



# DIGITAL RESEARCH®

# EUROPEAN Review

A MONTHLY DIGEST OF CURRENT NEWS AND VIEWS  
FOR OEMs AND SOFTWARE DEVELOPERS

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## Gray Research implements Concurrent CP/M with Windows for Sirius



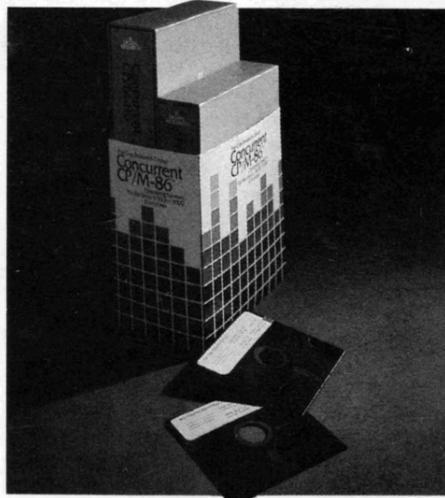
Concurrent CP/M has now been implemented for Sirius and Victor computers. A Canadian company, the Gray Research Group, has produced this implementation which is one of the most powerful implementations of Concurrent CP/M to become available.

The multitasking system supports up to eight virtual consoles, similar to the channels on a television set. At a single keystroke, programs can be switched to the

physical screen while other programs continue to run. The real-time monitor within Concurrent CP/M is the intelligence behind the system. It keeps the tasks and files separated, schedules all internal timing to execute the various processes and manages the logical input/outputs. When a process is waiting for a peripheral device to complete a cycle, Concurrent CP/M designates a greater share of the processing power, and other system resources, to other programs.

Unlike a television set, the Gray Research implementation allows up to eight executing programs to be simultaneously displayed in "windows" on the physical screen. Windows can be formatted, sized and positioned on the screen, and data can be transferred among the programs.

While Concurrent CP/M can be extremely beneficial to a single user, the Sirius implementation allows one or two low-cost remote user terminals to be connected. Each terminal operates as a single-tasking computer with the file and record locking facilities of Concurrent CP/M allowing users to operate on the same files at the same time. Now, three users can enter data that updates a Sales Ledger without the risk of file corruption.



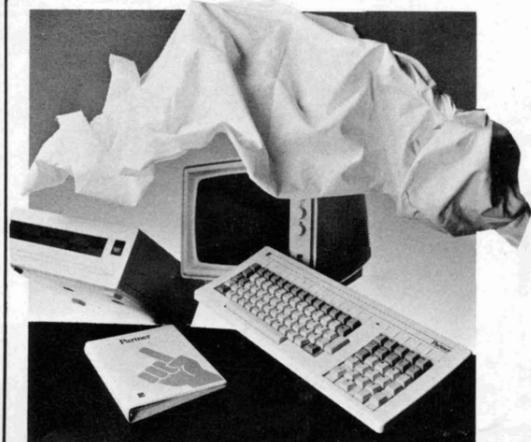
Each virtual console may be customised for a specific application. Individual keyboard layouts, character sets and terminal emulations can be selected. For instance, one console may have a Wordstar keyboard, a British character set and a VT-52 terminal type while another may have a Supercalc keyboard, a graphics character set and an ADM 3A terminal type.

The Gray Research implementation of Concurrent CP/M incorporates a high speed file system and supports the full facilities of the Sirius computer, including the hard disk systems. It complements the Concurrent CP/M available from ACT on the Sirius compatible Apricot and its hard disk version, the Apricot Xi.

Concurrent CP/M for the Sirius computer is available through GB Computer Products Ltd, in Reading, U.K., at a price of £495.

Contact David Ball on (0734) 661149.

## Another Concurrent CP/M unveiled



Here is the brand new RC750 system from RC Computer A/S in Denmark, a dual processor machine of considerable power. Based on the Intel iAPX-186 processor and the 82730 text processor, the RC750 is available with Concurrent CP/M and the GSX graphics system extensions.

Its standard configuration includes 256 Kbytes of memory and dual 1.6 Mbyte flexible disks, and has the option of a 12 Mbyte hard disk. It also supports three different local area networking protocols — Ethernet, Cheapernet and Micronet.

