

MAPPING DIGITAL MEDIA: MOBILE TV: CHALLENGES AND OPPORTUNITIES BEYOND 2011

By Ronan de Renesse



Mobile TV: Challenges and Opportunities Beyond 2011

WRITTEN BY

Ronan de Renesse¹

Media consumption has changed drastically over the past decade. With TV content now accessible everywhere at any time, consumer behaviour and trends are evolving fast. Online TV is a new platform that brings instant free access to favorite content and significantly disrupted the conventional TV business as a result. Given the success of smart phones and application stores, how will mobile affect the TV ecosystem? What opportunities and dangers does it hold? This paper addresses these questions while providing an overview of the mobile TV sector.

As originally defined and designed (linear TV streaming on handsets), mobile TV is on the brink of extinction. Yet, demand for video content on mobile is stronger than ever. Mobile TV will have to be reborn and transformed in terms of format, content and business model. The guardians of the TV and mobile ecosystem should facilitate this transformation while protecting customers' interests.

1. Senior Analyst and Head of Mobile Media at Screen Digest.

Mapping Digital Media

The values that underpin good journalism, the need of citizens for reliable and abundant information, and the importance of such information for a healthy society and a robust democracy: these are perennial, and provide compass-bearings for anyone trying to make sense of current changes across the media landscape.

The standards in the profession are in the process of being set. Most of the effects on journalism imposed by new technology are shaped in the most developed societies, but these changes are equally influencing the media in less developed societies.

The Media Program of the Open Society Foundations has seen how changes and continuity affect the media in different places, redefining the way they can operate sustainably while staying true to values of pluralism and diversity, transparency and accountability, editorial independence, freedom of expression and information, public service, and high professional standards.

The **Mapping Digital Media** project, which examines these changes in-depth, aims to build bridges between researchers and policy-makers, activists, academics and standard-setters across the world.

The project assesses, in the light of these values, the global opportunities and risks that are created for media by the following developments:

- the switchover from analog broadcasting to digital broadcasting
- growth of new media platforms as sources of news
- convergence of traditional broadcasting with telecommunications.

As part of this endeavour, Open Society Media Program has commissioned introductory papers on a range of issues, topics, policies and technologies that are important for understanding these processes. Each paper in the **Reference Series** is authored by a recognised expert, academic or experienced activist, and is written with as little jargon as the subject permits.

The reference series accompanies reports into the impact of digitization in 60 countries across the world. Produced by local researchers and partner organizations in each country, these reports examine how these changes affect the core democratic service that any media system should provide – news about political, economic and social affairs. Cumulatively, these reports will provide a much-needed resource on the democratic role of digital media.

The **Mapping Digital Media** project builds policy capacity in countries where this is less developed, encouraging stakeholders to participate and influence change. At the same time, this research creates a knowledge base, laying foundations for advocacy work, building capacity and enhancing debate.

The **Mapping Digital Media** is a project of the Open Society Media Program, in collaboration with the Open Society Information Program.

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I. Introduction

Combining two of the most popular and widely available services in the world, mobile and television has always been an interesting proposition. However, after many attempts by mobile operators, broadcasters and handset manufacturers, the business case for mobile TV still remains unproven, even in cases of high levels of adoption, as observed in South Korea and Japan.

The emergence of high-end handsets with large touch screens and advanced multimedia capabilities has boosted the demand for video on mobile. Yet demand does not necessarily translate into usage or revenues. Several challenges regarding delivering technologies, content availability and business models still need to be addressed.

In the advent of the digital switchover and its corresponding digital spectrum dividend, regulators ought to adopt the right decisions to facilitate the roll-out and operation of mobile TV services across Europe.

II. Technology Primer and Definitions

There are four different ways in which to deliver video content to mobile handsets: sideloading, Bluetooth sharing, 3G streaming and mobile broadcasting.

A vast majority of video content present on mobile handsets has been either transferred from the PC (i.e. sideloading) or from a friend's handset via Bluetooth. Both delivery methods are particularly popular, simply because it is entirely free to the consumer and it isn't controlled by anyone.

As opposed to sideloading and Bluetooth, 3G streaming (unicast) and mobile broadcasting are designed for 'anywhere anytime' content access rather than content portability. Both delivery mechanisms in turn define the breadth of content that can be delivered and whether the business model applies to niche or mass market relationships with consumers.

Unicast for Niche Market

Unicast mobile TV follows a one-to-one communication process where content is directly transmitted to mobile handsets through conventional cellular networks. Multimedia streaming applications are extremely demanding in terms of network resources.

Although third generation (3G) cellular networks have been deployed in most markets, this would never be enough to accommodate a mass market. Most 3G cells can sustain approximately 16 simultaneous mobile TV users for the poorest video streaming format (i.e. 64Kbps or 6.5 frames per second). However, the number of available channels does not affect network activity. Consequently, unicast mobile TV can offer an unlimited number of channels which is ideal to address the long-tail market.

Figure 1.

