



Mobile Video

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Additional Information and References

April 2009

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Part 1: Smartphones Coming to the Enterprise!

Following Completion of the Digital Television Transition

in June 2009

Enliten Forecasts 2010

to be the Year for Enterprise Deployment of DTV Capable Smartphones!

Hold onto your hats. This topic promises to provide a wild, rewarding ride.

By now, you've heard of 'smartphones,' mobile devices capable of doing just about anything. As a media manager, you may even have one. But do you really have a handle the big picture: why the delivery of video and rich media (Digital Television – DTV) to cell phones will be such a big deal, or when and how it will happen? More important, what impact and value will it have on us in the enterprise space?

Enliten believes smartphones will be the next great step in enterprise communications since the cellphone and Internet, enabling DTV applications to be distributed to and retrieved from virtually everywhere.

What are Smartphones?

Smartphones are cell (mobile) phones that offer advanced features such as e-mail, Internet access, GPS navigation, advanced organizing and scheduling, and e-book reader capabilities. They may include cameras, editing capabilities, and a built-in full keyboard, external USB keyboard or touch screen keypad. More advanced phones feature operating system software. As the features increase and expand, these smartphones will demand bandwidth similar to laptop computers and the need for 3G, WiFi, and WiMax-like services (Worldwide Inter-operability for Microwave Access). Essentially, these mobile devices are PCs.

What's in it for the Enterprise?

With smartphones and DTV service, enterprise organizations will be able to reach their employees and clients 'anywhere, anytime, on the device of their choice' (a phrase Enliten has referenced regularly over the past couple years), as telephone companies and cable providers compete for voice, data, and video services. Video services to

mobile devices represents the 'quad play' (fourth service point and third screen after the TV and PC displays).

Smartphones will improve communications and training for many enterprises. For some, they will drive revenue. For others, they will improve customer service. For most, the benefits are yet to be determined. With DTV capable smartphones, enterprises can distribute information and training clips to sales representatives and field technicians or service providers. They can have field representatives send video reports back to the home office as incidents occur or inclement weather creates hazardous situations.

Television stations are reportedly using WiMax connections to do live backhaul feeds for news events. Enterprises can do the same for webcasts. Although these are single transmissions, which typically, garner a great deal of attention and management, they clearly establish the model for DTV-based smartphone applications.

There are numerous challenges and obstacles to overcome. Bleeding edge organizations, or those in dire need of improved field communications, are certain to lead the charge. However, Enliten believes it will be mid-to-late 2010 before all the pieces come together and most enterprises embrace the DTV smartphone technology. At that point, wireless companies have service packages in place and products will be field tested. In addition, enterprises will have identified how to use and benefit from the varied and advanced functionality.

As a media manager, responsible for visual-based communications, you will need this time to develop processes and means to produce, manage, track and measure content. You will need the time to establish workflow processes and governance, very similar to what you should be doing today regarding video and rich media, as visual communications converge with computers; everything becomes digital; media departments collaborate with IT departments; and everyone, anyone becomes a producer of video-based content. The IT department will need to address the security, bandwidth, management and control, and compliance issues.

Take advantage of this new media and the time you have to prepare. The benefits are very likely to exceed the challenges.



Mobile Video Part 2: LTE vs. WiMax

Feedback to the previous “Update” was overwhelming. The “Mobile Video” topic proved timely and of great interest. As a result, this issue features a continuation on MobileTV, specifically: Long Term Extension (LTE), the next generation wireless service to be provided by AT&T and Verizon and Sprint’s WiMax service.

As mentioned in the previous “Update” our wireless carriers are working diligently to introduce their 4G service offerings, which among other things, will feature enhanced video capabilities. 4G is the term for fourth-generation wireless (also known as Beyond 3G, the current dominant wireless standard).

