Market Intelligence

Germany Embracing 3DTVs

According to market research firm GfK, available 3D content is moving from the realm of animated movies to feature films. That's helping to drive faster sales of 3D-capable TVs and Blu-ray players.

For example, 25% of TV sales in Germany are now 3D-capable models, comprising 43% of TV makers' revenue. A year ago, only 5% of sales were 3D models, so momentum is clearly picking up for the installed base.

The same holds true for 3D-capable Blu-ray players. Today, 60% of sales are models that are 3D capable, which generates 72% of manufacturers' income. A year ago, only 34% of sales were 3D models.

The figures were compiled by GfK in a market study commissioned by German industry association BITKOM, which compared sales figures of Q1'11 and Q1'12.

BITKOM expects 2012 sales of TVs in Germany to increase by 3.4% to around 10M sets compared with 2011, driven mainly by this summer's large sports events, such as the Euro 2012 football championship and the Olympic Games. In addition, Germany will be switching off analog TV transmission this year, and TV set prices continue to decline. *–Chris Chinnock*

Broadcast & Distribution

DirecTV Cuts 3D Programming — What Content Creators Think of the Move

Last week, DirecTV announced it was reducing the amount of 3D content aired on its n3D 24/7 channel due to "lack of content." To see if this story held water, I turned to the Stereoscopic 3D Professionals Worldwide LinkedIn group to see what they thought was the full story behind this move. The posted comments were very insightful. Below is a synopsis of these comments.

Some of you may recall that two years ago DirecTV launched the n3D 24/7 3D linear channel, as well as pay-per-view and video-on-demand 3D content services with heavy support from Panasonic. But in the DirecTV announcement, the company said, "While 3D adoption continues to grow and more programming is being developed, DirecTV has decided to move n3D to a part-time channel."

We asked DirecTV to comment, but it did not reply to our inquiries and there is no mention of the cutback on its Website. Apparently, **Consumer Reports'** James Wilcox noticed there was no programming on the n3D channel — just a note saying it would be broadcasting the summer Olympics in 3D. n3D will continue to air some content, but only on a part-time basis. The

company still airs the 3net 3D channel and has now moved ESPN 3D from part-time to full-time broadcasting.

I have taken the liberty to paraphrase some of these comments as noted below:

- I'm not surprised. I have DirecTV and they show mostly documentaries and repeat them incessantly.

- Of course it is due to lack of content! But broadcasters could have more content if they were to agree to pay its price.

- The channels can't complain about the lack of content if they're not investing in the cost of them.

- There is so much 3D content buying going on in Europe and Asia. China is scooping up bunches! LG, Sony, Samsung and Panasonic are all featuring 3D channels on their Smart TVs, so I am not buying the lack of content line.

- This is not a lack of content issue — it's a lack of budget issue. The key challenge is attracting marketing dollars to ultimately underwrite production costs — aka the traditional TV model.

- If the 3D programs were on the regular channels marked with a logo that says, "This program is available in 3D," loads of people would be watching.

- The real problem is that everyone's thinking in "Hollywood-sized" money, when they need to think about lower budget production and distribution. We need more realistic expectations that reflect the age of the industry.

- I agree with all of the above observations: not enough platforms, not enough content, not enough money. But some recent developments are concentrating production in fewer hands, which means less money for the small independent producers of 3D.

- There is a huge space between indie producers with low costs, and shooting everything with the AG-3DA1.

Granted, these comments come from the content creation side of the discussion, and we have not heard what advertisers, sponsors or the operators say about these issues.

These content creators are not amateurs, and they can create quality 3D content at more modest price points, so companies like DirecTV have options.

But this does not answer the business model issues that still loom. Sponsor-supported 3D programming is unsustainable, so the industry needs to offer compelling 3D content that viewers want to watch and advertisers want to support. And, I certainly agree that offering major TV shows in 2D or 3D on the same channel is the answer to wider adoption.