Unicast (one-to-one)

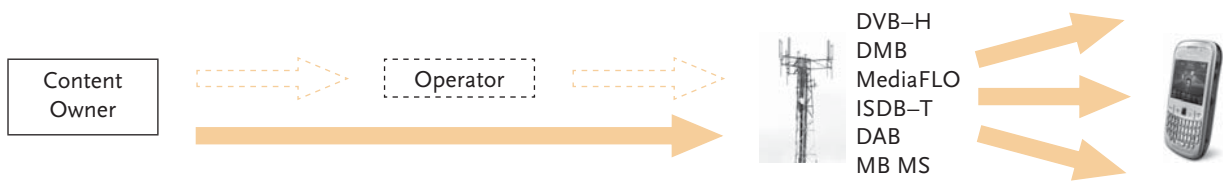


Broadcast for Mass Market

Broadcast mobile TV is a one-to-all communication process where content is broadcast to mobile handsets. The main advantage of this approach is that it can accommodate an infinite number of users, making it more appropriate for mass market conditions. However, the number of channels transmitted over the mobile broadcast network is limited. Five to 50 channels can be broadcast to mobile devices according to the amount of frequency spectrum made available for mobile services as well as the quality of those services. Additionally, there is no return path, so interactive TV is not possible without some additional communication channel.

Figure 2.

Broadcast (one-to-all)



There are numerous mobile TV broadcast technologies and the major ones are DMB, DVB-H, ISDB-T – all nationally open standards – and MediaFLO, a proprietary system of Qualcomm. What these systems have in common is the potential to reach mobile phone owners without the network operator being involved. However, the investment required to reach an unproven market is considerable, and a foray into mobile TV could prove a very costly gamble for the companies which build these alternative networks.

Figure 3.

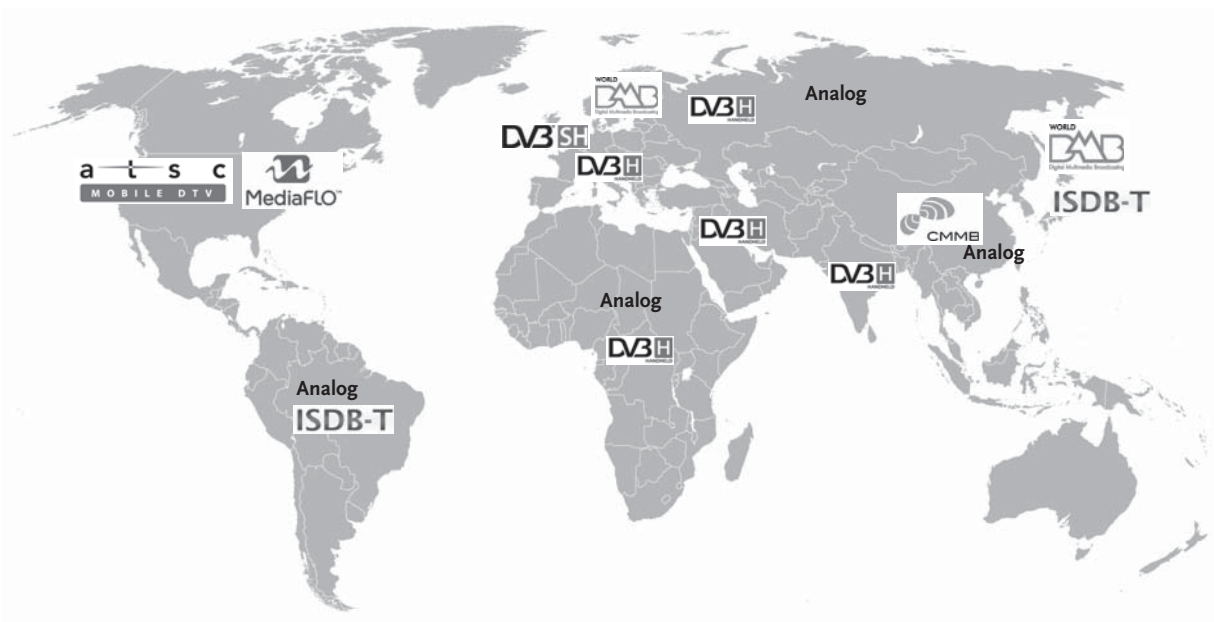


Table 1.