Sprint’s WiMAX

Sprint has partnered with Clearwire to provide its open-standard WiMax service. WiMax is based on the 802.16 wireless standard of the IEEE and will average download speeds of 4 Mbps and uploads at 2 Mbps. Theoretically, WiMax can provide download speeds up to 40 Mbps for fixed service and 15 Mbps for mobile service. Although Sprint’s Clearwire service is the first (4G) to be implemented, it will only be available in 10 cities by the end of the year and 15 by the end of 2010.

Sprint’s service is supported by a number of companies, including: Comcast, Time-Warner, Bright House Networks, Google, and Intel. This gives cable companies competitive offers against AT&T and Verizon video-based IPTV (U-Verse and FiOS) and wireless services.

3G		4G	
Third Generation Mobile Standards		Fourth Generation Mobile Standards	
Wi-Fi		Wi-Fi on Steroids	
Voice Video Calls Broadband Messaging E-mail		IP Multimedia Roaming (cross network)	
14.4 Mbps down 5.8 Mbps upload		Targeted to exceed 100 Mbps	
* Not all 4G networks will be mobile WiMAX			
**Theoretical speeds much higher (12 Mbps)			

Types of 4G Networks*	
Mobile WiMAX	LTE
802.16 Open Standard 10 cities today. Network needs to be built. Supported by: Comcast Time-Warner Bright House Networks Google Intel	Long Term Evolution Proprietary Standard Available in 2010 At the earliest. Evolution of existing Networks.
4 Mbps down** 2 Mbps upload**	100 Mbps down 50 Mbps upload

AT&T and Verizon LTE

AT&T and Verizon have selected Long Term Extension (LTE) as their 4G mobile standard. LTE is based on proprietary technologies and will provide download speeds up to 100 Mbps and uploads at 50 Mbps. LTE service will not be available until 2010, with widespread availability not expected until 2012.

LTE is supported by many manufacturers, such as Motorola, Nokia, and Ericsson, who make devices for the GSM standard. GSM is the dominant cellular standard (serving an estimated 80% of the world) and is similar to LTE.

Although WiMax is the first 4G technology to reach the market, LTE is considered by many to be better, projecting all services on single devices. In addition, LTE is expected to reach into rural areas, which currently are unserved by terrestrial wired or wireless voice and data services, via the spectrum AT&T and Verizon purchased as a result of the television station digital transition (scheduled for June 12, 2009).

It is unlikely that WiMax service will reach many of these unserved areas, which would require the expensive and extensive build out of telephone towers and cable plants. Satellite service is the complement to WiMax in these areas.

Other Options

AT&T also plans to roll out the “plus” version of its 3G network, High Speed Packet Access (HSPA+), with speeds up to 20 Mbps. Other companies, including Clearwire and cable operators, will offer various 4G services for both fixed to home and business as well as mobile.

Benefit for the Enterprise?

The U.S. has a wide selection of wireless voice and data services, although, some may dispute the coverage and quality. Today’s wireless provides Internet and limited video capabilities and functionality. The next generation wireless services will provide enhanced video applications. This will give communication, media, and IT managers more tools to reach and inform their employees and clients anywhere, anytime...via, terrestrial wired and wireless as well as satellite connectivity.

The next generation services will provide challenges, such as workflow, governance, security, creation and management of content. They will be the same (or similar) challenges we face today due to the convergence of TV and the PC and the state of digital, data, and IP.

Benefit to Consumers?

Feature rich handheld devices! Improved coverage and service quality! Competitive pricing! Ultimately, there will be a battle between wireless and wired services, especially in the consumer space. Much like today’s voice and data (IM and e-mail) services to cellphones and mobile devices, where consumers drop hardwired voice services into the home, many will exclusively subscribe to wireless broadband service (dropping wired broadband).



