DIGITAL RESEARCH NEWS

Digital Research moves into graphics field
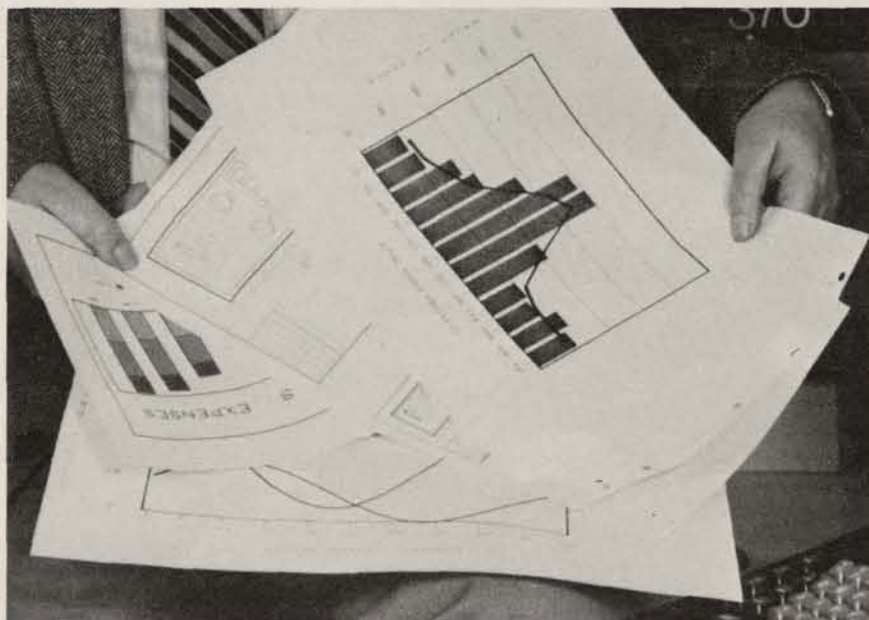
Digital Research systems software will be enhanced with graphics capabilities under a joint development and marketing agreement with Graphic Software Systems, Inc. of Wilsonville, Ore.

Digital Research will offer graphics software for programmers through a joint development and marketing agreement with Graphic Software Systems, Inc. of Wilsonville, Ore., announced Fred Langhorst, Digital Research manager of graphics development.

Digital Research will soon begin shipping grahics products that provide application developers a programming interface which is consistent with the emerging ANSI standards for computer graphics. GSS-CORE is a library of graphic primitives, and GSS-PLOT provides a higher level library of functions for data plotting such as bar graphs and pie charts.

"We believe graphics software will be the fastest growing segment of the microcomputer software market," said Langhorst. "With this agreement Digital Research will become the first microcomputer systems software company to offer standard graphics extensions for its languages that are consistent with standards on mainframes and minicomputers."

Will modify DRI compilers

The Digital Research/Graphic Software Systems agreement includes a significant amount of technology sharing, over and above the marketing aspects of the joint relationship, according to Langhorst. Involved is modification of DRI compilers to include graphic extensions and integration of graphic functions at the operating system level.

Eventually, Digital Research will sell these products for any hardware that can use a DRI operating system—and will support graphic displays and peripherals that include color

Agreement with Micro Focus adds COBOL compilers

Digital Research now provides a COBOL compiler produced by Micro Focus. The companies have signed an agreement that allows Digital Research to market and distribute the popular CIS COBOL™ and Level II COBOL™ microcomputer languages developed by Micro Focus.

The agreement means that Digital Research now has another strong language product to offer to users of 8-bit 8080-based and 16-bit 8086/8088-based microcomputers that run any of the CP/M* or CP/M-generic operating systems, according to Gordon Eubanks Jr., DRI Language Division vice president.

The addition of the COBOL products complements the language division's current line of 8- and 16-bit languages, including CBASIC®, CBASIC Compiler (CB-80)™, CBASIC-86™, CBASIC-16™, PL/I-80™, Pascal/MT+™ and Pascal/MT+86™.

Customization will continue

"Micro Focus will continue to handle customization of the two COBOLS to other operating systems," explained Paul O'Grady, Micro Focus president, "and we'll continue to handle sales of our software construction tools and maintenance tools. We'll also continue to offer CP/M family-compatible products to our own customers, but more and more we'll rely on Digital Research for sales and marketing."

COBOL (Common Business Oriented Language) is a powerful programming language designed for complex business applications. CIS COBOL is certified by the General

CIS COBOL and Level II COBOL will be marketed and distributed by Digital Research under an agreement between Micro Focus, represented by Direct Sales Manager Chris Barnes (right), and Digital Research, represented by Language Division Vice President Gordon Eubanks Jr.

Change in royalty policy favors ISVs

Digital Research has announced that Independent Software Vendors no longer will have to pay the company royalties for programs they sell written with DRI's compiler languages. Those ISVs who have paid these royalties to DRI in the past may credit the amounts to future purchases.

Now any ISV selling programs written in PL/I-80, Pascal/MT+, CBASIC Compiler (CB-80), CBASIC-86 and Pascal/MT+86, will not have to meet Digital Research's run-time licensing requirements.

Vendors have responded positively to the elimination of the royalties, according to Carmen Governale, DRI product marketing manager for the language division. "Large as well as small software companies are pleased that DRI has dropped the run-time licensing fees," Governale said. "For the large companies, it means they are no longer required to

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Are you using the most **current** releases of our products? Check the Order Form on pages 7 and 8 for the latest information. Inquiries may be made to Customer Service at (408) 649-5500.

Concurrent CP/M-86 turns one computer into many

Now microcomputer users can print a letter, examine information from a data base and receive electronic mail on their computers all at the same time, thanks to Concurrent CP/M-86™, the newest 8086/8088-compatible operating system from Digital Research.

"Concurrent CP/M-86 allows you to list a directory without terminating the program that's currently running," said Gary Kildall, Digital Research president, commenting on the company's latest operating system. "Or you can go from one screen of information to another with just a push of a button. It's as if you had several personal computers in front of you, each doing a different job."

Programmers also benefit from Concurrent CP/M-86. "Increased productivity is the immediate payoff," Kildall stressed, "because while one program is being compiled, and another is being edited, still a third can be debugged. In the world of software development, saving time means saving money."

CP/M-86 and MP/M-86 compatible

Concurrent CP/M-86 is compatible with CP/M-86™, Digital Research's 16-bit single-user, single-tasking operation system, and with MP/M-86™, which permits more than one operator to use a single 16-bit CPU simultaneously. Concurrent CP/M-86 offers file structure compatibility with all DRI operating systems, including CP/NET™ which permits a number of separate computers to operate in a processing network, and CP/M, the industry standard operating system for 8-bit microcomputers.