With the rapidly expanding base of 3D-capable TVs, the eyeballs will be there — we just need more leaders to step forward to prove that 3D can operate just like a 2DTV business. That's easier said than done, however. –*Chris Chinnock*

Olympics in 3D Update

Latin America

Pay TV service provider DirecTV and sports broadcaster ESPN have announced the first-ever 3D transmission of the Olympic Games in Latin America.

The broadcasts will be offered on the ESPN3D network exclusively to subscribers of DirectTV in Argentina, Chile, Colombia, Ecuador, Peru, Uruguay and Venezuela who are signed up for DirecTV Plus HD and who have 3D compatible television sets and glasses.

The events that will be transmitted in 3D are the opening ceremony of the 2012 London Olympic Games on July 27; the Women's Artistic Gymnastics on August 2; the Track and Field Finals on August 5; the Men's Basketball Finals on August 12; and the closing ceremony on August 12.

Canada

Adam Ashton, president of Canada's Olympic Broadcast Media Consortium, says providing coverage of some of the events in 3D proved to be too expensive. As a result, Canadians won't be able to see the Olympics in 3D.

The number of Canadians who actually own a 3DTV was another discouraging factor.

"3D is a very expensive business proposition and a tough business model that requires big investment and support by a number of different partners," Ashton said. "We did explore it for quite some time last year, but it just didn't make sense for our market at this time." *–Chris Chinnock*

Standards

ITU Promotes 3DTV, Defines UHDTV Resolutions

The international standards organization ITU (International Telecommunication Union; Geneva, Switzerland) has announced new ITU Recommendations on 3DTV that will provide much-needed tools to evaluate, make and exchange 3DTV programs. Intended to promote the further use of this format worldwide, the new recommendations are being submitted to administrations for accelerated approval.

The ITU-R recommendations focus on 3DTV program production and broadcasting in the two formats that are in use worldwide: the 720p and the 1080i/p HDTV environments. Recommendations were also agreed on the digital interfaces used in studios for 3DTV program production and on the general requirements for 3DTV.

ITU-R Study Group 6 also agreed on a recommendation for the methods to evaluate the quality of 3DTV images, which relates to three aspects or quality factors: picture quality, depth and comfort levels.

David Wood, chairman of ITU-R Working Party 6C (WP 6C), said, "These recommendations will be of great value to those who make and distribute 3DTV programs today and in the future. They will make the 3DTV world more comfortable for the media community and will surely encourage the success and further development of 3DTV."

ITU has also announced a new recommendation that represents a major advance in television broadcasting that will create an entirely new television broadcast environment with the advent of "Ultra-High-Definition Television," or UHDTV. ITU-R Study Group 6 has now agreed a draft new recommendation on the technical details for UHDTV, which is now being submitted to administrations for approval.

The ITU-R recommendation lays out the quality standards for UHDTV in two steps. The advances made with each of these quality steps are roughly similar to the step from the old standard definition television to high-definition television (HDTV). While HDTV pictures today have the equivalent of between 1–2 megapixels, the first level of UHDTV picture levels has the equivalent of about 8 megapixels (3840 x 2160), and the next level comes with the equivalent of about 32 megapixels (7680 x 4320). As a shorthand way of describing them, these are sometimes called the "4K" and "8K" UHDTV systems. Ultra-high-definition picture quality is accompanied by improved color fidelity and options for higher numbers of pictures per second than for today's television systems.

David Wood, chairman of ITU-R Working Party 6C (WP 6C), which developed the draft new recommendation, said, "This is the dawn of a new age for television that will bring unprecedented levels of realism and viewer enjoyment. It's a historic moment. Some years will pass before we see these systems in our homes, but come they will. The die is now cast, thanks to the untiring efforts of the international experts participating in WP6C."