	IP broadcast (IMB)	DMB	DVB-H	DVB-SH and S-DMB	MediaFLO	ISDB-T, ATSC-M/H & Analog
Regions in Operation	—	South Korea, Norway, Germany (ended 2008), UK (ended 2008)	Italy, Finland, Austria, Hungary, India, Kenya, Morocco, Namibia, Netherlands, Nigeria, Ghana, Philippines, Russia and a few others	South Korea	US	ISDB-T: Japan, Brazil, Peru, Argentina and Chile.
Regions in Trial	UK	—	Part of Europe, Asia and Middle East	Inmarsat and Solaris Mobile to launch services in Europe before May 2011.	Japan, Hong-Kong, Taiwan	ATSC M/H: USA
Operators partners	O2, Orange and Vodafone	—	Hutchison, DNA, Orange Austria, KPN	South Korea Telecom	Verizon, AT&T	—
Emitter	Operator's cellular tower	Terrestrial tower	Terrestrial tower	Satellite and terrestrial tower	Terrestrial tower	Terrestrial tower (owned by TV station)
Platform operator	Mobile operator	Broadcasters	Mobile operator and/or broadcaster	TU Media, Solaris Mobile	Qualcomm	Broadcasters
Investment required	Medium	Low	High	High	High	Low/Medium
Advantages	No need to buy new spectrum. Avoids network congestion. Part of 3GPP standard.	Existing transmitter infrastructure and DAB frequencies can be used.	Good quality of service and spectrum efficient. Open standard.	100% outdoor coverage and offers a wider range of TV channels.	Good quality of service and spectrum efficient.	Does not require new spectrum or new infrastructure.
Disadvantages	The entire network is reduced slightly in capacity at all times. No major quality improvement	Small number of channels, Poor indoor coverage.	Expensive to deploy and lacks compatible handsets.	Requires direct line of sight for reception and expensive to launch. No compatible handsets.	Proprietary technology. Expensive to deploy and lacks compatible handsets	Lacks conditional access and interactivity features. Difficult to monetize.

Technology Winners and Losers

In the Western world, the leading access technology for mobile video services is 3G (including HSDPA) with a subscriber market share above 80 percent. Mobile broadcasting technologies such as DVB-H and MediaFLO have struggled to take off due to the lack of compatible handsets, expensive deployment costs and an inadequate regulatory environment. Since the beginning of 2010, more DVB-H based services have closed down than have launched.

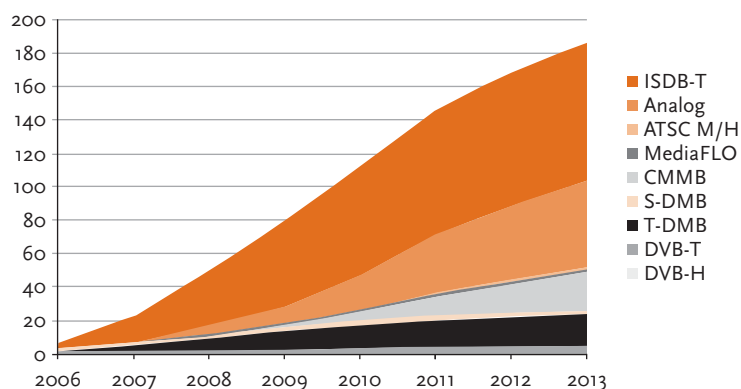
Outside Western markets, mobile broadcast is, on the contrary, the most popular technology to access video on the move. The main reason for this is that mobile broadcasting has been introduced as a handset feature – accessible for free, similar to the camera or FM radio, rather than a paid-for service. While corresponding mobile video services enjoy a very large audience, soaring past the tens of millions in Korea, Japan, China and Latin America, no one has yet managed to successfully monetize it.

The current winning standards for mobile broadcast TV are ISDB-T and Analog. ISDB-T is enjoying massive adoption level in Japan where it is embedded in 80 percent of new handsets. Analog portable TVs have been around for decades but never really worked while on the move and tend to have very poor battery life. Fabless semiconductor company Telegent Systems has managed to overcome those issues by developing efficient low-power semiconductor chips for analog mobile TV reception. Telegent Systems has shipped more than 80 million analog mobile TV receivers worldwide since mid 2007.

Another technology that had almost no presence in the mobile TV market until 2009 is WiFi. With mobile video usage in the home or office accounting for over 50 percent of total usage, WiFi represents a good opportunity for operators to offload expensive 3G traffic. However, in this case, content rights often have to be renegotiated, adding yet another cost to the complex mobile video business case.

Figure 4.

Mobile TV subscribers by technology* (m)



Note: * Global figures only – includes Western World, Czech Republic, Hungary, Poland, Slovakia, Slovenia, North America, China, India, South Korea and Japan.

III. Market Overview

Video services on mobile have been made available in parallel to 3G launches back in 2003 and 2004. Although many operators have had services operational since the first half of the decade, uptake has been mixed at best, and in most cases failed to live up to operator expectations. In 2009, mobile TV and video made up less than 1 percent of total mobile content revenue in Western Europe and North America.

The failure of operators' traditional TV and video services can be put down to a number of factors affecting both the technical and content sides of the service.

Technical inhibitors:

- Limited handset capabilities which, combined, resulted in a sub-par viewing experience. These include: low memory, power constraints and small screen size.
- Poor quality of service provision on the networks resulting in unreliable video quality
- High delivery costs which were often passed onto consumers in the form of high service prices.
- Fragmentation: thousands of handset profiles (different screen sizes, etc.) and complex DRM implementations which required multiple implementations, significantly increasing operating costs for service providers.

