LCD TV Association

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“LCD TV Matters”

Volume 4, Issue 2

"A Great TV in Every Room"

Contents

Chairman's Corner: CES 2012…

by Bruce Berkoff

This year's CES'12, was both more of the same (bigger, better, more affordable LCD TV's) and much different (various paths to the future, touted by many, most if not all of which will prove to be wrong), but it was certainly crowded with people and well-represented by the global brands of LCD TV, new and old (including folks like Panasonic/Viera, which has quietly begun to ship even more LCD TVs then they do PDP/Plasma's, but do not like to be reminded of this little fact, even though they make a very nice LCD TV!).

For the "Sharp"-eyed among us, we could see what was called the "world's first 8K LCD" (which is 8K by 4K versus Full HD which is 2K by 1K), as shown in Figure 1. So 8K is thus 4 times as much information in both the height and width as Full HD.

Nearby, at the LGE booth were a couple of Ultra HD 84-inch 3D screens from LGD (which is 4K by 2K, or twice as much in each directions as Hull HD) as shown in Figure 2, which looked great in person with their FPR glasses, but they are a bit hard to look at here without the nice lightweight passive glasses that went with them. In fact LGE's booth had tons of those glasses to use as you entered their booth, where they had the biggest # of 3D display I ever saw, as shown in Figure 3. People stood around and watched the customer LG Cinema 3D content video clip loop around, while wearing the comfortable passive 3D FPR glasses, and often actually clapped at the end. LGE's booth at this year's CES'12 was one of the nicest I ever saw, and the huge wall of about 120 3D LCD TVs at the front entrance had a lot to do with that! (many people have posted video clips of this on YouTube, if you missed it, check it out!)

Figure 1:Sharp's 8K LCD (7680x4320 pixels); Figure 2: LGE's 84-inch UltraHD 3DTV

At another nearby booth, a completely different view than this linear progression toward bigger and better LCDs was shown. As we can see in Figure 4, TCL had a "virtual holographic" 3D TV on display, though I have my personal doubts that we will be seeing any high quality messages from Princess Leia anytime soon. This relative new comer from China owns both the RCA and Thompson historic TV brands as well, but has the dubious marketing opinion that promoting their current red and white TCL logo makes more global sense, which is of course their right, but the same conclusions might be reached about their take on future display technology at the moment. I actually used to know some of their folks still doing lots of LCOS projection TV research, not too long ago, so they certainly have the many bases toward the future of displays covered, rather than focusing all their wood behind one arrowhead, as Scott McNealy use to say, but that too is their right, and I guess I admire their breadth of visions in the display space.

Figure 3: LG showed off an impressive array of 3DTVs; Figure 4: TCL featured a "virtual holographic" 3DTV

A more common theme throughout the show for TVs in our present and near future, were the "Smart" and "connected" TVs themes, embraced by almost every maker, from Samsung to Vizio, and Sony to LGE, and Toshiba and beyond. In fact, the only good use I ever saw Panasonic make of their Viera sub-brand name is shown in Figure 5 in their "Smart Viera" sign, for their Smart "TV" (I happen to think Panasonic is a great brand name, and one they should embrace in the USA and beyond, not try and sub brand at all in the Toyota/Lexus model, but they put the T and the V to good use here). Everyone was showing off various software interfaces to the connected home of the future, which we can have today, from every major brand, my main wonder is how many better features might we someday see if and when a true and complete AppleTV makes it to the marketplace? Certainly, many folks are not just waiting around, but getting every brand under the sun to join them in various home entertainment offerings and making up many new names to help brand their efforts as well, like the "Allshare PC software" and service and the "Smart Hub" gateway interface, shown here in Figure 6 from the largest TV brand at the moment, Samsung.

Figure 5: Panasonic cleverly linked the "Smart TV" concept with their Viera brand name; Figure 6; Samsung shows off their "SmartHub home entertainment menu

And while many were showing various twists and turns common in the display space to predict the future uniqueness of their TVs of tomorrow, a knowledge of the science and the display supply chain might be useful in handicapping their future (not unlike it was with the demos of a Candescent's thin CRT, or FED displays, of 1998).

This year, I was reminded of this by Sony's crystal TV demo, one of a full pixelated LED display, which was not unlike the old Brightside Technologies (which was bought by Dolby for their pixelated backlight HDR-high dynamic range functionality back in the 2007 timeframe) demo, but here in full color RGB LEDs rather than just a greyscale BLU. We shall see if they ever decide to sell any, but I am doubtful of the ROI for both their supply chain and customers. A more commonly held glimpse of the future was shown by the 2 large Korean companies, each with a 55-inch OLED TV demo announced at the show, such as that shown here in Figure 7, which was called by LGE, "the world's largest 3D OLED TV 55-inch". I know many folks remain excited by the promise of OLED in the displays of the future, but I think it will be both very expensive and in small volume for quite some time, again due to the realities of the supply chain (details in a future column perhaps) and also the lessening benefits for the consumer vs. the high end LED LCD TVs of today, and they get thinner, brighter, and lower power and better looking every year as well. As with many views of the future, only time will tell! (but consumers in the flat TV space will only win no matter what, exciting times indeed).

Figure 7: LGE's 55-inch OLED 3DTV

Bruce Berkoff has a long history and a wealth of global experience in the technology industry, having held key marketing (CMO) positions at several leading display and solar related companies around the world. As Chairman of the LCD TV Association his charter is to help "inform, promote, improve, and connect" the entire LCD TV supply chain and their related ecosystems, and remains an active speaker in the industry. Bruce is also currently the CMO (Chief Marketing Officer) of CBRITE Inc., residing in Asia, and was previously the CMO, and strategy officer, of the Energy and Display Systems group at Applied Materials (the world's factory equipment leader in display, solar, and semiconductors), involved with their display, solar, LED, OLED and battery products (ranging from PECVD, PVD, to MOCVD, etc). Prior to that he was CMO of Ascent Solar, CEO of Enuclia Semiconductor and, for over 6 years while living in Seoul, South Korea, Mr. Berkoff was the EVP/CMO of LG Philips LCD (today, LG Display, a global leader in TFT LCDs), helping to launch new flat display categories like wide aspect notebooks and monitors and the entire LCD TV industry, leading their efforts globally from product planning to product marketing and market intelligence (He later served on LGD's BOD as well).

Before that, Mr. Berkoff brings many years of experience in the high tech arena, having held various Silicon Valley-based executive roles with companies such as Philips Components, UMAX Computer Corp., Radius and Supermac. He is well-known for his visionary keynote addresses, panel chairmanships and other roles at display and electronics industry events, including the Symposium on Information Displays (SID) Business & Investor Conferences, USDC (US Display Consortium) Conferences, DisplayForum Europe, HDTV Forum, Asia SID (ASID), EuroDisplays (ESID), the U.S. Flat Panel Display (US FPD) Conference, the Flat Information Display (FID) Conference and the Consumer Electronics Show (CES) in Las Vegas, as well as moderating sessions and panels at marketing forums by Frost & Sullivan, etc. Mr. Berkoff holds undergraduate and graduate degrees in physics and biophysics from Princeton and the University of California, Berkeley, respectively, and also has display-related patents both granted and pending in the U.S. and China. He has sat on various related public company BODs over time, such as LG Display (LPL), InFocus (INFS), and Unipixel, amongst others.

LCD TV News

compiled by Veritas et Visus

Everything you ever wanted to know about Visual Display technology

The *Handbook of Visual Display Technology*, a four volume, over-2600 page book, is the ultimate reference library, and was just published by Springer-SBM and Canopus Academic Publishing. This comprehensive reference work covers all aspects of the science and technology behind displays, from the fundamentals of optics, vision and color science, through electronic imaging, processing and manipulation, display driving, TFTs and materials science, flexible displays and touch screens, display metrology, and concludes with a section on display markets and economic factors. Key sections are dedicated to specific display technologies: emissive displays including PDPs, LEDs and OLEDs; paper-like displays including electrophoretics, electrowetting, electrofluidic and MEMS; 3D display systems including stereoscopic, autostereoscopic, electronic holographic and volumetric displays; mobile displays, microdisplays and their application in projection and head-worn displays. Liquid crystal displays are extensively described in a large section which covers the fundamentals of LC phases and structures, their physical and optical properties, LC materials for devices, LCD technologies (including TN and STN, smectics, IPS, VAN, cholesterics, bistable LCDs and PDLCDs), backlights and LCD processing and testing.

The Handbook features contributions from over 150 leading display researchers across industry and academia, coordinated by an international Editorial Board and led by three Editors-in-Chief: Janglin Chen (ITRI, Taiwan), Wayne Cranton (Nottingham Trent University, UK) and Mark Fihn (Veritas et Visus, USA). It is extensively cross-referenced throughout, and each chapter includes a section on likely future trends and developments, a full reference list and suggestions for further reading. A unique offering in this field, the Handbook will be a valuable resource for anyone involved in the science and technology of displays, from graduate students through to academic and industrial researchers and engineers. Price: $1100 (print only or e-reference), $1350 (print and e-reference). For further details: http://www.canopusbooks.com/archives/01639

NEC Display Solutions improves V Series large-screen displays

NEC Display Solutions of America announced three new models to its commercial-grade V Series large-screen display product line. The 46-inch V462 will replace the V461, and the 46-inch V462-AVT and 65-inch V651-AVT with integrated tuners are new to the product line. Designed for extended use in retail, restaurants, indoor venues, training facilities and corporate boardrooms, the V Series includes full 1080p high-definition resolution, built-in low-profile 10-watt speakers, and a built-in expansion slot that allows for seamless integration of NEC accessories, third-party components and Open Pluggable Specification (OPS) products. Additionally, the new DVI loop-through option allows customers to pass a digital signal from one device to the next, thereby eliminating the need for additional hardware, such as a DVI daisy chain module. The V462, V462-AVT and V651-AVT also include popular features such as NEC's TileMatrix technology for building video walls up to 100 displays, a real-time scheduler to power on/off the display at a specific time, and remote diagnostics to monitor and control the display from an off-site location. http://www.necdisplay.com

DNP's new chip corrects contrast ratio of full-HD video in real time

Dai Nippon Printing (DNP) has developed a chip that can correct the contrast ratio of full HD video in real time. The chip, DT013150, is targeted at imaging devices such as surveillance cameras, automotive cameras and camcorders as well as display devices including mobile devices, digital signage and projectors. While the DNP's former product supports still and moving images with a pixel count of 800x480, the new product supports a pixel count of up to 1920x1080 at a frame rate of 60fps. The company started sample shipment June 6, 2011, planning to shift to volume production in October 2011. When the contrast ratio of a dark area is corrected with the former product, the noise components of a movie are emphasized, sometimes showing spots on the screen. To solve this

problem, the new chip removes noise components before correcting contrast ratio. For the correction of contrast ratio, Apical Ltd's technology is used as in the case of the former product. Because application specific integrated circuits (ASICs) are used for the correction, the real-time correction of video can be conducted even with mobile devices having CPUs whose processing capabilities are limited, DNP said. The maximum pixel frequency that the DT013150 can process is 150MHz. http://www.dnp.co.jp/eng

Before (left) and after (right) correction

Planar expands line of slim 82-inch professional LCD displays

Planar Systems introduced a new version of its slim-profile Planar d82L LCD display designed for corporate environments, small-scale control rooms and public venues for digital signage. The Planar d82L with AccessChoice design is the first 82-inch display to offer rack-mountable electronics, along with a broad selection of inputs, landscape or portrait orientation and superior visual performance. The first product in the Planar d82L line debuted in February. The Planar d82L with AccessConsole houses the electronics above the screen, making it ideal for digital signage in high-traffic, public spaces where convenient and adjacent storage is a requirement. Planar developed the new AccessChoice option to meet different demands from system integrators, and their end-user clients, looking for a large-screen, slim-profile panel that offers the freedom to select the location of the rack-mounted components and the expanded capability to connect to a wide variety of inputs. The electronics rack can be located as much as 80 feet from the LCD, expanding placement options. The sleek, logo-free panel can be mounted in landscape or portrait orientation, and adapted to different environments with an optional FramePlate dual-color frame with rounded edges. The thinnest 82-inch LCD on the market, the Planar d82L with AccessChoice minimizes obstruction without adding the expense of recessing the display within a wall or housing. A mere 3.9 inches deep, it is the only 82-inch LCD that meets rigorous Americans with Disabilities Act (ADA) accessibility guidelines for building and facilities. The Planar d82L with AccessChoice offers a full array of connectivity options, including HDMI, VGA, DVI In/Out, Component Video and HD-SDI. Built-in network and RS-232 controls provide remote access and reporting on display operations. Redundant power ensures uninterrupted operation if the primary power goes down. The rugged, industrial bezel and anti-reflective (AR) protective glass help prevent physical damage to the panel, while the distributed, off-board electronics reduce the buildup of potentially destructive heat close to the panel. Further, the display's 600 nits of brightness helps deliver full-HD picture quality, even in rooms with high levels of ambient light. http://www.planardigitalsignage.com

NHK and Sharp co-develop 85-inch super high-vision LCD display

Japan Broadcasting Corp (NHK) and Sharp Corp announced that they have developed an 85-inch LCD display compatible with Super High-Vision (SHV), or a pixel count of about 33 million (7,680 x 4,320). The pixel pitch and brightness of the 85-inch LCD display are 0.245mm and 300cd/m^2, respectively. It can display one billion colors

(red, green and blue x 10 bits). It shows 7,680 x 4,320-pixel SHV video on the screen at a rate of 60fps by using 16 HDMI cables. The LCD display was prototyped at Sharp's production line for large LCD panels. To develop the display that has 16 times higher pixel count than existing TVs, Sharp utilized all the technologies that the company has been developing and introduced new technologies. One of those newly-introduced technologies is what the company calls “low-load wiring technology”. To transmit 7,680 x 4,320-pixel video signals to the panel without delay, Sharp employed a wiring material and wiring structure that are different from those used for existing TV panels. Sharp employed the “UV2A” photo-alignment technology, which has already been introduced to its second Kameyama plant and Sakai plant, as well as a direct-lit LED backlight using red, green and blue LEDs as light sources. Though the color gamut and contrast ratio of the new LCD display were not disclosed, the company said that they are higher than those of existing TVs. NHK has been engaged in the research and development of SHV as a "super-high resolution video system," which exceeds the current digital broadcasts, since 1995, aiming to commence test broadcasts in 2020. Also, it plans to start commercializing 3D video based on the integral photography (IP) method in 2030. http://www.nhk

The 85-inch LCD display with a pixel count of 7680 x 4320

Samsung showcases super 4K 3D HDTV

Samsung showed an 8-million pixel, 70-inch HDTV with 4000x2000 resolution. The solution lies in shrinking pixels and using better transistors. In most cases, manufacturers can’t miniaturize pixels because the current silicon transistors can’t conduct electrons fast enough to work with miniaturized parts. Samsung uses metal oxide transistors, which conduct electrons quickly. Also the implementation of these metal oxide backplanes is inexpensive and is one of the few – IGZO (indium, gallium, and zinc) – that work with current technology. Current HDTV video comes in 1920x1080 or 1280x720 pixel resolutions, depending on whether it's 720p or 1080i/1080p, so 4kx2k will be the next step. http://www.samsung.com

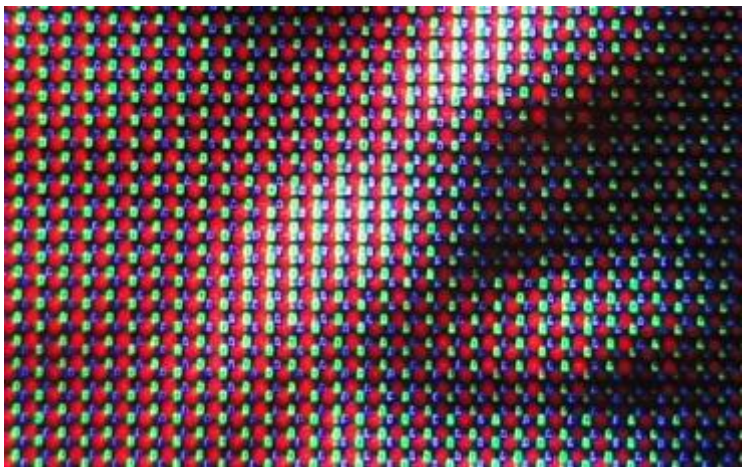
AirTies partners with Quantenna to deliver wireless HD video streaming

AirTies, the wireless networking and set-top box vendor, is partnering with Quantenna Communications, a leader in ultra-reliable Wi-Fi networking for whole-home entertainment, to build high definition (HD) video streaming solutions for the home with unmatched range and performance. The state-of-the-art wireless video performance of Quantenna’s 802.11n 4x4 MIMO chipset combined with AirTies’ MAC-level distribution software enables solutions that are capable of flawlessly delivering multiple simultaneous HD video streams in the home through as many as three concrete floors. Quantenna’s silicon is the highest performing Wi-Fi solution on the market, with the ability to distribute multiple video streams at 1080p-120, 1080p-60 and 1080i resolution through several walls and over long distances. The company’s QHS7xx 4x4 MIMO 802.11n chipset delivers up to 600Mbps of bandwidth throughout the home, and enhances coverage when connecting to non-4x4 MIMO clients such as iPads or 2x2 and 3x3 MIMO clients that are often found in laptop computers. Quantenna’s powerful silicon combined with AirTies’ video distribution technology overcomes typical problems traditionally associated with wireless video distribution, such as lost packets, jitter and latency. The chipsets operate in the 5GHz frequency band to avoid interference, and utilize dynamic digital beamforming along with channel management to regularly scan all available channels for noise, interference and traffic and then select the optimal route for interference-free multi-channel, HD video streaming. http://www.airties.com http://www.quantenna.com

Sharp shows off 8K prototype television

At IFA, Berlin Sharp showed off its Super Hi-Vision 8K, 85in LCD TV, developed in collaboration with the Japanese broadcaster NHK. Sharp points out in the video below that currently there's no content to support an 8K4K display. As it stands now, Sharp had to use a special camera in order to capture compatible footage, and supposedly a special "recorder" to store the footage and pipe it to the display. Unfortunately, Sharp wouldn't specify the actual size of the stored video files, but it's certainly not trivial to manage so much data. *Trusted Reviews* had this to say about the viewing experience:

"The quality of the native 8k4k material on Sharp's screen almost defies description. You could see levels of detail in people's faces, the ground, the tree, or actually any part of the image that the event being shown felt so tangible you felt you could just step forward and join the madness. Never before, in other words, has the idea of HDTV giving you a 'window on the world' been so accurately realized."



Sharp's prototype TV measures 85-inches at 7680x4320 – 16 times higher than current HDTVs. In terms of pixel density, the 33-megapixel display can claim only 104 pixels per inch – about what most people enjoy on their desktop today. In addition to the high resolution screen, the prototype TV boasts enhanced audio – at 22.2 surround sound.

Toshiba introduces 55-inch 3840x2160 3DTV

Toshiba has taken the wraps off a 55-inch, 16:9 ratio LED backlit TV with glasses free 3D capability and Quad Full HD resolution (3840x2160 pixels). Billed as the world's first large-screen glasses free 3D TV, the 55ZL2 is designed to allow several viewers to watch 3D content from different positions. Its CEVO-ENGINE calculates multiple wide-angle viewing zones in front of the lenticular screen and face tracking operated by the remote control is used to detect the viewers' actual positions and optimize the nine viewing zones. The CEVO-ENGINE also handles Auto Calibration which Toshiba says achieves "studio level picture quality" and personalized settings – including the volume level you last had the TV set to – can be stored for up to four users. Content can be recorded to an external hard drive via USB, SMART-TV functions allow access to Toshiba's Places online platform, Resolution+ converts lower res formats into Quad Full HD resolution and if you have an iPhone, you can download an app and throw the remote control away. The 55ZL2 can also display 2D content at the Quad Full HD resolution. The Toshiba 55ZL2 will be released in Germany in December 2011.

Silicon Image introduces high-quality video processing technology

Silicon Image announced its new family of high-quality cineramIC video processing IP cores, ranging from scalers and deinterlacers to video enhancement solutions such as noise reduction and edge enhancement. These IP cores are targeted for integration into digital video system-on-chip (SoC) designs to deliver optimal image quality for consumer electronics (CE), professional video processing, surveillance and medical imaging devices. Silicon Image's new cineramIC video processing IP cores can be used in a variety of products where high-quality video and digital image enhancement is required. Adaptive scaling and deinterlacing IP cores modify the format of the video stream to compensate for differing video content formats and display resolutions. In many HD applications, low resolution compressed video must be decompressed and scaled up to the higher resolutions of today's DTVs and displays. This can create noticeable image artifacts such as undesirable jagged edges on shapes and halos around text. Silicon Image's video smoothing, detail and edge enhancement and mosquito noise technology help reduce the artifacts created by digital video scaling and compression. http://www.siliconimage.com Chip designers can choose from a variety of processing blocks, which include:

Scaler IP Cores:

- Adaptive Scaler – Scales video to higher/lower resolutions while preserving image detail and suppressing ringing artifacts in graphics content.

Video Enhancement IP Cores:

- Mosquito Noise Reduction – Removes mosquito noise present along object edges in compressed digital images.
- Detail and Edge Enhancement – Sharpens image edge boundaries and improves fine detail.
- Video Smoothing – Removes the jagged edges which are caused by digital compression, scaling artifacts, poor-quality deinterlacing, or resolution limitations in digital sampling of an image.

Deinterlacer IP Cores:

- Precision Deinterlacer – Converts interlaced video into the progressive image quality demanded by today's high-resolution displays by eliminating many of the artifacts found in common deinterlacers to produce a smooth image free of artifacts.
- Progressive Reprocessing (PReP) – Recovers the original interlace signal from a progressive video data that has been previously deinterlaced by a poor quality deinterlacer to help significantly improve picture quality provided by the Precision Deinterlacer.

PacketVideo: New Twonky app beams videos from tablet to TV

PacketVideo announced its Twonky Beam Browser video streaming app is now available for iPad and Android tablet users. With Twonky Beam Browser, you can browse Web videos on your tablet and beam them directly to any Internet-connected TV, without needing cables to connect to devices. The Twonky Beam Browser homepage shows you recommended websites with videos available to beam. You may also browse websites not included in this list and beamable videos are indicated with a Twonky Beam button. http://www.twonky.com

ITU advances UHDTV standard

The International Telecommunications Union announced: "Ultra high-definition television took an important step towards becoming reality when experts reached agreement on most of the pertinent technical characteristics of this exciting new standard for television. UHDTV marks a leap forward beyond the current standards for high-definition television. The experts, who include scientists and engineers from around the world, have been working together for several years in the ITU Study Group on Broadcasting Service (ITU-R Study Group 6) to jointly develop and agree on the technical specifications that will successfully create "UHDTV". A demonstration of UHDTV was provided by the Japanese public service broadcaster NHK at ITU earlier this month. The screen displayed a staggering 33 million pixels, compared to a maximum 2 million pixels for the highest quality HDTV screens on offer today. In Sept. 2011, a trial UHDTV link was arranged between London and Amsterdam and plans are under way to cover part of the 2012 London Olympic Games in UHDTV for screening at public venues around the world". David Wood, chairman of the concerned ITU Working Party in the Broadcasting Service Study Group, said, "The relationship that a viewer has with television viewing is linked to the overall experience of the picture and quality of sound. The extremely high quality of UHDTV will have a definite impact on our lifestyle and on our engagement with the programs we watch." http://www.itu.int A short PowerPoint about the UHDTV development can be seen at: http://www.itu.int/dms_pub/itu-r/oth/0A/07/R0A070000240001PPTE.pptx

ZiiLABS selects high performance video DAC from S3 Group for high definition TV output

S3 Group, a provider of mixed-signal semiconductor IP solutions, announced that ZiiLABS licensed its mixed-signal IP for their ZMS-20 and ZMS-40 media-rich applications processors. S3 Group delivered a high performance video DAC from its portfolio. ZiiLABS, a wholly owned subsidiary of Creative Technology, is a leader in processors, advanced software and enabling hardware platforms. The latest ZMS processors combine Stemcell media processing cores with dual 1.5GHz ARM Cortex-A9s and the S3 Group's video DACs to deliver stunning high profile HD video output, immersive OpenGL ES 2.0 3D graphics, HD video calling and a rich desktop browsing experience across a broad range of tablet and connected devices. http://www.s3group.com/silicon-ip

Sony develops subtitle glasses

Sony has unveiled plans to market glasses that provide subtitles for films in a move being welcomed by cinema fans that are hard of hearing. The "subtitle glasses" should be available to UK cinema goers next year and will provide far more flexibility for audiences that suffer from deafness. Charlie Swinbourne, who is hard of hearing, tested the glasses in a short BBC film. The BBC film notes that choice in cinemas is limited for those hard of hearing as subtitled movies are often shown in the day and mid-week. Sony believes the glasses could take off outside of cinemas as well, suggesting uses including subtitled conversations. Furthermore, the glasses could potentially be used to transcribe conversations. Last year InAVate reported on a similar concept that was developed by Danish designer, Mads Hindhede. Hindhede envisaged coupling his device with a translation tool to allow real-time translation of a conversation.

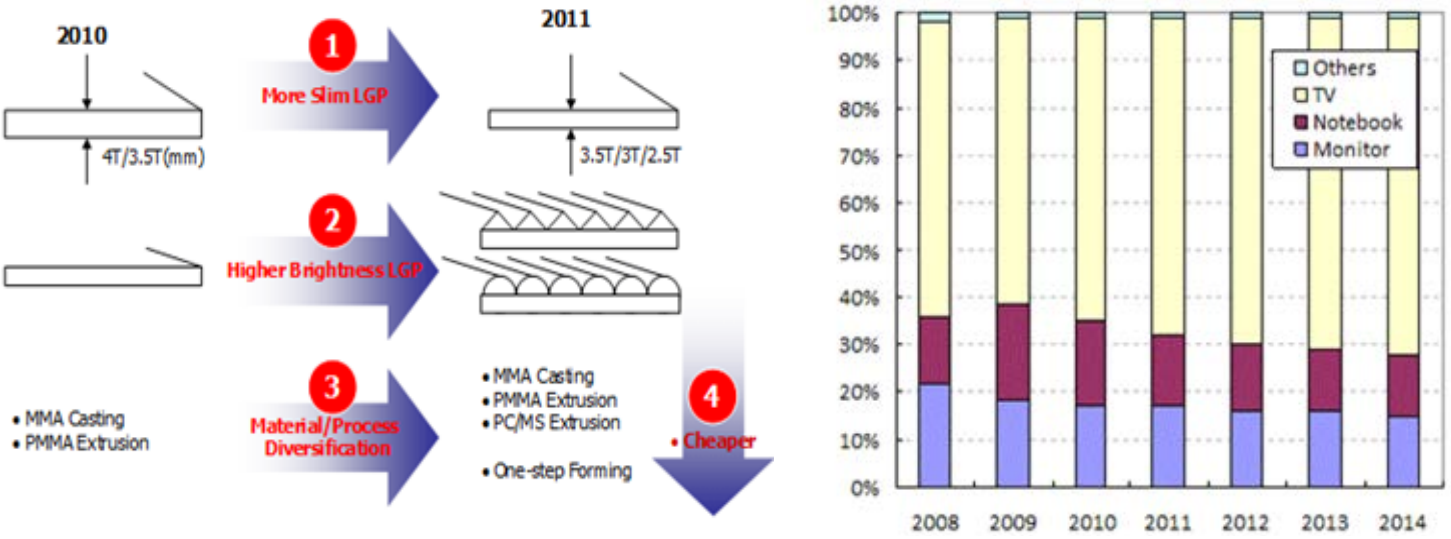
Informa Telecoms & Media brings out report on HD viewing

94% of UK households will have a TV set capable of receiving high-definition programming by 2016, according to the latest forecasts from Informa Telecoms & Media. This compares favorably with the worldwide average of 48% and puts the United Kingdom third globally, behind Canada and New Zealand (each with 95%). As recently as 2005, HDTV-ready sets were present in just 3% of the world's TV households and still seen as something of a novel technology. However, HD set sales are growing rapidly with a net 60 million households forecast to be added in 2011 alone. This means that 23% of the world's primary TV sets will be HD-ready by year-end. "Owning an HD-ready set does not, of course, automatically mean reception of HD programming. But, by 2016, 70% of the world's homes with HD sets are forecast to be using them to watch HD programs," according to Adam Thomas, Informa's Media Research Manager. "Again, the UK is ahead of the game, with 72% of HD-ready homes expected to watch HD programming by 2016. But this time it is well behind the global leader, which is the US at 91%. The UK lag is caused by the popularity of Freeview which is forecast to have only around half of its users watching HD programming by 2016." These numbers indicate that, by the end of the forecast period, TV services in several countries will be approaching the point where most, if not all, of their users are watching HD content. According to Thomas, "This raises the interesting prospect of a second wave of switchovers after 2016, with standard definition being switched off and HD effectively becoming the new standard definition." He added that, "The extra capacity freed up by such a move would then raise the possibility of another generation of SuperHD appearing, which would offer an enhancement to what will, by then, have become standard HD." http://www.informatandm.com

Displaybank publishes report on light guide plates for LED LCD TV

While LED LCD TV is showing exponential growth, the growth of edge-type LED LCD TV with its merit of slim design is especially notable. Accordingly, issues in shortages for light guide plates (LGPs), a key optical component for edge-type LED LCD TV as well as raw materials have been noted during the first half of 2010. From this, raw materials for LGP, MMA and PMMA prices have continuously increased throughout the first half of 2010. From the LGP processing maker's perspective, the capacity expansion of production lines continues by turning the existing lines dedicated for diffusion plate into LGP production line so competition is becoming severe. However recently, overstocked LED LCD TV has eased supply/demand for LGPs. TV makers are making every effort to consume the stocked products with aggressive marketing strategy and price decrease policy but production is stalled compared to the first half of 2010 and accordingly, the LGP production line utilization has been lowered. According to recently published "LGP for LED LCD TV 2011" by Displaybank, LED LCD TV is expected to create a 78 million unit market next year and edge-type LED LCD TV demand will show especially large demand and continue to increase. MMA raw material supply is expected to be maintained tight because LGP makers are continuously trying to develop slimmer products, higher Brightness, and new process/new material development.

Slimmer light guide plate is the technology that could slightly ease the raw material shortage situation. The thickness of current mainstream product is 3.5/3mm for leading companies and makers that actively entered into the edge-type LED backlit market this year is largely mass producing 4mm. But in order to apply thickness of 3.x mm level to 2.x mm level in mass scale, heat resistant characteristic and brightness lowering problem need to be addressed. Late comers to the LGP market are showing a trend of attempting to develop high brightness LGP in order to technologically differentiate themselves from existing makers. Methods like forming lenticular pattern directly on the original substrate of LGP or realizing prism phenomenon in the dot pattern forming stage bring brightness improvement.

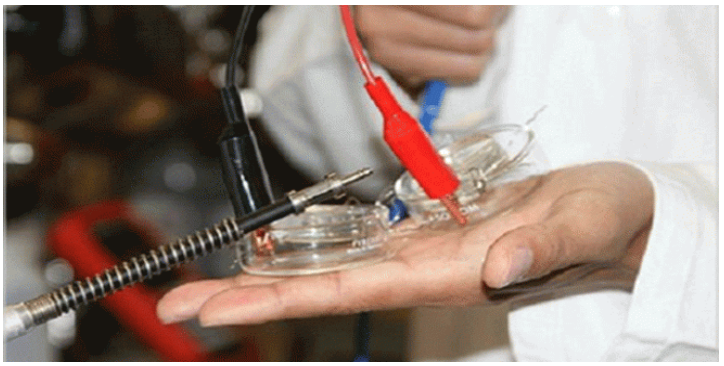


LGP evolution direction 2011; large BLU market share forecast by application

Displaybank has also published a large-size BLU/LED industry trend and analysis. The global BLU market is expected to record $16.8B in 2010, reach the peak with $19B in 2012, and decline thereafter. The increase in BLU demand unit will continue, but the revenue market is predicted to decrease after 2012 due to price reduction. Of this, TV BLU market is expected to record $10.7B and accounts for 64% of the overall market in 2010. The TV BLU market share is projected to increase up to 72% in 2014 along with the LCD TV demand increase. So, monitor and note PC BLU markets are to show decreases in market share. http://www.displaybank.com

Jacobs School of Engineering develops Smell-o-Vision TV

An odoriferous entertainment system is the technology that no one demands but that many have attempted to invent. Putting aside the question of whether anyone actually desires to smell the saltwater breeze kicking down the Jersey Shore or the smoky vapors curling off a Bobby Flay steak, engineers at the University of California, San Diego, have designed a plausible way to deliver fragrant delights through a television. In 1960, an adventurous filmmaker tried to do something similar, pumping smells through pipes in the theater chairs during “Scent of Mystery,” a gimmicky vehicle for the new technology. It was the first and last movie to be shot in the scent-o-vision format. Jin designed his “smelly telly” with earlier failures in mind and has come up with a more practical approach. “Instead of a mechanical activation, we use electrical activation. It would be easier to integrate into an existing system,” Jin advised. The device would contain up to 10,000 unique liquids, stored in an array of tiny chambers. When activated, a wire running through the array will heat the correct liquid. As the contents vaporize and pressure in the chamber builds, some of it escapes through a compressed hole in the chamber. Jin has run tests with a couple of perfumes and found that people could identify the smells while 30 cm away from the screen. http://www.jacobsschool.ucsd.edu



The actuators that heat the odorous liquid

Vestel to launch the first BitTorrent certified smart TV

Vestel and BitTorrent announced plans to showcase the world's first BitTorrent Certified Digital TV at the IFA show in Berlin. Vestel's new BitTorrent Certified TV will enable consumers to find, play and share all types of personal media, independently produced content and Internet files directly on their TV. The BitTorrent ecosystem is an integrated solution of software, devices and content, all orchestrated to move 100+ million PC users into the living room via certified TVs, Blue-ray/DVD players, media extenders, NAS devices and more. By becoming BitTorrent Certified, consumer electronics makers can leverage the speed of the BitTorrent protocol and key downloading, transcoding, sharing and file-shifting features to make it easy for their customers to find, get and play all files on any certified devices. The BitTorrent certification program and brand assures consumers that any content will playback. Certified consumer electronics devices (TVs, DVD/BD players, media adapters, etc.) will seamlessly play content via BitTorrent. Device manufacturers also empower consumers to stream content from their BitTorrent libraries, all from a 4-button TV, DVD/BD Player or media adapter remote. The most advanced BitTorrent solution enables consumers to download photos, video, and audio directly to devices. BitTorrent's new personal media sharing service will allow consumers to send home videos, audio and photos directly into TVs, DVD/BD players and media adapters. By featuring a personal sharing application, BitTorrent helps consumer electronics manufacturers and consumers privately and securely share home movies and personal videos and watch/listen to everything on certified devices. http://www.bittorrent.com

BBC plans to use 3D and "super hi-vision" for London Olympics

The BBC is considering plans to broadcast the 100 meters final of the London Olympics in 3D, as well as trying out a new technology that delivers picture quality said to be 16 times better than HDTV. Roger Mosey, the BBC executive in charge of the corporation's London 2012 coverage, said that 3D coverage for the 100m and other events was "certainly on the agenda", as part of a "limited experiment". The BBC will also test "super hi-vision", a new broadcasting technology so advanced it is not expected to be in homes for a decade. Three 15 meter (50ft) high screens will be erected around the country so that the public have a chance of seeing the imagery that Mosey said was so good it would match up with the experience of watching from the stands. The BBC is likely to broadcast the Olympic opening ceremony using the technology, which employs a single camera to capture a wide shot. It has already been tested on sports such as basketball and big stadium events. Mosey added that Sharp was working on an 215cm (85in) TV set using super hi-vision technology but that it was unlikely to be widely available until 2022. The debut of super hi-vision is part of a tradition of trialing new TV technology at the Olympics. The BBC led the way, delivering the first properly televised Olympic Games when they were hosted in London in 1948. The Los Angeles Olympics in 1984 was the first to use HDTV cameras. However, it was not until Beijing in 2008 that the BBC first broadcast in HD. However, Mosey said that the first 3D Olympics would not amount to a "24/7 service" during the Games, partly because it would mean interrupting its HD programming. Earlier this year the BBC made its first 3D broadcast, televising the men's and women's Wimbledon tennis finals on BBC HD.

CinemaNow and Intel give PCs a library of HD movie content

CinemaNow, Best Buy's digital entertainment service, and Intel Corporation are giving people the ability to enjoy a larger library of premium high- definition content on their PCs. For the first time, CinemaNow will offer 1080p HD movies for rental and purchase on 2nd generation Intel Core processor-based PCs with Intel Insider technology.

Previously, only standard-definition movies had been available from CinemaNow on the PC. CinemaNow has now added several hundred new releases and popular catalog titles in HD from 20th Century Fox and Warner Bros. Digital Distribution for people who have Intel Insider on their desktop, laptop or Ultrabook. This is in addition to the 15,000 movies and TV episodes CinemaNow already boasts in its regular catalog. HD content offerings from CinemaNow and Intel Insider are expected to grow as more new releases and catalog titles are added weekly.