A video on UHDTV development is available at http://youtu.be/hT2XluvAjwQ. *–Aldo Cugnini*

International Telecommunication Union, Sanjay Acharya, +41 22 730 5046, sanjay.acharya@itu.int

2D-to-3D Conversion

TandemLaunch Incubator Shows 3D Processing Technology

TandemLaunch Technologies (Montreal, Canada) has developed a very interesting business model to help incubate and launch early stage technology companies. At SID, two of its companies presented interesting new technology: Miramatrix (covered separately) and an unnamed German University that is developing some 3D image processing technology.

The TandemLaunch business model is unique as far as we can tell. The idea is for the company to work with various universities to identify interesting inventions that have commercial potential. The company then works with the IP holders to fund development of a prototype and reach out to industry and customer targets to validate the concept and get vital early feedback to be sure the product/technology fits market needs. TandemLaunch typical

funds this incubation phase with $500K to $1M in funds. It gets a return on this investment by taking an equity position in the start up and sharing in any revenues the company generates, including development contract.

So far, this sounds like a fairly typical government supported incubation model. What's unique is that TandemLaunch is funded with private capital.

Helge Seetzen, CEO of TandemLaunch Technologies, noted, "We work in partnership with the display industry and consumer electronics companies to accelerate adoption of university R&D in the multimedia space. TandemLaunch is actively shaping the display industry landscape through technology assessment, benchmarking and development in OLED, flexible displays, 3D and display interaction technologies. The interactive display market is expected to surpass $900B by 2016 with applications in virtual & augmented reality, gaming, telepresence, robotics, advertising, digital signage and automotive industries."

We missed discussing what the German University is doing at SID, so we took the opportunity to call up TandemLaunch's Rawy Iskander, VP Business Development. He said this project is to develop a hybrid 3D format approach that allows viewers to watch the content in 2D without glasses or in 3D with glasses. They are even working on a version that will support 3D without glasses.

While details of the approach were not disclosed, Iskander said the idea is to reduce the display of the stereoscopic image so that it can be viewed quite well as 2D content without glasses. This reduction in disparity is offset by adding in or accentuating monoscopic depth cue, like occlusion, perspective, size, etc. This aids those who want to watch the content in 3D get a decent 3D experience.

The approach is different and provides a compromise for both 2D and 3D viewing. In other words, it is not optimized for either but offers what they hope will be an acceptable image for both types of viewers.

This is not unlike an effect we have noticed with a technique called parallax scanning. In this capture mode, a small aperture moves in a circle inside the iris of the camera, creating slightly different perspectives of the scene, which can be used to generate a stereo pair. When viewed on a 3D screen, the content has little disparity and is quite watchable, but with glasses, a clearly noticeable 3D effect is evident.

The concept is also interesting, as it is essentially service compatible, meaning, a single channel can deliver both the 2D and 3D version probably with little or no overhead increase.

Iskander also noted the approach is being considered as a compression codec, with testing currently underway.

Finally, another start-up that TandemLaunch is working with is working on a motion deblurring technique based on a patent for 2004 from Columbia University. *–Chris Chinnock*

Rawy Iskander, TandemLaunch Technologies, 438-380-5435

2D-to-3D Conversion on Pixelworks Roadmap at InfoComm

With video processor chip technology already found in some of the top professional front projectors, Pixelworks (San Jose, CA) is now combining two key technologies to target real-time 2D-to-3D conversion. At InfoComm, the company announced it developed a turnkey reference design that includes hardware and proprietary software technologies from its bedrock PW980 image processor with analog front-end video decoder and PA136 motion engine chip solutions.

The offering will create a "minimal external component solution" that helps reduce the total Bill of Materials (BOM) cost, according to Pixelworks marketing VP Graham Loveridge. "With this reference design, our customers can quickly and cost-effectively deploy stunning 3D-enabled display solutions in a variety of applications, enabling faster time to market for products ranging from projectors to flat-screen displays," he said.

The PW980 is an ARM processor-based image processor/video decoder that includes an Analog Front-End (AFE) with proprietary video enhancement capabilities. This is complemented with the PA136 MotionEngine, a fifth-generation advanced video processor with content adaptive Motion Estimation/Motion Compensation (MEMC) that enables real-time motion adaptive 2D-to-3D conversion.

