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## Broadcast, Cellular Détente: Can it all Travel Over the Same Pipe?

From news delivered from the ancient Roman Forum's Rostra to modern day delivery of the Super Bowl to 111.5 million viewers, broadcasting has always been about efficiency.

Efficiency still matters, but the customization and convenience modern unicasting provides for video programming distribution confirms the obvious: Efficiency alone is no longer sufficient. Broadcasters (on all platforms – terrestrial, cable, satellite, IPTV) and wireless/cellular operators are painfully aware that consumers will only demand more personalized delivery of video programming.

Cable operators are in a good position to combine the best of both worlds in the same network with the well-established DOCSIS technology. Satellite and terrestrial operators, however, currently reside on one-way streets and must innovate to establish a reasonable solution to the problem.

As has been written here before, a technical solution that allows for dynamic use of spectrum in which data can either be broadcast or unicast on a single network would be the ideal solution. There is an element within the cellular-based LTE Advanced (LTE-A) specification, known as Evolved Multimedia Broadcast Multicast Service (eMBMS) that allows for broadcasting over LTE networks. The Netherlands' telecom provider KPN recently announced plans to launch a 10-channel broadcast pilot over its 4G network by using eMBMS. Preliminary reports suggest that KPN won't charge subscribers against their monthly time but plans to levy a monthly service charge.

It's still not a perfect solution; there is some interference with already existing terrestrial broadcast networks. And, not surprisingly, there is industry Balkanization that makes for a hostile business environment enabling for the distribution of traditional TV programming over LTE networks.

What if traditional TV programming broadcast over a digital terrestrial network can be distributed over an LTE network and displayed on a smartphone or tablet? In other words, why not get the DTT OTA content to smartphones without having to get a DTT tuner inside that smartphone? It sounds radical but there are some clever engineers in Germany and the U.S. who are working on this very solution. This solution is also not without business hurdles – the Tower Overlay network being developed at the Technische Universität Braunschweig, under the direction of digital TV pioneer Professor Ulrich Reimers, will require some cooperation at the infrastructure level with broadcasters and cellular

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operators. The two industries don't seem quite ready to sign a spectrum-use peace treaty.

The working title for the system, which was demonstrated in late September at IBC, is LTE-A+. It is a term followers of the digital TV market may want to remember because DTC believes that it may play a very important role in the next-generation of television broadcasting.

Stay tuned.

## As Video Needs Proliferate, SoCs Demands Evolve

CES 2014 was something of a coming-out party for the High Efficiency Video Coding (HEVC) codec. TV vendors such as Sony and Samsung and video services like Netflix threw their support behind the format in an effort to bring 4K video to the masses. Behind the scenes, HEVC support continued its march among semiconductor manufacturers in their next-generation System on Chips (SoCs) for home video devices.

Broadcom helped kick things off last year with the introduction of the BCM7445 SoC, and it was followed this year by other leading vendors including Sigma Designs, Entropic and Marvell.

Most chip suppliers will say that adding HEVC codec support into a single chip, even when demand for the new compression standard is still in its infancy, is imperative. Despite the widespread chatter about enabling 4K or UHD, many chip-supplier customers will require the newest video compression standard simply to improve an operator's efficiencies in delivering more HD channels or OTT video.

Yet even as new formats are adopted, SoC vendors will continue to support codecs such as MPEG-2 as the risk of removing legacy codecs is still "too high" for chip vendors to contemplate. With a vast library of content already encoded in MPEG-2, it is unlikely that SoC vendors will retire MPEG-2 support at least several more years.

Beyond the new codec, the continued evolution of the Set-Top Box (STB) into media gateways handling both broadcast and internet content is placing new demands on SoC suppliers to consolidate a range of features including media playing, 3D graphics processing, wireless connectivity, and transcoding capability into a single chip.

Security, too, is increasingly migrating into the SOC, eliminating the need and expense of building boxes with dedicated Smart Card slots. At CES, for instance, Entropic announced that it was working with NAGRA to integrate the latter's On-Chip Security conditional access technology into Entropic's SoCs. By moving the security functionality to the SoC, Entropic claimed, the cost and complexity of developing secure STBs is reduced, which enables device manufacturers to bring new set-tops to market faster.

