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NDS Takes Steps toward Making 3D and Connected TVs Practical

BY FRED DAWSON

NDS is developing new solutions aimed at greatly enhancing an emerging next-generation TV experience where substantial amounts of 3D content and user navigation platforms that integrate Web-based content with traditional TV programming will be commonplace.

3DTV and Internet-connected TVs were prominent themes at this year's Consumer Electronics Show, but, notwithstanding substantial hype on both fronts, there's still a long way to go in working out details that will result in mass market penetration. The NDS perspective on these developments, as articulated by Steve Tranter, the company's vice president for broadband and interactive, suggests the potential for transformation of TV is great provided stakeholders can cooperate on some core essentials.

Where 3D is concerned, the results from various consumer research efforts by third parties are coming back with a loud and clear message: people want 3DTV, Tranter says. "We're finding without a doubt that 3D content is viewed by end users as a must have, more than HDTV was at this stage and more than DVRs," he reports. "In fact, one statement I got back [from research sources] is that 3D is second only to what color registered in perceived value."

But for 3D to be a viable part of the programming mix some of the ancillary things taken for granted in 2D television must be tweaked to make them work in 3D. These include closed captioning and other messaging overlays and trick plays associated with on-demand content.

"What we have to do as a vendor to the TV operator community is provide things

like guide overlays, closed captions and really display information within that 3D experience," Tranter says. "You have to be conscious that the video has depth perception, and you can't conflict with that."

Anyone who has seen a 3D program with the type of graphics that often accompany sports programming understands what Tranter is talking about. These 2D graphic components when ported into the 3D environment create an effect where the graphic dominates as a foreground element on the edge of the picture, undercutting the realistic presence of what's going on at various depth points in the video.

"We're working very closely with standards groups to determine how closed captions and other graphics are displayed on top of the video and how the closed captions move around the screen or within the screen depending on the action, which gets very interesting," he says. "For example, as somebody in back of the scene speaks you can make the closed caption appear closer to them, and as they move forward, you can make the closed captions get bigger.

"Beyond that there's also the manipulation of the video," he continues. "We provide video recording technology embedded in the set-top box. So we have to figure out how to deal with trick play in the 3D environment."

In 2D, fast forward or reverse operates on a frame by frame basis, so the viewer sees the picture jump from frame to frame at fast speeds. But in 3D, with picture elements jumping into the foreground from frame to frame, watching a fast forward can cause a nauseating jerking effect.

"You don't want content jerking toward you," Tranter says. "We find that grouping frames together and then dropping some sections is a better way to do trick play."



Steve Tranter, VP, broadband and interactive, NDS

This is new territory that will take some time to work through, given the need for consensus on how these things should be done. "No one has really focused on this," Tranter says. "We're having to experiment. There's no one right answer. A lot of it has to do with how various approaches are perceived by viewers."

One element of the TV experience that won't have to be changed to accommodate 3D, at least for awhile, is the programming guide, Tranter says. Given that the preponderance of programming will be in 2D, "people aren't going to want to put the glasses on to watch the guide," he asserts.

But there may come a point where there are enough channels operating in 3D to merit creating a special matrix for viewing those channel options in 3D, he adds. "It could be a kind of mini application," he says. "We could do some pretty cool things in a matrix."

The work NDS is doing in the Internet-

connected TV arena similarly reflects the company's view that current iterations of the concept may not meet requirements for mass market acceptance. Here the question is whether consumers will be interested in built-in navigation systems that support access to managed Web content but operate separately from subscription TV programming guides. And there's also a lack of integration between widget-based applications coming from the Web through the connected TV and the actual programming viewers are watching.

"There's no contextual link between the two environments," Tranter says. "What's interesting for us is the nature of the broadband pipe and what can be done to bring Internet content and applications together with regular linear TV."

As demonstrated by NDS at its suite during CES, there are ways to make the multimedia and video content that's available on the Web more contextually relevant to the TV viewing experience than can be done with widgets. For example, the integrated guide demo showed a Planet Earth program on New Guinea where interactive options allow a viewer to download a map that sits transparently over the program to let the viewer know where the country is and where in the country events from the

program are occurring. The applications also included connections to YouTube where users could search for programs on the same topic.

To facilitate users' access to on-demand content the guide could integrate options from aggregators such as Netflix or Hulu as well as from traditional VOD servers. "The idea is to aggregate on-demand content into a seamless experience," Tranter says.

Indeed, connected TVs could deliver a big benefit to service providers in this regard if SPs could leverage built-in browsers on TV sets to connect with a single set-top in the home. This would create a two-way street where the guide integrates what is pulled from the Web and the TV displays an integrated user interface delivered from the set-top.

"One of the key areas we're working on is the remote user interface," Tranter says. "There are two ways of looking at it. One is to use something like a CEA 2014 standard HTML browser so that the user interface (UI) in the central set-top box is delivered over IP onto the TV. There's no integration needed [between the connected TV UI and the service provider's UI] because the TV displays the same UI you have running on the set-top."

The other approach uses Flash Lite, he says. In this case a Flash-based infrastructure delivers the UI to TVs that are equipped with a Flash Lite player.

"There are great opportunities where you can take devices like TVs, iPhones, PCs that are plugged into your network and deliver the same user interface to all of them with the same look and feel without having to put more real estate in front of them," Tranter says. "Now you can depend on the fact that when consumers purchase IP devices, they can all be connected via business rules with one set-top box."

Rather than connected TVs spawning apprehension among service providers, such capabilities represent opportunities for service providers to adjust their business models to exploit the power of IP in the TV domain. "I can enhance the user experience with more information from search engines that exist online, promotional clips and other elements to get a much more interesting visual experience," he says.

"So we see the two worlds coming together. I don't see the connected TV surviving on its own as a content source. I see that broadband pipe working with existing content in a much richer environment for the end user." ■