Programs running under Concurrent CP/M-86 can directly access up to one megabyte of main memory. The operating system can support up to 16 logical drives, each with a capacity of 512 megabytes, for a maximum of four gigabytes of on-line storage.

Other features include a real-time kernel; record and file locking; date and time stamps; password protection on files; error-handling and reporting;

PRODUCT UPDATE

Challenge of Kanji faced in meetings

Standard implementation of Kanji for use with Digital Reseach operating systems came one step closer during a recent meeting of five Japanese manufacturers and representatives from Digital Research.

The challenge faced by the group which met during March in Pacific Grove was how to adapt a complicated, partly pictographic language of 100,000 characters—each requiring 16 bits to represent—for use with Digital Research software. The problem was discussed during several sessions by leading Japanese manufacturers of personal computers and intelligent terminals with Kanji capability, and personnel from Digital Research, Microsoftware Associates (MSA) and Micro Focus. Microsoftware Associates represents DRI in the Far East. Micro Focus is the producer of CIS COBOL and Level II COBOL. This United Kingdom-based firm added its experience in working with foreign languages to the group working in Pacific Grove, March 3-12.

Purpose of the meeting was to discuss standardization of Kanji representation in Digital Reserach operating systems and languages. The languages will support Kanji data types, I/O facilities and Kanji string manipulation to be used as development tools for business applications software produced by Japanese

Meeting in an attempt to standardize Kanji representation in software recently were representatives from Digital Research, five Japanese manufacturers of microcomputers and Microsoftware Associates, Digital Research representatives in the Far East.

software vendors.

Kanji originated in China and became part of the Japanese written language in about 600 A.D. As the more modern Japanese language evolved, it combined elements of Kanji with Kana which is a phonetic derivative of Kanji.

Although there may be as many as 100,000 Kanji characters, the Japanese Industry Standard (JIS) has defined 8,000 characters for use by data processing computers and most microcomputer software will draw from only 3,000 characters. Because the normal ASCII characters are used to represent western alphabets, numbers and signs, a different system is needed for representing Kanji. Until now, different hardware manufacturers have been mapping characters in various ways.

As an attempt to standardize Kanji representation in software, the meetings in Pacific Grove are an important step in cooperating with the Japanese computer industry.

Where are we?

Main Switchboard	Customer Service	Support Center
(408) 649-3896	(408) 649-5500	(408) 375-6262

Answered during regular business hours or you may write:

Digital Research
P.O. Box 579
Pacific Grove, CA 93950

Digital Research and Intel work to solve software crunch

"Digital Research and Intel are providing solutions to meet the information processing needs of microcomputer users and to solve the current software crisis." That's what Intel Vice President Jack Carsten has to say about MP/M-286™, the multiuser, multi-tasking operating system which Digital Research is developing specifically for use with Intel's new iAPX 286 (80286) microprocessor.

Based on Digital Research's MP/M-86 operating system for 16-bit languages and application programs, the MP/M-286 version for the Intel microprocessor takes advantage of the 80286's sophisticated memory management and protection, virtual memory support and improved performance.

According to Gary Kildall, DRI president, the collaboration between Intel and his company—with Intel providing prototype hardware to Digital Research to configure the new operating system and test its performance—is necessary to meet the needs of microcomputer users.

"It is clear that in developing microcomputer software technology, software companies will need to become more tightly coupled with those developing hardware technology," said Kildall. "We are really one industry working to serve the needs of the end-user, so we must work together to fully use each new technological development."

MP/M-286 is the first operating system to support the full functionality of the 80286 processor, and will offer users a growth path from 8086- or 8088-based systems. New 80286 features include 16 times more directly addressable main memory, virtual memory support, multi-tasking hardware, memory protection and execution speeds six times that of the 8086. Coupled with the support provided by the 16-bit multi-user, multitasking power of MP/M-286, these features make a hardware-software combination that is suitable for the office of the future. With minor modifications, most CP/M compatible 8-bit application packages will run on the new iAPX 286 using MP/M-286.

The new operating system will be available from Digital Research, its dealers, distributors and OEMs, and through Intel's Software Distribution Operation (SDO).

Micro Focus

Service Administration's Federal Compiler Testing Center and is designed primarily for new program development. Level II COBOL also is GSA-certified at the high-intermediate level, and is designed for applications in which mainframe compatibility is required. Level II COBOL offers all the power of a complete COBOL language, necessary for data processing, to the microprocessing systems.

"At Digital Research we are very concerned to maintain the highest software quality in all the products we offer, so we made an extensive study of the Micro Focus products and other available COBOLs," said Eubanks. "We came to the conclusion that CIS COBOL and Level II COBOL fit best into our marketing plans. The products are of the highest quality and they have strong market leadership positions."

". . . an opportunity to create new standards in business software."

The two companies will jointly develop a standard package for the products.

Seen as opportunity to create new standards

"With the association of the two companies, we have an opportunity to create new standards in business software," said DRI President Gary Kildall. "Micro Focus has a lot of experience in the commercial requirements of operating systems and file managers."

John Rowley, DRI chief operating officer, added, "This is a unique opportunity to bring the microcomputer up to the standard of commercial systems technology set in the past by mainframes."

Addition of COBOL products complements the Language Division's current line of 8- and 16-bit languages.

The CIS (Compact, Interactive, Standard) COBOL compiler combines ANSI standard COBOL with extensions designed for interactive use on small systems, particularly in such areas as screen formatting and data entry. A CIS COBOL Run Time System is needed to execute both the compiler and CIS COBOL application programs. The Run Time System functions include interpretation of CIS COBOL intermediate code, file handling support, CRT interfacing and support for interactive debugging.

CIS COBOL is supplied in ready-to-run object form on 8-inch single density diskettes, and will soon be available in formats for the IBM Personal Computer and Displaywriter. Customers receive a language reference manual and operating guide with purchase of either CIS COBOL or Level II COBOL.

PRODUCT UPDATE

Pascal/MT+86 strengthens DRI commitment to 16-bit market

"We're excited about the potential of Pascal/MT+86," said Gordon Eubanks Jr., Digital Research Language Division vice president, "and we're pleased with its rapid development. This is another Digital Research product that underlines our commitment to the 16-bit marketplace."

Pascal/MT+86, the 16-bit version of Digital Research's native code compiler programming language, Pascal/MT+, is now being shipped to customers.

The newest language in the company's growing list of language division products is a complete implementation of the International Standards Organization (ISO) Pascal standard. It supports floating point real numbers for scientific applications, including the 8087 numerical processor, decimal arithmetic for business applications, and "ROMable" code for industrial applications.

Application programs written in Pascal/MT+ can be recompiled with Pascal/MT+86 and executed on machines operating under any Digital Research 16-bit operating system: CP/M-86, Concurrent CP/M-86, or MP/M-86.

