LCD TV Association

Inform • Promote • Improve • Connect

“LCD TV Matters”

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"A Great TV in Every Room"

Contents

Chairman's Corner: The more things change…

…the more they stay the same – and then change faster!

by Bruce Berkoff

People use displays to watch things, to inform or entertain themselves. This was true in the old days, when one might play pong on a large game machine at a local video arcade with a big honking CRT inside, or a timely favorite from my past like the SuperBikes Game in Figure 1, where you would sit on the machine with a CRT built in and race the bike you "saw" in front of you. It even moved around like a real "roadbike", in an early precursor to today's pseudo VR home game machines. The kids playing "Laser hockey" next to this Game (see Figure 2) were really a 3D analog of PONG I guess, but harder to display in 3D screens so far….or current 3D UI as well, even cool mods on Wii and Kinect, so far….

Anyway, the reason I wax nostalgic for the old gaming displays it seems, was that there used to be ONE type of display, and many uses in different places – no confusion what or how; a TV at home was for watching; an Asteroids game on a CRT at an arcade was for blasting. Yes, Atari began to blur that distinction with PONG just a few brief few decades ago with games in the home, but now your kids have their Nintendo DS for games, but then they can borrow your iPhone when their battery dies and play the same game, or even scale it up and play on that new 55-inch LCD TV with a "Smart" internet connection and maybe even a 3D screen… What and where they play and on what type of screen is all a blur to the modern teenager. We just have to keep up, making technology blend into the background of ambient displays with video everywhere, for everything, and everyone. Even if we see sillier and pricier phone bills (in this non-competitive capitalist society we pretend to have in the US versus the rest of the world without our government-created corporate oligopolies – creating my observation that the only truly capitalist country I see today is "Communist" China)... Or even considering Sony's privacy problems on their gaming network – pick your problem of the day, it all depends on displays blending into the environment, and being ever better and less expensive, (as if thin and flat were not hard enough!).

Displays have become so good that we easily forget what the limitations used to be like. Did anyone who used the first 128K Mac and marveled at PageMaker and the new "newsletters" it could create ever dream of a world like today's, where a standard iMac allows the creation and viewing of website "magazines" for things like downhill skiing on a wide screen PC, TV, or even your phone (see Figure 3). The only thing that gave me pause recently was to visit my kids school, and take heart in the fact that kids still love to crayon, and draw, and sketch on paper, and tape them to the walls and windows in their classrooms (see Figure 4), and I thought, this is good, and will represent a ying to the ever changing display world's yang – but now folks are showing transparent displays, which could BE the window and from there it is a small step for kids to draw ON that surface too! Imagine what

school could be like in a few short years – changing as quickly as the devices in our pockets! Hopefully as the tools change, the curriculum won't, so we can stop all this nonsense about "new math" and such, which leaves our students and teachers confused and behind, as the rest of the world realizes math is NOT new in the last 100 years (not in lower schools at least) and this scam to sell more textbooks more often stops exploiting our schools' spending the way unnecessary paperwork and blood tests exploit out health care system.

But I digress, you see, since as everything becomes a beautiful LED lite LCD TV it seems the choices get more complicated, from internet connected to 3D screens to wireless video and audio feeds (we hope!)

It seems that as the LCD TV industry matures into its large size and clear leadership role as the FPD technology of choice, the rate of change has seem to counter intuitively increased. Both via the increasing choices of types and features of TVs, from LED TV to Smart TV to 3D TV…. And, in the ever expanding way they are being used, both by consumers of various types of content (broadcast, web, professional videos versus increasingly good "home made" content, etc) and the growing number of technologies that "watch" what people are "watching",…this last category is where the "broadcasters" and "marketers" get excited, since if everyone would watch everything on some type of web based IPv6 device, they could watch what we watch, while we watch it, and not only serve us real time individualized ads, but slice and dice the data WE represent and resell that up the food chain as well… talk about real "monetization" of a display technology. But we have always said, "software sells hardware", and this would be another way for displays to grow in importance in our world, and they disappear into ever surface of the planet, much as in Corning's recent beautiful video, "A Day Made of Glass... Made possible by Corning", which I recommend you watch on you tube (http://www.youtube.com/watch?v=6Cf7IL_eZ38). And that is just the beginning of our ambient display future – with displays and videos everywhere we can imagine, and many places we have yet to think of….

Mr. Berkoff is the chairman of the LCD TV Association, a global not-for-profit marketing trade association dedicated to "informing, promoting, improving and connecting" the entire LCD TV supply chain and their related companies, to help promote "a great LCD TV in every room in the house!" For over six years, residing in Seoul, Korea, Mr. Berkoff was also the executive vice president of marketing and chief marketing officer (CMO) for LG.Philips LCD, a world leading TFT LCD manufacturer. Currently he is Chief Marketing Officer (CMO) for Displays at Applied Materials. He has also been the CMO at Ascent, a thin film flexible solar PV company and CEO of a fabless semi start-up in the video processing space and general manager of Philips Flat Display Systems software and electronics business unit. Prior executive posts include positions at UMAX Computer, Radius, SuperMac, and ZD Labs. Mr. Berkoff is a visionary speaker and author in the display and electronics industry. He has display related patents both granted and pending in the USA and China. He holds an undergraduate degree in physics from Princeton and a graduate degree in biophysics from the University of California Berkeley. Mr. Berkoff has sat on the boards of at least five publicly traded companies, including LG Display (LPL), Unipixel (UNXL) and Infocus (INFS).

LCD TV News

compiled by Veritas et Visus

Vizio unveils ultra-wide-screen 21:9 HDTV LED LCDs for cinematic experience

Vizio plans to launch "Cinemawide" HDTV, 21:9 cinema aspect ratio models that can display native 2.35:1 (CinemaScope) movies (at 2560x1080) without any black bars for a true cinematic experience. The ultra wide-screen perspective displays movies as designed for the silver screen for an immersive movie experience at home. Each model also features Vizio Internet Apps (VIA) in cinema mode, which allows users to browse apps side-by-side with 16:9 Full HD content without any compromise in resolution or size. The 50 and 58-inch class size models are "Edge Lit Razor LED" HDTVs with smart dimming. Vizio also demonstrated a 71-inch class size model with Full Array TruLED backlighting. All three models feature Vizio's Theater 3D technology that delivers superior, flicker-free 3D performance that is up to 2x brighter and significantly reduces crosstalk compared to current active shutter LCD TVs and works in conjunction with battery-free, lightweight glasses. Theater 3D puts the burden of 3D processing into the TV, eliminating the need for cumbersome, complex, and expensive glasses. Compared to active shutter technology, Vizio's Theater 3D offers up to 2x brighter picture quality without flickering. It also significantly reduces the crosstalk inherent in active shutter 3D which can cause eyestrain and headaches. Theater 3D eyewear is compatible with most 3D movie theaters. http://www.VIZIO.com

Planar expands Clarity Matrix family with 55-inch, LED-Backlit, Full HD LCD video wall

Planar Systems added a 55-inch LCD model to the Clarity Matrix LCD Video Wall System family. The Clarity Matrix 55 delivers Full HD resolution and exceptional visual performance with the narrowest image-to-image gap (5.7 mm) and thinnest profile (3.6"/ 93 mm) in the industry. The Clarity Matrix 55 delivers:

- High-impact visual performance. The Clarity Matrix 55 utilizes the narrowest bezel LCD technology available today resulting in image-to-image gap of a mere 5.7 mm, to create extremely realistic visuals across multiple screens.
- Thin profile. Included with the display, the EasyAxis Mounting System combines with slim profile of LCD technology to offer an installed depth of 3.6 inches (93 mm) from the mounting surface. The thinnest LCD video wall system in its category, the Clarity Matrix Video Wall System is the only video wall to meet American with Disabilities (ADA) clearance requirements for public buildings. No other manufacturer's large-format screens comply.
- The EasyAxis Mounting System makes front-servicability, behind-screen access, individual screen replacement and perfect panel-to-panel alignment quicker and easier than ever before.

The new Video Wall solution features LED backlighting, Full HD (1920x1080) resolution, and built-in image processing capabilities that deliver bright, sharp images. Off-board electronics and available redundant power supplies assure quiet and fault-tolerant, easy-to-service reliability features. The LED backlight and intelligent power supply automatically shut down if not in use, reducing power consumption. The Clarity Matrix 55 will begin shipping in the second quarter of calendar 2011 and will be available for purchase through Planar's worldwide network of authorized dealers. http://www.planar.com

3M's Uniformity Tape reduces LED count without sacrificing display image brightness or quality

In an effort to meet LCD manufacturer design flexibility demands, the 3M Optical Systems Division today announced that it has developed a unique solution called Uniformity Tape that will allow LCD manufacturers to reduce the number of LEDs required for edge-lit LED LCD panels at a low cost, without sacrificing brightness or efficiency. LEDs are becoming brighter and even more efficient – requiring fewer bulbs to achieve target brightness for a given display. Until now, there have been limitations as to how far LEDs can be spaced apart at the edge of an LCD panel because of dark areas that appear between LEDs when they are too far apart. This scenario is commonly referred to as 'head-lighting' because it looks like the dark space on the road between the headlights of a car.

Comparison of LCD Monitor without 3M's Uniformity Tape (Left Image) and with 3M's Uniformity Tape

3M's Uniformity Tape is a clear tape, which has adhesive on one side and a micro-replicated optical pattern on the other side. It is adhered to the edge of the light guide, which faces the LED light sources. The tape is designed to increase the spreading of light in the light guide from each LED, which greatly increases the allowable LED spacing. The optical pattern is spatially uniform, meaning that no positional registration of LEDs is required along its length. The Uniformity Tape keeps the edge of the display closest to the LEDs uniform in brightness when the spacing of light sources is increased. This allows panel manufacturers to save money by removing unnecessary LEDs. Uniformity Tape can also increase LED spacing by up to three times the current spacing, while maintaining edge uniformity for a given bezel size. When combined with 3M's Dual Brightness Enhancement Film (DBEF), Uniformity Tape allows display manufacturers even more design freedom to innovate and use less LEDs to create a backlight that not only meets energy standards, but also remains competitive at a low cost. Furthermore, Uniformity Tape helps device manufacturers meet the growing number of energy efficiency standards around the world. http://www.3M.com

ChiMei and Sharp to form partnership on LCD TV panels

Sharp will link with Taiwan's ChiMei Innolux on a deal to supply LCD television panels, with the aim of boosting Sharp's competitiveness in emerging markets. The Japanese firm will provide ChiMei with key power-saving technology and TV panels larger than 40 inches in return for a supply of 20 to 39-inch panels from ChiMei. It will be the first such partnership between LCD panel makers, and it is expected to accelerate the reform of the LCD panel industry. In 2009, ChiMei and Sharp ranked third and fifth, respectively, for worldwide shipments of LCD TV panels, according to DisplaySearch. The global market share of the two companies amounts to 22.8%, just behind South Korea's LG Display, the world's No.2 maker in the sector, with a 24.9% market share. The deal is expected to go effective on June 30, 2011.

Google buys Green Parrot Pictures to boost video enhancing on YouTube

Google has acquired an Irish company, Green Parrot Pictures, for technology that will allow YouTube to automatically improve the quality of videos stored on the site. Green Parrot Pictures, based in Dublin, makes digital video technology that Google hopes will make clips on YouTube sharper, steadier and lower in image noise. The technology may come in handy in particular for videos shot under pressure with low-quality devices, such as camera phones, in situations such as street protests, according to Google. Green Parrot Pictures' video improvement technology has been used in big-budget films such as "Lord of the Rings", "X-Men", and "Spider Man". "Their technology helps make videos look better while at the same time using less bandwidth and improving playback speed," said Jeremy Doig, director of Google video technology. http://www.greenparrotpictures.com

Mindspeed to features Amplif-Eye signal-conditioning solutions for high-definition video

Mindspeed Technologies announced the first in a new family of crosspoint switches that brings sophisticated signal-conditioning and input/output configurability features to compact yet feature-rich, low-power solutions for small- to medium-sized switching matrices. The digital crosspoint switches have been developed for video applications, ranging in size from 2x2 to 288x288, as well as its highly integrated, low-power, Serial Digital Interface (SDI) solutions. With the higher data rates required for the transport of HD and 3D video content, system designers need to resolve a variety of signal integrity challenges. http://www.mindspeed.com

Samsung Electronics releases 75-inch premium Smart TV

The D9500 series from Samsung Electronics TV products was introduced as the "world's largest 75-inch LED TV, with 3D capability, with smart functions. Not only is this the world's largest LED 3D TV; the 75-inch TV supports full HD, Samsung Apps, 240hz refresh rate, Wi-Fi built-in, active shutter for 3D, Skype, micro-dimming and touchscreen qwerty remote control. The TV is also highly efficient due to the LED backlighting. The D9500 is going to be able to take a normal 2D broadcast and convert it to 3D via an internal software engine. Samsung offers a 'QWERTY-type smart remote control,' has same array of computer keyboards, that let you search internet, content, social media like Facebook, or email more conveniently. The smart remote control is ergonomically designed with a comfortable grip and integrated motion sensor to prevent a malfunction so you can enjoy Smart TV comfortably. http://www.samsung.com

Mitsubishi Electric develops laser backlight LCD TV

Mitsubishi Electric Corp has developed a laser backlight LCD TV, which uses laser diodes for part of its backlight source, and the company has prototyped a 46-inch TV. Its backlight unit includes two types of light sources: red laser diode and cyan LED. Compared with Mitsubishi Electric's existing LCD TVs, which use white LEDs for the backlight, the color gamut of the new TV is about 1.3 times wider. It is a 126% color gamut of NTSC standards. Mitsubishi Electric has already commercialized a rear projection TV using RGB color lasers. This time, the company used only the red color laser. The laser is manufactured by Mitsubishi with an emission wavelength of 638nm. Because red color is realized by the laser light source, cyan LEDs are used for the other two colors (cyan is a mixed color of green and blue). The backlight of the prototyped 46-inch LCD TV is the edge-lit type. It uses several tens of the red laser diode and several hundreds of the cyan LED. Because a laser and an LED have different divergent angles, Mitsubishi Electric developed an optical system for evenly mixing light. As a result, the unevenness of color was mitigated, the company said. The brightness, contrast ratio, power consumption and other specifications of the new TV are almost the same as those of Mitsubishi Electric's LCD TVs using white LED backlights. http://www.mitsubishielectric.com

Samsung Electronics becomes the first to mass-produce transparent LCD panels

Samsung Electronics announced that it began mass production of a 22-inch transparent LCD panel in March this year. Transparent displays will have a wide range of use in all industry areas as an efficient tool for delivering information and communication. The panels come in two types, black-and-white and color, and they have a contrast ratio of 500:1 with 1680x1050 resolution. Compared with conventional LCD panels that use back light units (BLU) and have 5% transparency, Samsung's transparent LCD panel boasts the world's best transparency rate of over 20% for the black-and-white type and over 15% for the color type, which enables a person to look right through the panel like glass, and it consumes 90% less electricity compared with a conventional LCD panel using a BLU. A transparent LCD panel utilizes ambient light such as sunlight, which consequently reduces the dependency on electricity for generating power. Samsung's transparent LCD panel incorporates the High Definition Multimedia Interface (HDMI) and the Universal Serial Bus (USB) interface. Transparent display panels have endless possibilities as an advertising tool, which can be applied to show windows and outdoor billboards or used in showcase events. Corporations and schools can also adopt the panel as an interactive communication device, which enables information to be displayed more effectively. http://www.samsung.com

Vantrix launches "play, pause and resume" across multiple screens

Vantrix announced its multi-screen video solution now offers the ability of play, pause and resume (PPR) video to multiple screens. Thanks to Vantrix's wireless expertise, the PPR feature enables consumers to start to watch a video on demand (VOD) on one device, such as a TV, PC or mobile phone, and then continue watching the same program on another device from where they left off. For example, with PPR consumers can start to watch their favorite movie on their TV at home, continue viewing on their mobile phone on the commuter train to work and then, at a later time, finish on their PC at work. http://www.vantrix.com

SatLink selects Zixi as its end-to-end solution for broadcast-quality HDTV over the Internet

Zixi, the enabler of broadcast-quality HDTV globally over the cloud, announced that SatLink Communications Ltd., a leading provider of transmission solutions for video, audio and data over satellite platforms, fiber and IP, has applied Zixi's patented software to its global distribution network. SatLink has reduced cost for delivering content over its worldwide network by introducing new Zixi-enabled IP video transport services in place of satellite trunk lines and where satellite or fiber optic transmission services are not feasible. By adopting Zixi software into its network, SatLink offers broadcast-quality HD video and audio delivery over IP networks with zero packet loss 24x7, lower latency than satellite services, minimum overhead to network bandwidth, no network jitter, no stuttering, no buffering, and without having to alter operational or business processes. Using Zixi, SatLink is able to expand its content distribution services beyond its existing 70 earth stations by increasing deployments within minutes from any source location to any destination, while reducing its operational costs. Zixi's video delivery software platform provides SatLink with an easily scalable solution for content delivery. Video content from SatLink is encoded and sent to the Zixi Cast broadcaster, which sends the signal over the public Internet to the Zixi Feed receiver installed at every headend location, where it is then decoded. Zixi supports any video encoding and encryption over MPEG transport streams at any bit-rate and broadcasts in up to 1080p/60fps. http://www.Zixi.com

Intel says Light Peak interconnect technology is ready

An Intel executive has said that its Light Peak interconnect technology, designed to link PCs to devices like displays and external storage, is ready for implementation. Light Peak, announced in 2009, was originally designed to use fiber optics to transmit data among systems and devices, but the initial builds will be based on copper. Intel declined to comment on when devices using Light Peak would reach store shelves, saying shipment depended on device makers. Intel has in the past said that devices with Light Peak technology would start shipping in late 2010 or early this year. Intel has said Light Peak technology would use light to speed up data transmission between mobile devices and products including storage, networking and audio devices. It would transfer data at bandwidths starting at 10 gigabits per second over distances of up to 100 meters. But with copper wires, the speed and range of data transmission may not be as great. http://www.intel.com

New TV accessory box from DarbeeVision adds depth for immersive viewing

DarbeeVision showcased its new accessory box for the consumer electronics market: the DarbeeVision Visual Presence Processing Box (Darbee Box). The Darbee Box represents a level of immersive realism for home entertainment that has not yet been available to consumers, the company says. DarbeeVision's unique approach delivers extremely life-like images that pop off the screen, all without the need for 3D glasses. A simple black box positioned between the source and display of any home entertainment system, the Darbee Box will enhance the output of DVD, Blu-ray, video games, and media players as well as any digital broadcast on both standard and high-definition TVs. The Darbee Box is a plug-and-play unit that does not require tuning or calibration and has simple controls that are operated by a remote control. The Darbee Box processes an image in the same way a human brain does and then by adding these results back into the original image, pictures take on new properties that are both unexpected and visually gratifying. Going beyond the limitations of optics and electronics and taking into account what the human visual system does when images are viewed, the Darbee Box achieves an extraordinary sense of realism and depth, the company claims. http://www.darbeevision.com

Side-by-side comparison; enhanced visual image by DarbeeVision shown on the right

KFA2 announces cable-free graphics card

Galaxy sub-brand KFA2 has announced a graphics card with no display outputs. Instead, the KFA2 GTX 460 WHDI uses a wireless link to send the display output from a PC to a screen – whether that's a conventional monitor or an HDTV. The WHDI part of the card's name comes from the fact that it uses Amimon's wireless technology – WHDI stands for Wireless Home Digital Interface. The standard uses the 40MHz channel of the unlicensed 5GHz radio frequency band to deliver uncompressed 1080p video at 60Hz wirelessly. The card uses five aerials, which KFA2 says will provide "the most robust and highest quality HD wireless connection for in-room and multi-room applications". WHDI has a range of 30m (around 100ft), and can work through obstacles and walls. The WHDI standard supports HDCP 2.0, so it can route protected content (Blu-ray films, for example) without a problem.

Aside from having aerials rather than display outputs, the card is a typical GeForce GTX 460 1GB. It supports Nvidia's PhysX and CUDA technologies, and it's DirectX 11-compatible.

At the same time, KFA2 has also announced its single-slot GeFore GTX 460 1GB card, the GTX 460 Razor. This card also boasts the typical clock speeds, despite its single-slot cooler. The GPU runs at 675MHz (with the 336 stream processors operating at twice that rate), while the 1GB of GDDR5 memory runs at 900MHz (3.6GHz effective). Both cards are due to be on sale soon throughout Europe, and both are backed by a two-year warranty. http://www.kfa2.com

3D@Home Consortium launches promotional website

The 3D@Home Consortium announced the launch of 3DUniversity.net, a website designed to provide unbiased information to consumers. Topics cover everything needed for 3D entertainment in the home: 3D HDTV, Blu-ray players, monitors, cell phones, cameras, camcorders and related eyewear, 3D content sources, as well as a database of 3D movies and special events. One of the sites' goals is debunking the misinformation and myths surrounding 3D technology. Information for the website was culled from members of the consortium as well as 3D academics and stereoscopic scientists. 3D@Home Consortium is a non-profit organization aimed at accelerating the adoption of 3D entertainment into homes worldwide. 3D@Home members include filmmakers, movie studios, consumer electronics manufacturers, cable and satellite operators, academic institutions and consumer and professional research organizations. http://www.3dathome.org

Broadcom launches chipset targeting 3DTV and enhanced connectivity

Broadcom is sampling a new ultra-high performance dual HD set-top box system-on-a-chip video gateway solution which the company says has more than two times the performance over previous generations, capable of full HD 3DTV and whole-home connectivity integration that enables video gateways with streaming IP video. Designed in 40nm CMOS silicon technology, the BCM7422 reduces power consumption and lowers overall costs for next generation connected home appliances. The BCM7422 is the industry's first SoC to combine a 1.3 GHz multi-threaded MIPS processor with H.264/MPEG Scalable Video Coding (SVC), and Multiview Video Coding (MVC) standards to enable 1080p60/50 content distribution and full-resolution HD 3DTV. Complementing this new level of application software and visual performance is a 1G pixel per second OpenGL ES 2.0 3D GPU for advanced 3D graphics acceleration, as well as integrated whole-home connectivity functionality including MoCA and DLNA support. http://www.broadcom.com

NETGEAR introduces 3DHD wireless technology for sending high-definition video to home theaters

NETGEAR announced availability of its 3DHD wireless home theater networking kit (WNHDB3004) with 3DHD wireless technology, the first solution capable of reliably delivering jitter-free 1080p high-definition video streams throughout the home with no new wires. The home router or gateway which provides an Internet connection is in one room of the house while the home theater system is in another – sometimes separated by several walls or even on different floors. Running Ethernet cables through the house is expensive and time-consuming. NETGEAR 3DHD Wireless technology is a simple, fast and affordable alternative. The wireless technology includes: four transmitters and four receivers built into each 3DHD wireless adapter for multiple input multiple output transmission (4x4 MIMO), significantly increasing WiFi range and reliability; dynamic digital beam forming to steer

and target WiFi signals towards the receiver rather than broadcasting the signals in all directions, boosting range; Space Time Block Coding (STBC) to send multiple and redundant copies of the same data across different paths, minimizing packet loss and improving video reliability; and a feedback control loop that allows the transmitter to adjust its activity based on responses from the receiver, for reliable video streaming even in a changing or high-interference wireless environment. The result is carrier-grade range and reliability, capable of sending multiple HD video streams across the home through multiple walls – such as the two simultaneous HD video streams required for 3DHD movies and broadcasts – with virtually no data loss. The technology is robust enough to provide a reliable wireless bridge in homes as large as 5,000 square feet. http://www.netgear.com/3DHD

Sharp brings out S3D glasses with 2D conversion

Sharp's new active shutter glasses offer users the chance to watch content in S3D or 2D. The AN-3DG10-S glasses feature a physical button which can be operated to change the mode from S3D to 2D. Sharp says that the glasses allow viewers who are uncomfortable with 3D to watch the content in 2D, while their friends continue to watch in S3D. These glasses are selling for £100 in the UK. They come with new Aquos Quattron 3D LE925 TVs and with the new XV-Z17000 projector. http://www.sharp.com

3DFusion shows off its technology for 3DTV and digital signage

After a number of public events involving presentations of 3DFusion display technology, Insight Media analyst, Matt Brennesholtz, commented, "The 3DFusion display is the one I was thinking of when I said auto stereoscopic displays (ASD) were good enough for digital signage." On October 27, 2010, 3DFusion participated in the Kagan/Panasonic 3D Media Markets event organized by PK World Media. The event included such industry figures as Jeffrey Katzenberg and John Landau. The overall consensus was that 3D without glasses is 5 to 10 years away. 3DFusion president Steve Blumenthal was on the roster as a member of the technology panel and surprised the audience by inviting them to visit the 3DFusion business suite to experience the 3DFMax glasses free 3D ASD, and to see a real time, live 3D stereo camera capture display. 3DFusion also treated the Best Buy Theater Times Square audience of the Bon Jovi concert, to a presentation of the glasses free 3D video on four 3DFusion displays. In the words of Matt Brennesholtz, "I would say if 3D Fusion AS-3D is good enough for Bon Jovi fans, it is good enough for football fans and advertisers." President Stephen Blumenthal said, "Because we can integrate math algorithms with the classical 3D optical, left/right stereo pairs, we make the depth element of the image adjustable, just like brightness and contrast on a standard TV. In essence, we have created a new dimension in mastering, interacting, and optimizing the 3D video signal." http://www.3dfusion.com

Consumer Reports says plasmas offer better 3D images than LCDs

In its first-ever ranking of 3D performance, Consumer Reports evaluated 14 3DTV models and found that plasma TVs are better at displaying 3D images than LCD sets, primarily because they exhibit less ghosting, or double images that appear even when wearing 3D glasses. Three plasma models from Panasonic exhibited the best 3D picture quality and the least ghosting of all the sets tested. "It remains to be seen whether 3DTV is just a novelty or a new product category in the consumer electronics space," said Paul Reynolds, electronics editor for Consumer Reports. "But, our tests show that there are some fine 3DTV sets out there for those consumers eager for a new experience." Using exclusive 3D test patterns developed in-house, as well as 3D Blu-ray movies and recorded 3D sports broadcasts, Consumer Reports engineers found that all the 3DTVs were capable of creating impressive three-dimensional depth; however, the overall quality of 3D varied quite a bit among the 14 models that were evaluated. Consumer Reports found that attributes that affect regular picture quality also affect 3D, including black level, brightness, image detail, and viewing angle. Ghosting, which is technically called "crosstalk", also plays a big part in 3D quality. Panasonic plasma sets exhibited the least ghosting of any of the 3DTVs Consumer Reports tested, followed by plasma TVs from LG and Samsung, which had slightly more. Sony's LCD TVs came closest to the plasmas: ghosting was minimal, but only when the viewer's head was kept level; ghosting became severe when the viewer's head was titled even slightly. On the LG and Samsung LCD TVs, images had satisfying three-dimensional depth, but ghosting, which was significant in a wide variety of content, was distracting when apparent. All the tested 3DTVs, with one exception, performed very well with regular 2D programs. Viewers must use compatible glasses that are sold by each TV manufacturer; although the first "universal" glasses have just become available. http://www.ConsumerReports.org

Witbe launches S3D test system

French TV quality monitoring specialist Witbe launched a stereoscopic 3DTV testing solution. The company says that it is the first 3D solution of its kind available to 3DTV service providers. The Witbe 3D solution uses active robots that interact with all kinds of S3D services, including live, on-demand content and programs sourced from STBs. The system performs the real user's actions and verifies the results on-screen including the availability of left and right 960x1080 images, visual channel changing times, and the adjustment of the picture quality for the left, right and overall 3D image. This is based on the subjective mean opinion score (Video Witbe MOS) which, in turn, is based on the ITU-R BT.500 recommendation for non-reference video quality analysis for digital TV. Witbe is currently working with Cisco, Nagra, Numericable, Panasonic and Sagem for the project, as part of the 3D-HD Alliance Group. http://www.witbe.net

Goldmedia predicts one-in-five German households will have S3D TV by 2015

One in five households in Germany will have a stereo 3D TV by 2015, according to consultancy Goldmedia. The figure, said to represent about eight million households in the country, comes from the group's new "3D Home Entertainment in Deutschland" study. According to Goldmedia, one in three Germans (35%) say that they can imagine watching S3D programs on TVs using glasses. Almost two-thirds (62%) said that they would watch S3D movies on the TV, while 44% said that they would watch Blu-ray discs or VOD services. Almost one third (31%) said that they would watch S3D sports coverage. http://www.bitkom.org/de/veranstaltungen/102_64270.aspx

Amimon demos wireless transmission of 3D HD video

Amimon Inc of Israel has prototyped a system that wirelessly transmits 3D high-definition (HD) video by using the WHDI (wireless high-definition interface) high-speed wireless standard, which uses the 5GHz band. In a demonstration, the company transmitted 1080p 3D video with a frame rate of 24fps by using the 5GHz band. It plans to apply the system to adapter devices that wirelessly connect LCD TVs and Blu-ray Disc (BD) recorders supporting 3D video. The prototyped system consists of a board for transmitting signals and a board for receiving signals. A BD recorder supporting 3D video is connected to the transmitting board via an HDMI cable. And signals are wirelessly transmitted to the receiving board, which is connected to an LCD TV via an HDMI cable. Both of the boards are equipped with Amimon's digital baseband chip and RF transceiver chip. Amimon's WHDI-based transmission system uses the 5GHz band as in the case of wireless LANs and can transmit data at a rate of up to 3Gbits/s, the company said. Amimon has already completed the reference design of a wireless adapter that can transmit 3D video (a Taiwan-based ODM company made the design). And Amimon can release the adapter as soon as the logo for the chassis is ready. The company is now promoting the sale of the adapter to Japanese peripheral device makers by bringing the reference design to them. http://www.amimon.com

A Blu-ray Disc recorder supporting 3D video is wirelessly connected to an LCD TV

Binocle starts commercialization of stereo real-time visualization and correction software

French company Binocle started the commercialization of its real-time high-definition stereoscopic correction unit: the DisparityTagger. One of the challenges in mastering 3D cinema and television is related to the difficulty in transmitting deformation-free images, despite the extreme care needed for 3D shooting. The DisparityTagger allows 3DTV viewers to experience corrected 3D video, stripped of vertical disparities, when watching stereoscopic 3D live broadcasts. Vertical disparities cause visual discomfort when viewing stereoscopic images by causing eyestrain due to the geometric deformations intrinsic to 3D shooting. The DisparityTagger is the universal tool for monitoring stereoscopic shots, allowing to automatically detect in real time every issue that can arise while shooting. Moreover - with the new SDI out capability – the DisparityTagger can automatically correct in real time the stereoscopic streams on the fly to reach a shot free of vertical disparities. The DisparityTagger is the result of 12 years of stereoscopic shooting experience by Binocle, and four years of research by the INRIA Research Institute, in the "French Silicon Valley" of Grenoble. High-definition real-time processing is made possible by the computational power of the Nvidia SDI Quadro. http://www.binocle.com

Nielsen says US consumers show high interest in 3DTV, but cite concerns

According to a new report, "Focusing on the 3DTV Experience," released by The Nielsen Company in cooperation with the Cable & Telecommunications Association for Marketing, consumers expressed a "wait and see" attitude toward the technology. Key issues were the cost of the 3DTV set (68%), having to wear 3D glasses (57%) and the relative scarcity of 3D programming/content (44%). Despite these concerns, the research suggested that if these issues are satisfactorily addressed by set manufacturers and content producers, consumers might embrace the technology. Nearly three-fifths (57%) of viewers agreed that 3DTV made them feel like they were "part of the action" and 48% felt it made them more engaged with what they were watching. Nearly half of consumers (47%) said 3DTV would make them watch programs they wouldn't normally watch. Attracting video gamers will be important to spurring initial growth: 42% of respondents cited interest in playing video games in 3D, with 71% of hardcore or regular gamers interested in experiencing video games in 3D. http://www.nielsen.com

Nielsen/CTAM study reveals that 3DTV clashes with multi-tasking

It's very difficult, if not impossible, to text, instant message, or surf the Internet while watching 3DTV, and that's an obstacle to adoption, according to the latest research from The Nielsen Co. along with the Cable & Telecommunications Association for Marketing. That folks in general are familiar with 3D content because of increasing number of movies released in the format, and its use in theme parks. That exposure is translating into interest in 3DTV. That interest is highest among video gamers, early tech adopters, and film buffs. While consumer interest is generally high, it's "tempered" by concerns about 3D glasses "and the inability to multitask," CTAM and Nielsen said. Some 89 percent of those responding complained about the limitations imposed by having to wear shutter glasses. The study was conducted at the CBS TV City Media Lab in Las Vegas, in a "condominium that closely imitated a 3DTV home viewing environment." Around 425 people 18 and older were grilled after watching a 30-minute segment of 3DTV programming. http://www.ctam.com/3dtv Other findings from the study include:

- Nearly three-fifths (57%) of viewers agreed 3DTV made them feel like they were "part of the action" and 48% felt it made them more engaged with what they were watching.
- Nearly half of consumers (47%) said 3DTV would make them watch programs they wouldn't normally watch.
- However, a high number (77%) of consumers perceive 3DTV viewing to be better suited to special events, such as movies or sporting events, as opposed to everyday viewing.
- The top genres consumers are interested in viewing in 3D ranged from broadly appealing genres (sports, movies, action/adventure programming) to niche genres (nature/animal shows, travel, sci-fi and music concerts).
- Overall, 42% of respondents cited interest in playing video games in 3D, with seven-out-of-ten (71%) hardcore or regular gamers interested in experiencing video games in 3D.