CinemaNow offers instant access to an extensive library of premium movie and TV content with no subscription required. Through the service, people can easily access video content on a wide range of Internet-connected devices. Intel Insider technology is a feature of 2nd generation Intel Core processors that opens up a whole world of premium movies and entertainment right from a PC. Previously, much of the 1080p HD content had not been available on the PC due in part to content owner concerns about security. Intel Insider is a hardware-based protection technology that was designed to enhance security features in 2nd generation Intel Core processors, which is the fastest-shipping product in Intel history at over 75 million units shipped to date. With that, Intel Insider is available to an immense user base that continues to increase greatly by the day. http://www.intel.com

Jupiter Systems' new Quad HD Decoder now shipping

Jupiter Systems, the industry leader in display wall technology, announced that it was now shipping its new Quad HD Decoder Card for both the Fusion Catalyst and VizionPlus II Display Wall Processor product lines. The optional Quad HD Decoder Card provides support for the display of up to 200 HD or SD network video streams in MPEG-2, MPEG-4, H.264, and MJPEG formats. The card also supports streams from PCs, with real-time updates. Using Jupiter scaling and communication technology, dozens of streamed sources can be displayed at full frame rate, simultaneously, with digital precision throughout. The Quad HD Decoder Card supports most popular IP cameras and encoders. The Quad HD Decoder card is the fourth generation of streaming video decoding products from Jupiter Systems. The card installs directly into both Fusion Catalyst and VizionPlus II display wall processors. The Quad HD Decoder Card has four independent decoder SoCs (system on chip), each of which can handle streams from a variety of formats and source types. Supporting streams in MPEG-2, MPEG-4, H.264 and MJPEG, the Quad HD Decoder card can decode and display streams from IP cameras, NVRs, desktop encoders, and video management systems. http://www.jupiter.com

Silicon Image introduces InstaPrevue technology

Silicon Image announced its latest innovation, InstaPrevue technology, which will be featured in Silicon Image digital TV (DTV) and audio/video receiver (AVR) port processors. InstaPrevue provides the first-ever, live picture-in-picture preview of every HDMI input connected to a digital television or A/V receiver. Instead of cycling through inputs or navigating a text-based menu, users can now view and select the live preview window to switch between their Blu-ray Disc player, set-top box, DVD player, game console, or other HDMI-connected device. InstaPrevue technology enables the location, size, and appearance of the preview windows to be controlled by software within the DTV or AVR, allowing the manufacturer to seamlessly integrate a custom implementation of InstaPrevue with the system's remote control and on-screen graphical interface. http://www.siliconimage.com

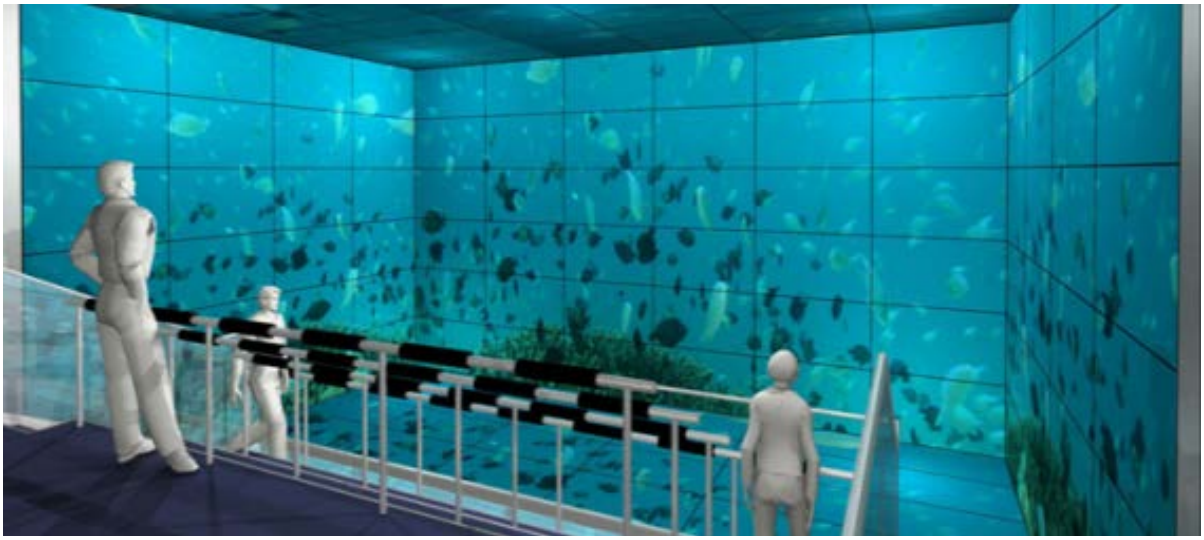
InstaPrevue provides the first-ever, live picture-in-picture preview of every HDMI input connected to a digital television or A/V receiver

Blu-ray players to reach 105 million units shipped in 2015, says In-Stat

New In-Stat research forecasts that the number of Blu-ray player units shipped will reach 105 million in 2015. DVD players and recorder shipments will decline over the next five years for most regions. By 2015, DVD recorders will be essentially phased out entirely, with only negligible shipments to Japan. Blu-ray recorders will replace DVD recorders, and many consumers of recorders will even drop the physical disk media option altogether and instead opt for a player with a large hard drive or a DMS in which to store DLNA-certified and other digital video content. BD players shipped to North America in 2010 represented 38% of the total Blu-ray player and recorder market. Japan accounts for the majority of Blu-ray recorders, and Europe is the main market for DVD recorders. At the end of 2010, over 15% of Netflix subscribers opted for Blu-ray subscriptions. The Chinese market for Blu-ray has been stalled by the lower prices of the local CBHD standard. The research, Global Blu-ray and DVD Players and Recorders (#IN1104965ME) contains regional breakouts of DVD and Blu-ray player and recorder shipments as well as revenues from 2008 to 2010 and forecasts from 2011 through 2015. http://www.in-stat.com

Sharp develops giant LCD screen

Sharp has announced that it has developed a gigantic 156 multi-screen setup composed of 60-inch PN-V601 LCDs arranged with 36 monitors on the wall, celling and floor as well as 24 monitors on both the right and left wall in order to provide with the best immersive video experience ever during the 5D Miracle Tour at the Hui Ten Bosch Theme Park in Nagasaki. http://www.sharp.com



Samsung Electronics creates framework for personalized art galleries

Samsung Electronics said that it is exploring alternatives by which artists could have their work displayed electronically in homes and executive offices. The company said that it has partnered to develop two prototype displays, utilizing Samsung "SM'ART" Gallery Panels, to encourage further market discussions and to demonstrate the concept to potential artist collaborators. Conveying new or well-recognized art electronically through framed LCD art screens in millions of locations is not only feasible, but highly practical, the company said. These new digital canvases would be initially targeted to fine art connoisseurs, both institutional and individual collectors. Through a cloud-based art selection, buyers could customize and refine their personalized art collection to cater to their individual tastes and aspect ratio requirements. Buyers could initially view the works of art through a handheld device for quicker browsing. Moreover, the system could also enable digital and video artists to expand their audience. In addition to providing classic fine art, Samsung Electronics said that the electronic gallery holds the promise of bringing virtually unknown artists to the attention of potential art collectors – talented artists that might otherwise have difficulty getting noticed. The company is working with Planar Systems, a leader in specialty displays for digital signage, and their high-end home theater brand, Runco, to demonstrate the concept. These high-quality displays could be used in home or commercial applications to electronically change a piece of art to better suit the mood of special events, important occasions or guests, at the owner's discretion. The aspect ratio and orientation of the display can vary – from portrait to landscape. For the prototypes, two sizes were developed: 21.9 inch wide x 33.9 inch tall offering a 1:1.5 aspect ratio (portrait), and 48 inch wide by 27 inch tall offering a 16:9 aspect ratio (landscape). http://www.samsung.com

This is a digital oil painting from Kent Wallis, on a 45-inch portrait LCD display, developed by Samsung and Planar. The prototype was demonstrated publicly for the first time on September 28.

Nippon Electric Glass develops "invisible glass"

Nippon Electric Glass has developed a glass substrate that it calls "invisible glass". The company reduced the reflection of light so that light can hardly be seen on the glass substrate. It is difficult to recognize the existence of the substrate. Nippon Electric Glass reduced the reflection of light by forming an anti-reflection film on each of the

front and back sides of the glass substrate. In the case of a normal glass substrate, about 92% of incoming light passes through it, and the 8% of the light left is reflected. On the other hand, about 99.5% of incoming light passes through the new glass substrate. So, only about 0.5% of the light is reflected. Nippon Electric Glass claims that the luminous reflectance of the substrate is 0.1% or lower. For the two anti-reflection films, the company used a total of 30 or more layers. Layer thickness is controlled in increments of nanometers. http://www.neg.co.jp/EN

A normal glass substrate (left) and the new substrate (right). Because light is hardly reflected on the new substrate, it can hardly be seen; a close-up shot of the normal glass substrate (left) and the new substrate (right)

AOL HD launches on Samsung smart TV and Google TV

AOL announced the AOL HD app is available for immediate download on Samsung Smart TV and Google TV platforms. The announcement comes on the heels of AOL HD's July 2011 launch on Roku, Boxee, DivX TV, and Yahoo! Connected TV. The expansion signals AOL's commitment to reaching new audiences, providing high quality content at scale, and innovating and engaging on new platforms in the connected TV industry, which accounts for 30% of US households. Samsung, the leading TV brand in the United States, was the first company to offer an application store for the TV and is dedicated to delivering applications specifically designed for the TV experience. The AOL HD app is available now for download on 2010 Samsung Smart TVs and Blu-ray players, with support for 2011 Smart TVs and Blu-ray players coming soon. Google TV released the next version of its smart TV platform. The update includes a cleaner and simpler UI, a more TV-like YouTube experience, a new TV and Shows app enabling discovery of shows relevant to consumers from over 80,000 movies and TV episodes, as well as Android Market. AOL HD features high-definition video content that is updated daily from properties across AOL Huffington Post Media Group, including technology (gadget and tech news from sites like Engadget, TechCrunch and Translogic); entertainment (celebrity news and interviews from franchises like Moviefone and Huffington Post Celebrity); and home (cooking, lifestyle and home improvement videos from celebrity partners like Eric Stromer, Sam Talbot and Carter Oosterhouse). In addition, AOL Music's full CD Listening Party (CDLP) – which lets listeners hear free previews of newly released albums – is also available. Earlier this year AOL launched its original programming slate of more than 15 original web series targeting key audiences including women, teens and young adults, and announced a partnership with Vivaki to innovate and drive the next generation of video advertising. http://www.aol.com

Raystream announces live streaming HD video compression technology

Raystream, a provider of HD video services, announced its new live streaming solution that enables real-time compression for distribution of live broadcast HD videos. Raystream's business customers can now seamlessly incorporate our real-time video compression technology into their existing video streaming processes, significantly reducing the bandwidth needed to stream live events. The new live streaming solution is applicable to any event, such as live webinars, web-based shareholder meetings, concerts, and satellite broadcast sports and news. Bandwidth requirements and costs are drastically reduced, with no decrease in the quality or clarity of the video. Using only satellite or even a GSM 3G connection, users can broadcast full HD video right from the frontline of a battlefield, for example. http://www.raystream.com

Azuki Systems announces support for video delivery to all screens

Azuki Systems announced support for over-the-top (OTT) video delivery to gaming consoles, smart TVs and OTT-enabled set-top boxes, adding to its existing support for tablets, smart phones, desktops and PCs. Azuki is now the only company to support carrier-class OTT optimized video on all screens and devices. The Azuki Media Platform provides a consistent experience across any screen, powerful studio-approved content protection across all devices, and superior video quality under any condition. Azuki's unique standards-based video architecture enables companies to capture real-time statistics from every device and implement multiple monetization schemes, including authentication, subscription, ads, and pay-per-view. http://www.azukisystems.com

NEC Display Solutions launches next-generation high-bright digital signage display

NEC Display Solutions of America, a provider of commercial LCD display and projector solutions, announced the latest addition to its X Series, the high-bright 46-inch X462HB. This professional-grade, large-screen display is designed for the rigors of 24/7 operation in a variety of applications, including outdoor digital signage, drive-through menu boards and video walls. The new X462HB offers a quarter-lambda polarizing film, which allows for outdoor viewing with polarized sunglasses in both landscape and portrait orientations. This is essential for quick-service restaurant (QSR) owners to ensure their customers can easily and clearly read the drive-through menu with any type of polarized eyewear. The display's full high-definition panel, a new feature in this next generation model, brilliantly displays content. The X462HB includes the following additional features: professional-grade LCD panel with advanced thermal protection and sealed panel design for the most formidable digital signage industry requirements; full 1080p high-definition resolution; brightness of 1200cd/m² (typical) and contrast ratio of 3500:1 (typical); power consumption of 320W (typical, <0.5W in standby); full digital connectivity with DisplayPort, HDMI and DVI-D; RS-232C, Ethernet (RJ45), IR Remote and DDC/CI enable automated e-mail notifications for diagnostic purposes and multi-display control; built-in expansion slot for seamless integration of future third-party components; AmbiBright ambient light sensor to automate brightness according to existing lighting conditions; landscape and portrait orientations; network control and communication for the highest level of remote display management; TileMatrix technology for video walls up to 100 displays; 24/7 scheduler with real-time clock. Optional accessories and products for the X462HB include the Display Wall Calibrator Color Calibration Kit, SpectraViewII Color Calibration Kit, stand, wall mount, speakers, single board computers, external PC, IPTV tuner, external TV tuner, DVI daisy chain module and internal HD-SDI card. The X462HB will be available in December 2011 at a minimum advertised price of $3,899. http://www.necdisplay.com

NewTek slow-motion system delivers HD instant replay

NewTek introduced 3Play 425, a four-input, two-output, slow-motion system that supports the simultaneous display, recording and instant replay of up to four video sources. NewTek 3Play 425, a compact, turnkey solution, provides in-game highlights authoring on-the-fly to producers looking for a serious, professional replay system. 3Play 425 includes over-the-network integration with NewTek TriCaster, appearing as a network input and providing a complete integrated solution for live sports production with a small footprint. Additionally, 3Play 425 can be connected to any switcher, providing additional capabilities for any existing production infrastructure. The system includes an intuitive control surface, giving replay operators hands-on control of every input. 3Play 425 will be available in the fourth quarter of 2011 and retail in North America for $21,995. International pricing may vary. http://www.newtek.com

Fractal Antenna Systems uses fractals as antennas for TV

Growing interest in free HDTV has created a new problem for millions: how to get better reception. Do it yourself experimenters have embraced the problem with an exotic new technology using fractals – intricate self-similar shapes – as antennas. Home grown fractals are the origins of fractal electronics. Nathan Cohen of Fractal Antenna Systems started the field in the 1980s by making DIY fractal antennas. The first fractal antennas were aluminum foil cutouts and bent wires. In the years since, Cohen finds himself a pioneer in a growing field that

probes the uses of fractals in engineering. Fractals have proven a key element to understanding Maxwell's equations (the guiding laws for electromagnetics); making smaller electronic tuned circuits; and even wideband invisibility cloaks. New applications reducing drag on airfoils and hydrofoils, and cancer treatment are among those that signal the emergence of fractal engineering. Most fractals give better TV reception, but only a handful of specific shapes work better than others. The company has the computer and laboratory tools that identify these. Cohen's firm, Fractal Antenna Systems, Inc., is the patent holder on fractal antenna and related technologies, and he stresses that an individual personally constructing one or two for experimentation is well within the allowance of the patent system. The firm makes antennas across the board for applications in the wireless world, but does not have an HDTV antenna yet. The company will launch such a product in 2012. http://www.fractenna.com

3M-commissioned research shows consumers value wide-angle viewing on LCD TVs

A new study commissioned by 3M shows that American consumers want high brightness and quality no matter at what angle they view their LCD TVs. The study was conducted by CBS Vision, the Las Vegas-based research division and facility owned by CBS Corporation. 3M is a leading technology company in high-quality consumer electronics. The findings show that as TVs become central entertainment hubs for viewing, gaming and web connectivity, consumers are viewing their TVs from many different angles on a regular basis, and expect a consistently bright and crisp screen image. As consumers age, they place an even higher premium on wide-angle viewing, the study shows. Studying nearly 600 consumers in three phases over a four-week period, the study found that 84% of respondents view their TVs from a variety of angles. Further, 69% of participants said wide-angle picture quality was very or extremely important. And yet, 44% initially were unaware of a difference in quality of many LCD screens when viewed from the side. Once they viewed two sets of varying quality side by side, however, 88% preferred the screen with better wide-angle luminance – a brighter, crisper screen at a variety of viewing angles. Additionally, the research shows that 47% of consumers reported they are not satisfied with the home-mode settings of most LCD screens, and change these settings, increasing the amount of energy consumed.

The research reinforces previous studies conducted in Japan looking at consumer viewing habits and luminance preferences. Key consumer behavior findings include: 86% have a flat screen TV; 15% definitely will buy a new TV this year; 60% find picture quality extremely important; 46% typically view their primary TV off axis, defined as any viewing angle that is more than 15% from center, when watching alone; 67% do so when watching with other people; 52% typically view their secondary TV off axis when watching alone; 65% do so when watching with other people; 84% at times view their TV off axis when watching alone; 87% reported other people at times viewing their TV off axis. Key consumer preference findings include 47% change the settings on their TVs to make them brighter (reducing the effectiveness of ENERGY STAR ratings); 44% were initially not aware of a difference in picture quality when viewed off axis; 88% preferred the set with better wide-angle luminance in a direct comparison; 83% of males 55 years of age and older would pay on average $200 more for the TV with better wide-angle luminance; 64% of females 55 years of age and older would do so, as well. http://www.3m.com

Aptina announces native 1080p system-on-chip solution for high definition video imaging applications

Aptina, a provider of CMOS imaging solutions, announced the AS0260 SOC (system-on-chip) imaging solution. The 2-megapixel native 1080p SOC delivers exceptional performance, and meets strict form factor requirements (z-height less than 3.5mm) for ultra-thin, full HD video applications within the video-centric consumer electronics market. The new SOC has a 1/6-inch optical format and a new 1.4-micron pixel featuring Aptina A-Pix technology

to provide excellent low-light performance. The new SOC provides HD video at 1080p/30fps or 720p/60fps with powerful image processing capabilities critical for sharp, clear video capture. The AS0260 provides SOC-specific features including integrated multi-camera synchronization for stereo or 3D cameras, perspective correction for off-axis camera placement, adaptive polynomial lens shading correction, UVC interface support for USB/ISP bridge devices, as well as automatic image correction and enhancement. Additionally, the AS0260 provides OEMs with advantages over many other Full HD (or 1080p) solutions currently on the market with MJPEG formatted data output to enable video streaming with reduced bandwidth; a presence detection feature combined with ambient light sensing for system power savings, and face detection and tracking capability for identity and security applications. http://www.aptina.com/products/technology/aptina_a-pix.jsp

LG Ultra definition 3DTV combines immersive 3D with display quality

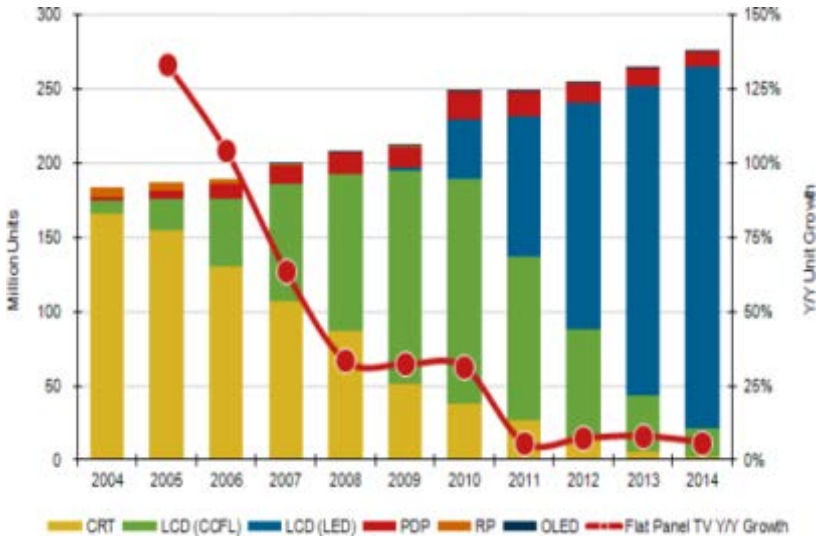
LG Electronics announced that it will unveil what is believed to be the world's largest Ultra Definition (UD) 3DTV at the 2012 International CES. Combining LG's passive CINEMA 3D technology and Smart TV functions with UD display technology, the 84-inch class (84.04-inch diagonal) TV breaks new ground in immersive 3D home entertainment, the company says. LG's 3D UD TV boasts an impressively large 84-inch class screen and 8 million pixels, four times the resolution of existing Full HD TV panels. LG's Cinema Screen slim and narrow bezel reduces the TV's frame to negligible levels. In addition, 3D Depth Control enables users to customize their 3D viewing experience by controlling the 3D effects, while 3D Sound Zooming provides users with immersive 3D sound to accompany 3D visuals. Through the superior display panel, users can access LG's Smart TV ecosystem, which is composed of over 1,200 apps and gives users access to a growing range of premium content services, including the 3D Zone, where users can select an increasing wealth of 3D movies. The imbedded 2D to 3D conversion engine expands the availability of 3D content to limitless levels. Users can easily browse and navigate through the Smart TV ecosystem using LG's new, ergonomically-designed Magic Remote, which allows users to make commands using the control modes of Voice Recognition, Wheel, Magic Gesture and Point. http://www.lg.com

DisplaySearch reports LCD TV shipment growth to improve in 2012 driven by 40-inch and larger sizes

Consumer demand for TVs has been softer than expected in 2011, but showing signs of improvement late in the year. However, inventory pressure plagued the industry through much of early 2011 and led to a sharp reduction in shipments to retailers. The result is that global TV unit shipments are expected to rise only 0.1% in 2011. According to the latest forecast released in the NPD DisplaySearch Advanced Quarterly Global TV Shipment and Forecast Report, growth is expected to improve in 2012, rising 2% to 254 million units. Flat panel TV continues to grow, but at a more gradual pace of 2-4% per year as the rapid transition from CRT to LCD and plasma nears an end. LCD TV continues to be the dominant technology on a unit and revenue basis, and in fact seems likely capture even more market share due to a weaker outlook for plasma TV going forward. As LCD narrows the pricing gap with plasma at many sizes, the demand for plasma has fallen; NPD DisplaySearch expects this to continue and has reduced its forecast for plasma TV.

Large TV sizes also continue to show strong growth, with shipments of 40-inch+ and larger sets expected to grow 12% in 2012 while <40-inch sizes decline 3%. A strong contributing factor to the growth of larger sizes, including an 18% increase in shipments of 50-inch+ sets, is pricing. Sizes up to 50-inch will have average prices below $1000 in 2012 and even 60-inch+ sizes will fall below $2000 for the first time. During Black Friday holiday sales in the US, many 40-47-inch sets were below $500, and even 60-inch sets fell below $1000, prompting robust unit sales as consumers were attracted to the new price points. Many consumers seem to be willing to give up features in favor of larger sizes for a given TV buying budget. Even in China, shipment share of 50-inch+ and larger sizes is growing strongly and may become the only region outside of North America to reach 10% 50-inch+ mix of unit shipments by 2015. LCD TV shipments will rise from 206 million units in 2011 to 225M units in 2012, an increase of 9%. LCD will account for more than 82% of all global TV shipments in 2011, rising to more than 88% in 2012, as

demand for plasma falls and OLED TVs arrive late in the year in small quantities and at high prices. LCD is now a strong competitive technology at all sizes and should climb to more than 95% share by 2014 as CRT fades and OLED is slow to grow. Premium features continue to grow, like LED backlights and 3D, and are keeping LCD TV average prices very stable, falling just 6% Y/Y on a volume weighted basis in 2011, the slowest year of LCD TV price erosion yet. Price erosion will be about the same in 2012 before picking up to 7-8% per year through 2015, but much less than the 24% decline seen in 2009. However, with the slower ASP erosion, total LCD TV revenue growth should remain positive through 2013 at 1-3% per year. The share of LED backlights in LCD TV shipments is expected to be about 46% in 2011, rising to nearly 68% in 2012. 3D will account for around 3% of LCD TV units this year. Plasma TV units grew 30% in 2010 due to a favorable pricing advantage over LCD, but as that advantage has narrowed in 2011, shipments are expected to fall 11%, to 16.3 million units. The decline in unit growth and weak profits have led manufacturers to focus on more profitable segments, even at the expense of unit growth. As a result, plasma TV shipments are projected to fall to less than 10 million units by 2015. The first OLED TV shipments are expected in the second half of 2012, but due to prices that are expected to be well above $4000 initially and remain significantly higher than mainstream high-end LCD TVs, will only grow to about 2.5% of the 40-inch+ segment by 2015. The worldwide forecast for 3DTVs was slightly increased to more than 23M units in 2011 through better than expected growth in emerging markets and Europe. By contrast, demand in North America has been surprisingly soft for 3D, and may only reach 3.6 million units in 2011 as US consumers remain very price sensitive. Eventually though, North America will see a rise in 3D adoption due to stronger preference for 40-inch+ sizes where the 3D feature is common and expected to be less costly. Globally, 3DTV is expected rise to more than 100M units shipped by 2015. Emerging regions, which includes China, Asia Pacific, Latin America, Eastern Europe, and Middle East/Africa, will account for the majority of flat panel TV growth over the next four years, averaging 11% growth each year, while developed regions decline an average of 1% each year. In fact, China has become the largest market for flat panel TVs and will continue to be throughout the forecast period. The Asia Pacific region is positioned for strongest growth as the late-adopting India market begins to boom. http://www.displaysearch.com



Worldwide TV forecast by technology

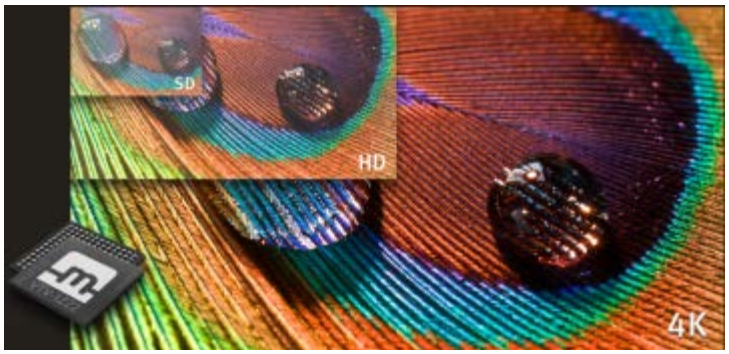
Samsung expands transparent display market with 46-inch LCD panel

Samsung Electronics announced that it is expanding the transparent display market with production of a 46-inch transparent LCD panel. Samsung's 46-inch transparent LCD panel features a contrast ratio of 4,500:1 with HD (1,366x768) resolution and 70% color gamut. The panel is being produced for a wide variety of retail display applications such as product showcases, commercial freezer doors and platform doors of subway stations in North America, Europe and Asia. Also, it will be used in other applications including e-boards, information windows, medical equipment, e-signage and mobile devices. Samsung's 22-inch transparent LCD panel, which is now being commercialized, has been well received by customers and potential customers in the mobile devices, jewelry and luxury goods sectors due to its compact size and low power consumption, in addition to its attention-grabbing display qualities. According to market research firm Display Bank, the transparent display market is expected to grow from $0.9 billion in 2015 to $87 billion in 2025. http://www.samsung.com

Commercial cooler application for 46-inch Samsung transparent LCD display

Marseille introduces its first 4K up-converter chips

Marseille introduced its first 4K up-converter chips, demonstrating a full suite of products. Enabling faster, more affordable adoption of 4K resolution technology for home theater, personal computer and mobile devices, these chips will ship in 2012. Poised to drive the video transition from HD to 4K, Marseille's proprietary virtualization technology will change how many other applications and consumer products are also designed in the future. To set a new standard in video performance, Marseille took just six months to design its latest 4K chip, but spent over five years developing its virtualization platform to enable faster, more affordable and differentiated chip and electronic system design. Marseille showcased both this platform and its 4K video processor chip reference design in current Blu-ray player and A/V receiver architectures, the best 4K video scaling for 3D, jaggy reduction, sharpness enhancement and on screen display graphics, mobile devices rendering full-resolution 8M pixels on 4K televisions, and the company's 4K TV platform. http://www.marseilleinc.com



Futuresource reports that 40% of West European homes will have 3DTV by 2015

Data reflects CE bundling of 3D technology with new HDTVs rather than actual consumer interest in new format. In Western Europe, 40% of households in the region projected to own a 3DTV by 2015, according to a new report. While 3D theatrical movies have become all the rage in Europe this year, the 3DTV install base will reach 65 million homes — driven more by TV unit replacements than actual consumer interest in the new home entertainment format, according to Futuresource Consulting. "Whether consumers use the feature or not, they will be buying it by default, as the technology will increasingly be incorporated in many of the sets in manufacturers' product ranges," said Jim Bottoms, director and co-founder of London-based Futuresource Consulting. "And where previously there was little 3D content available, the growth and acceptance of 3D is now being driven by the broadcasters. Going forward, the increased availability of 3D content will encourage viewers to engage with and evaluate 3D offerings." Indeed, the report said there are 10 million new TVs purchased annually in the United Kingdom, which has just 25 million households. "That means that every home is going out and buying a TV every two and a half years," Bottoms said, adding that global broadcasting of 3D content has increased threefold since June 2010. Meanwhile, 3D-compatible Blu-ray Disc players are gaining traction in the market, with close to 50% of Western European homes owning such a device by 2015. Although there was little 3D content available on Blu-ray in 2010, this is being addressed by this year, with 43 (largely special interest) Blu-ray Disc titles now available in the United States, 37 in the United Kingdom and 30 in Germany. Indeed, in the United States 33% of titles released so far are non-studio content, which is adding to the diversity, generating interest and encouraging consumer engagement, according to Futuresource. http://www.futuresource-consulting.com

3D TV panel penetration rate to reach 12.3% for 2011 reports DigiTimes

Major LCD panel firms Samsung Electronics, LG Display, AU Optronics (AUO) and ChiMei Innolux (CMI) have been focusing on increasing the shipments for 3D TV applications. According to industry observers' estimates, the penetration rate of 3D panels in the LCD TV industry reached 3.9% with total shipments of 1.9 million units in first-quarter 2011. The figure represents a 104% increase compared to the volume in fourth-quarter 2010. According to the industry observers, the penetration for 3D TV panels may reach 16.8% in fourth-quarter 2011, and an average 12.3% for the whole year. Although panel makers hope to use 3D to increase demand for the TV industry and increase the average selling price of panels, there are many practical challenges, such as insufficient 3D content, flickering images that cause dizziness and high prices, that need to be solved in order to attract demand, the observers said. http://www.digitimes.com

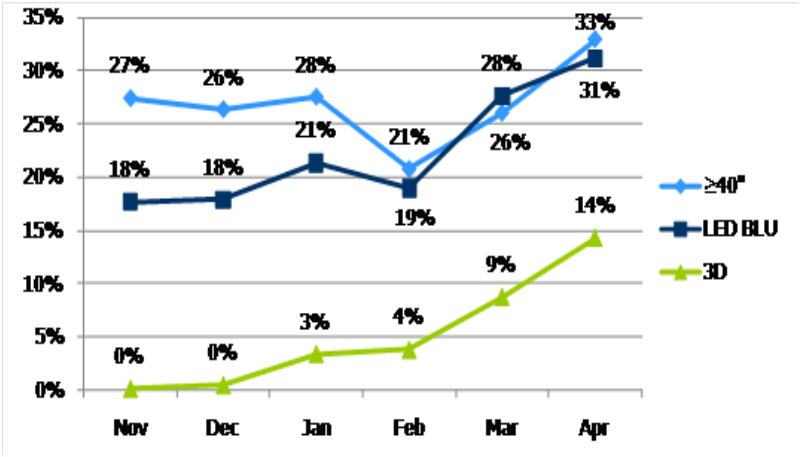
Planar introduces electronic sculpture in architectural applications

Planar Systems announced the introduction of the Planar Silhouette video display sculpture, a compelling and versatile new canvas for color and motion. The Planar Silhouette display, which towers over 10 foot tall, provides a new solution for architects, designers and their clients, to elicit an emotional response through imagery and form. The arrays of LCD screens are configured in a well-balanced array, forming a flexible digital canvas for an ever-changing, diverse display. Planar customers have found that Silhouette sculptures in a straight or staggered array can produce an impressive wall of color and motion stretching 18 feet wide. Whether the video on the screens is standard graphic imagery or photography or art created expressly for this display, the possibilities for creative expression are endless. The vision is to take digital displays to the multi-billion-dollar building materials and wall coverings market as an inspiring innovation, creating the category of architectural displays. http://www.planar.com

Planar's Silhouette video display sculpture

Displaybank issues report on evolution of the Chinese TV market

Displaybank says in a latest report that the current Chinese TV market is showing evolution that the industry is moving towards premium-class TVs from low-cost models. Share of premium-class panel procurement, namely large-size, LED backlit and 3D enabled panels from top six Chinese TV brands including Changhong, Haier, Hisense, Konka, Skyworth and TCL are showing gradual increases. The share of LCD panel supply by size towards Chinese TV brands in April 2011 shows 32.9% for over 40-inch panels recording 12.5% increase Y/Y. The analysis also showed Hisense and TCL are leading the larger-sized panel procurement trend. The share of LCD panel supply by backlight unit (BLU) type towards Chinese TV brands shows continuous growth for the modules with LED BLU reached 31.2% of all panels in April 2011 to show 23.6% increase Y/Y. CCFL comprised 37.5% of all panel supply and 31.3% went to LCD cells without BLU integrated. Ricky Park, senior analyst at Displaybank noted "3D TV panel procurement share of Chinese TV brands also demonstrate very sharp growth at the turn of 2011. Over the course of full-scaled 3DTV promotion starting from Labor Day season, 3D panel supply share recorded 14.2% of the total in April 2011 that the share was a significant increase considering very limited supply of 3D panel share 0.02% in April a year before. In particular, 82% of all 3D panels were supplied from Korean makers, consolidating position of Korean makers in 3D display market." Total panel shipment towards Chinese TV brands in April 2011 recorded 2.91M units which increased 11% Y/Y. http://www.displaybank.com



Monthly top six Chinese TV brands' 40-inch, LED, 3D panel procurement share trend

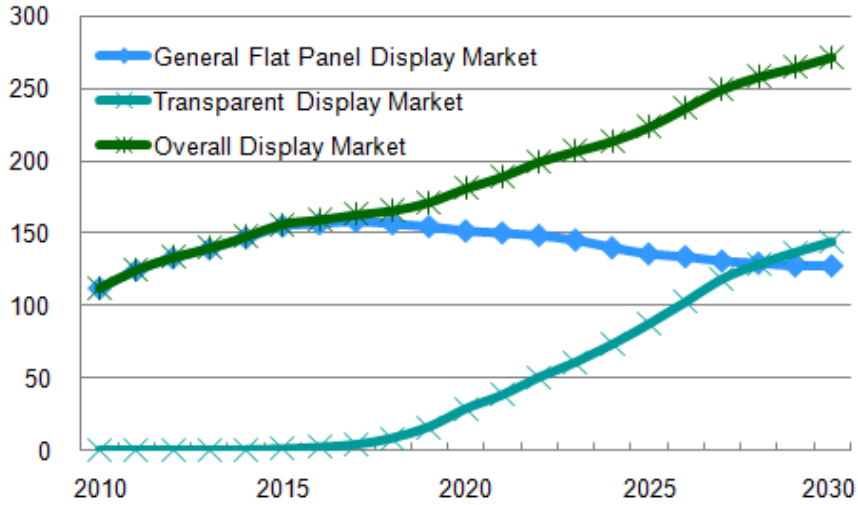
NHK technology interactively renders 3D space in real time

NHK Science & Technology Research Laboratories (STRL) demonstrated a technology that renders real-looking 3D animation video in real time in accordance with user operation. Specifically, when a display on which 3D video based on the IP (integral photography) method was being displayed was tilted sideways, characters in the display slid depending on the tilt angle. Because the characters were drawn in 3D, it looked as if they were living in the display. The IP method means the technology that is the base of the "Integral 3DTV", which NHK STRL is now developing. While existing 3DTVs display two types of images for the right and left eyes, the IP method

simultaneously displays images seen from all directions. 3D video of the IP method is different from normal 3D video having multiple viewpoints. The IP method is also called ray reproduction method, and it emits light beams in a way that a real object seems to exist. Therefore, if the IP method can be realized, the contradiction between adjustment and congestion" should not occur. While the right and left eyes decide the angle of the line of sight in accordance with an image popping out of a 3D display or an image deep inside the display, the eyes are focused on the surface of the display. The inconsistency of the two depths confuses the brain, causing 3D sickness. In the ideal IP method, this problem does not occur because the right and left eyes are focused not on the surface of a display but on an image. Video data of the IP method can be created by shooting a real object with a camcorder having a lens array. However, to create computer graphics or animation video, this method cannot be used because there is no real object to shoot. Therefore, it is necessary to reconstruct images seen from various angles in a six-dimensional data space called "ray space". http://www.nhk.or.jp/strl/english/index.htm