The RC750 is one of the first machines available that uses the iAPX-186 processor. It is also one of the first to use a mouse controller under GSX.

## G R A F F C O M exploits Concurrency

Graffcom, one of the first companies to recognise the potential of the microcomputer and the CP/M operating system, is now amongst the first to specifically exploit the advantages of Concurrent CP/M. The company has just released three new packages implemented to run under Concurrent CP/M and configured for the Apricot 16-bit computer from ACT.

"These packages are very new," said Graffcom managing director, Robert Owen. "As far as we know they are among the first to integrate under Concurrent CP/M."

With productivity improvements of over 30% claimed for the new packages, the company feels justified in its decision to implement all of its business software products to take full advantage of the

facilities available under Concurrent CP/M. It is a major step for Graffcom, for it brings together one of the most comprehensive ranges of integrated applications under the umbrella of a single, integrated operating system. By implementing all this on the new Apricot computer, the company has created one of the most powerful and flexible business tools available.

According to Robert Owen, the reasoning behind the choice of Concurrent CP/M was straightforward. "Our customers use the packages together and it made sense to provide for this integration. Concurrent CP/M provides us with a powerful, interactive, multitasking environment with all the facilities required for inter-task communications and synchronisation. Another important factor from our point of view is that it is now available on a wide and growing range of microcomputers, opening the way for more users to gain access to Graffcom business packages at their best."

Two of the products available on the Apricot come from Graffcom's existing product range, while the third is a newcomer, the "Oman" suite of integrated office software. The Graffcom product range is divided into three broad categories: business applications, office products and advanced systems. In all three areas, the company has invested many man-years to develop the products to the point where they offer the user exceptional value for money together with a high level of user-friendliness. This has been rewarded with over 5,000 sales of modules from its accounting packages alone.

Under the banner of Integrated Small

Business Software (ISBS), Graffcom has produced two advanced program modules for the small business or company department. ISBS-F is for the first time business user and comes complete with all the functions needed for the small business. These include order entry and invoicing, stock control, sales and purchases, general accounting and payroll. Users looking for a sophisticated and integrated business system can choose ISBS-W. This system is intended for users with Winchester disk based hardware and has as its key element a Business Control Module which acts as task manager and supervisor for the system.

In the office products area, Graffcom has produced three packages that together are called the 2020 Series. The range consists of a word processor, information manager and a financial planner, and all are aimed at easing the burdens of general managers, secretaries and clerks alike.

In the field of advanced systems, the company has produced a range of program development aids intended for software houses and systems programmers. These include the SDTX Software Development Toolbox and the PLG Primary Level Graphics System.

Ashton Tate, Chang Labs, Micropro and Sorcim have all, also, recently released specific versions of their popular applications to run under Concurrent CP/M.

All of these products are now available under Concurrent CP/M, bringing a powerful suite of business applications into the growing multitasking marketplace.

Graffcom Systems Ltd.  
7 Rickett Street, London SW6. Tel: (01) 385 9422

## Dr. Logo for 8-bit machines launched

A version of Dr. Logo for use with 8-bit computers has been released by Digital Research. It is aimed both at programmers, and at consumers who wish to teach themselves programming.

Like its popular 16-bit predecessor, the 8-bit Dr. Logo requires no previous knowledge of programming to obtain worthwhile results. This does not mean that it is a simplistic language product. On the contrary, its advanced design makes Dr. Logo a versatile tool in the hands of an experienced programmer.

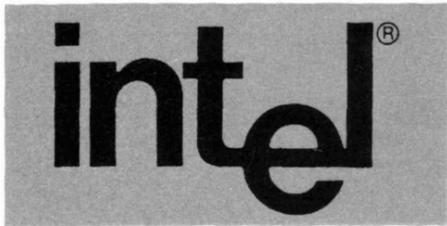
One of its key features is the use of 'turtle' graphics. Here, a triangular pointer is displayed on the screen to help users visualise how the cursor is positioned and moved to form graphic images. To assist first time users the language comes complete with easy-to-understand tutorial documentation.

