

# INFO WORLD

FROM THE TEST CENTER

The New Power of  
Presentation  
Graphics  
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APRIL 3, 1989

THE WEEKLY FOR PERSONAL COMPUTING PROFESSIONALS

VOLUME 11, ISSUE 14



A prototype application using Intel's DVI technology demonstrated multimedia interactive training on PCs.

## IBM, Intel Codeveloping DVI Multimedia Products

Microsoft, IBM to Provide Open Standards

BY STUART J. JOHNSTON

ANAHEIM, CA — IBM surprised veterans of the CD ROM industry last week by announcing it is getting aggressively involved in Digital Video Interactive (DVI) products and may release a PS/2 with DVI capabilities.

DVI technology uses digital compression and decompression technology as well as hardware and software products to bring interactive, full-motion video and audio capabilities to personal computers and con-

sumer electronics, according to Intel Corp.

James Cannavino, president of IBM's entry systems division, told attendees at Microsoft's Fourth International Conference on CD ROM that IBM will codevelop DVI systems with Intel. Initial PS/2 products are scheduled for release in the first quarter of 1990.

Microsoft and IBM also announced they will cooperate to provide open standards and also complete hardware and software systems for DVI, including sup-

See DVI, Page 8

## Borland Demonstrates OS/2 Turbo Tools

BY STUART J. JOHNSTON

Borland is giving corporate developers previews of its OS/2 versions of the Turbo language and plans to ship the products in about six months to challenge market leader Microsoft.

Borland officials have demonstrated Turbo C, Turbo Assembler, and Turbo Debugger running under OS/2 Presenta-

tion Manager — all with multithreading capabilities. Perhaps not coincidentally, the same three tools are also marketed together as Turbo C Professional for DOS.

Borland is also "doing a lot of R&D" into object-oriented products, said David Intersimone, developer relations director.

The Turbo tools "are structured in such a way that they can

## Compaq to Introduce 12-MHz 286

Also Expected to Cut Prices on 386s, Announce Its MS-DOS 4.01

BY RON COPELAND

Compaq Computer Corp. plans to introduce today a 12-MHz 286-based small-footprint machine and cut the price on all models of its Deskpro 386s, which is based on the Intel 386SX chip.

Compaq also said it will announce the availability of MS-DOS, Version 4.01, which includes the MS-DOS shell and a Compaq version of Microsoft's OS/2, Standard Version 1.1 with Presentation Manager.

The Compaq Deskpro 286e is based on the 12-MHz Intel 80286 microprocessor. It includes 1 megabyte of memory expandable to 13 megabytes, VGA on the motherboard, five 8/16-bit expansion slots, and four disk drive bays. The 286e also accepts an optional 1- or 4-

megabyte 16-bit high-speed memory expansion card.

The small-footprint 286e is available in three models: the Model 1 features a single 5/4-inch 1.2-megabyte floppy drive for \$2,699; the Model 20 adds a 20-megabyte hard disk to the basic unit and costs \$3,199; and the Model 40 offers a 40-megabyte drive for \$3,599. All models are available now.

Compaq also said that as of today, they are dropping the price on all models of their Compaq Deskpro 386s system line. The Model 1 is now \$3,299, down from \$3,599; the Model 20 will sell for \$3,799, dropped from \$4,299; and the Model 40 is down to \$4,199 from \$4,999.

Commenting on the Compaq price cuts, Lorie Strong, director of product marketing, said that "after evaluating the market-



Compaq's Deskpro 286e offers VGA on the motherboard.

place, we wanted to continue the positive trend in sales of our SX system line."

Also introduced today is Compaq's MS-DOS, Version 4.01. See Compaq, Page 105

## Intel i486 to Triple Performance of 386

BY MARK BROWNSTEIN

The Intel 80486 microprocessor, which is scheduled to be announced next week at spring Comdex, will provide performance of up to three times that of the 80386 processor, according to an Intel technical document examined last week by *InfoWorld*.