Displaybank brings out transparent display technology and market forecast

According to the newly released "Transparent Display Technology and Market Forecast" report by Displaybank, transparent display will debut the market for the first time in 2012 and sharply grow to create $87.2 billion market by year 2025. A transparent display refers to a display that has the characteristic of showing the background of the display as the display itself possesses certain level of transmittance. Transparent displays have many possible applications such as windows for buildings or automobiles and show windows for shopping malls. As the transparent display possesses superior quality in both design and functional aspect, much of the existing display market will be replaced by this, Displaybank thinks. Newly created markets will include construction, advertisement and public purpose – applications that existing displays cannot penetrate. Accordingly, the overall display market size is expected to grow further. http://www.displaybank.com



Display market forecast - revenue base (billion $)

Producer says 3D boosts memory retention in ads and education

Advertisers looking to increase memory retention among audiences should seriously investigate 3D, says James Stewart, a stereoscopic 3D commercial producer. In a presentation delivered at the Ontario Centres for Excellence Discovery 2011 conference, Stewart, founder and director of the Geneva Film Company gave some startling statistics. He showed the use of 3D in advertising yields returns in memory retention with audiences exhibiting 92% total recall of an ad, with 68% of that number showing a higher likelihood of following through with a purchase of the product advertised, a significant increase over the same commercial in 2D. Quoting studies from multiple independent sources including ESPN, Xpand and Texas Instruments, the data shows an average increase in viewer retention of 15%. Showing examples of his 3D work used in customer testing, Stewart said, "For a nominal increase in production costs, you get a 15 to 20% increase in ad recall." Stewart also provided powerful data from a study conducted in the UK on behalf of TI, showing that the use of 3D as a learning method in the classroom also improved a pupil's understanding of a difficult topic. Children's mean scores in lessons using 3D ranked 8.33 out of 10 while traditionally taught returned mean scores of 7 out of 10. http://www.genevafilmco.com

RNCOS says global 3DTV shipments to witness sharp growth

RNCOS reports that the global consumer electronics industry is set to witness phenomenal growth in the near future after the moderation of tough economic conditions. The digital technology revolution has enabled the industry to earn profit from the growing interaction of digital applications, such as camcorders, DVD player/recorder, digital camera, etc. Among the products of consumer electronics market, 3DTV is anticipated to show the highest growth rate. According to a new research report "Global Consumer Electronics Market Forecast

to 2013", the 3DTV segment is expected to grow at a CAGR of around 84% during 2011-2013. The study says that volume sales will grow at a rapid pace in a short period as manufacturers have started to implement 3D as a standard feature across their HD flat-panel product lines. The availability of 3D standard feature at a slightly higher cost will encourage consumers to opt for 3D capable TVs. Further, it is expected that the US, Japan, and Western Europe will be the key markets for 3DTV sales in coming years. The report analyzed the consumer electronics market across various key countries including the United States, the United Kingdom, Germany, China, India, Japan, South Korea, and Taiwan. http://www.rncos.com/Report/IM260.htm

TCO study reveals differences between active and passive glasses for 3DTVs

TCO Development has released the results of a study to compare the visual experience of active shutter eye-glasses or passive FPR (film pattern retarder) eye-glasses technology for viewing 3DTV. The study confirms that the two techniques differ in visual performance characteristics that affect the overall 3D experience. 3D functionality is becoming more common in computer displays, projectors, notebooks and TVs. The growing trend towards 3D display devices for consumers will likely extend to the workplace as well. Within the display industry the merits of active vs. passive glasses has been hotly debated for some time. As an independent certification body for displays, TCO Development is in a unique position to evaluate each of these technologies from the viewpoint of the user experience. The major findings from the study include angular dependent crosstalk. The crosstalk (also known as "image ghosting" or "image doubling") was measured since it refers to the incomplete isolation of the left and right image channels so that one leaks or bleeds into the other when the screen is viewed from different angles. Measurements were taken up to ±30° in both horizontal and vertical directions. Crosstalk values for the horizontal direction are low for both types of glasses. However in the vertical direction the passive glasses had higher cross talk values when tilted above ±15°. For a 3DTV that is placed at the correct height or tilted towards the viewer it is unlikely that the viewing angle will be larger than ±15° in the vertical direction. A conclusion however, is that a tilting function and correct placement are more important for a passive eye-glass 3DTV. The center luminance of white is about three times lower on an active eye-glass 3DTV compared to the passive eye-glass 3DTV due to the different transmittance of the eye-glasses. When wearing the eye-glasses the viewer will adapt to the average luminance, which means that the big difference in luminance will not be perceived by the viewer in the same degree. However, higher luminance is considered advantageous for the image quality, but other parameters are also important, e.g. black level, resolution and crosstalk, for the experienced quality of the viewer. When wearing dark glasses it becomes harder to see things around the TV, like for example the remote control. This is true for both types of glasses but the active ones are darker than the passive ones. The passive eye-glass 3DTV must sacrifice vertical resolution in order to show the images for each eye with different polarization. A passive eye-glass 3DTV with (1920x1080) will thus only have a measured resolution in 3D-mode of (1920x540) for each eye where an active eye-glass type 3DTV will have (1920x1080) for each eye. Studies suggest that images with the same resolution are perceived in more detail in 3D than in 2D. This means that the perceived detail of watching both (passive 1920x540) and (active 1920x1080) in 3D will be slightly higher than watching of each eye (passive 1920x540) and (active 1920x1080). http://www.tcodevelopment.com

NPD survey shows 3DTV acceptance improving

In its survey, "What's Next for 3DTV?" conducted by NPD and commissioned by the Cable & Telecommunications Association for Marketing, movies rank as the consumer favorite in the 3DTV viewing experience, with 93% of 3DTV owners reporting they had watched 3D movies at home. This finding is in line with 2010 findings, where 77% of consumers perceived 3DTV viewing to be better suited to special events, such as movies or sporting events. While some viewers in 2010 indicated a feeling of isolation with the 3D glasses, the majority of current 3DTV owners reported watching 3D programming with others. 64% reported watching a movie with others and 63% said they watched a documentary with a friend or family member. The survey indicated that 87% of current 3DTV set owners say they are satisfied with the quality of their 3D picture and 60% said their TVs are worth the price. The research also shows a shift in attitude about 3D glasses, described by many in 2010 as a "hassle". Today, 47% of 3DTV set owners say they're satisfied with having to wear the glasses and 55% are satisfied with the fit of the glasses. The survey did not reveal how respondents were receiving their 3DTV, either through subscription or via Blu-ray. As interest in 3D technology grows, consumers are also showing an interest in viewing 3D content on a variety of devices. While 21% of adults (18+) are interested in watching 3D movies at home, 17% are interested in taking 3D photos and 14% are interested in taking 3D videos. Despite the abundance of 3D

devices emerging in the market, consumer awareness of these devices remains focused specifically on 3DTV sets. With 36% of total households aware of 3D LCD TVs, awareness among other 3D devices, such as 3D camcorders (5%) remains low and only 14% of consumers are planning to purchase a 3D LCD TV in the next six months. http://www.npd.com

LG unveils 55-inch passive 3DTV

LG's LW980S is described as a "a top of-the-class" smart TV and "sets a new benchmark" with Cinema 3D technology, Nano Full LED (which disperses light evenly for a brighter screen) in one TruMotion 400Hz set. Addressing one of the big problems with 3D technology to date, LG's new TV comes with comfortable and affordable glasses that don't need recharging. It also features proprietary 2D to 3D conversion technology that allows users to watch all content 3D ready. This is done by automatically guessing the depth in 2DTV broadcasts and DVDs to produce the illusion of 3D. LW980S is also flicker-free meaning no dizziness or headaches will be experienced by viewers, another complaint about 3D displays. And the LED-backlit TV is also the world's first 3D display to receive approval from TÜV and Intertek, two of Europe's top testing agencies. The set, which comes in 47 or 55-inch size options, comes with 3D Video-on-Demand available through LG Apps. The TV also comes with "Smart Share" tool allowing users share content between the user's TV, mobile and other devices like laptops. http://www.lg.com

LG study: 80% of consumers pick passive 3D

LG Electronics released findings from a recent consumer study that showed 80 percent of consumers prefer the 3DTV experience wearing passive glasses over more established, and more expensive, active-shutter 3DTV glasses. The study was conducted for LG by market research firm Morpace last May, measuring an LG Cinema 3D HD LCD TV against active-shutter-glasses based LCD TVs from Sony and Samsung. The brands and models were selected by LG for the study. No plasma sets or other passive-glasses TV brands were measured. LG said the study was designed to measure "consumer preferences between 3D technology which uses active-flicker (LG's term for active-shutter) glasses that sync with an emitter on the TV and passive technology that uses polarized glasses similar to those used in movie theaters." LG continues to market 3D plasma TVs using active-shutter glasses, but decided after International CES to drop plans to introduce a range of active-shutter-based 3D LCD TVs to focus exclusively on its new Film Pattern Retarded passive-glasses technology. LG said the survey "measured real-time feedback from consumers and shows that LG's Cinema 3D passive technology is preferred by consumers across all measured categories, including overall 3D experience, 3D picture quality, 3D effect and 3D glasses." More than three quarters of the respondents preferred LG Cinema 3D for the immersive 3D experience (78 percent), 3D effect (77 percent), overall picture quality (77 percent) and 3D glasses (78 percent), the Morpace study said. In the live controlled test, respondents saw a total of four 3DTVs that displayed the same content and were asked to rate their experience with each. The TVs, questionnaire and glasses were all de-branded to ensure that brand perceptions had no impact on preference. www.lg.com/cinema3d-research.

Samsung streaming 3D content now available

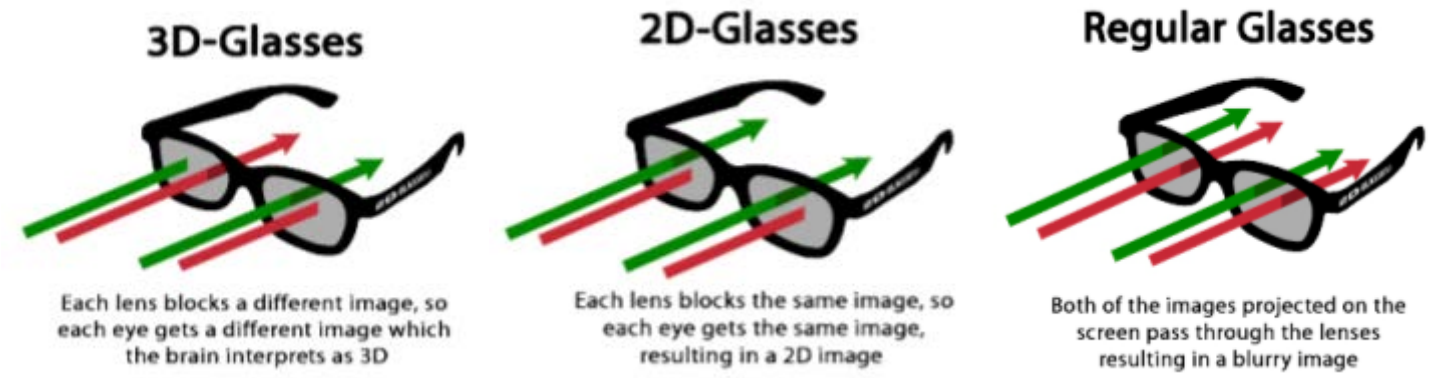
Samsung Electronics America announced that the Explore 3D app on Samsung's SmartHub connected TV interface is now offering a mix of free streaming 3D HD content. The Explore 3D app, which is accessible with a single click from Samsung's SmartHub interface, is offering streaming 3D movie trailers from DreamWorks Animation and other studios, music videos, educational content and full-length TV shows from Wealth TV. Later this year, Explore 3D will also offer access to paid 3D content, including feature films and shorts, plus full-length 3D documentaries. The service is available now on all 2010 and 2011 LED smart 3DTVs and plasma smart 3DTVs. Users simply sign up for a new account via any PC. The Explore 3D application is powered by Rovi technology and includes its cloud-based metadata and RoxioNow platform. Rovi currently powers entertainment services for a range of companies, including digital storefronts from Blockbuster and Sears that are also available on Samsung TVs. Samsung said it is using 3D Active technology to deliver 3D content.

Sony defends Bravia Active 3DTVs

Reacting to attacks on its 3DTV technology through LG Electronic's promotion of a recent consumer study and a corresponding newspaper advertising blitz this week, Sony Electronics Home Division senior VP Mike Abary said consumer actions speak louder than their alleged words. Abary rebutted LG's consumer study claims that 80 percent of viewers preferred passive glasses 3D technology to active-shutter (or active-lens as Sony calls it) technology. Abary pointed out that Sony's active lens technology delivers the best and brightest 3D images available on the market. “Especially important is that only our active shutter technology delivers HD in both 2D and 3D,” Abary said. “Sony creates the highest performing 3D products for consumers.”

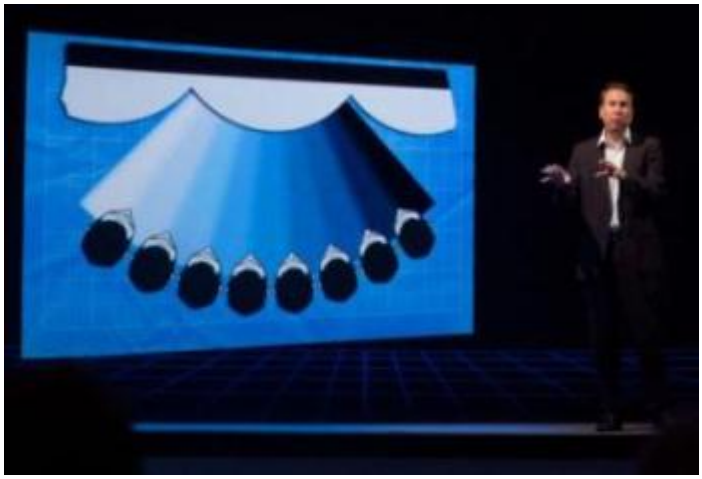
2D-Glasses LLC brings out solution to 3D sickness

About 10% of Americans experience some form of discomfort while watching 3D movies and television according to 2D-Glasses LLC. Symptoms range from a mild headache to severe nausea. 2D-Glasses LLC has created 2D glasses with the effect that you get to watch a 3D movie as if it’s a normal 2D movie. The glasses look just like 3D glasses, no one even has to know you’re not seeing the movie in 3D. One reason for this innovation is that some movies are made specifically for 3D and there may not be a 2D version available. http://www.2d-glasses.com



Toshiba aims at no-glasses 3DTV market

Toshiba unveiled its new 55LZ2, a large-screen 55-inch TV that can be viewed from a wide range of angles in 3D. Toshiba’s TV uses numerous tiny lenses to direct two different views in slightly different directions so each eye sees something different. That’s easier to do with a single viewer at a fixed distance to the screen, but harder with multiple viewers. Toshiba’s 55LZ2 divides the overall viewing area into nine separate regions so people can use the 3D over a broad range of angles. Before watching, a button on the remote control launches face-tracking software on the TV to detect viewers' positions to best control the picture. It’s got a screen resolution of 3,840x2160 to enable the nine-angle viewing, and Toshiba notes that helps when you're just looking at photos, too. The TV also includes Toshiba Places, the company's cloud-based service for things like renting video and sharing. And it can record digital video to an external drive connected by USB. The 55LZ2 will be available in Germany in December, Toshiba said, but didn’t detail other regions or prices. http://www.toshiba.com



Toshiba's glasses-free 3DTV uses lenses to direct light to in separate left and right channels across nine different angles so 3D video can be seen from different vantage points

Sony, Panasonic, Samsung and XpanD create 3D glasses initiative

Panasonic, Sony, Samsung and XpanD announced their intent to jointly develop a new technology standard for consumer 3D active glasses, under the name, “Full HD 3D Glasses Initiative.” With this new agreement, the companies said they intend to develop and license radio-frequency system 3D-active glasses technology,

including RF system protocols between consumer 3D active glasses and 3D displays such as televisions, personal computers, projectors and 3D theaters with XpanD active shutter glasses. The standardization will also include multiple types of infrared system protocols between 3D active glasses and 3D displays, ranging from the protocols jointly developed by Panasonic and XpanD 3D, to the proprietary protocols of Samsung and Sony, respectively. Universal glasses with the new IR/RF protocols will be available in 2012, and are targeted to be backward-compatible with 2011 active 3DTVs. Through this initiative, the four companies aim to widely introduce universal active 3D glasses to the market. http://www.panasonic.co.uk/html/en_GB/7810278/index.html

US consumers to spend more for 3DTV than HDTV, according to Strategy Analytics

US consumers looking to buy a 3DTV during the next year plan to spend over 50% more than those buying a regular HDTV, with over 11% planning to buy one next year. According to Strategy Analytics, those early entertainment adopters will spend 56% more in the US than for a regular HDTV. That price is expected to average $1224 for a 3DTV compared with $785 for a HDTV. The study found that in Europe 3DTV price premiums will be somewhat lower than the US when compared to HDTVs, ranging from 54% in France to 35% in Italy. While many studies show some lackluster consumer interest in 3DTVs, this study suggests that is not the case, that 11.5% of US consumers are somewhat or very likely to purchase a 3DTV during the coming 12 months. “3DTVs exhibit all the classic signs of an emerging market with early teething problems,” stated Jia Wu, senior analyst at Strategy Analytics. However, he adds, it is important to note that those who are thinking of buying the product attach significant additional value to a 3DTV relative to a regular HDTV. Consumer interest in HDTV is somewhat lower in Europe. For instance, 9% of consumers in Germany are likely to buy a 3DTV in next year. This number is 6.9% in the UK. http://www.strategyanalytics.com

Sharp Elite merges best of both brands

Sharp launched new Elite LCD TVs, a collaboration between Sharp and Pioneer’s Elite brand which mixes the best technology of both brands into the new premium TVs. Earlier this year when Sharp and Pioneer announced that they were going to be working together to launch a new line of Elite TVs. These TVs, available in 60 and 70-inch models, are both LED-based LCD TVs loaded with picture-quality enhancing tech, some of which is familiar. First, the TVs incorporate full-array backlighting, rather than edge lighting, creating more uniform screen lighting and localized dimming (by LED groups). All Elite TVs include a yellow sub pixel along with the standard red/blue/green formulation, which, when added together, creates more than 8 million dots on the screen. The models are claiming a refresh rate of “greater than 240Hz” due to a proprietary scanning backlight technology. The Elite TVs are THX certified. It also includes ISF certification with Day and Night modes for calibration. The feature that the company is most hyping is Intelligent Variable Contrast. Found only on the new Elite TVs, it automatically controls both the brightness and backlight to enhance color depth, brilliance and detail in dark areas. Finally, as expected from any TV sold in 2011, these models will include a suite of online features included Netflix, Vudu, CinemaNow and YouTube. Another online feature borrowed from the Sharp book is Elite Advantage Live (called Aquos Advantage on Sharp TVs) which allows online tech support directly through the TV. A remote tech can adjust settings in the TV, so you can just hand it over to the experts without letting them in your home. The 60-inch model carries an MSRP of $5,999.99, and the 70-inch model carries an MSRP of $8,499.99. http:// www.sharpusa.com

LGs' NANO FULL LED Cinema 3D HDTV is first passive 3D TV to achieve THX 3D certification

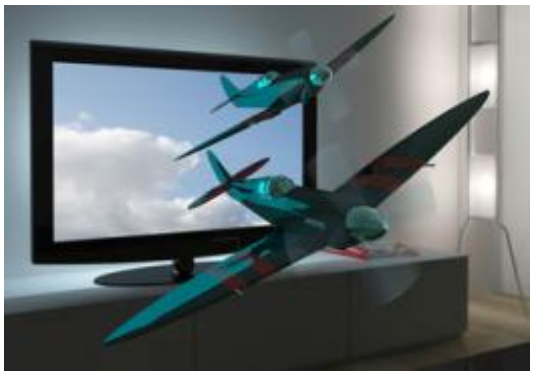
LG Electronics launched the world's first passive 3D TV to achieve the coveted THX 3D Display Certification.
LG’s new “NANO FULL LED” model is a stunning ultra-slim full-backlight LED HDTV being shown publicly for the first time here this week at the 2011 Custom Electronic Design and Installation Association (CEDIA) Expo. Shipping now, the flagship 55LW9800 also includes the LG Smart TV platform featuring wireless access to a rich array of online content without a PC. This unique NANO FULL LED HDTV uses LG’s film-pattern retarder (FPR) 3D screen technology making it the first 3D TV using flicker-free passive technology to achieve both THX 2D and 3D Display Certification. Joining an elite group of HDTVs, the 55LW9800 passed more than 400 THX tests evaluating left and right eye images for color accuracy, cross-talk, viewing angles and video processing performance. THX offers the only performance benchmark available today for 3D hardware.

THX provides the ultimate benchmark and performance criteria for CE manufacturers to deliver best-in-class entertainment products. THX 3D Display Certification confirms the 55LW9800 meets THX's qualifications for having the correct gamma, luminance and color temperature. These requirements in addition to low cross-talk and wide viewing angles result in superior 3D picture quality and performance.

The NANO FULL LED display employs a thin film incorporating a full array of LEDs, giving it more uniform light distribution and detailed local dimming from over two hundred addressable sectors. With more uniform lighting and improved localized dimming in both 2D and 3D modes, this model offers a greater range and life to colors. Add LG's TruMotion 480Hz refresh rate and the overall effect is a picture so smooth, sharp and realistic, it's as if the action is playing out right in viewers' living rooms. With NANO technology, superior picture quality meets stylish design, allowing for an incredibly narrow bezel and thin depth of just 1.08 inches. The 55LW9800 features LG CINEMA 3D technology, which lets people recreate the 3D movie theater viewing experience in their homes with lightweight eyewear, crisp, bright images and wide horizontal viewing angles. LG CINEMA 3D makes it easy to host family and friends for a sporting event or 3D movie night given the low cost of the glasses. LG's FPR technology optimizes the separation of images for the left and right eye, which are then filtered through the glasses to give viewers a better 3D effect with minimal cross-talk. LG's 3D Light Boost, a thin film covering the screen, creates bright, crisp 3D images for a superior 3D viewing experience by helping to counteract dimness that can occur with other 3D systems. The 2D to 3D Conversion feature provides a ready supply of shows and movies in high quality 3D. http://www.lg.com

3DTV sales at Currys and PC World saw 500% annual growth says Dixons Retail

Dixons Retail Group revealed that sales of 3D TV displays in its network of stores have increased dramatically over the last quarter. The British consumer electronics retailer, who owns Currys and PC World, said that 3D-capable HDTV sets accounted for 20% of all televisions sold between April and June this year. Passive 3DTVs, such as the LG LW650T and the Toshiba VL863 series, were singled out for praise by the retail group who said that these models sold particularly well, contributing heavily to the jump in overall 3DTV sales. Given the significantly cheaper prices, reduced weight and increased convenience of the polarized 3D glasses (when compared to their active-shutter counterparts), as well as tri-dimensional images that promise to be flicker-free, passive 3D televisions are gaining popularity among UK consumers. Dixons also stated that like-for-like 3DTV sales are up 500% on twelve months ago. The retailer attributed this to lower prices, greater availability of 3D content, and the fact that 3D capability is increasingly found on a wider range of flat-screen TVs (even entry-level and midrange ones). Currently 40% of the company's stock of televisions are made up of 3D sets. http://www.dixonsretail.com



3DTV sales at Currys and PC World saw 500% annual growth

Poorly made 3D movies at fault for slow 3DTV sales says Panasonic

An official from Japanese TV manufacturer Panasonic claimed that the adoption of 3DTVs has been hampered as a result of greedy Hollywood studios churning out what he described as "shoddy" 3D movies, effectively destroying any good first impressions or expectations consumers initially harbored for the display format, leading to poor sales figures. According to Panasonic UK's marketing director Andrew Denham, the urgency with which Hollywood movie studios have inundated cinemas with 3D versions of blockbusters has had a negative impact on the industry, adding that many 3DTV makers are now paying the price for the low quality of 3D movies that was prevalent at a time when the display technology was trying to take off. Explaining his viewpoint, he said that the sluggish sales of 3D-capable HDTV sets can be traced back to a lack of end-user confidence in the quality of the content.

Panasonic, IOC and OBS announce worldwide partnership for the first live 3D Olympic Games for London

Panasonic Corporation, the Official Worldwide Olympic Partner in the Audio and Visual Equipment category, the International Olympic Committee (IOC) and Olympic Broadcasting Services (OBS) announced a partnership agreement to make the London 2012 Olympic Games the first ever live 3D Olympic Games. The partnership will

produce the first HD 3D live broadcast in Olympic history, and will allow audiences around the globe to witness the world's greatest sporting event in immersive 3D. The 3D broadcast will include major events such as the Opening and Closing Ceremonies, athletics, gymnastics, diving and swimming, and will be produced and delivered to participating rights-holding broadcasters around the world. OBS will be in charge of producing more than 200 hours of 3D coverage during the London 2012 Olympic Games by utilizing Panasonic's state-of-the-art 3D production technologies including the AG-3DP1, a P2HD professional fully-integrated twin-lens Full HD 3D camera recorder. http://panasonic.net/olympic

AT&T drops ESPN 3D citing high carriage fee

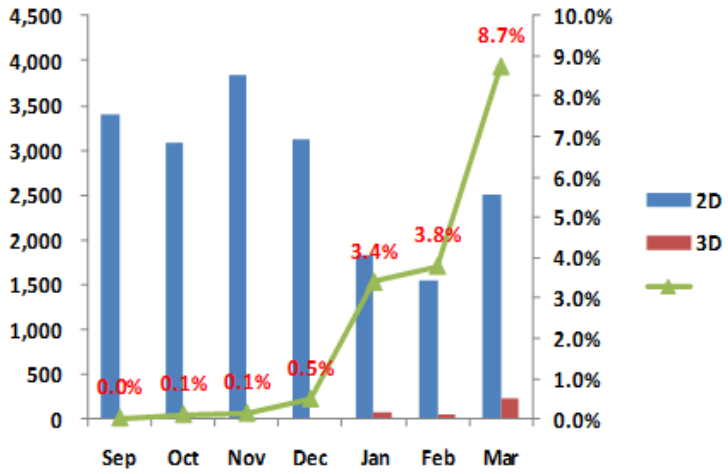
After carrying ESPN 3D during its first year, AT&T has dropped the network after its carriage agreement expired in July, saying that the price tag was simply too high. The sports programmer said ESPN 3D has featured more than 120 events in its first year, and is available to more than 60 million households through Comcast, DirecTV, Time Warner Cable, Bright House Networks and Verizon FiOS TV.

Sony extends sponsorship of ESPN 3D

Sony is extending its sponsorship of ESPN 3D for another year. The Japanese electronics giant emphasized its 3D productions of the upcoming Summer X Games, and the regular college football season commencing this fall. Sony was named the first official sponsor of the network when it was announced in January 2010. The network launched June 11, 2010 and transitioned to a 24/7 network on February 14, 2011.

Displaybank brings out 3DTV report

Displaybank has published a report on 3DTV including 3DTV technology development trends as well as business strategies of major TV makers, 3DTV market forecast by device (LCD, PDP, OLED), and technologies (shutter/polarization). According to the report, the 3DTV market is expected to be around 22 million units globally in 2011, taking 9% market share of the worldwide TV market. Chinese companies are especially expected to play a large role in these growing waves. The combined 3D share of monthly TV panel procurement by the six major Chinese TV makers (Changhong, Haier, Hisense, Konka, Skyworth, TCL) increased to about 9% in March and continued to rise steadily since. This trend is very similar to the initial look of LED LCD TV in the past and this shows Chinese makers' adaptability to new technology in a fast-changing TV market is getting much faster. In turn, expansion strategies of Chinese makers with regards to 3D are helping 3DTV market growth this year. http://www.displaybank.com



3D panel procurement share of six major Chinese TV makers

Eccleston Square Hotel includes 3DTV in your hotel room

The Eccleston Square Hotel in London is including 3DTV sets in its rooms. Opened in July 2011 in the heart of Central London, the hotel sits close to creative and chic fashion shops, as well as Buckingham Palace. Eccleston Square Hotel is the first hotel to feature 3D televisions in every room, 46-inch of Panasonic's best 3D image. The hotel also features smart glass walls and bathroom doors, adjustable, massage beds from Hästens, and glass, touch sensitive entry, light and climate control pads. The hotel also comes with an iPad2 in every room. Powered by Intelity's ICE software it drives the guest's control of the room and their experience in the hotel and of London. It is actually only the second hotel in the world to use iPad2's to perform this service. Rooms are available from 282 £ tax included. http://www.ecclestonsquarehotel.com

GUNNAR Optiks teams up with LG Electronics to enhance cinema 3D experience in the home

GUNNAR Optiks announced an alliance with LG Electronics to co-promote GUNNAR's premium 3D eyewear to consumers who have purchased LG CINEMA 3D HDTVs. The cooperation represents the first time that optical

equipment used by professionals in the entertainment industry will be available to consumers for use with 3DTVs. Joint promotional initiatives, primarily encompassing digital marketing elements, will be executed in the United States to position GUNNAR's Premium 3D eyewear as a premium accessory for LG CINEMA 3D customers. Originally introduced in January 2010, GUNNAR's premium 3D lens is Real D-certified and was the first optically correct eyewear available to consumers, setting an industry standard for quality. GUNNAR Optiks' Premium 3D eyewear reaches a global distribution network within both the consumer electronics and optical retail environments, including Best Buy stores and online at BestBuy.com, as well as domestic and international eyewear chains and independent eye care providers. Various frames are available for $49 to $149. LG CINEMA 3D TVs use a similar 3D technology employed in movie theaters. LG's Film Patterned Retarder (FPR) optimizes the separation of images for the left and right eye, which are then filtered through the polarized glasses. Individual left and right eye images are then combined for a 3D picture in Full HD1080p. This gives viewers a great 3D effect and also virtually eliminates cross-talk, providing an outstanding overall 3D viewing experience. In fact, third-party consumer research commissioned by LG shows that four out of five consumers prefer the overall 3D experience of LG CINEMA 3D TV technology from LG Electronics over active 3DTVs from Sony and Samsung. LG has expanded the LG CINEMA 3D series to include nine models available now: the LW6500 series in 47, 55 and 65-inch class screen sizes (47.0, 54.6 and 64.7-inch diagonals, respectively), the LW5600 and the LW5700 series in 47 and 55-inch class screen sizes (47.0 and 54.6-inch diagonals, respectively), and LW5300 entertainment packages bundled with a 3D Blu-ray player in 47 or 55-inch screen sizes (47.0 and 54.6-inch diagonals). http://www.lg.com/us/tv-audio-video/discoverlgtvs/cinema3d/index.jsp http://www.gunnars.com/premium3d

Majority of US consumers prefer 3DTV, reports Frank N. Magid Associates

According to research of US residents by Frank N. Magid Associates during Disney's D23 Expo, 99% surveyed said 3DTV was "somewhat better" than standard HDTV while 71% believe it is "much better" or "dramatically better". Half of US consumers surveyed wished they had 3DTV in their home, while over a third said it "brings things alive in a way I've never seen before". http://www.magid.com

BBC backs 3DTV

The BBC is firmly behind 3DTV, although Jo Sermon, BBC Worldwide's director of content strategy, speaking October 3 at the MIPCOM programming market, said the BBC is also playing the long game in that 3D is suitable for play-out on tablets, smart-phones, laptops, 3D-based Internet as well as Blu-ray devices. Sermon told MIPCOM delegates that a recent research study for the BBC showed that public interest in various 3D genres was high, with film (44%) being highest, natural history (40%), music (21%), entertainment (also 21%) as well as reasonable interest in 3D for comedy, soaps and entertainment. She highlighted Planet Dinosaur, a 50-minute 3DTV "special" that's grown out of the BBC longer-form series of the same name. The BBC is also backing music concerts, with shows by Britney Spears and Elbow captured in 3D. The broadcaster is also likely to take some of next year's Olympic Games in 3D. http://www.bbc.co.uk

iPONT exhibits live 3D broadcast technologies on glasses-free 3DTV

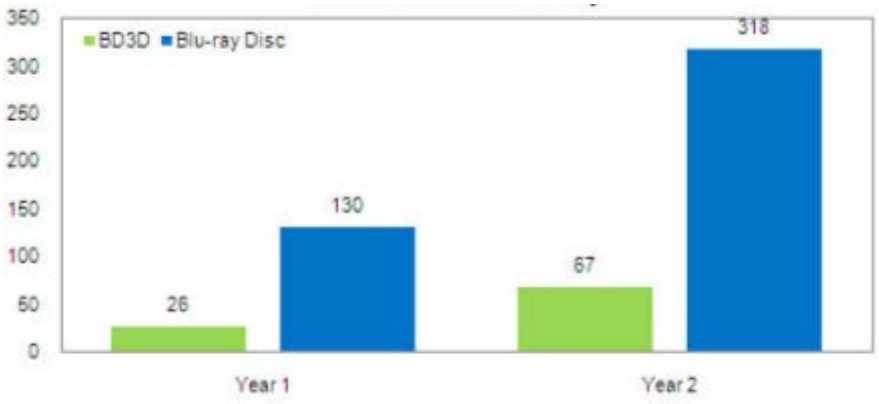
iPONT USA introduced the second generation of its breakthrough 3D without glasses system. iPONT USA demonstrated a 3DTV box, which converts any stereo 3D source, including 'live' 3D broadcasts, in real-time for viewing on a 3D without glasses screen. The demonstration by the glasses-free innovator aims to prove that without-glasses 3DTV technologies have reached a level of maturity and quality acceptable to the consumer market. iPONT has developed a system that produces real-time 3D pictures that are both clean and crisp with breathtaking depth, and all without glasses. "Glasses-free real-time 3DTV, without any noticeable processing delay, has been an industry challenge but we are close to delivering that premium-quality glasses-free 3D experience for the consumer in their living room," said Glen Harper, President of iPONT USA. "This year iPONT has participated in a number of high-profile 'live' without-glasses 3DTV sports trials including the UEFA Champions League final between Manchester United and FC Barcelona, Wimbledon men's final and Haye vs. Klitschko fight, where the technology came under scrutiny." iPONT's 3DTV box technology, available as a set-top box and in the future as embedded technology converts any 3D with glasses content today (all 3D broadcast signals are currently broadcast this way) into auto-stereoscopic content for use on glasses-free 3DTVs and displays, in real-time. The 3DTV box can handle Internet, satellite, cable and terrestrial services that stream 3D content directly into the home or businesses. http://www.ipont3d.com

LG Chem to expand production lines for FPR 3D film

South Korea's LG Group is expanding production lines for optical films, the key part for film patterned retarder (FPR) 3DTV, in order to make LG's FRP 3DTV more prevalent. In the midst of competition with Samsung Electronics' shutter-glasses (SG) 3DTV, LG's move is interpreted as a strategy to increase supply of FPR 3DTVs in order to reinforce its dominance in the market. LG Chem, a chemical unit of LG Group, decided to build second and third lines in addition to the first production line for a greater volume of FPR 3D films and it plans to inject 200 billion to 300 billion won ($186.16 million to $279.25 million) into the expansion. LG Chem has been producing some of FPR films since early this year and has just completed the first production line with an annual capacity of 1,300 units this month. The company has set a timeline for the second and third lines to be finished by 2012. It is looking for sites for the additional facilities, including Ochang, South Chungcheong Province. When the second and third lines are completed, LG Chem's annual capacity to produce FPR films is forecast to reach 40 million units. http://www.lg.com

IHS iSuppli says US consumers have taken to 3D Blu-ray

Counting feature films (159 million) and non-movie content, a grand total of 1.75 million BD3D units were sold at retail in the first 12 months of the format's life, according to an IHS analysis of Nielsen VideoScan point-of-sale data. Another 1.7 million units were taken home as part of bundling deals (deals that have provoked some criticism in the industry when major titles are available only as bundles). A total of 93 BD3D titles were expected for release in the United States during 2010 and 2011, the first two calendar years of the format's availability. In comparison, 448 Blu-ray titles were released during that format's first two years in the market. Even with the format's limited number of titles, a total of 507,293 BD3D discs were sold in 2010, comparing favorably with the 363,000 2D Blu-ray units sold in that format's launch year of 2006. The major reason for the limited number of BD3D titles on the market is the relatively small quantity of 3D titles released theatrically in previous years, according to IHS. However, this is rapidly changing. There were 23 theatrical 3D releases in 2010, and virtually all the big tentpole movies this year are being given the 3D treatment, which will allow the release of more 3D titles in 2011 and the following years. Additionally, studios are already converting some of their major hits from the past 30 years for theatrical re-release in 3D, like "Star Wars" and "Titanic". The growing number of titles combined with the large installed base of BD3D-capable players as well as the rising sales of 3D-capable televisions, will cause sales to accelerate in the second half of this year. The first film to hit retail on BD3D was "Cloudy With a Chance of Meatballs", released in the US by Sony, and IHS estimates the title sold close to 50,000 units in its first year at retail. "Cloudy" was also bundled with Sony 3DTVs and Sony 3D starter kits, which consist of extra pairs of glasses, so unit numbers were boosted significantly by the bundles. http://www.isuppli.com



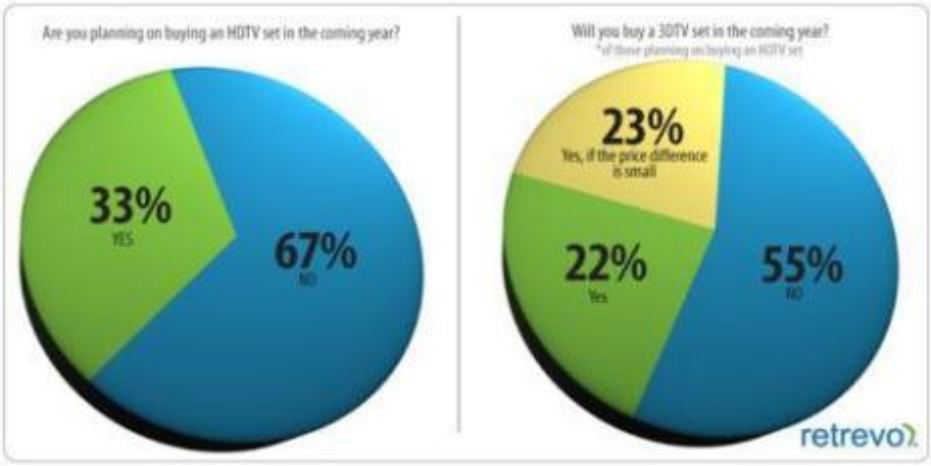
Number of US video titles released during each of the first two years in the market for BD3D and Blu-ray

CEA launches group to examine 3DTV energy

The Consumer Electronics Association (CEA) announced the formation of the 3DTV Technology and Energy Consumption Discovery Group. The discovery group will allow timely progress on the revision of CEA's energy measurement standards, while at the same time opening technical discussions on the energy consumption of 3D display technologies. CEA expects 3DTV shipments will top 3.6 million in 2011 and nearly double that in 2012, reaching 6.9 million. As more manufacturers add 3D features to their displays and content producers continue to create more 3D material, this discovery group will examine the state of 3DTV and whether energy measurement standards should be updated to reflect changes in technology. Participation in CEA standards and activities is open to any company, organization or individual with direct and material interest. To join the 3DTV Technology and Energy Consumption Discovery Group, visit http://standards.ce.org/kwspub/join/.