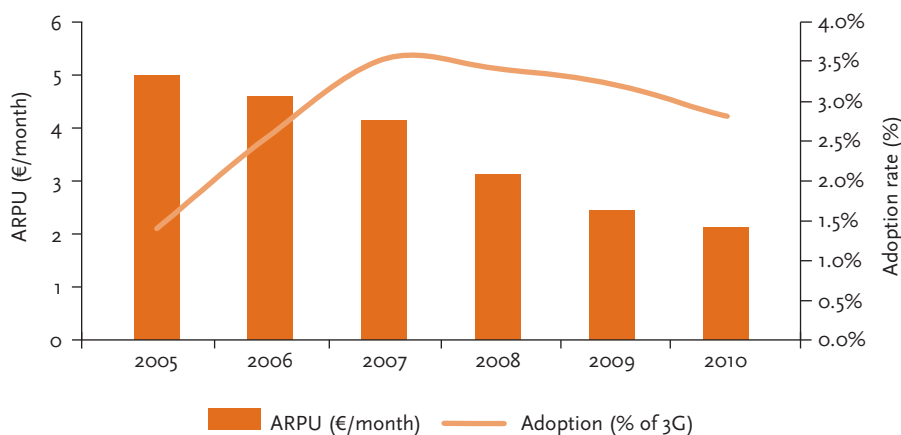
Content inhibitors:

- The linear format does not fit with the mobile context, particularly for conventional TV programming. Sport where there is a premium on live content is arguably something of an exception.
- Long-form and catch-up content rights are too expensive or simply unavailable. Again this is particularly true for conventional TV shows, although it applies to sports content for the major events.
- Dedicated, made-for-mobile content does not work and has consistently met with low consumption.

The market conditions are, however, slowly changing as those challenges are increasingly being addressed by the industry. Apple and its App Store have given a much needed boost to the mobile video industry by

facilitating the development of compelling services and opening the market to third party service providers. Overall, the App Store/iPhone combination has set a new benchmark for mobile video services, leading some mobile operators with a strong content focus such as Orange or Vodafone to make additional investment in their own services or embrace Apple's approach to content.

Figure 5.
Europe – Mobile TV market



Regional Analysis: Emerging Markets Lead the Pack

According to Screen Digest, emerging and developing markets like Brazil, Russia, India and China represent one of the greatest growth opportunities for the mobile industry with the number of subscriptions expected to double to 2 billion between 2007 and 2013. With a content ARPU several times lower than their Western counterparts, mobile operators in emerging countries are still heavily relying on voice and messaging services to generate profits. Nevertheless, against all expectations, emerging markets are where mobile TV has become the most popular. With a predicted mobile population of over 1.5 billion users by the end of 2013, China and India are set to generate more revenues from mobile TV services than Europe and North-America combined.²

Mobile TV is successful in emerging and developing markets for several reasons:

- Greater variance between TV and mobile penetrations: The number of TV households is much lower than in developed markets, so there are considerably more mobile phones than TV sets.
- Less competition from alternative mobile content services: Mobile games, music and other applications and services are thriving in developed markets and generate a high amount of competition for mobile

2. Screen Digest Mobile Media Intelligence database – August 2010.

TV services. With 3G networks not yet fully deployed and a very small number of high-end devices, the level of competition from other services is much lower.

- Lower expectations: The TV audience in emerging markets is used to cramped conditions and old, low quality television sets. The mobile TV experience is comparatively better. The threshold at which the quality of mobile TV stream or broadcast becomes unacceptable is therefore much harder to reach.
- Lack of information sources in nearby environment: With small internet and TV penetration rates, the number of ways in which to access information is fairly limited and tedious. Mobile TV offers a much simpler way to access news.
- Appropriate technologies: “in-band” technologies are the best option for emerging and developing markets because they can be rolled-out in synch with the digital terrestrial television infrastructure at a minimum cost like ISDB-T in Latin America. Handset manufacturers can also opt to embed an analog TV receiver in their devices.

Figure 6.

BRIC global mobile subscriber forecast (bn)