Futuresource reveals that 3DTV sales rate is faster than HDTV among early adopters in UK

3DTVs are selling faster than 2D HDTVs ever did, according to Futuresource, with UK 3D TV shipments for 2010 expected to hit 120,000 units. Despite surveys that said the UK population had no stomach for 3D, the sales figures seem to speak for themselves. Futuresource expects 550,000 3DTVs will be sold in the UK in 2011. This compares to a mere 4,000 2D HD TVs sold in the UK in 2003, the first year they were available. The company is predicting global sales of 3DTVs to exceed four million this year with 1.2 million of those in Western Europe alone. Of those forecast sales numbers the UK comes third behind France and Germany. http://www.futuresource-consulting.com

General 3D announces web-based HTML5/WebGL stereoscopic 3D system at 3DF33D.tv

In a 3D live streaming event on October 10, 2010 on 3DF33D.tv, General 3D announced the world's first web-based 3D stereoscopic system to stream 3D stereoscopic videos using only a browser. This new system uses the HTML5 and WebGL standards being built into Mozilla FireFox, Google Chrome and Apple Safari. This new web technology makes possible sophisticated computer graphics without browser plugins or downloads.

The team at 3DF33D is delighted to announce live streaming in stereoscopic 3D. We have one of our stereoscopic webcams pointing straight down on 56th street in Manhattan.

The General 3D technology based on HTML5 and WebGL opens up an entirely new category of technology for viewing 3D stereoscopic content including video, still photography, and computer graphics with a wide range of applications in communications, broadcasting and gaming. General 3D's 3DF33D.tv service will allow members to easily stream 3D stereoscopic content such as videos and still images using a variety of stereoscopic camera systems. Keith Fredericks, CEO of General 3D said, "It's easy to broadcast in 3D now. All you will need is a 3D webcam and a 3DF33D.tv account." After an easy 3D display setup on 3DF33D.tv, members will be able to upload 3D stereoscopic images and videos and participate in discussions related to 3D. In addition to member-uploaded content, 3DF33D.tv will be ready in the near future to host short-form and long-form video content such as movies, television shows and webisodes. General 3D technology will support a wide range of 3DTVs and 3D displays, including multiview autostereoscopic display support. The 3DF33D.tv player has been tested on Samsung, Sony, and Panasonic 3DTVs using shutter glasses, and Acer notebooks using polarized glasses and will operate out-of-the-box on many other existing 3DTVs, 3D notebooks and 3D display systems. To view stereoscopic 3D videos on the 3DF33D.tv system, you need a supported 3DTV or 3D display (with glasses), a computer and a free member account on 3DF33D.tv. In the future, General 3D will also offer a set top box with advanced functionality, eliminating the need for a computer. http://www.general3D.com http://www.3df33d.tv

New 3D backward-compatible broadcast DTV system launched in Italy

A broadcast and technology consortium in Italy is demonstrating an over-the-air digital 3DTV system that is backward-compatible with 2D TV sets, according to one of its members. The group held a news conference last week in Turin announcing the implementation of the system in the northern Italian region of Piemonte. Participants included Sisvel Profile, CSP Innovazione nelle ICT and Quartarete TV, which is now carrying the service that ostensibly allows those with HDTV sets to watch 2D HDTV, even when the transmissions use 3D techniques." Sisvel said the backward-compatibility was possible "due to an innovative technique for formatting stereoscopic images, known as 3D Tile Format, which makes it possible to integrate two 720p frames within a single 1080p frame. The reconstructed right and left images maintain their original resolution, preventing an unbalancing of the vertical or horizontal resolution." The 3D Tile Format is said to improve the quality of the transmission of 3D hi-def content, compared to current solutions, i.e., side-by-side or top-and-bottom. The compatibility for regular 2D sets, allows broadcasters to transmit to both 2D and 3D users without having to double the amount of bandwidth required for transmissions. http://www.sisveltechnology.com/news/files/3Dwhitepaper.pdf

Experimental results prove that, by choosing properly the way to cut the second frame in slices, the following phase of compression will not cause any relevant artifacts.

Panasonic works on 3D safety rules

Panasonic said it is working closely with the Japanese government to establish an international set of rules to govern healthy approaches to displaying 3D images, a move aimed at assuaging concerns about potential negative side effects of the technology. The company said it has already started the process of establishing broad 3D health and safety guidelines for electronics manufacturers, content makers and broadcasters. While there is no medical evidence to link 3D with health-related side effects, questions about the technology have arisen in the wake of a warning from videogame console maker Nintendo Ltd. that cautioned 3D games on its 3DS handheld could potentially damage the eyesight of children six years old and younger. LG Display also said it is changing its 3D technology to address concerns that the current industry-standard approach could be a contributing factor to 3D related illness and discomfort. LG Display said it has started to adopt an alternative method that involves placing a film on the screen and using polarized, passive glasses to view 3D images. This runs contrary to the active-shutter glasses favored by Samsung Electronics, Sony and Panasonic. Ten companies have signed up to use LG's film-patterned-retarder (FPR) technology, raising concern that 3D technology could be facing a standards battle. LG plans to stop making TVs that work with active-shutter glasses. http://www.panasonic.com

XPAND presents personalized 3D electronic eyewear

XPAND introduced the new YOUNIVERSAL series 3D electronic eyewear that optimizes the 3D experience by modifying the 3D parameters specifically for each user and for different 3D environments. The high-end electronic eyewear offers unprecedented personal optimization, full HD 3D performance, advanced interoperability between all 3D devices, and market-leading comfort and style. Using a specialized smart phone app, XPAND YOUNIVERSAL glasses can be optimized to address the fact that every human's eyes and facial structure are unique and that each user's viewing requirements and environment are different. Available in black, gray and red in male and female sizes, the new YOUNIVERSAL high-end glasses will begin shipping in April 2011 and will communicate with Infrared (IR), Bluetooth (BT), Radio Frequency (RF) and DLP-Link. The smart phone app will initially be available for Apple iPhone and Google Android platforms. Their ability to operate across so many different communication protocols brings a new level of universality to the 3D experience. "XPAND is deeply committed to maximum 3D quality," said Ami Dror, XPAND's Chief Strategy Officer. "Only active 3D glasses can provide full HD 3D experiences, but this is only the first step in 3D evolution. Our YOUNIVERSAL 3D glasses are personally optimized to the individual human visual capabilities with maximum comfort and customizability that allows them to work in all modern 3D environments." http://www.xpandcinema.com

CEA predicts all high-end TVs will enable 3D

In a recent interview Gary Shapiro, head of the Consumer Electronics Association, argued that 3D technology has been over-hyped compared with more fundamental developments like high-definition TV, a huge driver of industry sales for much of the past decade. Giving those digital TVs the capability to simulate 3D images, by comparison, is more of an enhancement than something altogether new, he says. "3D is not a category, it is not a product, it is a feature," says Shapiro. "The truth is that every high-end TV will be 3D." http://www.cea.org

Technicolor demonstrates new 3D certification program

Technicolor announced that its 3D certification program, *Certifi3D*, has been well received by the industry since its launch in December 2010. The service is being endorsed and applauded by content owners and network operators alike, including BSkyB. The certification program is geared towards broadcasters, network service providers and content owners, with the goal of delivering quality and comfortable 3D experiences to end consumers. Technicolor Certifi3D was created to ensure that 3D material meets minimum comfort requirements before it is delivered to consumers. As part of the service, Technicolor evaluates each shot against a set of objective criteria for stereographic reproduction, including a 15-point quality checklist to identify common errors in production that result in suboptimal 3D content. The company will also offer training programs to broadcasters and content creators to help them migrate their production and post-production techniques from traditional television to the three-dimensional medium. http://www.technicolor.com

Technicolor's Certifi3D, certification program is geared towards broadcasters, network service providers and content owners, with the goal of delivering quality and comfortable 3D experiences to end consumers.

1. Alignment/Geometry

What is it?
Improper vertical alignment of left and right images

What causes it?
Camera/lens not matched properly in production

How to fix it?
Geometry realignment

2. Luminance/Colorimetry

What is it?
Left image is brighter, darker or of a different hue than right image

What causes it?
Cameras not matched and/or beam splitter diffraction

How to fix it?
Color adjustment

3. Depth of Field

What is it?
Focus not matching in the left and right eye

What causes it?
Different aperture settings/non-matching lens focal values

How to fix it?
Cannot be fixed without significant post-production work or blurring the focused image to match

4. Reflections, Polarization, Flares

What is it?
Reflections on shiny objects not matching the left and right images

What causes it?
Beam splitter polarization, camera angles

How to fix it?
Cannot be fixed without significant post-production work

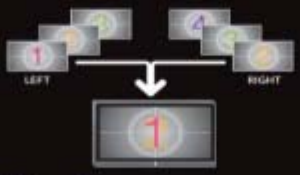
5. Contamination

What is it?
Dust, water, dirt or other particles in one of the images

What causes it?
Challenging environment, lenses/mirror not cleaned thoroughly

How to fix it?
Dust removal techniques

6. Sync/Genlock

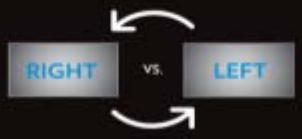


What is it?
Left and right images are not time accurate

What causes it?
Non-genlocked cameras or editing error

How to fix it?
Sync: Re-edit. Genlock issues cannot be fixed without significant post-production work

7. Full Reverse Stereo



What is it?
Left and right images are swapped

What causes it?
Data management or editing error

How to fix it?
Swap left and right images

8. Hyperconvergence

What is it?
Objects are too close to the viewer's eye to be viewed comfortably

What causes it?
Improper camera settings or object going beyond the safe 3D zone

How to fix it?
Push convergence back, or compress the 3D space

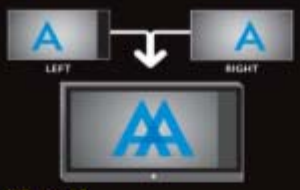
9. Hyperdivergence

What is it?
Objects are too far back to be viewed comfortably

What causes it?
Improper camera settings or objects going beyond the safe 3D zone

How to fix it?
Pull convergence forward or compress the 3D space

10. Edge Mismatch



What is it?
Left and right eye side edges not matching, either due to the addition of "floating" windows or beam splitter box

How to fix it?
Remove floating windows

11. Partial Reverse Stereo

What is it?
Some of the layers in a 3D composition are reversed left and right

What causes it?
3D compositing error

How to fix it?
Swap incorrect layers in compositing. Cannot be fixed on the final image without significant post-production work

12. Depth Mismatch

What is it?
Elements within a 3D composition are not in the correct depth to the scene

What causes it?
3D compositing error

How to fix it?
Fix composition. Cannot be fixed on the final image without significant post-production work

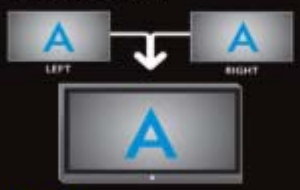
13. Visual Mismatch

What is it?
Elements within a 3D composition that do not match left and right

What causes it?
3D compositing error

How to fix it?
Fix composition. Cannot be fixed on the final image without significant post-production work

14. 2D to 3D Ratio

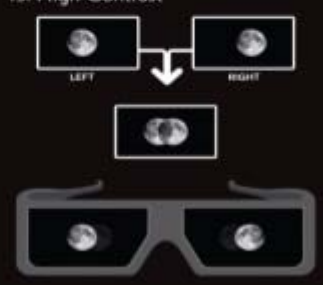


What is it?
Too many shots in 2D to qualify the show as genuine 3D

What causes it?
Lack of 3D content

How to fix it?
Replace non-stereo content with stereo content

15. High Contrast



What is it?
An element deep inside or far out of the window in high contrast with its environment, creating a double image on the display

What causes it?
Refresh rate of the display device/partial separation of left and right images by the 3D glasses

How to fix it?
Reduce contrast, change convergence or compress the 3D space

technicolor.com

Technicolor
2255 North Ontario Street, Suite 350
Burbank, CA 91504, USA
Telephone: +1 818 260 2615

ESPN 3D goes 24 hours starting in February

A year after ESPN announced the launch of an event-based only 3D network, the sports network announced that ESPN 3D will now air content 24 hours a day starting February 14, airing replays of previously televised ESPN 3D events when the network is not showing a live event. In January, the network aired four NBA games and the BCS national championship game, as well as four days of the Winter X Games all in 3D. Since launching the network on June 11 with the 2010 FIFA World Cup, the network has aired nearly 60 events. ESPN 3D is available in the US to approximately 62.5 million households and has carriage agreements with AT&T U-Verse, Comcast, DIRECTV and Time Warner Cable. It will also launch this year on Verizon FiOS TV. http://espn.go.com/3d

Deloitte survey suggests that 3D doesn't compel TV purchase for 83% of Americans

The introduction of 3D capability to TV sets isn't a sufficient reason for most Americans to run out and buy a new TV set. That's the verdict of a Deloitte survey of 1,960 U.S. consumers. "While major companies are betting on 3D, the survey finds that a majority of the consumers are not ready to make the transition to what is perceived to be more expensive technology," Deloitte's "Revolutions 2010" stated. "At a time when 72 percent of consumers have cut their overall entertainment budget...the majority of survey respondents – 83 percent – agrees 3D is not important enough to buy a new television." Deloitte additionally reported that only 9% of the sample had seen 3DTV first hand in the last six months and 7% had purchased 3D content for the home. Of that group, 55% said 3D met their expectations, while 24% said it didn't live up to them. A third said it didn't enhance the experience of watching TV. Of the 24% who were underwhelmed, 13% got sick watching in the format. Deloitte reported that younger people have the most enthusiasm about 3DTV: 40% of those 14-27, said they would by a 3D set with glasses; 55% would buy one without glasses. http://www.deloitte.com

Germany boasts better-than-expected 3DTV sales reports GFU

3D TV sales in Germany have exceeded expectations, according to the GFU. The industry group has reported sales of the 3D-enabled TVs to be 178,000 in 2010, bettering the expected figure of 150,000. Many industry experts have predicted that 3D TV sales will only really take off from 2012 onwards, with healthy figures expected in 2014 where consumer electronics manufacturers are hoping that investments in 3D technology will begin to pay off in earnest. 3D TV sales in the majority of regions haven't lived up to expectations, so it comes as good news for the market that in Germany at least they are doing well. http://www.gfu.de

Infogroup/ORC identifies increased interest in 3DTV

Infogroup/ORC conducted research which found in January 2010 that 6% of respondents either owned (1%) or expected to own (5%) a 3DTV within the next two years. The research firm estimates that this interest has since more than doubled to around 15%, with 4% owning a 3DTV and 11% expecting to purchase one within the next two years. "Our research clearly demonstrates a significant growing interest in 3DTV," said Wayne Russum, SVP and Director of ORC's CARAVAN suite of omnibus services. "The household interest is at 15% which equates to approximately 17.5mn US households who either now own or intend to purchase the technology within the next two years". http://www.infogroup.com

Team ACX to market glasses-free 3DTV

Team ACX showed prospective dealers its new Vibrante 3DX-24 auto-multiscopic (glasses-free) 3D HDTV during CES. The Vibrante 3DX-24, which is slated to reach stores at the end of the first quarter, expands upon ACX's commercially available (glasses-free) auto-multiscopic 3D hardware providing a consumer-focused glasses-free 3D experience using non-proprietary open standards, and a flexible modular deployment model. The glasses-free display system was developed in collaboration with AMD and Sonic Solutions. Vibrante, which is being positioned as a FullHD 3D LCD TV including a tuner, uses a computer as its primary source component. Full 1080p resolution is delivered from a Windows 7 PC to the Vibrante HDTVs via a single HDMI cable connected to an AMD Radeon (5000-6000 series) graphics card. Sonic created a Roxio/ACX Cineplayer BD player that takes any media and converts it on the fly to 3D for the auto-multiscopic displays. Sources include standard-definition DVDs, Blu-ray Discs, 3D Blu-ray Discs and home movies recorded in MPEG-4. Future capabilities of the player will include streaming live content, sporting events, 3D gaming and content rendered specifically for the Vibrante auto-multiscopic format, the company said. The ACX 3DX-24, which will carry an $800 suggested retail, features a 23.6-inch LCD auto-multiscopic high-definition 3DTV based on a proprietary lenticular configuration. It displays Full 1080p resolution for both 2D and 3D content. The company has already signed up several retailers to carry the set, including Costco, Amazon.com, BJ's Wholesale and Nebraska Furniture Mart. http://www.teamacx.com

Toshiba enhances 3D accessibility with multiple 3DTV technologies

Toshiba's Digital Products Division, a division of Toshiba America Information Systems, Inc., announced its most advanced 3D LED TVs for 2011. Featuring exclusive CEVO engine technology that includes enhancements for 3D picture quality, the new LED TVs also boast new ultra-thin cosmetic designs with chrome trim that add a touch of elegance to any home décor. In addition, Toshiba demonstrated its glasses free 3DTV for the first time. For 2011, Toshiba 3D models utilize the CEVO engine, which includes three key 3D technologies that set Toshiba 3D apart: TriVector 2D to 3D conversion allows consumers to watch all of their favorite 2D TV programming, 2D Blu-ray Discs, and personal camcorder movies in high quality 3D. Consumers can even view their 2D digital still pictures in 3D and play their favorite 2D video games in 3D. 3D Resolution+ technology automatically upconverts and sharpens 3D sources that are not native full HD – such as top/bottom or left/right formats – to create a consistently high quality 3D experience. 3D Cross Talk Canceller for dynamic 3D models mitigates any cross talk ghosting to create the clearest possible dynamic 3D images. To help expand consumer acceptance of 3D, Toshiba will be one of the first manufacturers to offer both dynamic (active) 3D and natural (passive) 3D series and will apply its CEVO engine to both 3D technologies.

Toshiba's first Natural 3D LED TV, the TL515 Series, creates stunning 3D images using affordable polarized glasses, making it ideal for longer viewing periods and 3D gaming. The TL515 Series is ideal for consumers looking for a great 3D experience and a low total cost of ownership. Featuring a black-brushed aluminum look, the TVs feature a 1080p Full HD CineSpeed Plus LED panel with local dimming for enhanced contrast and new 240Hz ClearScan technology for smoother motion. The TL515 Series also features the ultimate in connectivity with built-in Wi-Fi and Net TV with Yahoo Widgets, making it easy access online content and social networking sites. The TL515 Series will be available in 32, 42, 47, 55 and 65-inch diagonal screen sizes.

For the videophile that cannot compromise on picture quality in 2D or 3D, UL610 Cinema Series TVs feature Toshiba's all new Full HD 1080p Quantum "BLACK" LED panel with fine local dimming and CrystalCoat, which provide dramatic contrast for the deepest blacks, a faster response time and new CEVO-powered 480Hz ClearScan technology that enables an incredibly clear picture during fast motion. With active shutter glasses, the UL610 Cinema Series provides 1920x1080p Full HD 3D for images that truly jump off the screen. The UL610 Cinema Series feature Toshiba's new Metal Blade Design with Illusion Stand and includes built-in Wi-Fi, Net TV with Yahoo Widgets and a built-in sub-woofer speaker. The UL610 Cinema Series will be available in 46, 55 and 65-inch diagonal screen sizes, and will be available in April 2011. http://www.toshiba.com

70,000 signed up for Sky 3D in first 3 months

BSkyB has 70,000 3DTV subscribers, the UK satellite TV provider recently reported. Sky 3D was launched Oct. 1, 2010, and has exceeded early expectations. At launch, Sky said it expected to have between 50,000 and 200,000 subscribers by mid-2011. "Around half of all 3D TVs sold so far in the U.K. are connected to Sky 3D, with thousands more joining every week," said Sky 3D's John Cassy. "Since the launch on the 1st October we have had a number of world firsts – with the world TV premieres of *Avatar, Alice in Wonderland* and the *Toy Story* trilogy. On deck is the franchise's 100th live 3D sports broadcast, a stereoscopic performance by Diversity, some Sir David Attenborough documentaries, and a broadcast of ENO's new production of Donizetti's "Lucrezia Borgia," to be the first opera broadcast in 3D on Feb. 23. BSkyB was the first multichannel TV provider to successfully transmit live 3DTV across its hi-def infrastructure in April 2009. It did a soft launch to around 1,500 pubs across the UK in anticipation of last summer's FIFA World Cup soccer tournament. It publicized its plan to fully deploy 3DTV Oct. 1, prodding rival provider Virgin Media to launch 3D out of the blue on Sept. 28, 2010. Sky has around 2.9 million HD subscribers, all of whom could get the 3DTV service. Panasonic sponsored the service, similarly to its support of DirecTV's 3D channels in the US. http://www.sky.com/shop/tv/3d

Displaybank forecasts 83 million 3DTVs by 2014

The 3DTV market is expected to represent 3% of all TV market with 6.2M units in 2010 and among these, 5M units are expected to be 3D LCD TV and 1.2M units for PDP TV. Displaybank forecasts 6.2M 3D TVs will have been sold in 2010 growing to 33M units in 2012 and 83M units by 2014 to represent 31% of the TV market. In terms of device type, 3D LCD TV market is expected to reach 5.1M units in 2010 to represent 81% of the total 3DTV market and is expected to be mainly applied to premium products utilizing Full HD and 240Hz in large-sized TVs over 40 inches in size. By 2014, 3D LCD TV market size would reach about 70M units to represent 28% of the LCD TV market. In 2010, 3D PDP TV is expected to penetrate 8% of all PDP TVs but by 2014, most of PDP TV makers are expected to apply 3D as one of TV's function and 3D PDP TV is expected to represent 99% of all PDP TVs. The shutter glass type was the mainstream 3DTV technology type in 2010. Excluding LG Electronics, other major TV makers including Samsung Electronics, Sony and Panasonic are launching 3D LCD TV with shutter glass type and polarizer glass type will only show 2% penetration in 2014. Displaybank expects glasses-free 3DTV to be unveiled in 2014. http://www.displaybank.com

IOGEAR announces wireless 3D media kit

IOGEAR announced the Wireless 3D Media Kit (GW3DKIT), the company's first device to wirelessly stream HD audio/video and offer 3D support up to 100 feet away. Six different A/V devices can be connected and stashed away for discrete, uninhibited performance. Leveraging its own integrated private Wi-Fi (802.11n), the IOGEAR Wireless 3D Media Kit broadcasts with almost no latency and no interference from nearby wireless routers. Content can be streamed to a total of four wireless 3D receivers simplifying the process of setting up multi-room or multi-display environments with additional freedom to install displays in non-traditional locations without worrying about line-of sight placement. The Wireless 3D Media Kit consists of a wireless 3D transmitter and wireless 3D receiver with various connectors including HDMI, component, composite, VGA, and USB. Users can connect a Blu-ray player, DVR/set-top box, DVD player, media server, computer or even a VCR and stream the content 100 feet through the air. A USB port on the GW3DKIT can serve as a wireless keyboard/mouse connection allowing mobile control of a home theater PC or laptop within the 100 foot 3D receiver radius. Full access to stored videos, photos and music or management of online social media or work content is possible when combined with an IOGEAR wireless keyboard. Additional features of the kit include: supports Full HD 1080p 60Hz, 3D content and 5.1 channel audio inputs: 4 HDMI, 1 composite, 1 VGA with adapter for component, 1 USB outputs (1 HDMI, 1 USB use with HD and non-HD devices. Built-in IR allows user control of hidden source devices. No software or driver installation is necessary. The GW3DKIT Wireless 3D Media Kit will ship in Q1 2011, pricing will be announced soon. http://iogear.com

VIZIO announces full line of theater 3D HDTVs in sizes ranging from 22 to 71 inches

VIZIO announced a full line of "Theater 3D" HDTVs with sizes ranging from 22 to 71 inches. Theater 3D HDTVs offer crystal-clear, flicker-free 3D that's up to 2x brighter and significantly reduces crosstalk compared to current active shutter LCD TVs. Best of all, Theater 3D eyewear is battery-free, lightweight and comfortable, works with most 3D movie theaters, and will be available in a range of styles and colors from brand name designers. By utilizing a circular polarized 3D filter, the burden of 3D processing is built into the TV, allowing Theater 3D eyewear to be free of the batteries and shutter mechanisms inherent in active shutter 3D TVs. Theater 3D is up to 2x brighter, and significantly reduces crosstalk compared to current active shutter LCD TVs, handles fast motion without blurring, has a wider horizontal viewing angle, and reduces flicker that may cause eye strain found in active shutter 3D solutions. In addition, Theater 3D eyewear can be used to view 3D movies in a majority of movie theaters. Depending on the model up to four pairs of the lightweight and comfortable Theater 3D glasses are included with each TV. With this, VIZIO has eliminated two of the most common objections to 3D HDTV purchases: the need to wear bulky 3D glasses that require batteries or recharging and the need to invest in expensive additional 3D glasses so the entire family can enjoy it together. By incorporating all of the 3D processing into the TV instead of burdening the eyewear, as is the case with active 3D, VIZIO Theater 3D enables users to wear comfortable, eco-friendly, battery-free eyewear instead of active shutter glasses that are heavy, awkward, and require recharging and other maintenance.

