

THE EDITOR'S VIEW

So Where's the Shakeout?

Six Major Players Remain — Windows NT May Become Key

By Michael Slater

For the past few years, many observers (ourselves included) have predicted that a shakeout would occur among microprocessor architectures vying for the general-purpose market. As the desktop computer market has evolved, however, it appears to have reached a position of relative stability with only a few dropouts.

While no major shakeout has occurred, there have been a few losers. Although neither company is prepared to officially admit defeat, both Intel's 860 and Motorola's 88000 architectures are now clearly relegated to small niches and will not be contenders for mainstream, next-generation desktop systems. Intergraph's Clipper, which was never much of a contender, has moved one step closer to extinction now that Intergraph is porting some of its key software to SPARC-based systems.

Back in January 1990, we predicted that "Computing in the 1990s is likely to be dominated by architectures that already exist...new instruction set architectures will take a back seat." Indeed, the past three years have seen only one significant new architecture introduced for desktop computers—DEC's Alpha—and the possibility of successfully introducing a new architecture in 1993 or 1994 seems even more remote than it did at the start of the decade. (Revisions to existing architectures, such as SPARC version 9 or PowerPC, aren't new in this sense.)

The number of serious contenders for the desktop computer market for the next few years is thus down to six: x86, SPARC, MIPS, PA-RISC, PowerPC, and Alpha. We aren't including Hobbit and ARM here because they won't be major players in desktop machines. We haven't included the 680x0 because it doesn't appear to have a long-term future in the mainstream desktop computer market. With Apple planning to move to PowerPC and HP pushing its customers toward PA-RISC, the 680x0 is likely to lose both of its highest-volume desktop markets over the next few years.

Beyond narrowing the field to our list of six, no shakeout appears imminent. All the architectures on our short list seem to have enough backing to survive for at least a few more years. The harder questions are how each will fare over the long run, and whether one or two more will drop by the wayside in mid-decade.

The x86 architecture continues to dominate desktop computing by virtue of its compatibility with PC software. Its dominance for the next five years or more seems

assured; the question is whether other architectures might get perhaps 10% of its market. Note that today, 10% of the 386/486 market is about 3 million units—close to ten times the size of the total desktop RISC processor market. A modest shift of high-end users away from x86-based systems thus could cause a ten-fold increase in desktop RISC processor shipments.

Despite attempts to establish each of the RISC architectures as a multivendor standard, each (with the exception of MIPS) remains dominated by a single system vendor. MIPS is the architecture with the most evenly spread customer base; Silicon Graphics, while it is a key maker of MIPS-based systems, does not dominate the unit shipments.

Sun continues to hold the vast majority of the SPARC-based systems business, in spite of Sun's high-profile (if half-hearted) attempt to encourage a Sun-compatible market. HP remains the only company shipping meaningful numbers of PA-RISC systems, and none of the current PA-RISC microprocessors is available on the merchant market. Alpha systems are similarly dominated by DEC; although a few other companies have committed to making Alpha systems, none seems likely to be a major player in the desktop market.

PowerPC remains somewhat of an unknown, with the first chips still in an early sampling stage. So far, however, it is far from clear whether there will be high-volume customers other than IBM and Apple. Indeed, assuming that IBM markets PowerPC systems mostly to the traditional workstation market, Apple may be the only real high-volume customer.

By inheriting the Macintosh market, PowerPC is reasonably assured of a high-volume future. For the other RISCs, however, Windows NT is their best chance yet to get some of the PC market's volume. Should any RISC system take off as an NT platform, it could get a big enough volume advantage that investment in the other architectures would diminish, ultimately condemning them to small niches.

Even if the RISCs fail to penetrate the PC market, they still have a reasonably secure future. Although RISC workstation shipments (in units) are a mere 1% of PC shipments, average system prices are relatively high, so the dollar volume is more significant—and profit margins are much higher. This explains both the business success of workstation companies and the difficulty they have competing in the PC market. ♦