Designed to be fully compati-

ble with the 80386 processor, the 80486 — or "i486," as Intel is dubbing the chip — includes an on-chip, floating-point processor unit that is fully compatible with the 80387 math coprocessor, according to the document. This means that software written to make use of the 80387 should be capable of running on the new processor without having to be rewritten.

Intel officials refused to comment on the 80486's features.

The Intel i486 chip's calculation performance is enhanced by eight 80-bit registers that are

dedicated to numeric function computations, according to the document.

Although the initial shipments of the chip will run at 25-MHz or 33-MHz clock frequencies, performance advantages are achieved through advanced design features built into the chip's highly integrated architecture. The chip is capable of implementing frequently executed functions in one clock cycle, according to the document.

Memory management with See 486, Page 105

AT DEADLINE

## HP to Announce Faster Deskjet Printer Model

Hewlett-Packard Co. is expected to introduce at Comdex a faster model of its Deskjet printer and at the same time slash the price of the current Deskjet 20 percent, according to sources close to Hewlett-Packard.

The new Deskjet Plus prints text up to two times faster and graphics up to five times faster than the current model and features, in addition, more resident fonts, including six portrait and four landscape typefaces. The product will ship on May 1 and will cost \$995, which is the current price of the existing Deskjet; at the same time, Hewlett-Packard will cut the price of the original Deskjet to \$795.

Continued on Page 3



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**Richard Skrinde, *MacUser*, September, 1988:**

"FoxBASE+/Mac is a racehorse that will outrun the other Macintosh databases."

**Arthur Fuller, *Computing Canada*, June 9, 1988:**

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**Michael Masterson, *MacWEEK*, June 7, 1988:**

"FoxBASE+/Mac proves beyond a doubt that the Mac is a suitable platform for supporting fast database operations."

***BYTE*, September, 1988:**

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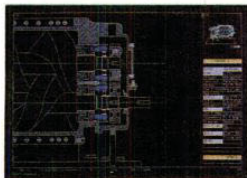
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# INFO WORLD



The DOS version of HP's MEd10 will support all major features of the CAD package **19**



The Powermouse 100 can execute commands without the user moving to the keyboard **25**



As the recent DRAM shortage abates, we look at the "silicon cycle" of boom and slump... **44**

## AT DEADLINE *Continued From Page 1*

The company will also cut prices on optional Deskjet font products by 30 percent.

— Bob Ponting

## Wang Announces Interlan Gateways

Turning individual local area networks into an enterprisewide office automation system, Wang Laboratories announced an Interlan gateway for its LAN Office office automation package. LAN Office runs under Banyan's Vines, 3Com's 3+, IBM's PC LAN, and Novell's Netware network operating systems. The new gateways allow users on any one of those LANs to communicate transparently with LAN Office users on any other LAN at any distance, Wang said. A directory coordination feature makes it unnecessary for users to know which network is home to the recipient of a message or file. Wang's Interlan gateway will be available in the second quarter for \$995 per server. A similar gateway to Wang's minicomputer-based VS product also costs \$995 and opens up the possibility of seamless connection to products like IBM's Profs, and DEC's All-in-One.

— Mark Stephens

## IBM AIX to Be Sold Through Dealers

IBM last week made good on its intention to have a stronger presence in the desktop Unix market by announcing it has authorized two dealer chains — Businessland and Microage — to market AIX for the PS/2, which started shipping March 31. AIX is IBM's version of Unix, which was formerly available only for the RT PC — IBM's RISC-based workstation — but is now available in a version for the Models 70 and 80, the most powerful machines in IBM's PS/2 family. As for other IBM products sold through the retail channel, authorized AIX dealers will be responsible for marketing and technical support of customers.

— Alice LaPlante

## Postscript Clone Supports Recorder

Hoping to be the first to market with Postscript support for a color film recorder, Custom Applications Inc. (CAI) will release a new version of its clone interpreter in June that supports Presentation Technologies' Mirage FR1 film recorder.

