

No Way to Regulate

Mobile TV in Europe

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1.0 The Perils of Success

GSM (Global System for Mobile Communications) has been an unqualified technological and regulatory success. European governments collectively committed to a unified standard for mobile phones in the eighties and codified the GSM standard by the end of the decade. By the early nineties, European operators were launching commercial services, and by the mid-nineties, operators outside of Europe were following suit. Today there are over three billion GSM subscribers spread across more than 200 countries.

Several sage regulatory decisions paved the way for GSM's success. For one, European governments coalesced around just two spectrum bands: 900 & 1800 MHz. This decision provided hardware manufacturers with additional economies of scale and allowed dual-band handsets to offer continent-wide roaming. Regulators in other countries followed Europe's lead, providing even greater economies of scale and roaming potential. Secondly, each GSM handset featured a removable Subscriber Identity Module card (SIM card), which identified the subscriber to the operator's network. By switching the SIM card into a new handset, subscribers could easily change phones. More importantly, they could change service providers by inserting a SIM card from another operator. The combined effect of SIM cards and common spectrum bands was a hypercompetitive market for both services and handsets. Penetration rates for mobile subscribers soared above the 100% mark in several European countries, making the U.S. market seem stodgy by comparison.

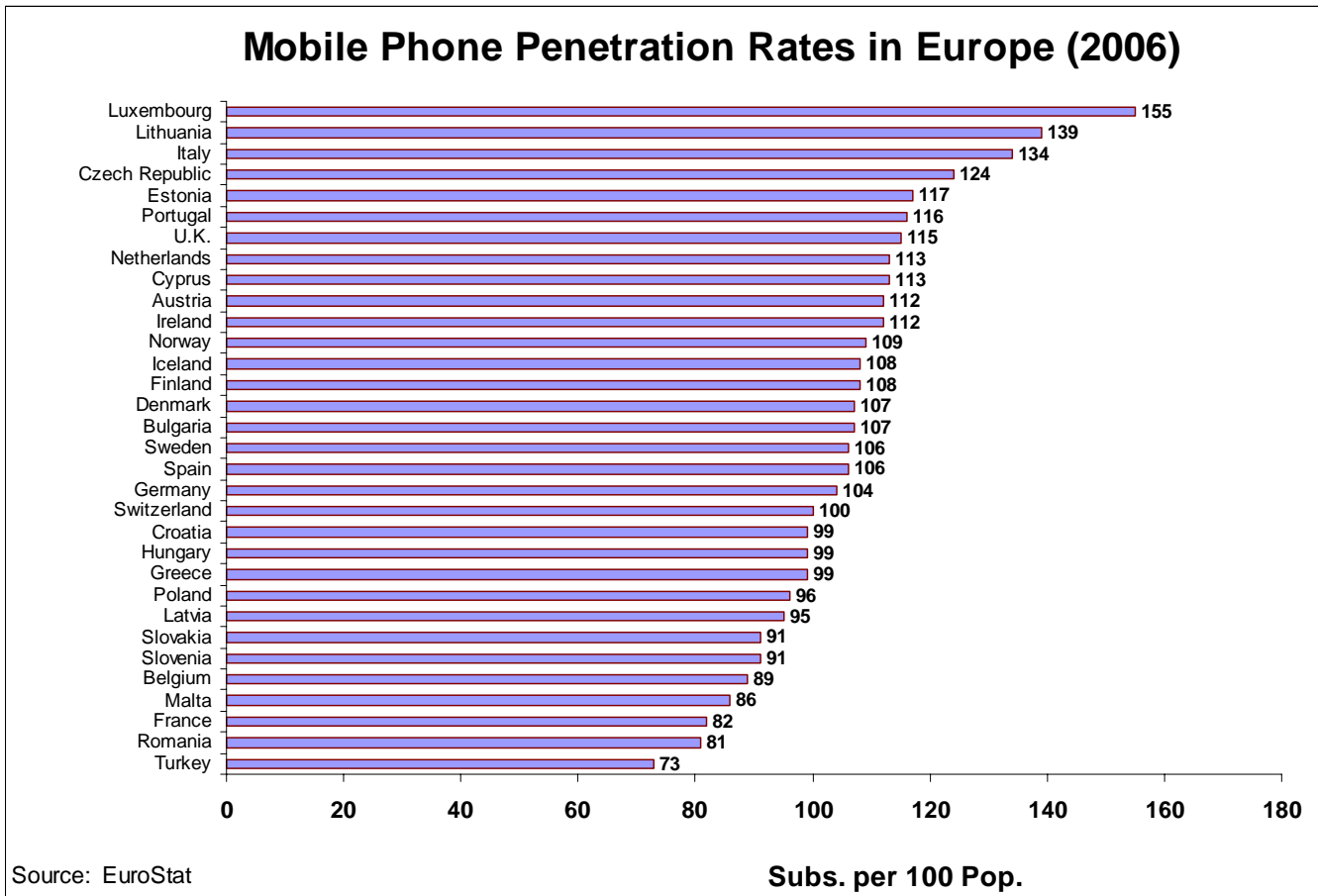


Figure 1 Mobile Phone Penetration Rates in Europe (2006)