Retrevo finds consumers still don't care about 3DTV

Despite the ongoing push from consumer electronics companies, people just don't seem to care about 3DTV. A recent survey conducted by Retrevo.com found that among those who plan to purchase a high-definition television in the coming year, only 22% of consumers stated definitively that they planned to seek out a TV with 3D capabilities. Another 23% said they would buy a 3D television if the additional cost was minimal, and 55% of respondents said they would not be purchasing a 3DTV, even if a set with 3D technology cost only slightly more than a 2DTV. When consumers with no interest in buying a 3DTV were asked why the new technology didn't appeal to them, 30% were bothered by the need for special glasses and 40% said there's not enough 3D programming to warrant a purchase. Retrevo.com's survey of more than 1,000 people also found that only 33% of consumers plan to purchase an HDTV in the coming year, and the slowed purchasing trend among consumers is hurting consumer electronics companies around the world. Sony, for example, recently lowered its full-year TV sales estimate from 22 million units to 20 million, and it reported an operating loss of $346 million yen in its September quarter. Panasonic, another big name in TVs, expects a net loss of $5.5 billion this year while Sony projects a $1.15 billion loss for the full year. http://www.retrevo.com



3D LCD TV panel shipments grew 27% in Q3'11, DisplaySearch reports

Shipments of 3D LCD TV panels reached 6.6 million units in Q3'11, accounting for 27% growth Q/Q. The pattern retarder type and shutter glass type are growing by 34% and 23%, respectively. According to the DisplaySearch *Quarterly Large-Area TFT LCD Shipment Report – Advanced LED + 3D*, panel makers are targeting very strong 30% growth in 3D LCD TV panel shipments for Q4'11. Downstream manufacturers and brands are continuously promoting 3D, and end-user awareness and interest are growing. In Q3'11, 3D TV panel penetration in total LCD TV panel shipments reached 12%. While LCD TV panel shipments did not grow in Q3'11, 3D panel shipment growth was healthy, and panel makers are targeting 30% Q/Q growth for Q4'11. According to NPD DisplaySearch estimates based on panel makers' shipment targets, 3D LCD TV panel shipments will reach 21.5 million units in 2011, with 3D penetration in LCD TV panels of 10% (4% pattern retarder type and 6% shutter glass type). Furthermore, with the launch of a series of newly developed low-cost 3D solutions, panel makers are targeting 20% 3D penetration in LCD TV panels by Q3'12. This level of 3D TV penetration may lead to more content availability. In addition to 3D TV, panel makers are aggressively promoting 3D monitor panels, especially for consumer entertainment PC and game markets. In 3D LCD monitors, pattern retarder makers are more aggressive than shutter glass makers. Panel makers are targeting shipments of more than 1.5 million per quarter from Q2'12 onward. This is up from 250,000 units in Q3'11. http://www.displaysearch.com

Application	Q1'11 Actual	Q2'11 Actual	Q3'11 Actual	Q4'11 Forecast	Q1'12 Forecast	Q2'12 Forecast	Q3'12 Forecast
2D	95.5%	90.7%	88.2%	85.1%	83.1%	79.5%	78.5%
3D Pattern Retarder	1.0%	3.6%	4.8%	6.6%	6.4%	10.4%	10.6%
3D Shutter Glass	3.5%	5.8%	7.1%	8.3%	10.5%	10.1%	10.9%

Q3'11 LCD TV panel shipment by 2D and 3D (shares)

Raystream unveils HD 3D compression system

High-definition video-compression codec developer Raystream recently launched a Full-HD 3D-video-compression service that will allow streaming of 1080 pixel 3D HD video in the same space as 2D HD streams. Raystream said its Cloud-based architecture enables instantly viewing of the compressed video on any 3D video-enabled device, including home theaters, set-top boxes, tablets, game consoles, laptops and mobile phones.

Using Raystream's Full-HD 3D compression tool, full-frame left and full-frame right HD 3D videos are condensed into a single, synchronized stream. That single stream can be played by HD 3D devices as full-left and full-right play out or side-by-side. Raystream said its proprietary video compression technology decreases bandwidth costs by reducing the file size of HD videos up to 90 percent, with an average of approximately 70 percent, and with no loss in clarity or quality. This is said to allow streaming without buffering or stopping. http://us.raystream.com

Meduza Systems introduces single camera 3DTV solution

Meduza Systems announced the availability of the TITAN, reportedly the first fully controllable 3D HD camera for television production. The TITAN features two 1080p CMOS sensors and convergence accuracy of up to 1/1000 of a degree. Footage can be recorded at speeds ranging from 24 to 120fps in 10bit. It is housed in a lightweight titanium body and weighs in at 7.5 pounds. The camera is marketed to provide on-the-fly sports coverage as well as use in documentaries. http://www.meduzasystems.com

Consumers prefer connected TV over 3D says Parks Associates

Despite all of the options available to get one's visual entertainment, television still is one of the most popular devices out there. According to new consumer research from Parks Associates, 20% of all U.S. households with broadband intend to purchase a new flat-panel television by the end of the year. Among those households intending to buy a new TV set, nearly three-quarters plan to buy a TV with advanced features like 3D or built-in Internet connectivity, but they're going much more for the latter than the former. While the findings don't necessarily represent the death knell for 3DTV (which has had trouble catching on with consumers), they do show that consumer interests lie elsewhere. "It's definitely a reflection of consumer sentiment today that is much more highly geared to connectivity and its practical benefit; that is, greater access to content through services such as Netflix and others," says Kurt Scherf, vice president and principal analyst at Parks Associates. "We're actually seeing 3D and connected technologies built into a large number of televisions, so consumers are actually getting both capabilities. It's just that online access to content resonates more strongly with them today." With prices coming down, more middle-class families are also getting into the game of buying these advanced TVs, Scherf says. According to the report, 20% of middle class households (those with annual incomes of $50,000 - $75,000) intend to purchase smart TVs this holiday season, compared with 12% of households with incomes about $75,000. Another factor: children. Families with children in the house were more likely to buy an advanced television than those without kids (17% vs. 10%). But what's good news for the television makers could be bad news for the content providers, specifically the ones bringing programming into the house. According to the report, consumers who intend to purchase a smart TV this holiday season are also more likely to cancel or downgrade their pay-TV service packages within the next year. www.parksassociates.com

Canal Plus takes 3D service off the air

French pay TV giant Canal Plus is to shutter its 3D channel after it failed to attract enough subscribers. The service, which kicked off in June 2010 in time for the Soccer World Cup, will close January 24. It had fewer than 20,000 subscribers. A Canal Plus spokesperson said that the service had allowed the company to experiment with the technology, but it had also posed a number of challenges, principally "the lack of enthusiasm among subscribers for stereoscopic programs." Another issue was the low level of sales of 3D TV sets in France, due to their high cost. Since March, the 3D service has aired a different live sports event and a new feature film each month. Last month, it aired its first 3D documentary, "Makay," a big-budget expedition into Madagascar's Makay Valley. The paybox will continue to air 3D content on its other channels. http://www.canalplus.fr

3net expands 3D programing in December

The 24-hour 3D channel 3net has significantly expanded its programing slate, with the announcement that it plans to air more than 50 hours of all new original 3D stereoscopic content in December. The network, a joint venture between Sony, Discovery and IMAX, is billing the slate as the most ambitious rollout of original 3D content in television history. The programming ranges across a wide variety of genres, including documentaries, live action reality series, mixed martial arts fighting, natural history, kids' animation and short-form sketch comedy. Some highlights of the new program include Fields of Valor: The Civil War, Hillbilly Blood: A Hardscrabble Life, Tough Love Garage, and Super Systems. http://www.3net.com

German and Austrian researchers say 3DTV does not increase seizure risk

Watching 3D television does not increase the risk of young people being affected by seizures as a result of epilepsy, according to the results of a new study. German and Austrian researchers presented the findings of the report at the American Epilepsy Society annual meeting in Baltimore. Dr Orrin Devinsky, director of NYU Langone Medical Center's Epilepsy Center, stated any issues relating to watching television and epilepsy would be as a result of flashing images, regardless of whether the content was being shown in 3D or 2D. Study author Dr Herbert Plischke, executive director of the University of Munich's Generation Research Program, added no provoked seizures were witnessed due to watching 3D television in the research.

Toshiba goes into details of its 55-inch 4k2k naked-eye 3DTV

Toshiba Corp announced the "Regza 55X3", a 55-inch LCD TV capable of displaying 4k2k (3,840x2,160 pixels) 2D video and 3D video viewable with the naked eye. The 55X3 is a domestic model of the product announced at IFA 2011 in Germany. It was launched in mid-December 2011 in Japan. Its price is expected to be about ¥900,000 (approximately $11,700). Toshiba is planning to manufacture 1,000 units per month.

The 4k2k video, which is one of the features of the 55X3, is created from input video by using the "Super-resolution Processing", which Toshiba has developed for its Regza series of LCD TVs. Video of terrestrial digital broadcast (1,440x1,080 pixels) and DVD video (720x480 pixels) are first converted to full-HD video (1,920x1,080 pixels). Then, based on the full-HD video, 4k2k video is created. The 4k2k video is vertically divided into two parts and output to the panel. This time, Toshiba employed an up-converting process called "color texture reproduction" in addition to the reconstruction, self-congruity, 3D frame, and color processes, which are used for the company's previous products. The color texture reproduction process restores fine, high-saturation color information that is lost when input video (4:4:4 format) is converted into digital broadcast signals (4:2:0 format) so that the textures of objects are improved. For the naked-eye display, which is another feature of the 55X3, Toshiba used the "integral imaging method", which the company is currently developing. In this method, lenticular lenses are arrayed on the front side of an LCD panel. This time, 2D video or 3D video (for two parallaxes) is converted to 3D video (for nine parallaxes). The pixel count of 3D video is 1280x720. To display both 3D and 2D video, Toshiba added a polarization switching sheet between the LCD panel and lenticular lenses. This sheet has a function of switching polarization by 90° and is used to turn on/off the lenticular lenses. The 55X3 has a face tracking function, which determines the location of a viewer by using a camera, and shows 3D video best suited for the location. Toshiba developed the 4k2k panel capable of displaying 3D video viewable with the naked eye in collaboration with a panel maker. It is equipped with a direct-lit white LED backlight unit. It can adjust the light emission of white LEDs in 12 (horizontal rows) x 20 (vertical rows) areas in accordance with input signals. As a video processing platform, Toshiba employed the "Regza Engine CEVO Duo". The 55X3 has two main image processors, a chip for estimating depth information in 2D/3D conversion and a chip for separating 4k2k video into two parts and outputting them. http://www.toshiba.com

The Regza 55X3 and Masaaki Osumi, Toshiba's executive officer; 3D image viewable with the naked eye

Chyron creates graphics interface for 3DTV

TV graphics designers have been rendering 3D graphics for 2DTV (HD and SD) for years. Typically, the 3D graphics are created inside a virtual 3D world in their computers. These 3D images are then converted so that they still appear to be three-dimensional when viewed on a 2DTV screen. 3D graphics and animation capabilities are a standard feature on Chyron's two-channel HyperX3 on-air graphics systems, and since most of the graphics are already designed in 3D, broadcasters can take them to air even more quickly, Chyron says. Some tricks, such as shading the area around a lower third or logo, help to blend the graphics into the 3D scene. Logically, using 3D graphics on 3DTV should be simpler than working with 2D television, because no conversion is required. A designer should be able to import their 3D renderings directly into the 3D playout server, for overlaying with 3D video as required. http://www.chyron.com

Pixel Power's 3D stereographic option is seamlessly integrated within Pixel Power Clarity and BrandMaster interfaces

Experience Sony's 3D content channel "3D Experience" topped 10 million total views

Experience Sony's 3D content channel launched in July 2011 "3D Experience" topped 10 million viewers worldwide at six months of service. 3D Experience movies, music, sports, and a wide range of 3D video and documentaries, are for LCD TV compatible 3DTVs, Blu-ray Disc Player for free Internet service. This service, initially launched in five countries, has expanded its deployment to currently 60 countries and regions. 3D work for 2012 from Sony Pictures Entertainment include "Amazing Spider-Man", "Men in Black 3", FIFA Club World Cup Japan 2011 official video, and 3D GRAND TOUR World Heritage Site. http://www.sony.com

ESPN considers placing graphics at the top of a 3D screen

ESPN is a 3DTV broadcaster and as a regular user of 3D graphics products made by Vizrt and Pixel Power (Brandmaster), ESPN knows a great deal about the conflicts that can occur between 3D graphics and 3D video. The biggest challenge lies in depth of field. For a 3D graphic to look good on top of 3D live video, the depth of field has to be the same. So if the shot shows a clear wide shot with a long depth of field, the graphics have to match that look. Similarly, if they are going tight on a close shot with a very shallow depth of field, the graphics have to match that. If they don't match, the visual result is jarring to the viewer as their brains try to integrate the conflicting depths of field. The depth of field conflict is most widely pronounced when ESPN uses "lower third" graphics to display team names, scores and other information. In doing so, the network is following a 2D tradition: The lower third of the screen has been reserved for these kinds of graphics for decades. The lower third section of the screen is typically the area that is closest to the viewer. This is also where things can change the most; for instance, if someone walks through the shot close to the camera. In 2D, this isn't an issue, but in 3D it can be a nightmare. In contrast, the upper third of the screen tends to stay stable in 3D, which is why ESPN is considering moving its team/score graphics up to this space. Doing so will require camera angles to be adjusted, so that this landscape is freed up during live play. But it would solve the problem of foreground interference. http://www.espn.com

Sportscasters use Vizrt's LiberoVision software to analyze plays

CableLabs Interop event to evaluate OpenCable 3DTV requirements

CableLabs will host a 3DTV interoperability event in February, allowing manufacturers of 3D-capable cable set top boxes, TV sets and test equipment to evaluate product implementations that are based on the OpenCable 3DTV requirements, or are designed to interoperate with such products. The "Interop" event, scheduled February 13-17, will draw from expanded testing capabilities in the CableLabs 3DTV research and demonstration lab, a facility for exploring and testing products and services tied to the rapidly emerging 3DTV category. CableLabs 3DTV Lab,

established in 2010 and located in the CableLabs facility in Louisville, Colorado, contains equipment representing the state-of-the-art in 3DTV and video technology over cable networks. The 3DTV Lab is an integral, and invaluable, part of the cable industry's ongoing research and development cycle into 3DTV technology. The cable industry relies upon the 3DTV Lab to demonstrate prototype products and services, and for testing conformance to standards and specifications that promote interoperability of 3DTV technology and services on the cable network. A comprehensive suite of calibrated 3DTV video test streams based on the CableLabs specifications were recently added to the 3DTV Lab. These new test streams were made available by Allegro DVT. The CableLabs 3DTV test suite, now including the new 3DTV test streams, will be used in interoperability test events, the CableLabs Development Lab, and the CableLabs Certification Program. CableLabs OpenCable specifications, which include support are publicly available at http://cablelabs.com/opencable/specifications/index.html

LG and Gaikai to bring cloud gaming to 3D televisions in 2012

LG Electronics and Gaikai are teaming up to bring an integrated cloud gaming service to LG Cinema 3DTVs in 2012. Gaikai says it has spent three years building the fastest interactive cloud network in the world, instantly capable of delivering cutting-edge games without the need for any extra custom hardware. The company's cloud platform will be a part of LG's game portal service within the Smart TV ecosystem and will allow consumers to use their Smart TV log-ins to seamlessly play a broad range of games, including some of the latest award-winning releases. http://www.lg.com/uk/index.jsp

MMD launches Philips no-glasses 3D displays

MMD announced a new line of no-glasses 3D displays with auto-stereoscopic technology, the 23-inch BDL23301VS, 42-inch BDL4251VS, and 55-inch BDL5571VS. Developed in conjunction with Dimenco, the new displays are designed to have the sharpest and most vivid 3D resolution in the market, the company says. The no-glasses 3D displays can achieve up to 28 viewing angles via lenticular technology. With this technology, audiences are able to see the best quality around objects from the standing spot in front of the display itself with a wide 3D viewing angle and the ability to change the optimal viewing distance. The no-glasses 3D display line can play both 2D and 3D (2D+Z) images and videos. This makes it extremely flexible as a digital signage tool. The integrated Dimenco rendering core that works with the Dimenco interface format (2D+Z), not only gives both content creators and end users full control of the depth-effect characteristics of their 3D images, but also offers simple creation of 3D content. The BDL4251VS has received a nomination for the 2012 Technology InAVation Awards. http://www.mmd-p.com http://www.dimenco.eu

Futuresource Consulting reports net-connected TV is fueling 3DTV popularity

Thanks to expected growth of Internet-connected TV shipments, Futuresource Consulting forecasts such TVs will comprise 80% of all worldwide TV shipments in three years. Right now, connected TVs shipments are at 27% of all TVs shipped globally. When it comes to 3DTVs, shipments of 16 million units are estimated for 2011, growing to represent 50% of the market in 2015. Futuresource says: "One of the key reasons behind the growth of 3DTVs is that consumers are purchasing the 3D function by default when looking to upgrade to higher-end models." The firm notes the public is "unaware of the in-built 3D capability at the time of purchase". Right now, net-connected TVs have the biggest share of the market in Japan, where they represent 59% of all TV shipments last year. Looking at other big markets – USA and China – both are getting 29% share of Internet-connected television sets. Europe receives a 24% share. http://www.futuresource-consulting.com

Stream TV plans glasses-free 3D product line

Stream TV Networks showed off proprietary Ultra-D technology at CES. Ultra-D is the company's new term for glasses-free 3D. However, Stream TV says that their method is proprietary and "surpasses all 3D viewing experiences offered to date". Stream TV says that their technology includes "unprecedented autostereoscopic 3D imagery". The end result will deliver 2D content in 3D autostereoscopic without glasses, and can also tweak 3D stereoscopic content (with glasses) to 3D autostereoscopic (without glasses). Stream TV says that users will also be able to control 3D effects on Ultra-D products, which will include everything from TVs and converter boxes to tablets and computers to games and digital picture frames. http://streamtvnetworks.com

Bluetooth SIG advances standardization of active 3D glasses

The Bluetooth Special Interest Group (SIG) announced it has reached the first iteration of its active 3D glasses standard using Bluetooth wireless technology. Samsung, among other member companies, is actively working within the Bluetooth SIG to finalize the standard that will give 3D glasses users greater freedom of movement, longer battery life, and increased interoperability with an ever-expanding group of television brands. As the 3D glasses specification makes progress, millions of Bluetooth enabled TVs have already shipped, paving the road to mass adoption of Bluetooth technology in the living room. In 2011, millions of Bluetooth enabled TVs were shipped to market. The connected living room also includes 71% penetration of Bluetooth technology into gaming consoles, with an expected 95.5% penetration rate by 2015, according to ABI Research. When coupled with Bluetooth technology's near 100% adoption rate in smart phones, the standard becomes the simple and secure way to wirelessly connect and control devices in the living room and throughout the home. Bluetooth SIG members currently ship more than 5 million devices per day, with an established installed base of 4 billion devices worldwide. http://www.bluetooth.com

HDBaseT Alliance adds "Power over HDBaseT" (POH) capabilities to its 1.0 Specification

The HDBaseT Alliance announced the release of the HDBaseT Alliance Power Over HDBaseT (POH) Addendum to the HDBaseT 1.0 specification. As demand for whole-home connectivity continues to grow, consumers face installation limitations and substantial cost as they search for wall locations that can support and provide power access for their consumer electronics devices. HDBaseT technology with POH revolutionizes the networking industry, enabling manufacturers to build thinner and lighter TVs and providing consumers the flexibility to install these TVs on any wall in their home, without requiring proximity to a power outlet. HDBaseT's breakthrough POH technology delivers up to 100 watts of power to TVs and other devices over distances up to 100m/328ft, via a single Cat5e/6 cable with standard RJ-45 connectors. This means it is no longer necessary to connect a device's electrical jack to a power supply. http://www.HDBaseT.org HDBaseT POH Benefits:

- Officially completes the 5Play feature set, adding power distribution to the unmatched offering of video, audio, Ethernet and control via a standard LAN cable.
- Significantly reduces overall network power consumption, enabling the introduction of new power-saving applications.
- Enables consumers to place components of their whole-home network in ideal locations regardless of electrical outlet availability.
- Simplifies and reduces cost of installation by eliminating the need to employ an electrician.
- Assists manufacturers in their quest to design thinner and more cost effective devices that can be connected with a single cable by eliminating the AC-to-DC elements within the devices themselves.

Leichtman Research Group reports 30% of US homes have net-connected TV device

Internet-connected TV sets are slowly growing, now representing just 10% of all TV sets in US TV homes, with video game consoles the biggest Web-connected TV devices. Research from the Leichtman Research Group says 23% of US TV homes have video game consoles that can get Internet video. Overall, it says 30% of US TV homes have at least one Net-connected TV device. According to Frank Magid Associates, breaking it down by manufacturer, 19% watch video through Sony PlayStation 3 and 13% through Microsoft Xbox 360. That study also says about 6% get the Internet through their TV sets by way of TiVo/DVR machines. Apple TV and Google TV each get a 4% share; Roku, 3%; Slingbox and Boxee each have 1%. Perhaps the biggest threat for new Internet-connected video on TV doesn't come from any of these: eMarketer says so-called over-the-top devices are on the rise. 10% of adults watch at least one video a week on TV through Net-connected TV devices. 7% have an Net-connected Blu-ray player connected to their main TV entertainment systems. Frank Magid Associates says the still-dominant way to watch online video, at 89% of the time, is through a PC or laptop. The next is mobile phones, 15%; Internet-connected TVs, 10%; tablet, 9%; and other, 3%. http://www.leichtmanresearch.com

Direct TV Research says global VOD revenue to climb 58%

Worldwide revenue from video-on-demand movies and TV programs will reach $5.7 billion in 2016, up 58% from revenue of $3.6 billion in 2010, according to a new research report from London-based Direct TV Research Ltd. The tally does not include pay-per-view sports events, adult entertainment or subscription-based VOD services such as Netflix, Amazon Prime and Google, among others. The United States will more than triple runner-up Italy

with more than $1.8 billion compared to $592 million. China, the world's most-populated country, is ranked third with $509 million in VOD revenue. By region, North America and Western Europe will continue to supply two-thirds of global VOD revenue by 2016, though this is down from 80% in 2010. That said, VOD TV revenue will triple in the Asia Pacific region over the same period to reach $1.2 billion. China will provide a lot of this growth. By platform, digital cable will generate $2.6 billion globally – double what it generated in 2010. Satellite TV will contribute $1.7 billion as digital cable widens its revenue growth and market share, according to the report. Internet-based TV (IPTV) is projected to overtake digital terrestrial TV (DTT) in revenue next year to become the third largest platform globally. In fact, VOD revenue from DTT is expected to be largely confined to Western Europe. The report says there is little evidence free VOD offerings by cable and satellite operators are driving consumers to transactional VOD or compensating for increasing number of homes downsizing their monthly pay-TV bills. Web-based services such as Hulu and TV.com, among others, are often easier to use than TV-based ones, allowing the viewer greater flexibility and a better environment to watch repurposed programming. Although viewers' interaction with connected TV services remains formative, the most vulnerable linear channels to VOD are those that rely heaviest on reruns, including TV syndication. http://www.digitaltvresearch.com

Barkley claims "Millennials" watch more TV online

Young media consumers – Millennials – continue to consume much more television related to online, and less traditional television than other viewing groups. Only 26% of millennials – typically those in the 18-29 age group – watch more than 20 hours a week of TV, versus older viewing groups where 49% of those viewers watch 20-plus hours a week. These are among the results of a study conducted by Kansas City-based marketing company, Barkley, in partnership with Service Management Group and The Boston Consulting Group. Millennials are much more likely to watch shows mainly on their laptops – 42% versus 18% for other viewers; on DVR playback – 40% versus 36%; or via video-on-demand – 26% versus 18% for other viewing groups. Largely as a result of TV marketing and other efforts, millennials more than older consumers are aware of youth-targeted cause campaigns. For example, the study says that for Dove's Campaign for Real Beauty, their awareness level was 33% versus 21% for everyone else. Gap's RED campaign earned a 26% number for millennials versus 9% for other consumers. Much of this activity comes from greater exposure to campaigns through social media – 40% versus 22% for other consumers – and online news, 28% versus 22%. "Since the Millennials generation is larger than the Baby Boomers and three times bigger than Generation X, marketers' understanding of Millennials' needs, tastes and behaviors will clearly shape current and future business decisions," says Jeff Fromm, senior vice president, Barkley. The survey was based on some 5,000 respondents and 3.9 million data points. http://www.barkleyus.com

Parks Associates reports TV everywhere demand spreading in Europe

Nearly 40% of Western European households now have connected consumer electronics of some sort, with game consoles and Blu-ray Disc players leading the way, and consumers there want more, according to a Parks Associates study. The concept of TV Everywhere on their connected devices is especially appealing to Western Europeans, the research firm found, with 30% of broadband households interested in having live TV on their connected devices, beyond the TV. United Kingdom residents were most interested, while German residents were least interested. "Multi-screen services are growing in popularity across Western Europe," said Brett Sappington, senior analyst for Parks Associates. Nearly half of the 10,000 surveyed said they wanted access to DVR content, and 37% said they wanted online video content on their TV. http://www.parksassociates.com

IHS iSuppli survey says economy fears put off TV purchase plans

US consumers planning to purchase televisions this year have plunged to record low levels as Americans continue to worry about the volatile economy, according to a new study from IHS iSuppli. The IHS iSuppli "US TV Consumer Preference Analysis" report lists the results of a survey conducted during the second quarter of 2011 showing that only 13% of US consumers who had not purchased a TV during the past quarter are planning to buy a new set during the next three to 12 months, down sharply from 32% in the first quarter. Some 83% of respondents said they had no intention of buying a new TV set within the next 12 months. This compares with the 66% of respondents who said the same during the first quarter, marking the highest negative level of response to the question since the studies were first made public in 2010, IHS said. The remaining 4% in the study represented those who had received televisions as a gift, up from 2% in the first quarter.

Among consumers who bought TVs in the second quarter, the most important criteria were picture quality, price and screen size, IHS said. Brand name has become a less important factor in the purchasing decision because of the diminishing price differential between different makes, IHS said. More troubling, the study showed higher-end features, such as connected TV systems and LED backlighting, were also not seen as critical decision factors in the purchase. Still, IHS said, LED-backlit TVs accounted for nearly 30% of TV purchases in the second quarter, up from 26% in the first. Overall, televisions featuring LCD technology represented 86% of flat-panel TV sales in the second quarter. Plasma displays accounted for the remaining market, although plasma sets experienced an increase in overall average pricing as well as favorability ratings, due to new models offering larger sizes and advanced features. A slight increase was detected in buyers going for 50-inch-and-larger sets, but IHS said the number of people who purchased under-30-inch sets increased a surprisingly high 38%, mainly for reasons of price as retailers offered fewer and smaller discounts in the bigger sizes. As for so-called Smart TVs with Internet apps, the use of Netflix among households soared to 66% for new TVs connected to the Internet, and together with Facebook, YouTube and games represented the most-accessed applications by consumers. IHS said its recent survey was conducted among more than 45,000 randomly polled US households from a continually refreshed pool of 2 million, with a margin of error at 1.6%. http://www.isuppli.com

FCC recommends adoption of SMPTE closed-captioning standard for online content

A Federal Communications Commission (FCC) Advisory Committee has recommended that a standard for the closed-captioning of online video content developed by the Society of Motion Picture and Television Engineers (SMPTE) be adopted by the FCC in its implementation of the 21st Century Communications and Video Accessibility Act (CVAA). The Act is designed to ensure the accessibility, usability, and affordability of broadband, wireless, and Internet technologies for people with disabilities. The standard, known as SMPTE Timed Text, was recommended in a report by the FCC's Video Programming Accessibility Advisory Committee (VPAAC). The FCC is reviewing the report with key stakeholders as it writes the CVAA regulations. In making its recommendation, the VPAAC noted that the SMPTE Timed Text standard is already used in production environments to repurpose television content for Internet use; is specified as the caption and subtitle format for the Digital Entertainment Content Ecosystem's UltraViolet format for commercial movie and television content; is specified in draft standards for Internet television delivery in the UK, France, Germany, Italy, and other European countries; and is currently being used by several video services and Internet video players. According to the US Census Bureau, 54.4 million people reported some level of disability and 35 million reported a severe disability in 2005. To accelerate the adoption of the closed-captioning standard, SMPTE announced in May that it was making SMPTE Timed Text available free for download. The overview document ST 2052-0-2010, the Standard ST 2052-1-2010, and an FAQ about the standard and its use are available at https://smpte.org/standards.

Oregan releases hybrid media browser combining digital terrestrial and over the top video capabilities

Oregan Networks, a developer of Internet TV receiver technologies, has launched a new hybrid version 4.2 of its software, which delivers Broadcast and Internet Protocol media functionalities in a single software stack. The company has implemented variants for the Latin American, European and Asian markets that have adopted the DVB-T or ISDB-T digital broadcast standards on their paths towards the digital switchover. As part of its multi-regional hybrid solution for telecom and broadcast operators, Oregan has emphasized the specific requirements of the emerging Broadband and PayTV markets in Latin America, based on the trend for the ISDB-T standard, adopted by the majority of countries in the region, including Brazil, Argentina, Chile and Peru, to become the second most widely spread Digital TV standard. http://www.oregan.net

FCC sets video description deadline at July 1, 2012

The Federal Communications Commission issued its Report and Order on video description, an audio service intended to assist blind people's access to TV content. The top four network affiliates – NBC, CBS, Fox and ABC –in the 25 largest markets, plus pay TV systems with more than 50,000 subscribers, will have to implement video description by July 1, 2012. Those operations will have to provide at least 50 hours per calendar quarter of video-described programming, in some combination of prime time and/or children's content. Affected cable operators will have to do the same for the top five non-broadcast networks they carry. Repeats won't count toward the total. Exemptions will be considered for

near-live or live programming such as breaking news, and for economic hardship. All TV stations, regardless of market size, must pass through network-provided video description feeds if they have the technical capability to do so. The same goes for cable operators of any size: they have to pass through video descriptions for both broadcast and non-broadcast nets that provide it if they are able. Stations that become affiliates in the top 25 markets will be required to comply with video description rules within three months of when their affiliation agreement is finalized. The Consumer Electronic Association is developing a standard for receiver manufacturers for equipment selection and navigation of multiple audio streams, including video description. Broadcasters now frequently use a Secondary Audio Program for languages other than English. The standard, CEA-CEB-21, Recommended Practice for Selection and Presentation of DTV Audio, went to ballot earlier this year.

CEA urges California to take notice of impressive electronics efficiency gains

The Consumer Electronics Association (CEA) highlighted the industry's energy efficiency achievements and initiatives during a public workshop held by the California Energy Commission (CEC) to consider regulation of additional consumer electronics products. Recently, a CEC staff draft report on energy efficiency and buildings indicates the CEC is moving forward with new regulations for a variety of product categories. Earlier this year, the CEC's regulation for televisions took effect, despite the fact that significant energy savings in televisions had already been achieved as a result of industry innovation, competition and the ENERGY STAR program at the national level, which the CEC does not recognize. Research commissioned by CEA has found that innovation, competition and ENERGY STAR have reduced the amount of power needed per unit of screen size 63% for LCD TVs from 2003 to 2010 and 41% for plasma TVs from 2008 to 2010. To put the gains in context, the power consumption of the average TV sold in 2010 consumes less energy than a 100 watt incandescent light bulb and less power than what is needed to light a typical living room. Recently, a paper in the California Journal of Politics & Policy, authored by C. Paul Wazzan and Dawn E. Eash of the Berkeley Research Group, found the CEC made many errors, including wrongly assuming that more TVs being purchased meant more energy consumption. Due to consumers replacing older TVs with newer, more efficient TVs, the paper concluded energy costs would remain constant over time. Moreover, the researchers questioned the data, math and analysis the CEC used in arriving at its TV energy efficiency mandate. "The CEC enacting more onerous and misguided efficiency rules based on faulty assumptions and data not only harms local businesses and consumers, it also does not genuinely contribute to the state's greenhouse gas emissions reduction goals," Johnson added. "We urge the CEC and other policymakers to recognize, account for and support existing policies and programs that are already in place and working to deliver ever more energy efficient electronics to consumers." http://www.CE.org

CEA announces standards focused on 21:9 aspect ratio on next-generation TVs

To support development of the next-generation of wide-screen digital television, the Consumer Electronics Association (CEA) launched new standards activity to support wider, 21:9 aspect ratio television screens. CEA is calling for industry participation in a standards update to investigate incorporation of methods for signaling delivery of the presence of 21:9 video into CEA 861, A DTV Profile for Uncompressed High-Speed Digital Interfaces. Next-generation TV displays will be capable of showing video in 21:9 aspect ratio, creating an even more expanded wide-screen view than today's prevalent 16:9 screens, and greatly enhancing the viewing experience for consumers. CEA-861 establishes protocols and recommendations for the utilization of uncompressed digital interfaces by consumer electronics devices such as DTVs, digital cable, satellite or terrestrial set-top boxes (STBs), and related peripheral devices. CEA's Video Systems Committee has begun developing specifications for signaling the presence of 21:9 aspect ratio video. As video displays with 21:9 aspect ratio are now appearing in the marketplace, adding this feature to the standard can more efficiently deliver such video to DTV receivers with native 21:9 displays. The Video Systems Committee believes that other standards-related organizations might also want to consider the inclusion of methods for signaling and delivery of 21:9 aspect ratio content utilizing other transport systems. Consideration of this increased aspect ratio addition will take place in CEA's DTV Interface Subcommittee's Uncompressed A/V Digital Interfaces Working Group. http://www.CE.org/standards

Silicon Image's dual-mode MHL and HDMI port processor built into industry's Toshiba TVs

Silicon Image announced that its SiI9381A dual-mode MHL and HDMI port processor has been designed into Toshiba's new MHL-enabled DTVs, which will be initially rolled out in Australia. MHL (Mobile High-Definition Link) technology enables consumers to view and share HD content from mobile devices to DTVs via a direct cable

connection. Toshiba's new Regza WL800A DTV model is available in 46-inch and 55-inch full HD screen sizes, and supports 1080p resolution and two channels of digital audio through MHL technology. The introduction of the latest Regza WL800A DTVs complements the growing MHL product ecosystem of smart phones, tablets and adapters. MHL technology is a new HD audio/video connectivity standard that enables a mobile device to transmit 1080p uncompressed video with up to eight channels of digital audio, while also supporting HDCP content protection, over five pins. In addition, MHL-enabled DTVs and displays provide power to the mobile device when connected, ensuring that the phone battery is charged and ready to use even after viewing a full-length feature movie. http://www.siliconimage.com

Silicon Image expands IP portfolio with high-quality video processing technology

Silicon Image announced its new family of high-quality "cineramIC" video processing IP cores, ranging from scalers and deinterlacers to video enhancement solutions such as noise reduction and edge enhancement. These IP cores are targeted for integration into digital video system-on-chip (SoC) designs to deliver optimal image quality for consumer electronics (CE), professional video processing, surveillance and medical imaging devices. Silicon Image's new cineramIC video processing IP cores can be used in a variety of products where high-quality video and digital image enhancement is required. Adaptive scaling and deinterlacing IP cores modify the format of the video stream to compensate for differing video content formats and display resolutions. In many HD applications, low resolution compressed video must be decompressed and scaled up to the higher resolutions of today's DTVs and displays. This can create noticeable image artifacts such as undesirable jagged edges on shapes and halos around text. Silicon Image's video smoothing, detail and edge enhancement and mosquito noise technology help reduce the artifacts created by digital video scaling and compression. By integrating Silicon Image's video processing technology, SoC suppliers will be able to deliver top-quality video for their customers.

