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OTA Digital TV: Years to go to Full Transition

It is generally unacknowledged that there are hundreds of millions of people around the world who watch analog TV. In our seemingly ubiquitous digital world many who think we are nearing saturation see digital TV as a mature market segment.

The truth is that there are still large swaths of the population that don't have access to free over-the-air (OTA) digital TV. In fact, less than one-third of the world's nations are transmitting digital terrestrial TV (DTT) signals today.

Status of DTT Transmissions Around the World

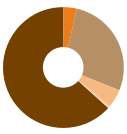
% of Countries not Transmitting **70%**
% of Countries Transmitting **30%**

Many of these countries, especially in Latin America, Africa and the Middle East, are just now making plans for building OTA digital TV systems. These and many other countries that have begun trials are years away from completing their transitions by shutting down analog TV transmissions.

DTC has been involved in the planning and analysis of several DTT transitions around the world, which gives us a unique perspective on the continuing switch from terrestrial analog to terrestrial digital TV. Thus, we are able to share some of the insights and lessons learned when embarking on an OTA analog TV to digital TV transition. Here are only a few:

• It is important to include all major stakeholders in the planning process from the very beginning. Early efforts to build DTT systems are frequently and understandably taken up by broadcast engineers either within a country's regulatory agency and/or by engineers in public and private broadcast organizations. There are many other non-technical aspects of a DTT transition that must be considered from the onset of planning: Regulatory, public policy, relations with neighboring countries, financial, availability and cost of consumer receivers, and the education of retailers, consumers and others impacted by the transition. When choosing a standard – be it SBTVD, ATSC or DVB-T/T-2 – there are non-technical factors that will impact the decision.

Transmission Standards Selected by Countries Around the World



Undecided ATSC ISDB-T
DVB-T DMB-T

• When selecting standards and specifications, it is important that one carefully considers receiver requirements for all technical specifications for both analog and digital reception. In most every case, there will be a period of time (in some cases 10 or more years) when some of the population will only receive analog signals and some will receive digital. A mixing of analog and digital transmissions that don't conform to the traditional regional use of both can have the unintended consequence of limiting the pool of receivers that are available.

• Don't underestimate the importance of preparing a comprehensive education program that simply and frequently informs consumers about the change they may experience in their TV viewing. Getting community leaders invested in the process early on is an important aspect of planning the education component.

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• Don't assume that consumers are the only constituency that requires information and education about the government's DTT and transition plans. It is critical to also develop educational material for the retail community, private broadcasters (if applicable), local content providers, and other government institutions.

DTC has been involved in planning and analysis for several DTT transitions around the world including in the Middle East, the Caribbean, and North America. For more information on DTC's DTT Planning Services, please go to http://dtcreports.com/documents/dtt_dtc.pdf.

The Next Push for Advanced Digital Set-top Boxes: Will 3D be the Catalyst?

For hardware suppliers, it is mostly the makers of TVs and Blu-ray (BD) devices that have realized benefit from the emerging home 3D video viewing business. Set-top box (STB) providers and the makers of integrated chips (ICs) that go in those boxes will have to wait their turn as the current frame compatible system is the only one video service providers can use to quickly get into the 3D content business.

Frame compatible 3D (both the right and left eye's images are squeezed into a normal HD program stream by interleaving them in either a "side-by-side" or a "top-bottom" configuration) does not require any additional processing or formatting beyond decoding and hence 3D programs can be delivered to the home using legacy STBs enhanced by firmware upgrades.

"What cable and satellite providers obviously want to do with their next generation STBs is to seize back control of content rather than simply pass it on to a TV.'

Unfortunately, frame compatible format STBs do little beyond passing along 3D content to the TV. As such, to view a given 3D channel in many cases the consumer first must know the 3D format being delivered, then navigate through on-screen menus and select the appropriate output format to configure his/her TV so it correctly displays 3D content. This is required every time a consumer changes channels from a 2D channel to a 3D channel. Not an attractive way to lure new customers to 3D.

What cable and satellite providers obviously want to do with their next generation STBs is to seize back control of content rather than simply pass it on to a TV. They also want the option of switching to full 1080p resolution MPEG-4 MVC (Multi-View Video Coding, used for 3D Blu-ray) especially as consumers become aware of the quality difference between BD 3D versus frame compatible 3D for the same content.

To achieve these goals new families of ICs are being introduced by semiconductor companies. At CES, for example, Broadcom announced nine new cable, satellite and IP STB system-on-a-chip (SoC) solutions. Broadcom's BCM7425, to look at just one, integrates a real-time HD transcoder coupled with an applications processor and can handle full resolution 3DTV as well as MoCA 1.1 for whole-home connectivity.

STMicroelectronics' STi7108 decoder IC supports 3DTV, content protection and connections to external devices. Integrating a 3D graphics engine capable of generating a 3D Electronic Program Guide and connection to Internet content the device provides inputs for up to six transport streams, and provides full-resolution HD 3DTV over HDMI 1.4 with HDCP copy protection.