"Programmers will be pleasantly surprised to find out how easy it is to use Pascal/MT+86," Eubanks said. "It generates optimized code and supports the full capabilities of the 8086 microprocessor. Also, it's compact and it's modular. You can do program compilation without changing disks, for instance, while the modular compilation facility allows you to link a program with other modules, or break a large program into smaller modules."

The Pascal/MT+86 package includes an integrated set of programs which makes possible rapid development of production quality software. The package includes a compiler and assembler to generate 8086/8088 relocatable object files; a linker to generate an executable file from relocatable compiler output; a run-time support library; a disassembler; and a symbolic debugger and library routines to perform tasks that range from transcendental functions to interrupt handling.

Also available is the Pascal/MT+86 SpeedProgramming Package™. This package is a program preparation system with a screen-oriented text editor at its core. The SPP-86 can

Pascal/MT+86 is the newest language in the company's growing list of language division products. The 16-bit version of DRI's Pascal/MT+ programming language is now being shipped to customers.

save development time by reducing the number of compilations required to find syntax errors and mispelled variable names.

Access Manager, Display Manager introduced as new tools

With two new products—Access Manager™ and Display Manager™—Digital Research's Language Division is helping to increase programmer productivity in two important areas.

Professional programmers need help to quickly and easily create high performance application programs. But all too often the labor intensive nature of programming can constitute a bottleneck in the process of getting useful computing power to the people who need it.

"With Access Manager the programmer is freed from writing index access methods into those application programs that need them," explained Gordon Eubanks Jr., Digital Research Language Division vice president. Access Manager is a general purpose file access method that allows software writers to establish keys for accessing data by zip code, by customer name, by order number

or by other such files.

Display Manager speeds program development time by giving software writers a tool for creating interactive screen displays, integrating these input and output screens into an application program, andensuring that these applications run on any CRT. "Not only does Display Manager make it easier for programmers to incorporate screen displays into application programs, in the end this tool means programs that are much more user-friendly," Eubanks commented.

Access Manager provides common access method

Access Manager provides a common access method—the keyed index-sequential method—for all Digital Research compiler languages. It can be linked to the run-time system or to application programs written in PL/I-80, Pascal/MT+

or CBASIC Compiler (CB-80), that run under CP/M or MP/M II.

The new programming tool supports duplicate keys. If a user's file contains customers with the same names, for instance, Access Manager automatically will differentiate the identical keys.

Access Manager allows programmers to develop programs that can handle records of any length. And it provides file access, with appropriate data security, to multiple users of shared databases. Because Access Manager works with all Digital Research language compilers, it gives software writers the advantages of data portability. "Software writers now have a lot more versatility and functionality," Eubanks pointed out.

No additional programming needed

Display Manager gives software

writers the ability to design input and output screens without additional programming. "In addition," said Eubanks, "Display Manager provides codes that allow screen displays to use the capabilities of any CRT, because it supports useful screen attributes such as flashing, reverse video, underlining and highlighting." Display Manager guarantees that visual attributes designed into a program will not prevent that program from executing on different CRTs. Display Manager incorporates the attributes supported by that CRT into each screen display.

Display Manager operates with any 8080-, 8085- or Z80-based system under CP/M 2.0 or MP/M II, and is compatible with PL/I-80, Pascal/MT+, and the CBASIC Compiler, CB-80. A 16-bit version of Display Manager is under development and will be available soon, as will a 16-bit version of Access Manager.

Royalties

keep track of products sold and to report royalties. And for the smaller companies, it means the licensing fees will not inhibit their development and marketing of applications. In some cases, smaller companies could not afford to market a product that required royalties. Now all software writers out there can develop their work without that concern."

Dropping royalties promotes development

In the past, ISVs who sold programs that contained run-time support executing under CP/M paid royalties for adding the routines to their application. "If you have a low profit, high volume product, a royalty can kill it," explained John Holland, a program writer in Shawsville, Va., "especially if you are writing in the small business or entertainment field as I do. Sometimes my author's royalty fee from the software house could be less than the royalty I had to pay for the

compiler. Obviously, I would not develop and market that product."

"For us the elimination of DRI's run-time licensing fee means we no

Kildall: OEMs also will benefit from change as more software . . . will be available for OEM systems.

longer have the hassle of reporting the royalties," says Linda Green, secretary-treasurer of Software Dimensions, Inc. in Citrus Heights, Calif. "The reporting process was a lot of paper work. Also, dropping the library licensing requirement will encourage software development to continue in the CP/M, MP/M™ operat-

ing environments. We at SDI feel this is another step by DRI in providing superior support and strengthening its commitment to software houses."

Means more software for OEM systems

"Our ISV program as a whole is a commitment to help software writers develop and market applications," said Gary Kildall, Digital Research founder. "This licensing change is an example of that commitment." Kildall pointed out that OEMs also will benefit from the change as more software, freed from royalties paid by the software writer, will be available for OEM systems.

Digital Research is contacting all software writers who have executed the run-time library licenses and is informing them of the new policy. Inquiries regarding this policy should be sent to Digital Research Customer Service, 160 Central Ave., Pacific Grove, CA 93950. Telephone: (408) 649-5500.

Graphics

CRT, pen plotters and graphic printers. Initially, however, Digital Research and Graphic Software Systems will tailor the graphic-extended compilers for individual OEMs.

Graphic Software Systems, Inc., formed in 1981, brings extensive graphics software experience to the small computer market place. According to Tom Clarkson, the company's president, "This agreement with Digital Research allows us to gain entrance into the large market of CP/M® users. We're pleased with the recognition given our products by the leader in microcomputer systems software. Together, we will be able to provide graphic capabilities to virtually all small computer system users."

With this agreement, Langhorst explained, Digital Research is in a position to supply Independent Software Vendors with standard graphics interface capabilities, further extending its product line and increasing DRI's impact on the microcomputer software industry.

Focus on a user: Automation Engineering

San Diego firm finds Pascal/MT+ is 'ideal solution'

Automation Engineering programmers find software development fast and easy with Pascal/MT+, a high level programming language from Digital Research, according to Automation Engineering Vice President Robert J. Bible Jr.

Automation Engineering of San Diego, Calif. is a young company that specializes in custom turnkey systems used for automated industrial inspection and gauging. The company's systems use the latest noncontact, electro-optical techniques to gather large amounts of data which must then be processed rapidly. The systems also must perform curve fitting, and control motors, warning lights and other devices that help ensure high productivity and high quality in industrial settings.

Every system is custom made

"All the systems we build are custom made," explained Bible, "be-cause they have to be able to handle lots of data—in some cases, up to 2 Mbytes of video data per minute. But they also have to be easy for the operators to use."

