

## MOST SIGNIFICANT BITS

### ■ Moto, IBM System Groups Drop NT for PPC

In a stunning retreat from PowerPC's attack on the mainstream desktop market, the three major system vendors offering PowerPC Windows NT systems have abandoned their plans to support the operating system. The decision was reached independently by IBM's RS/6000 group, Motorola Computer Group, and Groupe Bull. The companies have also abandoned efforts to get applications ported.

Despite appearances, there was no PowerPC alliance decision to drop NT; in fact, Motorola's semiconductor group remains committed to the NT 5.0 port. This support is motivated by two unannounced customers interested in NT primarily as a server platform. Apple, which is scheduled to lay out its new operating-system strategy on January 7, is presumably one of those companies. The hasty retreat of the announced NT system vendors is sure to have a chilling effect on the prospects for the operating system on PowerPC, however, and it would be surprising to see NT 5.0 ever emerge for PowerPC.

In one sense, the retreat from NT is not surprising; there have been few sales of PowerPC NT systems, and no significant system vendors beyond IBM, Motorola, and Bull. IBM's own efforts were limited to its workstation division, with no support from the PC company. Looking at their 1996 track record and the prospects for 1997 and beyond, the system makers just couldn't justify the investment in an aggressive application-porting and advertising effort. Since the PowerPC NT business was very small, its absence will have no immediate effect on the market.

In a strategic sense, however, the announcement is a surprise. IBM and Motorola had been committed to a long-term battle to gain a mainstream role on the desktop, even if the near-term payback wasn't there. With the emergence of Windows NT 4.0 and plummeting DRAM prices, the operating system appeared ready for a mainstream role. Motorola had just come out with a new line of NT systems and had purchased FirePower Systems from Canon.

The bottom line, however, is that the modest performance advantage PowerPC was able to deliver just wasn't big enough to sway users from Intel—or to convince ISVs to port their applications. Motorola and IBM were never able to deliver on the 2× advantage over Intel that the original plan was predicated on—and it isn't clear if even this advantage would be enough. Furthermore, looming on the horizon is Merced, which seems likely to close any performance gap that could be achieved before then.

PowerPC's desktop role will now be limited to MacOS systems, AIX workstations, and network computers. Windows CE presents another opportunity, although it will not drive high-end implementations of the architecture. The common thread of the revised PowerPC strategy is to focus on areas where Intel is not a direct competitor. Embedded

prospects for the architecture remain strong, although again they won't drive the same kinds of designs needed for the desktop. Fortunately, the MacOS market is big enough to support continued development.

The CHRP platform now ends up as something of an oddity. Originally conceived as a multiple-OS platform, its role now will be as the open hardware platform for MacOS. Much of the effort to integrate PC-compatible peripheral logic into the design is now irrelevant, and future versions of CHRP may strip out some of this now-vestigial complexity.

The end of PowerPC and MIPS as Windows NT platforms leaves Alpha as the only alternative to x86 processors in that market. Digital has a better compatibility story with FX!32, and it has a greater performance edge over Intel. Whether Alpha's advantages over PowerPC are enough to avoid the same fate, however, remains to be seen. —M.S.

### ■ Intel, Rambus Make DRAM Pact

Intel and Rambus will collaborate in the development of a so-called next-generation DRAM (nDRAM) technology for mainstream PCs. The new plan calls for nDRAMs to be the standard memory technology in PCs by 1999. In the interim, Intel will pursue speed enhancements to more conventional synchronous DRAM (SDRAM) memory arrays. The agreement is excellent news for Rambus licensees but signals the death knell for alternative schemes, such as SyncLink (see [100605.PDF](#)).

The new nDRAMs will be enhanced versions of today's Rambus RDRAMs, with a wider interface, a faster clock, and a more efficient protocol. Specific details were not described, but these changes would make RDRAMs a better match for *fin-de-siècle* PCs. The current 8-bit RDRAM interface is a potential bottleneck for systems that need Gbyte/sec memory bandwidth, and both the channel clock rate and protocol efficiency could stand to be improved.

Intel's roadmap shows 66-MHz SDRAM, currently available in many systems, becoming the most common configuration in PCs by the end of 1997. At that time, 100-MHz SDRAMs—still using a conventional low-voltage TTL interface—will arrive at the high end. Intel believes 100-MHz SDRAM is only a stopgap, however; within a year, faster processors will exceed the capabilities of SDRAM entirely and force the transition to nDRAM in high-end systems.

Intel says the use of nDRAM is not tied to a specific processor generation, but the timing of the change suggests that nDRAM is intended to feed Merced's expected voracious appetite for memory bandwidth. The new memories may be used with enhanced P6-class processors such as Willamette, but as with AGP, Intel may use nDRAM technology to help differentiate Merced instead.