Each Theater 3D model supports the widest selection of 3D formats to ensure compatibility across Blu-ray, broadcast, cable, satellite, and gaming. This includes Frame Packing, Side-by-Side, Top and Bottom, SENSIO HiFi 3D and the Real D format. All Theater 3D models feature VIZIO Internet Apps (VIA) Connected HDTV

platform. VIA delivers unprecedented choice and control of web-based content directly to the television without the need for a PC or set-top box. Current Apps from top online content and service brands include: Netflix, Amazon Video On Demand, VUDU, Pandora, Facebook, Flickr, Rhapsody, Twitter, and Yahoo TV Widgets. Additional Apps recently released include Fandango, iMemories, MediaBox, My-Cast, TuneIn Radio, Web Videos, Wiki TV and Yahoo Fantasy Football. Theater 3D eyewear will be available from well-known designer brands, including Oakley who has already launched one line of 3D eyewear that is also compatible with Theater 3D HDTVs. Launched recently as the world's first optically correct 3D glasses, Oakley 3D Gascan utilizes the company's proprietary HDO-3D technology for superior visual clarity. http://www.VIZIO.com

Real D and Samsung LCD jointly develop new LCD based 3D display technology

Real D and Samsung Electronics LCD Business announced that the companies are jointly developing a new 3D display technology called RDZ that offers full-resolution high-definition 3D video and is compatible with the same 3D eyewear used in Real D 3D-equipped motion picture theatres around the world. Unlike patterned retarder based 3D display technologies that cut resolution in half or diminish brightness, RDZ 3D display technology delivers full-resolution high-definition 3D images by adopting active shutter technology on the display. Based on Real D technology used in many of the world's 3D-equipped motion picture theatres today, RDZ displays are also 2D compatible, resulting in no reduction of image quality in 2D mode. LCD based RDZ 3D displays will offer consumers the choice of eyewear technologies without compromising image quality, which only active sync 3D technology can do. The LCD based RDZ 3D display technology is integrated on the LCD panel and actively syncs with the left and right eye images for 3D video. http://www.reald.com

Samsung and DreamWorks Animation expand strategic alliance for more immersive 3DTV viewing

Samsung Electronics and DreamWorks Animation announced that the two companies are joining forces for more immersive entertainment experiences in 2011. The two companies described plans for an expanded strategic alliance. Consumers who purchase a new Samsung 3D TV will gain exclusive access to two of DreamWorks Animation's new 3D Blu-ray titles, including "Megamind", which will be made available in 2011. The animation studio and consumer electronics company also intend to explore joint research and development activities and a number of expanded co-marketing initiatives throughout the year. As part of their expanded collaboration efforts, the two companies have agreed to explore ways to work together on research and development of future technologies related to 3DTV and smart TV. In 2010, Samsung introduced the first 3D LED TV, and DreamWorks has been a leading entertainment provider of high-quality 3D films and Blu-ray discs. The two companies hope to combine their talents to improve home entertainment even further than they have today. In 2011, the 3D Blu-ray version of "Megamind" will become the next DreamWorks Animation title to be made available exclusively to purchasers of new Samsung 3DTVs as part of a bundled promotion. The two companies plan to explore a new streaming 3D video-on-demand (VOD) service that would make DreamWorks Animation content – trailers and promotions in both 3D and 2D – available for streaming via the 3D application for Samsung smart TVs beginning in 2011. This represents an innovative new method by which film studios can use smart TV to reach consumers directly. Upon launch, consumers will be able to access VOD content through any of Samsung's LED, LCD and plasma 3D smart TVs. http://www.samsung.com

Vudu starts streaming 3D movies

Vudu's streaming service is now offering 3D movies. The company's 3D content is currently available to select Samsung HDTVs and Blu-ray players, and will be made available to PlayStation 3 owners. Vudu's 3D films will come to devices from Vizio, LG, and others in the next few months. The service will also be made available to 3D-capable Blu-ray players from Mitsubishi and Toshiba (among others), as well as the Boxee Box by the end of 2011. Vudu, which is a wholly owned subsidiary of Wal-Mart, didn't say which individual devices would work with its 3D offering, but it noted that the service would also be rolled out to "select 2011 models over the course of the year". Users have automatic access to 3D content, and won't be required to download anything to get it up and running. The 3D content is offered in standard definition, as well as 720p and 1080p resolution at the same bandwidth requirements as 2D content. http://www.vudu.com

Westinghouse unveils glasses system for 3D and 2D viewing

Westinghouse Digital unveiled a prototype personal viewer glasses systems for 2D and 3D viewing. The personal viewers incorporate "a revolutionary new optic developed for the US military by Immersion Optics" featuring "the largest consumer field of view (FOV) ever produced". http://westinghousedigital.com

3DTV 2011: home adoption poised to increase over next few years

The number of consumers watching television in the third dimension in their homes, and the quality of their experiences will increase significantly over the next few years. That was the opinion of executives speaking on a video services panel at New Bay Media's "3DTV 2011: What's Next?" conference held in New York last November. They envision the format taking off in the home over the next few years as technology continues to improve and impediments, relative to consumers wearing active or passive glasses and the need for more content are surmounted. "Technology will improve all around in years ahead, and that will bring more eyes to 3D sets," said Clyde Robbins of Motorola Mobility. How big the 3D network world will become in the years to come was a matter of some debate on the panel, which was moderated by Multichannel News technology editor Todd Spangler. The panelists didn't anticipate the industry would come anywhere near the 100-plus HD networks that are available today, because not all programming genres would necessarily embrace or benefit from the technology. Tom Cosgrove, the president and CEO of the 3DTV network joint venture of Discovery, Sony and IMAX, predicted there would be 20-40 3D channels within the next five years. Chris Chinnock, president of marketing research firm Insight Media, said things will begin to change toward a more passive 3D world shortly. He said that consumers have to weigh the 3D cost equation at home by gauging the combined cost of the set and the glasses. While passive sets cost more, the attendant glasses are not priced as highly as the active ones. The situation is reversed relative to active sets and their more pricey glasses. Robbins also said there are parallels between adoption of HD several years back and what lies ahead for 3D. However, he believes the nascent technology holds an advantage because its HD predecessor laid the groundwork for today's consumers, who are now more knowledgeable about the value/quality of LCD and plasma sets. Assessing the technology's prospects in the home environment, Robbins thinks 3D's growth will be slow over the next couple of years. "After that, it will go very fast," he said.

LG unveils six-foot 3DTV

LG Electronics unveiled the 72-inch LZ9700 3DTV. The company says it is the world's largest full LED-backlight LCD 3DTV. The display's high-speed TruMotion 400Hz capability – also found in LG's 55-inch 55LX9900 and 47-inch 47LX9900 – should provide smooth 3D playback along with outstanding 2D crispness when viewing fast-moving images. http://www.lg.com

3DFusion 3DTV without glasses makes European public debut

3DFusion Corp. has accomplished a major breakthrough in auto stereoscopic display (ASD) technology for glasses free 3DTV. 3DFusion has incorporated the former Philips technology with their proprietary 3DFMAX IP to create a new math-based Depth Meta Data 3DTV platform. This "picture perfect" broadcast quality 3DFMax platform is exclusive to 3DFusion and solves all of the historical 3D viewing issues, from 2D content conversion to live 3D camera capture. For most consumers 3D can only be seen in the cinema, where special glasses are required to look at 3D movies. With 3DFusions technology it is possible to watch these movies at home with a special 3DTV (which is also suited for 2D viewing). The 3DFMax Auto stereoscopic TV produces 3D with stunning quality, no visual side effects, no dizziness, no sweet spots, no headaches or nausea. It is comfortable enough to be watched for hours at a time, and it is a seamless replacement for 2DTV. The first 3DFusion ASD 3DTV production run targets digital-signage and entertainment. The company is projecting a first roll out of 5000 digital signage units for the second quarter 2011. Digital signage ASD requires 3DFusion to produce "re-mastered " 2D content conversion. http://3dfusion.com

3D sets to account for 40% of Sony LCD TVs in fiscal 2012

Sony expects 3DTV shipments in fiscal 2010 (ending March 2011) to reach 10% of its total LCD TV shipments of 25 million units, and the shipment share is expected to increase to 40% in fiscal 2012, according to Kenji Sakai, chairman and managing director of Sony Taiwan. Sony set up six experience centers for 3D displays at Taiwan's IT Month in December. The "Sony 3D World" promotion featured "3D LED Stage", "3D Cinema", "Sports Bar - 3D Stadium", "Music Cafe - 3D Music Store", "Auto Shop - 3D Game Zone", and "3D Photo Life". Kenji added that Sony is looking to become the leading vendor in the 3D market and the company has set up a 3D technological center in order to boost the popularity of 3D products. Kenji noted that Sony's outsourcing orders are expected to reach 50% of its total LCD TV shipments in fiscal 2010. Market sources said that the value of Sony's outsourcing will reach $15 billion in fiscal 2010. http://www.sony.com

Penthouse announces the launch of a 3D channel

Penthouse announced the launch of the Penthouse 3D Channel. This new channel will feature original adult-oriented programming each month shot in native high definition and 3D. Penthouse 3D will compliment the growing Penthouse HD channel lineup covering over 30 platforms in more than 15 countries. The 3D channel is expected to be available to system operators for broadcast to the general public in Q2'11. http://www.FFN.com

SeaChange delivers 3D movie first for du's IPTV video-on-demand service

On Demand Group, a subsidiary of SeaChange International, has completed a deal to deliver theatrical 3D content over UAE's integrated telecom service provider du's video on demand (VOD) service. On-demand streaming of "StreetDance 3D", the UK's top grossing dance movie with takings of £11.6m, which started 25th December is a 3D first for the Middle East and marks the further expansion of On Demand Group's extensive content handling capabilities. du's Video on Demand service, launched in 2009, has become the fastest-growing and most successful VOD service in the Middle East, and is managed in partnership with the London-based On Demand Group, the leading content aggregator for video-on-demand and three-screen video. In addition to sourcing and processing 3D content, On Demand Group is fully supporting the movie debut and driving its uptake through a range of on-screen promotions and in-market promotional services. http://www.ondemand.co.uk

European Broadcasting Union releases 3DTV briefing

The European Broadcasting Union has released a 3DTV briefing targeting broadcast management. The document provides an overview of 3D's audience value, the display market, content, acquisition and production issues. "The EBU believes that public service broadcasters must take a pragmatic approach to 3D services and they should be aware of the value of an event or program to its audience when making decisions about producing and broadcasting in 3D," EBU's Technical Report 10 states. The report says that by 2014, more than 40% of all displays will be 3D capable. Europe is expected to finish 2010 with 600,000 3D devices in the market, with the figure growing to 3 million by the end of 2011. In terms of creating content, a new set of parameters must be considered, much the way the wide-screen aspect ratio of HDTV gave rise to center protecting for 4:3. With 3D, screen sizes are ranging from a few inches in mobile devices to cinema-sized and IMAX screens. The 15-page briefing includes a summary of the history of stereoscopic moving images, which have been around since the early 20th century. The first 3D film was said to have been shown at the Ambassador Hotel Theater in Los Angeles in the fall of 1922. The EBU briefing is available online in .pdf form at "3D Briefing Document for Senior Broadcast Management". http://www.ebu.ch

Comcast announces fulltime 3D channel

Comcast announced a new 24-hour 3D service, Xfinity. Inaugural programming plans include the 2011 Tim Hortons NHL Heritage Classic and an MTV World Stage Kings of Leon concert. According to Comcast, plans are in place to offer subscribers such 3D viewing material as "movies documenting African safaris, haunted castles, the depths of the ocean, the surface of the sun, the age of dinosaurs and more, along with original programming that gives customers unique perspectives of events such as Chinese dragon dancing and rhythmic gymnastics." Comcast is also planning to air additional concerts in 3D on the new Xfinity service. http://www.comcast.com

CEA begins standards process for 3D glasses

The Consumer Electronics Association (CEA) announced the launch of a new standards process for 3D glasses. CEA, the nation's largest technology trade association, represents more than 2,000 technology manufacturers, retailers, service providers and installers. CEA seeks proposals for standardizing 3D active eyewear that uses an infrared (IR) synchronized interface from consumer electronics (CE) manufacturers. Interested participants are encouraged to join the 3D Technologies Working Group, R4WG16. "The expanding presence of 3DTV in the home makes the need for interoperable 3D glasses more urgent than ever," said Brian Markwalter, CEA vice president of research and standards. "As the hub of technology industry innovation, CEA is the logical host for such a crucial effort. Industry participation will help meet consumer demand and expectations regarding 3D interoperability in the home." R4WG16 requests that interested parties in the CE industry download the formal Active Eyewear Standards IR Sync Request for Proposal (RFP), and return it to Alayne Bell at abell@CE.org by 5 p.m. EST, March 31, 2011. You may download the RFP at www.CE.org/Standards/1401.asp. R4WG16 will then select the proposals that will become the basis for standardization. http://www.CE.org/Standards/1447.asp

BSkyB expands its 3D capacity

In order to meet increasing stereoscopic 3D demand for content, British Sky Broadcasting Corporation (BSkyB) has expanded its stereo 3D capacity with the purchase of two additional Mistika Post production systems working on a 64 TB SGO SAN, to enable powerful collaborative workflows. BSkyB launched Sky 3D, Europe's first 3DTV channel, using the latest technology, which included Mistika to create a 3D experience, providing sports programs, movies and entertainment into people's homes across the country. History was made in January last year, with the world's first live 3D sports broadcast, in which Mistika played a major role in the delivery. Mistika, which had already been placed at the heart of Sky Creative's pipeline, is vital for the creative team to meet high quality and time-sensitive stringent requirements that include editing, color correction, geometry-alignment and producing material as quickly as possible. The additional Mistika systems will play a crucial function in delivering an even more efficient workflow at BSkyB. One of the new systems is based at Sky Creative to work alongside the existing Mistika, with the other one installed in a different building for ingest and QC of 3D content. http://www.sky.com

Stills from a Panasonic 3D promo for Sky Movies. Images courtesy Sky Creative, BSkyB

Mentor Graphics delivers first multimedia platform for hardware emulation of 3DTV products

Mentor Graphics Corp. announced a multimedia platform to accelerate the verification of 3DTV-based products. This platform enables designers to develop and test their software against multiple 3DTV formats on their systems-on-chip (SoC) before silicon is available. The solution includes a High-Definition Multimedia Interface (HDMI) and employs 3DTV analysis tools early in the development cycle, delivering verification at thousands of times faster than software simulation. The platform consists of the Veloce family of emulators and the iSolve Multimedia product for HTDV and HDMI 3D applications, which provides a cost-effective and efficient solution, delivering a dynamic and accurate verification environment. The Mentor 3D TV Multimedia Verification platform is used as an essential part of the strategy for verifying 3DTV chips, where full software applications can be validated against a SoC prior to silicon being available, while analyzing several different 3D formats. Additionally, the platform provides direct visualizations of the 3D pictures and frames, rather than the limited signal-level displays of traditional simulation tools. This delivers a more effective and productive debug environment to develop new and leading-edge 3DTV products, without compromising delivery schedules. http://www.mentor.com/med

Futuresource Consulting survey predicts 3DTV adoption to hit 15 million next year

About 15 million 3DTVs will be in homes across the United States by the end of 2012, a study released by Futuresource Consulting claims. If sales hit that mark, it would represent a notable surge in 3DTV sales. A previous study from Futuresource found that 4 million 3DTVs were sold worldwide last year and only 8 million will be purchased around the world in 2011. Out of that 8 million, the research firm believes 5 million will be purchased for use in the United States. The growth of 3DTV adoption will rely upon the availability of 3D content, Futuresource says. The company claims broadcast content will not only get 3D to consumers, but also play a role "in educating the consumer and driving awareness". In North America, 11 3D services, 2 3D channels, and 6 video-on-demand offerings were available to customers at the end of 2010, Futuresource said. As more customers buy 3DTVs, Futuresource sees a positive impact on disc sales, as well. The research firm said 3D sales accounted for less than 1% of Blu-ray revenue in the US last year, but will reach approximately 25% in 2015. Sales of 3D Blu-ray discs this year will likely be led by "Harry Potter" and "Transformers". http://www.futuresource-consulting.com

Sony works on 3D drama TV series in Japan

Japan has introduced 3D to the TV drama series. The 10-episode series, called "Tokyo Control", portrays the life of officials from the Tokyo Air Traffic Control Center and will be aired in 3D on cable broadcasting, and in 2D from the producing company, Fuji Television Network Inc., which started January 19. The drama series is the fruition of collaboration between the broadcasting network and Sony Corp. http://www.sony.com

Insight Media releases passive polarized 3D HDTV technology and market report

Insight Media announced the release of the "3D HDTVs with Passive Polarized Glasses Report": a report on the technology, trends and forecasts for passive polarized 3D in HDTVs. This is Insight Media's 6th report on the 3D industry. The report is available immediately for $1,500 for a single company site license. CES 2011 saw the debut of passive polarized 3D HDTVs from a number of key worldwide brands. These new 3D products will change the landscape for 3D HDTVs in 2011 and beyond. They allow for the use of low-cost polarized glasses instead of the heavier and much more expensive shutter glasses. However, the passive 3D HDTVs do have lower 2D and 3D image performance, so which will consumers prefer? This is the key industry need this report seeks to address. Key findings include: passive polarized 3D HDTV products will find a strong position in the market over the next few years; patterned retarder and active retarder solutions are both likely to garner significant market share; glass-based patterned retarder solutions are likely to give way to film-based solutions relatively quickly; passive solutions for AMOLED 3D HDTVs are likely in the forecast period; passive solutions for PDP 3D HDTVs are less likely, but may be commercialized as the market rapidly adopts passive solutions. The report provides detailed analysis of: various technology solutions for passive polarized 3D HDTVs; price-performance-competitive analysis; market development analysis; consumer feedback analysis; purchase decision analysis; market penetration analysis; market potential analysis. http://www.insight-media.com

Samsung launches 3D video-on-demand service in Korea

Samsung has officially announced the green light to their 3D video streaming service. The 3D video on demand service will launch first in Korea, and then will be rolled out to the rest of the world, with the US and Europe next in line. Samsung's partnership with DreamWorks Animation will ensure some high-quality 3D movie titles like "Shrek", and "Megamind" coming to the service – but only later on, as it is expected to kick off with movie trailers, music videos, and children's education films first. The 3D content will be accessible through the 3D application on Samsung's Smart TV platform. http://www.samsung.com

RRsat Global Communications Network supports international 3D channel

RRsat Global Communications Network, Ltd. has announced their assistance in the launch of HIGHTV, reportedly the first international, entirely 3D entertainment channel. The content management and distribution specialist provided playout and uplink services to assist with HIGHTV, which serves audiences throughout European and Asia Pacific markets. The estimated 450 hours of HD programming will be distributed over the Eurobird-9A satellite to Europe, and then over the MEASAT-3a satellite across a portion of Asia. The channels will be distributed in MPEG-4 compression and the DVB-S2 broadcast standard. Program genres for HIGHTV include drama, comedy, lifestyle and fashion. http://www.rrsat.com

Sony and MIPTV partner in 3D venture

MIPTV has announced that it has entered into a partnership with Sony Corp. for developing and facilitating business contacts between the producers of 3DTV content and distribution channels for their products. 3D content producers are being invited to screen their programs for acquisition executives from 3net, the 3DTV joint venture that is backed by Sony, Discovery Communications, IMAX Corp. and other leading 3D content buyers. The organization will also be hosting a "3DTV Broadcast Content Experience" pavilion at its April 4-7 MIPTV 2011 event in Cannes, France, and will also feature a series of conferences on April 6 that will cover all aspects of the 3D business. These conferences are intended for producers, broadcasters, hardware providers, as well as digital and mobile operators. http://www.sony.com

Bloomberg reports Toshiba's autostereoscopic 3DTV sales stumble

Toshiba's attempt to interest us all in 3DTVs that don't require special glasses has fallen flat. The company sold fewer than half the sets it expected it would in the first month of sales, a senior executive has revealed. Masaaki Osumi, president of Toshiba's Visual Products Company, revealed the news, admitting the company sold just 500 of the 20-inch models and even fewer of the 12-inch ones, Bloomberg reports. The glasses-free sets are only on sale in Japan. The 20-inch Regza 20GL1 went on sale for ¥240,000 (£1800). Toshiba showed off 56-inch and 65-inch prototype 3DTVs at CES, and Osumi said large-screen models should be available to consumers by the latter half of 2011. http://www.bloomberg.com

Consumer Reports says passive 3DTV can compete with active

Comfortable viewing, cheaper glasses and a significant reduction in ghosting make the first passive 3DTV in the American market a decent rival to the active-shutter 3DTVs out there thus far, according to Consumer Reports. Looking at the Vizio VT3D650SV passive glasses 3DTV, which uses polarized glasses similar to those used in theaters, Consumer Reports pitted the set against Panasonic's top-rated TC-P65VT25 plasma 3DTV. "In general, there is a lot to like about the VT3D650SV," the report said. "For one thing, the polarized glasses are very comfortable to wear; they weigh just 0.7 ounces, so they felt very similar to wearing regular sunglasses. We also liked that you get four pairs of glasses with the TV, with additional pairs expected to cost from $10 to $30. That's a far cry from the $130 to $150 you have to shell out for active glasses." Consumer Reports found the passive 3DTV set to have "the most satisfyingly bright picture we've experienced when viewing 3D" and that ghosting "is reduced to the point where it gives plasma TVs a run for their money." The drawback is the loss of resolution with the passive glasses was noticeable. Active-shutter glasses can deliver a full 1080p picture to both eyes, while the passive glasses lose half the vertical resolution. "And if you get your 3D signals via cable or satellite broadcasts, which squeeze 3D signals into the space meant for a single high-def image, cutting the horizontal resolution, the resolution is reduced even further, to 960x540," the report said. "This loss of resolution may be visually subtle to some viewers, depending on the 3D program material, but it's likely to be noticeable and bothersome to more discerning viewers." Video artifacts also were more obvious with the passive glasses, and viewing angles were more limited than those 3DTVs using active shutter glasses, the report concluded. The Vizio VT3D650SV has a list price of $3,700. http://www.consumerreports.org

M-3DI standard to create compatibility among 3DTVs, 3D projectors and 3D cinemas

Panasonic and XPAND 3D announced that they have formulated M-3DI, a new standard for 3D active-shutter eyewear products that will bring about compatibility among 3DTVs, computers, home projectors and cinema projection. Other leading 3D technology providers for televisions, projectors and cinemas have agreed to participate in supporting the new standard, including Changhong Electric Co., Ltd., FUNAI Electric Co., Ltd., Hisense Electric Co., Ltd., Hitachi Consumer Electronics Co., Ltd., Mitsubishi Electric Corporation, Seiko Epson Corporation, SIM2 Multimedia S.p.A. and ViewSonic Corporation. Licensing of the M-3DI technology will begin next month from M-3DI License Agent (e-mail: license@m-3di.com), providing a communication protocol between 3D active-shutter eyewear products and 3D-capable TVs, front projectors, computers and cinema systems (XPAND-compatible theaters). The technology will let consumers enjoy the immersive 3D experience across all types of compatible 3D displays as well as at movie theaters, with a single pair of 3D active-shutter eyewear. The M-3DI standard will also assure consumers of comprehensive quality control in the creation of their 3D eyewear; participants in the standard-making will publish the specification of the standard and will organize quality control testing and approval procedures. The proponents of the M-3DI standard believe that this program, as an industry-wide initiative, will make a significant contribution to accelerate penetration of 3DTVs, computers and projectors. While the M-3DI standard to be licensed at this time uses infrared communication technology, radio communications will be considered for the next step. http://panasonic.net

Starz gets into 3D movies with Comcast and Verizon

Starz Entertainment is delivering 3D movies from Walt Disney Co., Pixar, and Sony Pictures Entertainment to Comcast and Verizon FiOS TV, available to those affiliates' subscribers of the premium net for no additional charge. Starz 3D On Demand currently offers "Cloudy with a Chance of Meatballs 3D", "Alice in Wonderland 3D", "G-Force 3D", and Pixar's "Toy Story 3 3D". Later this year, the service is scheduled to carry "Tangled 3D", "Tron: Legacy 3D" and "The Green Hornet 3D". It's still early in the adoption of 3DTVs, and retailers and TV manufacturers reported disappointing sales of 3D-enabled sets in 2010. But Starz believes the market will take off

at some point. Among other premium programmers, HBO debuted 3D movie content on its VOD service in January, also with Comcast and Verizon. Starz is in active discussions and testing with other affiliates, the company said. The programmer is also considering providing some of its original programming in 3D format, either natively produced or upconverted from 2D, in 2012. Starz's goal is to offer four to six VOD titles available at any point in time. Starz said it will meet encoding specifications requested by its affiliates. Currently the primary requested spec is for side-by-side 3D encoding with MPEG-2 at 18.75Mbps. In addition, Starz is making available a top/bottom version available in MPEG-4 H.264 at approximately 7 to 8Mbps. http://www.starz.com

Toshiba to launch "cinema specs" 3DTVs

Toshiba could have 40-inch+ glasses-free 3DTV sets - the ZL2 family - out in Europe by the end of the year, but specs-essential sets based on cinema-style passive technology will be on sale much sooner. Toshiba released its first glasses-free 3DTVs in Japan late last year. The top model is only 22 inches. Bigger sets, closer to familiar HDTV sizes, that make up the ZL2 line will be more desirable, but they will be premium-price products. The passive TVs come with four pairs of 3D glasses of the cinema kind; the VL series will debut in June as 42-inch and 47-inch models. They are Toshiba's first, though LG has been offering passive tellies for a while. The VL sets, unlike Toshiba's other 3D offerings, are not described by the company as "Full 3D". So while they are 1920x1080 resolution sets with 1080p support for HD content, 3D playback will 540p, as half of the vertical resolution is used for each eye's view. Toshiba said its future 3DTVs will automatically up the brightness and color characteristics during 3D playback to better cancel out the dimming effect of the specs' Polaroid lenses. http://www.toshiba.com

Mindlab tests 3D acceptability

Tests carried by the Mindlab International team, based at the Sussex Innovation Centre in Brighton, England, used EEG testing point to more attention span when 3D is used in film clips, etc. Participants watched nine film clips in total, comprising DVD, Blu-ray and 3D Blu-ray snippets. Mindlab carries out research for advertising and marketing companies who want to find out about responses to their ads and marketing material. As well as suggesting that people are more attentive and engaged while watching 3D, the study also found that the test group had a significantly more emotional response (8% more) when watching Blu-ray 3D compared to DVD. The study was commissioned by the Blu-ray Disc Association (BDA). Mindlab's Duncan Smith said: "This study has shown how format change affects the viewer on both a conscious and a subconscious level. The sharper contrast of the Blu-ray formats allows the brain to process more of what is being seen as less effort is needed to focus on certain objects." The result from the experiment also coincides with figures from Futuresource Consulting showing that 45 million Blu-ray Discs were sold in Europe in 2010 - virtually double the figure from the previous year, with the UK accounting for nearly 30% of sales. http://www.themindlab.org

Participants wired up for the Mindlab tests

Blinkx launches TV programming interface

Online video search engine Blinkx has announced a TV application programming interface, or API, for consumer electronics companies, which would bring Blinkx's index of more than 35 million hours of online video to HDTVs, set-tops and gaming consoles. The TV API can automatically filter results based on the capabilities of the device, including by supported video formats. Amino Communications, Belgacom and Miniweb are some of the companies that already have signed on to integrate the TV API into their devices. http://www.blinkx.com

LEDs and Energy Star drive flat-screen TV efficiency according to CEA

The newer your flat-screen TV is, the more energy-efficient it is, according to a study released by industry group the Consumer Electronics Association. The CEA commissioned an analysis, done by technical services company Tiax, which found a significant decrease in power consumption by flat-screen TVs from mid-decade to 2010. The average "active mode" power use of LCD flat-screen TVs in the 35-inch to 54-inch category was about 250 watts during the years 2005 to 2007, but is now closer to 100 watts, according to the study. From 2003 to 2010, the LCD power density, or wattage per square inch, fell 63% in active mode and dropped 87% in standby mode. Plasma TVs have traditionally drawn more power than LCDs, the study said, but there was improvement in efficiency over the past few years. From 2008 to 2010, the active mode power density for plasma TVs fell 41% and the standby mode fell by 85%. According to CNET's TV Energy Efficiency Guide, the average power consumption for plasma TVs is 301 watts. For a traditional LCD, it is 111 watts and 101 watts for LED-lit LCDs. Energy Star and industry competition helped propel the efficiency trend, according to the study. On a technical level, the study said that increased use of LEDs, rather than fluorescent lighting, and improvements in power electronics helped cut standby power. The CEA-commissioned study did not examine what impact 3DTVs will have on power consumption. But initial tests found that 3DTVs will consume more, with plasmas showing about double the power than when they are in 2D mode. http://news.cnet.com

NPD Group study identifies consumer hesitation to 3DTV

A new study commissioned by The NPD Group found that while people know more about 3DTV now, they are not generally any more convinced of why they need one. A year and a half into the 3DTV era kicked off by Sony and Panasonic and since joined by others, 45% of people who said they wouldn't buy a 3DTV said the reason is it is too expensive. And 42% of people said the reason they wouldn't buy one is because they don't want to wear glasses. That's an increase in both categories: just six months earlier only 37% said price was the inhibiting factor in their purchase, and 32% said wearing glasses was. But interestingly, the increase of people who were hung up on 3D glasses was larger than people who thought the TVs were too expensive. This NPD study follows a survey Nielsen conducted last fall that found, among other things, that 90% of respondents said they wouldn't want to wear glasses for 3DTV because it would hinder multitasking. The prices of the sets will eventually fall but we are still not that close to not wearing 3D glasses while watching a 3D television at home. And unlike HDTV, which went from the new must-have feature to commodity item in less than half a decade, 3DTV still doesn't feel like it is near becoming as ubiquitous as HD despite the best efforts of TV makers. http://www.npd.com

DECE announces further developments on UltraVIolet system

The Digital Entertainment Content Ecosystem (DECE) announced more details of its "buy once, play anywhere" cloud-based authentication system for digital video content. The scheme, which was dubbed "UltraViolet" last year, will allow users to purchase video content from any participating retailer and then authenticate that content on any UltraViolet-compatible device. UltraViolet will support six accounts per family, each of which can access the full set of family-owned video content, and it will support 12 unique devices per family. DECE envisions UltraViolet content being displayed on Internet-connected TVs, game consoles, smart phones, computers, Internet-connected Blu-ray players, tablets, and set-top boxes. Neustar has already created the central UltraViolet authentication registry for DECE, and a common file format along with five approved DRM schemes have also been announced (Adobe Flash Access, CMLA-OMA V2, The Marlin DRM Open Standard, Microsoft PlayReady, and Widevine). In mid-2011, UltraViolet content should go on sale both as digital downloads and in the digital copies sometimes included on DVD or Blu-ray discs. Late 2011 should see UltraViolet apps for PCs, consoles, and smart phones, with UltraViolet-specific products ready by early 2012. UltraViolet can deliver a purchased file in any of the various approved DRM "wrappers" and can do so in multiple resolutions. In addition, UltraViolet will eventually allow for streaming support as well, so that users with memory- and storage-constrained devices can instead simply stream a purchased piece of content over the Internet without needing a full download first. Apple has not joined DECE nor has it licensed FairPlay, meaning that UltraViolet videos won't play in iTunes (though they will work in third-party apps) nor will UltraViolet devices be able to play iTunes encrypted video. Disney is the other major party not on board, but Microsoft, Intel, Sony, Fox, IBM, Adobe, Best Buy, Cox, etc. are. http://www.uvvu.com

Vision Critical survey shows little 3D motivation

Most Americans, Britons and Canadians are unlikely to purchase a 3DTV in the next six months, according to a recent online poll conducted by market research firm Vision Critical. The survey of representative national samples showed "a negligible number" of respondents – 5% in America, 2% in England and 1% in Canada – have a 3D television at home. And few expressed an interest in purchasing one soon. That sentiment came with most respondents indicating awareness of the technology. Four in five respondents in the US (81%), Britain (81%) and Canada (84%) said they have heard of household consumer 3D television. After a brief description, 81% of Americans said they probably or definitely would not purchase a 3DTV in the next six months. American men are more likely (17%) to purchase than women (10%), Vision Critical said. In Canada, 95% said they would "probably% or "definitely" not purchase a 3D television in the next six months. Most of those (71 percent) fall into the "definitely would not buy" category, and respondents in British Columbia were the least likely to buy, at 98%, while 5% of those in Ontario were more open. Four in five Britons (81%) will not purchase a 3DTV in the next six months. Londoners are more likely to buy compared to those in other parts of Britain. Respondents in the Midlands and Wales are the least likely to purchase a 3DTV in the foreseeable future, according to the report. In all areas, the main reason cited for not considering a 3DTV purchase was high price. In Britain, two in five respondents (42%) think 3DTVs are too expensive; this is 39% in America and 32% in Canada. Secondarily, 31% of Britons, 28% of Canadians and 26% of Americans said wearing 3D glasses at home is inconvenient. Asked what they would be willing to pay for a 46-inch 3DTV, Americans said $753, and Canadians averaged $785. Britons said they would pay an average of $625 for a 40-inch 3D display.