In industrial settings, Automation Engineering systems often are used by operators unfamiliar with computer technology. "We've built our machines so that operators deal only with the simplest keys and switches," stressed Bible.

These system requirements of volume, speed and ease of use make Automation Engineering systems very software dependent, said Bible. "We have found Pascal/MT+ the best programming language to use under

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"We have found Pascal/MT+ the best programming language to use under these conditions," says Vice President Robert J. Bible Jr.

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these conditions—both for program development and for task execution. And the fact that Pascal/MT+ is ROMable is very important for us," he said.

When Automation Engineering first began developing custom software for its systems, the company tried to use assembly language for program development. But it found that assembly language is too complex for machine control applications. Instead, they sought a high level programming language and looked to Mike Lehman, developer of Pascal/MT+ and now a consultant to Digital Research. (Digital Research recently agreed to acquire Lehman's company, MT Microsystems.) Automation Engineering became Lehman's first Pascal compiler customer.

"We found assembly language too bulky," said Bible. "It also had portability problems. So we looked at other high level languages, which weren't right because there weren't good compilers for 8080-based machines. In machine control applications, execution time is critical; you don't have the luxury of an interpreter.

"In the end, we found Pascal/MT+ to be ideal for our purposes," he added.

Combines Pascal/MT+ with SpeedProgramming

Automation Engineering combines Pascal/MT+ with Digital Research's SpeedProgramming Package, an integrated set of tools for development of Pascal/MT+ programs. The tools include a sophisticated screen editor, syntax scanner and spelling checker and formatter.

"The SpeedProgramming package is a critical factor in our use of Pascal/MT+," said Bible. "Custom

machines need custom software, and with these program development tools we can provide it without taking a lot of development time. Also, the learning period is much shorter for new programmers using these tools."

In addition, Pascal/MT+ allows Automation Engineering programmers to develop software on the actual system hardware with the actual target microprocessor in a CP/M environment. This eliminates the usual problems with downloading, in-circuit emulators and cross assemblers, said Bible.

"Nothing that I know about for fast and easy program development compares with Pascal/MT+ and the SpeedProgramming development tools," commented Bible.

Automation Engineering also has developed run-time subroutines on its own that integrate with the Pascal/MT+ software. "Since Pascal/MT+ provides a linker, we can use our own assembly language modules and other pieces of a program, and call them up when we need them," explained the vice president. "We have, for example, a 9511 arithmetic chip routine that we can link. Having all the arithmetic on a chip is faster, and we're always after speed."

The company uses Pascal/MT+ to develop other utilities used during design, including optical lens layout, inventory cataloging, screen graphics and others. Automation Engineering also has developed its own libraries, with a searchable math library consisting of its own matrix operations, the first in a series of libraries it is marketing to other companies.

"All in all," said Bible, "the Automation Engineering management and programming staff find Pascal/MT+ an ideal solution to our needs for the development of software for fast, accurate control applications."
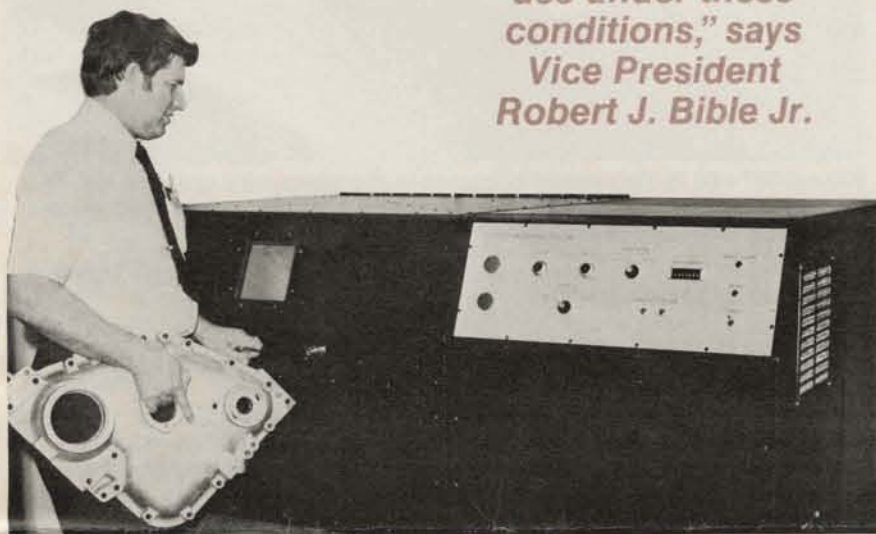
Reorganization affects six major areas

In a move that has far reaching consequences, beyond the simple reordering of the boxes on its organizational chart, Digital Research has undergone a major restructuring. The point of the reorganization moves, according to company management, is more effective customer service and tighter management of the company's rapid growth.

John Rowley, Digital Research chief operating officer, explained the new structure this way: "We're positioning DRI to be more effective in supplying the systems software and support services needed in the high growth microcomputer market. In the first half of 1982 we've more than doubled our staff, bringing on board much of the management team needed to remain an industry leader. The reorganization also signals the industry that we're becoming a major corporation—more professional, more competitive."

Affects six major areas

The organizational changes at Digital Research directly affect six major areas.

First, two Strategic Business Centers (SBCs) were formed around languages and operating systems. This structure allows each SBC the ability to plan and operate more efficiently, focusing resources on its distinctive market. Each SBC is responsible for its respective market position and has its own product development and marketing resources. Also the Finance and Administration function at Digital Research has taken on all EDP automation responsibilities, while transferring shipping and receiving tasks to the new Manufacturing group and order processing to the Operations group.

Second, an external Field Operations organization has been formed to support DRI's domestic OEM and distribution sales effort. A national sales and field technical support organization will allow DRI to maintain its strong growth while enhancing its customer support capability.

Third, an Operations group has been established to manage inside sales and order processing, customer services, marketing communications, technical support services, documentation, training and legal services. This will significantly strengthen DRI's ability to deliver support to its customers.

Fourth, a manufacturing group has been formed to manage the traditional shipping and receiving, inventory, assembly and diskette production functions, while providing the future capability for producing DRI's packaged software products. All Digital Research products will be supplied by the manufacturing operation.

"We're becoming more aggressive in our marketing and sales operations with focus on producing a high level of support," said Rowley. "The Language and Operating System SBCs will now be able to concentrate their resources in pursuit of their respective markets more directly. The new Field Operations capability allows us to serve our rapidly expanding customer base much better in the area of sales, education and technical services."