Chip designers can choose from a variety of processing blocks, which include: Adaptive Scaler – scales video to higher/lower resolutions while preserving image detail and suppressing ringing artifacts in graphics content; Mosquito Noise Reduction – removes mosquito noise present along object edges in highly compressed digital images; Detail and Edge Enhancement – sharpens image edge boundaries and improves fine detail in an image; Video Smoothing – removes the jagged (rough, irregular) edges in an image which are caused by digital compression, scaling artifacts, poor-quality deinterlacing, or resolution limitations in digital sampling of an image; Precision Deinterlacer – converts interlaced video into the progressive image quality demanded by today's high-resolution displays by eliminating many of the artifacts found in common deinterlacers to produce a smooth image free of artifacts; and Progressive Reprocessing (PReP) – recovers the original interlace signal from a progressive video data that has been previously deinterlaced by a poor quality deinterlacer to help significantly improve picture quality provided by the Precision Deinterlacer. Silicon Image's family of IP cores includes a broad range of HDMI technology solutions, MHL technology solutions, Serial ATA (SATA) storage, RAID controller, image signal processor (ISP) camera IP and H.264, MPEG-1/2 and VC-1 video decoders. http://www.siliconimage.com

Silicon Image InstaPort technology featured in Toshiba DTV models

Silicon Image announced that Toshiba's new 2011 line of REGZA digital televisions (DTVs), the Z2 series and ZP2 series for the Japanese market, will feature Silicon Image's patent-pending InstaPort S single-second port switching technology. InstaPort S-enabled DTVs will work with any connected HDMI-enabled source device to improve the consumer's HD experience by reducing to a single second the four to seven second delay that typically occurs with non InstaPort-enabled DTVs when switching between HDMI-enabled source devices. InstaPort S technology dramatically decreases switching lag times by performing simultaneous background High-bandwidth Digital Content Protection (HDCP) authentication on all connected HDMI-enabled source devices in advance of the source device actually being used. The InstaPort S feature is available in Silicon Image's SiI9381A, SiI9387A, SiI9389, SiI9587-3 and SiI9589-3 HDMI port processors. http://www.siliconimage.com

Internet-connected TV sales to surpass game console sales, says Informa Telecoms & Media report

A new report from Informa Telecoms & Media predicts that the worldwide sales of Internet-connected TVs this year will outstrip game consoles for the first time. Microsoft, Sony and Nintendo are slated to sell 37 million game consoles this year, but consumers will buy 52 million connected TVs from companies such as Samsung, Sony and LG. The report said the largest consumer electronics manufacturers stood to make the biggest gains, in particular the big three: Samsung, LG and Sony. But TV manufacturers will be faced with a conflict of interest. On the one

hand, they must build and support a platform that works across both the latest and legacy devices, effectively reducing the differences between the two – and, on the other, they must persuade users that the latest iteration is a superior device and worth purchasing. But Sony, Samsung and LG will face market pressure from emerging companies. Just as Sony was toppled by the emergence of Samsung and LG, so these established companies should be wary of Chinese manufacturers such as Hisense and TCL. These manufacturers are following the high-volume, low-price model laid down by Samsung and are likely to be the biggest beneficiaries of connected TVs as the Chinese market burgeons to sales of over 47 million in 2016. The report said the main losers would be media-streaming devices, which Informa does not believe will move far beyond the niche status they currently occupy. This could have major implications for players that have launched standalone boxes, including Apple. Informa believes that in order for Apple to be a player within the connected home space, it must launch a TV, or at least turn its Apple TV device into something more than a convenient way to access video via iTunes. Connected TVs are a mixed bag for cable operators since they provide streaming video content that competes with MSOs' offerings. http://www.informatandm.com

CJ HelloVision delivers "content everywhere" with Samsung smart TVs

CJ HelloVision, Korea's largest cable provider and subsidiary of conglomerate CJ Media Group, announced it will provide its "tving" application for Samsung's smart TVs. With this partnership, Samsung's smart TV users will be able to easily access the wide array of content on the tving platform, which will start its service in Korea at the end of August. Launched in June 2010, CJ HelloVision's tving is now the largest live ready-made-content service in the world which features 140 channels viewable on PCs, smart phones, tablets and now smart TVs. The platform has a video library of over 30,000 episodes and movies and 30 international broadcast channels among the currently offered 140 live channels, such as CNN, CNBC, Bloomberg and CCTV. CJ HelloVision plans to go global within this year and offer the tving application in foreign markets, which will allow subscribers in Asian countries, the US and Europe to watch Korean-made content on multiple devices. http://www.cjhellovision.com

NETGEAR chooses Quantenna chipsets for its next generation HD video-over-Wi-Fi products

Quantenna Communications, a developer of 802.11n silicon for streaming and distributing high-definition (HD) video throughout the home, announced that NETGEAR has again selected Quantenna's Full-11n 4x4 MIMO chipset for use in its latest wireless HD audio/video products. NETGEAR will develop next generation residential gateway and video bridge products based on Quantenna's QHS710 chipset to enhance their wireless video distribution capabilities. Quantenna's family of Full-11n chipsets uses the company's cost-optimized, third-generation 4x4 MIMO technology to deliver up to 600Mbps of bandwidth. The chipsets enable manufacturers to build products for delivering IPTV and other video streaming and data distribution services throughout the home over an ultra-reliable, high-performance Wi-Fi connection. http://www.quantenna.com

ATSC publishes successor to the CALM standard

The technical standard underlying the federal mandate to regulate the volume of TV commercials has been amended. The Advanced Television Systems Committee has published the successor to A/85, its Recommended Practice for broadcast loudness mitigation. Unlike the original, the revised standard accommodates non-Dolby Digital (AC-3) audio codecs. A/85 is the basis of the Commercial Advertising Loudness Mitigation Act, which directs federal regulators to make rules governing TV audio volume by December 15. The FCC recently extended the reply period on its CALM Act docket to accommodate the ATSC, which notified the commission the new document was in the pipeline. Replies were due August 1. The revised A/85 includes Annex K: Requirements for Establishing and Maintaining Audio Loudness of Commercial Advertising in Digital Television When Using Non-AC-3 Audio Codecs. The cable industry was particularly concerned about the availability of Annex K because more than 1,300 cable systems do not use Dolby Digital, and would not be able to comply with CALM without it. The A/85 successor document is available online at the ATSC website.

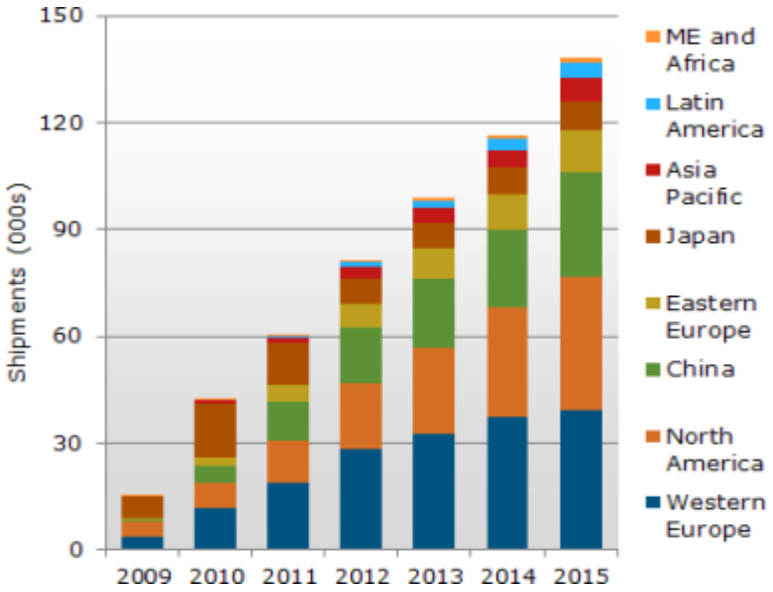
Microsoft leads consortium on using TV "white spaces" for Wi-Fi

A consortium of companies led by Microsoft and including the BBC, Nokia, BSkyB and Samsung, has begun a test program in Cambridge, England, to discover if unrequired TV spectrum could be reused to create so called "super Wi-Fi hotspots". These would provide Internet coverage to provide offload for areas where there is too much data traffic, or for those where there is no broadband at all. The project is designed to see if it is possible to re-use

spectrum in the 470Mhz to 790MHz range without affecting TV broadcasts, in order to feed the ever increasing demand for bandwidth from devices such as smart phones, tablets and laptops. UK regulator Offcom has given permission for the project to go ahead. The technique is known as dynamic spectrum sharing and has been described by Professor William Webb, CTO of project-backer Neul, as allowing, "access to spectrum that is owned by others without forcing them to give it back." Neul, one of the companies involved in the project is also looking at using white space spectrum for M2M services worldwide, but there are some who are not convinced it will be successful in getting the technology off the ground.

DisplaySearch says connected TV shipments to exceed 138 million units in 2015

Products launched by TV manufacturers in 2011 show how critical Internet services are to the future of TV. In 2011, more than 25% of all flat panel TVs shipped are expected to have some form of Internet connectivity. According to the DisplaySearch Q2'11 Quarterly TV Design and Features Report, this number is forecast to grow to 138M units in 2015, accounting for 47% of all flat panel TVs shipped. By the end of 2015, over 500M connected TVs will have shipped. The recent decision by the Indian government to switch off analog terrestrial signals and move to DVB-T2 digital broadcast in 2015 paves the way for further innovation and brings forward the possibility of a major new market for connected TVs. At the same time, trends like WiFi Direct enable the TV to partner more readily with handheld devices in the home, such as smart phones and tablets. DisplaySearch forecasts that more than 98M TV sets with 802.11 wireless networking built-in will ship in 2015. With energy regulations growing and power consumption on the rise, LED-backlit TVs have a clear advantage. There is a strong case for consumers to choose LED-backlit sets when replacing their TV, given the energy savings. The payback time for an entry-level LED-backlit TV is under four years in California, and under two years in Europe. http://www.displaysearch.com



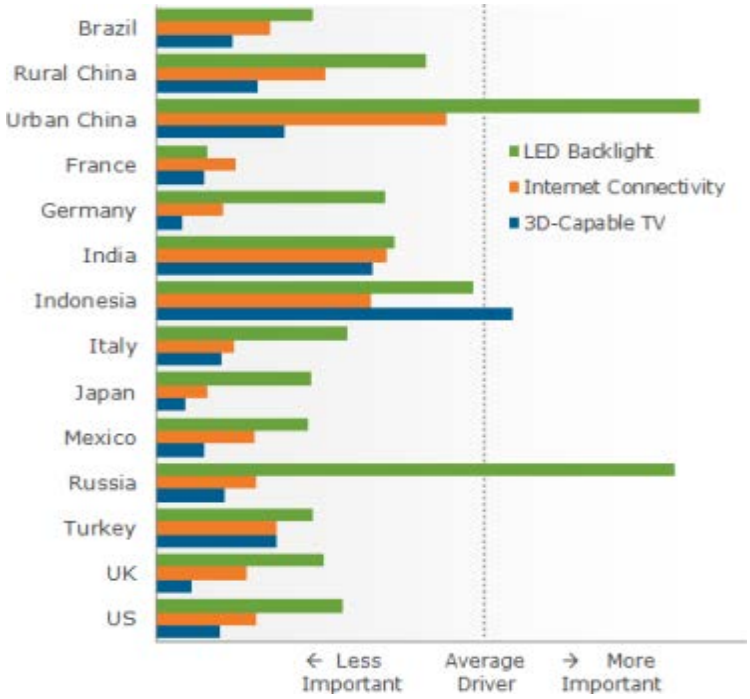
DisplaySearch connected TV forecast

DisplaySearch says new TV features not strong drivers of new TV purchases

According to the DisplaySearch Global TV Replacement Study, the main reasons why people decide to buy a new TV are the same ones that have been cited for years: to have a newer, bigger and better performing TV, and not just to replace a broken TV, although that can be a motivator. In an effort to drive even faster replacement activity, TV set makers have been developing new features to entice consumers to trade in even recently purchased sets that are just a few years old. LED backlights promise thinner form factors and lower power consumption for LCD TVs, but at a higher cost, while Internet connectivity expands the range of content TV viewers have access to. Finally, 3D was pitched as the next revolution in TV viewing, akin to the move to HDTV. These features add capability to TVs, along with cost, but the hope by many participants in the TV industry was that these features could nudge recent flat panel TV buyers back into the market for a new set earlier. The findings from the DisplaySearch study show that more work needs to be done to educate and convince consumers on the merits of these new features.

LED backlights are the most important of three advanced feature drivers, but only above-average in importance in two countries. In the majority of countries studied, LED was a below average driver of new TV replacements, but ranked stronger than Internet connectivity and 3D in most cases. Only Urban China and Russia had an above-average incidence of LED being a reason to upgrade an existing TV, with Indonesia following closely behind. The reasoning could be low awareness or understanding of the value offered by LED backlighting (lower power, thinner, lighter), but also an unwillingness to upgrade just to get this feature when price premiums are still 20% or higher. As a wide range of devices come with Internet connectivity, and Internet video consumption grows every year, upgrading a TV to gain Internet connectivity may seem like a strong draw. But a very confusing marketplace

and lack of embedded wireless connectivity mean that most view it as a nice feature to have, but certainly not a principle reason to upgrade a TV. Many of the countries that showed a higher level of interest were also emerging economies, so the lack of a strong traditional broadcast infrastructure may actually increase the relative importance of getting video content via the Internet, and therefore make an Internet-connected TV more of a motivating factor to upgrading existing sets.



3D capability is one of the weakest drivers of new TV replacements, contrary to set makers' and retailers' hopes. Few new TV features have garnered as much attention in the last year as 3D has. TV brands and TV retailers had been expecting the availability of 3DTVs to kick off a new boom in TV replacement, akin to the HD and flat panel booms. Although 3DTV shipments showed strong growth in 2010, the study results indicate that consumers aren't looking to make a new TV upgrade just to get 3D. The study results do indicate that 3D is a more important criterion for consumers who are already looking to purchase a new set. Even Japanese consumers, long considered to be early adopters, cited 3D as a relatively unimportant factor when deciding to buy a new TV. More likely, the lack of broadly available 3D content is making 3D a future-proof feature, but not a main reason to upgrade in the first place. http://www.displaysearch.com

Importance of new features by country, relative to the other 14 drivers of TV replacement

DiiVA Consortium announces Samsung smart TVs ready with integrated DiiVA interface

The Digital Interactive Interface for Video & Audio (DiiVA) Consortium announced that Samsung Electronics TV models UA32D5500, UA37D5500, UA40D5500, and UA46D5500 have passed the full DiiVA Compliance Test at the DiiVA Authorized Test Center (ATC) in Guangzhou, China. With DiiVA, users can interact with their content quickly and intuitively by clicking an icon on their TV screen or smart phone and immediately view the content they desire without having to remember the source or device on which the content originates. The combination of unsurpassed raw video bandwidth, data transport capacity, middleware and application network awareness provides consumers with an experience and features on the TV that mirrors the apps-driven experience they have come to expect from their smart phones and other digital devices. In order to ensure interoperability across various manufacturers, all DiiVA products must pass certification at an authorized ATC and may then carry the DiiVA logo. The DiiVA Guangzhou ATC is the first test facility developed to help manufacturers deliver compliant and interoperable DiiVA products. http://www.diivatc.com

PNY launches portable active high speed HDMI cable with RedMere technology

RedMere announced that consumer electronics brand PNY, using its cable technology, has launched the new "Active High Speed HDMI Micro Cable" into the US consumer electronics market. This is the latest addition to PNY's line of active cables with HDMI, which currently use RedMere's technology to become ultra-thin and portable. PNY's active high speed HDMI micro cable allows for easy and convenient access to videos, photos, presentations, web browsing, e-books, and more - direct from a portable device right to a projector, monitor, or HDTV and will help transform the way consumers now use their tablets and smart phones, the company says. RedMere's patented active cable technology allows 70% of the copper and PVC to be removed from the manufacturing process of a high definition video cable. This means that the HD video cable, typically very thick and cumbersome can now be made ultra-thin and portable, a feature that is very important to the smart-phone and tablet user. Most of today's smart phones and tablets come with multimedia features such as e-mailing and Internet connection as well as a 5-megapixel camera or higher, video recording capabilities and HD movie

playback in full 1080p. Many of these devices are able to connect digitally to HDTVs making them the perfect large-screen companions for the tablet or smart phone. The cable is an ideal connectivity partner for these devices as it enables and encourages media sharing by virtue of the fact is it so compact, lightweight and portable. The cable allows users to maximize the potential of their latest devices and these RedMere-enabled PNY cables work with compatible tablets, such as the Motorola Xoom, Acer Iconia, and BlackBerry Playbook; and compatible smart phones, such as the HTC EVO 4G, Motorola Droid X, Samsung Droid Charge, and LG Revolution. RedMere's active built-in booster module in the connector regulates the signal to prevent loss and enables PNY's cables to achieve 1080p HD video and audio through an ultra-thin design across extended lengths. http://www.redmere.com

Smart TV prospects double in less than a year reports Parks Associates

New research from Parks Associates has found that the number of US consumers planning to purchase a smart TV has nearly doubled in less than a year. The *Consumer Decision Process: Summer Update* shows that this growth means that a quarter of US broadband households intend to purchase an Internet-connectable CE device in 2011. In particular, more than a tenth of broadband households plan to purchase a smart TV in the second half of 2011, up from 6% in the first half. These households represent half of the homes planning to make a purchase which is estimated to be in the region of $1,000 for each device. When it came to rating the significance of connectivity in particular devices, users said that they rated a web-enabled technology in PVR, DVR or TiVo devices as more important than similar functionality in flat panel TVs. The research also showed that consumers had strong preferences for entertainment and social networking options on connected devices such as Blu-ray players, game consoles, and smart TVs. Preferred features include the ability to stream and download movies and TV shows as well as access to Facebook and online music. The survey also shows 19% of broadband households intend to purchase a tablet in the second half of 2011. Among tablet intenders, men are more likely than women to purchase 3G tablets and buy 3G data plans for their new devices. Apple was the preferred brand by far, with the iPad capturing over 40% of planned tablet purchases for the rest of 2011. http://www.parksassociates.com

HDMI-3nabled mobile PC shipments to surpass 300 million in 2014, says In-Stat

Last year saw a dramatic increase for HDMI in portable consumer devices, including HD camcorders and digital still cameras (DSC). In addition, on the PC side, HDMI's share of mobile PCs, graphics cards, and PC monitors continued to increase. New In-Stat research forecasts that HDMI-enabled mobile PC shipments will surpass 300 million units in 2014. http://www.in-stat.com Other details from the report include:

- Embedded DisplayPort will have a 35% attach rate in mobile PCs in 2013.
- 117 million LCD PC monitors will ship with DVI in 2011.
- HDMI will have an 82% attach rate in A/V receivers in 2012.
- Over 19 million HDMI-enabled digital camcorders will ship in 2014.

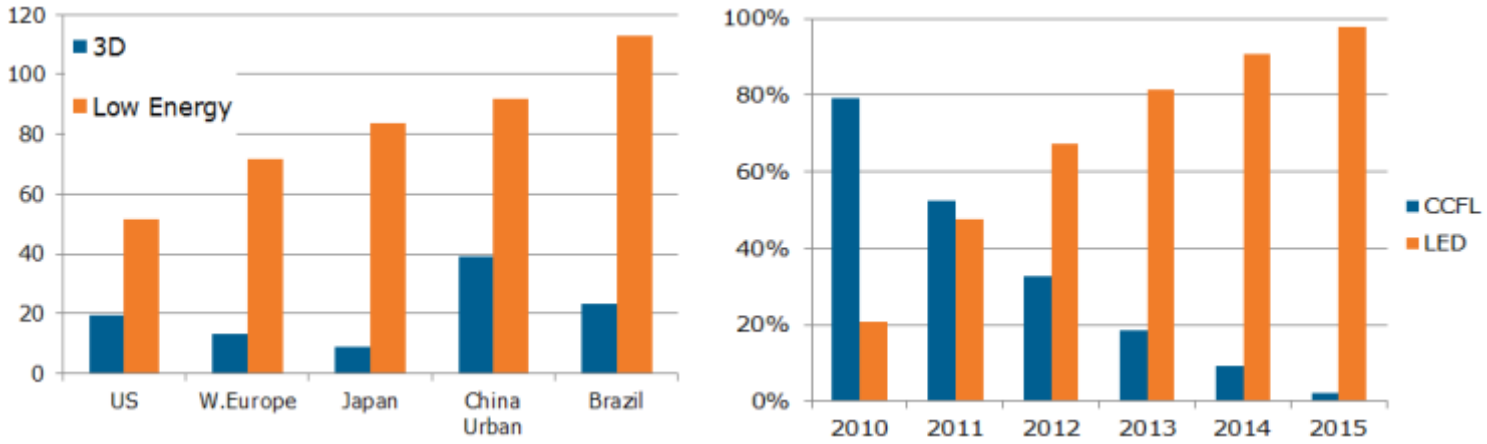
Rainbow Fish introduces lossless HDMI over fiber up to 1000 feet

Rainbow Fish Fiber Optic introduced a line of long distance Fiber Optic HDMI cables. Following extensive market and technological research in fiber optics and connectivity needs, Rainbow Fish innovated the world's first HDMI cable capable of lossless performance up to 1000 feet between source and display. This breakthrough in HDMI performance is made possible by proprietary technology to convert the HDMI electrical signal to a sophisticated optical signal and be transmitted through its fiber optic link to the display device where the signal conversion is reversed. Available in six pre-terminated lengths from 35- to 1000-feet the Rainbow Fish Pro Series features an in-wall rated cable jacket, rugged connector housing and an integrated USB power connection. A custom-length program is also available. For in-room fiber optic HDMI connections, Rainbow Fish Home Series cables are available in white and clear cable jacket in 20- and 35-foot lengths. www.rainbowfishcorp.com

DisplaySearch says energy and cost savings from LED-backlit LCD TVs not communicated to consumers

According to an analysis in the DisplaySearch Q2'11 Quarterly TV Design and Features Report, brands are missing an opportunity to market LED-backlit LCD TVs based on cost savings. Analysis of electricity and TV prices together with power consumption data reveals modest payback times for low-energy TVs. There is a strong case for consumers to choose LED-backlit sets when replacing their TV, given the energy savings advantages. DisplaySearch investigated whether the cost savings from lower energy consumption outweigh the increased purchase price of LED-backlit LCD TVs. In comparing CCFL and LED-backlit 40-inch LCD TVs, basic

configurations and Energy Star certified, LED-backlit sets were found to have lower life-cycle costs, under reasonable lifetime assumptions, even in the US. The payback time for an entry-level LED-backlit TV is under four years in California, and under two years in Europe. In the DisplaySearch Global TV Replacement Study, research was carried out on over 1,000 people per country. In most countries, lower power emerged as a stronger purchase motivator than LED backlights, but the connection between the two is not being made. Set makers seem to be failing to establish the connection or make the case for power, and thus cost savings, in their LED-backlit products. http://www.displaysearch.com



Consumer consideration of 3D and energy; LED backlight forecast share in LCD TV

New Energy Star specification excludes many large TVs

The latest iteration of the Energy Star program for TVs has gone into effect. As a result of the new version 5.3 requirements a number of the largest 2011 TVs, particularly plasmas, will actually lose Energy Star certification. The reason those TVs no longer qualify is because Energy Star made its requirements more strict this time around compared to the earlier version, designated 4.2, which has been in effect since April 30, 2010. According to Energy Star, televisions that meet the new ENERGY STAR Version 5.3 requirements are on average more than 40% more energy efficient than conventional models. Larger sets must meet even more stringent levels to qualify as Energy Star. A 60-inch TV will be on average 60% more efficient than a conventional model. In addition to increasing the stringency of the requirements for all screen sizes, the new version incorporates a “hard cap” of 108 watts regardless of screen size. That cap effectively disqualifies most plasma TVs larger than 50 inches, and many other large-screen DLP and non-LED LCD-based sets. Looking at the spreadsheet of models that qualify for the current Energy Star version 4.2, about 14 percent (297 of the 2096) use 108 watts or more. Many are 2010 models, and only three of them, including the 65-inch Samsung UN65D8000, are LED-backlit LCDs. Among TVs that miss the cut are the 51, 55, 59, 60, 64 and 65-inch members of the plasma TV series. The only 2011 plasmas that still qualify are 51-inch PND490/491/450/440 Samsungs and all 50-inch and smaller Panasonics. http://www.energystar.gov

UltraViolet set for consumer launch

The first movie title to be released physically with Ultra Violet digital ownership rights will benefit from a significant marketing campaign designed to educate consumers of the value of the ecosystem. The movie “Horrible Bosses” will go on retail sale October 11 in the US. Justin Herz, Senior Vice President Direct to Consumer and General Manager, Advanced Digital Services at Warner Bros revealed that the studio has bought spot advertising explaining the benefits of UltraViolet title ownership. UltraViolet rights allow content to be stored in the cloud, and then viewed on a variety of different devices. Admitting that the movie industry had done a “terrible job” in introducing digital products into the ecosystem, Herz said that a significant portion of Warner Bros’ title-based marketing spend had been allocated to the launch and subsequent titles. UltraViolet consortium Digital Entertainment Content Ecosystem (DECE) said the alliance had come together because digital distribution wasn’t working well. 20th Century Fox Home Entertainment said that the first UltraViolet titles from the company would be available in the first quarter of 2012.

SANUS introduces super slim HDMI cables

SANUS announced the addition of a new line of Super Slim HDMI cables to the SANUS Elements offering of AV accessories. SANUS Super Slim HDMI cables are currently available in three models, the 3.3' ELM4303, the 6.6' ELM4306 and the 8.2' ELM4308. Each model features a wire gauge that is 45% thinner than traditional HDMI cables, allowing for easy bending in tight spaces. SANUS Super Slim HDMI cables also offer connector heads that are 40% shorter than other cables, making them ideal for installation behind mounted flat-panel TVs with little clearance. When combined with SANUS Super Slim mounts, these cables allow you to place TVs incredibly close to the wall without interference from the cables' connectors. An integrated Ethernet cable provides high-speed Internet connectivity while eliminating the need for a separate cable. Cable features: 1080p video resolution and beyond for next generation displays; 3D capable; integrated Ethernet cable for high-speed Internet connectivity. http://www.SANUS.com

OMVC issues device profiles to assist manufacturers in developing mobile digital TV products

As the nation's broadcasters prepare to launch robust Mobile DTV programming, the Open Mobile Video Coalition (OMVC) has developed a set of comprehensive Device Profile guidelines to assist consumer electronics manufacturers in developing Mobile DTV products. The Profiles are baseline technical guidelines that give manufacturers details about how broadcasters will implement new services and the details needed to build consumer products that receive Mobile DTV. The Mobile DTV Device Profiles were developed jointly by the OMVC's Mobile DTV Forum, which represents consumer device and broadcast equipment manufacturers and software and middleware providers, and the OMVC's Technology Advisory Group, which is made up of broadcasters from member companies. "As the concept of Mobile Digital Television becomes a commercial reality, consumer electronics manufacturers need guidelines on receiver device features and functionalities that will provide robust reception capability and interoperability with broadcasters," said Anne Schelle, OMVC Executive Director. "The end goal is an enjoyable and secure Mobile DTV experience for our viewers. We are looking forward to the introduction of both new programming options and new personal devices that will take full advantage of the Mobile DTV standard." Later this fall, Schelle said the OMVC will initiate a model Conditional Access System in the Washington DC market, a move designed to help electronics companies test their receiver implementations to properly receive, decode, and display Mobile DTV broadcast signals. Conditional Access is an essential element in Mobile DTV to facilitate audience measurement and deployment of paid programming. http://www.OMVC.org

Strategy Analytics says 40% of pay TV cord cutters would pay more for *à la carte*

Collectively, US pay TV providers lost 400,000 subscribers in the second quarter – their single worst period in over three years. Cable TV took the brunt of the hit, though satellite operators were not left unscathed. While much of the subscriber loss can be attributed to traditional economic churners – "deal seekers" looking for a cheaper price – the percentage of those who say they're giving up on pay TV altogether is not abating. And those so-called "cord cutters" are not the low value/low revenue "fringe" customers they have been made out to be, according to new survey research just published by Strategy Analytics. The report, "Endless Fun? Pay TV, Cord Cutting, and Churn," finds that cord cutters place a high value on content, and are three times more likely to report watching paid video on demand (VOD) than "traditional" economically-motivated churners. Cord cutters are motivated less by price, and more by control of content, according to the report; service providers should view this as an opportunity, the report says. "Forty percent of cord cutters, compared to twenty percent of economic churners, said they would be willing to pay more than they currently do for pay TV if it meant they could pick and choose content on an à la carte basis," noted the report. http://www.strategyanalytics.com

DLNA enables streaming of premium video in connected homes across Europe

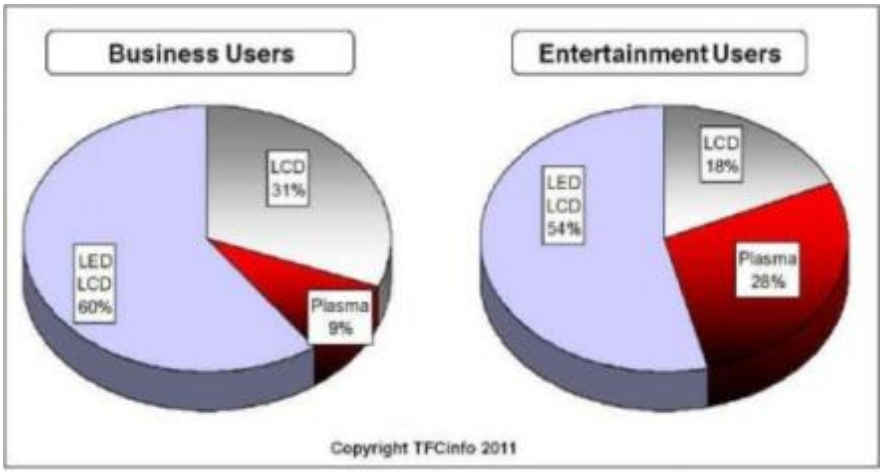
The Digital Living Network Alliance (DLNA) Interoperability Guidelines are enabling premium video throughout Europe with widespread support from the global service provider community. The Interoperability Guidelines leverage protected streaming to make premium video readily available to consumers for playback across DLNA Certified products. Household penetration of connected products, including connected TVs, game consoles and Blu-ray players, has grown to nearly 40% in Western Europe, according to a recent Parks Associates consumer

survey of 10,000 broadband households across France, Germany, Italy, Spain, and the UK. As the number of connected devices in the home increases, consumers are demanding more flexibility when viewing high-quality, premium content. With the availability of its Interoperability Guidelines, DLNA addresses consumer demand for simplified access to premium commercial content, including movies and network television programming on their DLNA Certified products. http://www.DLNA.org

TFC Info says LED LCD is the technology of choice for future flat panel purchases

TFC Info's recent "Flat Panel Brand Customer Perception and Preference Tracking Study 2011" compares and contrasts the business and entertainment segments in a detailed analysis of the flat panel market. This research reveals that there are some big differences between the market segments in the major motivators behind each technology. Overall picture quality and some aspects within the image quality spectrum are motivators behind future LED LCD purchases in entertainment. Some of the highest rated reasons for choosing an LED display include picture quality, contrast, resolution, lower power consumption and thinner panel. These findings are interesting as LED backlighting, lower power consumption, and thinness of panel were some of the least important things considered when purchasing a flat panel by entertainment end users in this study. The technical aspects are driving corporate end users to LED LCDs. The top three reasons for choosing an LED LCD are lower power consumption; no burn in issue (clearly burn in issues with plasma are still apparent in the pro market); and a thinner panel. Currently most ultra-thin displays are still intended for the consumer realm. Professional displays are expected to do more and have different logistical needs than in the home. In the corporate world considerations for cabling, mounting, locking, and the capacity for cooling have to be considered. While a high percentage of professionals would prefer purchasing an LED LCD, it may be some time before this shift would eventually be able to take place. LCD is a more suited option at this time for professional use. While there is greater desire for an LCD in the corporate world, the reasons behind choosing an LCD does not differ between business use and home use purchasers. End users state they would choose an LCD because of price, lower power consumption and no burn in issues. Increasing price competitiveness has greatly helped LCD, and in some ways end users are choosing LCD technology because of perceived plasma burn in and reliability issues. This indicates that much of LCD's success has been due in part to the failure of plasma display makers to convey improved reliability to the public, especially among home users where plasma remains popular. The top three motivators behind plasma purchases for entertainment use are overall picture quality, contrast, and having a wider viewing angle. These top three motivators are real and major factors considered when purchasing a flat panel display for home use. http://www.tfcinfo.com

If you were to purchase a flat panel display, which technology would you choose?