Using CAI's Freedom of Press Postscript-language interpreter, users can produce high-resolution color slides and Polaroid prints with more than 16 million colors from any PC application that supports Postscript output, said Mark Hastings, vice president of sales at CAI. The \$495 program runs on AT-class PCs and comes with 35 fonts compatible with the Apple Laserwriter Plus printer. The Macintosh version of the program will support the Mirage FR1 in August, Hastings said.

"CAI and Presentation Technologies are introducing a new technology to the market at a fraction of the cost and months ahead of any other solution," said Jeffrey Moore, president of CAI. The only other vendor to announce Postscript for film recorders is Agfa Matrix, which is scheduled to ship Matrix recorders incorporating the Adobe Atlas Postscript processor this fall. The Adobe processor will cost about \$10,000.

— Bob Ponting

## Mac Version of Mathcad to Debut

Mathsoft Inc. this week is expected to announce a version of its Mathcad mathematics package for the Macintosh. Aimed at technical professionals, the \$495 product is centered around the company's live document interface, which presents a simplified way of displaying and calculating equations in standard math notation. It also lets users use the Mac like a notebook, defining variables and inputting text from anywhere on-screen.

— Ed Scannell

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# Motorola Unveils Details of 68040

Chip Can Share Memory Among Multiple Processors, Other Devices

BY MARTIN MARSHALL

Motorola announced last week that its new 68040 processor offers the capability to share memory among multiple processors and other devices.

The 68040 uses a feature, called Snoop Controller, which monitors the external address bus to detect and flag any data changes and thus makes sure that other processes running concurrently use the updated information, the company said. The controller keeps track of both the data in main RAM as well as the data in the on-chip data cache, providing the "cache coherency" necessary for multiple processors to operate with the same RAM.

Data attributes are selectable so that a data set can be flagged as being snooperable, non-snooperable, cacheable, non-cacheable, shared, global, or private.

The long-awaited chip is also

expected to triple the performance of comparable 68030 processors through its extensive use of parallel pipelining, while at the same time maintaining 100 percent object-code compatibility with 68030 software.

The initial 25-MHz version is expected to yield 1.6 cycles per instruction and 15 MIPS performance, while a later 33-MHz version could produce up to 24 MIPS performance, sources said.

The 68040 contains its own 80-bit floating-point unit integrated on-chip, which is software compatible with the MC68882 floating-point chip. According to system vendors who will use the chip, the on-chip FPU will speed up floating-point calculations by nearly 10 times.

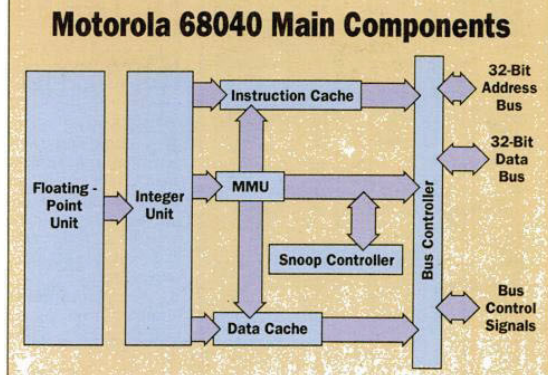
Like the 68030, the 68040 has separate on-chip instruction and data caches, but the amount of caching has been significantly

increased. These caches have a four-way set associative-caching scheme. The net effect of this scheme is to increase the hit ratio by 30 percent over direct mapping, said Jeff Nutt, technical marketing manager for Motorola's microprocessor products group. Also, like the 68030, the 68040 has an on-chip memory management unit.

Nutt expects that, by the fourth quarter, general sampling of the chip will occur, with production quantities expected in the first quarter of 1990.

Hewlett-Packard and Apollo were eager to announce support of the 68040. "Between six and 12 months after we receive the chip, we would expect to announce a 68040-based workstation," said Doug Johnson, HP's product marketing manager for workstations.

"We'll ship a 68040 product as soon as the chip is generally available," said Mike Gallup,



In the Motorola 68040, an on-board floating-point unit speeds up floating-point calculations by nearly 10 times, while pipelining produces two to three times the performance of a similar 68030.