Its technical features include list processing primitives, double-precision floating point that supports fifteen digits, informative error messages, debugging facilities such as TRACE and WATCH, indentation and comments, and compatibility with Apple Logo. Among its game programming primitives are RANDOM and SHUFFLE, as well as PADDLE and BUTTON which provide joystick control.

The Dr. Logo package runs on Zilog Z80 based microcomputers that have at least 64 Kbytes of memory available and use the CP/M or Personal CP/M operating systems.



Robert Owen, managing director,  
Graffcom Systems Ltd.



## Intel commissions Digital Research to port UNIX System V to the Intel iAPX-286

Intel has commissioned Digital Research to port UNIX System V to the Intel iAPX-286 family of microprocessors. The agreement also involves AT&T Technologies which owns the rights to UNIX.

AT&T retains exclusive rights to the product upon completion of the engineering. Both Intel and Digital Research, however, have been granted the non-exclusive right to market object code versions of UNIX System V to OEMs and retailers.

"This is a major development for the microcomputer industry, because it marks the first time UNIX System V will be available for personal computers," said Paul Bailey, vice president Europe for Digital Research. "UNIX has become popular in the mainframe and, especially, in the

minicomputer markets because of its versatility. For many OEMs, it can form a bridge between these systems and microcomputers."

"The agreement between Intel and Digital Research recognises that UNIX is an emerging standard for certain classes of microcomputer," said Rick Deutsch, Intel program manager for UNIX System V. "Intel supports the creation of standards and we believe Digital Research has the technical and managerial skills necessary to produce a UNIX implementation of high quality. The effort is part of the ongoing cooperation that has existed between the firms for years."

The version of UNIX System V for the Intel iAPX-286 family of microprocessors will be available for general release before the end of 1984.



## AT&T and Digital Research cooperate to widen use of UNIX System V on microcomputers

AT&T Technologies and Digital Research have agreed to enter a cooperative relationship to expand the number of industry-wide applications supported by the UNIX System V operating system. The primary objective of this relationship is to increase the commercial value of the UNIX System V operating system on certain classes of microcomputer. Initial focus will be on Intel iAPX-286 and Motorola M68000 based systems.

"AT&T Technologies is very pleased about what promises to be a constructive and mutually beneficial relationship with Digital Research," said Jack Scanlon, AT&T vice president, Computer Systems. "We believe that relationships such as this will help us achieve our ultimate goal of making UNIX System V an industry standard and compatible with a wide variety of business and office automation applications software."

John Rowley, president of Digital Research Inc. said, "Digital Research looks forward to working with AT&T Technologies in establishing UNIX System V as an industry standard. By making more software programs available for computers running UNIX System V our relationship will help satisfy customer demand for a powerful operating system and a wide range of software."

The specific project is the joint development of a UNIX System V Certified Software Library for microcomputers.

The Software Library will include a line of high quality applications and systems software designed to operate on systems that run UNIX System V. The Library will focus on sophisticated, portable applications software that is well supported.

OEMs which maintain object code compatibility with the standard version of UNIX System V for Intel iAPX-286 and Motorola M68000 based systems will be able to take advantage of the UNIX System V Certified Software Library.

"We believe that the UNIX System V Certified Software Library is a critical step in the growth of UNIX System V as an industry standard," AT&T's Scanlon said. "We're

happy to be working with Digital Research to make it a reality."

Both companies will sell Software Library products to OEMs, Value Added Distributors and Volume End Users. The first applications are planned for release before the end of 1984.

There are three major categories of software which will be included in the library:

- Systems software and programming tools including programming languages, programmer productivity tools, spoolers and application managers.
- Commercial software including such applications as word processing, spreadsheets, financial modelling tools, data base systems, business graphics and accounting systems.
- Scientific and engineering software including such applications as maths libraries, statistical analysis, engineering documentation, project management and scientific graphics.

Software developers interested in submitting applications for inclusion in the UNIX System V Certified Software Library should contact Bruce Weiner at Digital Research in Palo Alto, USA, on telephone number 415-856-4343.