Is 4th stage in development

According to Gary Kildall, Digital Research president, the new moves are a logical step in the development of the company. "It's really the fourth stage in our ongoing evolution. First,

we chose to include the participation of venture capital firms. Second, we enhanced our language capability by acquiring Compiler Systems, by entering into an agreement to acquire MT Microsystems and by signing an agreement with Micro Focus to share the marketing of their languages product line. Next, we added some needed management expertise. And now we're bringing it all together into a tighter, more formal structure. We've taken these steps so that we can continue to grow and respond to the needs of the industry and of our customers."

Maysonave heads field operations

The establishment of field offices is another new direction for Digital Research. The company will open regional offices throughout the United States and Europe, headed by Stephen Maysonave, director of field operations.

"We're taking this step in order to respond more quickly to sales opportunities and to make it more convenient for our OEMs and distributors to obtain educational services and technical support," Maysonave said. These offices reflect Digital Research's commitment to customer support in a dramatic way, and underline our leadership position in the microcomputer software industry."

Palo Alto is U. S. sales headquarters

The first field office will be the company's U. S. sales headquarters, located in Palo Alto, Calif. It will include a demonstration center and will provide full sales and support services. An East Coast office in Boston will be set up next with four other U. S. offices to be opened later

Stephen Maysonave has been named director of field operations for Digital Research.

in the year. A European office is planned that will work closely with Vector International, with offices in the United Kingdom, Germany and France to follow.

Maysonave previously was director of sales for commercial systems at Intel Corporation with worldwide responsibility for OEM software sales as well as the end-user sales organization in Europe. Jim Tillinghast, North American distribution manager for Digital Research, will report to Maysonave. Tillinghast was former manager of intercontinental sales at Intel, and was Intel's OEM manager for commercial software products. Two branch managers also have been hired by Digital Research. William Haufe, previously a branch manager for Wang Laboratories Inc., will head the DRI San Francisco area office. L. Mike Smith, previously West Coast manager for Racal-Milgo, Inc., will head the Pacific Northwest operation.

Support Center offers technical assistance

by Steve D'Annolfo

It is full speed ahead for the staff of software trouble-shooters that make up the Digital Research Technical Support Department. Months of planning, research, organization and revision have seen a slow but steady development to full operational status. Today, Digital Research is pleased to offer all registered users a complete software support service designed to provide technical assistance in the use of all products designed by Digital Research.

Directing the effort is Nancy J. Lehman. She has assembled an enthusiastic team of experienced technical analysts and has coordinated the development of an efficient problem solving procedure that is proving to be a successful combination.

Support Center services currently are provided at no cost to the user except the usual charge for a telephone call or the price of a postage stamp. To streamline the problem solving procedure, users should understand Support Center policies and follow the prescribed guidelines.

Customers must be registered

The most frequent stumbling block to obtaining access to support services has been improper customer registration. A standard registration card is enclosed in every product shipment. However, many users do not complete all entries on the card so are not registered. (Whenever possible, DRI returns incomplete registration cards to users.) Besides name and address, a user must enter his diskette serial number, product version number and signature. Refusal of technical support for unregistered users is a policy that DRI must enforce strictly. If your registration card has been lost, write to Digital Research for a replacement.

Problem determination is important step

Stressing a definitive policy for problem determination is another tenet of Support Center. In this way, users can direct various types of inquiries through the proper channel for resolution. Some inquiries the

Technical assistance is given to registered users by Support Center team of (left to right) Steve D'Annolfo, Dan Erickson, Wayne Johnson, Barbara Turner, Dick Lovelace, Bob Prince, Mike Bailey, Curt Geske, Dave Brown II and Nancy Lehman.

Support Center does not handle. Specifically, questions about product pricing, new product specifications or incomplete shipments should be directed to Customer Service at (408) 649-5500.

Analysts will not answer questions about proprietary information. Questions about non-Digital Research products also are politely refused as are inquiries about BIOS or XIOS that has been configured by an OEM or an end-user. In addition to these examples, all inquiries should meet certain criteria restrictions to determine whether the user should contact the Support Center by phone or simply write to the department.

Urgent problems handled by phone

The Support Center phone line is

designed to handle urgent software problems. Generally, users whose problems cause a serious degradation of system performance or a complete system failure should telephone for support service. This includes defective diskettes or situations where a product does not perform as documented. For example, call on the telephone if the symptom of the malfunction is an inability to read or copy released product master diskettes. A technical analyst will issue a number authorizing return of the defective diskettes for regeneration or replacement. However, if you purchased your diskettes from a Digital Research vendor, (i.e., OEM, ISV or distributor), notify that vendor directly. Users with problems that cause no serious delay in the systems

operation should describe them in a letter addressed to the Support Center.

Research your problems thoroughly

Before contacting the Support Center either by phone or letter, research your problem thoroughly. Read your manuals and refer to them by name, page, paragraph and statement in your description of the problem. Duplicate the problem in as small a test case as possible and document the test for review by a technical analyst. Write down any error messages displayed by the program. The more carefully defined and isolated a problem is, the faster it can be resolved.

If a software malfunction prevents you from continuing normal operation of your system and you must contact the center by telephone, have your research information ready. Between the hours of 8:30 a.m. and 5 p.m. (Pacific Daylight or Standard time) you may dial (408) 375-6262 for the Technical Support Center. The switchboard operator will ask for your name, company name, serial number and the product you are inquiring about. After verifying proper registration, the operator will connect you with a support analyst. Be prepared with specific questions. Time is expensive, especially on long distance calls. If the analyst cannot resolve your problem immediately, he will request permission to return your call collect. Otherwise, response will be made by letter.

Keep in mind that many software problems have documented solutions in the form of patches and application notes. Therefore, careful and prompt identification of your problem can yield a rapid response.

Support Center inquiries are coming into the center at an average of 300 per week and analysts are keeping pace. As the number of product users continues to grow, we expect the number of inquiries to grow proportionately and preparations already are taking shape to handle a greater volume.

The Support Center is pleased to receive your suggestions for support and product enhancement. Simply write your suggestion clearly in a letter and address it to the Digital Research Technical Support Center, P. O. Box 579, Pacific Grove, CA 93950. ▪

Support Center Forum: Answers to the questions most frequently asked at Support Center

In this and subsequent issues of *Digital Research News* we feature frequent user inquiries with solutions carefully determined by Technical Support department analysts.