Apollo's vice president of product marketing and programs.

Both HP and Apollo are planning multiprocessor systems using the 68040. Four- and eight-processor systems would be likely configurations of a 68040 multiprocessor architecture, HP's Johnson said. "Peo-

ple will probably pull applications from superminis, mainframes, and Crays to run on these systems," he said.

Apple Computer stopped short of saying it would definitely use the chip in future Macs, though it restated its commitment to using the 68000 line.

# 486

Continued From Page 1

paging and cache memory units is also included on the chip, as is an 8K unified-code instruction and data cache. The chip features a burst bus that is capable of 106-megabyte-per-second data bursts. Enhanced memory management on-chip de-emphasizes the need for faster (and thus higher-priced) DRAM chips, according to the Intel document.

Up to 4 gigabytes of physical memory can be addressed by the chip. Virtual memory, or memory that is stored on a hard disk

or on another storage device, of up to 64 terabytes can be addressed by the i486 chip.

Support for multiprocessor configurations is also built into the chip through multiprocessor instructions and cache consistency protocols. This reduces interchip communication delays and enables the chip to monitor data consistency among multiple caches.

Optimization of instructions built into the chip includes support for high-level languages and operating system functions. The 80486 will run DOS, OS/2, Windows, Unix System V/386, and the IRMX operating systems, according to the document.

# Compaq

Continued From Page 1

4.01, which includes the MS-DOS shell. A graphical interface similar to Presentation Manager, the shell incorporates menus, windows, icons, and an integrated mouse to simplify operating system command entry.

Compaq will continue to market MS-DOS 3.31 as well. "We think the market is not totally shifting to the latest DOS

like we've seen in the past," Strong said. "Version 4.01 does require a bit more memory, and many of our major accounts have already standardized on an interface, so a change isn't that appealing." The new DOS version will ship in April for \$150.

Compaq enhancements to MS-DOS 4.01 include Faststart, which speeds installation, and support for the Lotus/Intel/Microsoft Expanded Memory Specification (LIM/EMS) 4.0.

Compaq will ship in April for \$340 its release of Microsoft's

OS/2, Standard Version 1.1, with Presentation Manager and support for up to 16 megabytes of addressable memory. A key feature of the Compaq OS/2 product is its "dual boot" capability, which enables the user to select via a hot-key sequence whether to load OS/2 or DOS. Thus, one machine can run both DOS and OS/2 applications, Strong said. Users of OS/2, Version 1.0 can upgrade to 1.1 for a \$50 fee. Version 1.0 of OS/2 will be discontinued when 1.1 begins shipping.

# Users Find Alternatives While Waiting for Apple's Mac Laptop

BY LAURIE FLYNN

As the summer release of Apple's pricey Macintosh laptop approaches, alternatives seem to be gaining steam, including the imminent arrival of a \$1,600 kit that lets users convert existing Macs into 10-pound portables.

Scheduled for release in April by Nexsys Inc., the Travel Mac kit consists of a supertwist backlight LCD screen, batteries with power charger, carrying case, and DC adapter, according to Peter Kilcommons, president of the New York-based Nexsys.

Users can install motherboards from nearly all compact Macs, including the new 68030-based SE/30, Kilcommons said. The case has space for a video card so users can attach large screen monitors.

Colby Systems of Fresno, California, said sales of its portable Mac compatibles have in-

creased with reports that Apple's system will be heavier and more costly than customers hoped.

Apple's laptop is expected to weigh from 15 to 17 pounds and have the price tag of a low-end 68030-based Mac. It will also have an active-matrix display, an internal battery, and IC cards — known as SLIM cards.

Apple CEO John Sculley recently stated the company will deliver the machine this summer. Sources briefed by Apple said its price will start at \$6,500.

Some of Apple's most devoted customers seem the most discouraged by reports that the laptop has taken the high road.

"We don't give a squat about batteries," said a PC manager at a Big Eight accounting firm, referring to reports that the battery and screen technology have held up release. "Now you have a 17-pound machine that's two years late."