Bruce Weiner is the manager of UNIX Business Development at Digital Research. Bruce will send out Software Screening Forms requesting details of applications to be submitted. Information provided on a Software Screening Form will be used to evaluate basic fit with the Software Library and requested references will be checked. Following this, if satisfactory, an evaluation copy of the software and its documentation will be requested and tested to meet functional, quality and performance criteria. Enhancements to the software and documentation may be required to meet the library standards.

On acceptance, negotiation of an agreement to publish the software in the library will take place, followed by final acceptance testing and inclusion in the UNIX System V Certified Software Library.



## Motorola commissions Digital Research to implement Concurrent DOS on M68000 . . . and Digital Research programming languages under both Concurrent DOS and UNIX System V on M68000

In a move enhancing the standardisation of popular operating system software, Motorola has commissioned Digital Research to implement the Concurrent DOS operating system on Motorola's M68000 based VME/10 Development System. In addition, the recently signed agreement calls for Motorola and Digital Research to implement a range of programming languages under both the Concurrent DOS system and Unix System V on the VME/10, providing source code portability from Concurrent DOS to UNIX System V.

Concurrent DOS, which is written in the 'C' language, will be Release 4.0 of the Concurrent CP/M multitasking operating system. It provides a CP/M mode and an IBM PC-DOS mode thus opening up the opportunity for software developers to achieve source level portability from the PC-DOS environment to the M68000. The system includes windowing, local area network (LAN), graphics support, and is designed for single or multi-user microcomputers. Concurrency means the user can accomplish several tasks at the same time with windowing permitting multiple screens to be displayed simultaneously. For example, a user can work on two spreadsheets at the same time to reconcile data before merging.

The agreement also covers nineteen programming language products. Seven of these products will support the UNIX System V operating system.

During the first quarter, a number of CP/M products are being introduced for users who plan immediate design-ins using the VME/10 under CP/M-68K. These include:

- Digital Research C
- CBASIC Compiler
- Pascal/MT+

Concurrent DOS and Unix System V products to be available before the end of the year will offer a wider range of programming languages and utilities, yet will be source code compatible with the CP/M-68K languages. Additionally, a port of CP/M-68K is a precursor to a port of Concurrent DOS. This means that OEMs

and software vendors can start development for M68000 based products now and not suffer wasted effort.

The following products are being implemented under Concurrent DOS on the VME/10:

- Digital Research C
- Basic Interpreter
- CBASIC Compiler
- Pascal/MT+
- Fortran-77
- PL/1
- GSX Graphics

The same high-level languages listed above, supporting Concurrent DOS on the VME/10, are being implemented to support UNIX System V.

This will be completed by the year end. Language implementations are being carried out using Digital Research's "common backend" technology designed to ensure source code compatibility between implementations of a given language, and to shorten the development cycle.

These language products will then provide the applications portability from CP/M-68K and Concurrent DOS to UNIX System V on the VME/10.

According to Tom Beaver, Director of Motorola Microsystems Operations, "The agreement reinforces Motorola's commitment to support the M68000 microprocessor family with state-of-the-art operating systems that facilitate implementation of the myriad of applications developed by third party vendors. This latest development provides designers and end users with increased flexibility in software development along industry standard lines and is being combined with development and support of advanced semiconductor components to provide a portable, performance oriented environment for applications software." He added, "This is the first in a series of moves to provide complete portability between the UNIX System V, the VME/10 standard and other major operating system software libraries."

## Gary Kildall trifft Fachpresse in München



Gary Kildall — Founder and Chairman

Zu einem kurzfristig angesetzten Pressegespräch im kleinen Kreis eingeladen hatte kurz vor Weihnachten Dieter Kadach, Geschäftsführer von Digital Research GmbH (München) und Director of Central European Operations. Anlaß war der München-Besuch von Gary Kildall, Gründer und Chairman von Digital Research. In einem Münchner Nobel-Restaurant unterhielt sich Gary Kildall bei fernöstlicher Gastlichkeit und exotischen Speisen mit Günter Knauff (Chefredakteur "PC Welt"), Michael Pauli (Redaktionsdirektor "Computer Persönlich"), Gerhard Bader (Redaktion "PC") und mit Thomas Köther (Redaktion "Microcomputer-Welt").

