Is ARM Coming to Play in Games Consoles?

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When the specifications for Sony's new handheld PSP console were made public in January, they showed that ARM had replaced MIPS as the architecture for the main processor. With Nintendo having used ARM throughout the evolution of the DS console, and continuing to do so in the new 3DS, the score in handheld game consoles now reads "ARM 2 , Everyone Else 0". Having conquered the handheld market, Semicast believes ARM is now set to take on the established order in games consoles.

The current generation of games consoles consists of Microsoft's Xbox 360, Nintendo's Wii and Sony's Playstation 3. Sony also continues to produce its last generation Playstation 2, selling approximately five million last year, although Semicast expects production to cease in 2012.

The main processor for all three of the current generation of consoles is based on Power Architecture, with Microsoft and Nintendo using chips developed by IBM, and Sony using its Cell Broadband Engine (also based on Power Architecture). The Playstation 2 was designed using a MIPS processor developed by Toshiba and the announcement from Sony that the new PSP console will use ARM means that MIPS is currently designed out of each of the main handheld and games console platforms.

Sales of x86-based processors into games consoles ended in 2007 when Microsoft ceased production of the original Xbox, which had used an x86 processor. Semicast judges it unlikely that x86 will be used in any of the next generation of consoles, so the question is can ARM break the current dominance of Power Architecture?

It is the opinion of Semicast that Sony will continue to use its Cell Broadband Engine in the likely to be named Playstation 4 console. Sony purchased the Nagasaki-based

Cell processor manufacturing facility from Toshiba for a reported 50 billion yen at the end of 2010, which almost certainly signals Sony's commitment to Cell for Playstation 4. Semicast further judges that Nintendo will continue with Power Architecture-based processors from IBM for its follow up to the Wii console, so that leaves Microsoft and the next generation Xbox.

Following Microsoft's announcement that Windows 8 will run on both the x86 and ARM architectures, Semicast forecasts that Microsoft will change to using ARM in its next generation Xbox console and that its overall strategy for consumer electronics devices will converge on the ARM architecture. Microsoft has already adopted ARM for its Zune range of media players, recently using the Tegra processor from Nvidia in the Zune HD.

With extensive expertise in graphics processing units (GPUs) and with a working relationship with Microsoft already in place, Nvidia would seem an obvious candidate to develop the chip for the new Xbox. Its recent decision to become an ARM architectural licensee and the announcement of "Project Denver", an initiative to integrate ARM-based processors alongside Nvidia's GPUs, could point to the makings of a strategy to develop chips for games consoles. With close ties to TSMC, Nvidia would also have access to leading-edge semiconductor manufacturing processes, which will be necessary to rapidly reduce the manufacturing costs of what is certain to be a highly advanced chip. So having risen to prominence in other markets, is ARM coming to play in games consoles?

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