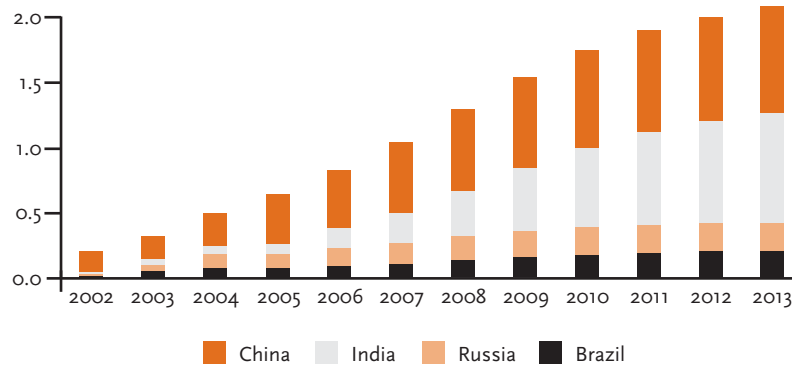
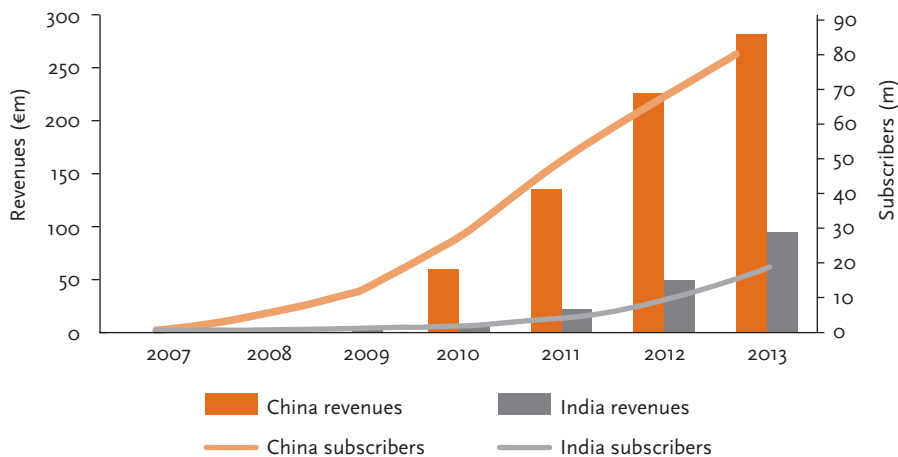


Figure 7.

China and India – Mobile TV forecasts



Business Models: Mobile TV Ought To Be Free

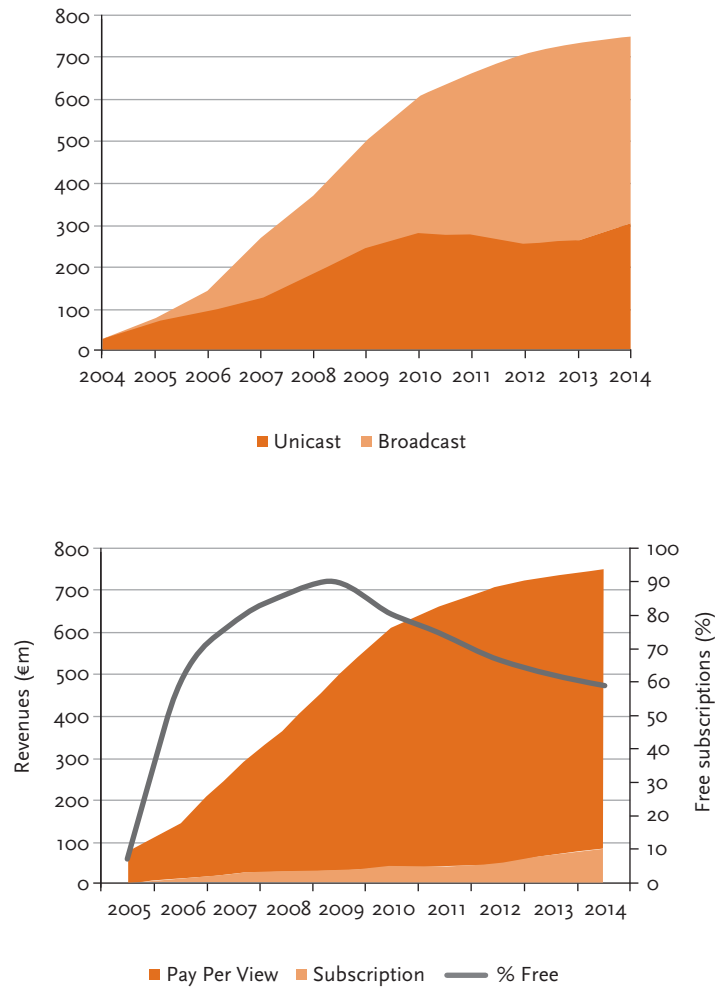
While unicast mobile TV is typically dominated by subscription models inherited from the mobile industry, broadcast mobile TV, although requiring a substantial level of investment, is clearly taken over by the free-to-air (FTA) model. Japan and South-Korea are leading the way with FTA services which now nearly count 75 million mobile viewers, 90 percent of the global broadcast mobile TV market.

With regard to paid-for services, the subscription model largely prevails and generates in excess of 93 percent of revenues globally. Subscription is a business model with which consumers feel comfortable as it is already widely used in both mobile and television industries. For countries where the proportion of mobile users on prepay packages is very high, such as Italy, subscriptions have proved less successful. On several occasions mobile operators in those markets have bundled mobile TV services with expensive long-term contracts in a move to increase ARPU and boost the number of long-term mobile contracts (i.e. 12 to 24 months), but this strategy has not paid off as expected. In France, however, mobile operators Orange and SFR have adopted a similar strategy but bundled mobile TV with mobile internet access and other mobile content services instead. This has proved to be better approach, and France now enjoys the highest number of mobile TV subscribers in Europe.