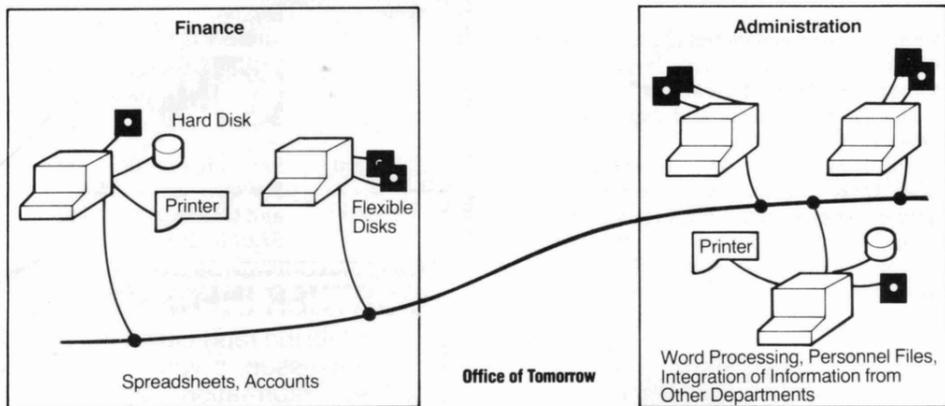
Sozusagen aus dem Nähkästchen plaudernd, sprach Gary Kildall über Marktstrategien und beantwortete Fragen der Journalisten. Herausragende Ankündigungen waren die künftige Zusammenarbeit mit AT&T Technologies sowie die neueste Version 3.1 des Betriebssystems Concurrent CP/M, die Kildall als reines OEM-Produkt sieht. Als eines der wichtigsten Features nennt er die Unterstützung des 8087-Prozessors, der die Rechengeschwindigkeit mit Concurrent CP/M 3.1 bis zu 50 mal erhöhen kann.

Die Window- und Maus-Welle sieht er als kommerziell an, Profis würden damit arbeiten, meinte Kildall. Neben dem

kommerziellen Concurrent CP/M 3.1 sieht man laut Gary Kildall bei DR das CP/M 2.2 und das Personal CP/M mehr für die Anwender im Kleinrechnerbereich. "Dies entspricht auch der Unternehmensstruktur: Digital Research gliedert sich in die beiden großen Hauptgruppen Consumer-Division und Commercial-Division", erläuterte Kildall. Großen Raum dieses Meetings nahm auch die Sprache Dr. Logo ein: "DR hofft", sagte Gary Kildall, "daß diese moderne Sprache eines Tages das eigentlich uralte Basic ersetzen wird". "Japan wird für uns immer mehr zum nichtignorierten Mitbewerber", führte Gary Kildall weiter aus, "da dort Staatsmittel zur Förderung der Entwicklung bereitstehen."

Nach einem informativen und unterhaltsamen Abend verabschiedete man sich mit dem Versprechen, sich bald wieder zu einem ähnlichen Gespräch zu treffen.

# DR Net—getting nets to work



As personal computers enter into widespread use within companies, the requirement for these computers to be able to communicate with each other is increasing rapidly.

Providing shared access to data bases, business operations data, decision support data and to higher cost peripherals makes sense. Networking is a key element for a company to be able to realise the full potential of its investment in microcomputers.

According to a Future Computing Inc. report (December, 1983), the world-wide personal computer market is projected to grow at about 35% per year through 1988. The same report states that personal computers in Local Area Networks (LANs) are projected to grow at nearly 100% per year and that this segment is expected to be a \$6B world-wide market by 1988.

Personal computer LAN standards are evolving now. The standards are expected to accommodate several types of data link protocol and physical media affording the user a choice in network design to suit requirements. For example, these requirements may relate to size of network, speed of communication and cost. The question facing many manufacturers of microcomputers is not whether but in which direction to proceed.

Important requirements for microcomputer networks are emerging, including:

- Hardware independence — at the microcomputer and network levels
- Flexible multiple server networks
- Resource sharing
- Distributed data processing
- Security
- Applications transparency

A problem faced by many office administrators and DP managers is the interconnection of computers from different vendors, with both 8 and 16-bit processors. In order to make them communicate they need compatible network software, compatible network hardware and compatible operating systems. Digital Research offers a solution with a new product called DR Net. DR Net, the Digital Research networking software previously referred to as DR Softnet, has now completed its test phase and is ready for release.

