New Multimedia Chips to Enter the Fray

Media Processors, Multimedia-Enhanced CPUs Debut at Microprocessor Forum

by Linley Gwennap

The battle of the media processors continues to heat up as several vendors prepare new products for this market. In the meantime, makers of general-purpose CPUs are racing to include multimedia instruction extensions in their 1997 products.

Later this month, Fujitsu will reveal plans for its first media processor at the Microprocessor Forum (October 21–24 in San Jose, Calif.). Another newcomer to the media-processor market, Oak, will disclose the first details of its DVD decoder. Oak built its reputation on 2D- and 3D-graphics accelerators; the new chip, containing a RISC core, will be its first programmable device.

Chromatic, the only vendor shipping a media processor today, will describe the second generation of its Mpact family, a chip that addresses the modest 3D performance of its current device while integrating system functions to reduce cost. Samsung will reveal new details about its MSP media processor, which combines an ARM7 CPU core with a high-performance vector processor.

While these processors are all aimed at improving the multimedia performance of PCs, MicroUnity is applying similar technology to a different market. The company will disclose a new CMOS device for cable modems that significantly reduces power levels from its previous BiCMOS chip.

Pushing the Pentium Pinout

Although Intel will be prodding the market toward the P6 in 1997, the vast majority of processors sold next year will remain in the Pentium pinout. This pinout allows OEMs to move easily to next-generation processors by retaining compatibility with current motherboards and system-logic chip sets. Due to the limited bandwidth of this pinout, however, x86 processor vendors are expanding their on-chip caches to squeeze more performance out of a narrow pipe.

At the Microprocessor Forum, Intel will reveal for the first time the inner workings of its forthcoming P55C processor. The new device is expected to be Intel's first CMOS Pentium, using a 0.28-micron process to improve clock speed and reduce power consumption. The original Pentium design has been modified to include larger on-chip caches and Intel's new MMX multimedia instructions. We expect this device to be the best-selling PC processor in 1997.

Intel's competitors are pushing the Pentium pinout even further. Cyrix claims its M2 processor will have P6-class performance within the Pentium pinout. The company will disclose how it will achieve this feat. AMD will discuss its K6 processor, for which it has similar performance claims. The company is relying on the K6 to put it back into the performance race among x86 CPU vendors. Both of these processors include large on-chip caches as well as compatibility with MMX.

Sun Prepares First Java Processor

Despite criticism from some analysts, Sun is pressing forward with plans for chips that execute Java programs directly in hardware, without the need for a virtual machine layer. The company will reveal at the Microprocessor Forum how the first Java core, PicoJava, will execute Java byte codes. Sun plans to prove the experts wrong by displaying the advantages of its new architecture over a standard RISC or x86 processor emulating a Java machine.

Instead of completely eschewing traditional instruction sets, other embedded vendors are extending them, mainly to improve multimedia performance. ARM's Piccolo design combines the original RISC CPU core with a set of new instructions for digital signal processing. Hitachi's SH-4 extends the performance of the successful SH family while positioning the product line for emerging multimedia applications. LSI has developed a new core called TinyRISC that maintains traditional RISC features while reducing code size and thus system cost.

RISC Processors Embrace Multimedia

The makers of general-purpose RISC processors are also focusing on multimedia. At the Microprocessor Forum, both Digital and MIPS will introduce new extensions to their instruction sets aimed at boosting performance on motion video and other digital-media algorithms. These vendors will join HP, Sun, and Intel in developing multimedia extensions for their processors.

As usual, the RISC vendors will also deploy the most advanced microarchitectures and highest-performance processors. Digital aims to deliver twice the performance of any currently shipping processor with its forthcoming 21264, to be unveiled at the Forum. HP, which managed to briefly snatch the performance lead from Digital earlier this year with its PA-8000, will disclose its follow-on part, the PA-8200. For intensive floating-point code, IBM's P2SC is a key competitor for these two performance leaders. QED, best known for its R4600 processor, will unveil a new MIPS design with an impressive price/performance rating.

With nearly all CPUs improving their multimedia performance, the battle will be between multimedia-enabled host CPUs striving to remain dominant while discrete media processors try to steal a piece of the action. M

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