Q. How can I get SUBMIT files to accept and execute control?

A. The two control characters P and C are specific commands to the BDOS and cannot be executed from SUBMIT files. Other control characters such as Z that are transparent to the BDOS can be executed from SUBMIT files if you apply the following patch to SUBMIT.COM. However, if you plan to include PIP commands in your SUBMIT file, as the majority of users do, you must apply a second patch to PIP.COM as well. This patch is listed following the patch to SUBMIT.COM. The patching procedure employs use of the CP/M Dynamic Debugging Tool (DDT). Make sure you have studied the use of DDT and make sure you have back-up copies of SUBMIT.COM and PIP.COM before making the changes as specified. Entries that you are to make appear in boldface type. Make the following changes to SUBMIT.COM.

```
A > ddt submit.com
    DDT V2.2
    NEXT PC
    0600 0100
    -I0441
    0441 SUI 61
    0443 STA 0E7D
    0446 MOV C,A
```

```
    -s442
    0442 61 41
    0443 32 .
    -go
A > save 5 submit.com
A >
```

If you plan to include PIP commands in your SUBMIT file, remember that you cannot exit from PIP with a carriage return because SUBMIT does not accept lines terminated with only a carriage return. The following patch modifies PIP so that a period can be used to exit from PIP. To use PIP within a SUBMIT file, place a single period on a line by itself after the last PIP command to be executed.

Use DDT to make the following changes to PIP.COM Entries that you are to make appear in boldface type.

```
A > ddt pip.com
    DDT VERS 2.2
    NEXT PC
    1E00 0100
    -I54f
    054F CPI 00
    0551 JNZ 055E
    0554 LHLD 1DFC

    -a54f
    054F cpi 2
    0551 jnc 55e
    0554
    -go
A > save 29 pip.com
```

Q. I am trying to use the Pascal/MT+ V5.5 INLINE asterisk feature to do branching. Why doesn't it work properly?

A. When using the *+n and *-n feature of the INLINE facility, the syntax scanner reports '' ')' expected Error #4 when it encounters the asterisk. For example, the statement "INLINE('JMP / *-4) will not compile. To correct the situation, apply the following patch procedure to the MTPLUS.COM file using the CP/M Dynamic Debugging Tool (DDT). Make sure you have studied the use of DDT and make sure you have a backup copy of MTPLUS.COM before making the changes as specified. Change the MTPLUS.COM file to Read/Write status and make the changes as shown. The entries you are to make appear in boldface type.

```
A > ddt mtplus.com
    DDT VERS -,-
    NEXT PC
    8B80 100
    -a479c
    479c lxi, h,0
    479F push h
    47A0 jmp 47aa
    -^c
A > save 139 mtplus.com ▪
```

Reformatted documentation for CP/M 2 is available

Improved documentation for the industry standard CP/M 2 operating system will be available July 1 from Digital Research Inc. The revised CP/M Operating System® Manual will combine seven smaller manuals into one volume and will be easier to reference, according to DRI Technical Publications Manager Susan Raab.

The manual will include a glossary, a list of error messages and an index. These additions will make the documentation easier to use, Raab explained.

The new edition of the CP/M documentation will present in six chapters material formerly published in the following separate manuals: Features and Facilities, Context Editor User's Guide, CP/M 2 User's Guide, ASM User's Guide, DDT User's Guide, CP/M Interface and CP/M Alteration Guide.

Inquiries may be directed to Digital Research Customer Service, 160 Central Ave., Pacific Grove, CA 93950. ▣

Release of CP/M-86 for use on the IBM PC is announced

"IBM and CP/M—don't buy one without the other" is what *Wall Street Journal* readers across the country read in advertisements during April and May. The ad announced the long awaited release of CP/M-86 for the IBM Personal Computer and the support of that operating system by application software companies.

As reported earlier, IBM and Digital Research have signed an agreement enabling IBM to distribute this specially designed version of the DRI 16-bit operating system. As a result of this agreement, IBM Personal Computer users can immediately access a large data base of financial planning, accounting, word processing and other application software as well as a variety of languages and programming tools that are not compatible with other operating systems running on the IBM PC.

The *Wall Street Journal* ads were a cooperative effort of Digital Research and a group of Independent Software Vendors (ISVs), demonstrating that the CP/M community includes software vendors as well as hardware manufacturers. In the ad (see below) and in the following comments, a number of application software vendors describe some of the program available to PC users running the CP/M-86 operating system.

Chang Labs offers MicroPlan

One of the business tools available to PC users running the CP/M-86 operating system is MicroPlan from Chang Laboratories, of Cupertino, Calif. MicroPlan users can quickly and easily perform complex financial modeling, what-if analyses and can generate full financial reports with this expandable product.

Chang Laboratories decided to offer MicroPlan for the IBM PC under CP/M-86 because, according to President Dash Chang, "We know Digital Research and its CP/M operating systems very well, and we trust them. They're a strong factor in the marketplace. We're also in favor of maintaining one strong standard in the industry, and that's the CP/M family."

Structured Systems likes flexibility

Structured Systems Group, an Oakland, Calif.-based supplier of a complete line of business application packages, cites similar reasons for supporting the CP/M-86 operating system.

"Digital Research dominates the market, so using CP/M operating systems probably increases our potential user base by a factor of ten," said Mark Tomko, Structured Systems Group director of marketing. "It's the most flexible operating system family, it's consistently upgraded and Digital Research gives us thorough support."

Micro Focus will add SLIDESHOW

Micro Focus Inc., of Santa Clara, Calif., offers IBM PC users business application development and maintenance tools as well as a mainframe-level COBOL compiler, all based on the CP/M-86 operating system.

According to Paul O'Grady, Micro Focus president, The IBM PC's ability to interface with IBM mainframe computers has added value when users run Micro Focus mainframe-compatible software. The majority of corporate applications are written in COBOL.

Micro Focus will soon add SLIDESHOW to its offerings for the PC. This application development tool for system designers generates and links graphics screens, text screens, menus and user prompts to COBOL programs.

Select designs for 1st time user

Select Information Systems, of Kentfield, Calif., offers CP/M-86-based word processing and communications programs for the IBM PC. Its application packages are designed especially for the first time business user. The company offers built-in tutorial programs with its software to teach users how to work with the CP/M family of operating systems.

Micro Pro offers popular Word Star

One of the best known companies providing CP/M-86-based application programs for the IBM PC is MicroPro International Corporation of San Rafael, Calif. It offers its Software System to PC users, an entire line of business application software which includes the world's most popular word processing package, WordStar.

And there is more...

This sampling of IBM PC application software based on the CP/M-86 operating system covers a small part of what is now available. More CP/M-86-based applications for the PC are being developed by independent software vendors (ISVs) who want to take advantage of the success of the IBM PC and the marketing benefits of using standardized systems software to reach a wider base of users.

Digital Research continues to support large and small ISVs to make sure users of the IBM PC and other systems have access to the packages they need for professional, industrial and business applications. ▣

Concurrent

network compatibility; and multiprogramming compatibility.

The first DRI implementation of Concurrent CP/M-86 will be on the IBM Personal Computer with the IBM Displaywriter to follow.