Application	Concurrent CP/M with DR Net	Application
Presentation		Presentation
Session		Session
Transport	NIOS	Transport
Network		Network
Data Link	Ethernet, Arcnet, Others	Data Link
Physical		Physical

ISO Model

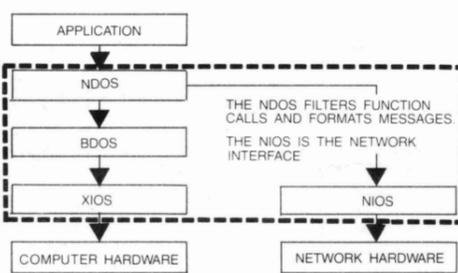
The purpose of DR Net is to overcome the problem of connecting different types of computer, including those with different processors, and to do it in a manner which is independent of the physical network being used. The goals guiding this design philosophy are portability, network transparency, applications transparency and operating system independence. DR Net is available today for both 8 and 16-bit Digital Research operating systems, and will migrate to the next generation of Digital Research operating systems on new

processors. The 8-bit software is the established CP/Net, and the same basic message format from CP/Net has been maintained for DR Net in order to maintain compatibility. There is also a function call for supporting non-standard messages on the network to facilitate interfacing to non-Digital Research operating environments.

One way to understand how DR Net relates to network products like Ethernet or Arcnet is in terms of the International Standards Organisation Open Systems Interconnect reference model (ISO OSI). DR Net provides the Session and Transport level services, while Ethernet and Arcnet provide the Data Link and Physical levels.

### Hardware independence

One of the most significant features of DR Net is that it can be customised for any of the popular network protocols, just as CP/M can be customised for different microcomputers and processors. The NDOS (or Network Disc Operating System) is analogous to the BDOS of CP/M in that it is the portion of DR Net that is proprietary and invariant. The NIOS (or Network Input/Output System) is written by the systems implementer for the target network. The systems implementer can then choose the most suitable network protocol, such as Ethernet or Arcnet, or switch to other technologies if they become popular. Additionally, gateways can be developed between different networks. This means that one computer can be a connection between two networks.



Concurrent CP/M with DR Net is a network operating system

### Flexible multiple server networks

DR Net defines two different types of network node. Requesters are workstations running applications that need to access resources on the network, such as files or printers. All transactions on the network are initiated by Requesters. Servers, on the other hand, are those nodes that respond to requests by reading or writing to files, outputting to printers or providing other operating system functions remotely. In order to have a network, there must be at least one Server. However, DR Net allows multiple Servers on the same network.

Because it is hardware independent, a network can take any shape depending on the network hardware that is being used. 8 and 16-bit systems can be on the same network and up to 255 nodes are supported. For 8-bit Servers, under MP/M II, 16 Requesters can be logged in at the same time. For 16-bit Servers, under Concurrent CP/M, up to 64 Requester processes can be logged in. One Concurrent CP/M station can act as multiple Requesters because of multiple processes being active at the same time. A major benefit to the user is that Concurrent CP/M can act as both a Server and a Requester and can do so simultaneously due to its multitasking capability. This means that the Server operates as a background task, allowing the user to run applications locally or as Requesters on the network while that same station is performing Server functions. There are two principal advantages to this. First,

there is no requirement for a dedicated Server, which saves cost. Second, it is much easier to share information on the network, since all files do not have to be transferred to a central Server before they can be accessed by other Requesters on the network.

### Resource sharing

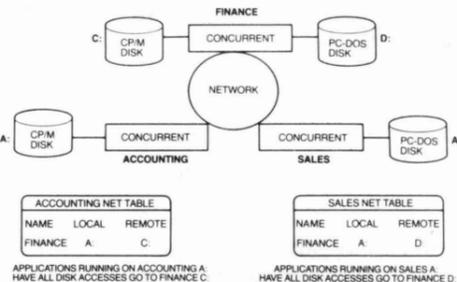
DR Net therefore provides major benefits in the area of resource sharing, effectively allowing the user to spread the cost of higher priced, high performance peripherals over many users. The two most common peripherals to be shared are high capacity disk drives and letter quality printers.