Gefen introduces signal generator with HDMI output and 3DTV testing

The newest addition to the GefenTV line is the lightweight and portable Mini Signal Generator for HDMI 3DTV. Ideal for anyone installing, designing and integrating high definition home entertainment systems, it offers advanced features in a small package designed for easy mobility. The Mini Signal Generator for HDMI 3DTV works with all displays and projectors using HDMI, supplying numerous test patterns for calibrating and testing video performance. Testing signals are supplied for HDCP verification as well as all aspects of HDTV including one 3DTV pattern. Its support for testing 3DTV displays makes it desirable for forward-thinking installers. An on-screen display menu guides users through all settings for an easy operation. http://www.gefen.com

DVB reveals 3D update plans for 2012

The Digital Video Broadcast Group has revealed their intentions to enforce improvements to 3DTV technology in the British Isles next year, hoping to see greater levels of detail in the format than ever before. The DVB Group

plan to introduce the upgrades alongside the launching of the "Phase Two 3DTV standard" in the region in 2012. The regulatory body have announced plans to add a (possibly mandatory for all new systems) "Depth Range Control", which would see the users control just how three-dimensional they want their 3D viewing experience to be. Another planned update to the technology would be a significant one in terms of picture quality, as a proposed leap to full-HD detail is proposed to replace the current half-high definition 3D resolution. http://www.dvb.org

New ATSC 3.0 technology group formed for future TV

The Advanced Television Systems Committee formed a new technology group to develop a next-generation TV standard not likely to be compatible with the one in use today. ATSC 3.0 is anticipated to be a series of voluntary technical standards and recommended practices for the next digital terrestrial television broadcast system. The result is intended to "serve viewers and TV stations for decades to come," ATSC said. Because ATSC 3.0 is likely to be incompatible with current broadcast systems, it must provide improvements in performance, functionality and efficiency significant enough to warrant implementation of a non-backwards-compatible system. Interoperability with production systems and non-broadcast distribution systems should be considered by the new technology group. Formation of the new ATSC 3.0 Technology Group, called "TG3" will allow the ATSC Technology & Standards Group (now called "TG1"), chaired by Dr. Richard Chernock of Triveni Digital, to accelerate its current activities including development of ATSC 2.0, NRT, 3D and Mobile DTV. TG3 was recommended by the ATSC Board of Directors in July and adopted by the membership on September 2. http://www.atsc.org

Knowledge Networks says video games, DVDs on the rise rivaling TV

Knowledge Networks says that in 2011, playback/recorded content via video-game devices amounts to 12% of all 13- to-54-year-olds who watch streamed or downloaded TV programs or movies through a video-game system at least once a month. The biggest category for alternative TV viewing, according to the survey, is DVDs, which register 60%, slightly down from the 2010 total of 62%. DVR content, the second-largest category, increased to 36% from 34%. Streaming video over a PC rose to 24% from 20%. Video On Demand services followed, grabbing 20% from its previous number of 17%. Blu-Ray usage was also up 14%, from 8%. Netflix also continues to see big growing numbers. Forty-nine percent of its current customer base have used the service in less than a year. The service has around 22 million subscribers. The study says 46% of all 13- to-54-year-olds have used Netflix at least once, with 35% watching at least one TV or movie on a monthly basis. Fifty-two percent of Netflix customers are between 13 and 31; 46% are 32 to 45; and 35% are 46 to 54 years old. Concerning new technology and Netflix, 11% of its broad swath of consumers 13-64 have used the service via mobile device. The biggest use here comes from its 13-31 customers, at 17%. Older boomers have only used Netflix via a mobile device at a 3% rate. http://www.knowledgenetworks.com

Elliptic Technologies first to market with HDCP 2.1 compliant content protection solutions

Elliptic Technologies, a global leader in security IP and content protection solutions has announced the release of its HDCP 2.1 Software Development Kit (SDK). The software suite is the first commercially available solution in the market that complies with the recently released standard HDCP 2.1 or High-bandwidth Digital Content Protection 2.1, a key security technology used to protect premium content. The Elliptic HDCP 2.1 SDK is a complete and cost-effective content protection solution for digital audio/video entertainment content in the wireless and wireline home network environment. The solution is targeted at OEMs, network operators, service providers and Over The Top (OTT) content providers. It can be seamlessly integrated into embedded components for use in tablets, media centers, DVDs, Smart HDTVs, Set Top Boxes, Game Consoles, Streaming Controllers and other consumer electronic products. The Elliptic HDCP 2.1 SDK is based on the latest specification HDCP IIA Revision 2.1 and it supports all mandatory elements of copy protection (authentication, key exchange, content encryption, system renewability), as well as enhanced locality check features and robustness rules support. The solution runs efficiently in limited resource environments and it can be implemented within frameworks such as ARM TrustZone, where security critical components are embedded and executed in trusted environments and non-critical components are executed by the host OS, such as Android. http://www.elliptictech.com

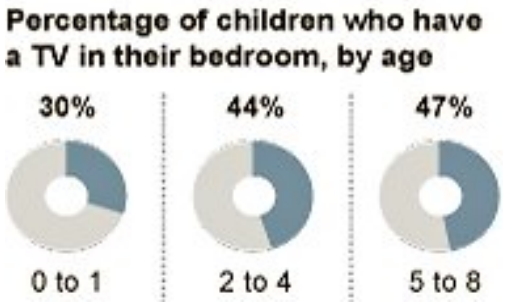
American Academy of Pediatrics says TV is bad for babies' brains

A decade ago, the American Academy of Pediatrics suggested that parents limit TV consumption by children under two years of age. The recommendations were based as much on common sense as science, because

studies of media consumption and infant development were themselves in their infancy. Now the AAP has release a new, science-heavy policy statement on babies watching television, videos or any other passive media form. Media, whether playing in the background or designed explicitly as an infant educational tool, has "potentially negative effects and no known positive effects for children younger than two years," concluded the AAP's report, released in October. "Although infant/toddler programming might be entertaining, it should not be marketed as or presumed by parents to be educational." Since the AAP made its original recommendations in 1999, passive entertainment screens – televisions, DVD players, computers streaming video – have become ubiquitous, and the average 12-month-old gets between one and two hours of screen time per day. The 0 to 2-year age group has become a prime target for commercial educational programming, often used by parents convinced that it's beneficial. Studies have found that children don't really understand what's happening on a screen until they're about two years old. Once they do, media can be good for them, but until then television is essentially a mesmerizing, glowing box. Three studies since 1999 have tracked educational television use and language development, and they found a link between increased TV time and developmental delays. http://www.aap.org

Common Sense Media reports screen time higher than ever for children

Despite the American Academy of Pediatrics' longstanding recommendations to the contrary, children under eight are spending more time than ever in front of screens, according to a study from Common Sense Media. The report also documents for the first time an emerging "app gap" in which affluent children are likely to use mobile educational games while those in low-income families are the most likely to have televisions in their bedrooms. The study, by Common Sense Media, a San Francisco non-profit group, is the first of its kind since apps became widespread, and the first to look at screen time from birth. It found that almost half the families with incomes above $75,000 had downloaded apps specifically for their young children, compared with one in eight of the families earning less than $30,000. More than a third of those low-income parents said they did not know what an "app" – short for application – was. The study found that fully half of children under 8 had access to a mobile device like a smart phone, a video iPod, or an iPad or other tablet. Television is still the elephant in the children's media room, accounting for the largest share of their screen time: about half of children under two watch TV or DVDs on a typical day, according to the study, and those who do spend an average of almost two hours in front of the screen. Among all children under two, the average is 53 minutes a day of television or DVDs – more than twice the 23 minutes a day the survey found children are read to. And almost a third of children under two have televisions in their bedrooms, a substantial increase from 2005, when the Kaiser Foundation found that 19% of children ages 6 months to 23 months had them. In families with annual incomes under $30,000, the new study found 64% of children under eight had televisions in their rooms, compared with 20% in families with incomes above $75,000. http://www.commonsensemedia.org



Strategy Analytics reports that multi-screen users are avoiding TV ads

People using tablets and smart phones while watching TV ignore the commercials, Strategy Analytics says in its latest report examining multi-screen behaviors at home. The research drills down into how viewers shift their focus between devices. "For example," Strategy says, "high-impact scenes on the television screen can divert user attention away from personal devices, while television advertising diverts attention toward them." Caroline Park, senior analyst and author of the resulting study said, "Simultaneous use of several screens is a behavior that is being readily adopted and has quickly become the main way that early adopters choose to experience watching TV. Multi-screen users very rarely concentrate solely on a television show in its entirety, and while this presents challenges to the TV industry, it also offers new opportunities for viewer engagement." Park found that TV ad breaks have an impact on casual games played on personal devices. Survey participants noted that they preferred games that didn't take long to complete, or which were not time-dependent, so that they could fit their games activity into the ad breaks. http://www.strategyanalytics.com

Strategy Analytics survey shows US leads the way in connected TV

Consumers around the world are connecting their television screens to the Internet in their droves, according to a new survey from Strategy Analytics. The research firm conducted a recent survey with nearly 5,000 respondents

across the US and Europe, and as a result of its findings, now estimates that 42 million globally are connecting their television to the Internet in order to watch TV shows and movies. One of the survey's more significant findings was that the US seems to be far ahead of Europe when it comes to connected TV adoption – around 20% of US homes were found to be using connected TV, compared to around 10% of European homes. Within Europe, Germany seems (perhaps surprisingly, given its role in the HbbTV initiative) to be falling behind in terms of connected TV adoption: only 6% of German homes were found to currently use connected TV services, compared to 12% in both France and Italy. Around 9% of UK homes are believed to use connected TV. Strategy Analytics ascribes the higher rate of connected TV adoption in the US to the success of online video services such as Netflix and Hulu: Europe has yet to find its own equivalent, according to the research firm, although there are a handful of localized services in each European market. "People are still working out the best way to get connected TV content onto their TV set," said David Mercer, principal analyst at Strategy Analytics. "In the US the games console is leading the way: in Europe the most popular method is to connect a PC to the TV using an HDMI cable. But the majority of connected TV viewers are actually making use of more than one solution. There may be a number of reasons for this: certain content is only available from different devices; or they are using different TV screens at different times." http://www.strategyanalytics.com

HDMI founders announce initiative to broaden industry participation in HDMI specification development

HDMI Licensing, LLC, the agent responsible for licensing the High-Definition Multimedia Interface (HDMI) Specification on behalf of the HDMI Founders, announced HDMI Forum, Inc., a new organization designed to foster broader industry participation in the development of future versions of the HDMI Specification. All future standardization activities, including development of the specifications, will be transitioned to the new organization. Membership in the HDMI Forum is open to any interested company wishing to become a member. "With over 1,100 adopters of the technology, and over 2 billion HDMI-enabled products shipped since launching the standard in 2003, the HDMI Founders strongly believe that the next leap in growth will come with broader industry participation," said Steve Venuti, president of HDMI Licensing, LLC. "Due to the overwhelming success of the HDMI Specification and the increased adoption of the standard in a wide variety of applications and industries, the HDMI Founders decided to establish the HDMI Forum, a new organization where interested companies can become an integral part of the development process." The current HDMI licensing model provides access to critical intellectual property at a minimal cost for those who adopt and implement the HDMI Specification. For that reason, adopters of the HDMI 1.4 Specification will see no change in their day-to-day business as it relates to their interaction with HDMI Licensing, LLC. Current adopters who wish to license future versions of the specifications will be able to do so under a similar model. http://www.hdmiforum.org

Growth of LCD TVs to reach 9% in 2011, says MIC

Taiwan-based Market Intelligence and Consulting Institute (MIC) has forecast global LCD TV shipments to reach 194 million units in 2011, with a mild increase of 9% on-year compared with 2010, as the LCD model has occupied over 80% of the TV market. MIC added that global LCD TV shipments may reach 285 million units in 2016, with a compound annual growth rate (CAGR) of 8% from 2011-2016. The lowered quotes of LEDs have caused prices of their end products to drop, MIC said. Up to 97% of notebooks now have LED backlit panels, while 43% of the monitors and 44% of the LCD TVs are LED backlit. MIC said 3D applications are gaining the most growth in large-size flat panel TVs, and 3DTVs are expected to account for 11% of global TV shipments in 2011. In addition, less than 2% of the notebooks and monitors will be fitted with 3D panels in 2011, it said. MIC noted that with the growth of 3D content and peripheral products, TV sets equipped with 3D technologies may reach 30% of the overall TV market in 2014. http://mic.iii.org.tw

ATSC Endorses Global Broadcast TV Standards Effort

The Advanced Television Systems Committee was among a global delegation calling for worldwide coordination of future broadcast TV standards. Members of ATSC signed the declaration at the Future of Broadcast TV Summit in this coastal Chinese city. "It makes sense to work together – to conserve scarce resources, to speed new developments to the market and to take advantages of economies of scale wherever possible," said ATSC President Mark Richer, co-chair of the summit, 11th from the left in the picture. Lynn Claudy of the National Association of Broadcasters is far right. The declaration comprises three major initiatives: Defining the future of terrestrial broadcast systems; exploring "unified terrestrial broadcast standards;" and promoting global technology

sharing. “We need to explore new ways of cooperation, seek the progressive unification of standards, and realize technology sharing so that the efficiency and convenience enabled by digitization will be realized--not reduced by system fragmentation,” the document states. “The 21st Century is an era of integration of broadcasting, Internet, and communications, all of which have evolved in parallel. Consumers are calling for more convenient and user-friendly services. The development of digital technology opens the possibility of cooperation among all the different networks and transmission systems.” http://www.box.com/shared/jebo5v05pmkqquzur2ss

Representatives from the Canadian Broadcast Corp., Communications Research Center, Digital Video Broadcast Project, European Broadcast Union, Electronics and Telecommunications Research Institute, Globo TV Network, IEEE Broadcast Technology Society, NAB, National Engineering Research Center of Digital TV of China, NHK Science and Technical Research Laboratories, Public Broadcasting Service and the Brazilian Society of Television Engineers signed. The ATSC Board of Directors endorsed the joint declaration, “recognizing that the global initiative is consistent with the goals of ATSC 3.0 next-generation broadcast standards development,” said Samsung Vice President John Godfrey, ATSC board chairman, who accompanied Richer and more than a dozen other ATSC members at the summit in China. The developing ATSC 3.0 standards focus on improved audio and video compression systems, more-efficient transmission technologies and new applications. In the near-term, ATSC also is developing ATSC 2.0 backwards-compatible enhancements to the current U.S. digital TV transmission standard, including areas such as Internet-enhanced and 3D broadcasting. The joint declaration calls for defining requirements for future terrestrial broadcast systems, considering unified terrestrial broadcast standards, and exploring global technology sharing.

Intel moves away from digital TV business

Intel said it was winding down its TV business and reallocating the resources to develop “ultrabooks”, smart phones and tablets. Intel will move engineers who were developing TV chips to the group responsible for tablets. It is also refocusing its efforts on IP-based content delivery networks, for which there are similarities between tablets and TVs. Sony’s TV sets and Logitech’s Revue set-top box, both running Google TV software, are the more famous products based on Intel’s TV chips. Its CE4100 and CE4200 chips were adopted by companies including Comcast and Boxee. Intel has other TV efforts under way, including the Widget Channel, a platform designed to meld television and the Internet, which was announced in 2008 with Yahoo. “We believe the future of TV is in IP delivery and multi-screen usages and are aligning our focus to these areas,” a spokesperson said. Intel also said it was putting more money into the development of chips for smart phones and tablets as it tries to establish a bigger foothold in those markets. http://www.intel.com

FCC issues rules on TV ad sound levels

The Federal Communications Commission unanimously passed rules to control the loudness of TV commercials. The order requires all TV stations and cable systems to comply, with different parameters for smaller operators and local versus national ads. Loudness considers not the volume, but the dynamic range of sound. The rules implement the Commercial Advertising Loudness Mitigation Act passed by Congress a year ago. The CALM Act outlaws TV commercials that are substantially louder than the preceding program or commercial. For locally inserted commercials, TV stations and cable operators will have to demonstrate they’ve installed the proper equipment and software. For national ads embedded by a network, the network itself must certify that it is within CALM compliance. The networks must make their certification available to all distributors. Programmers must conduct annual 24-hour audits of their content. Broadcasters and larger cable systems must check 100% of programming for a period of two years. Those cable systems with fewer than 10 million and more than 400,000 must spot check 50% of programming. The FCC’s rules incorporate the ATSC’s Recommended Practice, A/85. The RP sets target loudness at -24 LKFS (a measure of loudness, one unit equaling a decibel), with variations up to +/-2 dB, for content without metadata. The measurement is based on an

"anchor element", most typically the dialog of a program. The ATSC first published A/85 in 2009 and revised it in July to accommodate non-Dolby Digital (AC-3) audio codecs. The cable industry was particularly concerned about the revision because more than 1,300 cable systems do not use Dolby Digital. http://www.fcc.gov

WallTenna gives consumers an easy way to cut the cable cord

There's an emerging market in consumer electronics for powerful indoor antennas that allow consumers to cut the cord on expensive cable and switch to free broadcast television. For many consumers, indoor antennas are a welcome option to the hassle and expense of installing an outdoor antenna. A leader in this rapidly growing category is WallTenna, an innovative indoor antenna that combines superior performance with sleek, flat design. For just $40, less than one month of cable charges, consumers can purchase a WallTenna, and access their favorite stations broadcast for free over the air (OTA).

According to a recent industry survey, only 15 percent of U.S. households currently take advantage of free OTA broadcasts, which were mandated as part of the 2009 Digital TV transition that required all full-power television stations to provide all-digital broadcasts over the air. OTA picture quality is also touted as brighter and crisper than what consumers receive from pay TV. Cable or satellite providers use data compression that compromises picture quality. In recent tests performed by the Research Triangle Compliance Engineering (RTCE) lab in Raleigh, N.C., WallTenna achieved unmatched performance across the digital spectrum. WallTenna's flat, clear design enables it to be placed virtually anywhere indoors – a key factor in receiving more TV channels.

In addition to its powerful performance, WallTenna is sleek, convenient and easy to install. Ultra-thin and weighing just three ounces, WallTenna hangs on any wall and its crystal clear design means it can also be affixed to a window without blocking the light and is ideal for people living in apartments, condos or dorms who can't have rooftop antennas. The omni-directional design ensures that WallTenna receives broadcasts from multiple directions. It's also compatible with TiVo and other DVR recording devices. http://www.walltenna.com

WallTenna's flat, clear, lightweight design makes indoor installation easy. This powerful, omnidirectional indoor antenna outperforms others, providing consumers access to more free over-the-air TV broadcasts.

LG, Intel Team On WiDi-Enabled TVs

LG Electronics reported it has entered a strategic alliance with Intel to use the chip-makers' wireless digital video over Wi-Fi (called WiDi) technology in next year's Cinema 3D Smart TVs. The agreement makes LG's TVs the first to feature the WiDi system. WiDi was developed by Intel to stream video content from an Intel-based laptop, notebook or other external mobile device to a TV, projector or display monitor. Currently, the system requires a receiver box or dongle be connected to a TV's video input, but the agreement would enable the system to be built into LG's Cinema 3D sets. The WiDi system uses point-to-point connectivity and features a wireless interface for instant viewing of content on the wirelessly connected display. The system also allows the streaming of online content - such as YouTube videos and streaming TV shows from broadcast websites - that are accessible through notebooks and other mobile devices, LG said. The system does not require the presence of an active wireless internet or WiFi connection to transfer content between external mobile devices and Cinema 3D Smart TVs.

Intel WiDi does not tie down the mobile device during real-time content sharing, LG said. Users may perform other tasks on their notebooks and tablet PCs while simultaneously streaming content to a Cinema 3D Smart TV, projector or monitor. LG and Intel plan to launch co-marketing activities to support the Cinema 3D feature, including demonstrations planned for next month's International CES in Las Vegas. http://www.lge.com

Nielsen reports drop in TV ownership

Nielsen released its annual television audience report. Nielsen has found that TV ownership in the US has declined for the first time since 1992 from 115.9 million households to 114.7 million. At the same time, the average number of TVs in each household has increased from 2.97 to 3.01. TV ownership had been steadily increasing between 1975 and the early 1990s. In 1992, it dipped slightly, but then began a continued climb until 2006. Since then, it has remained relatively flat until 2010, when it showed a decline. Possible reasons for the decline include more online viewing and the economy. A close look at ownership by age reveals that in the main adult

demographic, individuals between the ages of 18 and 49, ownership has declined by 2.7%. Conversely, the number of homes without a TV showed a tripling from one to three percent, and is at its highest level in over 35 years. The most likely causes have been pinned on a tough economy and technology. Cable providers continue to regularly hike rates leading to lost subscribers. Although they and satellite providers often refuse to acknowledge it, Internet video is increasingly popular, especially among younger viewers. http://www.nielsen.com

Digital TV Research predicts a fifth of TV sets to be connected in five years

Data from Digital TV Research is predicting that there will be over half a billion (551 million) TV sets connected to the Internet by 2016 representing a fifth of global TV sets. In its Connected TV Forecasts report Digital TV Research expects that by 2016 most sets on sale will have the ability to connect to the Internet even though not all homes buying these sets will hook up to the Internet. It forecasts that the gross proportion of TV households with a connected set will be 43% by 2016, up from 11% in 2010. The most common method of connecting a TV set to the web at present is via a game console such as the Wii, PlayStation 3 and Xbox, accounting for 79 million of the 124 million connected TV devices at the end of 2010. However, Digital TV Research predicts that the number of connected TV sets will exceed the number of connected games consoles by the end of 2012 and it adds that the number of installed connected TV sets will grow from 31 million at the end of 2010 to 244 million by 2016. Sales of connected TV sets with a built-in Ethernet connection and, increasingly, widgets/applications are taking off, especially as retail prices are beginning to fall. http://www.digitaltvresearch.com

Infographic from Gerson Lehrman illustrates "The Changing TV Landscape"

A new infographic from G+/Gerson Lehrman Group shows numerous interesting trends about how users are newly viewing television. https://www.gplus.com/Infographic/Welcome-to-the-Digital-Living-Room-How-is-the-TV. The infographic is shown on the following pages.

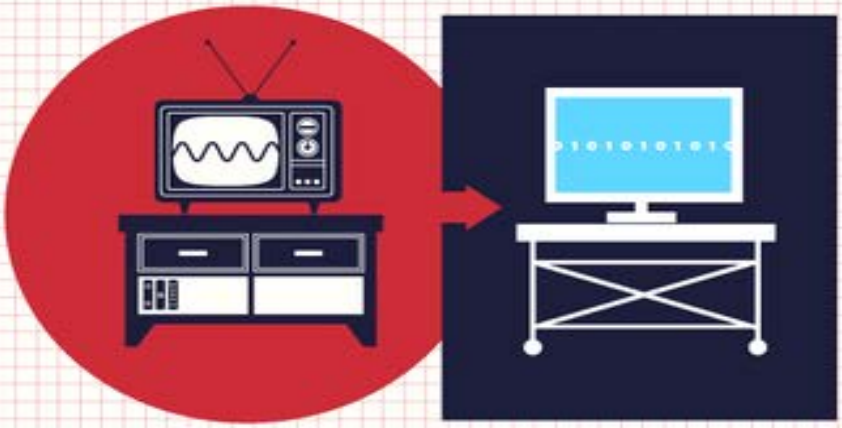
Welcome TO THE DIGITAL LIVING ROOM

How is the TV Landscape Changing?

A Major First Step:

ANALOG TO DIGITAL

Embracing the new digital era, Congress marked **June 12, 2009,** as the last day for TV stations to broadcast in analog. After that date, all broadcast signals were switched to digital, which produces higher-definition resolution, better sound, and can transmit more data.



DVR Gives Viewers

THE POWER TO TIMESHIFT

First introduced to the consumer market in 1999, digital video recorders (DVRs) have since grown tremendously. Forrester predicts that by 2015, the devices will reach a household penetration of about 40% to 45%.

According to Nielsen, DVRs—with TiVo leading the market—are both beneficial to networks ratings and consumer convenience.

What Shows Are People Replaying?

Nielsen listed the top DVR genres, based on rate of playbacks, and found that science fiction is the most popular.

1 Science Fiction
2 Sitcoms
3 Drama
4 Variety/ Reality
5 Evening Animation

Easy Peasy TV

24.5 AVERAGE MONTHLY HOURS OF DVR VIEWING

49% OF DVR PRIMETIME PROGRAMMING IS PLAYED BACK THE SAME DAY IT WAS RECORDED.

88% IS PLAYED BACK WITHIN 3 DAYS.

Online Video:

A GAME CHANGER

Thanks to the ubiquity of the Internet and the advent of cloud computing, television programming now transcends the traditional small screen. Consumers can watch videos from any device that can access the Web.

IN FACT, IN OCTOBER 2011,

201.4 BILLION

ONLINE VIDEOS WERE WATCHED AROUND THE WORLD, WITH THE GLOBAL VIEWING AUDIENCE* REACHING

1.2 BILLION

UNIQUE VIEWERS.

*Aged 15 and older

Where Are People Getting Their Online Video Fix?

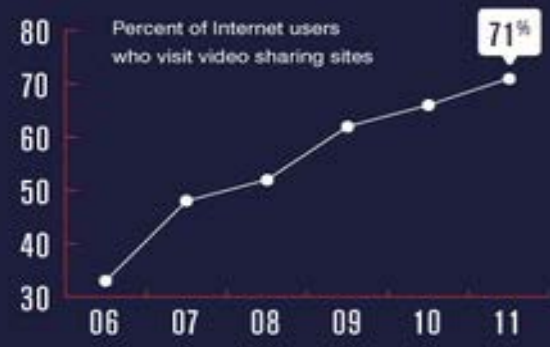
10,157,354

According to the latest Nielsen Report on the topic:
YOUTUBE HAS A HUGE LEAD COMPARED TO OTHER VIDEO STREAMING WEBSITES.

Total Streams (September 2011)

Visitors to Video - Sharing Sites Climbs

Over the past 5 years, the percent of Internet users who go to video sharing sites has more than doubled to 71% in 2011.



Online Videos Drive Conversion & Traffic

The Discovery Channel increased video streams by

123% by implementing video sitemaps, which make it easier for Google to index video content and have it appear in search results.

Dell, Inc. reports that video helped reduce service call volumes by

5%

65.9% of respondents to a GetResponse survey believe that videos in emails have a moderate to significant impact on conversion rates.

Netflix & Hulu Bring On-Demand

MAINSTREAM

NETFLIX

How is Netflix able to attract more than 30 million subscribers? Through on-demand access to a large collection of films and television series.

On September 18, 2011, the company jeopardized this when it announced it would separate its DVD-by-mail and "Watch Instantly" streaming feature into two entities, with the DVD service being called Qwikster.

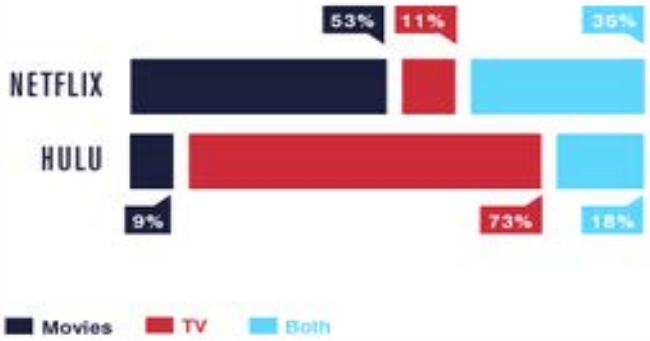
The companies would have different cost structures and benefits. Amidst the public uproar, the company cancelled the change less than a month later.

THE AVERAGE NETFLIX USER WATCHES 5 TV SHOWS AND 4 MOVIES PER WEEK.

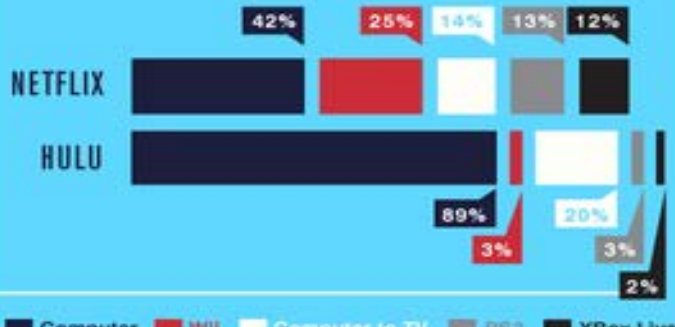
HULU

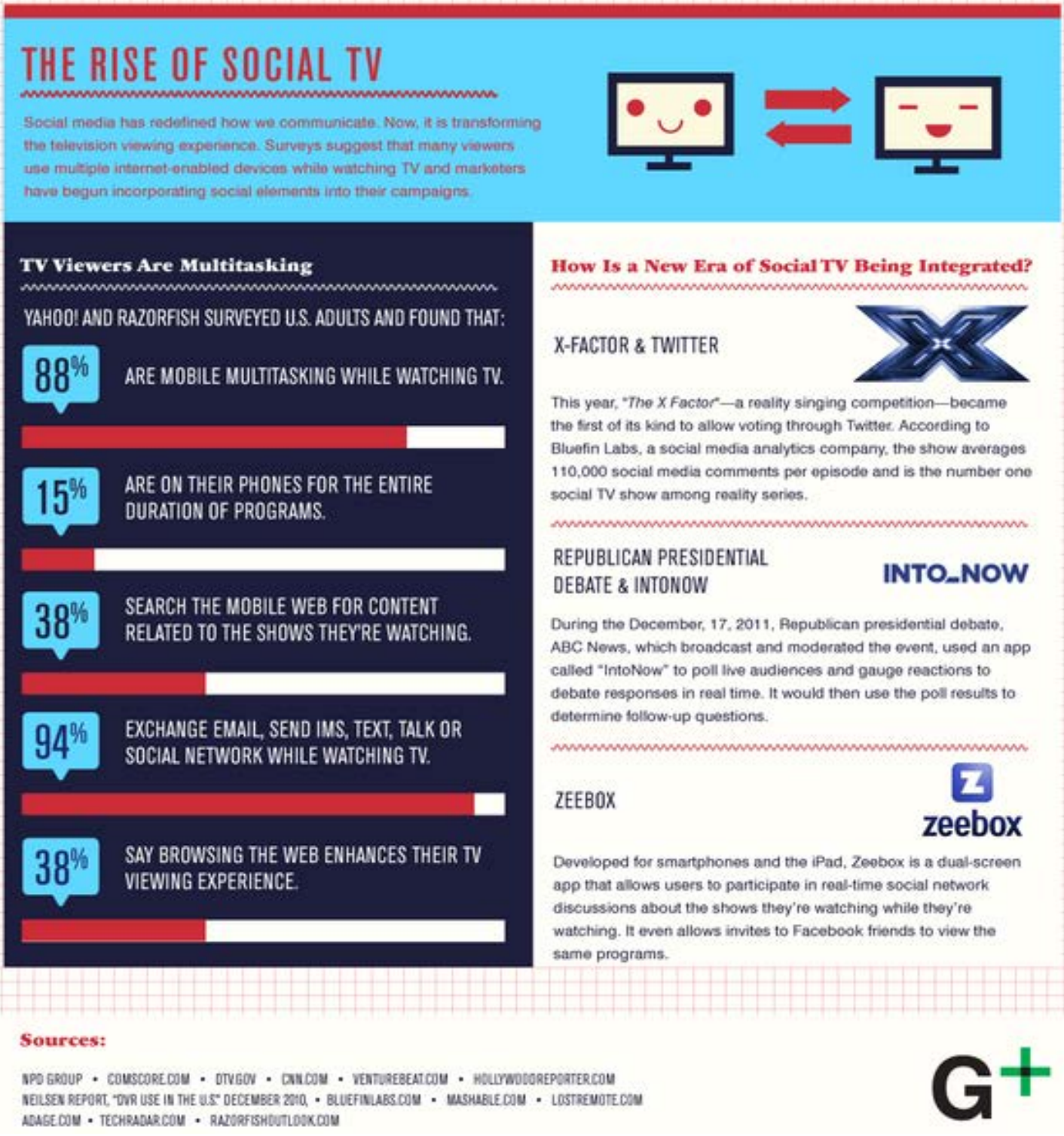
Geared toward the TV fanatic, Hulu offers both recent TV episodes as well as past seasons, and attracts those yearning for exclusive behind-the-scenes footage from major networks.

What are Netflix & Hulu Users Watching?



And How Are They Watching?





Whitespace Regional Area Network Alliance promotes broadband via unused TV frequencies

A new international trade association, the Whitespace Regional Area Network Alliance, has formed in order to promote the use of TV band frequencies to deliver broadband services to rural and developing areas. Its goals include the deployment and use of standards-based products and services as a cost-effective way to bridge the digital divide between those who have broadband and the literally half the world that can't access it. The five founding members of the WhiteSpace Alliance are AmeriSys, BAE Systems, Electronics & Telecommunications Research Institute (ETRI), National Institution of Information and Communication Technology (NICT) and RelayServices. Initially, the organization has adopted the IEEE 802.22 technology, which can deliver up to 29 Mbps per TV channel over an area up to 100 km from the transmitter. The standard, which was finalized in July, ensures there will be no interference to existing services like: digital or analog TV broadcasts; or low-power licensed devices such as wireless microphones. Its future plans include the use of 4G/LTE in higher density areas. http://www.WhiteSpaceAlliance.org

ITU receives Emmy Award for CALM Standard

The International Telecommunications Union received an Emmy Award for the Recommended Practice underlying the Commercial Advertisement Loudness Mitigation Act. ITU was recognized by the US National Academy of Television Arts & Sciences for the "Standardization of Loudness Metering for Use in Broadcast Audio". ITU-R Recommendation BS.1770 on "Algorithms to measure audio program loudness and true-peak audio level" was elaborated over a decade as a result of the dedication of many specialists including Craig Todd of Dolby Laboratories, Gilbert Soulodre of Communications Research Centre, Canada, and Spencer Lieng of the Australian Broadcasting Corp. The standard was finalized during the last study period within ITU-R Working Party 6C under the chairmanship of David Wood of the European Broadcasting Union. The pertinent algorithm and the agreed parameters are now contained in the ITU-R Recommendation approved by ITU member states, giving worldwide guidance on loudness metering. http://www.itu.int

Always Innovating's HDMI dongle turns any HDTV into a smart TV

Always Innovating showcased its HDMI dongle, a compact device that can turn any HDTV into a smart TV. Essentially, Always Innovating's HDMI Dongle is a portable version of a set-top box. The device is based on the Texas Instruments Cortex-A9 OMAP 4, which can run from 1GHz to 1.8GHz depending of the configuration, and offers 1GB of RAM as well as a micro SD card for local storage. The dongle can run on Ice Cream Sandwich, can stream and decode 1080p H.264 video from the Internet, and is compatible with popular streaming-video services like Netflix, Hulu, and Amazon. The device is controlled using a special 9-button remote that is capable of interpreting voice inputs and features near field communication (NFC) technology to offer tap-to-share capabilities. Once connected, the dongle, which is powered via USB, allows to surf the Web, watch movies, and play games online. The device is also both Wi-Fi and Bluetooth-capable so it can be connected to both the Web and any compatible accessories. The company will not be producing the device for commercial sale; however, it intends to license it to others. http://www.alwaysinnovating.com

The HDMI dongle that turns any HDTV into a smart TV

New Roku streaming stick integrates smart experience into TVs

Roku unveiled a new solution to make a better smart TV. The new Roku Streaming Stick is a wireless device about the size of a standard USB flash drive that will plug into a TV to instantly transform it into a smart TV. The Roku Streaming Stick will feature built-in WiFi, processor, memory and software to deliver Roku's growing collection of streaming entertainment. The Roku Streaming Stick will not require any cables or a separate power source, and can be controlled by the TV remote. Like Roku players, it will deliver the more than 400 channels found on the Roku platform today and will benefit from regular, free software updates and channel enhancements. The Roku Streaming Stick will be available in the second half of 2012. It can be bundled with a TV in retail or sold separately for consumers to use with their own TVs. The Roku Streaming Stick will plug into MHL-enabled HDMI ports on TVs. MHL is a new standard that uses the HDMI connector on TVs to deliver power and other critical elements for the streaming experience. MHL is currently adopted by nearly 100 hardware and manufacturing vendors including Nokia; Samsung Electronics; Silicon Image.; Sony; and Toshiba Corporation, who are the joint founders of the MHL Consortium. http://www.roku.com

Roku Streaming Stick instantly makes a TV smart

Silicon Image ViaPort technology included in new line of BenQ 3D televisions

Silicon Image and BenQ announced that Silicon Image's ViaPort technology has been designed into BenQ's new 3D DTVs. The SiI9489A dual-mode port processor allows BenQ customers to view and share HD content from MHL-enabled mobile devices as well as the latest HDMI 1.4 devices on their MHL-enabled BenQ TV. By using the SiI9489A's ViaPort feature, BenQ's 3DTVs allow an HDMI output connection from the TV to connect an AVR, HTiB or wireless audio system – greatly simplifying home theater setup and use – while providing the highest-quality surround sound including support for the latest high bit rate audio formats. The ViaPort connection allows the BenQ TV remote to control AVR volume as well as standard TV functions. The SiI9489A supports all HDMI audio formats, including Dolby Digital, DTS, and high bitrate formats such as Dolby TrueHD and DTS MasterHD. http://www.siliconimage.com

DLNA debuts "Premium Video" to enable delivery of TV programs and movies

The Digital Living Network Alliance (DLNA) introduced DLNA Premium Video. With DLNA Premium Video, service providers can allow consumers to stream their favorite television programs and movies to DLNA Certified products such as digital televisions, tablets, mobile phones, Blu-ray disc players and video game consoles. For instance, you can begin watching a favorite television show in the living room on your DLNA Certified television and then continue the same program hours later in your bedroom on a DLNA Certified tablet. Content will be delivered by service providers to a single set-top box that connects to the home network, reducing the clutter of multiple set-top boxes in the home. http://www.dlna.org

HDMI technology expands its reach as the preferred digital connectivity standard

HDMI Licensing and the HDMI Forum announced that over 1,150 licensed HDMI Adopters are expected to ship over 800 million HDMI-compliant products in 2012 according to market research firm In-Stat: an increase of 17% over shipments in the year 2011. This translates into an installed base of over 3.1 billion HDMI products deployed worldwide which represents an increase of 34% over 2011. The HDMI Forum was launched in October 2011 to foster broader industry participation in the development of future versions of the HDMI Specification. The organization is responsible for all new standardization activities, including development of future versions of the HDMI Specifications. Open to any interested company wishing to become a member, the HDMI Forum currently has 43 members. The membership recently elected 11 members to the Board of Directors. Arnold Brown of Silicon Image was elected as Chairman of the Board and Rambod Jacoby of Nvidia was elected as President. Current activities include ongoing meetings with the Technical Working Group as well as the Marketing Task Group. The HDMI Forum expects to release the next version of the HDMI Specification in the second half of this year. The next version, which is focused on meeting immediate market needs, will include increased bandwidth to accommodate higher resolutions as well as new video timings and other features. http://www.hdmiforum.org

Lenovo unveils first Ice Cream Sandwich TV

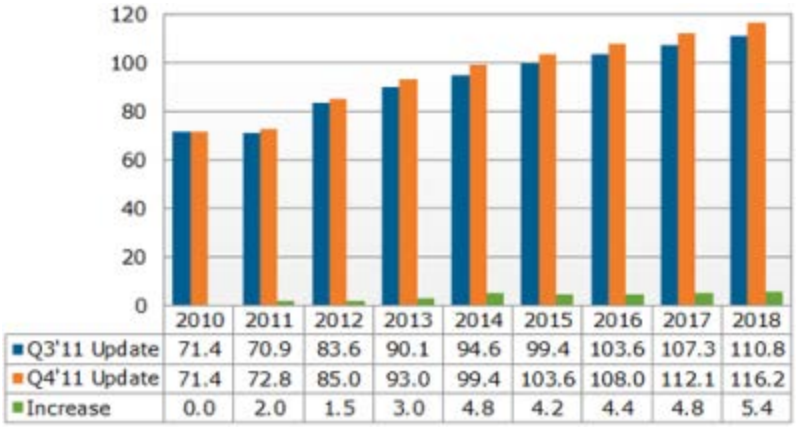
Google's Android operating system version 4.0, better known as "Ice Cream Sandwich", has been slow to arrive on smart phones and tablets (it recently made its debut in the US on the Samsung Galaxy Nexus smart phone). But Chinese tech company Lenovo used CES to introduce the first smart television with Android 4.0, a 55-inch 3D (240Hz refresh rate) LED model called the K91. It will be available in April in China. Lenovo is referring to the user interface as the Sandwich UI letting you switch among video on demand, Internet apps and regular TV. TV apps are customizable by Android developers. More than 100 apps are preloaded. The TV has a Qualcomm Snapdragon dual-core processor, 1 gig of RAM, a hard drive with 8 gigs of storage, plus a removable 2GB SD card. Lenovo is producing a 42-inch model as well. http://www.lenovo.com

OmniVision launches high-performance native HD image sensor

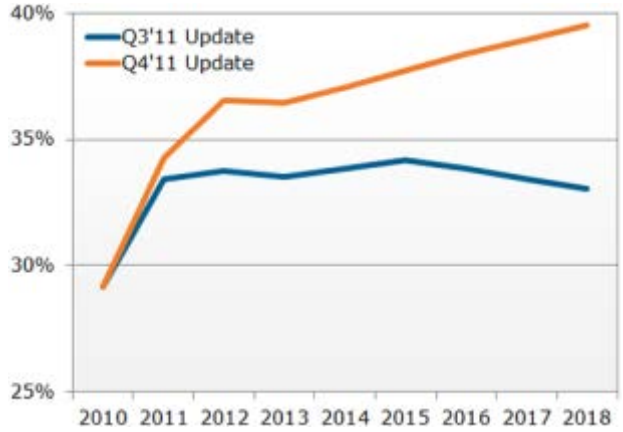
OmniVision Technologies, a developer of advanced digital imaging solutions, announced the launch of its new high frame rate, native high-definition (HD) CameraChip sensor that is capable of capturing high quality 720p video at 60 frames per second. The OV9713 combines excellent low-light performance and high dynamic range (HDR) with fast frame rates, making it an ideal solution for entertainment, notebook, telepresence and high-end security applications. The OV9713 is the first sensor to be built on a new and improved OmniPixel3-HS pixel. The sensor's new pixel architecture offers better low-light sensitivity, signal-to-noise ratio (SNR) performance and a 5dB improvement in dynamic range compared to the previous generation, allowing it to perform exceptionally well in devices that operate in challenging lighting conditions. Additionally, the OV9713's 12-bit RGB RAW output capability provides optimized HDR, while the embedded sequential line or frame-based HDR features allow an even higher dynamic range to address high-contrast scenes often encountered indoors. The OV9713's fast frame rate minimizes latency delay, resulting in quick response time when using the camera for interactive gaming and real-time communication for telepresence applications. The sensor is also 3D ready, offering frame synchronization functionality for 3D (stereo) camera systems. Using an improved OmnniPixel3-HS architecture, the OV9713 delivers industry-leading low-light performance of 3300 mV/lux-sec. It comes with a standard 2-lane MIPI interface and fits into an 8x6x4.5mm module size. The OV9713 is currently available for sampling, and is expected to go into volume production in Q2' 2012. http://www.ovt.com

DisplaySearch predicts LCD TV area demand to reach 116 million square meters in 2018

The LCD TV market saw a rapid shift toward sizes larger than 40 inches at the end of 2011, as consumers, particularly in North America and China, took advantage of new sizes and more affordable prices. As larger sizes such as 46, 47, 55, 60 and 65 inches are being adopted by consumers, panel makers are also developing other new large size TV panels, including 43, 48, 50, 70, and even 75, 80 inches and larger. In response to the strong end-market adoption, NPD DisplaySearch has increased its forecast for LCD TV area demand. According to the NPD DisplaySearch Quarterly Worldwide FPD Shipment and Forecast Report, LCD TV panel demand will reach 85 million square meters in 2012, nearly 2% higher than the previous forecast. NPD DisplaySearch has also increased the area demand forecast from 2013 to 2018 to account for increased 40-inch+ LCD TV demand.