"We feel that Concurrent CP/M-86 is the perfect hardware-software match for the 8086/8088 family," summarized Kildall, "just as CP/M was for the Z-80, 8080 family." ▣

Digital Research schedules two technical seminars; ISV Conference/Language Workshop expanded to 4 days

Technical seminars for Independent Software Vendors and hardware manufacturers have been scheduled by Digital Research for mid-summer and early fall. The two distinct series of workshops are part of the ongoing technical support program provided by Digital Research.

Language workshop added for ISVs

The ISV Conference and Language Workshop is set for July 20-23 at Asilomar Conference Center in Pacific Grove, Calif. in an expanded four-day format that will include an optional two-day language workshop.

Like other parts of the ISV program, the seminar is designed to teach participants how to market, protect and document their products. It also will provide intensive training in Digital Research languages.

During the first two days, enrollees will attend sessions on the present and future of operating systems and languages, documenting products, dynamic advertising, generating publicity, software protection, copyrighting, technical customer support and marketing.

During days three and four, indepth workshops will be offered in PL/I-80, CBASIC, Pascal/MT+ and CIS COBOL. Each language workshop will cover data types, I/O, file accessing, flow of control, application programming and systems programming. Participants will receive tips and techniques from the language implementers as they are taught how to use a powerful, new language.

Cost of the ISV Conference and the Language Workshop is $600. Fee for the ISV Conference only is $300, or $400 for the Language Workshop only. Registration fee includes documentation of the language workshop attended, a notebook with outlines of speaker presentations, and lunch each day.

Sessions begin at 8:30 a.m. daily and conclude at 5 p.m. except the final day when sessions end at 3 p.m. A cocktail party will be presented the first evening of the ISV Conference. During a round table discussion, the first evening of the Language Workshop, participants will meet with Digital Research technical staff to discuss problems and ideas in a relaxed setting.

Through ISV seminars, Digital Research encourages the production of quality application software for use with Digital Research operating systems. More than 3500 programmers have joined Digital Research's ISV plan. Other services include the *ISV FORUM Newsletter*, the CP/M Compatible Software Catalog and a hotline.

Operating Systems Seminar scheduled

The three-day Operating Systems Seminar for Original Equipment Manufacturers and systems integrators is scheduled Sept. 22-24, also at Asilomar Conference Center in Pacific Grove. This seminar is designed specifically to help participants understand the capabilities of Digital Research's family of operating systems and software utilities. A technical overview of CP/M and CP/M-86 will be given by Thomas A. Rolander, operating systems developer and vice president of DRI Operating Systems Division.

Participants may register for either the 8- or 16-bit systems implementation sessions on CP/M or CP/M-86; MP/M II or MP/M-86; or CP/NET. Topics include: structure and configuration of the hardware-dependent BIOS; preparation of a disk definition table for disk subsystems; disk file random access techniques; memory management; overview of CP/NET; implementation of CP/M-based CP/NET slaves and MP/M based CP/NET masters; overviews of MP/M II; and a new session on programming in a shared environment.

One evening will be devoted to a round table discussion during which attendees will be encouraged to express their expectations about operating systems. Digital Research uses this information to help develop its new products, policies, and licensing and support practices.

Cost of the Operating Systems Seminar is $500 which includes breakfast and lunch each day and a notebook of speakers' materials.

More information on these and other Digital Research seminars is available from Seminar Coordinator Peggy Anderson, P. O. Box 579, Pacific Grove, CA 93950, (408) 646-6065.

ⅠⅠ DIGITAL RESEARCH™ — Products

Product Description	Media Formats 8" Diskettes: Single Density	Double Density	Diskette Only: Single Density	Double Density	Documentation Only Price	Documentation Description	Order Details All single density diskettes are IBM 3740 soft-sectored. All double density diskettes are Intel MDS 800.
Operating Systems and Utilities							
CP/M® 2.2	$150	$200	$135	$185	$25.00	Seven manual set includes: CP/M Alterations, Interface, Dynamic Debugging Tool, Context Editor, Assembler, Features & Facilities and User's Guides.	NA
CP/M SBC 80/20	$200	NA	$185	NA	$25.00	Same as CP/M 2.2 Documentation.	System & Disk Only include ROM.
CP/M-86™ 1.1	$250	NA	$220	NA	$40.00	Three manual set includes: CP/M-86 System, User's and Programmer's Guides.	PROM set available for $100
MP/M II™ 2.1	$450	NA	$420	NA	$40.00	Five manual set includes: MP/M II User's, Programmer's and System Guides. LINK-80 Operator's Guide and MAC Language Manual and Applications Guide.	LINK-80 Guide and MAC manual included with system only.
MP/M-86™ 2.0	$650	NA	$610	NA	$50.00	Three manual set includes: MP/M-86 User's, Programmer's and System Guide.	NA
CP/NET™ 1.1	$200	NA	$195	NA	$15.00	CP/NET User's Guide.	NA
TEX 2.1	$100	$125	$ 95	$120	$10.00	TEX User's Guide.	NA
DESPOOL™ 2.0	$ 50	$ 75	$ 45	$ 70	$ 2.50	DESPOOL Operator's Guide.	NA
Languages and Programming Tools							
PL/I-80™ 1.3	$500	$500	$475	$475	$35.00	Five manual set includes: PL/I-80 Applications, Language and LINK-80 Operator's Guides. PL/I-80 Command Summary and MAC Language and Applications Guide.	MAC manual included with system only.
CBASIC® 2.8	$150	$150	$130	$130	$30.00	CBASIC Reference Guide.	NA
CBASIC-86™ 1.1	$325	$325	$305	$305	$30.00	CBASIC-86 Reference Manual.	NA
CBASIC-16™ 1.3	$325*	NA	$305*	NA	$30.00	CBASIC-16 Reference Manual.	*Please contact Digital Research for available formats.
CB-80™ 1.3	$500	$500	$480	$480	$30.00	CB-80 Language Manual	NA
Pascal/MT+™ 5.5	$350	NA	$335	NA	$30.00	Pascal/MT User's Guide.	NA
Speed-Programming Package™ 5.5	$200	NA	$195	NA	$10.00	SpeedProgramming Package User's Guide.	Requires Pascal/MT+ version 5.2 or greater.
Pascal/MT+ with Speed-Programming Package 5.5	$500	NA	$485	NA	$35.00	Two manual set includes: Pascal/MT+ User's Guide and SpeedProgramming Package User's Guide.	NA
MAC™ 2.0	$ 90	$115	$ 80	$105	$15.00	MAC Language & Applications Guide	NA
RMAC™, LINKLIB & XREF 1.1	$200	NA	$185	NA	$25.00	Two manual set includes: LINK-80 Operator's Guide, MAC Language & Applications Guide.	NA
BT-80™ 1.0	$200	NA	$185	NA	$25.00	BT-80 Reference Guide.	NA
XLT86™ 1.0	$150	NA	$145	NA	$10.00	XLT86 User's Guide.	XLT86 is available in the VAX VMS version for $8000.00.
SID™ 1.4	$ 75	$100	$ 70	$ 95	$10.00	Two manual set includes: SID User's Guide and SID Command Summary.	NA
ZSID™ 1.4	$100	$125	$ 95	$120	$10.00	Two manual set includes: SID User's Guide and ZSID Command Summary.	NA