In the wake of such success, European governments have been quick to use the GSM approach when addressing other policy issues. In the late nineties, they decreed WCDMA (Wideband Code Division Multiple Access) would be the only 3G standard for Europe and mandated the use of a common spectrum band. More recently, they have come out strongly in favor of DVB-H (Digital Video Broadcasting - Handheld) as the mobile TV standard for Europe. Yet the danger of regulating in such a reflexive manner is that policymakers will overlook actual market and technological conditions. Every policy issue is seen as a nail because the hammer was previously successful.

2.0 WCDMA or Death

The case with WCDMA illustrates the potential hazards of this regulatory approach. WCDMA promised to deliver robust mobile data services to consumers and handsome ARPU increases to operators. These promises, however, came with high up-front costs for new network deployments and spectrum acquisitions. Moreover, market demand for such advanced services was unproven, introducing a high amount of risk into the deployment decision. Nonetheless, European governments, anxious not to fall behind technologically, put the appropriate spectrum blocks up for auction and set deployment deadlines for the winners. European operators thus faced a painful choice — commit to 3G, incur the heavy deployment costs, and hope for the best or forego 3G deployment and accept the risk of market marginalization.

Regulatory decisions, not market realities, created this painful choice. Prudence dictated that operators first test the market for data services using cheaper, interim technologies such as GPRS (General Packet Radio Services) and EDGE (Enhanced Data GSM Environment). Regulators demanded that operators commit to 3G before they had had sufficient time to test the waters. Logic called for operators to acquire spectrum as needed and use it for voice or data capacity, depending on their network needs. Regulators insisted that spectrum be used for WCDMA.

In the end, most European operators felt they had little choice and dove headlong into WCDMA, with dire consequences. The pressure for new spectrum and licenses drove auction prices into the billions. Deployment costs added to the bill, and the dot.com crash made it hard to raise money. Operators suffered under the weight of heavy debts, and British Telecom was the biggest casualty. Saddled with enormous debt loads, the company eventually sold its cellular arm to Spain's Telefonica and to this day is a minor player in the U.K. mobile market.

3.0 Standards for the Sake of Standards

European regulators have lately taken up the question of how to serve mobile TV. It is difficult for WCDMA technology alone to enable widespread mobile TV use. The one-to-one relationship between the content and the viewer means that every additional viewer further taxes the network's capacity. A sudden spike in viewers could potentially overload the network, interrupting other services including voice traffic. A new technology is needed, but which technology to use?

There are several candidates (see Figure 2), and European regulators are generally adopting the GSM approach: pick a single technology (in this case DVB-H) and mandate its use. Unfortunately, the market and technological conditions bare little resemblance to the GSM scenario regulators faced in the early eighties. For starters, spectrum availability differs from country to country. DVB-H is ideally suited for the UHF TV spectrum, but in some markets (the U.K., France, etc.), TV broadcasters are still using these frequencies and will not fully vacate them until around 2012. Secondly, the use of DVB-H denies operators the possibility of leveraging established network infrastructure. As a counterpoint to DVB-H, DMB (Digital Multimedia Broadcasting) technology is designed to piggyback on DAB (Digital Audio Broadcasting) radio networks, which are deployed extensively in Holland, the U.K., and Germany.

Mobile TV service is also, by its nature, very different from voice service. For the latter, roaming offers very tangible benefits. Travelers can continue using their same number and handset while on the road. For mobile TV service, however, the benefits of roaming are not as apparent. Even if the mobile TV service providers can establish roaming agreements (a considerable assumption) and even if handsets become equipped with multiband DVB-H capabilities (another considerable assumption), the channel lineup will change as subscribers move from one country to another. In most cases, the shows will also be in a different broadcast language. Faced with unfamiliar programming in an unfamiliar language, most mobile TV subscribers will have little interest in a roaming service —particularly if they are asked to pay a premium for it.

