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out a comparable offering. The PR mud balls have already started flying as Nvidia mocks ATI's comments mocking Nvidia's "proprietary" software—very helpful for the industry and consumers trying to figure out what to do.

We visited Havok and asked them about using the GPU and they said whereas they could do it, none of their customers were asking for it. ATI says they are looking into porting Havok on the GPU but have no roadmap or schedule to discuss publicly. (See related article about Havok's new products and plans, page 16)

What do we think?

Ageia demonstrated the benefit of physics in game play and, to some extent, like early 3D stereovision, the effects were done for eye-candy and not game play or story. Adding physics to a game increases the compute burden immensely and the game designers now have to decide how much of the environment is destructible. This takes the relatively simple two-triangle texture mapped wall or fence, for example, and changes it into a 10 to 20 triangle and subsequently multi-textured mapped set of objects, which then have freedom of movement determined by impact and velocity of the impacting object (i.e., a bullet vs. a body, vs. a bomb, etc.) And once destroyed, the broken bits now have to be rendered anew as well with subsequent shadows and maybe reflections—so for practical reasons the areas of "real" physics behavior have to be limited—and obviously no midrange or even a single AIB performance-class system is going to have much, if any real-time real-world physics going on.

The game developers know this too and their big concern is making a game that will run on the most systems—i.e., the installed base. They can't afford the design time (i.e., the "delay time" in getting a game out) to put a lot of realism in a game that can only be run of a few ultra (i.e., three AIB) systems. And when they do, they have to detune the graphics (like the flat comic book look of "Mirror's Edge") to compensate for it.

But, no journey is ever started without a first step and we applaud Nvidia and EA and Take2 for taking the initiative to start this new level of game play. It (the market for real-time physics in game play—gee, there's an opportunity for an acronym) will develop at the rate of Moore's law because it is totally

processor bound, regardless of which processor (CPU and/or GPU) is being used. This time next year, physics will be an integral part of games, high-end action games at least, and we'll wonder how we ever did without it.

■ Zenvergence arrives

By Kathleen Maher

Zenverge is a relatively new player on the scene and the company, founded in 2005 as a fabless semiconductor company, is ready to step out with new products. The company was founded in July 2005 in Cupertino, California by veterans from the video industry including Amir Mobini and Tony Masterson, who were among the key players at iCompression. iCompression was one of the first companies to develop a single-chip MPEG-2 decoder and encoder and they were acquired by Globespan Virata in 2000. They helped engineer a deal to spin off the MPEG 2 technology to Conexant, where it was leveraged into products. Then, they moved on to start Zenverge with investment from DCM, Norwest Venture Partners, and Motorola.

This time around, Mobini and Masterson are looking at the developing market for mobile devices, media players, and connected TVs. People want video on a variety of devices and they'd like to move it around—from DVR to mobile phone, from PC to connected

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TV, and from the Internet to the device. There's no reason why they shouldn't be able to do that except that encoding has been expensive in semiconductor resources and with all the different platforms that are evolving, there is an alphabet soup of formats that makes the issue even more complex. And then, there's the biggest, baddest three-letter acronym of all, DRM, which can stop the party right in its tracks.

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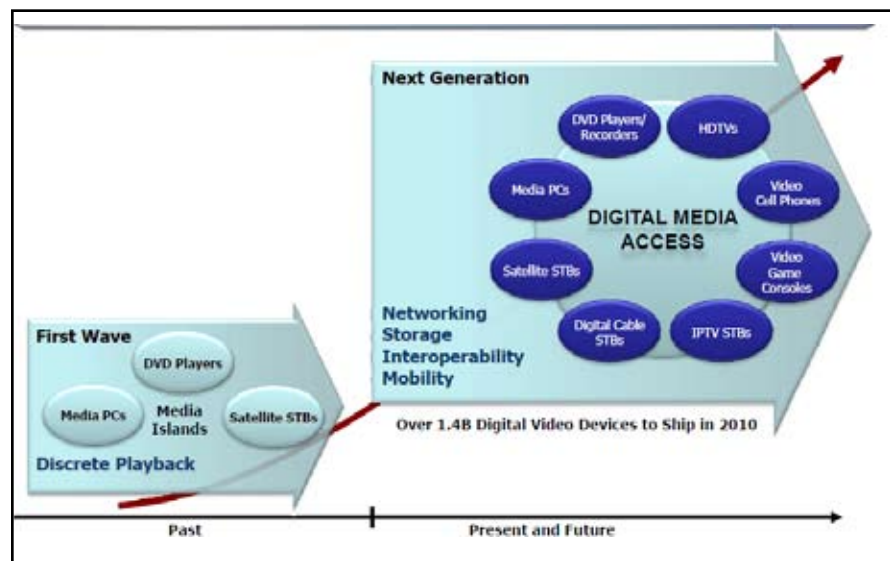


FIGURE 1: We have the media, now what? Zenverge sees a need for hardware-accelerated transcode tools that can fit within the power limited requirements of a variety of small devices and TVs. (Source: Zenverge)