	2010	2011	2012	2013	2014	2015	2016	2017	2018
Q3'11 Update	71.4	70.9	83.6	90.1	94.6	99.4	103.6	107.3	110.8
Q4'11 Update	71.4	72.8	85.0	93.0	99.4	103.6	108.0	112.1	116.2
Increase	0.0	2.0	1.5	3.0	4.8	4.2	4.4	4.8	5.4



LCD TV demand area - Q3'11 and Q4'11 (millions m²); 40-inch+ LCD TV percentage in total LCD TV – Q3'11 and Q4'11 (unit basis)

In the report, NPD DisplaySearch points to several factors that are driving the increase in LCD TV area. New panel sizes such as 39, 43, 48, 50 and 65 inches are being manufactured in the same Gen 6 through Gen 8 fabs, but now offer better glass substrate utilization efficiency. More LCD TV brands are developing products around these new sizes and introducing them to the end-market this year. Promotions of large sizes including 58, 60, 65, 70, 71, 72, 75, 80, 82 and 84 inches, some are with high-end features and specifications such as 21:9 cinema form factor or 4Kx2K resolution. As more large sizes are presented to consumers at attractive prices, consumers will be encouraged to upgrade to larger sizes. The percentage of 40-inch+ in LCD TV demand has been increasing as consumers continue to adopt larger sizes. In 2015, 40-inch+ sizes are expected to account for 38% of total LCD TV panel demand, which was previously forecasted at 34%. http://www.displaysearch.com

Adobe advances entertainment apps for TVs

Adobe Systems Incorporated announced that LG and TiVo have become the latest partners to bring Adobe Flash-based applications via Adobe AIR to connected TVs and digital home devices. Content partners can now take advantage of AIR to deliver Flash-based console-quality gaming and premium video across TVs, Blu-ray players and set-top boxes. Adobe also announced that Flash Player 11 and AIR 3 are available, a milestone release that will enable the next generation of immersive application experiences across devices and platforms. With more than 100 unique digital home devices already certified to support Adobe Flash and AIR, including Samsung Smart TVs, Adobe expects rapid growth for Flash-based applications across connected televisions and other devices. New gaming apps like Frima Studio's Zombie Tycoon, VH1's "I Love the 80's" Trivia or Raider from PlayJam, as well as premium video experiences from SnagFilms, Flingo, EPIX and others are just a few of the applications that are enabled by AIR. With the AIR SDK, Flash Builder and Flash Professional CS5.5 software, developers can build new applications for connected digital home devices or extend existing Flash-based experiences from desktops and mobile devices to TVs. AIR 3 brings a series of advancements to TVs including full hardware-accelerated rendering for 2D and 3D graphics to enable console-quality gaming applications. Content publishers are able to deliver HD videos with Dolby and DTS 7.1 channel surround sound for full support of home theater systems. With the new Game Input API, developers can also make a range of devices an integral part of the gaming experience on TV screens, including joysticks, smartphones and tablets. Available later today, Flash Player 11 and AIR 3 enable the next generation of immersive application experiences across devices and

platforms including Android, Apple iOS (via AIR), BlackBerry Tablet OS, Mac OS, Windows, connected TVs and other platforms. Dozens of new features in Flash Player 11 and AIR 3 allow developers to deliver a new class of gaming and premium video experiences, as well as sophisticated, data-driven applications with back-end systems integration across devices, including the iPhone and iPad via AIR. http://get.adobe.com/air

Blackmagic Design announces Intensity Extreme for high quality video capture

Blackmagic Design announced Intensity Extreme, a new low cost and extremely high quality video capture and playback product for professional videographers with HDMI and analog video based on the new Thunderbolt technology for only €209. Intensity Extreme is the first Thunderbolt technology based device to combine the high quality of HDMI capture and playback with the wide compatibility of analog component, NTSC, PAL and S-Video and analog audio capture and playback in a compact size that's completely powered from the Thunderbolt connection on the computer. This means Intensity Extreme is the perfect solution for adding video to laptop computers as it powers from the laptop battery. Intensity Extreme can be connected to any big screen television or video projector for incredible edit monitoring. Current computers don't have the processing speed to render complex multi layer real time effects in HDV playing back to FireWire cameras. Intensity Extreme solves this problem by outputting video on HDMI and analog outputs for big screen monitoring in both SD or HD formats. Intensity Extreme instantly switches between the 1080 HD, 720 HD, NTSC and PAL video standards. Intensity Extreme is fully compatible with Adobe Premiere Pro, Apple Final Cut Pro 7, Adobe After Effects, Adobe Photoshop and any QuickTime based software application. Intensity Extreme key features include HDMI video and audio capture and playback; analog capture and playback in SD/HD component, NTSC, PAL and S-Video; stereo analog audio capture and playback; Thunderbolt connection for high speed data and high video quality; capture and playback DV, DVCPRO HD, HDV, Online JPEG, ProRes and uncompressed video; use for edit playback monitoring on televisions and video projectors; HDMI and Component switches between HD and SD; real time effects supported in Apple Final Cut Pro 7 and Adobe Premiere Pro; video capture and playback with Blackmagic Media Express 3 utility; Thunderbolt bus powered so no external power supply is required; compatible with Mac OS X 10.6 Snow Leopard and Mac OS X 10.7 Lion; includes breakout cable with RCA type connectors for analog video and audio. http://www.blackmagic-design.com

SeaChange demonstrates multi-screen video solutions in the cloud

Multi-screen video solutions leader SeaChange International will show a range of products at TelcoTV 2011, October 26-27, that service providers can use to deliver rich, personalized viewing experiences and targeted linear and on-demand advertising across mobile, PC, set-top and tablet devices. Demonstrations will include SeaChange's Nitro video subscriber experience software, Infusion advanced advertising platform and in-home gateway. SeaChange's Nitro software enables service providers to offer subscribers control over linear and on-demand content across mobile, PC, tablet and TV screens. Nitro leverages HTML5 to give viewers intuitive features and functionality to navigate and manage video content on any screen they choose, including TV listings, bookmarking, search and recommendation, and handheld-as-a-remote capability. The Infusion Advanced Advertising Platform is designed to help service providers manage centralized ad operations and scale to 150,000 insertable channels and millions of ad assets as they migrate to consolidated regional and national advertising systems that are managed from increasingly Web-centric and virtualized datacenters. Infusion enables targeted advertisements to be dynamically inserted into linear and on-demand video streams across multiple screens. SeaChange's in-home gateway uses DLNA standards to enable whole home DVR as well as viewing and sharing of OTT and television content, images and music throughout the home. All of SeaChange's open multi-screen video solutions, which include its cloud-based RS-DVR, are supported by Adrenalin, the video back office built using an open service oriented architecture to deliver a consistent video experience that avails millions of video assets to millions of devices across multiple networks. Adrenalin can establish new services or transform existing services to provide rich and seamless user experiences across mobile, tablet, PC and TV screens with extensive cross-promotional capabilities and fully integrated linear and non-linear advertising. http://www.schange.com

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Will Smart TVs Reinvigorate the LCD TV Market?

by Paul Gagnon

Paul Gagnon is Director of North America TV Research at DisplaySearch. Paul has more than 13 years of experience in the Consumer Electronics industry in retail, manufacturing and market research, adding value and insight to the industry-leading analysis at DisplaySearch. Paul is primarily involved with TV market tracking, forecasting and analysis as well as consulting and conferences and has been cited as an industry expert in numerous publications such as *Wall Street Journal*, *The New York Times* and *Los Angeles Times*. Prior to joining DisplaySearch, Paul worked as the Senior Marketing Analyst for Hitachi America LTD's Home Electronics Division, forecasting and analyzing volatile TV and video market trends and had extensive involvement in product development and strategic planning. He was also responsible for developing and implementing retail sales incentive promotions at Hitachi. In addition, Paul was a member of the CEA's Video Division Market Research Committee. Paul has a bachelor's degree in marketing and a master's in business administration from San Diego State University.

The global TV market had a tough year in 2011 and as we closeout the year by compiling final shipments for the year, it is clear that LCD TV is the only growth TV display technology now. Overall Plasma TV shipments were down almost 7% while CRT TV units fell 34%. At the same time, LCD TV shipments increased by 7% to 205M units. Overall the global TV market was flat though with less than 1M units differentiating 2010 and 2011. This is not good news for the long term and a signal that something must change to drive renewed global growth.

LCD TV's have a very high share of annual shipments, and although the growth in market share, even in a stagnant overall TV market, will lead to a continuation of LCD TV unit growth for several more years, there are warning flags that continued or reinvigorated growth will take a fundamental change in the TV business to achieve. The market shift from bulky CRT and Projection TVs to sleek and sexy flat panel TVs, along with a simultaneous shift to digital broadcasting and HD, helped spur tremendous replacement cycle growth during the 2000's. Even as we are fielding the 2012 edition of our Global TV Replacement study, it's apparent that those shorter replacement cycles seem to be sticking, so a drop in volume due to a lengthening replacement cycle seems unlikely.

TV makers, and other participants in the TV supply chain, have struggled lately with poor profitability and excess capacity. Along with intense pressure to maintain market share and new devices waging war for consumers' attention (tablets), the pressure on pricing is immense. This past holiday was another symbol of consumers' willingness to defer TV purchasing until the best prices can be obtained.

However, without another transformative technology cycle, there is little hope to drive another surge in growth. OLED TV is a much hyped display technology, but due to high costs and similar performance to high-end LCD TVs, we don't expect much in the way of rapid growth, as shown below in our latest forecast. Similarly, 3D TVs, LED backlights and 4K resolutions won't drive a substantial boost to consumer demand because they are unwanted, overpriced or unnecessary features. So, if a change in the display specification doesn't seem able to make a fundamental change in the TV business to drive greater sales growth, what might?

We believe connected TV's, of which Smart TVs are a subset, have the potential to revolutionize how consumers use and value a TV. Currently, TV viewing is a very passive activity and while other devices in the living room vie for attention. What if the TV could become an integral part of a flexible home entertainment ecosystem in a more engaging way? How could intelligence and connectivity enhance a TVs utility and restore value and desire? Can these content models feed the bottom and top lines of TV of struggling TV brands? These are some of the themes we will be exploring at the 2012 US FPD Smart Displays Conference Feb 28-29 in San Diego, Ca.

At this point, the defining of the broader connected TV market in general, and the Smart TV market in particular, is a challenge. The technical hurdles seem to be mostly overcome (wireless networking is more common) and software is slowly improving, enabling better user interfaces and more intuitive usage. But significant hurdles remain:

- How can various user interfaces and interactivity technologies improve the utility of a connected TV?
- How can cable and satellite TV providers be brought into the mix?
- What's the best business model to ensure TV makers get a proper portion of profits and revenues for digital content?
- How will search functionality be enabled?
- Will set top boxes be a better location for intelligence, or can the TV retain the power?
- Will global broadband networks be able to support greater streaming of high definition and even 3D content?
- Who will educate the consumer?
- What is a Smart TV vs. a basic connected TV vs. a connectable monitor?

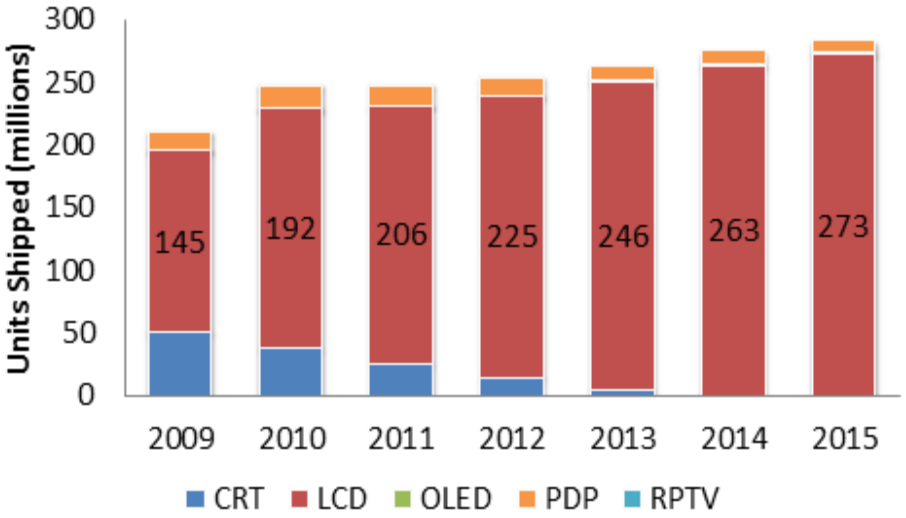
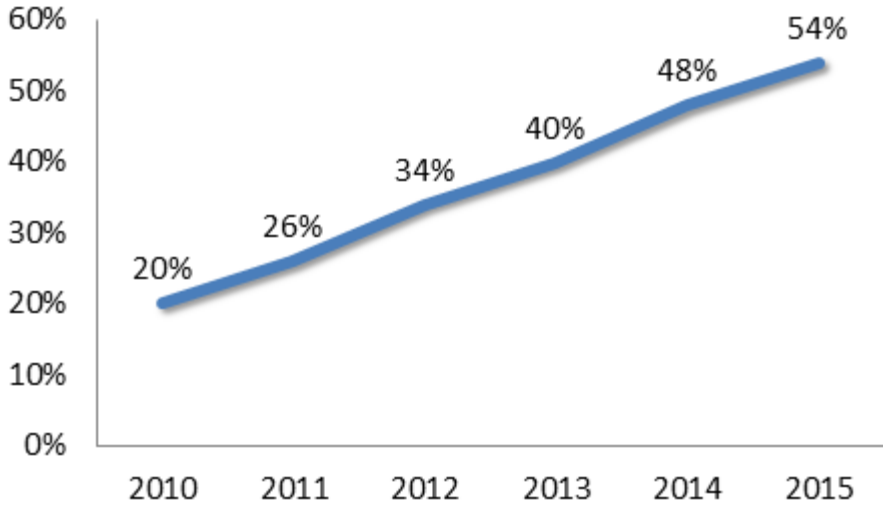


Figure 1 - Global TV Shipments by Display Technology

At this point, we see the connected TV market expanding from about a quarter of TV units shipped worldwide in 2011 to more than half by 2015. While connected TV units and share are growing, we don't yet see it driving a wave of replacements that might lift overall sales of TVs in the same way that the flat panel and HD transitions did. However, there is a lot of activity and buzz surround the possible entry to the TV market of non-traditional technology companies. Apple is rumored to be entering the TV space and with the successful launch of Amazon's Kindle Fire tablet over the holiday season, it's not inconceivable that Amazon could become a new player as well. In fact, it seems that the *content* could drive sales of hardware instead of the other way around.



If Apple does enter the TV market (and not just with an updated Apple TV set-top-box), a sizeable fan base can be expected to buy them. And while that might not amount to more than a few million units the first year or two, it will likely spur a great deal of innovation among the other TV brands, which could result in many millions of extra TV upgrades as consumers become energized.

Figure 2 - Connected TV Share of Global TV Shipments

If, and it's a big if, connected TVs can revolutionize how consumers acquire and consumer content, and if the TV can become an indispensable item in the home entertainment network or ecosystem, we might have to revise our forecasts in a positive way. Given that LCD is expected to remain the dominant display technology in the TV space for a long time to come, this would overall annual demand. This would be very good news indeed.

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LG Display

The TV market in Europe – some sobering thoughts…

by Bob Raikes

Bob Raikes is an experienced sales and marketing specialist in distribution and in the PC displays business in particular. Pursuing a keen interest in micro-computers, he joined the PC industry in 1982 at Data Efficiency. Following a spell to establish the distribution company DDL, he helped to set-up Taxan UK as the UK sales manager. From there he spent seven years with Japanese monitor and graphic board maker Eizo, initially as sales director and later as managing director of the company's UK subsidiary. He established Meko Ltd in 1994. As well as being managing editor of Display Monitor, Bob was for several years the displays editor for The Peddie Report and a regular contributor to Computer Shopper and other titles. Bob long ago decided that if Moore can have a law, he can have one too.

- **Bob's First Law, first developed in the mid-1980s, states: "Everyone that buys a computer, always buys another".**
- **Bob's Second Law states: "Anything that increases the visual bandwidth wins in the end". This observation dates from slightly later, after years of hearing the questions: "Who needs graphics?", "Who needs color?", "Why does anyone need more than 256 colors/a 15-inch screen/VGA resolution?"… The law predicts that there will be a continuous development of electronic displays until they match the capabilities of human visual perception**

As this issue of the *LCD TV Matters* went to press, we were just trying to finalize our EMEA numbers for the last quarter of 2011 and for the year as a whole. Sadly, it's looking very bad. It looks as though the quarter is going to be around 10% down on the same quarter last year. The Christmas holiday quarter is traditionally when everybody is looking to make their best sales of the year. It will also mean that the whole year is down by almost as much. It looks as though the final numbers for Germany will beat the UK, traditionally the largest market for TVs in the region.

Most of the market had been hoping for a late rally in sales – consumers sometimes reward themselves for not spending their money since the summer holiday period by treating themselves and spending some money at Christmas or in the 'January sales'. As we measure the sales into the stores, most of the inventory in the stores in January will have needed to be in the stores by December so are reflected in our Q4 numbers. However, this year, they decided to hang onto their money. So why the gloom?

- First, and fundamentally, the Eurozone crisis has made consumers everywhere extremely nervous, whether you are in one of the countries such as Greece or Portugal that is at the heart of the crisis, or whether you are in one of the wealthier countries where consumers are worried that they are about to get a bill for baling these countries out. The need to keep interest rates for sovereign debt as low as possible has meant that governments such as the UK's are working on 'fiscal responsibility' by cutting public spending and tightening budgets. However, this is not the recipe needed to get the economic growth that is the only real solution to the crisis.
- The second reason for gloom is that Western Europe is very much a replacement market for TVs – everybody that wants one has had one for a long time.

There are trends coming that will help the TV business, consumers quite like the idea of connected TVs, but 3D is still seen as just a 'nice to have' for top-end sets, rather than a 'must have' for all sets. Some consumers also like the idea of LED-based sets that reduce power consumption and HD content is starting to be available with a reasonable number of channels in a number of countries. SES and Sky have both done well with HD subscriptions in Germany.

Analogue switch off is also completed in 2012 in Western Europe and some will upgrade to make the most of that. There has been a 'knock on' effect on TV retailers from the poor sales and many are really struggling to survive or failing to. Darty of France, which owned Comet, one of the largest electronic and electrical retailers in the UK, has had to effectively pay to get rid of that business.

There is some good news, but you have to look to the South East and the East of Europe to find it or even further south to the Middle East and Africa. Turkey is doing well with 8% growth or thereabouts, Poland has seen good growth this year and Russia and Norway are doing well out of relatively high oil prices.

Of course, the market won't stay this bad forever, but at the moment, it's hard to see where growth in the LCD TV market will come from in the next year or two. We do expect some of the products that were originally designed for the developing countries, like the thicker direct LED sets, to impact around the edges of the region and may even be used as fighter models in the major markets. We met people at CES that got a great response to the concept from European TV buyers. Well, they got a great response to the prices, anyway!

Why Architects / Interior Designers Need Display Geeks…

by Jin Kim

Jin Kim is the founder and president at DisplayBlog, bringing together news, information and analysis from the high-tech display industry to help, educate and entertain. By combining the experiences and knowledge gained serving as senior marketing manager at LG Display and as director of TFT LCD Market Research at DisplaySearch, Kim brings a fresh look at the display industry and products such as LCD TVs, LCD monitors and notebook PCs. Kim received a BA at UC Berkeley and an MBA at from Claremont Graduate University.

This beautiful living room is designed by Verdastudio Architects & Designers and is located in Yermasoyia, Limossol, Cyprus. Beautiful. The solid wood brings warmth to the modern stone and glass design. A little cluttered for my taste but tasteful enough. Although I don't think I would enjoy watching TV as much. The TV has a lot of glare and it is facing a wall of windows. As far as I can tell the windows are already shaded. With all that glare I am not sure you can enjoy much of anything.

It is almost impossible to find LCD or plasma TVs with matte screens anymore. And using matte-screen-based DLP, LCoS or a Laser TV would have been worse since rear projection TVs don't do very well in bright ambient environments. The best option given this layout would have been to have darker shades or curtains.

If you enjoy watching movies or TV, lighting is important and I would recommend designing a room that can easily be made dark and without a lot of light directly hitting the front of the TV. Also consider a TV that has thin black bezels to minimize visual distractions. http://www.archdaily.com/91408/adamos-residence-vardastudio-architects-designers/

It looks like the empty space next to the sliding doors is for an entertainment center with the big space earmarked for a big TV. And that's the problem. It doesn't matter whether the TV is LCD, plasma, or OLED.

Part of Kiko House designed by Alfredo Resende Arquitectos this living space on level 0 is small yet open. But, the experience of watching TV isn't very good in a bright ambient environment, especially when directly hit by outside light. Often there are reflections and glare. Brightness suffers and with that contrast. That's why videophiles have dark rooms or rooms that can easily be darkened with thick curtains. http://resendearquitectos.com/

According to the floor plan there is a wall to the right of the sliding doors. In terms of creating an environment for a better TV viewing experience that might have been a better location for the entertainment center.

6 ways TVs of the future can be more intelligent

by Andrew Eisner

Andrew Eisner is Retrevo's resident gadget enthusiast and former Executive Producer at *PC World Magazine.* Andrew is well versed in technology products, having helped establish Ziff Davis' premiere test lab, where he led a team testing the latest high tech gear. When he's not pouring over gadget specs, he can be spotted riding his motorcycle around Bay Area back roads or hiking in the hills while listening to NPR podcasts on his iPod.

Aside from 3D, HDTV, and color, changes in television set technology have been slow and subtle over the years, but with today's changing tech landscape, TVs of the not-so-distant future could be intuitive, interactive devices that "watch us." With the annual Consumer Electronics Show just concluded, let's look at some of the ways in which we can expect TVs to change.

1. **TVs Will Watch You and Learn What You Like to Watch:** It might take some face recognition technology already being demonstrated in the latest version of Android (Ice Cream Sandwich), Apple's iPhoto and even Facebook, combined with some machine learning and AI technology but imagine how useful it would be if your TV could watch you for a change, learning all about your viewing behavior including likes and dislikes. After becoming familiar with your TV viewing preferences, your TV could become a virtual assistant for you, recommending programs or incorporating recommendations from your network of friends.
2. **TVs Will Understand Gestures and Voice:** As long as your TV is watching you maybe it will apply gesture recognition technology similar to what Microsoft has developed for its Kinect game controller and allow you to interact with your TV by waving your hand or nodding your head and of course there's always Apple's Siri technology so you can have a dialog with your TV using natural language commands to instruct your TV what to do.
3. **Recommendation Engines and Proactive Recording:** The same recommendation technology we find so useful in web sites like Amazon, Yelp, Netflix, Retrevo and others will find its way into the TV of tomorrow. "Cloud," recording of shows on a DVR may become less necessary however, for first run shows like news, sporting events and award shows there will remain a need to record shows and whether the DVR is built into your TV or it's part of the cloud, your TV should be aware of what you record and what you end up watching so it can make recordings for you without you setting up the recording. A truly intelligent TV would record shows for you that you didn't even ask to record or discover shows in the cloud that it thinks you might want to watch. In other words your TV could tell you, "I took the liberty of recording a new show I thought you'd want to watch."
4. **The Tablet Becomes Part of Your TV**: The fact that your tablet will most likely become your remote is safe to assume as there are many examples of it from companies like Sony and Samsung, but as tablets move into the mainstream, it's likely the "intelligence" in new TVs may come more from your tablet than the TV itself. For example your tablet may become the medium that enables your social networking Facebook activity or run a recommendation engine, maintain a guide and monitor new shows looking for ones you might want to watch.
5. **Your TV Will Become Part of Your Social Network:** While this may seem obvious, there is a difference between connecting to Facebook on your TV to view wall postings, and integrating Facebook with your TV so your friends can see what you're watching and chat with you about the TV show you're watching. The concept of a "social" TV was introduced a few years ago by Boxee however we're surprised the idea of integrating Facebook and TVs hasn't been widely adopted. It should soon be easy for your friends to recommend things to watch and your TV should also learn which friends' recommendations you like best. A socially aware TV will offer the ability to share the experience of watching TV together even when you're not together.

6. **The Future of TV Advertising; Super Personalized Ads:** TV shows can be associated with certain demographics which advertisers can use to place personalized ads but with an intelligent TV, advertisers can not only know what you watch but whether or not you're paying attention, chatting about it with your friends, or whether you lost interest and fell asleep. Soon, advertisers could tailor ads so personal you might find them disturbing.

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LCD TV Association

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INFORM the public on the many benefits of LCD technology (vs. CRT and projection, PDP and the coming set of laser RPTV players). The LCD TV Association will debate the claims of competing technologies, as well as sponsor, post and distribute white papers on industry research and relevant topics - as determined by LCD TV Association Advisory Board.

No one leaves a good movie…

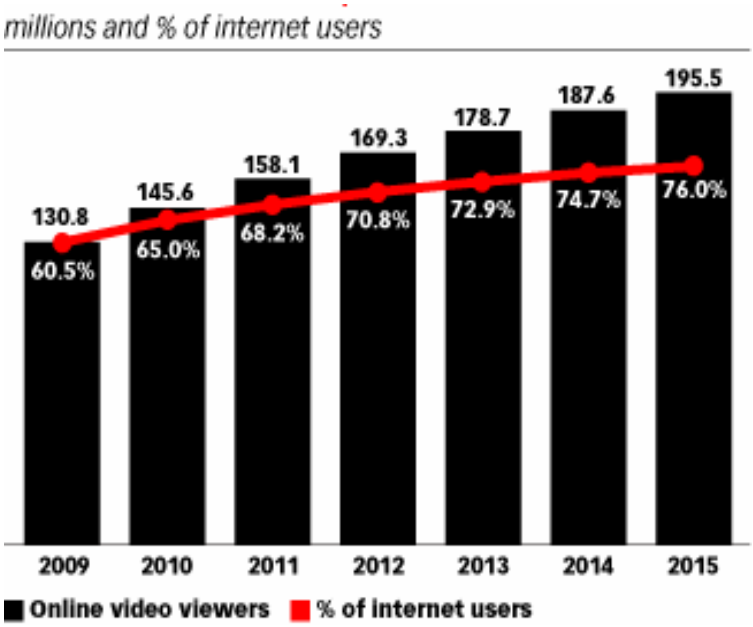
Not even a company movie

by Andy Marken

Andy Marken is president of Marken Communications in Santa Clara, California. He has been involved in the video/illustration content and storage industry for more than 20 years. Years ago, he was instrumental in helping Philips introduce CD technology to the US. He has helped launch and educate the market regarding DVD-R and DVD-RAM. Today he is working to launch the blue laser technologies – Blu-ray and HD-DVD. Andy has also been instrumental in supporting a wide range of video and content firms including Sigma Designs, Dazzle, Pinnacle Systems, FAST, InterVideo, Ulead, and other firms in the software and hardware industries. He can be reached at http://www.markencom.com.

We now have two generations that have grown up with the internet and online content. It's no wonder that this past June, 158.1 million people (68.2 percent of the U.S. internet users) sat through 6.26 billion viewing sessions.

According to eMarketer, the average internet user watches about 16.8 hours of online video a month. This was up from last year's 14.5 hours of video for the same month. comScore's research results are even higher. They recently reported that a total of 178 million Americans watched a record 6.26 billion video sessions in a year. Part of that acceleration is attributed to more people using their mobile devices – smartphones and tablets – for viewing. The growing number of online viewers has the cable industry concerned that people will "cut the cord" and move online to watch their movies and TV shows. Teens, tweens and millennials find it perfectly natural to watch news/current events, TV shows, sports and TV shows on-the-go when it is convenient for them, not when the station or network airs them. The internet/web is also the first place people go when they're looking for information on a product, service, problem resolution, sales outlets, product/application reviews and more. As a result, videos provide manufacturers and retailers an excellent opportunity for capturing and holding eyeballs on the web when they're looking for specific information.



Online Viewing – The number of individuals watching video content online has grown dramatically in recent years; and younger generations are making mobile content a part of their daily lives. Today's smartphones and tablets are becoming popular educational, informational, entertainment tools. Source – eMarketer

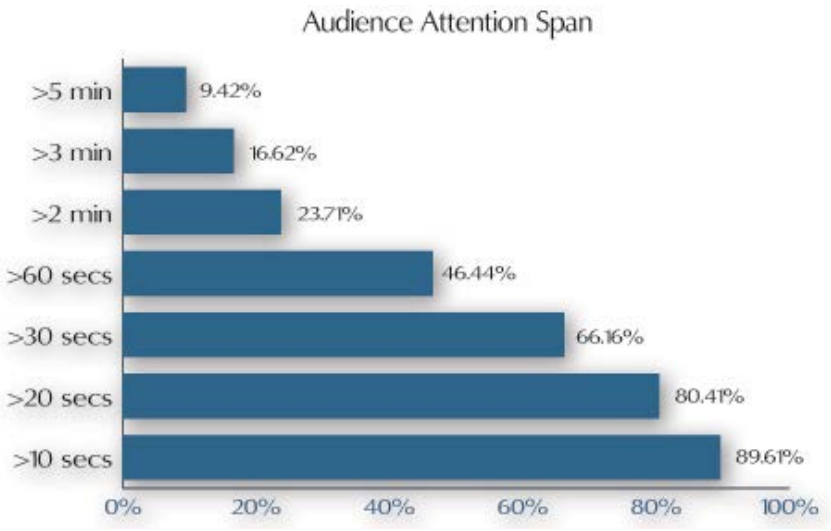
Viewing Outlets – In addition to posting company videos on the organization's website, firms can add them to their company's Facebook page, Google+ and a wide range of video posting sites for added traffic. One of the keys is to ensure good SEOed copy accompanies them to optimize viewer opportunities.

In addition to your own website, there is a growing list of video placement locations that allow people to share personal and business videos on specific topics that blend with today's social shopping activities. These video sites are being swamped with content being uploaded and viewed around the globe. For example, YouTube reports that every minute, 48 hours of video is uploaded to their site.

Mini-series: Today, the bulk of video viewed online is snackable – bite-sized information/entertainment, rather than a complete meal of full TV episodes or full-length movies. The most popular online video content, watched by 40 percent or more of the US online video audience, are short pieces of five minutes or less. An industry analyst recently explained the reason for the short sessions, *"People are online and bombarded so much that they have the attention span of a minnow. A minnow never gets bored swimming around his small bowl because every time he comes back around…it's all new!"*

We won't publicly agree or disagree with the statement, but we do know that the average video session was only 5.4 minutes this year, up very slightly from the prior year. Just in case you think all of those folks suddenly had a sudden need to watch ads they previously skipped over when watching shows on their TV set, the average online video ad remained the same for the past two years – 0.4 minutes.

Short is Best **–** While people get their video content online, most of it is not full- length TV shows or movies. The majority of viewers prefer fast, informational messages. Slow opening scenes will make it easier for people to click away from the video. Source - TubeMogul



Sorry…it isn't the ads: Adding online video to the company site is a way for the organization's communications and marketing staff to provide an up-close and personal look at products explain how they work and help people make the best purchase decision. Research shows video increases sales conversion and reduces returns. Increasingly, people visit websites and expect informative product pages that include:

- Alternative views
- Ratings, reviews, customer feedback
- How-tos, user guides, applications
- And in recent years, videos

Video is the most creative, most effective marketing tool in nearly every area.

Beyond the Photo – Organizations that include informative but casual videos on their products, services and capabilities not only get more traffic, they keep people on their website three times longer according to researchers. The range of video content that can be included goes well beyond a straight product "feature" to include how-tos, installation, applications, troubleshooting and increasingly, third-party endorsements.

Source – SundaySky

Inform, Educate, Sell: Video has become such a powerful educational/informational tool that firms are providing video links on releases. In addition to improving sales and reducing returns, video can boost search engine optimization efforts. Sites and pages with video also rank higher, especially when they aren't embedded or in pop-up windows. Microblogs such as Twitter have become important tools to help good educational, informational videos go viral. While they understand the power and reach of video, marketing/ communications people have been slow to implement it in both their internal and external programs because they believe:

- It's too time-consuming to do
- it's too expensive
- It's too difficult to do
- It's too expensive

It is true that some of the videos you've read about and seen that have gone viral -- seen by millions -- have been done by very good video production crews. But the ideas came from the company's marketing, communications teams and you're just as smart as they are…right? While it's nice to have a lot of really cool camera/post production tools, it isn't the hardware and/or software that make good videos. People do.

