3D at CES: Experiencing the TV of the Future

The excitement mounts. We've enjoyed tasty morsels of information via the blogosphere about the lavish 3D demos planned for the 2010 International CES in Las Vegas. And with the pump primed by 3D content in the movies--according to the Consumer Electronics Association (CEA) 17 percent of adults have seen a 3D movie in a theater in the past 12 months -- we can't wait to take that first glimpse, almost in childlike wonderment, of how our home viewing experience is about to be changed forever.

So now, only hours must pass before CES exhibitors unveil their goose bump generators amid the aroma of newly laid carpeting and the air-filling crescendo of cinema soundtracks. As we wait there is one thing we know with certainty: 2010 is poised to be the year when consumers finally can enjoy stunning 3D experiences across multiple entertainment mediums such as gaming, still photography and, of course, movies.

With a score of next-gen innovators presenting their goods and services in the CES Experience 3D TechZone, a must-see area for the acquisitive and the inquisitive alike, and with a wide swath of glitzy attention-getters trying to draw attendees into 3D-related booths elsewhere on the floor of the Las Vegas Convention Center, the choice of where to go and what to see can be a daunting one.

How do you sort through it all? Much like horse racing fans engaged in thoughtful study of the Daily Racing Form, show-goers will find themselves with a bag full of literature poring over pages and pages of stats, claims and visitor incentives.

This wealth of information can be confusing, so to help you handicap the CES 3D derby the 3D@Home Consortium, which is dedicated to speeding the commercialization of 3D technology and content to the home, has put together this Guide to 3D at CES, featuring brief descriptions of important 3D demonstrations at the LVCC as well as a rundown of the conferences, meetings and other events of significance at the show.

First, however, there are a few things you should know about the emerging 3D for the home market as well as the 3D hardware and software platforms soon to be available to consumers.

Why This Year is Different

The consumer electronics industry has flirted briefly with 3D before, but 2010 will be different, primarily because it will break the chain of a long running drama that previously had always resulted in disappointment. For example, last year, even though companies such as Mitsubishi were marketing DLP-based rear projection TVs capable of showing 3D content, the renewed consumer interest in 3D did not translate from the Cineplex to the living room, basically because content was not available for home viewing. One could say that until now 3D for the home was as rare as "unobtainium," James Cameron's superconducting, levitating metal in "Avatar" that was, well, unobtainable.

No longer. 2010 promises to be the breakout year for the commercialization of 3D for the home, with 3D-capable flat panel TVs, Laser TVs and home theater projection systems becoming available from a number of major suppliers. As the exhibitor guide section below indicates, JVC, LG, Panasonic, Samsung and Sony will be among major CE brands unveiling 3D TVs at CES 2010.

In addition, with a recently completed 3D Blu-ray specification, the amazing 3D experience that has proven so popular in movie theaters is about to come home. As a result, many demos at CES will be utilizing 3D TV sets displaying content from 3D-enabled Blu-ray players.

Not that moving pictures in 3D is anything new. Long before Twitter, iPhone and Reality TV, 3D images were produced in the 1950s by filming every scene from two different angles, and then having the audience wear polarized glasses to create a 3D effect when the images were projected using two projectors. Subsequent 3D efforts relied on red/blue anaglyph to allow a single display solution. Today's more sophisticated 3D technologies use either polarized (passive) or shutter-type (active) glasses; active 3D glasses use a synchronized signal from the display to open and shut the LCD in front of each eye in sync with the appropriate left or right eye image frame to enable the reproduction of high quality 3D images.

3D imaging is possible because human beings use what the engineers call binocular disparity to sense depth; in plainer terms our eyes are offset from one another (the average distance from one eye to another is approximately 64mm) and as such each eye sees a somewhat different image of the same object. By employing stereoscopic vision we can absorb two slightly different images of the same data, fooling the human brain into depth perception: it decides that a picture extends out from the surface of a flat screen. Because of this many 3D systems can work their magic by creating and sending images individually meant for our right or our left eye.

There is growing evidence that consumers are ready to seize the opportunity to experience 3D at home. According to Steve Koenig, CEA's Director of Industry Analysis, CEA's consumer research shows that 3D technology has demonstrated unquestioned success at movie theatres and will emerge as part of other facets of the consumer's viewing habits. An entire generation is growing up with the expectation that movies should be in 3D, and if that's the case, Koenig asks rhetorically, why shouldn't they get the same experience at home?

Koenig adds that 3D TV is similar to HDTV in that consumers are more likely to want it once they have truly experienced it. Of those who have seen 3D lately, he reports, 60% indicated they have seen are willing to spend more on a 3D-enabled TV.