Mobile Video Additional Information & References

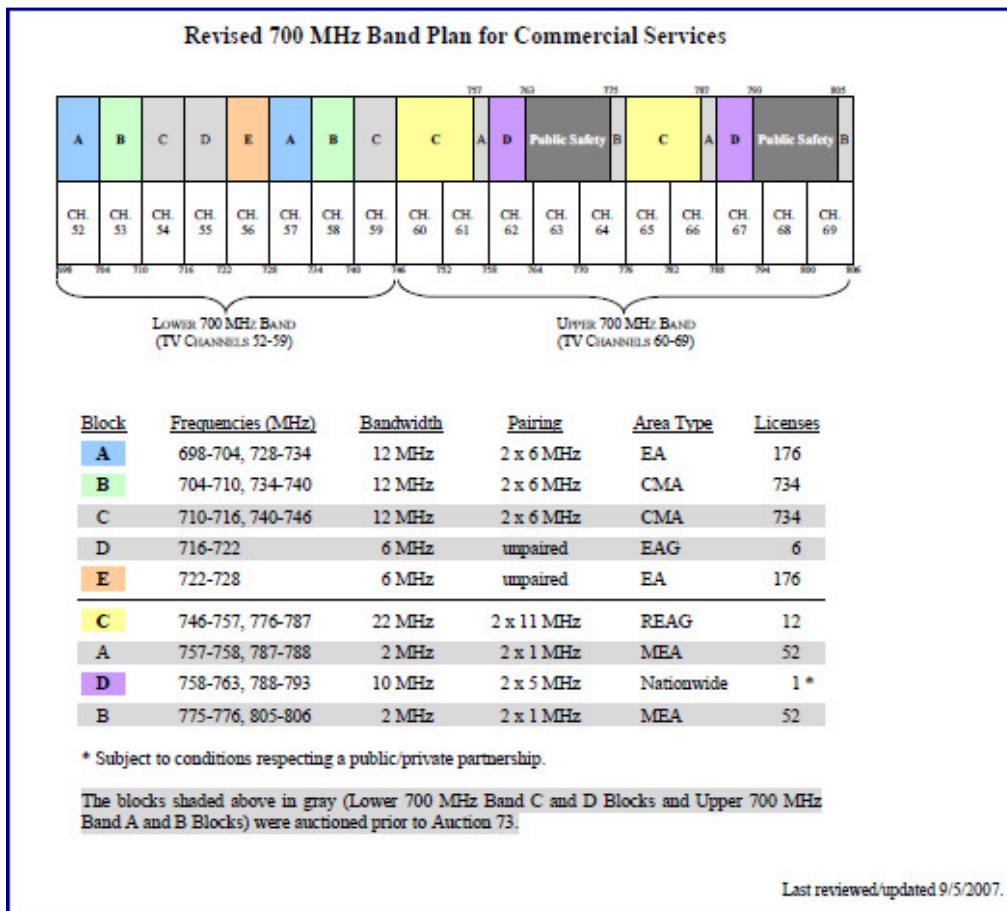
Influencing acts/steps

The Telecom Act of 1996 called for a transition to an all-digital TV format.

The Federal Communications Commission (FCC) and Congress developed the Digital Television (DTV) bill, which was signed into law in 2006.

Congress set the transition completion date for February 17, 2009, but then pushed it back to June 12, 2009.

National Telecommunications and Information Administration (NTIA), which oversees US spectrum, auctioned the available bandwidth beginning in January 2007. The bandwidth is the 700 MHz spectrum which is currently used for analog television broadcasting, specifically UHF channels 52 through 69.



In 2007, leaders in the broadcasting industry (including the National Association of Broadcasters – NAB) established the Open Mobile Video Coalition (OMVC – which consists of 800 commercial and public television stations), which accelerated the development of mobile DTV.

The OMVC worked with the Advanced Television Systems Committee (ATSC) to develop an industry standard by early 2009.

Winners

An OMVC study projects \$2 billion annually in mobile DTV advertising revenue, making it attractive to the advertising community.

Broadcasters and consumers get more TV channels over the same bandwidth and sharper, higher quality video (on large flat screen TVs).

Auctioned spectrum generated \$20 billion in revenue to the government (more than double what was expected).

