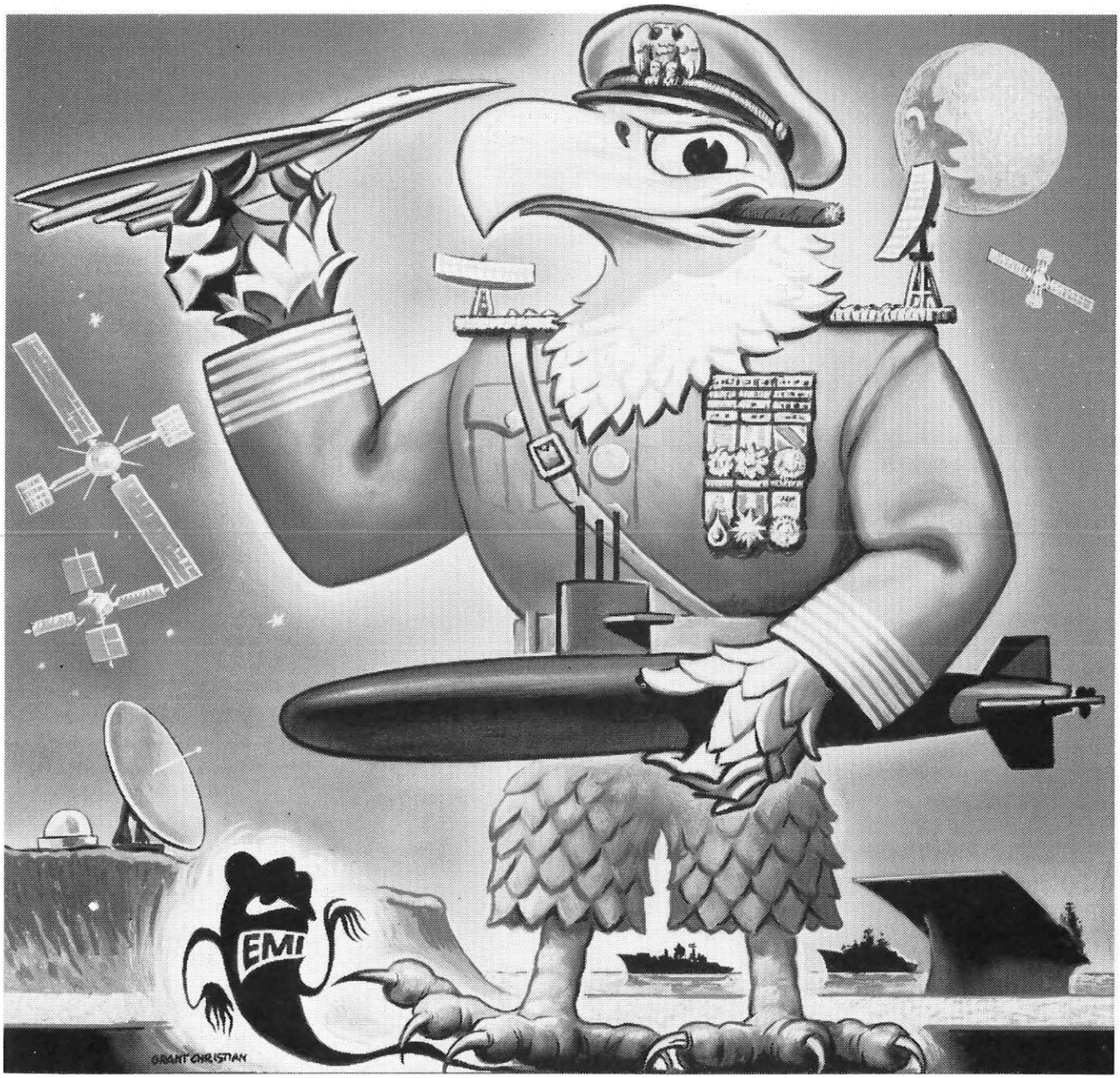

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Chapter News

BAY AREA CHAPTER on October 20 was treated to a presentation on raster graphics technology, anti-aliasing, addressability, and color hardcopy by Maria Runyon, Chapter Chairman, at the Santa Clara facility of Seiko Instruments, her employer. Thanks to Maria for prompt reporting of this well-attended meeting.

LOS ANGELES CHAPTER on November 10 met at the Hughes Aircraft Company's Ground Systems Group facility in Fullerton. Carl Ericson, department manager of liquid crystal light valve projector products engineering, demonstrated the HDP-4000 large screen display. The HDP-4000 is a two-channel liquid crystal light valve projector which generates a high brightness, four-color precision-converged real-time tactical situation or graphic display for command control applications. It is currently in production for delivery to several air defense programs. Carl Ericson and Don Sprotbery, senior system engineer, described the liquid crystal light valve and light valve projector principles of operation, and discussed some of the other light valve projector products currently in production. This was followed by a demonstration of the breadboard HDP-4000 projector driven with a tactical scenario.

DELAWARE VALLEY CHAPTER on November 23 enjoyed a presentation by Stephen Mesaros, manager of hardware engineering, Telegenix, Inc., Cherry Hill, NJ. The Series TDS2000 Plasma Display Terminals, demonstrated by Telegenix at the National Computer Conference last June, included a quarter-ton monster with a 10½-foot display diagonal — *the largest ever produced.* Typical applications of such massive displays are found in passenger terminals, on trading floors, and in network control centers.

Telegenix, founded 14 years ago, has an installed base of over 9,000 displays throughout North America, Europe and Asia. Well over half of this total is of the DC multiplexed plasma type.

For the November meeting Steve Mesaros took the SID audience behind the scenes at Telegenix and discussed some of the engineering solutions peculiar to large-scale plasma display design. His paper included demonstrations of several different types of raised cathode and screened image plasma terminals.

Thanks to Chapter Chairman Stephen M. Filarsky for forwarding an excellent meeting notice.

Present at SID Board Meeting, October 18, Cherry Hill, NJ, were (l. to r.): front row, Gene Slottow, Ifay Chang, Gus Carroll, Peter Pleshko; back row, Lynn Maldoon, Gordon Spencer, John van Raalte, Larry Tannas. Thanks to our Publications Chairman for this picture.

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