Through all those business model experiments it has been quite clear that, for consumers, mobile TV does not justify a monthly subscription as a stand-alone service. Mobile users see mobile TV as a device feature like the camera mode or FM radio rather than an actual service. Bringing mobile TV on the top of other services in a properly priced TV or mobile content bundle tends to be the best approach.

Figure 8.

Global mobile TV revenues by platform* (€m)



Note: * Global figures only – includes Western World, Czech Republic, Hungary, Poland, Slovakia, Slovenia, North America, China, India, South Korea and Japan.

IV. Trends To Look Out For

Mobile TV in the Spectrum Debate

Spectrum is a key resource for all services relying on over-the-air transmissions. Unicast mobile TV services use the existing 3G spectrum while broadcast mobile TV services require additional chunks of frequencies to operate. New spectrum is generally sold or awarded by the local telecommunication or/and media regulator(s). With analog switch-off, spectrum previously being used by broadcasters is being freed and redistributed to provide additional capacity for HD TV channels or mobile broadband services. Consequently, mobile operators and broadcasters are vying for the same pieces of spectrum, leading to an aggressive lobbying war.

A key example of this is in the U.S. where several broadcasters have launched a mobile TV joint venture called Pearl and made a commitment to provide spectrum, content, marketing and financial resources for the launch, development and operation of a nationwide mobile video delivery platform based on ATSC M/H. According to this group of broadcasters, the ATSC-M/H network offers an alternative option for the delivery of content to mobile devices, off-loading cellular networks from data-heavy traffic and therefore indirectly bringing additional capacity for mobile broadband services. Consequently, mobile TV is not necessarily just seen by broadcasters as an opportunity to generate additional revenues or eyeballs, but also, and maybe more importantly, as a way to defend their spectrum ownership.

Mobile TV spectrum has too often been allocated by regulators to broadcasters without considering the role of the operator, often leading to bad consequences. This was partly why DVB-H never took off in Germany and France. Without handset subsidies, mobile billing, nationwide marketing campaigns, retail outlets and customer support, broadcasters will find it very difficult to bring content and new technology to mobile handsets.

The Emergence of Mobile VoD Catch-up Services

The mobile video market is currently dominated by the consumption of short-form content such as news and sports highlights, comedy and user generated content. Full-length TV series and movies have not gained

much traction on mobile, aside from trailers, cast interviews and highlights. This is not due to a lack of consumer demand but rather the difficulty of getting long-form content on the mobile platform at the right price. The addressable market for mobile video has often been too small to justify the licensing costs.

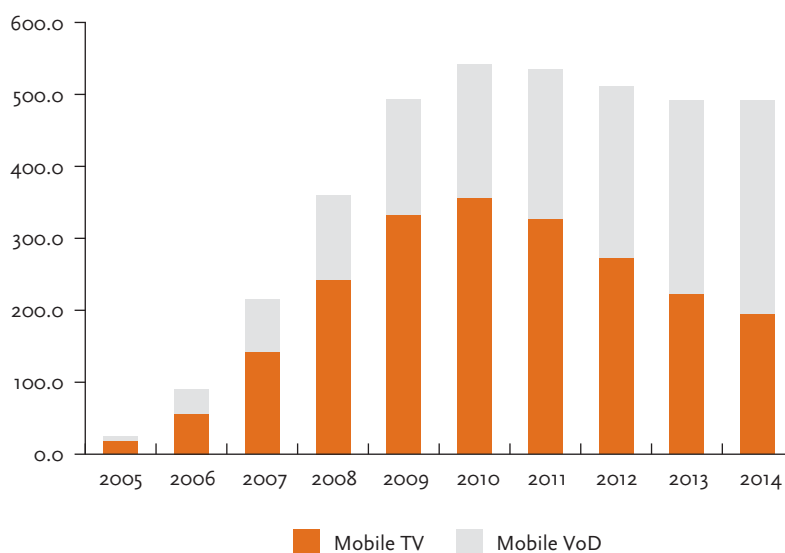
The mobile video market is currently undergoing a major revolution, focused on content and cross-platform integration. Over the past 12 months, mobile operators such as 3, Orange, T-Mobile, Vodafone and AT&T have revamped their mobile video strategy, moving from the traditional linear TV channels and video clips to movies, TV shows and catch-up content.

This substantial improvement in the content line-up is due to several recent changes in the market conditions:

- Content rights: Cross-platform content rights have helped operators expand their fixed TV operations to mobile at a relatively lower content cost.
- Better handsets: Mobile devices are becoming more advanced in terms of video capabilities and offer a much better user experience thanks to larger screens, higher processing power and better software.
- Faster networks: Mobile networks have been upgraded to more advanced technologies such as HSDPA, offering faster download speeds and better streaming quality. In addition, WiFi compatibility is now present on most of the latest smartphones, offering better access speeds at no extra cost while offloading congested 3G networks from heavy video traffic.
- Market openness: The App Store gives better flexibility to content and service providers in terms of content line-up, pricing options and user interface. Better internet browsers on smartphones have also made it easier for existing online video services to get ported onto mobile. BBC iPlayer is a great example of this.