Mobile TV Technologies around the World

Technology	Notes
Digital Video Broadcasting-Handheld (DVB-H)	<ul style="list-style-type: none"> • Related to DVB-T, a terrestrial broadcast technology • Backed by Nokia • Channel width: 5, 6, 7, or 8 MHz • Open standard approved by ETSI in November 2004 • Officially endorsed by the European Union • Has failed to establish a presence in the U.S. • Limited amount of spectrum currently available but migration to digital TV will gradually make room for DVB-H around the world
Satellite-Digital Media Broadcasting (S-DMB)	<ul style="list-style-type: none"> • Satellite-based offshoot of DAB, a common digital radio technology • Channel width: 1.7 MHz
Terrestrial-Digital Media Broadcasting (T-DMB)	<ul style="list-style-type: none"> • Supported by the Korean government • Struggling to get a firm foothold in the European market • Channel width: 1.7 MHz • Two high-profile ventures recently abandoned T-DMB (BT Movio in the U.K. & MFD in Germany)
MediaFLO	<ul style="list-style-type: none"> • Proprietary technology developed by Qualcomm • In addition to broadband, it offers trickle-download capability for viewing content on-demand • Channel width: 5, 6, 7, or 8 MHz • Set to become the dominant standard in the U.S. but deployments confined to the U.S. so far
Multimedia Broadcast Multicast Service (MBMS)	<ul style="list-style-type: none"> • Based on W-CDMA technology (HSPDA) and part of 3GPP • Utilizes W-CDMA spectrum and works in conjunction with voice services • Combines elements of broadcast and unicast technologies so that it is more scalable than the latter and more customizable than the former • Ericsson is a key backer
TDtv	<ul style="list-style-type: none"> • A proprietary technology offered by IPWireless • Based on TD-CDMA and MBMS technologies • Compliant with 3GPP specification • Utilizes unused, unpaired spectrum bands awarded to 95% of all 3G carriers as part of their license • Low-cost base station upgrade for 3G operators • Being tested by several large operators in Europe, namely Orange, T-Mobile, Vodafone, Telefonica, and 3UK • Can offer 28 broadcast channels within 10 Mghz of spectrum

DVB-SH	<ul style="list-style-type: none"> • Backed by Alcatel-Lucent • Combines terrestrial and satellite technologies to deliver wider coverage • Fully compatible with DVB-H • Can utilize 700MHz spectrum as well as S & L band spectrum • Would overcome the challenge of limited UHF spectrum availability in Europe
CMMB	<ul style="list-style-type: none"> • Promoted by SARFT, China's broadcast regulator • Unlikely to be used outside of China
MXtv	<ul style="list-style-type: none"> • WiMAX-based solution developed by NextWave • Unveiled in May 2008 • Works within the operator's WiMAX spectrum band • Delivers a maximum of 45 video channels (300 kbps) in 10 MHz of spectrum at 30 frames per second¹ • Only requires a software upgrade for those deploying a core WiMAX network with NextWave technology • Not a feasible option for operators deploying core WiMAX networks without NextWave technology
Digital Video Broadcasting, Terrestrial (DVB-T)	<ul style="list-style-type: none"> • European standard for digital TV broadcasts • Designed with stationary platforms in mind • Basis for DVB-H technology • More feasible for mobile TV in Germany, Austria, and Taiwan than elsewhere • High power consumption limits battery life (three hour max. at present vs. 8-9 hours with DVB-H)
Advanced Television Systems Committee, Mobile/Handheld (ATSC-M/H)	<ul style="list-style-type: none"> • Based on ATSC, the North American standard for digital TV broadcasts • Not yet ratified • Designed specifically for mobile TV use • Combines two proposed standards (A-VSB and MPH) that were previously vying against each other
Integrated Services Digital Broadcasting-Terrestrial (ISDB-T)	<ul style="list-style-type: none"> • Developed in Japan for NHK (Japan Broadcasting Corp.) • Digital TV standard in Japan and Brazil • Technologically similar to DVB-T (the digital TV antecedent of DVB-H)

Figure 2 Mobile TV Technologies

Given these market and technological conditions, the chief purported benefit of having a mobile TV standard is greater economies of scale in handset and equipment production. Unfortunately, this battle has already been lost. Mobile operators in the United States have firmly come out in favor of MediaFLO technology; Japan is solidly set on ISBD-T; Korea is committed to DMB technologies; China is set to use CMMB; and deployment of even more technologies is on the horizon. There is no prospect

¹ This is if all 10 Mhz of spectrum is devoted to TV broadcast. The maximum number of channels decreases (naturally) as more bandwidth is devoted to Internet connectivity or other applications.

for a single, worldwide mobile TV standard akin to GSM. European regulators have set a mobile TV standard simply for the sake of having a European standard.

4.0 Conclusions

Standards can be a good thing; the GSM standard proved to be a great thing. Yet standards must be useful and not established simply for the sake of having a “standard.” A European mobile TV standard will not enable lucrative roaming services, nor will it solve the economies-of-scale problem facing the market. It will, however, deny European operators the freedom to choose which technologies they need and also deny them the use of established network infrastructure. The DVB-H standard for Europe is a standard for standard’s sake and a mistake. Regulators would be wise to recognize market realities, acknowledge their mistakes, and going forward consider the merits of standards on a case-by-case basis.

About the Author

John Barrett currently analyzes digital media and international trends for Parks Associates and also heads the company's consumer research team. He regularly advises companies from both the content and hardware industries on their digital media strategies and has authored dozens of industry reports. Recent publications include *Digital Media Habits*, *Global Digital Living™*, and *Web 2.0 & the New Net*.

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