"There appears to be a significant perceived lack of value with 3DTVs among consumers in all three countries," stated Matt Kleinschmit, Vision Critical senior VP. "This is not surprising given that many people may have only recently migrated to high-definition TVs, and now they are being asked yet again to upgrade to a new technology. At the same time, early adopters of plasma or LCD HD TVs discovered that there was very little HD content when they first purchased these devices, and then witnessed prices drop dramatically over the course of several years. It seems these same consumers may have learned their lesson and are sitting on the sidelines of the initial 3DTV technology wave. The inherent value proposition of these initial 3D TVs, coupled with the inconvenience of having to wear 3D glasses at home is just too much of a barrier to take the plunge." Of the small number willing to make a purchase in six months, 35% of Canadians said they would probably buy an LG, 17% said Sony and 21% would go with whichever brand has the best deal. Among US purchasers, 32% would take a Sony, 14% would take a Samsung and 16% would take the best deal. In England, 35% would go for the best deal, followed by 23% for Sony and 14% for Samsung. http://www.visioncritical.com

Japan court rules forwarding TV shows via the Internet is illegal

Japan's supreme court has ruled that a service that transfers TV programs to overseas viewers via the Internet is illegal, and sent the case back to the Intellectual Property High Court for damages to be calculated. The ruling overturned previous judgments by lower courts, which ruled that the service does not violate copyright law. Japan Broadcasting Corp. and five Tokyo-based local TV broadcasting firms sued computer company Nagano Shoten, demanding the firm's service be terminated for copyright violation and seeking damages. The service, which the supreme court judged transmission of intellectual property to the public, distributes TV programs to customers' computers via the Internet, using an image-forwarding device embedded with a TV tuner made by Sony Corp.

DisplayMate Technologies offers calibration patent

DisplayMate Technologies is offering its recent US patent 7,808,554, covering the automatic calibration of displays, HDTVs and cameras for sale. This patent is compelling to any company that sells or manufactures high quality displays, TVs, monitors, game consoles, digital and video cameras. The patent claims a method for automatically configuring, setting up, adjusting, calibrating, and controlling a display for televisions, computers, game consoles, or similar sources to obtain optimum image accuracy, brightness, color, and picture quality when connected to many different signal inputs and sources, and also for automatic digital and video camera calibration under many different settings and conditions. The method is for use in factory calibration, field service, and consumer set up. The method ensures that the viewer sees the highest quality, most accurate rendition of all images and videos, a commercial necessity now that HD televisions, monitors, digital and video cameras have pervasively entered the consumer market. The patent is being marketed for DisplayMate Technologies by Quinn Pacific. http://www.quinnpacific.com

Cisco buys digital media company Inlet

Cisco Systems announced its intent to acquire privately held Inlet Technologies, a provider of adaptive bit rate (ABR) digital media processing platforms, for $95 million in cash and retention-based incentives. Inlet will augment Cisco's new Videoscape TV platform by adapting the quality of the video stream based on real-time network conditions, Cisco says. Inlet's ABR technology is used in streaming multimedia over managed and unmanaged networks. Videoscape, announced at the recent CES show, is a TV platform for service providers that combines digital TV and online content with social media and other communications applications for home and mobile video entertainment. Cisco expects to close the acquisition in the first half of this year. Inlet employees will be added to Cisco's Service Provider Video Technology Group. http://www.cisco.com

Synerchip's DiiVA ICs power affordable home entertainment network solutions

Home entertainment network solutions provider Synerchip demonstrated Digital Interactive Interface for Video & Audio (DiiVA) devices powered by its first-to-market DiiVA 1.1 semiconductors. On display were digital televisions from manufacturing partners Hisense, Konka, LG, Skyworth and TCL — all using Synerchip's SC6010 DiiVA Receiver IC. Also featured were DiiVA reference designs from system-on-chip (SoC) partners Sigma Designs with an IPTV set-top box and media adapter and MediaTek with a Blu-ray player. Both source-device reference designs incorporate Synerchip's SC6002 DiiVA Daisy Chain Transmitter IC to deliver DiiVA functionality. Bringing all DiiVA DTVs and source devices together into a network is Synerchip's SC6040, the world's first native DiiVA matrix switch with four DiiVA input ports and two DiiVA output ports. The SC6040 is capable of switching video from any input to any output, as well as multi-casting the video to both outputs. Data, including USB and Ethernet, can be switched from any port to any other port. The SC6040 features an integrated Ethernet port as well as I2S and SPDIF outputs providing an ideal solution for AV receivers and other multimedia switching devices. http://www.synerchip.com

ACCESS and Panasonic partner to promote open platform for Internet TV services

ACCESS and Panasonic Corporation announced a partnership with the aim of promoting an open platform for Internet TV services. As part of this initiative, Panasonic will provide its Ajax-CE middleware with high-speed performance, rich multimedia expression capabilities and compact code footprint, used on its VIERA Cast/VIERA Connect Internet TV service. Based on this middleware, ACCESS will provide a platform for Internet TV services under the global brand name NetFront TV Cast to TV and set-top box (STB) manufacturers and content providers (CPs) throughout the world. With the goal of providing end users with more satisfying Internet TV services more quickly, ACCESS and Panasonic have entered into a partnership to promote an open platform for Internet TV services. By leveraging its engineering expertise and network with major TV manufacturers, established as an independent software provider, ACCESS will promote this solution as an open Internet TV services platform, based on Panasonic's Ajax-CE middleware, throughout the world. ACCESS will also drive new generations of services that operate on the platform and will provide comprehensive Internet TV services that satisfy a wide variety of end user needs on a global basis. http://www.access-company.com

SiBEAM showcases 60GHz-based WirelessHD products

SiBEAM, the provider of millimeter wave (mmWave) solutions and developer of high-speed wireless communications platforms, showcased the growing ecosystem of 60GHz-based WirelessHD products. SiBEAM also demonstrated its third generation WirelessHD technology based on the WirelessHD 1.1 specification and provided details on its roadmap focused on 60GHz solutions optimized for mobile and portable platforms. The Dell Alienware gaming laptop features SiBEAM's 60GHz-based WirelessHD chipsets. Powered by SiBEAM's chipsets, the Alienware M17x R3 effortlessly transfers wireless high definition video to the HDTV for an enhanced gaming experience. ASUS is incorporating SiBEAM's WirelessHD technology in its notebook PCs including the G73JW and the G53. Ideal for gaming, these models provide consumers with a latency-free experience and perfect video quality, free of interference from other wireless technologies. Abocom introduced the world's first WirelessHD docking stations for iPad and iPhone mobile devices, providing both a charging and wireless video transmission platform for mobile phones and tablet PCs. VIZIO showcased its new lineup of products including the XWH200 Universal WirelessHD Transmitter & Receiver Kit. The XWH200 includes a 4-port transmit adapter and separate receiver adapter that can support up to four source components connected using standard HDMI cables, thereby upgrading existing HDTVs and components. Monster launched its Digital Express product family that includes high-speed wireless HDMI adapters based on WirelessHD. These adapters offer wired equivalent connections

with zero latency, ideal for the gaming community. The products include the Monster Digital Express Wireless HDMI Kit (DX WHD1), Monster Digital Express HDMI Transmitter TX400 (DX TX 4), and Monster Digital Express Wireless HDMI Receiver RX100 (DX RX 1), thereby offering an array of options for connecting existing A/V products wirelessly. SiBEAM also announced partnerships with two leading technology and products companies, Foxconn and Nvidia. SiBEAM has entered into a cooperative partnership with Foxconn Technology Group (Hon Hai Precision Industry). The cooperation with SiBEAM will enable SiBEAM to utilize Foxconn's product testing and manufacturing strength and to access new customers for its technology. SiBEAM and Nvidia have worked together to enable SiBEAM's WirelessHD technology to operate with Nvidia GPUs when connected to an HDMI device. In addition, Nvidia and SiBEAM are working together to ensure Nvidia's 3DTV Play software works seamlessly with SiBEAM Wireless HD to allow users to enjoy 3D gaming, Blu-ray 3D, and 3D photos on an HDMI 1.4 3D TV. http://www.sibeam.com

WirelessHD ecosystem of products from SiBEAM

Samsung and Adobe bring Adobe AIR to smart TVs

Samsung Electronics and Adobe announced that Samsung's smart TV platform will be the first to integrate support for Adobe AIR 2.5 for TV, making it easy for developers to build, distribute and monetize standalone applications through Samsung's smart TV applications store, Samsung Apps. The integration of AIR for TV with Samsung's smart TV platform will create new opportunities for a growing community of more than three million Adobe Flash Platform developers who can use Adobe Creative Suite 5 to author content for AIR for TV. All of Samsung's 2011 Smart TVs and Smart Blu-ray players will include support for Adobe AIR for TV. Samsung also announced plans to bring Adobe Flash Player 10.1 to its Smart TV browser, extending the company's current support for Flash Player 10.1 on Samsung smart phones and tablets. With the addition of Flash Player 10.1, users will enjoy a more complete web browsing experience on the TV, with access to millions of websites with rich videos, games and other multimedia content. With Samsung's Smart TV platform and Adobe AIR for TV, developers are able to leverage existing code to create and deliver standalone applications across devices and platforms. The Samsung Smart TV platform was built with the developer in mind, enabling content creators to develop applications on an open platform, using common web standards like Javascript and XML and now support for Adobe AIR. The platform uses a single Software Developer Kit (SDK) for apps that runs across HDTVs, Blu-ray players and Blu-ray Home Theater systems. http://www.adobe.com/devnet/devices/flash_platform_tv.html

Veebeam wirelessly transmits computer content to TVs

A new Veebeam device comes in both standard and high definition varieties, and is made up of a wireless USB antenna that's connected to a laptop or computer and a receiver box that's hooked up to an HDTV. The system is said to be capable of wirelessly playing any content from one to the other, whether it's online movies, sports or news updates, digital photos or holiday videos. Veebeam is described by its creators as being content agnostic, meaning that it will wirelessly stream anything from your laptop or computer to your TV. Rather than use a set-top box or bottlenecking an already overworked wireless home network, the Veebeam system creates a point-to-point, 150Mb/s wireless connection between the USB antenna and the receiver unit. The receiver is plugged into the television and incorporates ST Microelectronics' HD decoding IC running Wyplay's embedded digital media renderer software. Users can choose between the screencasting mode, that offers the best experience for viewing photos or websites, and the higher-quality Play-To mode, which allows for multi-tasking as well as benefiting from the highest video output. There are two varieties on offer – the Veebeam SD edition costs $99 and has an output resolution of 480i and Dolby Digital audio, and the Veebeam HD variety at $139, which has the same composite A/V outputs as its sibling but also includes full 1080p resolution output via HDMI port, optical audio output and a couple of USB ports. http://www.veebeam.com

The Veebeam USB antenna connected to a laptop playing a HD movie; The Veebeam laptop-to-TV content streamer

Sears launches movie download service

Sears Holdings Inc. formally launched a movie download service that allows consumers (including subsidiary Kmart) to buy and rent new release movies and television shows. Called Alphaline Entertainment, the previously announced service is offering new releases such as "The American" (with George Clooney), "The Town", "Devil", "Easy A", and "Legends of the Guardians", among others, for $3.99 for up to two-day rental periods. Movies can be purchased for $19.99 and played on up to five different PCs. A title can be transferred to no more than four RoxioNow-approved portable devices. The service, which is powered by Sonic Solutions' RoxioNow technology, also offers episodic purchases ($1.99) of TV series like "Mad Men," "Sanctuary," "Chuck," "Fringe," "Running Wilde," "Hellcats," "Chase," "Fringe," "The Closer" and "Two and a Half Men," among others. Sonic and Sears are also working to embed Alphaline at a chip level on a growing network of devices, including portable media players, Blu-ray Disc players, mobile phones and high-definition television sets from leading manufacturers. http://alphaline.roxionow.com

LG Electronics and Synerchip announce broad DiiVA collaboration

LG Electronics and Synerchip announced a wide-ranging collaboration to bring Digital Interactive Interface for Video & Audio (DiiVA) functionality to market in a broad array of advanced TVs and other consumer electronics devices. The parties will work together to develop and promote a home entertainment architecture made possible by DiiVA that features a consistent and personalized user experience across multiple CE platforms to drive "N-screen" convergence. Synerchip will focus on standardization of DiiVA middleware and associated API to enable content acquisition, management and control leading to a personalized viewing experience, as well as supporting development of content-based navigation and control apps that drive N-screen convergence. In return, LG will implement DiiVA across multiple device categories and collaborate with Synerchip on developing new DiiVA-enabled features for next-generation CE products. Finally, the parties intend to collaborate on advancing DiiVA standards for future products as well as jointly promoting DiiVA to key ecosystem partners, including major motion picture and TV media companies, PayTV operators, service providers and wireless carriers as a key enabler of the next-generation home entertainment architecture. http://www.lg.com http://www.synerchip.com

Celeno's video over Wi-Fi chosen by Technicolor for all-in-one digital home platform

Celeno Communications announced that the Technicolor MediaEncore all-in-one digital home platform will utilize Celeno's dual concurrent band video-grade Wi-Fi solution. Celeno's carrier-grade Wi-Fi solution enables triple-play networks across the home for instantaneous wireless multimedia applications. These include HD pay-IPTV content streaming, OTT video distribution, VoIP, multi-player gaming, Internet surfing, and others using both the uncongested 5GHz frequency and the 2.4GHz frequency concurrently while maintaining QoS and high performance. Converging legacy pay TV and new OTT internet-based video content over a single IP infrastructure will enhance the user experience by providing easy access to any type of content from a single location and from a single user interface. It will also allow for a cost-effective home distribution infrastructure. Celeno's field-proven OptimizAIR technology is now harnessed to deliver a single hardware and software package to achieve best-in-class video over Wi-Fi performance while maintaining coherent quality of service and manageability across both 2.4GHz and 5GHz networks. It supports implicit beam forming and real time antenna diversity techniques to achieve HD performance to portable displays such as smart phones, laptops and tablets. A special networking software layer provides an easy support for media sharing and seamless home connectivity between the two networks. The hardware SoC-based module is architected with a single RGMII interface and completely offloads the host from any Wi-Fi processing, freeing up resources to focus on user applications. http://www.celeno.com

Cavium unveils WiVu for home media distribution and wireless display for consumer markets

Cavium Networks unveiled its comprehensive solution for home media distribution and wireless display applications. Known as WiVu, Cavium's solution is designed to enable multi-room and interactive content distribution and access via any network at home, both wired and wireless, on a wide range of CE devices. There are two fundamental differentiations that make WiVu unique. First is Cavium's PureVu high performance video processors that use patented technology for low latency compression and robust, high fidelity media transmission. Second is the solution's full alignment with major consumer industry trends, leveraging popular video processing and network connectivity technologies, such as H.264 and 802.11 Wi-Fi, which are already getting integrated into a wide range of CE devices. There is no need for integrating new radios, creating proprietary compression schemes, or forming new alliances. Cavium's WiVu leverages the latest notebook technologies such as embedded DisplayPort and Display Mini-Card (DMC) Key Components of WiVu. Cavium's WiVu solution is designed to target a wide range of CE devices and consumer applications. The current implementations of the PureVu processors already enable OEMs to incorporate WiVu into many devices including DMC module for notebook and desktop PC, flat panel TVs and monitors, portable displays, Blu-ray/DVD players, A/V receivers, STB, tablet and smart phone docking stations, virtual desktop, and stand-alone transmit and receive adapters for legacy CE devices. Cavium has also developed a series of full hardware and software reference platforms to enable its partners and customers to build WiVu based solutions quickly, and to build differentiated products for their target market segments. Cost optimized, turn-key reference designs are available for the DMC module, as well as stand-alone transmit and receive adapters. Cavium's ODM partners have been using the associated design files to implement their own prototypes for promotion to their OEM customers. http://www.caviumnetworks.com

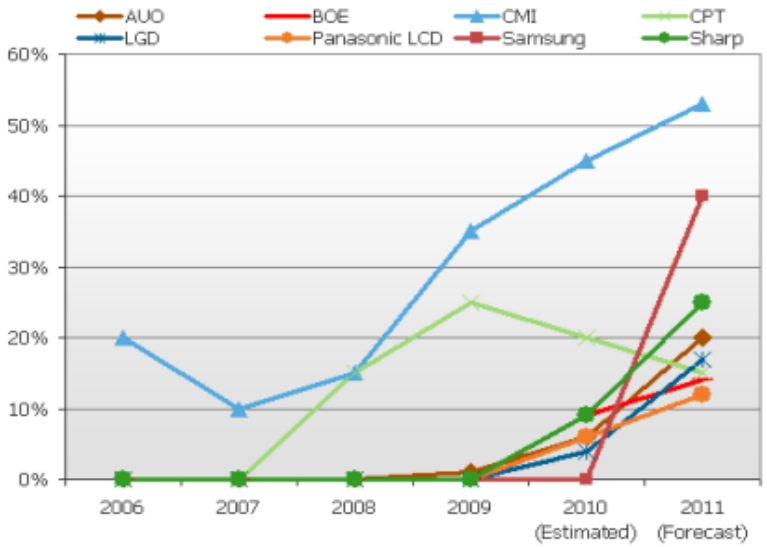
DigiTimes analysis says LCD TV market may reach 210 million units in 2011

Through continued falling prices and demand from emerging markets, the LCD TV market is expected to reach over 210 million units in 2011, up from 180 million units in 2010, reports DigiTimes. Samsung Electronics remains as the leading vendor with 35 million LCD TVs and almost 40 million flat panel units with plasma TVs included in 2010, while LG Electronics followed with 25 million LCD TVs. Samsung aims to ship 45 million LCD TVs in 2011, while LG aims to ship 35 million units. For Japan-based vendors, Toshiba exceeded Sharp becoming the second largest Japan-based vendor, while Sony remained top in 2010. Toshiba is expected to ship almost 13 million LCD TVs in 2010 through its strategy of controlling prices, channels and OEMs, while Sharp is expected to ship around 12 million units. Looking into 2011, despite doubts for the overall Europe and US economies, LCD TV shipments are expected to reach 210 million units in 2011 due to demand for LCD TVs from emerging markets, as well as new technologies such as Internet TV and 3DTV. Through orders from Philips, Toshiba, China-based vendors and channel vendors, TPV Technology will remain the leading OEM for LCD TV in 2011 with over 20 million shipments, while shipments from other OEM players such as Foxconn Electronics (Hon Hai Precision Industry), Compal Electronics and Wistron are also expected to continue to increase due to orders from vendors. Foxconn is expected to follow in second with 15-18 million units in shipments. With Sony gearing up for the competition in

2011 and aiming to ship around 35 million units, Wistron is expected to benefit as Sony may release more mid-range to entry-level models for outsourcing. Compal is expected to benefit from the rising outsource orders from Toshiba, while BriView Electronics reportedly landed small volume orders from Panasonic, in addition to its existing orders from Toshiba. http://www.digitimes.com

Shipments of cell-type LCD TV panels forecast to increase 30% in 2011 according to DisplaySearch

In an effort to meet growing customer demand, LCD panel manufacturers are planning to grow their cell businesses 30% in 2011 to support the increasing needs of their TV manufacturer customers, according to the DisplaySearch *Quarterly LCD TV Value Chain Report*. In the cell business model, TFT LCD panel makers provide only the liquid crystal cell – which includes the TFT and color filter glass substrates, as well as liquid crystal with timing controller and driver ICs, but not the backlight module or additional optical films – to the set manufacturer, who completes the module as they build the TV set. This business model allows for more flexibility in panel production, and also enables set makers to customize their designs and add more value. The DisplaySearch 2011 forecast for the cell business indicates that ChiMei Innolux will lead the cell market, achieving 50%+ of cell shipments, with their major customers being Chinese TV brands. Samsung plans to target around 40% of its cells shipments for its internal TV division. Other panel makers also plan to increase cell shipments 10-20% in 2011. In addition, some OEMs and TV brands plan to leverage Backlight Module System (BMS) assembly in an effort to reduce the overall cost of production. http://www.displaysearch.com



Cell shipment forecast

Analysis in the DisplaySearch *Quarterly LCD TV Value Chain Report* includes other observations of LCD TV value chain dynamics:

- The share of LCD TVs outsourced reached a record high of 34% in Q3'10, as Sony and LGE increased their outsourcing ratio to more than 50% and 20%, respectively.
- Among OEM shipments in Q3'10, excluding TV manufacturers, TPV ranked #1 with a 23% share, followed by Foxconn/ChiMei Innolux at 15% and Vestel at 13%. Taiwanese OEMs (Compal, Wistron, and AmTran/Rakern) each have shares of about 8-9%.
- In 2011, the top three panel makers, Samsung, LG Display, and ChiMei Innolux, will be aggressive with their plan to ship more than 60 million units of LCD TV panels. In total, LCD TV panel makers plan to ship more than 270 million units in 2011.
- Sales targets for the top seven Chinese TV brands for 2011 total 60 million units. Although Chinese brands report little excitement in the China TV market, their aggregate shipment plans show 33% Y/Y unit growth on average in 2011.

In-Stat reports that the installed base of Smart TV devices to reach over 230 million by 2014

The global installed base of web-enabled stationary consumer electronics (CE) devices is growing rapidly and includes a wide variety of devices. Typically, web-enabled CE devices can execute widgets, small software application programs that directly access an online portal, such as Netflix, Amazon VOD, Pandora, or YouTube. The development and use of smart TV applications are expected to proliferate over the next five years and, as a result, web-enabled CE device shipments are expected to grow 6-fold, surpassing 230 million installed units by 2014, the majority of these in North America and Europe, says In-Stat. In 2014, nearly 70% of DTVs shipped will be network-enabled devices, although many will not be web-enabled. The popularity of the over-the-top (OTT) video is creating interest in enhancing the IP video capabilities of cable, satellite and IPTV set top boxes (STBs). The vast majority of Blu-ray disc players and recorders shipped will be both network-enabled and web-enabled devices. http://www.in-stat.com

Computers hooking up to Internet on TVs according to SideReel

According to SideReel, an independent Web TV destination with a base of more than 10 million monthly unique users, 40% of respondents had connected their computer to their TV in the past month, a three-fold increase over last year's results. 60% of people connecting a device to a TV connect their computer, and 5% use a box like Roku, Boxee or Google TV. The survey was conducted to identify usage patterns in the areas of social media, Web TV, and the use of connected devices. The average user age in 2009 was 26, and in the 2010 results, 29, but the report notes that there is no correlation between age and time spent watching online.

Average TV User Age (Winter 2010)		
Age Group	***2010***	***2009***
18-34	68%	80%
8-24	44	60

Time Spent Watching Online TV	
Watch/Week	***% of Respondents***
> 5 Hours	78%
5-20 Hours	54

Social Media is important, but only for 25% of online TV watchers. While 29% used Twitter, none of the check-in services including GetGlue, Miso, Clicker or Foursquare have significant usage among SideReel's TV watchers. Only 10% of users want to broadcast what they are watching or want to watch to their friends. Only 25% of SideReelers want to know what their friends are watching - down 50% from last year. 24% of SideReel visitors subscribe to Netflix. 70 % of users who stream video via the Internet to their TV do so using Netflix. 30% of users stream video other than Netflix to their TVs. Users who watch more than 10 hours per week are less likely to have cable than users who watch less than 10 hours online - these are likely tomorrow's cord cutters, or cord trimmers. 72% of SideReel users watch more than five hours of TV online per week. 30% of SideReel users own an iOS device. 16% own an Android device. More than 5% of SideReel users have an iPad – impressive for a new device. http://www.sidereel.com

Ownership of Mobile Devices (SideReel Users)	
Device	***% of Respondents Owning***
iPhone	30%
iPod Touch	22
iPod	5
Android	16

Amazon.com introduces a Netflix-style online video-streaming service

Amazon.com introduced a Netflix-style online video-streaming service promoting 5,000 movies and TV shows as part of its $79-a-year Amazon Prime program. Besides free two-day shipping and cheap overnight deliveries, Amazon Prime members now can catch blockbusters for no additional charge. But it remains to be seen if Amazon's new offering will give it an edge against Netflix, the nation's #1 video-streaming service. Amazon already rents and sells digital versions of movies and TV shows on an *à la carte* basis. Netflix has more than 20 million subscribers in the United States and Canada. While the company does not say how many titles it has available for streaming, the number is believed to be four times as big as Amazon's. For $7.99 a month (or $95.88 a year), Netflix subscribers can stream movies and TV shows to their computers, smart phones, tablets and Internet-connected TVs. For an additional $2 a month, Netflix throws in one by-mail DVD at a time. Amazon's pay-as-you-go service, with 90,000 movies and TV shows, offers a broader array of titles. http://www.amazon.cpm

Philips ramps up its pull-out from television business

Philips continues to wind up its television business according to Reuters and Bloomberg. Frans van Houten, a "restructuring expert" and newly appointed CEO of Philips, has implemented a plan to hand over control of the Philips' TV business to TPV, a Hong Kong-based monitor maker that controls 33% of the global computer monitor market. The joint venture grants TPV control of the business, with a 70% ownership stake. Philips will claim the remainder, but it has the option to sell out. According to Bloomberg, it will receive royalty payments from TPV of at least $72 million annually starting in 2013. The deal is an effort to boost the Dutch company profits. Philips lost €87 million euros in the first quarter from its TVs, which it first manufactured in 1928. The value of the deal has not been disclosed, but all 3,600 Philips employees who currently work in the TV business will be transferred to Hong Kong. Philips sold a majority stake in PC monitors to TPV for $358 million in 2004. The deal accelerates Philips' focus on a few key industries: lighting, health-care products, and smaller consumer electronics such as toothbrushes and electric shavers. Philips was one of the last surviving mass-market European television manufacturers -- a niche now dominated by Germany's Loewe AG and Denmark's Bang & Olufsen AS. Philips struggled to compete with Asian manufacturers such as Samsung and LG Electronics. http://www.philips.com

Nielsen to fix iPad blind spot in TV ratings

The Nielsen Co. expects to start tracking consumer video viewing on iPads by the end of this year or into the early part of 2012, filling a gap that's appeared as MSOs start to create apps that let authenticated customers view live TV on the popular Apple tablet. But even when Nielsen starts to track that, the results are expected to have a minimal effect on ratings because, for now, it only applies to consumers who have purchased tablets and live in markets where cable operators support that capability. The plan, he said, is to bring to the iPad Nielsen's "extended screen model" that's already being used to measure broadband video delivered to PCs and Macs. That will fix an iPad blind spot that has some programmers concerned that they will be penalized if they don't get credit for tablet-based viewing. Just two US MSOs – Time Warner Cable Inc. and Cablevision Systems Corp. – have launched iPad apps that let customers deliver live TV channels to iPads so long as they are accessing that programming from in their homes. http://www.nielsen.com

IMS Research reports US IPTV will see steady growth through 2015

The US IPTV market could see more than 20% compound annual growth rate through 2015, according to IMS Research, whose analysis also suggests that pay TV cord-cutting will have a minimal effect on the video service provider market in the coming years. The research firm said that IPTV CAGR will run about 20.1% from the end of 2010 to 2015, while digital satellite TV comes in around 2.5%. Also, while cable TV operators are expected to lose 2.75 million subscribers during that stretch, they may pick up about 7.8 million digital cable customers. Cutting the pay TV cord for over-the-top video services could be difficult to predict, as the possibility remains that some customers who have cut the cord could actually return to pay TV in the future, especially if pricing changes occur, IMS Research said. After pay TV cord-cutting became a much-debated issue last year, more recently, industry research has tended to question both its immediate and long-term effect. Also, while much has been made in recent days of Netflix nearing the top of the market heap in terms of number of video subscribers, IMS pointed out that cable TV players such as Comcast continue to deliver far higher monthly average revenue per user. For example, while Netflix reported ARPU of $12.19 for the first quarter, that figure is nowhere near Comcast's fourth quarter 2010 ARPU of more than $133. http://www.imsresearch.com

Dish Network completes purchase of Blockbuster

Dish Network has completed its $320 million acquisition of Blockbuster. Earlier, Dish had beaten billionaire investor Carl Icahn and Cobalt Video, a consortium of lenders, for the bankrupt video chain's assets. Blockbuster filed for Chapter 11 last fall, after struggling under nearly $1 billion in debt for much of the past year. It listed the major studios as its unsecured creditors. It put itself up for sale in February after it was unable to agree to a recapitalization plan with its creditors. http://www.dishnetwork.com

Sharp receives Energy Star award

Sharp has been selected to receive a 2011 Excellence in Energy Efficient Product Design Award from the US Environmental Protection Agency's (EPA) Energy Star program. The award recognizes Sharp for its "ongoing commitment to promoting energy efficiency amongst the consumer electronics and business products' trade and consumers, as well as the company's efforts to lead by example in the execution of its business operations." Each year, the US EPA and the US Department of Energy (DOE) honor organizations that have made outstanding contributions to protecting the environment through supporting and promoting energy efficiency. "The ideals upheld by the Energy Star program are consistent with those of our corporate vision to contribute to the world through environmentally-friendly and health-conscious business, focusing on energy-saving and energy-creating products," said Bob Scaglione, Sharp chief marketing officer. "Our efforts in this area are diverse and go far beyond the products we manufacture. This is demonstrated through our recent enhancements to our manufacturing facilities to reduce energy use, our comprehensive renewable energy program for elementary school students, our free nationwide Sharp TV and printer cartridge recycling program for consumers and many other initiatives." In 2010, Sharp offered Energy Star qualified products in nine categories: room air conditioners, air purifiers, fax machines, audio products, Blu-ray Disc players, copiers, printers and multifunction devices. Sharp's Aquos Quattron televisions, with Quad Pixel Technology, are said to produce energy efficiency as high as 67% above Energy Star standards and as much as 65% above the current LCD CFL models. In 2010, 51 of Sharp's LCD TV models were Energy Star qualified, as well as all of its Blu-ray Disc players. For the first time, Sharp introduced Energy Star qualified professional monitors, including its PN-E series, PN-V601 video wall monitor and PN-L601B touch-screen monitor. http://www.sharp.com