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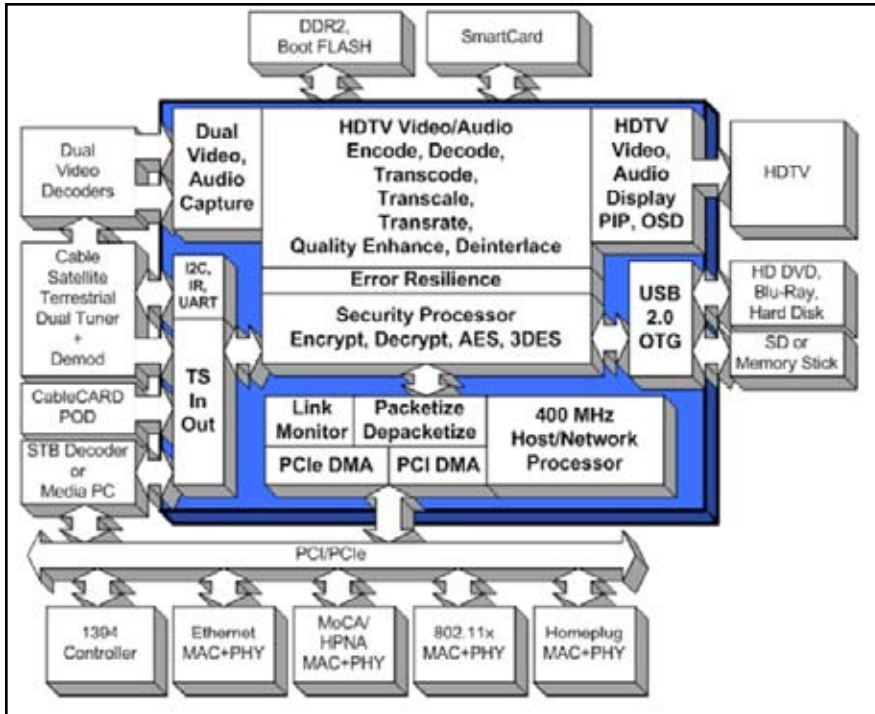


FIGURE 2: Block Diagram of Zenverge's new ZN200—the first member of the Zen1 family. (Source: Zenverge)

processors.

Users would like to be able to easily take their media with them and to transfer it around the house but they don't want to have to think about formats or to wait for processing. To meet user demands, says Zenverge, processors have to be capable of transcoding, transcaling, and transrating to change the bit rate on the fly to deal with fluctuating network bandwidths, and transrating to decrypt and encrypt data to meet the security demands of content holders.

In a phone conversation with Mobini and Masterson, we were told the company is well into talks with content holders about the capability of their new processor for content protection. In addition, they told us that as TVs become more connected, the manufacturers are eager to add capabilities that will make those TVs more useful—and the ability to seamlessly and rapidly transfer content from TV to other devices in the house is an important capability.

The company will be showing its new ZN200 processor at CES this year. It's a single-chip media IC that will support transcoding, decoding, and encoding of multiple formats at up to four times HD performance or

up to four simultaneous streams. The company says it has 22 patents on its technology.

At CES, the company will demonstrate ZN200's ability to:

- Distribute multiple HD channels with integrated, independently rendered channel guides from a single server. As a result, service providers can offer multi-room, multi-TV transfer of content without expensive set-top boxes.
- The ability to record and simultaneously play back multiple HD channels at once or convert HD data to be played back on devices that support different formats.
- Modify the content bitrate of multiple HD channels to increase storage or to be able to send data on bandwidth-limited networks.
- Function at the cable/satellite head-end, and for IPTV video switches for high-quality encoding and transcoding.

Zenverge will introduce the Zen1 family, which includes three devices with varying capabilities, including seamless media networking at different price points. All three will offer multi-

HD transcoding, encoding, and decoding in a single chip.

The ZEN1 family is available in sample quantities. The company says that they can offer their products at pricing that makes it practical for the target platforms: mobile devices, media players, phone, set-top boxes, TVs—all of which are notoriously price-sensitive.

What do we think?

The trick here is to convince customers that they need a hardware accelerator at this stage of the game as SoC companies are trying to absorb as many capabilities as possible. Given the experience of the Zenverge team, we don't think they'd even come calling if they didn't already have some deals in their pocket.

Anark teams with WorldViz

Anark Corporation is a small company based in Boulder, Colorado with interests in serious gaming and CAD. The company has been growing on the basis of its tools for training and simulation. At IITSEC this year, the company announced a partnership with the virtual reality company, WorldViz.

WorldViz offers a toolkit called Vizard which enables users to create real-time 3D interactive simulations—these can be used to create environments for product visualization, training, architectural walk-throughs and for entertainment.

Anark is bringing their CAD tool, Anark Core 2.0, to the partnership, which will let users bring models into WorldViz environments. Anark's tools are designed to enable communication and collaboration using CAD models that can be imported into Anark Core and annotated, modified and exported as B-rep data or mesh formats into SolidWorks, Inventor, ACIS, CATIA V4/V5, Parasolid, STEP, NX, IGES, COLLADA, DWF, X3D, and VRML.

According to WorldViz, Vizard is an easy tool for creating 3D worlds and it supports clusters and CAVEs, head-mounted displays, dome projectors and autostereoscopes, motion tracking, force-feedback systems and Microsoft DirectInput gamepads and joysticks. Content created with Vizard can be published as an executable with royalty-free distribution. ▲