Comprehensive support for disk drive sharing and file sharing is provided and DR Net takes full advantage of the file and record locking features of Concurrent CP/M. File and record locking is essential for data base applications such as accounting or maintenance of personnel records. Without it, data bases could become corrupted as users update files while others are reading them.

Using the print spooler in DR Net, anyone on the network can send listing output to a printer on the network and it will automatically be printed as soon as that printer becomes available. A true print spooler/despooler is provided as part of the package. This is different from background printing in that once the file is spooled, the user may continue to use the application and the console. The print job will, in the meantime, be sent to the print server for an available printer.

### Distributed data processing

In addition to conventional resource sharing, DR Net affords network support for inter-node process communication. Queues can be mapped across the network, allowing for inter-process communication and synchronisation. This feature provides the possibility for distributed data processing. For example, an order processing application running at one node could be programmed to directly input information, using the queues facility, to a shipping and inventory control application running at another node. DR Net also extends the functionality of CP/M-86 Requestors to allow most Concurrent CP/M applications to run under CP/M-86, if they are to run across the network (i.e. the program is loaded from a remote disk and data is accessed remotely). This includes supporting file and record locking and queues on CP/M-86 Requesters.



Applications designed for non-networked environments can run without modification

### Security

In any network system, security of information is a prime concern for all users. In DR Net, security is provided at three levels. First, a password must be given when logging onto Servers. This prevents unauthorised users from accessing the network or certain Servers. Second, drives on Servers may be made private. Third, Concurrent CP/M provides for passwords for individual files. This allows sensitive files to be protected, even though other files on the disk may be accessible.

### Applications transparency

Also of concern to network users and managers is the degree of transparency afforded by the system and the level of compatibility provided for existing applications. The key to applications transparency is that the end user does not need to interact with the network. This means that applications run in the same way whether they are on the network or not. This has important benefits for end users in terms of training time and preservation of their investment in applications software.

There is little doubt that the ease with which an end user may network personal computers will soon be a major factor in the choice of machine. Digital Research is now able, with DR Net, to provide the network support that will enable manufacturers of microcomputers to meet the users' needs.

## JET TAKES CP/M PLUS FOR 'OPEN' SYSTEM

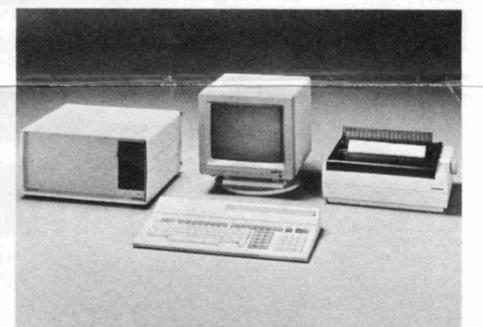


Sweden's Jet Computer has placed a major contract with Digital Research for CP/M Plus, together with a range of high level languages. They are to be used on the Jet 80 computer, a Z80 based system that comes as a single board computer in its simplest form but which can grow into a distributed network of 32 systems. The maximum configuration provides 128 Kbytes of memory coupled to a 10 Mbyte Winchester and 800 Kbyte flexible disk. The languages selected include CBASIC and Pascal/MT+.

## INTEGRATED MANAGEMENT WITH BMS

JSB Computer Systems in Cheshire, UK, has introduced a comprehensive business and accounting suite called the Business Management System (BMS) which run under CP/M, Concurrent CP/M and Unix operating systems. The suite is available as a range of integrated modules that can be purchased individually as required. Modules cover all business activities from accounting to administration. The suite is also portable across the range of Digital Research operating systems, allowing users to start small and upgrade to bigger systems with ease.

## SIEMENS BUYS COMPLETE RANGE FOR PC-16



The West German manufacturer, Siemens, has ordered a complete range of Digital Research software products for its PC-16, 16-bit personal computer system. The full list of software includes Concurrent CP/M, the GSX graphics system extensions, the Display Manager and Access Manager programmer productivity tools and the DR Draw and DR Graph applications packages. The programming languages ordered include Personal Basic, CBasic, CBasic Compiler, Pascal/MT+, Fortran-77 and PL/I.