W3C says Internet TV needs standards

The World Wide Web Consortium (W3C), the official standards organization of the Web, has issued a report on the transition of TV to a service, identifying several points that need to be addressed for Internet TV to become a widely available, open, cross-platform service. In February, the organization held a Web and TV Workshop in which 77 organizations including broadcasters, telecom companies, cable operators, OTT (over the top) companies, content providers, device vendors, software vendors, Web application providers, researchers, governments, and standardization organizations active in the TV space discussed the future of television as a service. The report identifies the W3C's proposed Open Web Platform as one solution for application development, in that it gives designers cross-platform interoperability. According to the report, the conversation arrived at a number of "convergence priorities". Among these priorities are adaptive streaming, or keeping a steady stream of video despite changing bandwidth, home networking, the role of metadata and Semantic Web technology, and even the possible extension of HTML5 for television. At the moment, devices and services often compete on content offerings rather than functionality. This will change with time, however. As television evolves further into a service, people will expect the service to be available on a variety of devices, and to connect smoothly with other favorite services, including social networking and shopping. As the number and diversity of devices grows (across multiple industries), interoperability challenges will also grow. W3C's proposed Open Web Platform would offer standardized ways to handle issues that are currently proprietary and platform specific. Issues with Digital Rights Management (DRM), for example, prohibits Android users from getting Netflix. Proposals for metadata and Semantic Web solutions, for example, could make interoperable solutions between different software solutions possible. http://www.w3.org

TAOS display management solutions recognized for energy conservation benefits

Texas Advanced Optoelectronic Solutions (TAOS) has been selected by a sustainable solutions television show to showcase its green efforts and success with improving product performance while simultaneously reducing energy consumption. TAOS was featured in the "Energy Solutions" series of "Going Green" in March and April. The demand and production of flat panel displays found in high-tech electronic products is rapidly growing because they have an impact on the end-user experience through mobile phones, tablets and TVs. Flat panel displays have the highest power consumption within the total system therefore there is an increased focus on utilizing power-saving technologies and eco-friendly components in their design and manufacture. TAOS's ambient light-sensing technology is used by global customers in their pursuit for reduction in energy consumption in consumer products like Sony VAIO laptops and VIZIO HDTVs. The digital ambient light sensors used in these products automatically adjust the display brightness based on the lighting conditions, reducing the overall system power consumption by as much as 30%. http://www.taosinc.com

HDBaseT Alliance announces new members

The HDBaseT Alliance announced the addition of 23 companies to its membership base. Founded by LG Electronics, Samsung, Sony Pictures Entertainment and Valens Semiconductor, the HDBaseT Alliance has experienced notable growth since its incorporation in June 2010. Together with the founding board members, a variety of consumer and commercial industry market leaders have joined the alliance. Contributor members are Bel Stewart Connector, Extron Electronics, Microsemi, Pulse Electronics, Quantum Data, Silver Telecom, and Tyco Electronics. Adopter members are Creston Electronics, CWIN Technology, Elka International, Gefen, Grandbeing Technology, Hank Electronics, Himax Technologies, Intersil Corporation, Kordz, Lastar, Legrand/Ortronics, MiniFrame, Smart Home Engineering Corp (SHE), SURE-FIRE Electrical Corporation, Transformative Engineering, and Vaux Electronics. HDBaseT is the first connectivity solution to deliver all-in-one, HD multimedia connectivity using an existing cable and connector. Using a 100m/328ft, Cat5e/6 LAN cable with standard RJ-45 connectors, already installed in many homes, HDBaseT simultaneously sends the 5Play feature set – full HD video, audio, Internet, power (100W) and controls – throughout the home or commercial setting. Development and preparation for an HDBaseT Alliance Compliance Program is currently underway. In the coming months, the Alliance will formulate a logo program to ensure consistency and consumers' ability to recognize interoperable HDBaseT devices. http://www.HDBaseT.org

Mirics chipset supports all terrestrial and cable TV standards globally

Mirics announced a chipset that supports all terrestrial and cable TV standards deployed globally, making it possible for tablet, notebook and desktop computers to receive content wherever there is a broadcast signal. The FlexiTV MSi3113 – which is Mirics' second-generation chipset – surpasses the size and power consumption benchmarks set by its predecessor, at lower cost, making standard and high definition broadcast reception accessible to a wider audience. Designed for use with Mirics' FlexiTV processor-efficient software demodulator algorithms, the MSi3113 chipset consists of the MSi003 multi-standard RF tuner chip and the MSi2501 USB bridge chip. Each is supplied in an ultra compact 5x5mm package. This small footprint makes the chipset extremely well-suited to integration on the main board of a tablet PC or motherboard of a notebook PC. In addition to support for the full range of worldwide terrestrial and cable TV standards, MSi3113 is also suitable for all mainstream digital radio standards, including DAB, DAB+, DMB and HD Radio, and can deliver FM signals. It incorporates an infrared remote control capability. http://www.mirics.com

Brightcove and LG Electronics partner to expand online video distribution to the living room

Brightcove and LG Electronics announced a partnership to expand online video distribution to LG NetCast-based smart TVs. The partnership enables more than 2,700 Brightcove customers around the world to extend the reach of their online video initiatives to the living room and provides consumers with new levels of choice and control through access to a range of highly popular video content. The LG Smart TV platform provides media companies and brand marketers with an opportunity to deliver programming to the living room with control over user experience, programming and important business operations, such as advertising and analytics. Through this partnership, Brightcove and LG will make it easy for Brightcove customers to publish and distribute their video content to the LG Smart TV platform while also giving non-traditional television programmers an easy route to the living room television. Later this year, Brightcove will introduce a series of tools and support resources to help organizations take advantage of the LG Smart TV platform, including a functionally complete reference application to give customers an advanced starting point for creating immersive LG Smart TV video viewing experiences. http://www.brightcove.com http://www.lgusa.com

Beijing pressures Sharp to upgrade Chinese LCD TV panel factory to Gen 10

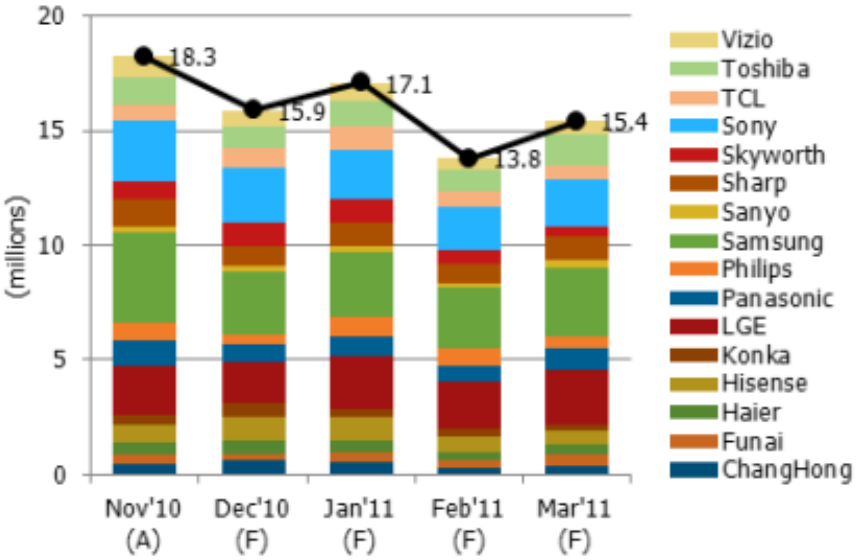
Having approved Samsung's and LG's requests to build cutting-edge LCD manufacturing plants in China last year, the Chinese government is having some reservations about giving the go-ahead to a similar application from Sharp Corporation, the Japanese national newspaper *Yomiuri Shimbun* has reported. This is due to the Osaka-headquartered TV maker's reluctance to disclose sensitive details on its latest technologies to Chinese organizations, for fear of intellectual property (IP) theft and the effect on the output of its own Sakai factory. Sharp had initially intended to construct an eight-generation (Gen 8) LCD panel factory in Nanjing, but *Yomiuri*'s sources have revealed that Beijing is applying pressure on the Japanese HDTV manufacturer to deploy its tenth-generation (G10) LCD display technology instead in China. With each progressive generation of LCD manufacturing plant, larger sheets of "mother glass" (from which a number of panels are cut) can be handled, therefore boosting production efficiency. Eight 46-inch LCD TV panels can be made from a G8 mother glass, whereas a G10 sheet – boasting a total surface area of 8.7m2 – can be divided into eight 60-inch panels. http://www.yomiuri.co.jp

Horowitz Associates reports non-traditional TV viewing is surging

Media researcher Horowitz Associates says 31% of city consumers watch TV content on computer/laptops, mobile devices or tablets, or streamed from the Internet to the TV through so-called "over the top" devices, such as Apple TV, Xbox or Blu-ray DVD players. Horowitz says those who use alternative platforms for TV spend, on average, 15% of their video time on platforms other than traditional TV in addition to time spent viewing other traditional digital TV platforms: DVRs and video-on-demand services. Looking specifically at individual multicultural urban consumers, the new study says 41% of Asians watch TV content on alternative platforms at least weekly; 37% for Latinos; and 36% for blacks. This is versus 25% for whites. US viewers' share of video-enabled mobile devices, such as smart phones, tablets and gaming devices, increased to 46% in 2011 from 35% in 2010. It says "self-reported" weekly viewership of TV content on mobile devices has increased to 10% in 2011 from 4% in 2010. Weekly mobile TV viewing is highest among blacks and Latino consumers, 14%, compared to whites at 7%, and Asians at 5%. http://www.horowitzassociates.com

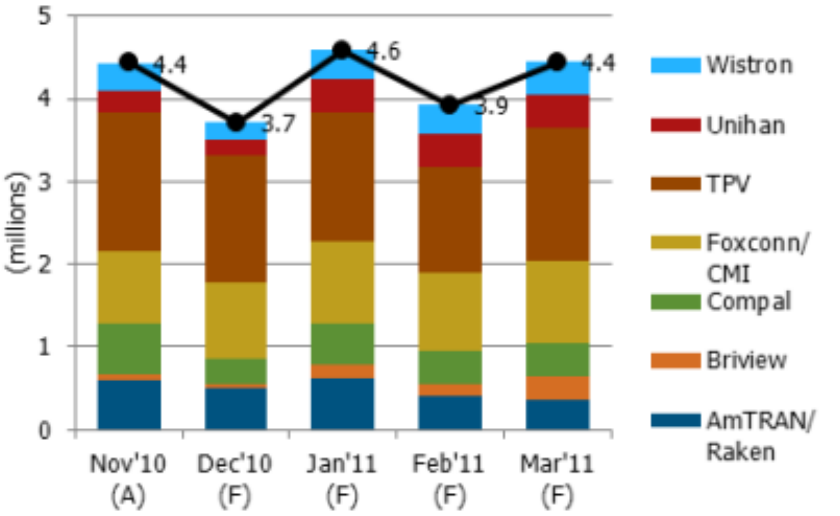
DisplaySearch reports that LCD TV brands adjust production downward in Q1'11

The LCD TV industry looked forward to reduced inventories as a result of strong sales in Q4'10, and based on that, had started to plan for a strong 2011. However, results from the newly published DisplaySearch *MarketWise – LCD Industry Dynamics* report indicates that the major LCD TV brands have adjusted their Q1'11 production plans downward. The top 16 LCD TV brands, including global brands, such as Samsung and regional players like Konka in China, have reduced their combined monthly production plan from 18.3 million in November 2010 to 15.4 million units in March 2011 (Figure 1). Overall, Q1'11 production is forecast to be 46.3 million units, a 12% Q/Q decline from Q4'10.



Top 16 LCD TV Brands Monthly Production Plan

Despite the cautious stance of the TV brands, LCD TV sub-contract manufacturing (OEM/ODM) companies are increasing their monthly shipments from December 2010 to March 2011. This indicates that TV brands are increasing outsourcing manufacturing to OEM/ODM companies, which is driven by cost management, logistics, manufacturing scale, and in some cases, access to panel supply.



Major LCD TV OEM/ODM's Monthly Shipment Plan

The report also includes other observations about LCD industry dynamics:

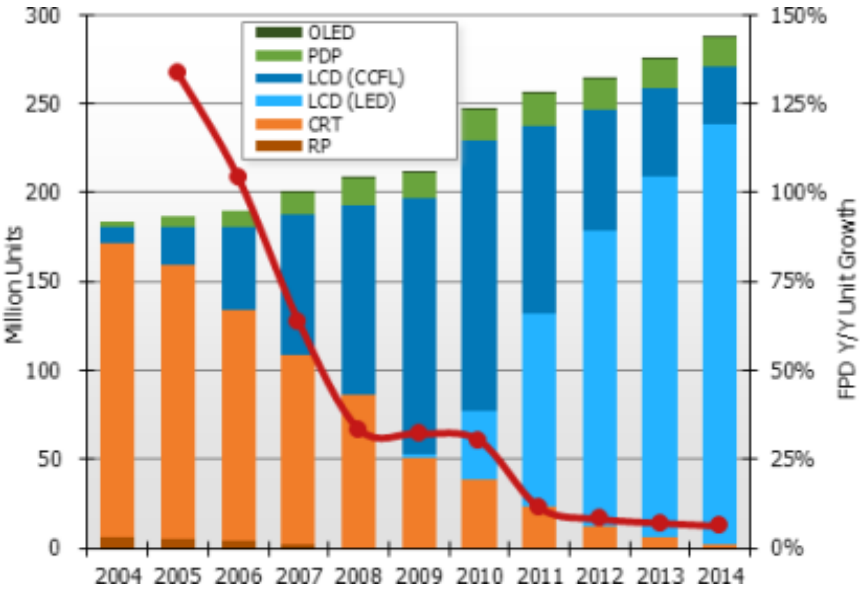
- The supply of key TFT LCD panel components, such as glass substrates, color filters, polarizers, LED and light guide plates, is generally in balance in Q1'11.
- January large-area TFT LCD panel shipments will fall 2% from December 2010, due to adjustments in capacity utilization rates, and decline a further 7% M/M in February due to fewer working days in China. However, panel makers expect a big jump in March, with shipments passing 60 million units.
- Panel inventories at the top five TFT LCD makers (Samsung, LG Display, AUO, ChiMei Innolux, and CPT), fell to safe levels at the end of 2010.
- TFT LCD makers will reduce their utilization rates in January and February, but expect to be over 90% on a global scale by March.
- The top ten LCD monitor OEMs plan to increase their production in January by 4.3% M/M, to more than 14 million units. However, they plan to reduce February and March production to just over 12 million units.
- LCD TV panel shipments to China were 5.1 million units in November, and fell to 5.0 million units in December. DisplaySearch forecasts shipments will continue to fall to 4.6 million in January and 3.2 million units in February. http://www.displaysearch.com

DisplaySearch reports global LCD TV market grows 31% in 2010, slowing to 13% in 2011

According to the latest DisplaySearch Quarterly Advanced Global TV Shipment and Forecast Report, total TV shipments in 2010 will reach more than 247 million units, a staggering 17% increase from 2009 and the best growth seen since the start of the flat panel TV transition. This comes despite a very slow recovery from the Great Recession of 2008-2009, and weakness in regions like North America reflecting continued caution on the part of some developed market consumers. Innovations like 3D were introduced to capture consumers' attention and drive strong growth in 2010, but sales of 3DTVs will likely disappoint many brands and retailers at around 3 million units worldwide. "North America continues to be a tough market for TV sales, with total TV shipments rising just 0.4% year over year through the first three quarters of 2010," noted Paul Gagnon, Director of North America TV Research for DisplaySearch. "As unemployment remains high and consumers remain sensitive to price, budget-conscious consumers have been surprised by limited price declines, partially influenced by a much stronger mix of advanced TV technologies introduced this year like LED backlights, 3D, and Internet connectivity which offset any price declines," continued Gagnon. Average TV prices in North America are only expected to fall 6% Y/Y in 2010 compared with a 22% decline in 2009.

LCD continues to dominate TV shipments worldwide, accounting for at least half of all TV shipments in all regions except Asia Pacific. Even with the strong demand growth for LCD TVs worldwide, shipments have been lower than manufacturers expected, and the resulting rise in global LCD TV inventory during Q3'10 has led to more vigorous price erosion during Q4'10. LCD TV shipments will rise from 190 million in 2010 to 215 million in 2011, although an increase in the rate of ASP erosion will lead to the first ever revenue decline in the LCD TV category. Japan has been a spotlight market for LCD TV growth in 2010, with LCD TV shipments forecast at 22.6 million units, an increase of 80% from 2009 due to the Eco-Points stimulus program. That program will end in 2011, so shipments are expected to fall sharply. European shipments have been fairly robust in 2010, but growth will fall from double to single-digit rates over the next few years. Also a first in 2011, emerging regions will overtake the developed regions (Japan, North America, and Western Europe) in total LCD TV unit volume as the growth focus shifts to countries with lower flat panel TV penetration.

LED backlights have been a key trend for LCD TVs in 2010, and their penetration into LCD TV shipments will rise to 20% globally due to more attractive pricing, especially in the second half of the year. In 2011, LED-backlit models are expected to account for the majority of LCD TV shipments worldwide as manufacturers continue to transition away from fluorescent backlights. This is possible due to the rapidly decreases in the premium for LED models from highs of 100% during 1H'10, to less than 50% in 2011; for some sizes and frame rates it will fall to nearly 20%. Plasma TV demand continues to be very robust in 2010, helped by the fact that consumers are still looking for strong value and plasma TV has maintained its rate of price decline. Plasma TV shipments are now expected to exceed 18 million units in 2010, a 28% increase from 2009, when shipments actually declined Y/Y. http://www.displaysearch.com



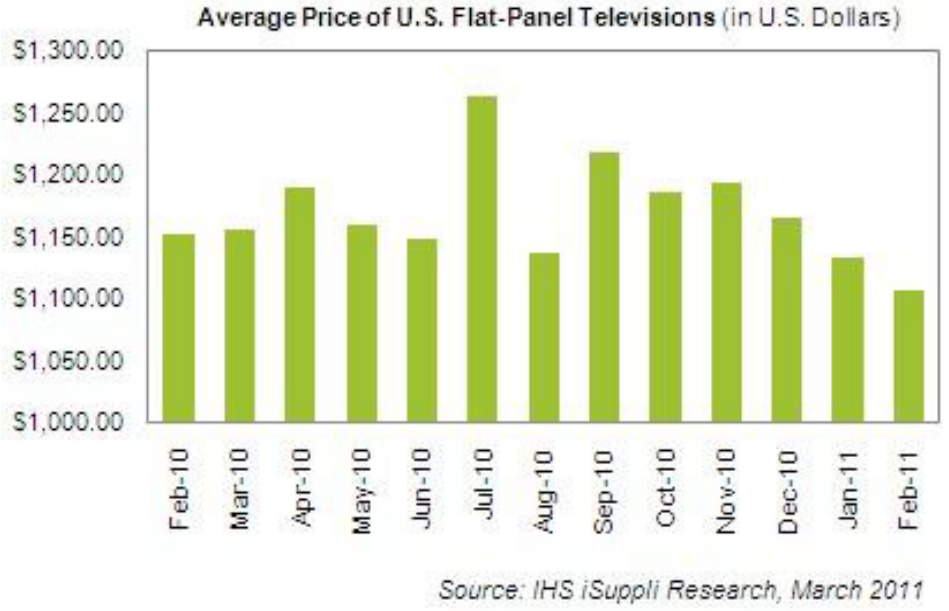
Worldwide TV market by technology

US television prices decline to make way for new models, reports iSuppli

Pricing for flat-panel televisions in the United States fell for a third consecutive month in February as manufacturers sought to clear old inventory and make room for new 2011 models, according to the latest IHS iSuppli research. Average US TV pricing in the month of February dropped to $1,108, down 2.3% from the January level of $1,134, with the biggest percentage decrease occurring in sets sized 21-29 inches and in those larger than 50 inches. February's pricing also was 3.7% down from $1,151 during the same month a year ago,

continuing a trend that started in December 2010, a month after TV prices shot up and temporarily reversed a long course of steady decline. TV brands also are building on a strategy to widen their pool of offerings to further draw in shoppers. Consumers now have more choices – from models providing the latest premium features such as 3D, Internet connectivity and LED backlighting, to sets in which advanced features have been left out or scaled back in exchange for a lower price. For LCD TVs overall, pricing fell on every size group by approximately 1 to 2%, declining to $1,037 on average. The 50-inch and larger LCD TVs featuring the older technology of cold cathode fluorescent lamps (CCFL), for instance, saw a $102 decrease from their previous perch in January and an even steeper drop of $301 when year-ago levels are taken into consideration. Among LCD TVs featuring the more advanced technology of LED backlighting, price declines were smaller, averaging less than 1% in February, likely a testament to the growing popularity of the ultra-thin sets among consumers. Most of the price decrease here centered on LED-backlit sets smaller than 50 inches, with the largest drop on average of $28 falling on the 30 to 39-inch models. The only segment in the TV space where pricing went up in February was in 3D LCD TVs, increasing by $16 on average to $2,990. And in a sign of the industry's commitment to continue supporting 3D, the number of available 3DTV models jumped to 68, compared to 54 in January and 19 in March 2010.

Excluding 3D TVs, the general decline in LCD televisions was mirrored in the plasma TV area, with prices falling to $1,525 on average in February, down 3% from the earlier month. Much like their counterparts in the LCD space, plasma sets are experiencing deep price cuts and discounting to make room for the new 2011 lineup. The contraction in TV pricing for LCD and plasma models notwithstanding, the market is set to gain strength after the first quarter in line with normal seasonal patterns, IHS believes, and retailers are expected to then raise average prices across all channels after all the old models have been cleared away. http://www.isuppli.com



DisplaySearch reports Sony takes top position for flat panel TV shipments in India for 2010

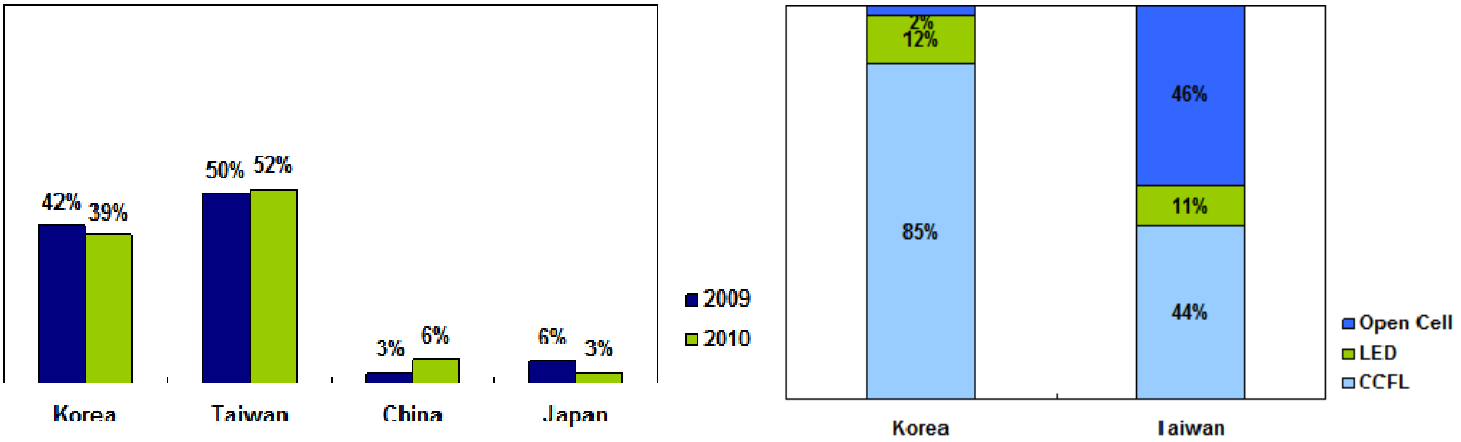
Sony overtook Samsung Electronics and LG Electronics for the top position, with 22.1% of flat panel TVs shipped in the Indian market in 2010, according to the newly-published DisplaySearch Quarterly India TV Shipment and Forecast Database. The total TV market in India for 2010 was 15.6M units, 43.7% of the Asia Pacific TV market. In Q4'10, the unit penetration of FPD TVs reached 51% in Asia Pacific, the lowest of any region, according to the data published in the DisplaySearch Quarterly Advanced Global TV Shipment and Forecast Report. In India, CRT is still the primary TV technology, and Q4'10 FPD unit penetration reached only 27%, out of a total of 4.3M TVs shipped, increasing slightly from 23% in Q3'10. 32-inch and smaller sizes are leading the shift to FPDs from CRTs in India. 32-inch models have been the most popular LCD TVs with a 40% unit share, followed by 24-inch or smaller sizes, whose unit share increased to 38%. There is strong competition among the three major brands in Indian flat panel TV market, which have a combined share of more than 60%. Samsung had top unit share in 2009, but dropped to #2 with a 21.3% share in 2010. LGE had top unit share in Q1'10 and Q3'10, but was #3 for the year, with a 21.0% share. http://www.displaysearch.com/

2010 Rank	Brand	2009 Share	2010 Share	Y/Y Growth
1	Sony	22.9%	22.1%	96%
2	Samsung	29.3%	21.3%	48%
3	LGE	23.1%	21.0%	85%
4	Videocon	7.6%	13.7%	267%
5	Panasonic	8.2%	8.5%	112%
	Other	9.0%	13.3%	201%
	Total			**103%**

2010 India flat panel TV brand rankings by unit share

Displaybank reports 39 million LCD TVs sold in China in 2010

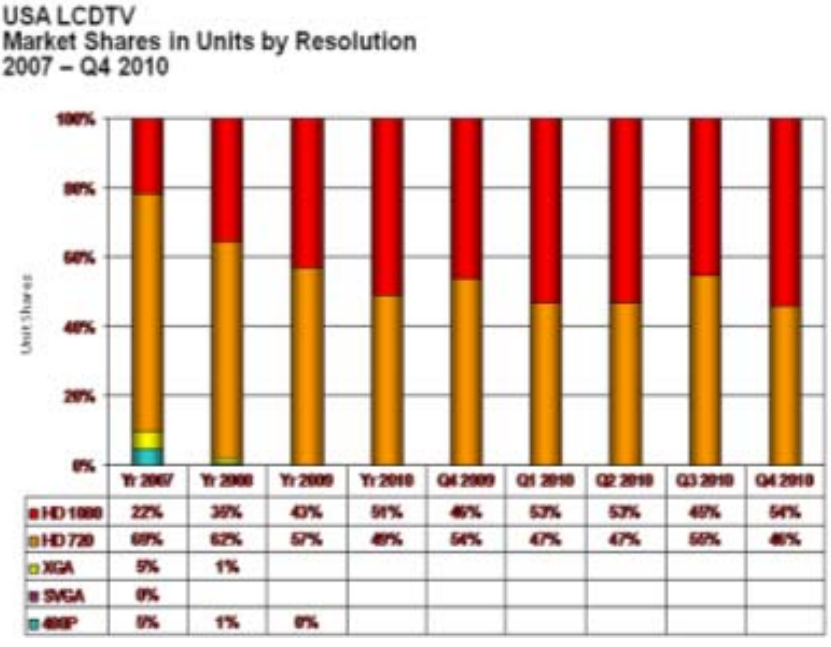
Displaybank announced that Chinese LCD TV market in 2010 was 39 million units comprising 21% of the global LCD TV market which places the region at top surpassing a 19% share from the North American LCD TV market. Combined market share of the top six Chinese TV makers including Changhong, Haier, Hisense, Konka, Skyworth and TCL reached 75% of the total Chinese LCD TV market and these top six Chinese TV makers are responsible for 15% of global TV panel shipments. The ranking of TFT LCD panel suppliers that supplied most to the top six TV brands came out as CMI with the largest share with 32% followed by LG Display at 21% up 2% Y/Y and Samsung at 18% down 5%. Taiwan-based panel makers' supply towards the top six TV brands increased 5% Y/Y to 52%. http://www.displaybank.com



Panel sourcing share of top six Chinese TV brands by country in 2010; Panel supply type towards top 6 Chinese TV brands by country in 2010

Quixel Research reports HD1080p models finally top overall LCD TV category

The majority of the overall LCDTV unit sales migrated from HD720p to HD1080p in both Q4 and 2010 as a whole. The LCD TV 40-inch+ models have led the flat panel TV market in HD1080p adoption for several years but, Q4 was the first time the overall market ceded to HD1080p. Quixel Research's recently published LCDTV Market Review revealed HD1080p unit share was 51% of the overall LCDTV category in 2010 and 54% in Q4 2010 or an increase of 8% and 9% respectively. Unit sales of HD1080p LCD TVs below 40-inch grew 65% from Q3'10 to Q4'10, and when comparing 2009 to 2010, HD1080p volume was up 36% while HD720p volume was down 16%. Piloted by the larger sized LCDTV models, HD1080p revenues have outpaced HD720p for the LCDTV category overall since 2008, and made up 75% of the category in 2010. Overall shipment volume for the LCDTV category was up 25% from Q3'10 to Q4'10 and up 3% from Q4'09 to Q4'10. The economic climate attributed to the flat results annually, with unit sales off about 1% from 2009 to 2010. Revenues for the LCDTV category were also up from Q3'10 to Q4'10, rising to $5.9B for the quarter. However, large screen model sales could not offset quickly eroding ASPs and the sluggish overall demand. As a result, revenues declined 5% from Q4'09 to Q4'10 and were down 11% from 2009 to 2010. Revenues for the LCDTV category were $19B in 2010. Quixel Research projects very modest growth in 2011 and 2012. http://www.quixelresearch.com



TFT LCD manufacturers downgrade LED backlight penetration targets reports DisplaySearch

Global shipments of LCD TV panels with LED backlights reached 16.4 million units in Q1'11, a slight decrease from 16.6 million units in Q4'10. According to the DisplaySearch *Quarterly Large-Area TFT LCD Shipment – Advanced LED Report*, LED penetration in LCD TV panels reached 33% in Q1'11, a healthy growth from 29% in Q4'10. However, LCD panel manufacturers have adjusted their targets for 2011 LCD TV panel shipments with LED backlights down from 53% to 47%. Key reasons for this change in outlook include the current sell-through climate, price erosion in premium LED models, making them less attractive, and a shift in strategy towards 3D panels. New LCD TV panel manufacturers are focusing on CCFL production to ensure stability in the business lines as they ramp up their Gen 6 and Gen 8 lines.