Your best camera: Even seasoned videographers agree that the best camera is the one you have. Even if you don't have all of the expensive gear, you always have a camera with you…on your smartphone. Most smartphones today have 4-6 megapixel camera lenses (don't worry about what megapixels mean; or, if you really want to know, look it up in Wikipedia). Our smartphone has an added 16GB SD card which can store roughly three hours of HD video. Shoot enough raw footage and somewhere in the content you'll have three to five minutes of good video. If not, give the smartphone to one of the younger people in the office and he/she will show you how to get some great content. Once you have the raw video the real creative – and pretty simple – work takes place. If you're a Mac user, you have a very good piece of video production software, iMovie. If you're a Windows PC user, you have more choices – Corel, Cyberlink, Adobe, Arcsoft, Avid Pinnacle and muvee to name a few. We really like Avid's Studio software because it's economical and has the tools, capabilities you'd want/need to make an award-winning indie film.

Easy post work: Our (current) favorite though is muvee Reveal. It doesn't have all of the multiple tracks, special effects and transitions; but most of the time, people get dazzled by all the special tools and try to use them all in their company video. All the *wow* factor gets in the way of the message. Look at any Hollywood movie. Lots of cool stuff in the first and the last few minutes of the movie. The rest of the movie is produced using fades, cuts, dissolves. Post production doesn't get in between the actor/story and the viewer. That's precisely what you want to achieve, which is why muvee Reveal not only does the job but does it almost automatically. muvee and similar products analyze photos and video, style and choice of music and automatically create a video synced to the beat of the music with transitions and effects built in. If you want to do a little more with your content the best product we know of is Avid Studio which quickly, easily lets you produce theater quality videos.

Interesting, informational, short videos – even with minor mistakes -- are more believable than polished ads. The software helps you explain products and visually assist customers in efficiently, effectively buying/using your products/services. Don't go pro on them…your job is to just take viewers through the product/service story. It adds credibility and encourages people to share the videos and links with others. Videos are finding their way into special interest blogs where folks want to share an idea or answer an application/support question. Since the digital environment is changing rapidly, there are no "best practice" social media models you can follow. But by now, you should know that pushing messages at the consumer doesn't work.

Keep shooting: The key point is one is never enough. Add videos on a regular basis. What types:

- How it works demonstrations – show how neat, fun, versatile, profitable it can be
- Installation/ troubleshooting videos – we all have problems, help customers
- Expert interviews at tradeshows – let these people talk about trends, news, market future
- Interesting, enthusiastic employees – help people identify with people
- Product champion customers – who doesn't love a happy customer?
- Invite customers to send in their best, most unusual videos

Ask your customers, followers what types of videos they'd like to see…they'll tell you. Just keep them visual and add human interest. Monitor the feedback on the videos and the information presented. Give credit to individuals for their inputs/ideas. It's all part of building sound reputation equity. There are a million stories on the web; and every company would love to create a video that goes viral, drawing hundreds of thousands of eyeballs. The best way to do it is…get started now!!!

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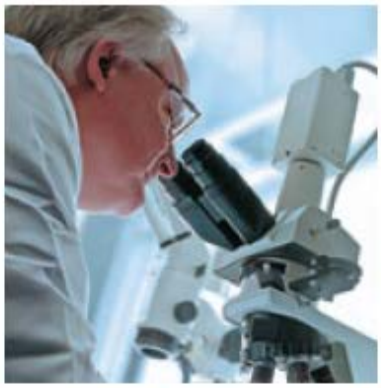

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LGD LED 3D HD LCD TV…

by Mark Fihn

Mark Fihn currently heads a publishing company called Veritas et Visus, where he supports the flat panel display industry based on his expertise related to notebook PCs, Tablet PCs, touch technologies, the LCD TV market, and display related human factors, including high resolution and wide aspect ratios. Prior to Veritas et Visus, Mark worked for 3 years at the market research firm DisplaySearch. He additionally participated for 15 years in computer system and LCD-related procurement at Texas Instruments and Dell while living in the United States and Taiwan. He has been active in many display-related areas, most specifically in publicly championing industry-wide adoption of high resolution displays, notebook LCD standardization, and video sub-system integration. Mark was educated at St. Olaf College (Northfield, Minnesota), the American Graduate School of International Management, (Phoenix, Arizona); St. Edward's University, (Austin, Texas), and in the University of Texas at Austin's doctoral program in International Business. http://www.veritasetvisus.com

No doubt there are a few more acronyms I could throw in to describe the new television that now graces my family room, but let me just go with WOW!, (which for my son stands for "World of Warcraft", but for which I'll stick with "Wonders of the World"!

Although I've had a 3D TV (rear projection) in my home for 4 years now, it's mostly been used for 2D purposes – in part because of a paucity of content, but more so because the 3D implementation was a bit problematic – particularly the tremendous loss of brightness. I can now report that LG Display's Film Patterned Retarder technology (FPR) has WOW'd me and my family. I admit to being something of a skeptic when it came to 3D TV in the home – convinced that the glasses too severely inhibited the social interaction common with family TV viewing. But the passive glasses are much more forgiving when it comes to interacting with others and other devices than are the shutter glass solutions that truly obscure anything outside of the TV. My kids, for example, have no trouble watching the 3D images, while simultaneously keeping up a steady stream of text messages on their mobile phones.

More importantly, LG's FPR solution offers really good 3D! I've now watched numerous 3D films, (*Harry Potter Deathly Hallows Parts 1 & 2, Pirates of the Caribbean On Stranger Tides, Beauty and the Beast, The Lion King, Tangled, Step up 3D, Hubble 3D*, and *Grand Canyon – a River in Crisis*. So there's a mix of live action, animation, and IMAX-production solutions – and all of them are simply spectacular. The Harry Potter films are especially impressive, from my perspective, eliciting numerous WOWs from me and my family.

Perhaps most surprising to me, was that LG's 2D-to-3D conversion technology was MUCH better than I'd expected. While not as good as the films produced for 3D, the conversion solution was amazingly impressive – particularly using Blu-ray disks.

For those who suggest that 3D technology creates undesirable effects – such as nausea or eyestrain, all I can say is that I personally experience a bigger sense of nausea induced by motion effects while in a car, (a daily experience that never keeps me from driving). Translated, LG's FPR solution is the best I've personally experienced, at least in a TV solution – which is statement that is based on considerable experience. I am VERY impressed! That said, there is still a need for more content. While there are close to 100 3D Blu-ray titles now available, there's a need for more. I will almost certainly buy a large percentage of what's out there, (with a particular desire to get the *Toy Story* series and *Avatar)*, and I now very much look forward to showcasing the likes of *Tintin* and *Hugo* on my new LG FPR screen…

I still frequently see in the popular press from a number of naysayers how 3D is just a passing fad – nowhere near good enough to pass the critical eye of the average viewer. To such naysayers, my only comment is: "You are wrong". While there are still improvements to be made – and these improvements are coming very fast; and while there still needs to be more content – which is also coming very quickly; 3D is not a fad. It's real. It's here. And it's really very, very good. WOW!

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Where is the Camera on My New TV?

by Norman Hairston

This is the first recession where TV has meant LCD and not CRT. Norman Hairston is a third generation TV professional in that many of the people that he worked with early in his career had worked with the inventors of color TV set technology. He has held technical, commercial and strategic planning positions in the display industry and has worked with a variety of technologies including CRT, LCD, laser based displays, Telaria and CRT projection. He began his display career at Corning developing their early strategic plans for the LCD substrate business. He has since held display positions at Honeywell, Gemfire, Intel, and as a consultant. He holds both Chemical Engineering and Materials Science degrees from MIT and an MBA from Stanford.

It's no secret that some of the air has gone out of the TV product category. TV set marketing was always a tough business with ongoing fights for market share and few brands being consistently profitable. Today, even Sony, one of the top US brands for decades, is suffering from multiple years of negative profitability. The TV set retailers are suffering as well and consequently reducing space and manpower devoted to selling TVs. There are more exciting categories in consumer electronics for them to devote their efforts toward, specifically smart phones and mobile electronics. This article advocates a shift in focus for the TV set category away from its traditional role as an outlet for network-produced content and adopting the mobile phone moxie; specifically, improving the TV as a platform for producing user-generated content.

Most or all of the profitability of TV set sales has been in the sales of attachments rather than the devices themselves. This is a great model for devices such as printers where the attachments are ink cartridges that have a much shorter life than the product itself. The sale of a new ink jet printer generates ongoing sales of ink cartridges and other consumables that can subsidize the printer sale and bring the consumer back to the store for repeated purchases. The attachment model is less attractive when the life of the attachment equals the life of the product or where only one sale can be generated with a hardware sale. Maintenance contracts or extended warranties can also boost the profitability of the product. However, rather than an addition to the revenue stream, they are much more of just a difference in the revenue split; the consumer only has so much to spend at the time of purchase. Though profitability does rise for the channel with the addition of these contracts, revenue may not.

Logically, the least attractive attach sale is one where the product life of the attachment exceeds the life of the TV. As with extended warranties and service contracts, these attachments can be much more profitable than the base TV set and hence, improve the profitability at the time of sale. But as before these attachments don't generate ongoing revenue for the retailer or TV set maker. Attachments where the life can or does exceed the TV set replacement cycle includes things such as HDMI cables, mounting hardware, sound systems, even the content services sale once the retailer passes the consumer relationship to a content provider. With the current profitability model of the TV set built around the attach sale and with the demand for these attachments declining as the flat panel TV market matures, the TV set industry has to find a new model for profitability and growth. Consumers will not necessarily need a new wall mount each time they buy a new TV and will probably not want to flip from their current mass media content provider so that the store can get credit for a content sale.

Platform Growth Models: There are four ways to maintain or grow a consumer electronics product category:

- Improve the t Product
- Add Features
- Add Applications/Functions
- Access New Content

As a display technology person, my first instinct is always to improve the product. Certainly, a better product at the same price can be expected to sell better than a lesser product. Since the advent of LCD TV in the mid 2000's, there have been fantastic improvements in the product with better response times, viewing angles, and larger sizes at affordable prices. Further, there are a number of visual performance improvements being implemented now. These include 3D, wider aspect ratios, and the long awaited OLEDs. However, with the industry's tendency to offer more for less, it is not clear that these product changes will improve the overall profitability of the industry. Indeed, after the initial bust-out from 40 years of the average US purchase price of a color TV set being precisely $400, the industry seems to be working its way back down to selling $400 TV sets. Though the amount spent on TV viewing has actually grown if you count the content provider bill, little of this added revenue goes to the TV set supply chain.

An alternative or supplement to a more visually appealing TV has been to offer improved features. New features, such as picture in picture (PIP) can be very hot for a time but unless they fundamentally change the way the consumer uses the TV they can be fleeting. "Connected TV" can be a feature of the set or it can be a feature of any one of the numerous devices that are connected to the TV. While there is considerable benefit to integrating this into the TV set as it simplifies things for the consumer, the ability to charge extra for these features is limited as they are effectively given away in the bundling of the other devices. My mom has a 30 year old Zenith attached to a $50 Blu-Ray. This set up provides wireless internet connectivity and consequently, NetFlix. As most of the content this particular TV shows is old TV shows, movies, and the news, the arrangement offers a complete solution for what is still 90+% of TV viewing.

A third way to grow the category would be to introduce new applications or functions. As a product category within consumer electronics, TV is among the oldest. TV sets were, of course, preceded by the phonograph and by radio. . Radio still exists as a separate category in the form of satellite radio; but radio today is largely just a function that is bundled into some other device. Phonographs became part of audio and audio became part of TV with the advent of the Home Theater concept. If you wanted to by a record player today, most likely they would be next to the A/V receivers (it's hard to find an audio only receiver) which would be in the Home theater section next to the TVs. The absorption of audio by the TV category was important in maintaining revenues through the recessions of the late 1980's and early 90's.

Various other platforms have been created and grown by adding new functions, bundling previously unrelated functions, or unbundling functions to gain lower cost or portability. The Palm computer established itself by bundling a wide variety of personal management functions. It was a calendar, watch, calculator, notepad, business card… It did these functions quite well but was supplanted by the smartphone which bundled all of these features and more with a traditional cell phone. The cell phone essentially cannibalized the palm computer.

However, the smart phone has done much more. It is nibbling away at the TV market providing 24/7 mobile access to what has traditionally been TV viewing. It is nibbling away or eliminating the need for other devices such as an independent GPS. It also provides direct access to the content retailing arm of whoever produced the device. But I think that its biggest source of growth has been a result of its gobbling up both the still and video camera markets. In this process it is creating a new ecosystem where the smart phone serves as both content creator (of images, videos and texting content) as well as the primary output device for this new social media. Though you can certainly buy attachments for your smart phone and you can buy media services for it the profitability of smart phones is not as depended upon the attach sale. By buying a smart phone; you get access to all of the new social media for free. You also gain access to millions of apps that are either very inexpensive or free that enable the phone to interact with yourself or the app writer in new and unforeseen ways. As the new applications grow more complex, the smart phone owner has an incentive to keep his hardware current.

The new apps or functions are most valuable when they give access to new content. By contrast, although a new TV may be much better visually than an older one it is replacing, the interaction and the experience will be largely the same because the TV is fundamentally oriented around showing the same mainstream commercial content.

Looking at historical TV set sales growth; there have been two large events. Most recently there was the transition from standard definition to HDTV which forced a lot of turnover in the TV set population. Before that there was the innovation of the VCR. The VCR proved new functionality to the TV set in that it broadened the content beyond what was available from broadcast or cable. It also enabled both user generated content as well as enabling content from small 3rd parties (people beyond the networks). Although there have been several iterations of the VCR concept, migrating from tape to disc and then from disc to web connected device, the orientation of the device still revolves around providing mass media commercial content.

Surprisingly, while PCs have added cameras and cell phones have added cameras (even though cell phone communication is still almost exclusively audio only) the one exclusively video oriented consumer electronics device, the TV, has yet to add a camera as a standard part of the platform. True, the cameras on cell phones can be used for less than noble purposes but they also get used for completely unexpected things such as depositing checks. The fact that you have visual capture and I/O on the platform becomes enabling of the new and unexpected. Putting an addressable operating system and storage slots on a TV would help as well. Though Mr. Jobs may reach out from the great beyond and correct this oversight on the TV platform soon, it remains a creative failure that the TV set industry has yet to fully engage in the new media by implementing interactive features. Rather than promoting connectivity with mass media providers the industry may want to consider how to better interact with Facebook and YouTube.

In contrast, improvements to the image alone have historically had big impacts on market share but did not contribute that much to growing the market. Indeed, in growing the market, image quality seems to have been secondary to enabling new content. VHS beat out Beta with a lower image quality but the advantage of being able to distribute films on one tape. Though there was not a direct competition between instant film (Polaroids) and the more common externally developed film. The lower quality of instant film seems to have been tolerated largely because it circumvented an external review and more intimate photos could be taken. Prior to their brief entry into the instant film market, a Kodak employee related to me that their estimate was that the instant film industry was at least 35% intimate photography. This sort of content was a major driver of VCR adoption. It was also a major driver of the internet (but of course this was subsequently replaced by spam ads for herbal Viagra and cheap prescription drugs by mail from Canada). Indeed, it could be surmised that the slow adoption of 3D TV has been limited more by low numbers of consumer 3D cameras than by the availability of mass media 3D content.

Conclusion: This article began with a somewhat gloomy assessment of the current TV market. In truth, things are not so bad. Though the US economy has been technically out of its recession for a couple of years, my belief is that there is still a lot of pent up demand both from the poor economy and from the HDTV transition that will get realized as the economy actually gets better for middle class people. However, as I hope I have illuminated, the current profitability model for TV set sales largely relies on the sale of attachments which should logically diminish over time. Though the industry can and will provide better product, most likely at a cheaper price, going forward, I think that there is more to be gained by providing home TV viewers with both the ability to create their own content as well as to access this user created content from other users. Make it simple for the consumer and the TV set industry can enjoy some of the growth the smart phone industry has achieved.

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About the LCD TV Association

The LCD TV Association is a global, non-for-profit marketing trade association, formed to help the entire LCD supply chain and retail channel through to the end consumer via various communication tools, including speeches, interviews, sponsored research, as well as industry newsletters, meetings and standards settings – resulting in better information and distribution of this information, as well as better understanding of the rapidly changing world of flat TVs and HDTVs for all related parties. Participating at the many industry trade and consumer shows around the world to help promote members' interests, as well as create better LCD TV products for everyone, our goal is to serve both the industry needs and promote the consumers best interests. We encourage and engage in discussions to promote the industry overall, as well as helping foster healthy competition and create better products with higher value propositions for consumers and retailers alike. The LCD TV Association can help fight the growing "specsmanship" in trade publications and refocus conversations on true image quality and understanding for consumers, and help the whole LCD TV ecosystem to improve and thrive. For more information on the LCD TV Association, it's membership, or to join at one of the various levels available, please visit us on the web at http://www.LCDTVAssociation.org.

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2012 HDTV Buying Guide coming soon

Authored by Bruce Berkoff and edited by Alfred Poor, the 2008 edition of the HDTV Buying Guide is currently available. The 68-page paperback book can be ordered at Amazon for $13.45, qualifies for free shipping status, and is available immediately: http://www.amazon.com/HDTV-Buying-Guide-Bruce-Berkoff/dp/0965197530

"After an easy 2-hour read, I was off again to the electronics store to compare the seemingly endless choices of HDTV's. This time I knew the proper size and features of the LCD I wanted to buy for my living room and had a list of meaningful questions to ask the salesperson regarding price guarantee, warranty, and extras (cables and external speakers). The money saved on cables alone offset the cost of the book many times over. I especially found the "myth busting" boxes and "what to look for" paragraphs informative. The title of the book says it all...HDTV Buying Guide".

-- P. Molisani

HDTV Buying Guide

If you're ready to buy an HDTV, this book is all you need to understand the various choices and choose the right one.

This book covers all the bases, but is so easy to understand that I'd give it to anyone in my family who wants to buy an HDTV. It will make holiday gift buying easy.

Alfred Poor, HDTV Almanac

Bruce Berkoff knows just how to explain HDTV so you can put your new understanding to work right away. I think my Mom can benefit from this book, too.

Ross Young, Founder, DisplaySearch

Print edition ISBN 978-0-9651975-3-3: $14.95
E-book edition ISBN 978-0-9651975-4-0: $7.95

Sometimes you think you may know something but then someone explains it in terms you can understand you all of a sudden say, "Oh, I get it now." This is the case with Bruce Berkoff's book about HDTV. Bruce obviously has a command of the subject matter and a talent for explaining it. He tells you what's important and what not to bother with like manufacturers' specs on contrast ratios which are measured under so many different conditions they become a meaningless comparison. I enjoyed this book and learned a few things about HDTV, I'd recommend it to anyone shopping for HDTV or just wanting to enhance their knowledge of this subject.

-- Andrew Eisner

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From the professor…

by Alfred Poor

Alfred Poor is the editor and publisher of "HDTV Almanac", a free daily service of news and commentary on the HDTV, digital television, and home entertainment electronics markets: http://hdtvprofessor.com/HDTVAlmanac. **This article comprises three recent entries about the TV industry, providing some insights into just how diverse and continuously interesting the market has become; still not without some substantial problems.**

FCC to Revisit "Must Carry" Rules

There are sizable problems with retransmission fees and how pay-television subscribers get caught in the squeeze between their services and the content providers. Many people don't realize that there is a fascinating flip-side to this problem, which is known as "must carry". It works like this.

Every three years, local television broadcasters have to make a choice. They can either make their content available to local pay-TV services (cable, satellite, and telco) in return for a retransmission fee, or they can choose to forego the fee and just require the pay-TV service to carry their signal on the subscriber system. It's a tricky proposition. If you're sure that consumers will want your programming (note that the pay-TV service is not allowed to go to some adjacent market to replace yours if it's from the same network), then you go for the gold. If you're not sure that anyone would miss it if your programming gets left off, then you may want to invoke the "must carry" rule so that you can reach a bigger audience and get more money from your advertisers.

This whole system got more complicated with the digital transition. Cable companies started as community antennas, distributing the over-the-air signals through cables on the ground so that all homes in the area could get good reception. Originally, all cable systems were analog, and they just pumped the signals from the antennas through the wires. Then they got premium channels which they encrypted, which led to set top boxes to decrypt them. And then we got digital systems that offer improved image quality (and more secure encryption). The digital systems also made it possible to deliver high-definition images.

So now we have digital transmissions from almost all television broadcasters, but many cable companies still maintain analog distribution networks. This means that the digital signals have to be converted back to analog in order to be sent to analog subscribers. Cable companies would like to convert over to all-digital systems, but this requires capital investment and converter boxes for any subscribers who still don't have a television set with a digital tuner. Cable companies would like to free up some of their capacity by dropping local stations that don't have much of an audience. Smaller broadcasters want to keep the "must carry" rule so that they don't lose a major part of their audience (since so few people rely on over-the-air signals these days).

This issue has come to a head because cable services were given a three-year waiver from the requirement to not degrade the rebroadcast signal. This was required because the standard definition analog systems cannot display the high definition content of some digital broadcasts without scaling it down significantly. That waiver expires in June, and the FCC needs to decide whether or not to renew it. If it does not renew the waiver, then local cable companies may be forced to switch to digital networks unless the FCC makes other changes to the "must carry" rule as well. In preparation for these deliberations, the FCC has called for comments on the issue.

The Big Three Networks

Everything seems to come in threes. We had the Big Three Automakers in Detroit. There were those little pigs. And then there were the major television networks: Netflix, Amazon, and Google.

Wait a minute; what happened to ABC, CBS, and NBC?

From where I sit, that is ancient history. The traditional networks are dead men walking, and just don't know it. They are trying to stick with the old models of providing the conduit for video entertainment, and they are failing.

Streaming content over the Internet bypasses the traditional network, making it an unnecessary intermediary in the system between content producer and consumer. And it may also squeeze out the traditional role of "advertiser" at the same time. If we have learned one thing from the Internet, it is death to the middleman; Amazon Kindle, Square, and Zappos are just a few examples.

Most of the content shown on online systems such as Netflix and Amazon are reruns. The traditional networks and Hollywood movie studios try to wring out some additional value from these leftovers so they license the content for streaming. And in the process, they have sowed the seeds of their own demise. They have provided the fuel for the fire that is the consumer demand to watch what they want, when they want, where they want. And that is a fire that can't be put out at this point. But can the networks be replaced? Netflix has launched its original content with the series "Lilyhammer" and will follow up with "House of Cards" with Kevin Spacey and a revival of the popular "Arrested Development" next year. Google's YouTube is investing in original content as well, and is providing full-length programming of all sorts.

And here comes GigaOM with a breaking story that Amazon has posted job openings for creative positions with the goal of creating its own content. The service is a bit of a sleeper in the streaming video arena at this point, but its Amazon Prime members get to watch all sorts of content for free (along with many other useful bonuses) in return for a Netflix-like monthly fee. Many consumers may find that they can get a better combined value from Amazon, and if the company starts producing compelling content, it could be a major force.

The new world of video entertainment is going to require a new world of ways to pay for the content's creation. Who do you think is in a better position to deliver a new model: ABC, CBS, and NBC, or Google, Netflix, and Amazon? I rest my case.

How Low Can They Go?

Sorry, folks, but I cannot resist this one. I really struggle to refrain from the breathless "Wow! Look at how low this price is!" type of story because it gets old and it's inevitable that someone can come up with a deal that tops whatever you've found. But I have to give in to this one.

Why? It's a set from a top tier brand. It's a deal from a major retailer. It's nothing fancy but it should get the job done, and it has four HDMI inputs.

It's the 42″ Sharp LC42SV49U and it is on sale at Best Buy for $329.99. That's well under the benchmark $10 per diagonal inch, and a rather attractive deal. How is it priced so low? Sharp is having trouble selling all the televisions it makes. The new (and rather expensive) Gen10 LCD fab is designed to make larger size panels, but word is that they have cut production back to just 50% of capacity. That has to hurt. So I expect that Sharp is looking to make cash any way it can, just to feed the capital costs of that monster factory. And Sharp is not alone. The television market has gone soft just when the companies have ramped up their production. So I expect to have my breath taken away soon and often by even better deals.

Oh, and before you lunge for the keyboard to write to me (at alfred@hdtvprofessor.com), I do realize that this same set was available from Best Buy on Black Friday for just $200. What makes this deal so remarkable is that you don't need to spend the night in a sleeping back to get one.

UPDATE — the folks at Sharp saw this post and sent me the following statement. I'm impressed that they responded so quickly to this piece, and that they presented their case without criticism or comment, but just stated their positive view of the situation. I take their statement about their sales forecasts at face value.

As the sales leader of large screen (60-inches and larger) LED televisions in the US, Sharp Electronics Corporation continues to have strong growth and sales projections for large screen LED TVs in the US market. The company's sales expectations in the US for the 2012 Fiscal Year are unaffected by production rates at our Sakai (Japan) plant.

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Display Industry Calendar of Events

Please notify mark@veritasetvisus.com to have your future events included in the listing.

January 2012			
January 8-9	Storage Visions Conference	Las Vegas, Nevada	
January 9-11	Digital Hollywood CES	Las Vegas, Nevada	
January 10-13	2012 International CES	Las Vegas, Nevada	
January 18-20	NEPCON World Japan	Tokyo, Japan	
January 18-20	LED/OLED Lighting Technology Expo	Tokyo, Japan	
January 21-26	Photonics West 2012	San Francisco, California	
January 22-26	Electronic Imaging 2012	San Francisco, California	
January 23-25	Stereoscopic Displays and Applications	San Francisco, California	
January 24-26	ICE Totally Gaming	London, England	
January 25-26	DisplaySearch Japan Forum	Tokyo, Japan	
January 26-28	MacWorld Expo	San Francisco, California	
January 30-31	International Thin-Film Transistor Conference 2012	Lisbon, Portugal	
January 30 - February 4	Advances in Computer-Human Interactions	Valencia, Spain	
January 31 - February 2	Integrated Systems Europe	Amsterdam, Netherlands	
February 2012			
February 3	Emerging Display Technologies	Costa Mesa, California	
February 4-9	Medical Imaging	San Diego, California	
March 5-9	Game Developers Conference	San Francisco, California	
February 6-9	Flexible Electronics and Displays Conference	Phoenix, Arizona	
February 7-9	Imagina	Monaco	
February 7-9	Semicon Korea	Seoul, Korea	
February 14-17	Intelligent User Interfaces	Lisbon, Portugal	
February 14-16	Broadcast Video Expo	London, England	

February 14-17	Hollywood Post Alliance 2012 Tech Retreat	Indian Wells, California	HPA
February 19-22	Tangible, Embedded, and embodied Interaction	Kingston, Ontario	TEI
February 20-23	LED China 2012	Guangzhou, China	
February 20-23	Sign China 2011	Guangzhou, China	
February 22-23	3D Display Technology, Perception and Application	Washington, DC	OSA
February 22 -23	Createasphere/Digital Asset Management Conference	Los Angeles, California	
February 24-26	Sound & Vision 2012	Bristol, England	SOUND&VISION
February 24-26	International Conference on Imaging Theory and Applications	Rome, Italy	IMAGAPP 2012
February 28-29	US FPD Conference	San Diego, California	DisplaySearch
February 28 - March 1	APEX Expo	San Diego, California	APEX EXPO IPC
February 29 - March 1	Electronic Displays Conference 2012	Nuremburg, Germany	
February 29 - March 2	PV Expo 2012	Tokyo, Japan	PV EXPO
March 2012			
March 4-5	Symposium on 3D User Interfaces	Costa Mesa, California	IEEE
March 4-7	Focus on Imaging	Birmingham, England	
March 4-7	Haptics Symposium	Vancouver, British Columbia	HAPTICS
March 4-8	Virtual Reality 2012	Costa Mesa, California	IEEE
March 6-8	Air Traffic Control	Amsterdam, Holland	ATC Maastricht
March 6-9	Digital Signage Expo	Las Vegas, Nevada	DSE
March 6-10	CeBIT 2012	Hannover, Germany	CeBIT
March 8-9	Augmented Human Conference	Tokyo, Japan	Augmented Human
March 9-11	Symposium on Interactive 3D Graphics and Games	Costa Mesa, California	i3D
March 12-14	DVB World	Rome, Italy	DVB
March 14	Silicon Chip Industry Training Seminar	London, England	FutureHorizons
March 15-17	EHX Spring	Orlando, Florida	EHX
March 19-23	2012 Measurement Science Conference	Anaheim, California	
March 20-21	Digital Signage Show Australia 2012	Sydney, Australia	DIGITAL SIGNAGE WORLD

March 20-21	Over-the-Top TV Conference	Santa Clara, California	
March 20-22	FPD China	Shanghai, China	
March 20-22	Laser World of Photonics China	Shanghai, China	
March 20-22	Phosphors Summit	Scottsdale, Arizona	
March 20-22	Image Sensors Europe	London, England	
March 21	Korea FPD Conference	Seoul, Korea	
March 22-24	International Sign Expo	Orlando, Florida	
March 27-29	Sign UK/Digital Signage Showcase	Birmingham, England	
March 28-30	Eye Tracking Research and Applications	Santa Barbara, California	
March 28-30	LAVAL Virtual	Laval, France	
April 2012			
April 1-4	MIPTV	Cannes, France	
April 3-4	Printed Electronics and Photovoltaics Europe	Berlin, Germany	
April 11-13	Highly Functional Film Technology Expo	Tokyo, Japan	
April 11-13	FineTech Japan & Display 2012	Tokyo, Japan	
April 11-13	Touch Panel Japan	Tokyo, Japan	
April 12-14	Photovoltaic Technology Show	Berlin, Germany	
April 14-15	2012 Taiwan FPD Conference	Taipei, Taiwan	
April 14-17	Global FPD Partners Conference	Himeji, Japan	
April 14-19	NAB 2012	Las Vegas, Nevada	
April 16-18	Photovoltaics Summit	San Diego, California	
April 17-18	Taiwan Display Conference	Taichung, Taiwan	
April 17-19	Smart Fabrics 2012	Miami, Florida	
April 19-20	DisplaySearch Taiwan	Taipei, Taiwan	
April 23-26	Cinemacon	Las Vegas, Nevada	
April 23-27	SPIE Defense, Security, and Sensing	Baltimore, Maryland	
April 24-26	SEMICON Singapore	Singapore	

April 26-27	Laser Display Conference	Yokohama, Japan	
April 29 - May 2	Digital Holography and Three Dimensional Imaging	Miami, Florida	
April 30 - May 2	UV/EB Technology Expo and Conference	Chicago, Illinois	
May 2012			
May 5-10	CHI 2012	Austin, Texas	
May 8-11	International Conference on Animation, Effects, Games, and Digital Media	Dusseldorf, Germany	
May 9-11	CEDIA Expo Asia Pacific	Brisbane, Australia	
May 13-15	SMPTE Forum on Emerging Media Technologies	Geneva, Switzerland	
May 13-18	EuroVis 2012 / Eurographics	Cagliari, Italy	
May 15-16	CEDIA Expo New Zealand Expo	Auckland, New Zealand	
May 16-17	Screen Media Expo Europe	London, England	
May 22-24	CeBIT Australia	Sydney, Australia	
May 24-25	China FPD TV China FPD and Smart TV Conference	Shenzhen, China	
May 28-30	Graphics Interface 2012	Toronto, Ontario	
June 2012			
June 3-8	SID International Symposium	Boston, Massachusetts	
June 4	SID Business Conference	Boston, Massachusetts	
June 5	SID Investors Conference	Boston, Massachusetts	
June 5-7	E3 Media and Business Summit	Los Angeles, California	
June 5-9	Computex 2012	Taipei, Taiwan	
June 6	The Lighting Evolution: From Sapphire to Lumens	Boston, Massachusetts	
June 7	Touch and Interactivity	Boston, Massachusetts	
June 7-10	SIIM 2012	Orlando, Florida	
June 9-15	InfoComm '12	Las Vegas, Nevada	
June 11	Silicon Chip Industry Training Seminar	London, England	
June 11-14	Fusion[12] Developer's Summit	Bellevue, Washington	

June 11-12	Projection Summit	Las Vegas, Nevada	
June 12	Infocomm DisplaySearch Digital Signage Conference	Las Vegas, Nevada	
June 12-13	Digital Signage Expo 2012	Berlin, Germany	
June 12-15	Interaction Design and Children	Bremen, Germany	
June 13-15	Dimension3 Expo	Plaine St. Denis, France	
June 15-16	SEMICON Russia 2012	Moscow, Russia	
June 18-21	CineEurope	Barcelona, Spain	
June 18-21	Nanotech Conference & Expo	Santa Clara, California	
June 19-21	LOPE-C -- Large Area, Organic and Printed Electronics Convention	Munich, Germany	
June 19-21	Photonics Festival: OPTO Taiwan , SOLAR, LED Lighting, Optics	Taipei, Taiwan	
June 20-22	3D & Virtual Reality Expo	Tokyo, Japan	
June 25-29	International Symposium on Display Holography	Cambridge, Massachusetts	
June 26-29	OLED Expo 2012	Seoul, Korea	
June 26-29	LED Expo 2012	Seoul, Korea	
June 30 - July 7	Nanosciences & Nanotechnologies	Thessaloniki, Greece	
June 30 - July 7	International Symposium on Flexible Organic Electronics	Thessaloniki, Greece	
July 2012			
July 4-6	EuroITV 2012	Berlin, Germany	
July 5-8	SINOCES	Qingdao, China	
July 9-12	Intersolar North America	San Francisco, California	
July 10-12	Semicon West 2012	San Francisco, California	
June 18-20	International Symposium on Wearable Computers	Newcastle, England	
July 25-30	National Stereoscopic Association Convention	Costa Mesa, California	
July 18-20	China International Touch Screen Exhibition & Seminar	Shanghai, China	
July 25-26	Japan Forum	Tokyo, Japan	
July 31 - August 1	The LED Show	Las Vegas, Nevada	

August 2012			
August 4-5	Web3D	Los Angeles, California	
August 5-9	SIGGRAPH 2012	Los Angeles, California	
August 13-14	Emerging Technologies Conference	Santa Clara, California	
August 12-16	SPIE Optics+Photonics	San Diego, California	
August 19-24	International Liquid Crystal Conference	Mainz, Germany	
August 21-23	Australasian Gaming Expo	Sydney, Australia	
August 28-30	IMID	Daegu, Korea	
August 28-31	European Conference on Cognitive Ergonomics	Edinburgh, Scotland	
August 31 - September 5	IFA 2012	Berlin, Germany	
September 2012			
September 3	IFA DisplaySearch Business Conference	Berlin, Germany	
September 3	Silicon Chip Industry Training Seminar	London, England	
September 5-7	Semicon Taiwan	Taipei, Taiwan	
September 5-8	CEDIA Expo	Indianapolis, Indiana	
September 6-7	China FPD	Shanghai, China	
September 6-11	IBC 2012	Amsterdam, Netherlands	
September 9-12	PLASA '11	London, England	
September 9-13	International Conference on Digital Printing Technologies	Quebec City, Quebec	
September 9-13	Digital Fabrication 2012	Quebec City, Quebec	
September 12-13	Touch Gesture Motion Europe	London, England	
September 17-18	Organic Electronics UK	London, England	
September 19-20	3D Entertainment Summit	Hollywood, California	
September 19-20	3D Gaming Summit	Hollywood, California	
September 21-24	Mobile HCI 2012	San Francisco, California	
September 26-28	OLEDs World Summit	San Francisco, California	
September 27-28	Createasphere/Entertainment Technology Exposition	New York, New York	

October 2012			
October 2-3	Printed Electronics Asia	Tokyo, Japan	IDTechEx
October 2-6	CEATAC Japan 2012	Tokyo, Japan	CEATEC JAPAN
October 9-11	Semicon Europa 2012	Dresden, Germany	semi
October 9-11	Plastic Electronics 2012	Dresden, Germany	Plastic Electronics
October 22-25	SMPTE 2012	Hollywood, California	SMPTE
October 29 - November 2	ACM Multimedia 2012	Nara, Japan	ACM Multimedia
October 31 - November 2	FPD International	Yokohama, Japan	FPD International
October 26-28	Green Device 2012		Green Device 2011
November 2012			
November 5-8	CEDIA China Expo	Shanghai, China	CEDIA
November 5-8	Showeast	Miami, Florida	
November 11-15	Solid State and Organic Lighting	Eindhoven, Netherlands	OSA
November 12-16	Color Imaging Conference 2012	Los Angeles, California	SID IS&T
November 19	Silicon Chip Industry Training Seminar	London, England	FutureHorizons
November 28 - December 1	SIGGRAPH Asia	Hong Kong, China	SIGGRAPH
November 29 - December 2	CeBIT Bilisim EurAsia	Istanbul, Turkey	CeBIT
December 2012			
December 4-7	IDW/AD	Kyoto, Japan	SID
December 5-6	Printed Electronics US	Santa Clara, California	IDTechEx
December 9-11	Workshop on Liquid Crystals for Photonics	Hong Kong, China	SID
December 11-13	CineAsia	Hong Kong, China	CINE ASIA
December 12-13	Touch Gesture Motion	Austin, Texas	IMS CONFERENCES

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