

■ Chromatic's Mpack Impacts

Acknowledging PC makers' blatant apathy toward media processors, Chromatic Research is undergoing a massive restructuring. Having recently released its Mpack 2 processor (see [MPR 11/18/96, p. 1](#)), the company will not develop any further products in the Mpack line, although it will continue to support the existing products. Instead, Chromatic is developing "a new and unique approach to media processing," which the company does not plan to disclose until 1H99. Products using the new technology are not likely to appear before 2H99.

The leading proponent of media processors for PCs, Chromatic has for years perched on the verge of success, waiting for the big design win that would put it over the top. But the original Mpack chip's acceptance was impeded by its lackluster 3D acceleration and late software deployment. By the time Mpack 2 came out, Intel had added MMX to all of its CPUs, diminishing the need for a separate multimedia-accelerator chip.

Chromatic was also hampered by its unusual business model: the company sold no chips (instead licensing its designs to LG Semicon, STMicroelectronics, and Toshiba) but developed and sold all Mpack software. This model required Chromatic to field a software team much larger than its hardware team. Most of the software, which handled a wide variety of media protocols and functions, had to be developed before a customer could ship a viable product.

The new business model involves "simplifying and opening the software environment," which presumably means letting others create the necessary codecs. This change reduces the funding needed to develop the new technology. Because current Mpack sales are unlikely to sustain a new development effort, even a scaled-back one, Chromatic has obtained new funding from an unspecified source, probably a large semiconductor vendor instead of a venture capital firm.

The company also implied that its future products will be more integrated. Chromatic is rumored to be combining an x86 CPU core with its next media processor, creating a true all-in-one processor. A logical backer for such a project would be ST (formerly SGS-Thomson), which produces both Mpack and x86 chips today. ST subsidiary Metaflow is also working on an x86 processor; the Chromatic and Metaflow projects may be connected.

As part of the restructuring, Chromatic has laid off about half of its 300 employees, mainly in the software and marketing areas. The company's problems show how difficult it is to change the established PC architecture without strong backing from Intel and Microsoft. Chromatic's insistence on developing all of its own software—and not delivering on time—has also been part of the problem. Most startups don't get a second chance to prove themselves. One hopes the folks at Chromatic will make the best of theirs. —L.G.

■ Coppermine to Open in 2H99

Intel acknowledged that the 0.18-micron version of Katmai, code-named Coppermine, will begin shipments in 2H99, two quarters after the initial 0.25-micron version. We expect this part to be used in the mobile as well as the desktop market, whereas Katmai will be restricted to the desktop market due to heat issues. The new process could allow speeds of up to 700 MHz for the desktop Coppermine.

As a simple shrink of Katmai, Coppermine is likely to be the first product shipped from Intel's 0.18-micron process (which, despite the name, will not include any copper layers). Contrary to some confusing public statements, Intel does not expect to ship any 0.18-micron products before 3Q99. —L.G.

■ Deep Price Cuts for Pentium II

Intel's third-quarter list prices, effective on July 26, fell faster than usual, with most Pentium II prices falling by 30% or more from the previous quarter. The Celeron and Xeon processors weren't affected as much, as these products were recently announced with the new prices in mind. The price cuts pave the way for the introduction of faster Pentium II processors later this quarter.

The new prices (see [MPR 8/3/98, p. 23](#) for details) position the 400-MHz Pentium II at \$589, down from \$824 in 2Q98 and leaving room for the expected Pentium II-450 to appear at the top of the line. The 300-MHz version dropped 44% from the previous quarter, and the Pentium II-266 fell to \$159, two dollars lower than the 233-MHz part, which is being phased out. These price cuts are so large that Intel initiated an unusual midquarter price change in June (see [MPR 6/22/98, p. 5](#)) to spread out the cuts.

At \$159, the Pentium II-266 offers a low-end alternative to the Celeron-300, which now lists for \$138. Intel had already committed this low Pentium II pricing to customers before the Celeron plan was complete, which is now causing some confusing overlap. In the future, we expect Intel to keep Pentium II prices above \$200 while positioning Celeron below this point.

Mobile Pentium/MMX and Pentium II prices dropped by as much as 37%, with the lowest Mobile Pentium II now at \$262. Even at this price, Pentium II will not exceed Pentium/MMX in mobile shipments this quarter.

Just before announcing the new prices, Intel confirmed that the PC processor market remained stalled in the second quarter, as the company's revenues were basically flat. Intel's average selling price steadied, despite intensified competition. The company hopes the deep cuts for this quarter will entice customers to "buy up," keeping its ASP steady while making it more difficult for competitors to gain a foothold.

Intel officially expects the second half of the year to be better than the first, due to normal seasonal growth if nothing else. Company officials stopped short of predicting a strong

rebound but are cautiously optimistic that the current market slump has reached the bottom. —*L.G.*

■ K6 Shipments Rise, But Prices Drop

In announcing a larger-than-expected second-quarter loss, AMD disclosed that it shipped 2.7 million K6 processors, up from about 1.5 million in the first quarter. Of these, 40% were on its 0.25-micron process; AMD says production problems with that process have been resolved and that all third-quarter shipments will be 0.25-micron chips. Accordingly, AMD has withdrawn from its foundry agreement with IBM.