LED Penetration	Q1'10	Q2'10	Q3'10	Q4'10	Q1'11	Q2'11	Q3'11	Q4'11
Q1 Report	9%	19%	26%	29%	36%	50%	59%	62%
Q2 Report	9%	19%	26%	29%	33%	38%	52%	57%

LED Backlight Penetration in LCD TV Panel Shipments (Q1 vs. Q2 Report)

LG Display continued its leadership in LED-backlit LCD TV panel shipments in Q1'11, shipping more than 4 million units for a 27% share. Samsung closely followed with 24%, and Sharp and AUO each had 18%. Nearly all LCD TV panel makers are focusing on edge-type LED backlights, with the exception of Sharp and LG Display, who are also producing direct type backlights. In terms of LED backlight LCD TV panel revenue, Samsung led with 30%, followed by LG Display with 27%. Penetration of LED backlights in LCD TV panels is highest in 50-inch and larger screen sizes. In Q1'11, LED backlight penetration was 86% in 50-54-inch LCD TV panels, 82% in 55-59-inch, and 83% in 60-inch+. In the 46-47-inch segment, LED backlight penetration was 54%, and in the 40-42-inch and 32-inch segments, penetration was 41% and 18% respectively. http://www.displaysearch.com

Panel Maker	Q4'10	Q1'11
LG Display	31%	27%
Samsung	21%	24%
Sharp	22%	18%
AUO	14%	18%
ChiMei Innolux	9%	9%
Others	3%	4%

LED Backlight LCD TV Panel Shipment Share (Q1'11)

Vizio maintains lead in US LCD market says iSuppli

Riding a wave of demand for its LED-backlit televisions, Vizio Inc managed to maintain the lead in the US market for LCD TVs in the fourth quarter, according to a study by iSuppli. Based in Irvine, California, Vizio is partly owned by major Taiwanese TV contract manufacturer Amtran Technology Co. Market researcher IHS iSuppli said in a report that Vizio shipped 2.9 million LCD TVs in the fourth quarter, up 78.9% from 1.6 million units in the third quarter. This translated to a market share of 27.6% in the US, up from 19.5% in the third quarter, the report said. Vizio's lead over second-placed South Korean rival Samsung Electronics expanded to 7.4% in the fourth quarter, up from 2.1% in the third quarter. http://www.isuppli.com

Q4 2010 Rank	Vendor	Q4 2010 Market Share	Q4 2010 Unit Shipments	Q3 2010 Market Share	Q3 2010 Unit Shipments	Q4 2009 Market Share	Q4 2009 Unit Shipments	Year Over Year Growth	Sequential Growth
1	Vizio	27.6%	2,867	19.5%	1,602	18.6%	1,844	55.5%	78.9%
2	Samsung	20.2%	2,100	17.3%	1,426	17.3%	1,715	22.4%	47.3%
3	Sony	10.1%	1,049	9.7%	796	13.3%	1,318	-20.4%	31.8%
4	LG Electronics	9.4%	976	9.0%	742	8.0%	793	23.1%	31.5%
5	Toshiba	6.8%	708	6.5%	533	7.1%	708	-0.1%	32.8%
6	Sanyo	3.9%	404	6.7%	555	4.0%	401	0.8%	-27.1%
7	Panasonic	2.8%	290	3.2%	263	2.1%	207	39.8%	10.3%
8	Sharp	2.5%	264	4.6%	380	3.2%	317	-16.8%	-30.6%
	Others	16.6%	1,726	23.4%	1,924	26.5%	2,637	-34.5%	-11.8%
	Grand Total	100.0%	10,384	100.0%	8,220	100.0%	9,941	4.5%	25.8%

Top 8 LCD TV brands in the US in the fourth quarter of 2010 (unit shipments in thousands)

ABI report says HDTVs and Blu-ray players will drive connected devices past 3 billion by 2016

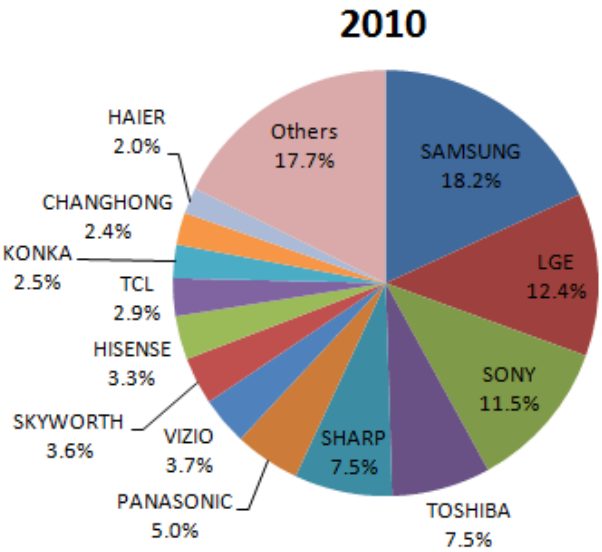
By 2016 a total of more than 3 billion Internet-connected devices will have been shipped worldwide, with HDTVs and Blu-ray Disc players leading the way, according to a report from ABI Research. "TV and video player connectivity is being strongly driven by streaming services such as Netflix in the United States and LoveFilm in the United Kingdom," said ABI Research practice director Jason Blackwell. "Gaming consoles also create powerful demand for connectivity; although connected consoles are nothing new, they still rank strongly in connected home entertainment and will see increased shipment numbers through 2014." Blackwell said cloud-based music streaming services, including Pandora, Rhapsody, Melon and Spotify, also are helping to drive connected consumer electronics. Other innovations such as Apple's AirPlay, which allows wireless streaming of music or other audio content throughout the home, will also help to drive demand. http://www.abiresearch.com

Displaybank releases 2010 TV market data and mid/long-term TV market forecast

	2008	2009	2010	2010 Y/Y
LCD TV	101.5	142.9	187.9	31.5%
PDP TV	13.9	14.2	18.2	28.9%
RPTV	0.4	0.2	0.1	-31.9%
Others	0.0	0.0	0.0	-47.5%
CRT TV	85.4	50.2	38.4	-23.5%
Grand Total	**201.3**	**207.4**	**244.7**	**18.0%**

The TV market showed an unprecedented remarkable growth in 2010. This is a considerable rise in CAGR of the worldwide TV market from 4% in the past to 18% by 2010. FPD TV (LCD and PDP) is the driving force behind such a great jump of the TV market. In 2010, LCD TV shipments amounted to 187.9M units, which is a 31% increase Y/Y, while PDP TV shipments totalled 18.24 million units, up 29% Y/Y. The annual growth staying at 2% in 2009 shows how huge the upward trend in 2010 was. On the contrary to the growth in the FPD TV market, CRT and RPTV (Rear Projection TV) markets continued to record a negative growth of -24% and -32%, Y/Y. Factors that enabled the TV market to grow tremendously in 2010 can be summarized largely with five as follows:

- Shortened replacement period (10 years for CRT in the past, about five to seven years for FPD TV lately)
- A plunge in FPD TV prices
- An increase in TV ownership by household (Demand for second TV grows)
- Government-supported policy (China: Home Appliance to the Countryside, Japan: Eco-Point, etc.)
- Transition to digital broadcasts



In addition to the factors above, there are a variety of mixed bolstering factors for the tremendous growth in the 2010 TV market. In terms of shipments of LCD TV in 2010 by company, Samsung Electronics took the lead by shipping 34.2M units, followed by LG Electronics in second place with 23.2M units and Sony in third place with 21.6M units. As mentioned above, the LCD TV market posted 187.9M units in 2010, growing 32% Y/Y, which is more than 5M units higher than earlier expected. The biggest reason behind such a remarkable growth is a sharp growth in the Japanese market. http://www.displaybank.com

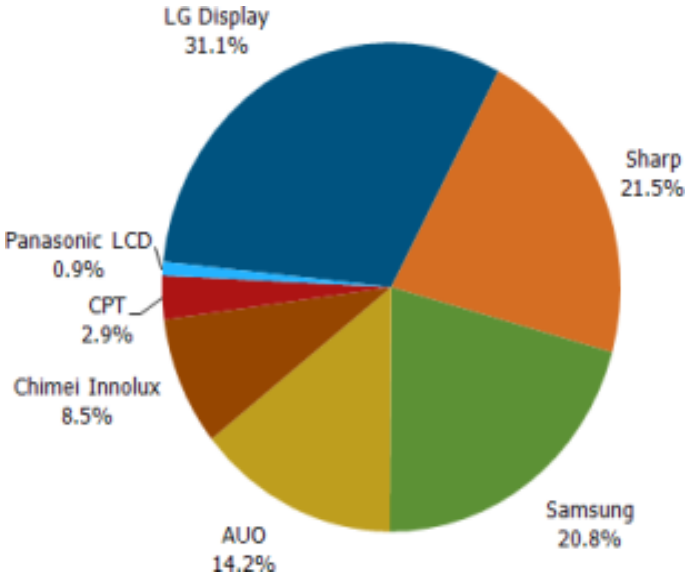
DisplaySearch predicts 53% LED backlight penetration for TV panels in 2011

Global shipments of LCD TV panels with LED backlights reached a high of 16.6 million units in Q4'10, with strong growth in edge-lit configurations. According to the latest DisplaySearch *Quarterly Large-Area TFT LCD Shipment–Advanced LED Report*, panel makers are targeting rapid penetration increases for LED backlights in LCD TV panels, growing from 36% in Q1'11 to 62% in Q4'11 for an overall penetration of 53% for 2011. For the year 2010, penetration reached 21%, up from 2% in the previous year. The growing awareness of LEDs among consumers has encouraged panel makers to increase LED performance. DisplaySearch expects that LED penetration will pass 50% and become the mainstream for LCD TV backlights.

Backlight Type	Q1'10	Q2'10	Q3'10	Q4'10	Q1'11	Q2'11	Q3'11	Q4'11
CCFL	91%	81%	74%	71%	64%	50%	41%	38%
LED	9%	19%	26%	29%	36%	50%	59%	62%

LCD TV Panel Shipments by Backlight Type

The highest penetration of LED backlights in LCD TV panels was in the 50" to 60" segment. In Q4'10, LED backlight penetration was 76% in 50-54" LCD TV panels, 67% in 55-59," and 87% in 60"+. In the 46-47-inch segment, LED backlight penetration was 54% in Q4'10. In the 40-42-inch and 32-inch segments, LED backlight penetration was 37% and 17%, respectively. Nearly all LCD TV panel makers are focusing on edge-type LED backlights in TV panels, with the exception being Sharp, which is producing direct type as well. As the following figure shows, LG Display led in LED-backlit LCD TV panel shipments in Q4'10, shipping more than 5 million units for a 31.1% share. Sharp closely followed with 21.5%, then Samsung with 20.8%, and AUO with 14.2%. In terms of LED-backlit LCD TV panel revenues, Sharp and Samsung were tied with 27.3%; LG Display followed with 25.1%, and AUO with 13.9%

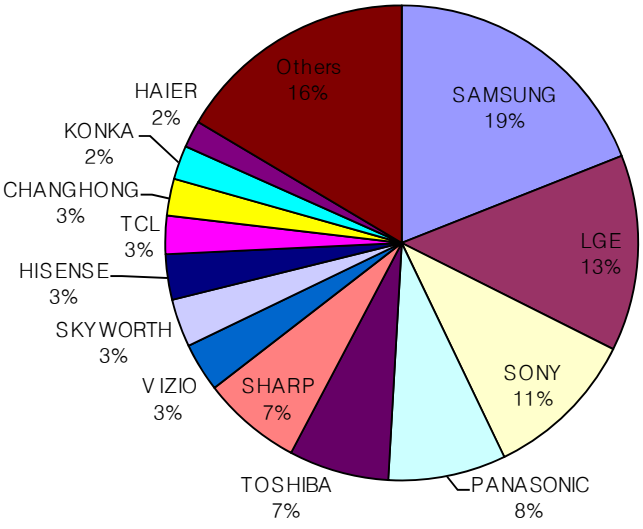


LED-Backlit LCD TV Panel Shipment Share (Q4'10)

Displaybank reports that 1 out of 3 global flat panel TVs are made by Korean makers in 2010

Displaybank announced that 1 out of 3 flat panel TVs globally were manufactured by Korean makers in 2010. The LCD TV market in 2010 grew 31% Y/Y to 187.9 million units and PDP TV for the same period grew 29% to 18.24 million units. Samsung Electronics and LG Electronics shipped 66.8 million flat panel TVs combined to comprise 33% of the total flat panel TV shipment in 2010. These and other findings are disclosed in Displaybank newly updated *Monthly FPD TV Shipment Data* which covers worldwide flat panel TV shipments of on a monthly basis. Looking at the LCD TV shipment by maker in 2010, Samsung Electronics shipped 34.2 million LCD TVs to be ranked in No.1 position followed by LG Electronics and Sony with 23.2 million and 21.6 million units shipped. LED LCD TV shipment in 2010 recorded 37.5 million units to represent sharp growth recorded each quarter. On LCD TVs shipped in the fourth quarter of 2010, the share of TVs with LED BLU comprised 29% such that 3 out of 10 LCD TVs were LED LCD TV. Displaybank pointed out the main reason of flat panel TV market growth in 2010 as the sharp growth in domestic Japanese market through the Japanese Eco Point policy and others such as:

- Shorter TV replacement term (past CRTs: 10 years, recent FPD TVs: 5-7 years),
- Rapid decrease in FPD TV price,
- Rising number of TVs per each household (increasing demand for second TV),
- Government support policies from each country (China's consumer electronics subsidy program and Japan's Eco Point policy, etc.), and
- Transition towards digital broadcasting.



Jusy Hong, senior analyst at Displaybank noted "TV market in 2011 will see transition from advanced market to emerging market that the Y/Y growth rate is expected to diminish. Flat panel TV market for 2011 is expected at 233.08 million units which is expected to record 13% Y/Y and among these, LCD TV would grow 15% Y/Y to 215.38 million units and PDP TV would decline 3% Y/Y to 17.7 million units." http://www.displaybank.com

DisplaySearch reports that global TV shipments grow 15% Y/Y in Q4'10 as LCD share surges

Global TV shipment growth improved in Q4'10 after falling sharply in Q3'10, rising 15% Y/Y to a record 77.6 million units, according to the figures released in the latest DisplaySearch *Advanced Quarterly Global TV Shipment and Forecast Report*. The improvement in annual growth rate, which had fallen to 9% Y/Y in Q3'10, can be attributed to improved growth in developed markets, particularly North America, which had experienced a substantial slowdown during the first half of the year. China was the only region to decline in Q4'10, falling 2% Y/Y as a significant decline in CRT TV shipments more than offset growth of LCD and plasma. For the first time since Q1'10, LCD TV had stronger Y/Y growth than plasma TV, as prices for LED-backlit LCD TV models fell a little faster—increasing LED share to 30% for the first time. Prices for standard CCFL-backlit LCD TVs also fell a little more quickly because panel price declines upstream in the supply chain worked through to retail prices. Plasma TV growth continued to be quite positive, rising 20% Y/Y, although there are signs that the growth rate is starting to slow as LCD TV prices have become competitive at several key sizes, particularly 42-inch.

Technology	Q4'10 Units	Q4'10 Unit Share	Q/Q Growth	Y/Y Growth
LCD TV	63,506	81.8%	39%	26%
PDP TV	5,662	7.3%	17%	20%
OLED TV	0.4	0.0%	159%	-1%
CRT TV	8,358	10.8%	-10%	-32%
RPTV	65	0.1%	80.6%	28%
Total	**77,592**	**100%**	**30%**	**15%**

Q4'10 Worldwide TV Shipments by Technology (000s)

DisplaySearch reports that 3D TVs accounted for about 9% of total TV revenues worldwide in Q4'10, and much more in certain segments, like 40"+ 120 Hz LCD TVs, which were nearly 20% 3D in Japan. LED-backlit LCD TVs also continued to grow share, rising to 30% of total LCD TV unit shipments for the first time, while 120 Hz and higher frame rates accounted for just under a quarter of LCD units. LED premiums are falling rapidly, dropping from more than 50% in Q3'10 to less than 40% in Q4'10 for 32" sets. This has been made possible through improvements in LED component costs and a reduction in the number of LEDs required in a given design due to improved efficiency.

Samsung was the #1 brand on a revenue basis, with a 21.2% share of total global TV revenues and a 21.4% share of global flat panel TV revenues. For the full year 2010, Samsung remained #1 in flat panel TV, although their share fell about a point from 2009 on growth from LGE as well as increases by Japanese brands due to the strong home market. Samsung was the #1 LCD TV brand in Q4'10, and Panasonic was the #1 plasma TV brand. By region, Samsung was #1 in LCD TV unit share in most markets during 2010. However, Chinese brands still dominate the domestic China market, and Vizio moved past Samsung on a volume basis for LCD TVs in North America. For 3D TV, Sony was the top 3D LCD TV brand on a unit shipment basis in Q4'10, and Panasonic was the top 3D PDP TV brand. However, in total combined 3D TV shipments across all technologies, Samsung was the leader. http://www.displaysearch.com

Rank	Brand	Q3'10 Share	Q4'10 Share	Q/Q Growth	Y/Y Growth
1	Samsung	21.6%	21.4%	27%	2%
2	Sony	11.8%	14.2%	54%	34%
3	LGE	13.5%	12.7%	20%	18%
4	Panasonic	9.1%	8.3%	15%	13%
5	Sharp	8.0%	8.1%	29%	67%
	Other	36%	35.3%	25%	8%
	Total	**100.0%**	**100.0%**	28%	15%

Q4'10 Worldwide Flat Panel TV Brand Rankings by Revenue Share

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LCD TV Market Falls Short of 2010 Forecasts

by Hisakazu Torii

Hisakazu Torii is Vice President of Japanese TV Market Research at DisplaySearch. He brings 18 years of display industry experience and is responsible for covering all Japanese TV brands across Asia Pacific. Before joining DisplaySearch, Torii worked at Mitsubishi Electric where he conducted market research for product groups, business planning and new product development in all major display applications, including TVs, notebook PCs, monitors, mobile phones, digital still cameras, digital video recorders, automotive displays and industrial applications. Torii received his degree from the Department of Law at Waseda University in Tokyo, Japan.

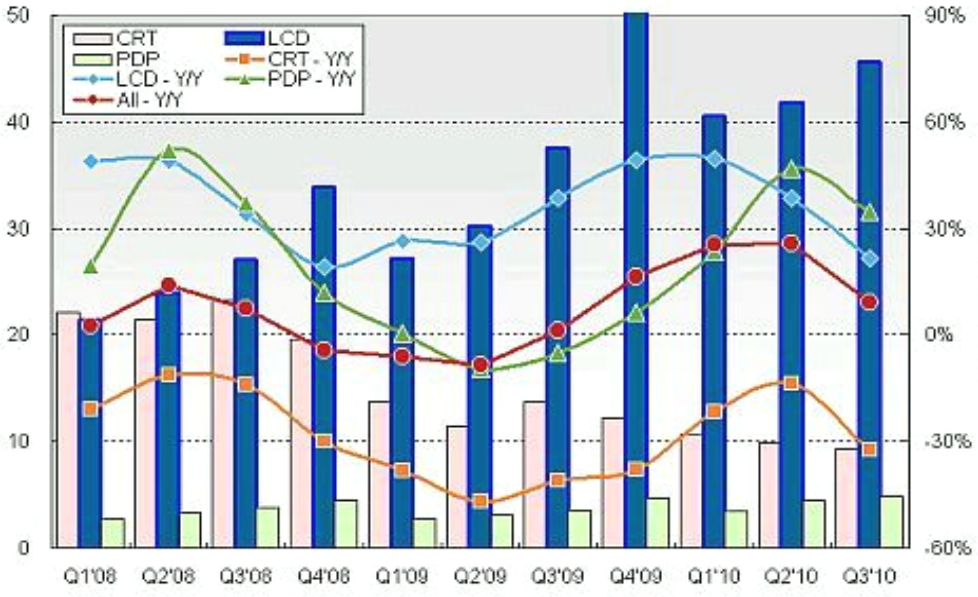
It is becoming clear that neither TV brands nor panel suppliers will be pleased with results for the 2010 LCD TV market. In the first half of 2010, DisplaySearch estimated that the LCD TV demand in 2010 would be 188 million units. In contrast, the total of TV brands' planned shipments at the beginning of 2010 was over 220 million units, and panel suppliers also had aggressive plans exceeding this number. It is highly likely that the market will finish below these planned numbers. According to the latest forecast, the total LCD TV demand in 2010 will be 188-190 million units due to an over-supply of LCD panels in the first half along with the sluggish demand caused by deteriorating macro economy in the US and Europe in the second half.

Q3'10 Surprise: Emerging Markets Surpass Developed Countries

According to the latest DisplaySearch *Quarterly Global TV Shipment & Forecast Report*, Q3'10 LCD TV shipments were 45.67M units, up 22% Y/Y as previously predicted.

One of the highlights is that emerging countries (Eastern Europe, China, Asia Pacific, Latin America, Middle East and Africa) took a 51% market share, surpassing developed countries (Japan, North America and Western Europe) for the first time. Demand was slow in North America (up 1% Y/Y) and Western Europe (down 2% Y/Y) before the year-end shopping season, and inventories are increasing. In developed countries, only Japan experienced a substantial increase, up 68% Y/Y, thanks to the eco-point effect. However, it was not enough to offset results in the US and Europe, which have more than 40% share of the global market.

Another highlight is that plasma TVs maintained strong performance with a growth rate at 35% Y/Y. This is because plasma TVs prices are highly competitive with LCD TVs, particularly with LED-backlit LCD TVs, in 40" and larger TV class.



Worldwide TV Shipments and Y/Y Growth by Technology (in millions)

Source: DisplaySearch Quarterly LCD TV Value Chain Report

1H'11 Outlook: Low LCD TV Demand

If the market keeps following the same track as in the second half of 2010, there is a possibility that the LCD TV market will have a tough time in the first half of 2011. Possible scenarios are as follows.

- Due to the slow economic recovery, market growth in the US and Europe will be at a moderate pace. DisplaySearch decided to revise the demand in North America in and after 2010, and now we estimate the 2011 shipments will be down around 2M units to 40.5M units.
- With insufficient price drops for LED-backlit LCD TVs against plasma TVs and CRT TVs, LED-backlight LCD TVs will not grow and will not create demand as expected. DisplaySearch forecasts that the share of LED-backlight in the LCD TV shipments in 2011 will be 51%. To create more demand, both set and panel prices need to fall further as we approach the China National Day holiday season in October 2011.
- LCD TV prices will not be low enough to cause an explosive demand surge in emerging countries, including India. As a result, demand will not grow as much as expected worldwide, and the share of FPD TVs in the total TV market will not increase that swiftly in the first half of 2011. This would also likely keep the LCD TV panel oversupply situation in place through much of 2011.
- Plasma TVs will continue price competitiveness with LCD TVs even in the 40" class. Plasma TV sold well during the Black Friday week in November, and according to sources, the plasma demand will be steady in Q1'11.
- It is likely the LCD TV industry will need to make some adjustments when panel procurement for eco-point boom in Japan settles down in Q2'11.

2H'11 Hopes: Price Declines, High Holiday Demand, and Growth in Emerging Countries

In the second half of 2011, the market needs to brace itself for the FPD TV demand decline in Japan after the eco-point effect expires. DisplaySearch forecasts that Japan TV shipments in 2011 will decrease by around 10M units from 2010. With this severe change in volume, it is inevitable that Japanese TV brands will focus on increasing shipments and market share in emerging countries where growth is strongest.

LCD panel suppliers are currently in an over-supply phase. In the second half of 2011, panel suppliers will face a critical stage in the Crystal Cycle: determining when demand starts expanding in emerging countries, including India, and timing capacity expansions to match. FPD TV demand can continue to grow, mainly in emerging countries

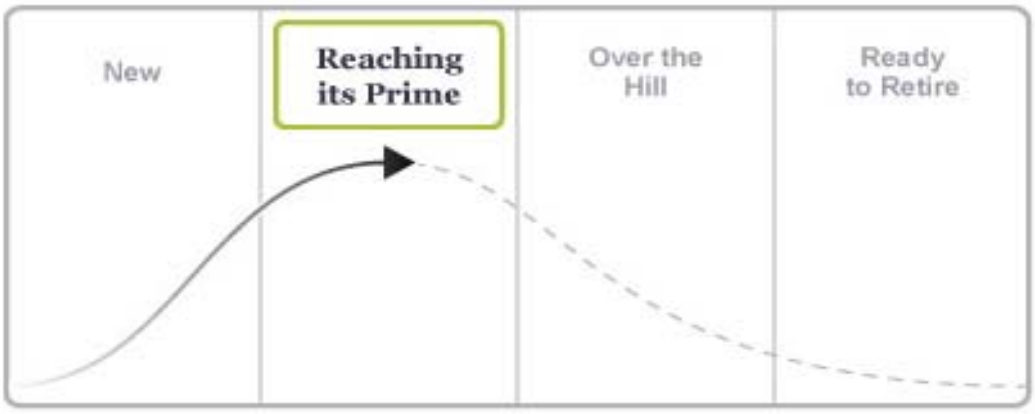
- Second or third TVs for the middle-income group in the urban area in China
- Accelerated diffusion of FPD TVs in Latin America, including Brazil
- Eventual a full-scale FPD TV penetration into India

Just as Q3'10 was the first quarter when emerging markets surpassed the demand from developed countries, 2011 will be the year when emerging countries have the majority share of global flat panel TV shipments. For more information: *Quarterly Global TV Shipment & Forecast Report*, visit http://www.displaysearch.com

Interview with Andrew Eisner from Retrevo

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.

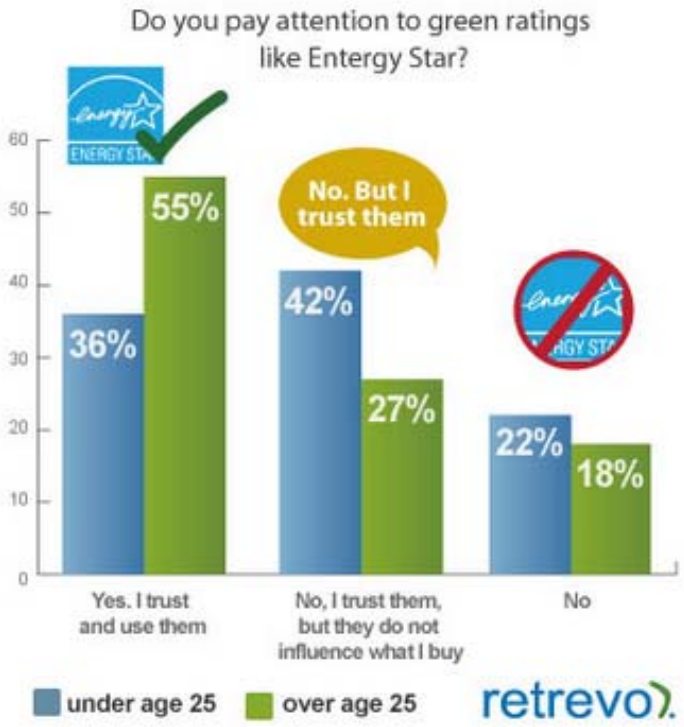
Please give us some background information about Retrevo. Retrevo is a popular and fast-growing website that provides buyers and users of consumer electronics products the information they need in order to make an informed buying decision the latest gadgets and gear including HDTV products, laptops, digital cameras and more. Retrevo was founded by three seasoned entrepreneurs with engineering expertise and is based in Sunnyvale, CA. Most recently, Retrevo added the ability to buy consumer electronics products and accessories right on the site. Retrevo uses AI technology to process and analyze data on all the latest products in order to deliver objective buying advice like their "real-time review" which indicates whether a product is new or old.



The Retrevo Value Map presents bang for the buck information in a interactive, graphical presentation.

How did you come to be involved in the LCD TV Association? Bruce Berkoff and I helped manage Ziff Davis Labs and have remained friends ever since. The HDTV category on Retrevo is one of the most popular on the site and becoming involved with the LCD TV Association was a natural step in getting closer to the industry producing the HDTV products that our audience is buying.

Tell us about what goes on at Retrevo Labs. Retrevo uses data "mined" and analyzed from surveys conducted on its site by polling its 6 million monthly visitors. We also enlist independent panels from outside the site. The surveys cover everything from trends in social media and gadgets to who's buying green gadgets. For example, in a recent report, Retrevo asked consumers if they feel guilty when they don't buy a green gadget, and was disappointed to learn that nearly 60% of respondents felt no guilt for not buying green gadgets. Among that group 42% indicated they didn't care if the gadget they bought was green or not while another 16% said price trumped green. On the bright side, nearly 40% said they do consider green when shopping for gadgets, even if they don't end up buying green.



What are the current "hot" areas in terms of technology that you see in the TV market? If you had asked me that question last year I would have said 3D without hesitation. As we wait for the chicken and egg (content vs audience to watch it) situation plays out, I still feel confident that consumers will want 3DTVs but they will wait until they don't have to pay a price premium. The connected TV is another important feature for many reasons. With so many ways to connect your TV to the Internet (Blu-ray player, AVR, set-top box, etc.), I still think the easiest way would be through the TV. At least you might have one less remote to fumble with. Speaking of remotes, one trend we see is for entertainment center control through smart phones and tablets. We also wonder what impact AllVid, the successor to Cable Cards will have. I personally also like DLNA or as Apple prefers to call it, AirPlay and think it's an under-rated feature.

Is the interest in "green technology" being inspired by a real desire by companies to be environmentally responsible, or is it driven by governmental mandate? Based on some of our studies we are sorry to say it looks like government mandates will be a stronger force than consumer demand especially among the next generation of TV buyers.

Is 3DTV here to stay, or does your survey evidence suggest it still is at risk? Our original survey saw a significant spike in interest after *Avatar* came out. We suspect consumers still want that same experience at home but I think we need more big 3D TV "events" like a 3D Super Bowl or a 3D Oscars to help create demand for the sets. The latest factor is the glasses war with passive offering price and convenience advantages but a showstopper issue with resolution. The question is will consumers decide to wait for passive 3DTVs with 4K resolution?

Do you think 21:9 aspect ratios will find any significant penetration into the TV market? On the surface, Cinema TV sounds like a great idea. Who doesn't find those black bars annoying? In practice, the scaling often required to fill the screen can produce some sub-standard results. Higher resolution TVs should help drive Cinema TVs in the future but for now we're not sure consumers are going to go for it in a big way although the idea does sound nice and could be marketed quite effectively to increase demand.

How about movement to Quad-HD (or higher) resolutions? We're anxious to see some real 4K TVs like the ones we've been seeing at CES the last couple of years.

Are "connected TVs" going to change the nature of TV broadcasting? Connected TVs are definitely a game changer but how much it will affect cable and satellite providers remains to be seen. I don't see OTA going away anytime soon in fact, I'm a big fan of Mobile DTV.

In your view, will OLED be successful in displacing LCD in the TV market? Do you see any other display technologies on the horizon that may give LCD a challenge in the TV market? We like OLED in smart phones and not only like the way it looks but the energy it saves. People in the industry we talk to think we're going to waiting awhile before we see competitively-priced large-screen OLED TVs. Surprisingly enough, at the moment it looks like Plasma TV may be seeing a resurgence as a competitor to LCD TVs. There's still a perception that Plasma is better for fast action and the Panasonic 3D Plasma TVs are very popular.