The PA136 was introduced and ramped into high volume in 2011, originally targeting improvements to low format Internet video (its "n2M" technology) with a new "simplified design" and lower cost. The combination technologies are now being used to target 2D-to-3D real-time conversion

The PW980 includes high-speed LVDS interface signaling (that helps boost EMI performance), an integrated 2D local dimming control (that helps with dynamic contrast plus power savings in LED backlight displays), and support of full 120Hz video at 1080p and WUXGA resolutions.

 "Building on our PA136 success with top-tier TV brands, we have now introduced a turnkey reference design that incorporates our exceptional 3D and industry-leading picture enhancement technologies," Loveridge said." With the PA136 motion engine combined with its PW980 image processor, this is perhaps a classic example of repurposing a tried and true video technology now taking aim at real-time 2D-to-3D conversion.

Pixelworks also has more advanced MEMC technology available to move in this direction should the need arise. The company has already launched its PA 138 targeting more advanced

high-end systems, and announced in April it's showing to top-tier TV makers its PA168 (sixth-generation) "halo-free" MEMC technology that integrates scaling and frame rate conversion in an "expandable architecture," that looks to support even higher refresh rates and resolutions, plus support for all major 3D formats (with multi-view) capabilities for AS-3D the company said.

We think the company is on the right track by expanding its value proposition to OEM TV and other device makers looking longer term toward 2D-to-3D conversion solutions. It knows that content that will drive the market transition to 3D.

So offering solutions that combine its existing chip technology, boosted by next-gen (PA168) MEMC chip development with support for AS-3D solutions going forward, it will go a long way toward positioning the company in playing a big part in this next-generation TV eventuality. *–Steve Sechrist*

YUVSoft 2D-to-3D Conversion in Paris

Word came out that YUVSoft, the Russian-born 2D-to-3D conversion software used as a plug-in in both Adobe After Effects and The Foundry Nuke, showed off its technology at the Dimension3 Trade show in Paris in mid-June.

We gave extensive coverage to the company's software approach to 2D-to-3D conversion in the May 2012 issue of the *Large Display Report* (page 38). No word yet on the state of its latest parallax correction technology the company was working on in early Spring. We have an update request into company founder Dmitry Vatolin and will pass along details as they come in. *–Steve Sechrist*

Microdisplays

TI Upgrades DLP Chipset

Insight Media had a chance to talk to Kurt Eckles, Business Development manager of DLP Display Products, at InfoComm about what was new with DLP. While Texas Instruments (Dallas, TX) didn't have any new imagers to announce, it did announce a new family of ASICs to enhance interoperability, 3D and interactive capabilities. These chipsets are intended for front-projector applications and TI expects products containing the new chipsets to arrive in late summer 2012.

In the past, DLP controllers have only directly supported side-by-side 3D format. For a DLP-based projector to support all 3D formats, the projector manufacturer had to decode other formats into side-by-side before delivering the input video to the DLP chipset. The new ASICs will support all HDMI 1.4a 3D formats, simplifying the design of the input electronics for the projector manufacturer.

The chipset is available for any of the DLP imagers for mainstream front projectors, including XGA, SVGA, WXGA, 1080p and WUXGA imagers. According to Eckles, they support all input formats up to WQXGA 120Hz. In addition to 3D, the chipset simplifies the design of interactive projectors.

"Creating a chipset that makes 3D and interactive technologies more accessible for projector developers is a major step forward for the industry,' said Roger Carver, general manager, DLP Front Projection. "This helps our customers build off-the-shelf projectors while adding new capabilities at a comparable price point that allows for global deployment while still serving unique regional needs."