Seeing is Believing
Growth of the 3D at home business at least in part depends on the success of 3D at the box office. In all, 18 3D movies opened in 2009, but nearly three times that number – some 47 – are scheduled for release this year. Happily, even without counting the revenue from Avatar, which opened just before Christmas, film industry analysts report that box office revenue from 3D films totaled $1.3 billion in 2009—up from $307 million the previous year. Nearly every large movie studio and many smaller ones offered 3D releases in 2009 including “Up” from Disney-Pixar, “Ice Age: Dawn of the Dinosaurs” from 20th Century Fox, “Monsters vs. Aliens” from DreamWorks/Paramount Home Entertainment and Sony Pictures’ “Cloudy with a Chance of Meatballs”.

Having succeeded on the big screen, it's television's turn to take a shot at 3D and recent developments in packaged software are brightening the outlook for 3D at home. Last month, the Blu-ray Disc Association (BDA) announced the finalization and release of its “Blu-ray 3D” specification. The spec, which represents the work of the leading Hollywood studios and consumer electronics and computer manufacturers, will enable the home entertainment industry to bring a full HD 3D experience into consumers’ living rooms on the Blu-ray Disc home entertainment platform.

There is a lot to like in this spec: it allows every Blu-ray 3D player and movie to deliver full HD 1080p resolution to each eye, thereby providing not only the immersive impact of 3D but also the industry’s top resolution image quality. Moreover, the specification is display agnostic, meaning that Blu-ray 3D products will deliver the 3D image to any compatible 3D display, regardless of whether that display uses LCD, Plasma or other technology and regardless of what 3D technology the display uses to deliver the image to the viewer’s eyes.

Expected to hit store shelves in the second half of this year, Blu-ray stereoscopic 3D discs combine the crisp, high-definition images the format is known for with high-quality 3D visuals that seem to jump from the screen.

The Blu-ray 3D specification is also designed to allow PS3 game consoles to play back Blu-ray 3D content in 3D, according to the BDA.

You are in the Game
Logically 3D may well make more sense applied to a video game than to any other entertainment function: imagine playing a game with objects and characters that appear to surround you. 3D vision in gaming also helps players judge distance, contributing to the realism of action games. Already, PC gamers can enjoy hundreds of game titles in 3D when using an appropriately equipped PC and one of the 3D capable monitors. Very recent developments add the ability to play 3D games on gaming consoles and a 3D-capable TV.

Insight Media, a display technology market research firm, predicts that the stereoscopic 3D market is poised to grow from a handful of 3D-capable displays and a few thousand gamers, to an expected worldwide market of over 40 million 3D-capable displays by 2014. These and other results can be found in Insight Media’s study “2009 Stereoscopic 3D Gaming Report: A Comprehensive Analysis of S-3D Technology for Gaming.”

Recognizing the strong market possibilities for 3D in gaming, Sony has revealed plans for a firmware upgrade to existing Playstation 3 consoles to provide full 3D capability for existing games on the system by the end of 2010.

Among 3D console games to hit the market in the past year is Disney Interactive Studios' "G-Force" game for Xbox 360 and PlayStation 3. Disney uses anaglyphic 3D glasses (the traditional red and blue glasses) in this game as it does for its Wii game "Toy Story Mania," based on the Walt Disney World and Disneyland theme park ride. Another 3D game supplier, Ubisoft, chose the polarized glasses approach for its stereoscopic 3D technology in "James Cameron's Avatar: The Game" released on December 1st for the Xbox 360.

On the educational gaming front, The Federation of American Scientists (FAS) has developed a PC-based 3D video game to help teach students about cell biology and molecular science. The game, called "Immune Attack," targets students from seventh to 12th grade. Players must navigate a nano-sized robot through a 3D environment of blood vessels and connective tissue in an attempt to save a patient suffering from a bacterial infection by retraining her non-functional immune cells. In fact, new 3D-based curricula are being developed to support many education efforts as new 3D capable projectors ship into classrooms.

3D Broadcast Developments
Of the principal methods for delivering 3D content to U.S. homes, the most widespread distribution channels-- broadcast, cable and satellite--are only now approaching the 3D format definition stage. As a result, 3D broadcasts are not likely in the near future, but nonetheless there are developments aplenty in Asia and Europe as well as in the U.S.