# Users Say DOS 4.0 Not Worth an Upgrade

BY ED SCANNELL

If the pundits' prediction that DOS will be the PC's best-selling operating system through the early 1990s is true, IBM's latest version is not yet ready to lead the charge.

The program — which has been saddled with technical problems — is seen by many users as not being worth the time and expense of upgrading. For corporations writing their own menuing systems, IBM's DOS 4.01 has also kept a low profile.

"To me, it [DOS 4.0] is a dead issue," said the office automation manager of a large New York bank. "I have recommended that we don't pursue it at this point."

The program's technical shortcomings center on its use of expanded memory, its graphical shell's intolerance of many applications, and its incompatibilities with earlier DOS versions due to its capability to create files larger than 32 megabytes.

IBM admits it is working on an upgrade that addresses in-

compatibilities between DOS 4.0's EMS support and applications that use Lotus/Intel/Microsoft EMS 4.0. IBM officials declined to say when the fix will be out.

Some users said they like DOS 4.0's graphical shell and its improved file manipulation, search features, and capability to change various attributes — all utilities that were previously marketed separately.

But the incompatibilities with EMS and the interface superseded these advantages, some users said.

"The front end is beautiful, but it is not very stable with ill-behaved applications. About half my apps blew up running with it," said one microcomputer manager.

"At first it looked like an attractive menuing system that made life easier, but I ran into an odd problem — it would blow up when I switched to my terminal emulator," said Phillip Gordon, manager of office automation for Charles Schwab.

Gordon said he had problems when he used a Sys com-

mand to put DOS 4.0 on a hard disk formatted under DOS 3.3. The menu's graphics mode then conflicted with other graphics programs. When he installed DOS 4.0 on the disk using its select menu feature, it worked fine. But as a result of this problem, Gordon realized he couldn't just hand DOS 4.0 over to users.

"I would have to set it up and maintain the shell and batch files. I began to ask myself, 'Why do this?'" Gordon said.

DOS 4.0 supports files larger than 32 megabytes by redefining cluster sizes and rendering them incompatible with files created under earlier versions of DOS. The impractical remedy is for all users to switch to DOS 4.0.

"People haven't gone to 4.0 because they haven't had to," said Paul Brantley, a vice president at the training company Micro Mentor Inc., in Cambridge, Massachusetts.

"No one is going to change over their machines to another operating system just to get a backup command that works a little quicker," Brantley said.





## NOTES FROM THE FIELD ■ BY ROBERT X. CRINGELY

# IBM and Compaq Fight to Offer the Best Bad Deal

I have a friend — a reformed economist — who found a new career in the hi-fi equipment business. He builds vacuum tube amps and other gear for stereo fanatics who claim that: a) They can hear the difference; and b) having heard the difference, they can't live without a \$5,000 amplifier or a \$25,000 stereo system.

"The main lesson I've learned in business," said my rich friend, "is that

you can price a product too low, but you can't price it too high."

We talked once about going into business together, building custom bicycles, but the idea fell apart when he suggested setting a retail price of \$75,000 per bike.

**SUCH A DEAL.** Which brings us to the weird price war going on right now between Compaq and IBM. This is like a price war between BMW and Mercedes, only the

Huns are too busy making money to do something so silly.

Most recently, Compaq set a price for its Model 30 286 killer, the 286e, then dropped it by \$200 only 24 hours later on word of some pricing changes coming from Big Blue. The kids in Houston also moved up their announcement date by a week to compete with the coming Model 55. Compaq's even telling my friends in England that it may postpone the 33-MHz 386 announcement planned for Comdex to reposition — and reprice — the product. And while these unannounced, unpriced products are waiting in the wings, I calculate that ALR, Everex, and Northgate have sold 15,000 machines.

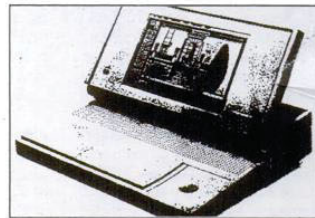
**THEY CALL HIM THRIFTY BILL.** While IBM and Compaq fight over which company will have the lowest-priced high-priced machine, Microsoft is paying the penalty for being too cheap. We're not talking about the costs they've moved into Redmond for the worker bees to sleep on between 20-hour shifts, but rather the failed deal to buy Mirrors from Micrograf.