The consolidation of functions is important both from a cost-savings perspective for STB OEMs but increasingly also for space and power management functions as well. Several operators are experimenting with replacing traditional STBs with HDMI dongles (similar in design to Google's popular Chromecast). These designs place a premium on space but also power conservation, another critical advantage of the SoC, since some designs only draw power via USB. With STB makers committed (voluntarily) to reducing the power consumption of their boxes in the U.S. by 2017, power management is now a critical metric for STB OEMs and critical value-add for SoC suppliers.

## DIGITAL TV RECEIVERS: WORLDWIDE SHIPMENT FORECASTS (2012-2018)

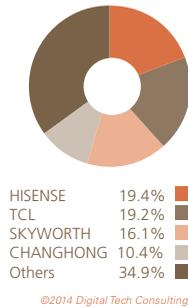
*8th Edition*

DTH satellite STBs, digital cable STBs, IPTV STBs, and DTT STBs and IDTVs are all forecasted in this report that provides a thorough and concise snapshot of the future of digital TV devices.

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## Going Global, A Long and Winding Road

2013 ESTIMATED SHIPMENTS  
OF DOMESTIC LCD TV  
BRANDS IN CHINA



Chinese domestic TV makers are set to retain the market lead (in terms of volume of shipments) in China, currently the world's largest LCD TV market. DTC estimates that 19.7 million TVs shipped into the domestic Chinese market in fourth quarter 2013, which is up 3% over the same period in 2012. Domestic brands represent 82% of LCD TV sales in China, led by Hisense, Skyworth, TCL, Changhong, Konka, and Haier, according to DTC's latest domestic Chinese television market research in conjunction with China-based RedTech Advisors.

Size is still an important measure for Chinese consumers, as larger screened LCD TVs are still the preference. DTC estimates the sales of TVs with a screen size of 42" or over accounted for 80% of overall Chinese domestic LCD TV sales in fourth quarter 2013, an increase of 2% compared to the same period in 2012.

Chinese TV suppliers realize that in addition to offering lower prices, they must also compete at the feature level to lay down a global footprint, which the major domestic Chinese brands say is a primary goal. As early adopters, Chinese TV makers have been promoting UHD TV as a bullet-on-the-box feature to increase domestic sales, although the UHD TV broadcast infrastructure is not yet in place and the TVs don't offer the full complement of capabilities that can be realized with UHD TV.

Competing in the global market is a completely new game for Chinese TV makers, and several issues have to be faced head-on to make progress. First, brand awareness is limited. Consumer preference for the Chinese brands is low in the more developed markets. Second, new entrants must navigate new distribution channels and marketing methods.

Perhaps their biggest challenge is balancing their image as merely low-price players with their desire to compete as high-quality, high-tech suppliers.

DTC's Domestic Chinese LCD DTV Quarterly Tracking Service, which reports on quarterly shipments by screen size, suppliers, chip suppliers, and video compression technology, is available for 2010, 2011, 2012, and 2013 (either by quarter or cumulative).

## HOW DO YOU PLAN FOR A DIGITAL TV TRANSITION?

You do it with guidance from a team of experienced transition specialists. The DTC Digital TV Transition Group provides planning, education, research, and technical design of analog-to-digital TV transitions and next-generation for governments, broadcasters and other-DTV stakeholders around the world. Our team of experts has worked in Europe, the Middle East, Asia, South America, the Caribbean and North America to aid countries in completing complicated transitions.

Every member of our team has been directly involved in analog to digital TV transitions and upgrades to next-generation platforms around the world by evaluating technical standards and specifications, overseeing transmission infrastructure installations, helping government agencies and retailers with consumer receiver procurement, managing government

programs for receiver distribution, and developing consumer education programs.

Because no two transitions are alike, the DTV Transition Group responds to the unique culture, economics, and goals to tailor a DTV Transition to specific country conditions. We take a holistic approach to a transition, having assembled a team with expertise in government relations, retailer and consumer education, technology, market conditions and equipment suppliers. A transition is not about moving from one technology to another. It is about transforming an entire communications system to improve communications for citizens and governments. For more information, please see our website and contact Myra Moore at 214.915.0930