For example, futurists and technology enthusiasts are watching pilot programs move forward in Korea and Great Britain. Recently the Korea Communications Commission (KCC) announced its intention to support 3D broadcasts in Full HD quality sometime this year with licensing scheduled to begin this month and first broadcasts expected by later this year.

Across the pond, the UK's BSkyB announced it will be launching a Sky 3D channel this year to bring sports, entertainment events and other 3D programming to its subscribers, employing a dual camera set-up to capture images for the left and right eye and distributing polarizing glasses to provide the full 3D effect.

Closer to home, the first live 3D broadcast ever to be shown on a giant video screen at a major sporting venue was unveiled last month at Cowboys Stadium near Dallas. The event, which was part training exercise and part technology showcase, involved over 80,000 fans who were given blue and red lens anaglyph cardboard 3D glasses upon entering the stadium.

It should be noted that the anaglyph (red/blue) 3D method is of significantly lower quality than 3D techniques employing passive and active glasses, however it can play a role as an "entry level" 3D that allows users to see 3D on existing 2D sets, before they purchase a new 3DTV.

Beginning with the second half kickoff of the Dallas Cowboys-San Diego Chargers football game, the 160 ft. long x 72 ft. high display that hangs from the roof of the new stadium was converted from high definition 2D to 3D for both live action and instant replays.

The technology that made the conversion from 2D to 3D possible was created by HDlogix using the company's new ImageIQ 3D technology, which it says will enable real-time conversion of any HDTV signal to 3D on any 3D-ready display (although viewers are likely to see the difference in the quality of converted-to-3D content from native 3D content).

And, if 3D is ever going to make it into viewers' homes via broadcast television there will have to be a way to get it there. Broadcasters like BSkyB are looking at so-called "frame compatible" solutions that pack the two stereo images into a single video frame, sometimes in a side-by-side configuration. In addition, the MPEG Industry Forum (MPEGIF) has formed a 3DTV Working Group that will try to sort out the most appropriate ways of transmitting 3DTV within the structure of the MPEG-4 AVC/H.264 digital protocol.

MPEGIF is presenting a Master Class on January 8th at the 2010 International CES. The MPEGIF Master Class will be chaired by Sebastian Moeritz, president of the MPEGIF and CEO of dicas, and David Price, Vice President of MPEGIF and Vice President at Harmonic Inc. Price says 3D video will be a major theme of the class, adding that the sessions will explore where TV is heading, including the transmission of 3D video, TV Everywhere and mobile broadband TV, among other subjects.

In a related development, seeking to respond to recent input from television manufacturers, the HDMI Consortium will meet late this month to add an additional 3D format to the 1.4 HDMI specifications, which already provide support for the use of 3D over HDMI connections. The addition of the new format will help to ensure the application of 3D to broadcasting, as well as to Blu-ray disc and gaming. The Consortium has stated that they are committed to resolving this issue in January and publishing a document soon thereafter.

NEW AND NOTABLE AT CES

Below, listed in alphabetical order are brief descriptions of 3D related exhibits at CES 2010:

3ality Digital
(Demonstrating live 3D broadcasts every hour in the Sony Theater Central Hall Booth 14200)
3ality Digital develops enabling technologies for digital live-action 3D entertainment, from image capture through display, regardless of viewing platform. The company's live-action 3D content can also be seen on 3D televisions in various manufacturers' booths on the show floor.

3ality Digital's systems powered the first movie shot entirely in digital live action 3D *U2*

3D; were employed for the first live 3D NFL broadcast and the first live 3D college football championship broadcast; and are currently being integrated into leading broadcast and production companies around the world.

3D@Home Consortium
(Experience 3D TechZone Booth 14844)
Comprised of more than 40 companies representing the entire 3D development channel from North America, Asia and Europe, the consortium is working to accelerate the adoption of quality 3D technology in the home by enabling an entire "system" of products that will broadcast, play, and display 3D content.

Aerial Burton
(Central Hall Booth 14746)
Aerial Burton Inc. is the first company to succeed in developing True 3D Display using laser plasma technology. By using its device, you can create 3D images in the air. Most 3D displays introduced until now draw pseudo-3D images on 2D planes by utilizing the human binocular disparity. However, many problems occur, e.g., the limitation of the visual field, and the physiological displeasure due to the misidentification of virtual images.

To overcome the aforementioned problems, Aerial Burton succeeded in developing a volumetric "True 3D Display" which can produce bright dots in the air so an audience can see 3D images in true 3D space. The display device uses the plasma emission phenomenon near the focal point of focused laser light. By controlling the position of the focal point in the x, y, and z axes, it displays real 3D images constructed by dot arrays in the air.