The remaining 0.35-micron processors in 2Q98 were sold at fire-sale prices because of their lagging clock speeds, dragging AMD's average selling price down to \$86. The company is shipping the K6-2 in volume at 266, 300, and 333 MHz; a 350-MHz version is promised for this quarter and a 400-MHz part in 4Q98, leaving the company between one and two speed grades below Intel's top of the line.

AMD expects to ship between 3.2 million and 3.7 million K6 processors this quarter and a total of 12 million this year, implying 4Q shipments of about 4.5 million units. Although the company must still find customers for that many K6 chips, it is having success among top-tier PC makers. A design win in HP's Pavilion consumer PC gives AMD wins at three of the top five PC makers and five of the top six U.S. retailers.

Pricing remains a concern. An oversupply in the market developed during the past quarter, especially at the low end, pushing prices down and making it tough for any of Intel's competitors to earn a profit. To regain profitability, AMD must get into the midrange of the PC-processor market, where competition is limited and margins are higher.

By the end of the year, AMD plans to deploy the K6-3, whose on-chip L2 cache should boost performance. In mid-1999, the company hopes to ship the first K7 processors. Using its newly announced 0.18-micron copper process (see [MPR 8/3/98, p. 10](#)), AMD expects to push the K7 to 1 GHz in early 2000. Timely deployment of these products should get AMD out of the oversupplied low end. —*M.S.*

■ 3Dlabs Takes Dynamic Pictures

Following the debut of its Permedia 3 graphics chip (see [MPR 8/3/98, p. 1](#)), 3Dlabs has acquired Dynamic Pictures, one of its key competitors in the PC CAD graphics market, and announced plans to become a supplier of graphics cards.

In entering the board business, 3Dlabs seeks to boost its revenue by cutting out the middlemen, such as Elsa, that sell Glint-based 3D cards for PC workstations. We do not expect these cost savings to translate into lower graphics-card prices; the CAD market is less cost-sensitive, and the company needs the extra margin to make its high-end development efforts more profitable. Though it will now be competing with companies that it also supplies with graphics chips, 3Dlabs will continue to support these customers as long as they want. The company is not planning to compete in the mainstream

PC expansion-card market, where volumes are higher but margins are much lower.

Dynamic Pictures (DP) makes the Oxygen series of 3D graphics chips and sells Oxygen-based cards into the PC workstation market. These products will continue to be offered for some time. At Siggraph in July, 3Dlabs announced the latest product developed by DP, the Oxygen RPM. DP has also created some interesting multithreaded driver software for Windows NT.

In acquiring Dynamic Pictures, 3Dlabs gains access to DP's sales channels and customer base, and it removes one of its most significant competitors for PC CAD cards. DP's stockholders will receive 1.8 million shares of 3Dlabs stock; in addition, 3Dlabs assumes DP's outstanding debts of about \$2.9 million, making the deal worth about \$17 million. The company has retained DP's entire R&D staff but will take a one-time write-off for the termination of in-progress R&D at Dynamic Pictures, suggesting that, in the long run, 3Dlabs does not need Oxygen to survive. —*P.N.G.*

■ SPEC Scores With New 3D Benchmarks

The Standard Performance Evaluation Corporation (SPEC) has finally updated its OpenGL performance characterization (OPC) benchmark suite. The organization has replaced the increasingly irrelevant conceptual design-rendering software (CDRS) viewset (test files) with a new viewset developed with Parametric Technology's Pro/Designer. The improved benchmark will be released by the end of the year; SPEC will stop reporting CDRS results about six months later.

The CDRS viewset has been the subject of much optimization work by 3D-hardware vendors. As with any benchmark, this optimization has produced impressive scores but it reduces the relevance of the OPC benchmarks to real-world applications. The new Pro/Designer viewset will not be immune to such optimizations, but reported scores will be more relevant to buyers of 3D CAD workstations, at least for the next year or two.

In related news, SPEC's graphics performance characterization (GPC) group has announced its first benchmarks based on two popular 3D applications. The new GPC benchmarks measure performance in SolidWorks 98 and Quake II. GPC is also nearing completion of a third benchmark, this one based on Pro/Engineer. It differs from the OPC work in that the GPC tests will actually use Pro/Engineer, while OPC offers synthetic benchmarks that simulate tasks commonly performed by CAD systems. GPC will develop additional application-based benchmarks for digital-content creation and visualization.

Finally, SPEC (www.spec.org) has formed a Multimedia Benchmark Committee (MBC) to measure performance on tasks such as MPEG-2 and Dolby Digital decoding, video-conferencing, and MPEG-2 encoding. The new benchmarks will measure both performance and quality, the latter results to be produced using software developed by MIT to model human perception of video playback. —*P.N.G.* 