For an alternative technology to penetrate against LCD, what do you think are the key performance parameters where LCD still has vulnerabilities? At one point I thought the FED TVs might have a shot at competing with LCD offering the benefits of phosphor combined with small size but it doesn't look like that's going to happen. If Plasma comes up with breakthroughs to compete on size, weight, and power consumption they could put a little heat on LCD TVs otherwise it looks like LCDs have enough tricks up their sleeves including quantum dots, direct backlights, higher resolutions, and greater economies to keep the competition at bay.

As someone who spends a considerable amount of time looking at comparative specifications, do you think consumers can adequately compare LCD TV performance based on company-provided specifications? Retrevo's AI technology compares millions of specs, millions of times a day. Similar to humans it looks as much at the features found in various sets to determine values. We think Retrevo is the best place for buyers to get the "what" behind the "why" when it comes to deciding what TV to buy.

What are some of the most egregious examples of "specsmanship" that you've seen? Now that we've exposed all the myths around contrast ratings, we think one of the next specs to go after is refresh rate with both camps guilty of overstating their specs. Plasma makers brag about having a 600 Hz refresh when they don't really change frames at that rate. LCD makers use some tricks and techniques like black frame insertion to also boast of high refresh rates.

Please share with us some trends that you've seen in terms of consumer buying behavior for LCD TVs. As much as we love to compare TVs on the latest features, we still see price as a major factor.

How does Retrevo make money? Retrevo has had success up until now generating lead referrals fees and ad revenue as the audience is made up of household decision makers who are in the market for a new TV or other electronics product. Many CE companies have "sponsored" areas or content on the site. Most recently we decided to add e-commerce with a marketplace. Traditionally publishers like CNET and PC World have only been able to go as far as lead referrals because they didn't want to do anything to jeopardize their credibility. Retrevo has spent four years gaining our visitors' trust by providing unbiased advice along with services like a library of manuals available to download for free. We feel we can add commerce with losing the trust of our audience.

Who are your customers? Our customers come from multiple sources including search engines, links from other sites and direct traffic. They come looking mostly for reviews and manuals for all categories of consumer electronics.

Aside from TVs, what other market segments does Retrevo cover? The HDTV category is unquestionably one of most popular along with products like digital cameras, laptops, smart phones and the emerging tablet category. Some categories like GPS and MP3 may have seen stronger demand in the past but consumers are still interested in them. We also provide buying advice for products like AV Receivers, Printers, Blu-ray players, Wireless Routers and more.

Care to predict what the "average" TV will look like 10 years from now? That's a fun question. Ten years might be too soon for a holographic TV so I'd have to say either OLED or some quantum dot, direct backlit "smart" LCD TV. Actually it's possible that we'll see a "wall computer" that will double as a TV and will also display other types of things. Oh, and I also think we might see a "real" Apple TV sometime soon.

New 3D TV Technology Coming in 2011

How Will Consumers Respond?

by Ross Young

Ross Young is SVP, Displays and PV at IMS Research USA. Prior to joining IMS Research in November 2009, Young co-founded Young Market Research (YMR) with Barry Young in May of 2009 which IMS Research acquired in November. Prior to forming YMR, Young was VP of New Market Creation at Samsung Electronics' LCD Business, reporting to the LCD CEO, where he tracked, analyzed and assessed the solar market and supported their market intelligence efforts in notebooks and TVs. Prior to Samsung, Young was the founder and CEO of DisplaySearch, the leading flat panel display market research, consulting and events firm. Young ran DisplaySearch from 1996 to 2007. was educated at UCSD, Australia's University of New South Wales, UCSD's Graduate School of International Relations and Pacific Studies and Japan's Tohoku University.

3D ticket box results show consumers love 3D movies. However, 3D TV sales have disappointed. Why is this? One major difference is the 3D glasses. US theaters use polarized or passive glasses. They are light, comfortable and inexpensive. However, 3D TVs on the market use active shutter glasses which are expensive, bulky and heavy due to the internal batteries necessary to control the switching liquid crystal. I believe if it wasn't for the glasses, 3D TVs would be doing much better as it is hard to justify $500+ in glasses costs for limited 3D content.
In a recent Nielsen survey, 45% of survey respondents indicated the glasses were not comfortable. What if the low cost, light and comfortable glasses were available with your 3D TV?

Starting in 2011, 3D LCD TVs based on film patterned retarders will be. Expect these TVs from LG, Philips, Toshiba, Vizio and a host of Chinese brands as well. At FPD International 2010, LG Display, AUO and CMI all showed LCDs with polarized glasses. LG and AUO indicated it would be their priority in 2011. Interestingly, LG Display produced nice brochures on the benefits of their polarized or passive glasses approach while Samsung produced literature on why the shutter glasses approach is superior. Seems to be this battle will only get louder when the brands get involved.

What may cause confusion, is that passive glasses performance is better in some areas than others when compared with active shutter glasses 3D. In the active shutter glass approach, time multiplexing is used where the left and right images are shown in different frames within one frame time. The shutter glasses and their switching liquid crystal are opened alternately in each left and right frame in sync with the images on the TV. In addition, in the case of LCDs, a black frame is inserted in between the left and right frames. So, 240 Hz frame rates correspond to 60Hz for each of the left, black, right and black frames. This approach requires very fast liquid crystal switching and frame rates. Because LCDs don't switch as fast as plasma or OLEDs, they tend to show more double images or ghosting than plasma or OLEDs. Furthermore, because of the black frame insertions and the shutter glasses, significant brightness is lost. Most 450-nit 3D LCD panels are actually perceived through the glasses at less than 100 nits. More than 80% of the brightness is lost. Brightness must improve to achieve a more acceptable 3D experience.

On the other hand, in the spatial multiplexing approach, a film patterned retarder (FPR) is applied to the front of the panel. It corresponds to the odd and even lines of the LCD and converts light to either left or right circular polarization which are seen by the polarized glasses as left and right images producing 3D images. Unlike time multiplexing, the entire frame time can be used for generating one frame. As a result, the slower liquid crystal response rates are less likely to produce ghosting or double images. The panel supplier can also use slower refresh rates if desired. 120Hz is sufficient for FPR 3D as flicker is less of an issue and black frame insertion is not required. The FPR clearly separates the left and right images, producing a more stable image. Furthermore, brightness is significantly improved as there is no black frame insertion required. Brightness should be at least 2X higher than time multiplexing approaches.

However, the FPR sacrifices resolution for these other improvements. Every other line is used for each eye. Thus, 1920 x 540 is being observed by each eye rather than 1920 x 1080. Higher resolutions have gained significant

share in the TV market, although only Blu-ray movies are shown at 1920 x 1080p. Will consumers notice the difference? Will they care?

In addition, the FPR 3D approach suffers from a lower vertical viewing angle than shutter glasses 3D due to the FPR. Will this be observed in retail? When I saw numerous FPR 3D demos at FPD International last month, I didn't perceive this, but wasn't looking for it in particular. AUO claimed they had developed a new pixel design to allow for larger vertical viewing angles with FPRs.

Due to the differences in resolution and viewing angle, in 2D mode, the shutter glass approach should be better as you can't turn off the FPR in 2D mode.

In terms of cost, the FPR does cost more, but FPR panel suppliers claim that they can match conventional shutter glass panel costs. This may be because of vertical integration, lower cost approaches or reducing the refresh rate. However, if the glasses costs are factored in, the FPR 3D solution should be at least 20% less costly than shutter glasses 3D TVs. So, the total purchasing cost will be less.

The advantages of each approach are summarized in the table below. I would expect the brands offering this new approach to heavily promote its advantages, while the brands not offering this approach such as Samsung, Sony and Panasonic, may actively promote its disadvantages. Interestingly, Vizio just came out with their first passive glasses TV and suggested that you could take their stylish glasses, which cost $45 a pair, to the movie theater, an additional benefit.

It could get even more confusing for 3D if active retarder technology, which does not sacrifice resolution and maintains passive glasses use, is introduced. At FPD International last month, both LG and CMI were showing prototypes with this technology which looked great. However, it should be the most expensive panel solution as it requires additional an additional liquid crystal layer and an additional pair of glass substrates. OLEDs have also been shown with this approach and plasma should be able to use it as well.

	FPR w/ Polarized Glasses	Shutter Glasses
3D Glasses	✓	
Ghosting Performance	✓	
Flicker Performance	✓	
Brightness	✓	
Resolution		✓
Viewing Angle		✓
2D Performance		✓
Cost	✓	

In my case, I want to experience 3D in the home, but I can't justify the glasses prices, so I am looking forward to the passive glasses 3D solutions. One of my coworkers' objections was until he could buy a bag of 3D glasses in the supermarket or liquor store for entertaining during the Super Bowl, Final Four, etc., he is on the sidelines. Well, don't be surprised to see bags of 3D glasses in supermarkets for Super Bowl 2012.

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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.

Past Editions of "LCD TV Matters"





You can download prior editions of "LCD TV Matters" from:

http://www.veritasetvisus.com/lcdtva.htm





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Snapshot of LCD TV Patent Landscape

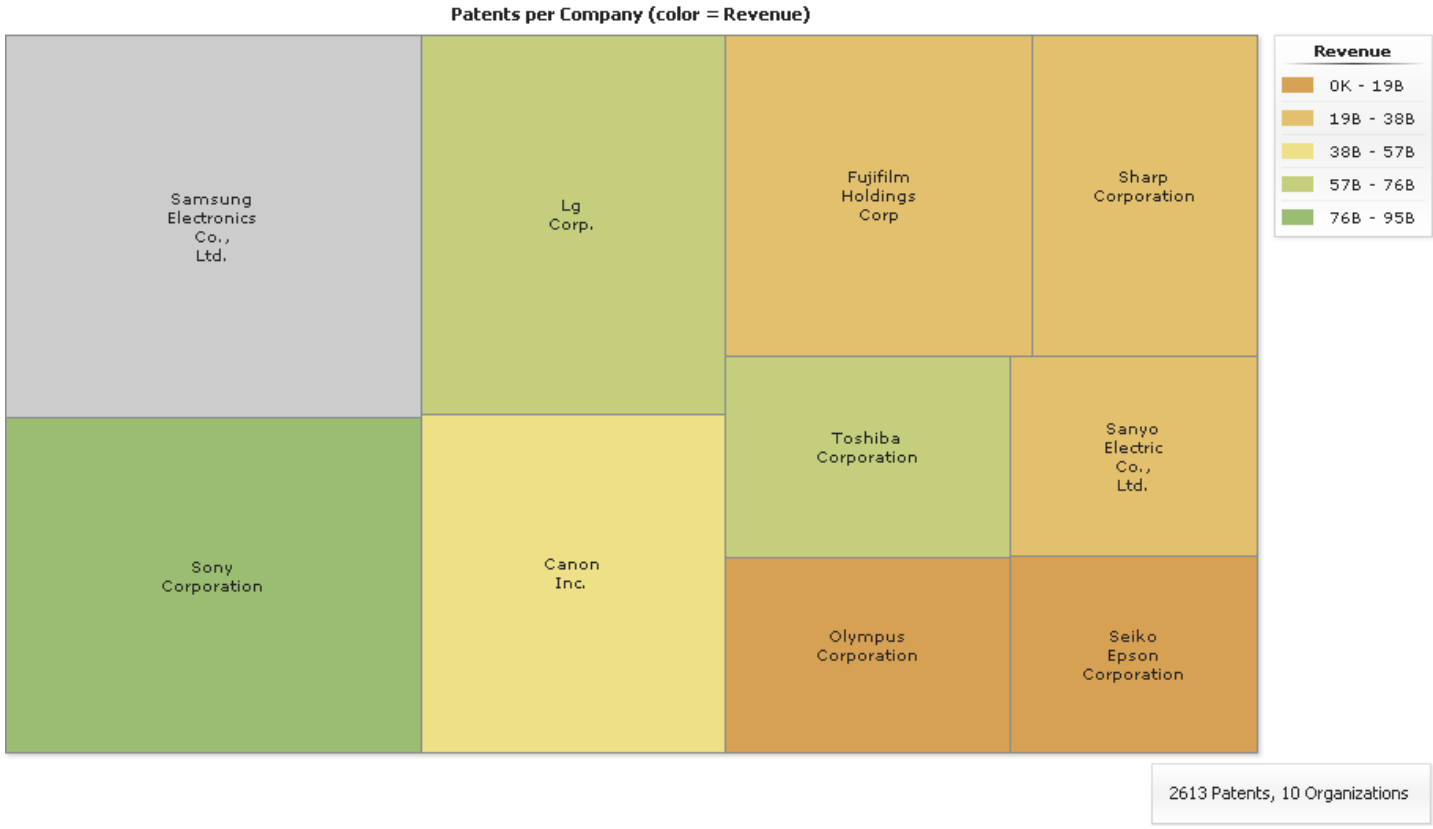
by Guy Oliver

Guy Oliver is Marketing Communications Manager at Innography, who works closely with product management and software engineering experts. He has nearly 20 years experience in the high-tech software industry as a writer and editor in the fields of technical documentation, business communication, and marketing communication.

The Top Ten holders of LCD TV related patents according to Innography are the following companies we all recognize but some of which we may not associate with TVs:

- Samsung Electronics Co., Ltd.
- Sony Corporation
- LG Corp.
- Canon, Inc.
- Fujifilm Holdings, Corp
- Sharp Corporation
- Toshiba Corporation
- Olympus Corporation
- Sanyo Electric Co., Ltd.
- Seiko Epson Corporation

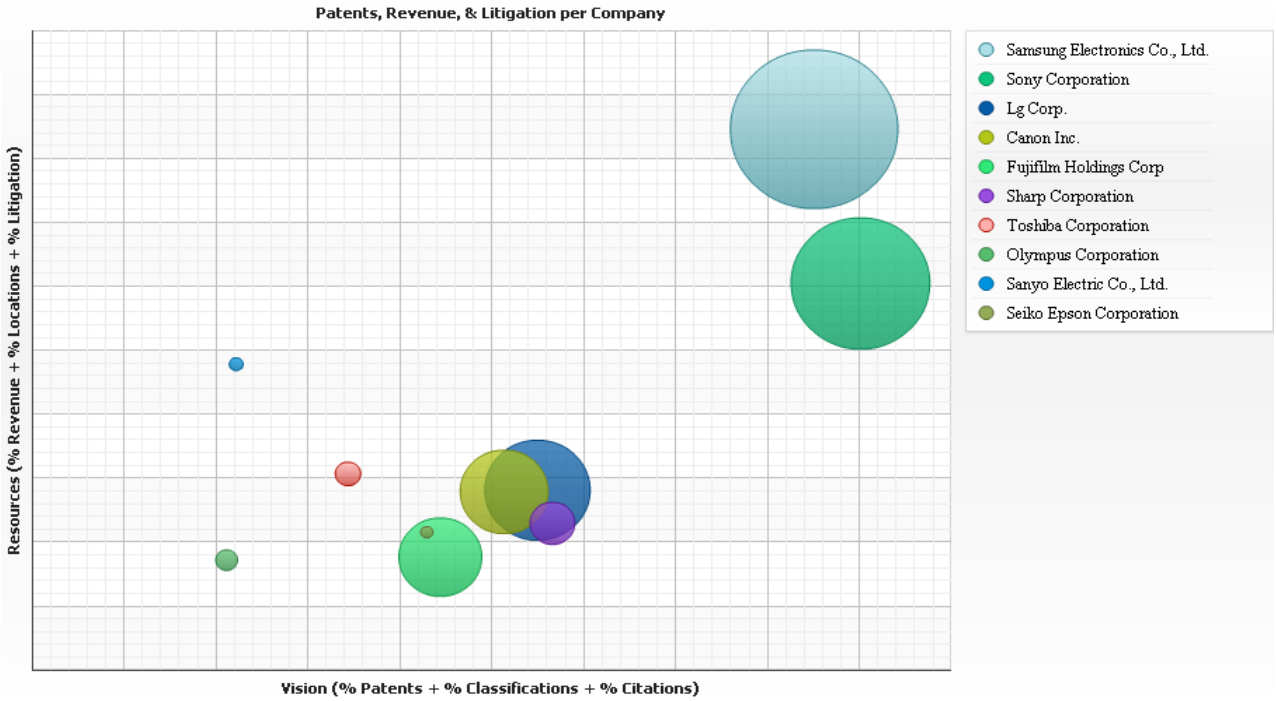
These companies are listed in order of LCD television patent portfolio size. From here we need to drill into these companies to find more detail about them and their portfolios. A typical starting point is to visualize more details about the companies that includes financial and litigation data, which can be performed quickly using Innography. The following heat map visualizes these ten companies based on portfolio size and revenue:



Innography Heat Map Grouping Companies by Portfolio Size and Revenue

In the Innography heat map, block size indicates portfolio size and color indicates annual revenue according to the key to the right of the chart. Samsung Electronics has the biggest portfolio, which indicates it has the largest investment in LCD television technology. Sony also has a large portfolio and has the largest revenue of the group.

Another option in Innography is to visualize these companies using a bubble chart as shown:



Innography Bubble Chart Indicating General Market Strength

In the Innography bubble chart, the bubble size indicates portfolio size of each company. The X axis (Vision) position indicates the relative strength of each company's patent portfolio. It is measured by:

- Percentage of all patents in this space that it holds
- Percentage of patent classifications related to LCD television, held in the company's portfolio
- Percentage of citations by patents related to LCD television patents in the company's portfolio.

The Y axis (Resources) position indicates the business strength of the company in terms of:

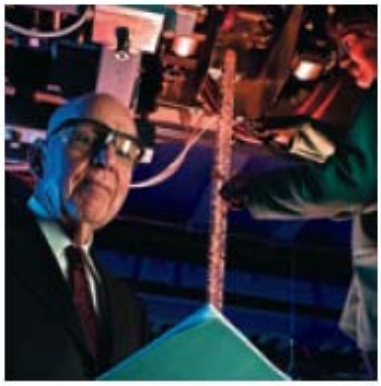
- The annual revenue of the company the bubble represents, an indicator of the total resources it can bring to bear for the purpose of innovation
- The global footprint of the company, an indicator of its presence in geographic hot-spots of inventions of specific technologies
- The amount of litigation in which the company has been involved as a plaintiff or a defendant

The bubble chart confirms what the heat map indicated. Samsung and Sony both have made substantial investments in technology and related IP. Sharp Corporation appears to have a small portfolio, mediocre portfolio strength (Vision axis), and is not as well positioned in the market as Samsung and Sony. The heat map indicates that Sharp has significant annual revenue even though it is far less than Samsung and Sony.

More behind the glass

Corning is known for providing the LCD industry with a reliable supply of high-quality glass substrates. Yet the advantages we bring to customers extend well beyond the product itself. Our advanced products and technologies are backed by decades of leadership in research and development, extensive technical expertise, a commitment to addressing customer needs, and an ongoing spirit of innovation. At Corning, industry-leading products are just the beginning—there is always more behind the glass.

History



Knowledge

People

Technology

Ecology

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http://www.corning.com/LTA

Metamerism and the Bathroom 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.

At one point in time, at Intel, I was responsible for the introduction of "Skins" to the notebook world. "Skins" had already become popular in software where applications could be skinned, providing a customized look for users. Skins were also already popular for cell phones where physical enclosures were available to provide a unique look to as cell phone to both personalize and distinguish it from the millions of others that had the exact same cell phone model. The one big difference in the notebook world was that individuals were invited to compose their own skins, emblems or images that would grace the outside of their notebooks, making their particular notebook not only relatively unique among those that had that particular model but absolutely unique, possessing a user composed personalized skin that absolutely no other notebook had.

The problem with such an undertaking was that although most every has eyes, almost no one understands vision, specifically the human visual system, and more specifically metamerism. At Intel, we worked with FedEx/Kinkos and Skinit, as the provider of custom skins. The idea was that people would submit their own images to Kinko's and that they would create custom notebook skins based on user submitted imagery. FedEx's great concern was that they would have a great influx of new users that were unused to dealing with metamerism issues and that they would have a large amount of product returns and unsatisfied customers owing to the appearance of the product received being much different from what users perceived as the image they submitted.

In order to address these issues, I wrote several web pages for the Intel site explaining metamerism (and color blindness as well) cautioning users, to be cognizant of these issues as they composed the custom skin for their notebook. Patting my own self on the back, the web pages, at least, were a resounding success and for a time they were the most visited web pages on the Intel site. In large part, I think, the success of the web pages was a result of individuals being given information, or more exactly an explanation, of what they already fundamentally understood about what they saw. For those of you still following but who have never heard of metamerism before or who have not bothered to look up the definition, metamerism is the tendency of object to look different (or look the same) depending on lighting conditions. The color of what is seen in an image is a function of the colors reflected by the inks (or pigments) on the image as well as the distribution of colors falling on that image. A printed image under incandescent lighting will be perceived as different colors under incandescent lighting vs. daylight vs. florescent. The sample that you bring to the paint store may match well under the incandescent lights of the store but may be a horrible match when it is on the walls in your home under daylight. Taos has made a vibrant business selling their metamerism adjustment chip to display makers to compensate for how emissive displays are perceived under various lighting conditions.

This has been a long introduction to highlight two facts. One is that the public inherently understands metamerism. The second is that metamerism provides an immense business opportunity.

Metamerism and the Bathroom TV: In several articles, I have pointed out that Bruce, when he refers to "A great TV in Every Room", there is no caveat of "… except the bathroom". Bathroom TVs are already standard in premium hotel rooms (particularly Westins) and are increasingly common in movies and TV commercial s e.g. the Comcast commercial that end in "Who puts a Telly in the Lew?" Wake up guys, that is a customer calling.

Bathroom TVs also have a number of other potential applications owing to the privacy of the room in which they are situated. These include security, and as a digital mirror, among others. The digital mirror aspect has been previously explored by Philips, but may not have been as well positioned as it might have been, and certainly the price has come down in cost since the idea was first floated. The idea of a digital mirror, as offered by Philips was based on providing perspectives that were not available using a standard mirror, even multiple standard mirrors. While this is valuable, I suggest that metamerism compensation may be the aspect that gets the bathroom TV market going.

While it is always questionable when one speaks for a group that they are not part of, I would say that make-up and its application comprise a significant part of the lives of many consumers. When you walk into a department store, you must come in through the make-up department as that is **located at the entrance of every department store**. The reason for this is that the mark-up on make-up is astronomical… and the reason the mark-up is so high is that consumers will pay an astronomical margin for what they know may only be slightly better.

Consumers pay these exorbitant prices for make-up and take the product home and apply using a conventional mirror, millenniums old technology, frequently/usually under conditions that are much different from the lighting where they will be viewed. Most everyone has seen photographs where someone put considerable time and effort in applying their makeup only to have it photograph badly, sometimes bizarrely, or otherwise exhibit different colors than what the user intended or saw when she was putting it on. A button on a digital mirror that automatically adjusts for the lighting in the current room and the lighting in the intended viewing environment (I am under fluorescents but I would like to see how I look under daylight) would be worth considerably more than the 600% mark up and the several hundred dollar premium per year of using a finer make-up.

Veterans of the TV industry are familiar with gender issues, particularly the problems that the projection TV industry had convincing women to accept these large boxes (older projection TVs) in their living rooms. Being an industry that is almost completely male, it took a long time for this message to sink in and for the industry to focus on producing slimmer product. However, with that lesson learned, the industry continues in an exclusively male mode both ignoring the interests of women and ignoring the opportunity. A digital mirror that shows a woman how she is really going to look in the environment where she is headed, that shows multiple perspectives not possible with a conventional mirror, will be worth its weight in gold.

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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.

Penetration and Structure…

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.

Nielsen: US TV Penetration Drops

In early May, Nielsen reported:

> The 2012 UEs also reflect a reduction in the estimated percent of U.S. homes with a television set (TV penetration), which declined to 96.7 percent from 98.9 percent.

UE stands for Universal Estimate, though limited in scope to the US. I think this is a good trend for the US as a whole. TVs have incredible sucking power: it sucks your money, power, time, and your brain. Less TV is more. And I have three. One, a 34-inch Sony CRT TV, is in the living room. The second, a 32-inch Toshiba LCD TV, is in the family room. The third, a 19-inch Hitachi CRT TV, is in the garage waiting to be taken to a recycling center. The two TVs that we do use are not connected to any TV source; both act merely as monitors to display DVDs and VHS tapes. Although we are thoroughly penetrated by TVs no one watches a single minute of TV through our TVs, and it'll likely stay that way.

> *Note: Nielsen reported that this decline represents 2010 census data for the first time in their reporting. This was the first decline since 1992, when Nielsen adjusted its stats to take into account data from the 1990 census. Three interrelated factors may explain the downward shift, Nielsen posits:*
>
> - *The shift from analog to digital broadcasting, which dipped after the change went into effect and has not rebounded since;*
> - *The recession and worsening economic and financial conditions of US households;*
> - *The rise of OTT video and people viewing across multiple platforms.*

3M Collimating Multi-layer Optical Film Simplifies LED Backlight Structure

3M's new class of integrated optical films, known as 'Collimating Multi-layer Optical Film' (CMOF), can eliminate all free-floating films, as well as the light guide from LED LCD backlights.

What this means is that complicated structure of the LED backlight and associated costs will go down significantly.

> CMOF is based on 3M's multi-layer optical film technology platform that is used to make current display films such as DBEF reflective polarizers and ESR reflector films. By leveraging CMOF, 3M has demonstrated how to reduce the amount of light management material in an LED LCD backlight by an order of magnitude—significantly improving the overall environmental profile, while enabling non-incremental improvements in cost, as well as the simplicity of products, display systems and supply chain.

With a simpler LED backlight manufacturing throughput should increase as well as yields. At the same time the cost of LED backlights should go down by quite a bit. With lower costs LED backlight adoption in LCD monitors and TVs should increase, paving a future that is mercury-free in the display electronics that we purchase.

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Tough, yet sophisticated.

Corning® Gorilla® Glass is changing the face of television. Remarkably thin and lightweight, Corning Gorilla Glass enables streamlined designs that dissolve the boundary between you and the action. Its amazing optical clarity brings TV images to life. And it features exceptional durability to handle those moments when viewing unintentionally becomes a contact sport.

Learn more at CorningGorillaGlass.com

Look for Corning® Gorilla® Glass on Sony BRAVIA HDTVs at leading electronic retailers.

Approximately Right

Looking Back at 2010 and Forward to 2011

by David Barnes

David Barnes brings more than forty years of experience in the capital equipment, semiconductor and TFT LCD markets to bear on client concerns. He introduced market-leading test-repair systems for TFT manufacture (ArrayChecker and ArraySaver lines) in the mid 1990's. Later that decade, he negotiated joint ventures between Philips Electronics and LG Electronics through due diligence, then stayed in Seoul to support the board from conception through the IPO in 2004. After the first dual listing on NYSE and KSE, he provided similar services to more clients as VP of Strategic Analysis for DisplaySearch. Assignments in recent years include IPO, project funding, underwriting, due diligence and debt restructuring. He now provides services through BizWitz, LLC. He attended the University of California at Santa Cruz.

Sony admits profits from LCD TV sets are hard to obtain and Best Buy admits fancy sets are hard to sell. iSuppli predicts US shipments will decline for the first time in 2010. Such news in December confirms earlier warnings in this column that producer expectations for 2010 would go unmet unless prices met consumer expectations. Some product and price adjustments were made during the holiday season. These were too little too late but they position the market for a better 2011.

In hindsight, aspirations for 3D LCD TV demand appear to be a case of inside-out marketing. Panel makers saw faster 3D frame rates as a way to lever the natural advantage of LED backlights. Most of the additional cost would arise in the eyeglasses, which were separate from panel makers' businesses. TV brands and retailers saw 3D sets has a way to lever the excitement of Avatar-like movies and stimulate replacement of older sets. Unfortunately, consumers remained skeptical about expensive 3D glasses and movie studios remained focused on theater box office sales. The industry learned from this belatedly and began designing 3D screens that use inexpensive glasses such as film-patterned-retarder panels from LG Display. It looks like such products will increase 3D penetration in 2011.

Panel makers and brands succeeded in convincing consumers that LED backlights were the next big thing in 2010. The problem with that was cost. A few premium sets could be sold, but not lots of them. New Plasma sets looked more attractive to some shoppers. Producers and brands who piled into the LED backlight category found themselves with a lot of expensive inventory. The price premium over CCFL units could not be sustained and LED costs could not be reduced as quickly as hoped. The good news is that progress was made and new components should reduce costs for LED backlights in 2011.

Outside-in marketing assesses consumer preferences as these are revealed through behavior. Using such measurements, we can see that reducing the average price per square foot (meter or inch) of LCD TV display is essential for increasing demand. Elastic demand relative to price occurs when the slope of demand is steeper than (negative) one when demand and price are plotted on log-log axes. In such cases, reducing price is rational because sales revenue increases as demand increases faster than price declines. Looking at DisplaySearch data for all of 2007, 1008 and 2009, we measure elasticity of 1.7, which is quite favorable. At that rate, LCD TV screen area doubles when the area price decreases 35%. This historical trend is plotted below.

The implication is that producers will slow demand growth if they slow the pace of average price decline. That is what happened in 2010 when the supply chain geared up for more LED and 3D units. The average LCD TV set price remained flatter than usual for most of 2010. Some people were surprised at the pace of price reductions in the fourth quarter, but these were reasonable. As plotted below, DisplaySearch's PriceTrack data shows LCD TV panel prices declined at the historic rate when measured from December to December. The long-term pace of area price reduction has been in the 19% to 20% regime since the mid-1990s. The market forces have changed little since large AMLCD began shipping. Recent data shows that the pace of panel price reductions returned to normal in order that growth could continue. At the historic rate, price falls 35% in about 23 months, so we should expect a doubling of demand every two years. We could see more sets and larger sets shipping in 2011 if panel prices remain on track.

There are reasons to expect panel prices will fall slower than normal again in early 2011, however. This time, the reason is capacity growth, which should decelerate compared to 2010. That is a healthy and natural reaction, so prices could adjust to market demand later in the year on a global basis.