Analog Devices
(Analog Devices Technology Pavilion, North Hall Suite N236)
At CES 2010, Analog Devices will demo the ADV7623 HDMI 1.4 transceiver, incorporating Xpressview fast switching technology, the industry's first HDMI 1.4 interface to support 3D display resolutions. ADI will highlight the ADV7623 within several demos including a complete video solution for Home Theater platforms as well as its portfolio for digital cameras and camcorders. The ADV7623 incorporates HDMI 1.4 support for 3D TV video in HDTV formats up to 1080p.

AMD
(Grand Lobby Booth GL-8 and GL-10)
AMD will demonstrate the forthcoming Blu-ray stereoscopic 3D standard at the 2010 Consumer Electronics Show, showcasing how consumers will soon get to enjoy high-fidelity 3D entertainment once reserved only for theaters. AMD and CyberLink will jointly preview Blu-ray stereoscopic 3D entertainment for those in attendance. The new standard is one of many 3D technologies AMD openly supports, along with 3D DLP televisions, dual-panel and line interleaved 3D monitors, and is part of AMD’s initiative to further both the art of 3D entertainment, and its adoption in homes worldwide through

close collaboration with 3D technology partners, including OEMs, software developers and content distributors.

Bit Caldron
(AMD, Grand Lobby Booth GL-8 and GL-10)
Bit Cauldron will come out of stealth mode at CES and unveil a new set of active shutter glasses that are activated by an RF instead of IR or visible light sync pulse. Attendees will be able to see the glasses in the AMD booth at CES (showing movie and gaming content from PC-based platforms).

With RF, IR and visible (DLP Link) communication protocols for communication between the 3D display and the glasses all in the market, there is the potential to create confusion and incompatibility issues for consumers. However, the RF communication solution does eliminate line of sight issues with the other two methods and can eliminate some interference issues with IR remote controls and DLP Link interference from fluorescent lamps.

Bit Caldron has teamed with AMD to optimize the BC5000 glasses operation for ATI FireGL and Radeon graphics cards, which support 3D output. The glasses can also be used with 3D capable TVs as long as the TV supports the VESA 1997.11 stereoscopic connector standard.

Broadcom
(South Hall 4 Meeting Room 35679MP)
Broadcom, a global leader in semiconductors for wired and wireless communications will showcase end-to-end 3DTV at CES to demonstrate how 3D content will change the living room viewing experience and bring exciting new possibilities to home entertainment. The potential to watch 3D movies in the home has generated much excitement with studios releasing more than a dozen 3D movies in the past year.

Corel
(NVIDIA, South Hall Booth 35912)
Corel Corporation is working with partners including NVIDIA to offer a stunning 3D software entertainment experience on the PC. Building off the strengths of its Corel WinDVD software, Corel has developed a prototype 3D Blu-ray playback software application. Anticipating the upcoming 3D Blu-ray specification, this new prototype is poised to become a cornerstone of the 3D experience as exciting possibilities emerge with the expected growth of PC-driven home theater systems. Corel expects to make a 3D Blu-ray version of WinDVD commercially available later this year. Customers and partners can see Corel’s 3D Blu-ray prototype software in action at CES 2010 in Las Vegas.

Fujifilm
(Experience 3D Tech Zone, Central Hall Booth 14846)
Fujifilm will be demonstrating the new Fujifilm FinePix REAL 3D System at CES. It is the world's first three dimensional (3D) digital imaging system that captures realistic 3D still photographs and movies; providing 3D images that users can enjoy without special 3D glasses. The system includes the FinePix REAL 3D W1 Digital Camera, the FinePix REAL 3D V1 Viewer and 3D prints through Fujifilm's photo printing, gifting and sharing web site, www.seehere.com.

Fujifilm will also demonstrate the FinePix REAL 3D W1 digital camera with NVIDIA 3D Vision. NVIDIA 3D Vision is a combination of high-tech wireless glasses and advanced software that allows users to view 3D pictures and movies in full HD on a PC, as well as automatically transform hundreds of PC games into full stereoscopic 3D.

HDlogix
(Experience 3D TechZone, Central Hall Booth 14946)
HDlogix focuses on building imaging and video-based products and services. HDlogix has spent over a decade in advanced video research and holds an extensive portfolio of intellectual property, which provides unique product differentiation and underpins continuous innovation.

At CES, HDlogix will formally unveil ImageIQ 3D, demonstrating the technology by converting a live high definition broadcast to 3D in real time. HDlogix will demonstrate support for multiple 3D formats, including anaglyph, passive, active and autostereo. The company will capture live HD footage of show attendees and convert it for 3D viewing.