Mirrors is a handy piece of code that recompiles Windows programs, turning them into PM apps in about 20 minutes. Microsoft wanted to incorporate Mirrors into PM as an integral part of the engine, but apparently also wanted to finance the deal with monopoly money or Argentine pesos, which didn't appeal to Micrograf.

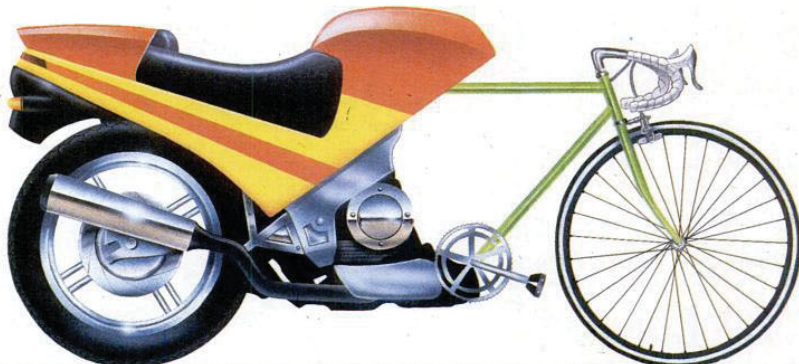
**NO JOY AT BORLAND.** Now it's *my* turn to be generous, admitting that I was wrong two weeks ago when I said the Smithsonian had failed in its search for PS/2 joysticks. It must have been a typical federal procurement effort, because dozens of folks called up to rave about their CH Products MCA game cards that work with most analog joysticks. Also about to ship is a joystick board from Qua Tech Inc., and both a game card and an intelligent joystick that doesn't need a card from Advanced Gravis, in Canada.

In another update, Borland's Philippe Kahn was the guy who paid for distributing hundreds of copies of *New England* magazine — with its unflattering profile of Lotus' Jim Manzi — at the recent Esther Dyson conference. Claiming a momentary lapse of common sense, Philippe has since apologized and gone to bed without his supper.

**WATCH THOSE TAILS, GUYS!** Finally, here's a look at the soon-to-come Apple laptop, courtesy of some friends inside Apple who call themselves Four Blind Mice. At 17 pounds and \$6,500, it's evident that the kids in Cupertino have what it takes to make it in the high-end stereo business.



Now here's the deal: Call me with your industry secrets at (415) 328-9610, ext. 237 and I'll send you a lovely Cringle mug to enjoy while you wait to be fired.



## Pack extra power into your PC.

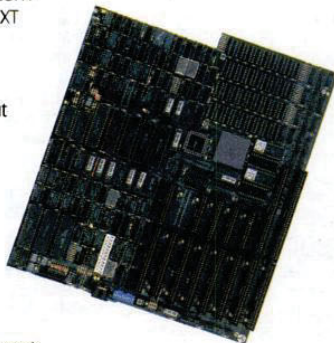
Make it over into a '386.

DTK's new PEM-2000 dual-speed 8/20 MHz 80386 motherboard gives you 100% PC/AT compatibility at speeds up to 27.3 MHz. It also offers some very elegant engineering, like eight expansion slots including two for 32-bit memory expansion, two serial ports and one parallel port, a DTK BIOS with built-in diagnostics, and the socket for an optional 80387 coprocessor.

DTK means value in PC-compatible motherboards, add-on and networking cards, and bare bone systems, including FCC Class B-certified 10 and 12 MHz '286 computers. Which is why the two high-speed XT clones named "Best Buys" in *PC World's* August, 1988 issue, both use DTK motherboards.

The PEM-2000 is a good example—but by no means the only example—of the DTK difference. To get the full story on all our high-performance XT, '286 and '386-based products, contact the DTK office nearest you for specifications and pricing.

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