For an Insight Media video of TI's Mike Guillory, click HERE.
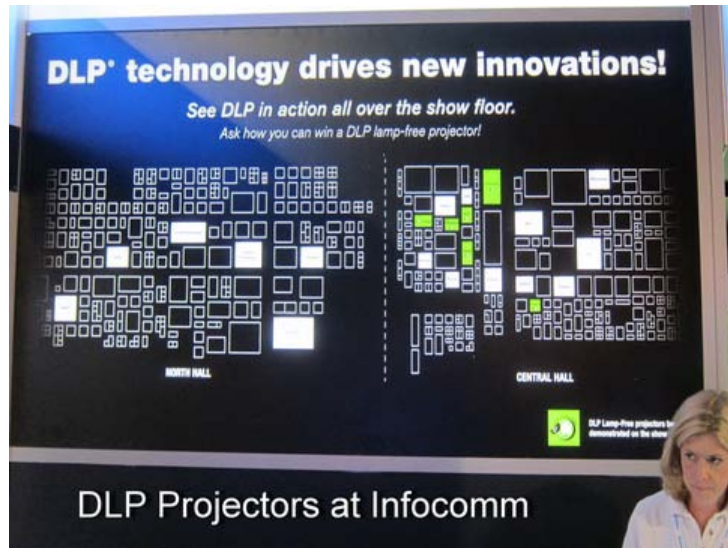
The new chipset also helps facilitate the shift to lamp-free light sources by incorporating features designed specifically for solid state deployment, enabling a wider range of manufacturing options. TI was providing visitors to its booth a map of the InfoComm show floor that showed the location of all the projector manufacturers at the show that were showing DLP projectors. The 16 booths marked in white used lamps, the projectors in the six booths marked in green were lamp-free with solid-state illumination. *–Matthew Brennesholtz*

Texas Instruments, Kurt Eckles, +1- 214-567-2586, eckles@ti.com

Education

Educational 3D Content (eS3D) Providers — Summer 2012 Update

Everywhere I go, the first question educators, researchers, manufacturers and resellers ask me about 3D in education is entirely predictable: "What kind of content is available in 3D?" Twice a year, I release a special report on available stereo 3D content available specifically for the educational market. For context, remember that 3D educational content represents a diversity of approaches and design. It comes in the six delicious flavors illustrated below, a subject discussed in a previous *LDR* article.

I started reporting my comprehensive list in January 2010, with my first report highlighting <u>seven</u> software companies producing stereo 3D content for the educational market. That's all we could find at that time.
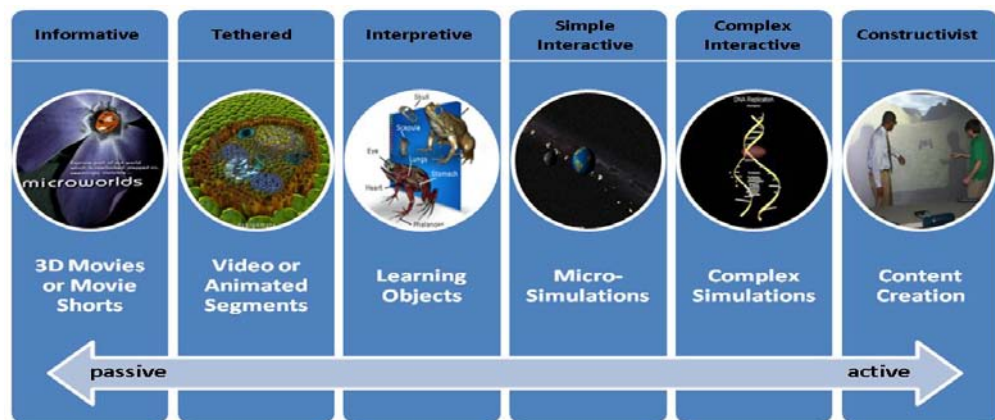
Something interesting has happened along the way. Today, two-and-a-half years later, the number of 3D educational content publishers has grown to 25. That's more than a 350% increase. And it's still growing. Another interesting development to watch is the increasing emergence of more content for the elementary classroom.