Hyundai IT
(Experience 3D TechZone, Central Hall Booth 15044/15045)
Hyundai IT, a leading manufacturer of 3D displays, will show its latest 3D LCD displays in 24", 32", 46" and 46" 2x2 video-wall screen sizes. Hyundai IT will be demonstrating various 3D formats displayed and viewed with polarized glasses including 2D/3D real-time video processing and the 3D HD experience on 46" 2x2 video-wall 3D displays.

Insight Media
(Experience 3D TechZone Central Hall Booth 14845)
Insight Media, a leader in emerging display market research, will be presenting its new report on 3D. Come to the booth to see this report and talk to one of the company's world-class and internationally-recognized display experts. Insight Media has provided consulting services to over 100 customers/clients. New this year is 3D Comm at InfoComm 2010, June 9-10-11, 2010, Las Vegas, NV. The program includes 3D Seminars, 3D Technology Pavilions and 3D Technology Showcases.

JVC
(Central Hall Booth 8219)
One of the most stunning 3D demonstrations at the show will be in JVC's 4K front projection theater. The company will be showing 3D content in full 4K resolution (4 times that of HD) using a pair of JVC DLA-RS4000 4K projectors.

At CES, JVC will be launching its IF-2D3D1 stereoscopic processor that converts 2D video to 3D in real time. This unit accepts a standard HDMI or HD-SDI input in HD, and provides stereo output in a variety of formats: sequential, side-by-side, line-by-line, checkerboard, anaglyph, or separate L/R signals. It will be shown with a variety of 2D input content, with the output displayed in 3D on our GD-463D10. In addition to

providing real time 2D to 3D conversion, the unit can also accept discrete L/R signals from a stereoscopic camera rig, and convert the signals to a standard that can be displayed on the GD-463D10 monitor--useful for 3D production crews.

JVC will also be exhibiting its GD-463D10 46-inch LCD monitor featuring Xpol technology for flicker-free stereoscopic images with inexpensive (passive) glasses. Several of these monitors will be in use at the booth showing a variety of content, including a station that features the FujiFilm W1 Finepix 3-D camera. The GD-463D10 is currently shipping.

LG Electronics
(Central Hall Booth 8205)
LG Electronics is introducing 3D-capable product from its video projector, LCD HDTV and computer monitor lines. The company's new 2010 video projector series includes the model CF3D, the world's first Full HD, 3D Single Lens Type Projector. Featuring a brightness rating of 2,500 ANSI-lumens and a high contrast ratio of 7,000:1 this model also features TruMotion 120Hz for smoother images – a technology previously only seen on flat panel HDTVs.

LG INFINIA HDTVs (the LE9500, LE8500 and LE7500 series) combine a slim design and thin bezel with enhanced connectivity and abundant content options. Leading the way to the ultimate home entertainment experience, the 55- and 47-inch class LE9500 sets will be LG's first 3D-ready models available in the United States.

With LG's W2363D monitor, consumers can now enjoy 3D picture quality from their home monitor, offering an extraordinary gaming and entertainment viewing experience with special glasses. The W2363D features exceptional picture quality with full HD 1920 x 1080 display resolution, Tru-Surround HD, dual HDMI interfaces and 3 msec response times making this a great fit for playing 3D games and watching 3D movies.

Magnetic 3D
(Hilton Booth 55017 in the Asian Pavilion of the International Gateway)
Magnetic 3D, a global-leader in glasses-free, auto-stereoscopic 3D displays and 3D digital signage solutions, is debuting its 2010 product line at CES on the show floor with its partner Norco Intelligent Technology Co. The company will also host an invitation only showcase at the Palazzo Hotel. The exclusive gallery showing will feature several of its newest groundbreaking technologies, including a 22" Emersa 3D Gaming Display, 22" Envolv 3D Touch Display, and Enabl3D 55" 3D Digital Signage display. Magnetic 3D will also be featuring several new software applications including VizCad, a revolutionary 3D digital prototyping and visualization software and FuzionCast, the first and only enterprise level digital signage solution for managing 2D and auto-stereo 3D content seamlessly or simultaneously remotely in a global network.

Microvision Optical 3D
(Experience 3D Tech Zone, Central Hall Booth 14744)
At CES 2010, Microvision Optical 3D will emerge from stealth mode and show the first dual-purpose 3D glasses. The glasses can be used as polarizers to separated 3D images at the theater, on laptops, TVs and monitors – and they can be used as

sunglasses when outside. The stylish curves glasses feature circular polarizers, while the frames are designed and produced by a French company using the finest materials. The glasses feature full UVA / UVB sun protection.