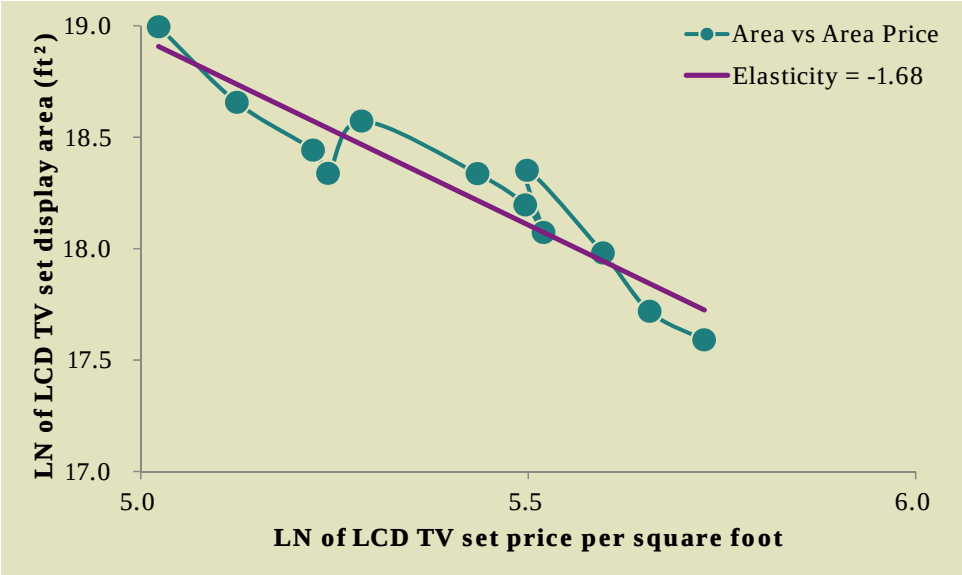

Figure 1: Elasticity of LCD TV Display Area Demand, Q1'07 – Q4'09

Source: DisplaySearch, Q1'10 Global TV Report; BizWitz analysis

Economic Conditions

The prospects for demand growth in the USA may depend more on price reductions than it may in BRIC countries next year. China and Brazil will tighten their belts a little to curb inflation but consumer sentiment remains positive there. Here, we see mixed messages from the stock market and the employment market. Stock prices on US exchanges rose in the fourth quarter of 2010 in response to the Bernanke put (quantitative easing) and holiday retail sales are on course for a 4% to 5% increase over 2009. In other news, the S&P/Case-Shiller index of home prices through October signaled a double-dip and the percentage of adults employed declined again in November.

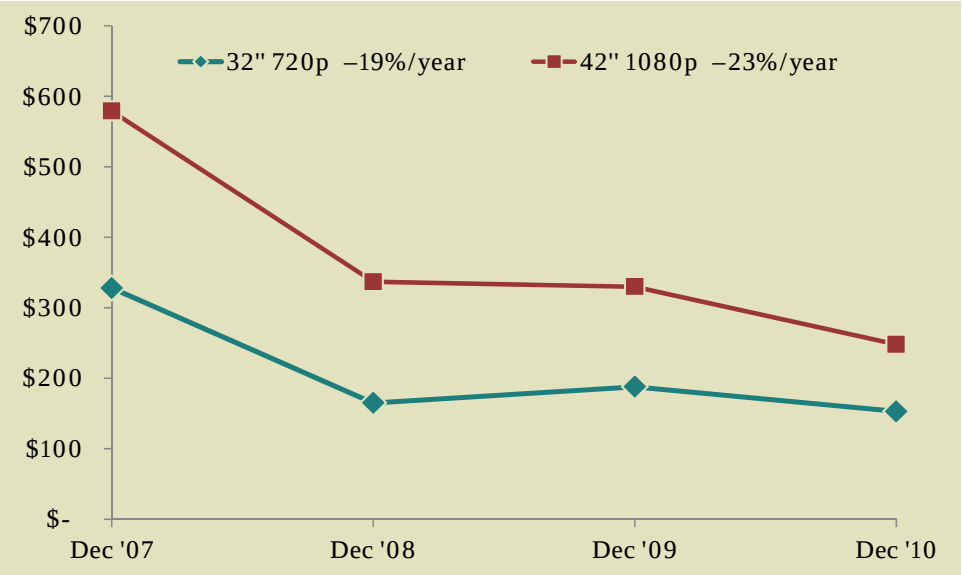

Figure 2: Area Price of LCD TV panels in December

Source: DisplaySearch, PanelTrack; BizWitz analysis

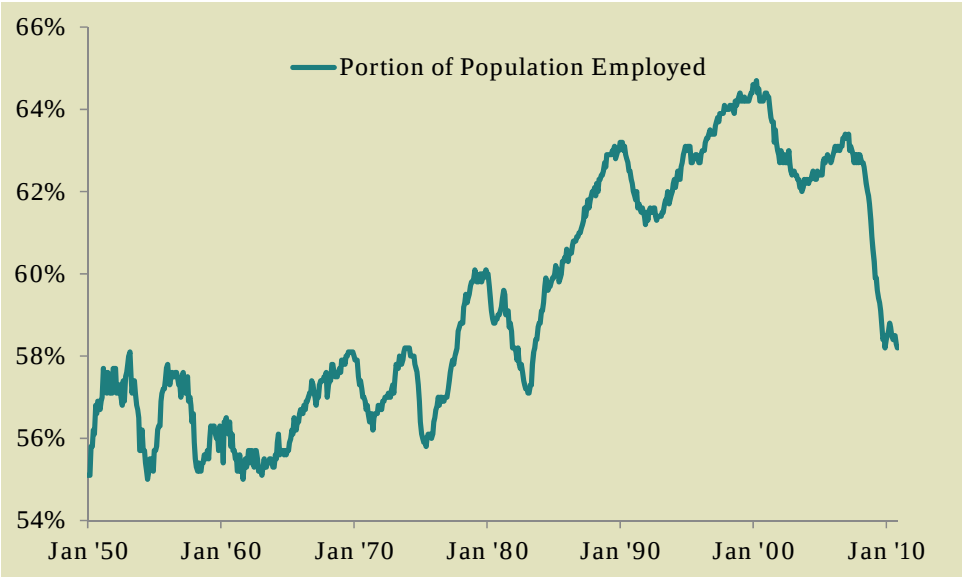

Figure 3: Percentage of US Adults Employed Through Nov '10

Source: US Bureau of Labor Statistics, December 2010; BizWitz analysis

Unemployment figures, which are reported widely, count only those unemployed recently and looking for work. The total number of adults without work was 41.8% of the US population in November 2010. Many of these people work hard keeping house or may never work outside the

home but the point is that only 52% of adults have jobs. That is a level not seen since August 1983. Job losses have erased most of the gains made since dual family incomes lifted domestic spending power in the 1970's. Economic conditions may improve in 2011 but we may not see the level of buying power we took for granted last decade until next decade.

Retail Conditions

Weaker purchasing power has led to stronger retail growth in discount channels such as warehouse and superstores compared to sales in specialized electronics stores. American consumers increased their spending in discount stores 13% a year from 2000 through the first quarter of 2008. Since then, discount store receipts have grown only 2% a year.

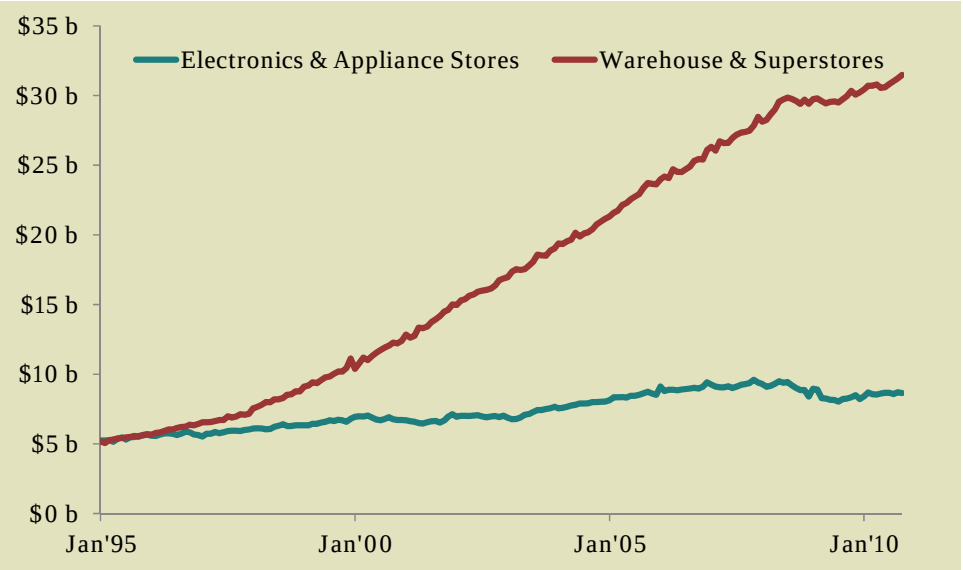

Figure 4: Sales in Electronics and Warehouse Stores Through Oct '10 (USD billions)

Source: US Census Bureau, NAICS 443 & 45291, December 2010; BizWitz analysis

Conditions in conventional LCD TV venues have deteriorated more. The annual pace of sales growth there was only 5% through the first quarter of 2008. Since then, growth turned to decay as sales decreased at a 3% annual rate. American shoppers are spending more time and money in discount stores seeking bargains.

The big box retail leader, Best Buy, has tried to counter the rise of discounters by offering superior services before and after the sale. The strategy seemed to work until mid-2009. Since then, consumer electronics and service income have both declined year-on-year. In the most recent earnings call with analysts, Best Buy's CEO expressed concern over keeping good employees in his stores as the company cuts budgets for commissions and bonuses. Without good help in the aisles, there is little difference between Best Buy and Wal-Mart.

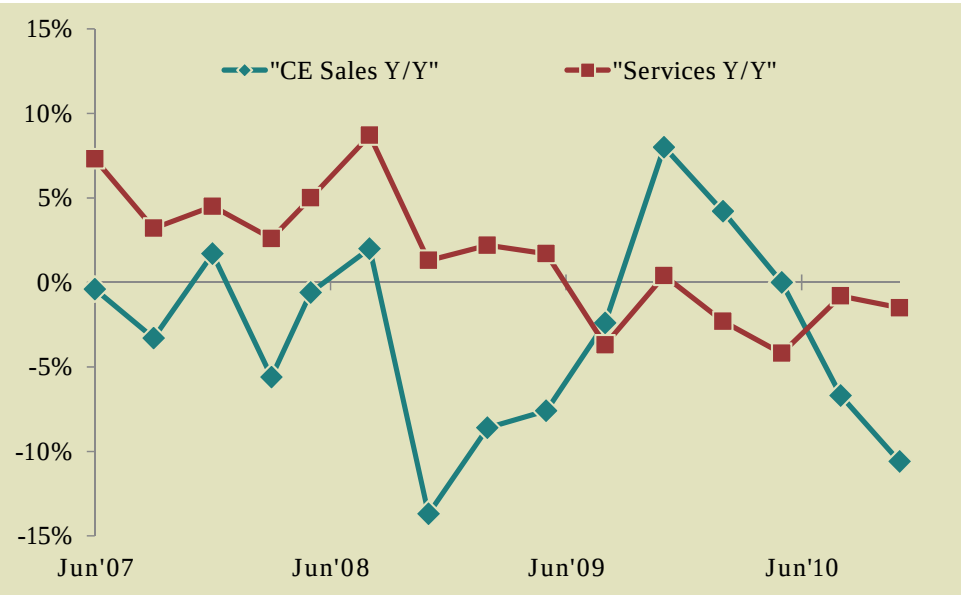

Figure 5: Consumer Electronics and Service Sales at Best Buy (year-on-year))

Source: Best Buy disclosures (their quarters are based on work weeks); BizWitz analysis

The good news for Best Buy and other specialty retailers is that consumers appreciate help when buying smart phones or tablets. Those product segments performed better than the TV category. This bodes well for future LCD TV and home theatre products. As consumers become more aware of internet TV and more products come to market, consumers may appreciate help selecting and installing sets with new features. I look forward to improving conditions in the LCD TV market next year.

Vivid & Clear Motion Picture

- Fast and stable response time provides you motion picture without image distortion
- Cooper lines helps the panel to handle movie data at high speed and volume without any data loss
- Scanning Backlight technology is applied to realize superior moving image quality of 240Hz or above level

Touch Screen Interactive Functions

- Horizontal aligned Liquid Crystal does not have image retention in video streaming condition when it is touched
- It has 10 times faster recovery rate after the array is scattered by touching the panel
- Representative sample of an interactive function is to be used in Public display, IPTV, Home Network and Game area

Low Power Consumption

- High aperture ratio and simple BLU structure with EEFL bring users' low power consumption
- Optimal Power Control algorithm which controls BLU dimming by analyzing the display data reduces cumulative power cosumption
- Environment friendly sources which dose not contain Pb.

No Color Wash

- The colors are the same regardless of the view at any angle with lowest Color shift and Gamma Shift of IPS
- The colors are not distorted because it does not cause image blurring which brings color wash
- There is no distinctive color distortions in the shifts between color levels

Full HD LCD TV.
IPS technology brings the best quality screen to
TruMotion 240Hz
The right choice of true brightness on your TV.

IPS technology works everywhere, watching high speed movie or trying it by touch, it delivers the ultimate brightness that you're looking for!
Experience the clear difference, now.

LG Display

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

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.

SID 2011: Green Displays

On May 18, I attended a special conference-within-a-conference about Green Displays, hosted by IMS Research. It turns out that this topic runs deep and wide, but there was one particular aspect that I thought would be worth sharing. Consider the following comparison between two Sony 46-inch LCD HDTVs.

The Qualia 005 was the first LCD HDTV to use LEDs for the backlight. It consumed 612 Watts of electricity, was 5-inches thick, and weighed 130 pounds. Oh, and it sold for a mere $15,000. Compare that with one of Sony's current offerings: the 46-inch Bravia KDL-46EX520. This also uses LEDs as a light source, but is rated at just 103 Watts. That's about the same as a single 100 Watt incandescent light bulb, and it is an 83% reduction in power consumption. At the same time, the weight has dropped to 31 pounds, and the case is just 1.65-inches thick. That means a 67% reduction in thickness, and 76% reduction in weight.

It's obvious that energy will be saved because the set will draw less electricity when operating, but there are energy implications for the other specifications. For example, you can fit three of them in the same space as the other model. That means more pieces per container, which means lower shipping costs. And the lower weight also lowers the shipping costs. And all those are savings that can eventually find their way to the consumer in the form of a lower purchase price. Clearly, not all the savings in the new model come from lower energy costs, but it's one factor that makes it possible to sell the newer model for $989, which is about 93% less than the first model.

And whether you care about environmental green or not, that's a lot of folding green that you save.

Green Tips

No, the title is not about the new shoots appearing as spring arrives (there still are some piles of snow around here as I write this). I'm talking about environmentally-friendly ideas. I just came across a site (actually I rediscovered it) that has some great resources. It's the Green tab at the Digital Tips site, which is published by the CEA (the same organization that puts on the Consumer Electronics Show every year). On this page, you'll find links to places that you can donate used electronic gear so that it can be reused, or you can find out ways to get it recycled responsibly. You'll also find suggestions on ways to be smart about the electronic products that you buy, and how to save energy when using the ones that you have.

Yes, this is an industry-sponsored site, so you may find some points that you might interpret differently, but overall, it's a good resource and a great place to start.

HDTV Sets Turn Green

No, this is not an announcement of a major recall. The Consumer Electronics Association (CEA) commissioned a study of energy use by flat panel HDTVs, covering 13- to 65-inch LCDs and 42- to 65-inch plasma sets. According to a press release, the results indicate that power consumption of LCD sets when in use dropped 63% from 2003 to 2010. Standby power use for LCDs dropped 87% from 2004 to 2010. Plasma posted impressive gains as well, dropping 41% of active power and 85% of standby power use from 2008 to 2010.

Some of the gains for LCD sets can be attributed to the growing use of LEDs as backlights instead of the traditional fluorescent tubes. Plasma technology has improved so that more ultraviolet light is produced in each cell, resulting in more light for less power.

Now, you need to consider the source when looking at these results. The CEA is an unabashed cheerleader for the manufacturers, so it would be a surprise if the report didn't paint a favorable picture. For example, the press release states that "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." Now, that may seem impressive if you're thinking about a 42″ HDTV, but I suspect that the "average TV sold in 2010″ was somewhat smaller than that, and the 100 watt draw would seem reasonable for something like a 32″ set. I also did not see an explanation for why the LCD figures started with 2004, but the plasma figures didn't start until 2008. If you want to check out the report for yourself, here's the link: http://www.ce.org/PDF/PowerConsumptionTrends.pdf.

Even considering the source, however, it's clear that great strides have been made to cut down the energy consumption of flat panel HDTVs. And no matter how you slice it, that's a good thing.

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Display Industry Calendar of Events

A detailed calendar with active URLs is maintained by Veritas et Visus. Please notify mark@veritasetvisus.com to have your future events included in the listing. http://www.veritasetvisus.com/industry_calendar_2010.htm.

January 2011			
January 4-5	Storage Visions Conference	Las Vegas, Nevada	
January 5-7	Digital Hollywood CES	Las Vegas, Nevada	
January 6-9	2011 International CES	Las Vegas, Nevada	
January 19-20	NEPCON World Japan	Tokyo, Japan	
January 19-21	LED/OLED Lighting Technology Expo	Tokyo, Japan	
January 19-21	NEPCON World Japan	Tokyo, Japan	
January 19-21	Photovoltaics Summit	Phoenix, Arizona	
January 22-26	Tangible, Embedded, and embodied Interaction	Funchal, Portugal	
January 22-27	Photonics West 2011	San Francisco, California	
January 23-27	Electronic Imaging 2011	San Francisco, California	
January 24-27	Stereoscopic Displays and Applications	San Francisco, California	
January 25-27	ICE Totally Gaming	London, England	
January 25-29	MacWorld Expo	San Francisco, California	
January 26-27	DisplaySearch Japan Forum	Tokyo, Japan	
January 26-28	Semicon Korea	Seoul, Korea	
January 31 - February 3	Nanomaterials, Nanofabrication, and Organic Electronics	Adelaide, Australia	
February 2011			
February 1-3	Integrated Systems Europe	Amsterdam, Holland	
February 1-3	Imagina 2011	Monaco	
February 4	Organic Displays, Lighting, & Electronics	Los Angeles, California	
February 6-11	European Conference on Liquid Crystals	Maribor, Slovenia	
February 7-10	Flexible Electronics and Displays Conference	Phoenix, Arizona	

February 12-17	Medical Imaging	Orlando, Florida	
February 13-16	Intelligent User Interfaces	Palo Alto, California	
February 15	Displays for Challenging Environments	Warwick, England	
February 15-17	Broadcast Video Expo	London, England	
February 15-18	Hollywood Post Alliance 2011 Tech Retreat	Rancho Mirage, California	
February 18-20	Symposium on Interactive 3D Graphics and Games	San Francisco, California	
February 22	Smart TV Evolution Korea	Seoul, Korea	
February 22-25	Digital Signage Expo	Las Vegas, Nevada	
February 23-28	Advances in Computer-Human Interactions	Gosier, Guadeloupe	
February 25-27	Sound & Vision 2011	Bristol, England	
February 28 - March 4	Game Developers Conference	San Francisco, California	
March 2011			
March 1-2	US FPD Conference	San Diego, California	
March 1-2	Over-the-Top TV & Video	San Jose, California	
March 1-4	LED China 2011	Guangzhou, China	
March 1-4	Sign China 2011	Guangzhou, China	
March 1-5	CeBIT 2011	Hanover, Germany	
March 2-3	Electronic Displays Conference 2011	Nuremberg, Germany	
March 3	Createasphere/Entertainment Technology Exposition	Universal City, California	
March 3-4	International Thin-Film Transistor Conference 2011	Cambridge, England	
March 5-7	International Conference on Imaging Theory and Applications	Algarve, Portugal	
March 6-9	Focus on Imaging	Birmingham, England	
March 8-10	Air Traffic Control	Amsterdam, Holland	
March 10-11	SID - ME Spring Meeting	Seeheim, Germany	
March 14-18	2011 Measurement Science Conference	Pasadena, California	
March 15-17	FPD China	Shanghai, China	
March 15-17	Laser World of Photonics China	Shanghai, China	

March 17-19	EHX Spring	Orlando, Florida	
March 19-20	Symposium on 3D User Interfaces	Singapore	
March 19-23	Virtual Reality 2011	Singapore	
March 22-24	Phosphors Summit	San Antonio, Texas	
March 22-24	Image Sensors Europe	London, England	
March 23	Korea FPD Conference	Seoul, Korea	
March 28-31	Cinemacon	Las Vegas, Nevada	
April 2011			
April 4-6	Smart Fabrics 2011	London, England	
April 4-8	MIPTV	Cannes, France	
April 5-6	Printed Electronics Europe	Dusseldorf, Germany	
April 5-6	Photovoltaics Europe	Dusseldorf, Germany	
April 5-7	Photovoltaic Technology Show	Stuttgart, Germany	
April 6-10	Laval Virtual	Laval, France	
April 9-14	NAB 2011	Las Vegas, Nevada	
April 10-12	Global FPD Partners Conference	Hyogo, Japan	
April 12-14	Sign UK/Digital Signage Showcase	Birmingham, England	
April 13-14	International Eye Tracking Conference	Reno, Nevada	
April 13-15	FineTech Japan & Display 2011	Tokyo, Japan	
April 13-15	Touch Panel Japan	Tokyo, Japan	
April 14-15	2011 Taiwan FPD Conference	Taipei, Taiwan	
April 19-20	Intelligent Video Conference	Los Angeles, California	
April 22	DisplaySearch Japan Forum	Tokyo, Japan	
April 22	Backlighting Asia	Seoul, Korea	
April 25-29	SPIE Defense, Security, and Sensing	Orlando, Florida	
April 25-26	Interactive Displays 2011	Sacramento, California	
April 27-28	Digital Signage Show 2011	San Francisco, California	

April 27-28	3D Gaming Summit	Universal City, California	
April 28-30	International Sign Expo	Las Vegas, Nevada	
	May 2011		
May 3	The Power of LEDs	San Jose, California	
May 3-4	Smart Lighting 2011	Dusseldorf, Germany	
May 3-6	International Conference on Animation, Effects, Games, and Digital Media	Stuttgart, Germany	
May 6-8	China Optoelectronics and Display EXPO	Shenzhen, China	
May 7-12	CHI 2011	Vancouver, British Columbia	
May 9-11	Digital Holography and Three Dimensional Imaging	Tokyo, Japan	
May 10-12	SEMICON Singapore	Singapore	
May 11-13	CEDIA Expo Asia Pacific	Sydney, Australia	
May 15-20	SID International Symposium	Los Angeles, California	
May 16	SID Business Conference	Los Angeles, California	
May 18	Touch and Interactivity	Los Angeles, California	
May 18	Green Displays	Los Angeles, California	
May 19	eBook Market Evolution	Los Angeles, California	
May 16-18	3DTV-CON 2011	Antalya, Turkey	
May 17-18	London, England	London, England	
May 18-19	Screen Media Expo Europe	London, England	
May 19-20	DisplaySearch China FPD TV and HDTV Conference	Shenzhen, China	
May 23-26	Laser World of Photonics	Munich, Germany	
May 24-26	Dimension3 Expo	Seine Saint Denis, France	
May 24-26	Digital Signage Expo 2011	Essen, Germany	
May 25-27	Graphics Interface 2011	St. John's, Newfoundland	
May 25-27	Conference on Intelligent Technologies for Interactive Entertainment	Genova, Italy	
May 31 - June 2	CeBIT Australia	Sydney, Australia	
May 31 - June 3	EuroVis 2011 / Eurographics	Bergen, Norway	

May 31 - June 4	Computex 2011	Taipei, Taiwan	
June 2011			
June 2-5	SIIM 2011	Washington, DC	
June 7-9	E3 Media and Business Summit	Los Angeles, California	
June 8-9	Ink Jet Technology Showcase	Barcelona Spain	
June 9-10	Digital Signage Show Australia 2011	Sydney, Australia	
June 11-17	InfoComm '10	Orland, Florida	
June 13-14	Projection Summit	Orlando, Florida	
June 13-16	Nanotech Conference & Expo	Boston, Massachusetts	
June 14	Infocomm DisplaySearch Digital Signage Conference	Orlando, Florida	
June 14-16	Photonics Festival: OPTO Taiwan , SOLAR, LED Lighting, Optics	Taipei, Taiwan	
June 14-16	SEMICON Russia 2011	Moscow, Russia	
June 14-16	SGIA Printed Electronics and Membrane Switch Symposium	San Jose, California	
June 20	Mobile Imaging and Display Korea	Seoul, Korea	
June 20-23	Web3D	Paris, France	
June 21-22	International Conference on Stereoscopic 3D for Media and Entertainment	New York, New York	
June 21-24	CEDIA Expo Europe	London, England	
June 21-24	OLED Expo 2011	Seoul, Korea	
June 21-24	LED & Solid State Lighting Expo	Seoul, Korea	
June 22-24	3D & Virtual Reality Expo	Tokyo, Japan	
June 22-24	Electronic Materials Conference	Santa Barbara, California	
June 22-24	Haptics Symposium	Istanbul, Turkey	
June 27-30	Cinema Expo	Amsterdam, Holland	
June 28	Close Look into the Touch Panel Market	San Jose, California	
June 28-30	LOPE-C -- Large Area, Organic and Printed Electronics Convention	Frankfurt, Germany	
June 29 - July 1	EuroITV 2011	Lisbon, Portugal	

July 2011			
July 4-7	International Conference on Materials Chemistry	Manchester, England	RSC Advancing the Chemical Sciences
July 7-10	SINOCES	Qingdao, China	CES
July 9-14	HCI International	Orlando, Florida	
July 11-13	International Symposium on Flexible Organic Electronics	Thessaloniki, Greece	ISFOE
July 12-14	Intersolar North America	San Francisco, California	inter solar North America
July 12-14	Semicon West 2011	San Francisco, California	semi
June 12-15	International Symposium on Wearable Computers	San Francisco, California	ISWC 2011
July 12-18	National Stereoscopic Association Convention	Loveland, Colorado	
July 13-16	Nanosciences & Nanotechnologies	Thessaloniki, Greece	N&N
July 15	Touch Screen Korea	Seoul, Korea	ITconference
July 19-22	SMPTE Australia	Sydney, Australia	SMPTE
July 20-21	China International Touch Screen Exhibition & Seminar	Shanghai, China	
July 20-22	China International Flat Panel Display Exhibition	Shanghai, China	
July 26-27	The LED Show	Las Vegas, Nevada	theLEDshow
July 27-28	Japan Forum	Tokyo, Japan	DisplaySearch
August 2011			
August 7-11	SIGGRAPH 2011	Vancouver, British Columbia	SIGGRAPH
August 16-17	Emerging Technologies Conference	San Jose, California	DisplaySearch
August 21-25	SPIE Optics+Photonics	San Diego, California	SPIE The International Society for Optical Engineering
August 24-26	European Conference on Cognitive Ergonomics	Rostock, Germany	ECCE 2011
August 30 - September 2	Mobile HCI 2011	Stockholm, Sweden	Mobile HCI 2011
September 2011			
September 2-7	IFA 2011	Berlin, Germany	IFA
September 2	IFA DisplaySearch Business Conference	Berlin, Germany	IFA DisplaySearch Business Conference
September 5	Silicon Chip Industry Training Seminar	London, England	FutureHorizons The Global Semiconductor Industry Analysts

September 7-9	Semicon Taiwan	Taipei, Taiwan	
September 7-10	CEDIA Expo	Indianapolis, Indiana	
September 8-9	China FPD	Shanghai, China	
September 9-13	IBC 2011	Amsterdam, Netherlands	
September 13-16	PLASA '11	London, England	
September 14-15	3D Entertainment Summit	Universal City, California	
September 19-22	Eurodisplay / IDRC	Bordeaux, France	
September 20-21	Createasphere/Entertainment Technology Exposition	New York, New York	
September 20-23	HCI 2011	Tokyo, Japan	
September 26-28	OLEDs World Summit	San Francisco, California	
September 27-28	RFID Europe	Cambridge, England	
October 2011			
October 2-6	International Conference on Digital Printing Technologies	Minneapolis, Minnesota	
October 2-6	Digital Fabrication 2011	Minneapolis, Minnesota	
October 4-8	CEATAC Japan 2011	Tokyo, Japan	
October 6-9	CeBIT Bilisim EurAsia	Istanbul, Turkey	
October 10-13	Taipei Int'l Electronics Autumn Show	Taipei, Taiwan	
October 10-14	IMID	Seoul, Korea	
October 11-13	Semicon Europa 2011	Dresden, Germany	
October 11-13	Plastic Electronics 2011	Dresden, Germany	
October 11-14	Korea Electronics Show	Seoul, Korea	
October 13-15	Viscom	Dusseldorf, Germany	
October 13-16	ElectronicAsia 2011	Hong Kong, China	
October 16=20	Frontiers in Optics	San Jose, California	
October 17-20	Solar Power International	Dallas, Texas	
October 23-26	AIMCAL Fall Technical Conference	Reno, Nevada	
October 24-27	Showeast	Miami, Florida	

October 24-27	SMPTE 2011	Hollywood, California	
October 26-28	FPD International	Yokohama, Japan	
October 26-28	Green Device 2011	Yokohama, Japan	
November 2011			
November 2-3	Createasphere/Entertainment Technology Exposition	Burbank, California	
November 2-4	Solid State and Organic Lighting	Austin, Texas	
November 3	International Symposium on Emerging and Industrial DLP Applications	Frankfurt, Germany	
November 3-5	Viscom	Milan, Italy	
November 7-11	China Display / Asia Display 2011	Kunshan, China	
November 8-10	SATIS 2011	Paris, France	
November 8-12	Color Imaging Conference 2011	San Jose, California	
November 9-11	VISION 2011	Stuttgart, Germany	
November 16-17	Digital Signage World ASIA	Singapore	
November 15-17	Digital Hollywood Fall	New York, New York	
November 16-18	International Workshop on Flexible & Printable Electronics	Muju, Korea	
November 18	Future of Television East	New York, New York	
November 21	Silicon Chip Industry Training Seminar	London, England	
November 24-26	China International Touch Screen Exhibition & Seminar	Shanghai, China	
November 28 - December 1	ACM Multimedia 2011	Scottsdale, Arizona	
November 30 - December 1	Printed Electronics US	Santa Clara, California	
December 2011			
December 6-8	CineAsia	Hong Kong, China	
December 7-8	Revolutionizing the Television Experience	Los Angeles, California	
December 7-9	SEMICON Japan	Tokyo, Japan	
December 7-9	The European Stereo-3D Summit for Science, Technology and Digital Art	Liege, Belgium	
December 12-15	SIGGRAPH Asia	Hong Kong, China	

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16055 SW Walker Road, Suite #264, Beaverton, OR 97006 U.S.A. Phone +.215.206.6506 membership@lcdtvassociation.org