Below find my summer 2012 list of producers of 3D educational content, available first in the *Large Display Report*. These content producers are listed in alphabetic order, along with a few salient comments that are worth a careful look.

- Amazing Interactives 3D micro-simulations and learning objects in science, social studies, math and language arts. This company has released some wonderful new learning objects and resources, including some new elementary-level offerings. Unfortunately, it has taken a conservative step backwards in reducing the negative parallax of some of its resources, which I feel is a big mistake in the educational market. It mystifies me. http://reachout-interactives.com

- Cyber-Anatomy: 3D learning objects, micro-simulations, and simulations in the area of science. This firm continues to add new and rich learning objects to its palette of offerings and has recently dropped prices. Good move. And mobile device versions are on the way. http://www.cyberscience3d.com

- CyberLightning: In the content creation category, this is a stereographic 3D converter and presenter, one that is scalable from mobile to large HD screens. http://www.cyberlightning.com/products/cyberslide

- Designmate: A collection of 350 3D animations (4 minutes in length, on average), more than 200 3D interactives, 1,200 mono-videos, and 400 simulations or learning objects in the area of 6–12 math and science. Of special note is the current availability of over 200 animations now offered for secondary math alone. Another key bit of news is that it now has more than 50 new topics for the elementary level, with an expected 200 elementary topics coming out by September. Its content is extremely high in quality, favored by classroom teachers and students, and used in some of the most promising research studies to date. Content will run in an iPad environment — which can now be pushed to DLP projectors with the right settings. Designmate content will soon be available for almost

all android tablet environments, as well, since it is in the final stages of testing. http://www.designmate.com

- e-Animation Corp: 3D animations and videos in the fields of biology, chemistry, physics and geography. It offers over 120 secondary school experiments that focus on presenting dangerous, expensive or time-consuming experiments. That makes a lot of sense to educators. http://www.eanim.com/category/gallery

- Edumagic: 3D edutainment content for the preschool age child, including math, phonics, storytelling, rhymes, holidays, field trips, curiosity, science, motor skills, music, art and craft, habits and manners, and more. Preschools aren't a large market, but malls might be! http://www.3dedumagic.com/Content.htm

- EonReality: 3D learning objects, micro-simulations, simulations and content creation. Add to that a cloud-based repository for sharing and obtaining user-generated or commercially available 3D objects or scenes, and you have a formidable presence. Its new environment allows you to plug in or integrate existing PowerPoint, video and other resources within a 3D "stage" or setting. A new type of blended learning. http://www.eonexperience.com/Home.aspx

- Gaia: Secondary-level 3D learning objects, micro-simulations and simulations in the fields of science, English, geography, social sciences, design technology, math, creative arts and sports physiology. http://www.gaia3d.co.uk/3d-subjects

- Instant Effects: In the content creation category, this is a stereographic 3D PowerPoint plug in. http://www.instanteffects.com/

- JTM Concepts: 3D learning objects, micro-simulations and simulations in the areas of science, math and social studies, at all grade levels. It has some of the best elementary-level content. It has recently updated its graphics, and its screens will give other companies a run for their money. http://www.jtmconcepts.com/classroom_home.html

- K2: High-quality 3D educational movies. http://www.k2communications.com/showcat.php?cat_id=23

- NavTech: 3D learning objects, micro-simulations, and featuring a student-created content component. http://navtech3d.com

- NeoTek: 3D video segments, learning objects, micro-simulations and simulations. http://www.neotek.com/Educational_Titles.htm

- nVidia: Offers a 3D-Vision, a product that turns existing educational games and simulations into stereoscopic 3D. http://www.nvidia.com/object/3d-vision-games.html

- Passmore Labs: 3D video documentaries, such as the award-winning "Physics of Surfing" and "Microworlds." Do you like 3D bats? http://www.passmorelab.com/