IBM Displaywriter™ Compatible Products

Product Description	Single Density	Double Density	Single Density	Double Density	Documentation Only Price	Documentation Description	Order Details
CP/M-86 DW 1.0	$325	NA	NA	NA	$50.00	CP/M-86 DW documentation.	These products are designed for a Displaywriter with the following configuration: Electronic Module, Display, Disk Drive and Printwheel Printer.
CBASIC-86 DW 1.0	$325	NA	NA	NA	$30.00	CBASIC-86 Reference Manual.	
CP/M-86 DW & CBASIC-86 1.0	$600	NA	NA	NA	$80.00	Two manual set includes: CP/M-86 DW documentation and CBASIC-86 Reference Manual.	

ⅠⅠ DIGITAL RESEARCH™ — New Products

Product Description	Media Formats 8" Diskettes: Single Density	Double Density	Diskette Only: Single Density	Double Density	Documentation Only Price	Documentation Description	Order Details All single density diskettes are IBM 3740 soft-sectored. All double density diskettes are Intel MDS 800.
New Languages and Programming Tools							
Pascal/MT+86™ 3.0	$600	NA	$580	NA	$30.00	Pascal/MT+86 Language Reference Manual and ASMT-86 Reference Manual.	NA
Speed-Programming Package™ 1.0	$250	NA	$245	NA	$10.00	SpeedProgramming Package User's Guide.	Requires Pascal/MT+86.
Pascal/MT+86 with Speed-Programming Package 3.0	$800	NA	$775	NA	$35.00	Pascal/MT+86 Language Reference Manual, ASMT-86 Reference Manual and SpeedProgramming Package User's Guide.	NA
SID-86™ 1.0	$150	NA	$145	NA	$10.00	SID-86 User's Guide.	NA
Display Manager™ 1.0	$400	NA	$380	NA	$30.00	Display Manager Programmer's Guide.	NA
Access Manager™	$300	NA	$280	NA	$30.00	Access Manager Programmer's Guide.	NA
CIS COBOL™ 4.4	$800	NA	NA	NA	NA	Two manual set includes the CIS COBOL Language Reference Manual and CIS COBOL Operator's Guide.	Please specify if for CP/M-80 or CP/M-86 Operating System.

DEC™ VT180 Compatible Products

CBASIC™ DEC VT180 2.8	$150	NA	NA	NA	$30.00	CBASIC Reference Manual	These products are designed for a DEC VT180 microcomputer.
CB-80™ DEC VT180 1.2	$500	NA	NA	NA	$30.00	CB-80 Language Manual	"
PL/I-80™ DEC VT180 1.3	$500	NA	NA	NA	$35.00	Five manual set includes: PL/I-80 Applications, Language and LINK-80 Operator's Guides, PL/I-80 Command Summary and MAC™ Language & Applications Guide.	"
Pascal/MT+™ with SpeedProgramming Package™ DEC VT180 5.5	$500	NA	NA	NA	$35.00	Two manual set includes: Pascal/MT+ User's Guide and SpeedProgramming Package User's Guide.	"

⅏ DIGITAL RESEARCH™   Order Form

Catalogs & Books

CP/M Compatible Software Catalog lists over 100 Independent Software Vendors (ISVs) who write CP/M compatible software. Your guide to accounting packages, word processors, languages, utilities and more.	$ 5.00
CBASIC Software Directory. A listing of software vendors that market products written in CBASIC.	$ 7.50
OSBORNE CP/M User Guide by Hogan	$12.95
The CP/M Handbook with MP/M by Zaks	$13.95
The CP/M Primer by Murtha & Waite	$11.95
Using CP/M by Fernandez & Ashley	$ 8.95
Data Structures & PL/I Programming by Augenstein & Tenenbaum	$25.95

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If you include payment (check, money order or credit card), we will pay the UPS charges on continental USA orders.

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All international orders must pre-pay in U.S. dollars. (Bank transfers may be made to Bank of America, Pacific Grove, California. Account #35-08558-00133.)

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Date

Qty.	Product Description (please specify single or double density)	Unit Price	Total Price
	CP/M Compatible Software Catalog	$5.00	

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California shipments add 6% sales tax.	
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The prices shown are USA domestic prices. International prices are 10% higher for systems, and 20% higher for documentation.

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Note: All products are shipped in their current version.

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FM 101-V2

1982 catalog includes 350 companies

More than 350 companies and their products are described in the 1982 edition of the CP/M Compatible Software Catalog to be published by Digital Research Inc. this summer. In addition to the increased number of entries, the current catalog includes 16-bit application software, and products listed by language and companies listed by application.

The catalog is made available to its customers by DRI as part of the Independent Software Vendor program. By listing the wide variety of compatible software produced by independent vendors, the catalog helps OEMs, dealers and end-users find the best business and vertical market application packages for CP/M-based systems. The directory also supports software developers who write and market application packages in Digital Research languages.

"This publication includes the many software products compatible with CP/M," said Gordon Eubanks Jr., Digital Research Language Division vice president. "As such it is a necessary tool for everyone operating in the software market—vendors, dealers and OEMs. Our 1982 catalog is greatly expanded to include the many new programs available and the companies producing them, has the new 16-bit products and is indexed by company, language and application use."

While the first volume of the DRI catalog contained 100 listings, the 1982 edition includes 350 companies which produce CP/M compatible software. Domestic and foreign companies, listed alphabetically by name and with address, are described in the first section of the new catalog. In an entirely new second section, products are described and listed by DRI language compatibility: CBASIC, CBASIC-86 and CB-80; Pascal/MT+ and PL/I-80.

The large number of entries has delayed publication of the catalog, Eubanks explained. Even after the deadline for accepting listings was postponed, requests for inclusion in the catalog continued to be received. For that reason a revised edition of the 1982 catalog is planned for late in the fourth quarter. Companies that would like to be included in that edition and the 1983 catalog may request an application form from Nan Bomberger, CP/M Compatible Software Catalog Coordinator, P.O. Box 579, Pacific Grove, CA 93950.

Copies of the catalog will be available from Digital Research, computer retailers, distributors, system houses and microcomputer manufacturers. Price of the two-color, professionally produced publication is $10.00. ⅏