Mitsubishi Digital Electronics America
(Experience 3D Tech Zone, Central Hall Booth 14548)
At CES 2010, Mitsubishi Digital Electronics America (MDEA) will be announcing details for a new product that will enable consumers to more easily experience 3D content on its 3D-ready TVs.

MDEA will also be showcasing its 3D-ready technology on the LaserVue and Home Theater televisions in the in the Central Hall. LaserVue, the world's first laser-powered television, is presently available in a 65" screen size and not only delivers twice the color of many of today's HDTVs, but it also uses exponentially less power than comparably-sized LCD and plasma TVs.

Mocomtech
(South Hall 1 Booth 21763)
Mocom's Super Power Screen is the world's first concave lens-type screen optimized for use in 3D. This 3D concave projection screen uses optical lens technology to provide 20 gain (20x) brightness and retain more than 99% of high polarization. The screen has the same precise curvature as the lenses and reflects the main light of the projector to the viewers while scattering the ambient light in all directions so as not to interfere with the main light.

Other important qualities of the screen include its simulated depth and improved image resolution and contrast because of the structure of its surface, which consists of aluminum with nano-level diffusion lines and minute particles. Mocom's Super Power Screen compensates for the loss of brightness caused by polarizer and polarized glasses, by increasing the reflection of light by 20x which is 6-10 times brighter than standard silver screens. This technology provides bright images on big size screens (above 100") in high ambient light, bringing high quality 3D images to the viewers.

Nagravision
(Venetian/ Palazzo Congress Center, Level 3, Room Toscana 3601/2/3)
3D is the next evolution in the HD experience, and just as Nagravision built HD prototypes and products to drive customers towards HD solutions, the company expects to stay ahead of the curve and be the thought leader for 3D as well.

Nagravision will be showcasing its NAGRA Media Guide for 3D at CES. The company has developed a prototype user experience to determine what is the optimal user experience for 3D TV and has partnered with and met with key players in the 3D industry to provide the building blocks for the 3D-at-home experience. The company will continue to evaluate and determine the best of breed partners and integrate 3D into its existing

and future convergent products.

NVIDIA
(South Hall 4 Booth 35745MP, South Hall 4 Booth 35912, Grand Lobby GL-6)
NVIDIA will be showcasing a number of different 3D technologies at CES, all powered by NVIDIA GPUs and NVIDIA 3D Vision technology, the industry's coolest 3D stereoscopic solution for the home.

On display at the booth—as well as in the Grand Lobby—NVIDIA will be showcasing Blu-ray 3D playback on brand new 1080p, 120Hz PC LCDs from Acer, Alienware and others. Also shown: new software-based Blu-ray 3D players, including Cyberlink PowerDVD, Arcsoft TotalMedia Theater 3 and new 3D Vision-ready notebooks from ASUS and others. Hot new games will be presented in full 3D, including Metro 2033, Avatar, Just Cause 2, and Dark Void.

Panasonic
(Central Hall Booth 9405)
Panasonic will be showing four Full HD 3D Plasma HDTVs, in 50", 54", 58" and 65" screen sizes. All feature Full HD 3D (1080p resolution for both the right and left eye) In addition, Panasonic will be showing a 3D Blu-ray player. These will be available in the April-May time frame. The company encourages CES 2010 attendees to stop by the booth to experience Full HD 3D in the Panasonic 3D Theater.

RealView Innovations
(North Hall Booth 5621)
3D is a current rage, but the realities can disappoint: goggles, queasy feelings, expensive hardware, limited software. In contrast to software-focused optical solutions, RealView Innovations Ltd. has concentrated on developing specialized optical components and transforming them in new ways during the assembly process itself. The result is a breakthrough called "Depth Enhancement Technology" which consists of passive optical displays that give a totally new visual experience. Depth cues in the existing 2D content (including all the 3D cues in sophisticated digital graphics) take on new life, and give the brain more to play with.

RealView Innovations is featuring three examples of its new technology at CES 2010. A game device accessory, the V-Screen, enhances the Sony PSP game experience. It's versatile (it fits PSP series 1000, 2000, 3000 and "slim" models), and it comes with a rugged protective case. Two Deep Screen accessory screens are also featured, to fit a 22" or 23" wide-screen display, or a 42" television or display. As with the V-Screen, viewers will immediately experience an enhanced depth experience, and therefore have a more engaging, involved gaming experience.