The PC-16 is Intel 8088 based with up to 512 Kbytes of memory and a range of disc storage options.

## NMW MULTITASKS STOCKBROKERS

Multitasking and networking facilities are crucial to a new stockbroking management system developed by NMW Computers in Cheshire, U.K. That is why the company has selected Concurrent 3.1, with DR Net, fully implemented as the native operating system. The NMW system will give stockbrokers the power to view, access and manipulate data simultaneously and rapidly, both of which are important in the fast moving financial world.

## LAUREATE FOR CP/M

The new Laureate small professional computer from Computers, makers of the popular Lynx home computer system, is one of the new breed of systems aimed at bridging the gap between the home/game playing computer and the desk top business machine. An important part of the strategy is the availability of CP/M 2.2 from Digital Research, which will give Lynx owners immediate access to a wealth of applications software.

## Contract negotiation and administration

Patie McCracken has joined the European Operations of Digital Research as a contracts administrator with responsibility for the negotiation of OEM, distributor and value added distributor licensee agreements. This includes the re-drafting of contracts to comply with English, French and German law.

Patie joins from Digital Research Inc. where she has held a similar post for the past two years. Patie joined Digital Research in 1981 as a general marketing representative. Prior to this Patie was responsible for administration for MT Microsystems and from 1977 to 1980 she was a marketing representative with the Bank of America.



## New European manufacturing manager at Digital Research



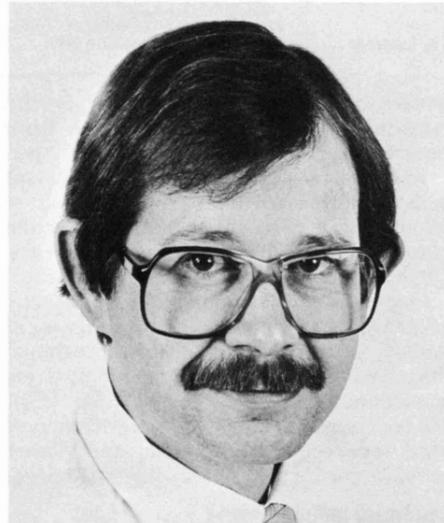
Terry Ralph has joined Digital Research as European manufacturing manager with responsibility for the manufacture of Digital Research's products in Europe.

For the past 5 years he was production planning and control manager with CBS (UK) Ltd. Prior to that he was with Pirelli Ltd. for 9 years, which he joined in 1970 as production control manager. Later at Pirelli he was promoted to become project manager, Production Systems.

## Perkins to expand OEM business

Philip Perkins has joined Digital Research as OEM sales executive with responsibility for increasing Digital Research's business with major OEM accounts and expanding OEM sales growth areas.

Philip Perkins has spent the last nine years with Tektronix UK Limited where he was a senior sales executive with responsibility for sales of microprocessor development systems into large scale commercial and government design laboratories.



### DIGITAL RESEARCH CALENDAR

4th — 11th April Hanover Fair — Hanover. Digital Research stand number 2109, Hall 3.



17th April Software Forum — Paris. For software developers and OEMs, at the PLM Saint Jacques.

### FURTHER INFORMATION

Complete the reply card, enclosed with this issue, if you would like further information on Digital Research products mentioned in European Review, or additional copies.

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April	2	3	5	9	
June	4	5	7	11	
	The CP/M-86 Operating System Code: MC86 1 day	The Concurrent CP/M-86 Operating System Code: MCCC 2 days from	Using Spreadsheets Under CP/M Code: MSPR 2 days from	CP/M Assembler and Advanced Facilities Code: MADX 3 days from	Networking with CP/M Code: MNET 2 days from
May	14	15	17	21	24
June	18	19	21	25	28

Further information about these courses is available from Sandra Lathe, Pergamon Infotech Limited, Berkshire House, Queen Street, Maidenhead, Berkshire SL6 1NF, United Kingdom. Telephone: (0628) 39101. Telex: 847319.

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