Figure 9.

Western markets – Mobile video – Consumer revenue (€m)



Impact of Application Stores on Business Models

In July 2008, Apple launched the App Store, offering a new distribution platform for mobile content to a limited but engaged high-end consumer base of iPhone and iPod Touch users.

Thanks to a strong marketing campaign and the integration of the iTunes' billing platform, Apple brought the number of app downloads to more than 3 billion in 18 months, equivalent to five times the global number of games downloads on mobile operator portals over the same period. The number of downloads is set to grow further to 8.8 billion by the end of 2014 when the App Store will then have more than 165 million active users (excluding the iPad).

The key advantage of a distribution platform such as the App Store is that content providers are more in control of their mobile offering. However, with over 200,000 applications now available on the App Store and only 10 percent of downloads being paid for, competition is high and failures are more common than successes. To overcome this challenge, service providers have been innovating with business models such as cross-platform bundles.

For instance, BSkyB has recently made its Sky Mobile TV application available for free to its existing Sky Sports customers until the end of 2010. Canal+ in France lets users access some of its programs for free and also applies preferential tariffs to its existing customers. A powerful application portfolio with the right pricing strategy can help minimize churn, boost subscriber addition through differentiation and increase ARPU by converting pay TV subscribers to higher-tier packages. It will however fail to bring an additional revenue stream on its own.

Figure 10.
World Apple's App Store forecasts

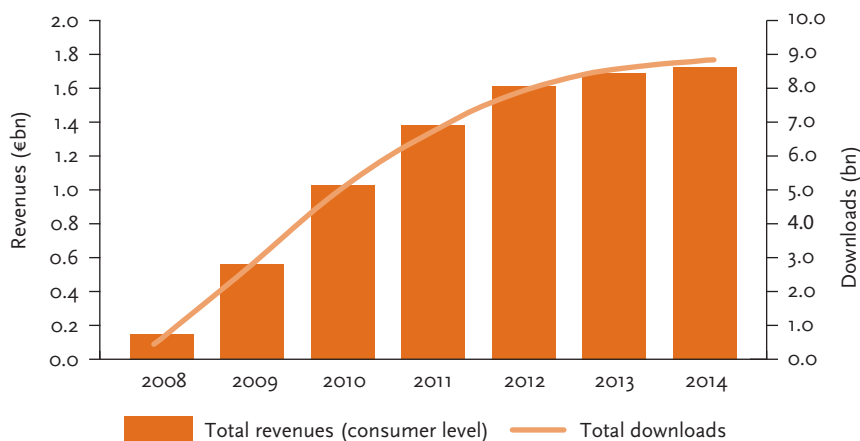


Table 2.

Owner	Store	Launch date	Platform/ OS support	Countries	Revenue share	Total Catalogue
Apple	App Store	Jul-08	iPhone OS	77	70%	+200,000
Nokia	Ovi	May-09	Symbian, Maemo, Java, Flash	180	70%	13,000
Orange	Orange Applications Shop	Mar-09	Android, Symbian, Windows, Blackberry	UK, France	not disclosed	5,000
GetJar	GetJar	Dec-04	Java, Symbian, WinMo	Global	Free	69,147
Handango	Handango	Apr-99	Multi	Global		190,000
Handmark	Handmark	Aug-00	Multi	Global		
SonyEricsson	PlayNow Arena	Aug-09	Java, Symbian, WinMo	69	70%	160
Vodafone	Vodafone 360	Jun-09	LiMo	Global	70%	7,000
Samsung	Samsung Mobile Applications	Feb-09	Multi	Global	70%	
LG	LG Application Store	Jul-09	Java, Flash Lite, LiMo, WinMo	17	80%	1,400
Research In Motion	Blackberry App World	Apr-09	Blackberry OS (+4.2)	50+	70%	6,000
T-Mobile	web2go	Apr-09	Multi	USA		
Microsoft	Windows Marketplace	Oct-09	WinMo (+6.0)	33	70%	900
Google	Android Market	Oct-08	Android	25	70%	+70,000
China Mobile	Mobile Market	Jul-09	Multi	China	50%	
Palm	App Catalog	Jun-09	WebOS	4	70%	
Verizon	Vcast	Q4 2009	Multi	USA	70%	
Samsung	Samsung Application Store	Sep-09	Windows, Android	7	70%	800
SK Telecom	T Store	Sep-09	Multi	South Korea	70%	+65,00
Mobango	Mobango	Dec-04	Java, RIM, Symbian, Android, WinMo	Global	Free	+9,000

V. Conclusion

Mobile TV undoubtedly offers certain benefits from a social and political aspect. As mobile phones bring anywhere-anytime connectivity to individuals, it has the potential to be a key and even – in some situations – a critical tool to access information, especially for live events. (For instance, millions of mobile users tried to watch Barack Obama’s speech when he won the US presidential election, leading to heavy congestion in the 3G networks and therefore many mobile video sessions were dropped.) In emerging markets, mobile TV can become the only source of information and the viewing experience is often shared among several people despite the small screen size.