- Presente3D: A creative mixture of 3D content creation and learning objects, this software is designed to "take 2D PowerPoint into the Third Dimension." It is a truly easy-to-use and offers a very flexible ribbon bar add-on to PowerPoint 2010. It enables the educator, e-trainer or student to turn their presentations into a 3D format, but more importantly to turn any graphic or chart within a PowerPoint into a 3D object that can be manipulated in

space. Hardware and software manufacturers in the 3D space should consider bundling this product with their own solutions, as it would afford another layer of advantage to their own product. http://www.presente3d.com/?kid-88TY

- Sensavis: 3D video complex simulations in the area of medicine and science with stellar visualization. And, think about this: The company is engaged in some innovative projects using 3D in patient education. That is a promising market space. See its new promo at: http://www.youtube.com/watch?v=0dL58Qfu9u4. http://sensavis.com/

- Spatial Thinking: 3D video interactives/micro-simulations in the area of secondary mathematics. These resources were designed for the classroom and produce achievement results, if you are looking for a pilot. http://www.spatialthinkingllc.com/Products.html

- Tactus Technology: 3D simulation and learning objects, featuring a stereoscopic 3D virtual frog dissection model. http://www.tactustech.com/products/vfrog/press_release.html

- Tru3Di: In the content creation category, this group produces a number of professional and medical stereographic 3D presentation software tools. http://www.true3di.com/3d-software.html

- TrueVision Systems: Visualization systems that transform optical 3D images viewed through the microscope to a digital 3D image displayed on a projection screen or monitor in real time. Working mostly with medical schools and teaching hospitals, it is now making interesting in-roads into the arena of patient education with 3D. An example would be using 3D for patient education prior to cataract surgery to improve patient outcomes and outlook. http://www.truevisionsys.com/education.html

- Virtual BioTK: 3D anatomy learning objects, with Spanish-language options. http://www.virtualbiotk.com

- Xpand: In the content creation category, a 3D plug-in for PowerPoint. It also serves as a clearinghouse for many of the other 3D content providers listed in this content update. http://www.xpand.me/education/

- 3D Hub: A library of downloadable 3D learning objects and micro-simulations in a number of content areas. http://www.3d-hub.co.uk/models.php

- 3D StereoLab: 3D video training in school safety, emergency preparedness and PSAs. http://www.3dstereolab.com/Home.html

Additional content is expected sooner rather than later from content giants Discovery, Sony and iMax. In addition, other smaller startup companies are set to enter the stage shortly. *–Len Scrogan*

2D-to-3D Conversion

VEFXi Uses E3 to Unveil Latest Conversion Tools

VEFXi Corporation (Portland, OR) was at the big gaming event, E3, to showcase two new products: the 3D-Bee Diamond Converter with the next-generation VEFXi Hornet Depth Engine, and a DiamondBlade Pro system, now in alpha testing.

The new 3D-Bee Diamond converter is aimed at consumers and brings gamers the highest quality, natural looking 3D video converted in realtime from any 2D HD video (720p, 1080i, or 1080p). The powerful Hornet Depth Engine and advanced 3D feature set allows gamers to adjust settings to a high specificity of 3D depth, volume and pop-out – creating the experience they want.

The feature set of the 3D-Bee Diamond sets it apart from any 3D game viewing and playing experience currently available. It includes six presets -- Sports, Movies, Gaming, Sports+ Movies + and Pop-out – and features an Advanced 3D Mode which provides gamers and home viewers with a range of 3D experiences through 11 steps of depth and pop-out.

"With the 3D-Bee Diamond, you can customize your 3D like you do your avatar and actually watch and play everything on your 3D television, increase the depth to feel like you're on the field while you're watching football, or increase pop-out to a point that the characters are in your living room when you're watching a movie," said Craig Peterson, VEFXi founder and CEO. "With the 3D-Bee Diamond, you finally get 3D your way."

The new 3D Diamond is based upon the VEFXi 3D-Bee Platinum real-time converter, the previous top of line conversion product from the company. It is available now for $699 in a box the size of an iPhone and consumes less than 5W.