Samsung
(Central Hall Booth 11026)

At CES 2010 Samsung will continue to innovate and impress with its most extensive array of LED TVs to date; half of the LED TV line will have 3D capabilities. Samsung's complete 3D offering also includes a Blu-ray player incorporating 3D technology.

Some examples: Samsung's UNXXC900 is the world's slimmest fully integrated LED TV with the first on-board TV display touch-screen remote control. It enables viewers to experience both native 3D content as well as 2D content rendered in 3D with Samsung's new auto-conversion system. Samsung's LED 7000 Series is a fully-featured slim LED TV with built-in 3D technology including 3D processor and emitter and a 240Hz frame rate technology for an outstanding theater-like viewing experience at home. And the Samsung PNXXC7000 is a 1080p Plasma HDTV featuring a built-in Digital TV (DTV) Tuner, High-Definition 3D Processing, and Internet@TV IPTV connectivity.

Sensio
(Experience 3D TechZone Central Hall Booth 14745 and South Hall 1 Booth 20931)
Sensio develops and markets stereoscopic 3D digital compression, decompression and display formatting technologies. Its flagship technology, SENSIO 3D, allows the high-quality distribution of 3D content through conventional existing 2D broadcast channel networks (cable, satellite and/or IPTV) and playback on any 3D display device, including plasma TVs, LED/LCD HDTV's, PC and glass-free 3D displays, as well as home theater and digital cinema projectors.

SENSIO 3D is compatible with existing standard DVD and Blu-ray players as well as game consoles including Xbox and Playstation 3. The company's latest 3D technology is fully compatible with the recently announced Multiview Video Coding ("MVC") specification.

Booth opportunities include playing Ubisoft's Avatar: The Game on an Xbox, ordering films or sports on a 3D video-on-demand display, watching a concert on-line thanks to 3D IP streaming and watching an HD 3D movie on Blu-ray disc.

Sisvel Technology
(South Hall 1 Booth 20537)
Sisvel Technology, a subsidiary of the Sisvel Group, and 3DSwitch, a startup devoted to 3D stereoscopic imaging, are collaborating on the development of 3Dready, a new method for automatic 2D/3D format recognition and conversion that greatly enhances your 3D TV viewing experience.

3Dready allows seamless transition from the current 2D broadcasts to 3D. Thanks to 3Dready, it is no longer necessary to modify 3D TV setups from the menu each time you switch from a 3D to a 2D channel. Furthermore, 3D is guaranteed to function on 2D TV sets (in 2D view) as long as the decoder has been uploaded correctly.

3Dready doesn't replace existing 3D standards for broadcasting and display, but rather unifies them under a single roof by tagging video content and converting the format as

necessary. In addition to 3Dready, Sisvel Technology and 3DSwitch also have plans to develop and launch new technologies related to stereoscopic 3D imaging and broadcasting.

Sony
(Central Hall Booth 14200 and 15000)
Sony is showcasing new 3D BRAVIA HDTVs and Blu-ray Disc devices. In total, Sony will launch 9 new models that will playback 3D content and two new Blu-ray devices including a stand-alone single disc player and a 5.1 Blu-ray Disc integrated home theater system.

TDVision
(Experience 3D TechZone and Central Hall Booth 14944)
TDVision Systems is the world's leading innovator in Full HD 3D technology for acquisition, encoding, transmission and display. TDVision will be showing the award winning 2D+Delta system of stereoscopic coding as well as Magnum Semiconductor DXTPro chipsets encoding real time H.264 3D at full resolution.

Technicolor
(Experience 3D TechZone Booth 14448 and Central Hall Booth 13219)
Technicolor will be demonstrating an array of products and services for 3D to the Home. Genuine 3D @ Technicolor means the most comprehensive slate of 3D services that reach consumers in theaters, at home and on the go. Demonstrations include advanced 3D authoring for Blu-ray, new BD-Live feature developments, automated 3D subtitling creation, 3D playback on a PC, and auto-stereoscopic content delivery on a mobile phone. Broadcast 3D will be shown via a Set Top Box using an HD channel. Technicolor's theatrical 3D on film solution will be presented as well.

Technicolor delivers an interactive demonstration experience that allows you to be immersed in 3D like never before. Learn more about what Technicolor is already doing today to enhance the 3D experience from production to your living room.

THX
(Renaissance Suites and SENSIO South Hall Booth 20931)
THX Ltd. will be demonstrating its THX Media Director, which simplifies the entertainment experience, allowing TVs and other playback devices featuring 3D technology to automatically configure the appropriate 2D and 3D settings when paired with THX Media Director-enabled content technology.