The agreement with Rambus involves technology development and licensing of a Rambus-designed nDRAM

controller to Intel for its core-logic chip sets. Rambus will publish the nDRAM specification, and we expect to see all current Rambus licensees adopting the new technology, giving Rambus a strong leadership position in the DRAM industry. —P.N.G.

### ■ Windows CE Support Spreads to Five CPUs

Broadening its support to five microprocessor architectures, Microsoft proclaimed that Windows CE will be ported to ARM and PowerPC. These two families join MIPS, SuperH, and x86 as officially anointed platforms for the new operating system. Handheld PCs based on SuperH and MIPS processors are currently shipping. No vendor has expressed public interest in the x86 port.

From ARM's point of view, the announcement gives the company access—through its 16 licensees—to both the Newton and WinCE handheld platforms. The company's 1996 agreement with English PDA maker Psion adds a third popular platform, covering all bases.

No date was given for the availability of the ARM port of Windows CE. For PowerPC, the operating system is currently running on Motorola's MPC821 (see [091202.PDF](#)), but a port to other PowerPC chips should be relatively straightforward. IBM was conspicuously absent from the WinCE/PowerPC festivities; the company has expressed little interest in the PDA market but in the future could support WinCE for other consumer electronics devices. —J.T

### ■ Motorola, General Magic Shift PDA Platforms

Coincident with the arrival of Windows CE on Motorola's PowerPC 821, the company quietly discontinued its 68K-based Envoy and Marco PDA platforms (see [080404.PDF](#)), which ran General Magic's Magic Cap and Apple's Newton OS operating system, respectively.

General Magic is also reworking its PDA strategy, completely retooling Magic Cap under a new project, code-named Rosemary. The new version retains the current Magic Cap look and feel but substantially revises its inner workings. Rosemary will run with about 6M of ROM with 1M–2M of DRAM, somewhat more memory than the initial version of Magic Cap required. Some of the size increase comes from additional features; some is due to porting the OS from the 68K to the MIPS instruction set. General Magic expects to release Rosemary to its OEMs in January; Magic Cap-based products are expected "sometime in 1997."

Rosemary has dumped the 68K architecture for a MIPS processor based on the Toshiba R3900 core (see [090205.PDF](#)), called "Dino," which works with a mixed-signal ASIC dubbed "Betty." The two chips were a joint effort between General Magic and Toshiba. With minor modifications, the pair became the Philips 31100 and UCB1100 PDA chip set (see [1006MSB.PDF](#)), which power the Philips Velo handheld PC. Toshiba manufactures the parts for both General Magic and Philips, which offers the chip set for sale.

### MDR Seeks New Analysts

MicroDesign Resources, the publisher of *Microprocessor Report* and the industry's most respected group of technology analysts, is expanding its staff. We are seeking experts in either high-performance microprocessors, particularly x86 and PowerPC, or in PC technology, including multimedia, networking, and system design. Candidates must have design and/or technical marketing experience in these technology areas. Outstanding writing and presentation skills are a must. The positions will be in our Sunnyvale (Calif.) office.

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General Magic provides the reference hardware to its OEMs but is also considering entering the consumer market itself. With nearly the same hardware as Velo, a General Magic device would differ primarily in its operating system: Rosemary versus Windows CE. Initial vendor support for the latter has been strong, although it is far too early to count actual unit sales. General Magic will have to do some conjuring, indeed, if it hopes to prevent its second OS from pulling the same disappearing act as the first. —J.T.

### ■ Digital Slashes Alpha Prices in Half

Digital cut the prices of its 21164 Alpha processors by as much as 50% in an effort to make Alpha systems more attractive to Windows NT users. All price cuts are effective immediately and place Alpha on par with Pentium Pro while still offering significantly better performance. The Pentium Pro-200/256 scores 8.2 on SPECint95 (base), for example, while the 21164-433 pounds out 11.5 for less money.

The biggest discount comes at the top of the line: the 21164-433 is now priced at \$750 in 1,000-unit quantities, a 50% cut. The 366-MHz chips drop from \$950 to \$495 (48%), and the 300-MHz parts fall from \$695 to \$395 (43%). Digital's ferocious 500-MHz part (see [100901.PDF](#)) retains its initial price of \$1,450.

With MIPS and PowerPC exiting the Windows NT market (see [1017MSB.PDF](#)), Alpha is now the only alternative to the x86 for Windows NT. Digital is banking on its price cuts and the recent revelation that Alpha, with the help of FX!32, runs some Windows applications faster than Pentium Pro to make Alpha the processor of choice for buyers looking for high-end NT servers and desktops. —J.T. ☐