Diamondblade Pro System Shown at E3

Insight Media also was not at E3 to see the demonstration of the new DiamondBlade Pro system, so we took the opportunity to talk with VEFXi CEO Craig Peterson about this new development program.

This is a professional level product aimed at content creators and works in conjunction with existing 3D editing programs like Avid, Final Cut, Edius and Premier. These programs can work well for adjusting the depth of certain scene and changing the depth volume or other stereoscopic characteristics. However, the playback of the changes can be an issue in 3D. Often, these are large files that can require hours or even days to render and playback in 3D. This is where the editors find out if the 3D adjustments they made are good enough or they need to be better optimized – again requiring hours or days to visualize the results.

The DiamondBlade Pro solution is an external box that provides for real time rendering of these 3D edits to greatly speed up the 3D editing process. As noted, it works in conjunction with other 3D editing programs which can smooth the depth transition between scenes, expand/contract the depth volume, or adjust the position of this depth volume relative to the
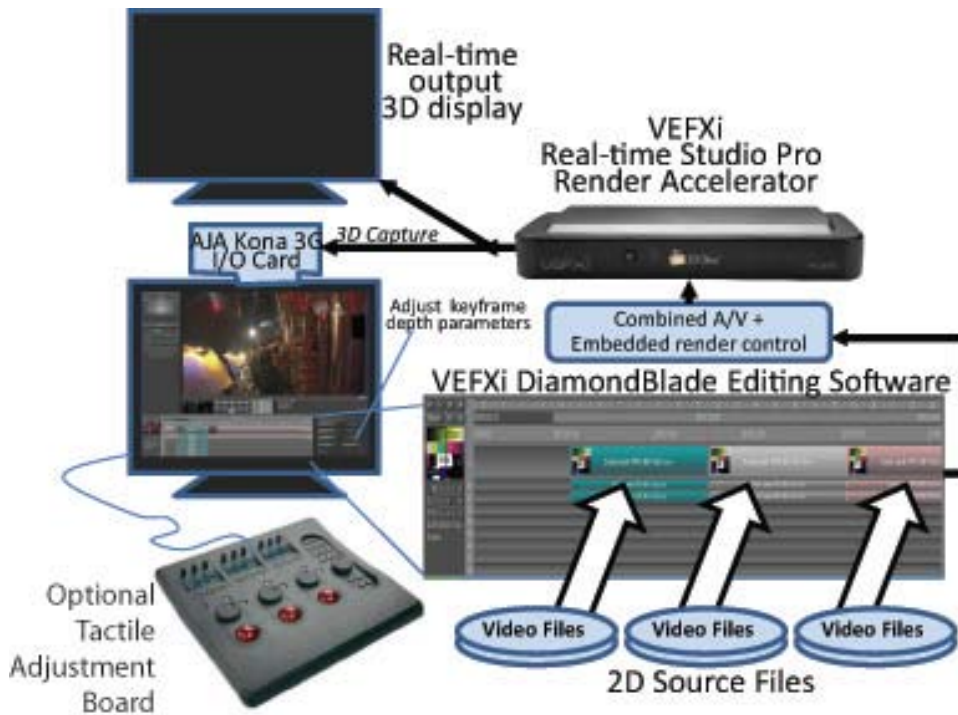
screen plane. The system works in conjunction with a $2K Kona 3G graphics card, as illustrated in the workflow graphic (see image).

The VEFXI Diamondblade lets users edit offline on a frame-by-frame basis using key frames, and play back and capture finalized 3D instantly – versus in days required by other approaches.

Peterson also told us of the development of their Ultimate conversion box, which should ship this August. He noted that the Diamond box converts 2D video to two-view stereo images in real time, but the Ultimate box will add the ability to convert stereo two-view content to multi-view glasses-free 3D content. – *Chris Chinnock*

VEFXi, Lorenzo Traina, [1] (971) 269-0000, lorenzo@vefxi.com