XpanD
(Hilton Hospitality Suite 28-132)
XpanD, the leader in active-shutter 3D glasses for cinema, video, gaming and other applications, will display its new X102 and X103 active stereoscopic glasses. The X102 Series DLP-Link Active 3D glasses are compatible with all projectors and televisions using DLP-Link 3D communication. They feature an active-shutter design based on XpanD's revolutionary, patented "pi-cell" system, in which a specialized, fast-switching liquid crystal cell provides rapid, stereoscopic shutter action to deliver alternate right- and left-eye images. Features include rugged construction with built-in flex points, a lightweight and stylish form factor that can be comfortably worn with eyeglasses, a modular design to accommodate both adults and children, environmentally friendly diodes, and a power-saving auto on/off mechanism.

XpanD's X103 3D glasses utilize a small emitter and are compatible with LCD TV's. These active glasses can also be used for gaming in conjunction with your computer and a 3D ready display.

CONFERENCE PROGRAMS AND MEETINGS

Thursday, January 7
Entertainment Technology@CES
10:00 a.m. – 4:30 p.m. – N260, North Hall, Las Vegas Convention Center
3D for the home, over-the-top services and mobile distribution of content are some of the most pressing issues and opportunities facing the entertainment industry. The Entertainment Technology Center at USC brings together the major Hollywood studios, consumer electronics and technology/services companies to collaborate on solutions for next-generation content delivery.

10:00 am. - 10:15 am	**Research Report: 3D TV Consumer Trends**
Presenters:	Shawn DuBravac, Chief Economist, Director of Research, Consumer Electronics Association

David Wertheimer, CEO and Executive Director, Entertainment Technology Center @ USC

10:20 am - 11:00 am **3D Creatives Panel-Learning on the Frontlines**
Moderator: Buzz Hayes, Senior Producer, Sony Imageworks
Panelists: Ted Kenney, Stereographer, 3ality
Phil McNally, Stereographer, Dreamworks
Steve Schklair, CEO, 3ality Digital
Habib Zargarpour, Senior Art Director, EA

11:20 am - 12:10 pm **3D Distribution-Delivering 3D to the Home and Beyond**
Moderator: Wendy Aylsworth, SVP Technology, Warner Bros.
Panelists: *David Broberg, Vice President, Consumer Video Technology, CableLabs*
Benn Carr, VP New Technology, The Walt Disney Company
Mark Ely, Executive Vice President of Strategy, Cinema Now/Sonic Solutions
Walt Husak, Senior Manager, Electronic Media, Dolby
Brian Lenz, Director, Product Design & TV Product Development, BSkyB
Chuck Pagano, EVP Technology/CTO, ESPN

12:20 pm - 1:10 pm **Emerging 3D Devices-Avoiding the Format War**
Moderator: Richard Doherty, Co-founder and Director, The Envisioneering Group
Panelists: Josh Greer, President, RealD
Christos Lagomichos, Executive Vice President Home Business, NXP Semiconductors
Nandhu Nandhakumar, SVP Advanced Technology, LG Electronics
David Naranjo, Director, Product Development, Mitsubishi Digital Electronics America
Eisuke Tsuyuzaki, CTO, Panasonic

Thursday, January 7
3D Hope or Hype
1:30 – 2:30 p.m. N256, North Hall, Las Vegas Convention Center
3D has enjoyed a resurgence in theaters with movies such as Monsters vs Aliens leading the way. But what about 3D at home? Which, if any, of the competing technologies will prevail, and how does today's 3D differ than the 3D fads of the past?

Moderator: Carolyn Giardina, Freelance Columnist, The Hollywood Reporter
Panelists: Anthony Bailey, Vice President of Emerging Technologies, ESPN
Rick Dean, Chairman, 3D @ Home Consortium
Brian Lenz, Director, Product Design & TV Product Development, BSkyB
Ahmad Ouri, CMO, Technicolor
Eisuke Tsuyuzaki, CTO, Panasonic

Friday, January 8
3D@Home Meeting
7:30 – 11:30 a.m. Las Vegas Hilton Rooms 1 and 2
At this meeting, there will be updates from the 3D@Home Consortium Steering Teams and various standards organizations around the world that are looking at defining 3D requirements. The meeting will end with a roundtable discussion on the direction of 3D, where the challenges lie and the opportunities for overcoming them**.** Pre-registration is required! To reserve a seat, please contact: Heidi@3Dathome.org.