The wireless service providers, who purchased the spectrum, will introduce a number of advanced technologies into the market over the next couple years, including:

- Sprint who has partnered with Clearwire to provide WiMax, promising average download/upload speeds of 4 Mbps/2 Mbps.

- AT&T and Verizon who plan to provide Long Term Evolution (LTE) service with projected download/upload speeds of 100 Mbps/50 Mbps.

- AT&T plans to roll out the “plus” version of its 3G network, High Speed Packet Access (HSPA+), with speeds up to 20 Mbps.

The OMVC projects there will be 130 million phones and 25 million media players capable of receiving mobile DTV signals. Manufacturers such as Research in Motion (RIM), Apple, Google, Palm, Samsung, and Nokia will develop functionality and compete for marketshare.

Computer manufacturers are positioning to compete in this space, with “mobile Internet devices” (MIDs) – essentially, tablets.

This DTV technology will enable broadcasters to deliver weather alerts and emergency information directly to consumers, a valuable tool for Homeland Security and benefit to consumers.

Enterprise Communicators, along with consumers and providers, will benefit as the fourth component of the Quad Play becomes reality: MobileTV.

Survey Findings

According to an article in USA Today published March 27, 2009, a survey conducted by Ball State’s Center for Media Design (CMD) for the Council for Research Excellence found adults ages 45 to 54 were the heaviest users of all electronic media....on a combination of TV, computers, mobile devices and other screens...averaging 9.5 hours per day.

Although the heaviest usage for this group was viewing live and delayed television content, it’s indicative of the direction the use of digital media is heading. As stated, and supported by Enliten’s beliefs/findings, the usage of computers and mobile devices to

view video is still in its infancy. As an example, according to the survey, young adults ages 18 to 24 were the heaviest users of online video, cellphones, console video games and computer software. However, they spent just 5.5 minutes a day watching computer video.

According to Michael Bloxham, a Ball State researcher, "You might slowly be seeing growth in online video, especially after sites such as Hulu began...." He adds, "(Since the study was conducted last spring and fall) Blackberrys, iPhones, DVRs and social-networking sites also have increased in popularity." As stated throughout this document, Enliten believes the expected growth in smartphones and DTV services will enable an upsurge in both consumer and enterprise usage of MobileTV.

By the way, the survey was conducted by observers using smart keyboards to record media use of participants over a two day period.

Definitions, Descriptions and Acronyms:

4G – Fourth-generation wireless standard

CDMA – Code Division Multiple Access

GSM - Global System for Mobile communications (dominant world mobile standard)

HSPA – High Speed Packet Access

IEEE - Institute of Electrical and Electronics Engineers

IMT – International Mobile Telecommunications. IMT-2000 is the global standard for 3G wireless

ITU – International Telecommunication Union.

LTE – Long Term Extension

TDMA – Time Division Multiple Access

WiMax – Worldwide Interoperability for Microwave Access

1G - Analog Voice

Introduced in the late 1970s, the first cellular systems were analog and used for voice calls. Data transfer was only about 15 Kbps.

2G - 2.5G (2G+) - Digital Voice and Data

Second generation systems were digital and deployed in the 1990s. They were based on GSM, TDMA or CDMA standards. Data services were added and commonly called 2.5G or 2G+, enabling Internet access and e-mail with downstream speeds from 64 to 200 Kbps.

3G - High Speed Data

The third generation was introduced after 2000 and offers faster access to the Internet with downstream speeds from 300 Kbps to 1 Mbps. 3G also supports worldwide roaming.

Defined by the ITU under the IMT-2000 framework, 3G is implemented on a regional basis: UMTS and CDMA2000 in North America; UMTS in Europe and NTT DoCoMo in Japan.

4G - Higher Speed for Movies and TV

In the 2010-2015 time frame, the LTE technology for GSM phones and UMB technology for CDMA phones are expected to support TV in real time as well as video downloads at high speed. They are also expected to embrace automatic roaming to non-cellular systems such as Wi-Fi, satellite and other wireless networks, whichever is most appropriate.

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