Sigma Designs' new SMP8910 media processor for the IPTV STB market and Blu-ray players provides more than 6,000 DMIPs (Dhrystone MIPS) performance via a dual-core 1004k MIPS CPU, and the company says the SoC can handle HD video decoding as well as 3D processing and multi-format audio decoding with plenty of processing power on tap to run middleware, STB and over-the-top (OTT) applications.

If there is a downside to the new 3D silicon it is that decoding and managing two full left and right 3D images requires not only higher performance processors but also additional memory bandwidth and the combination is likely to boost the cost of components in STBs.

Pay TV service providers will likely give this "enhanced" version of 3D the same business-model treatment that it did HDTV and MPEG-4 AVC/H.264 coding in their early days. In order to avoid the considerable expense of deploying new STBs in the field, "BD quality 3D" services will fall into a separate premium tier. Only those ready to add an additional fee to their monthly pay TV bill will get the latest and most powerful STBs.

World's Largest LCD TV Market Keeps it Local

China is still poised to be one of the largest markets for digital television shipments for years to come, according to DTC's latest domestic Chinese television market research in conjunction with Chinese-based RedTech Advisors. As a lot of the world's major consumer markets move on to a HDTV focus and some onto a nascent 3D HD market, domestic Chinese suppliers are finding themselves busy outputting basic LCD TVs into a market that still has millions of analog sets as competition.

True to Chinese consumer products markets, an overwhelming majority of LCD TVs in China are being supplied by domestic Chinese suppliers. In the fourth quarter of 2010 75% of LCD TVs were supplied by domestic brands. Top suppliers included Hisense, Skyworth, TCL, Changhong, Konka, and Haier which combined to ship over 8 million units in the last quarter of 2010. The majority of the remaining 25% of the market is represented by major foreign brands such as Sharp, Samsung and Sony as well as some smaller domestic brands.

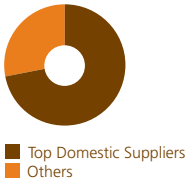
In 2010 45 million digital sets were sold in the domestic Chinese distribution network, of which roughly 70%, or over 31 million, were from the top domestic suppliers mentioned above. According to DTC's research, the most popular screen size shipped by domestic top suppliers was 32". And the top two chip suppliers commanded 69% of the market for integrated chips into LCD TVs.

With a lot of major consumer markets already saturated with LCD TVs, China is poised to sustain domination (in terms of volume of shipments) for years to come. With an estimated 385 million TV households and just the tip of the iceberg revealed, China can definitely be considered the most significant TV market in the world.

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 now available for 2011. The service also includes important information on panel suppliers and OEM/ODM relationships among Chinese TV suppliers and their contractors.

Main Chip Suppliers for LCD TVs Sold In Chinese Market Dominated by Few Players

China Digital TV Market Primarily a Domestic Affair



DTC'S PLANNING SERVICE FOR DIGITAL TERRESTRIAL TV TRANSITIONS

Nearly 80% of the world's countries have yet to build a digital terrestrial TV system and many government agencies that manage spectrum and broadcasting are facing the important task of designing and implementing DTT systems in the near future. Selecting standards and specifications, creating a timetable, and educating broadcasters, retailers and consumers about the DTT transition plan takes time, expertise, and a well-rounded team.

DTC has been involved in planning and analysis for several DTT transitions around the world. From the Middle East to the Caribbean, and North America, DTC has aided countries in assessing receiver requirements and availability, set-top box cost analyses, and the creation of educational materials for retailers and consumers. DTC has the market expertise to aid transitioning countries as they build out DTT systems and plan for the shut off of terrestrial TV analog systems. If preparing for a DTT system and/or an analog shut off, planning and guidance is essential. DTC makes available a free DTT Transition Guide at http://dtcreports.com/documents/dtt_dtc.pdf. To learn how DTC can help you with your transition, please contact Myra Moore at 214-915-0930 or myra@dtcreports.com.

DIGITAL TV RECEIVERS: WORLDWIDE FORECASTS (2009 - 2015)

Fifth Edition

January 2011 US | **$1,750**

This data-intensive report delivered in a spreadsheet format provides worldwide data and forecasts of digital TV receivers. DTH satellite, digital cable, IPTV, and terrestrial platforms are all forecasted in this report that provides a thorough and concise snapshot of the future of digital TV devices.

The report includes:

- Shipment data for STBs and IDTVs for 2009-2015
- Regional and top vendor market share forecasts for 2011
- A section of charts and graphs for ease of interpretation and presentation
- An executive summary that gives an overview of this rapidly changing market.

For more information, please visit
http://dtcreports.com/report_stb.aspx

To order the service, or for more information, please contact Myra Moore at 211.915.0930 or myra@dtcreports.com.

Digital Tech Consulting is a market research firm providing strategic information and analysis to help companies succeed in the consumer digital marketplace. To learn more about DTC and how our analysts might help your company, please contact us at the information below.

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