Mobile TV today is either a niche service with adoption rates lower than 3.5 percent or a popular handset feature generating very little revenue for operators and broadcasters providing it. It is therefore fair to conclude that, against initial expectations, mobile TV does not represent a good business opportunity for the industry as a stand-alone service. However, that does not necessarily mean that mobile TV has reached a dead-end. On the contrary, recent efforts being made on the content and hardware front have shown that the demand for video content on mobile is stronger than ever. Mobile operators, broadcasters, pay TV operators and device manufacturers have to rework their business models as to make mobile TV a compelling complementary service proposition rather than a stand-alone failure. Industry players focusing on bringing premium long-form video content to mobile as part of a multi-screen strategy will be the likely winners, as long as appropriate business models are being used.

Glossary

3G: Third-generation mobile technology which must allow for data peak rates of more than 200Kbps. W-CDMA, CDMA 2000 1xEV-DO and any of the HSPA family (including HSPA, HSDPA and HSUPA) are considered 3G. For the avoidance of doubt, Screen Digest does not consider CDMA 2000 1x networks as 3G since the maximum data transfer speed is 144Kbps. Later revisions of the EDGE technology do fulfil this specification, but most EDGE networks are not considered 3G since most EDGE deployments are earlier revisions.

3G streaming: Multimedia streaming over mobile networks using 3G technology.

ARPU: Average Revenue per User. Average revenue generated by each subscription (not subscriber) in a given period, usually monthly or yearly.

ATSC M/H: Advanced Television Systems Committee Mobile/Handheld. Mobile broadcast technology based on US home grown digital terrestrial television standard.

BBC iPlayer: Online catch-up TV service developed by the BBC in the UK.

Bluetooth: Open wireless technology standard for exchanging data over short distances between mobile devices.

Catch-up TV: Type of multimedia service in which TV shows are made available for on-demand consumption for a period of days after the original broadcast.

DMB: Digital Multimedia Broadcasting. Mobile TV broadcast standard particularly successful in Asia. The technology development has been partly funded by the EU.

DRM: Digital Right Management. DRM technology is used to limit and control the use of digital content on various devices.

DVB-H/DVB-SH: Digital Video Broadcasting – Handheld/ Digital Video Broadcasting – Satellite services to Handhelds. Mobile broadcast TV standard developed by Nokia and partly funded by the EU.

EDGE technology: Enhanced Data rates for GSM Evolution. Mobile technology providing data transfers of up to 240 Kbps. It is also referred as 2.5G technology.

Fabless semiconductor company: Specializes in the design and sale of semiconductor chips while outsourcing the actual fabrication to a third party manufacturer.

High-end handsets/Smartphones: Mobile phone that runs a complete operating system and provides third-party software development guidelines and marketplace. Smartphones feature advanced capabilities beyond voice calls and messaging.

HSDPA: High-Speed Downlink Packet Access. Enhanced 3G mobile technology which allows UMTS-based networks to provide high data transfer speeds.

IMB: Integrated Mobile Broadcast. Mobile broadcast technology integrated into a cellular infrastructure such as GSM and UMTS networks.

In-band technology: Mobile broadcast technology which developed as an extension of an existing digital terrestrial television technology. Examples include ATSC M/H, ISDB-T and DVB-H.

ISDB-T: Integrated Services Digital Broadcasting Terrestrial. Japanese home grown digital terrestrial television standard also used for mobile broadcasting. ISDB-T is considered has an “in-band” mobile TV technology.

Long-form video: Professionally produced content from television which lasts longer than 10 minutes. It mainly includes movies, TV series and TV shows.

MediaFLO: Mobile broadcast technology developed by Qualcomm.

Mobile broadcasting: ‘One-to-many’ communication process where data is sent to all mobile users at once. Broadcasting is typically used by the TV industry for transmitting television signals over the air.

Multimedia streaming: Delivery method for which multimedia content is constantly received and presented to an end-user.

Sideload: Transferring data directly from the PC to the handset via a cable or WiFi.

UMTS: Universal Mobile Telecommunications System. 3G technology providing transfer rates of up to 384Kbps.

Unicast: ‘One-to-one’ communication process for the delivery of mobile audiovisual content. Mobile TV services delivered over cellular networks (i.e. using 3G technology) are considered unicast.

Mapping Digital Media is a project of the **Open Society Media Program** and the **Open Society Information Program**.

Open Society Media Program

The Media Program works globally to support independent and professional media as crucial players for informing citizens and allowing for their democratic participation in debate. The program provides operational and developmental support to independent media outlets and networks around the world, proposes engaging media policies, and engages in efforts towards improving media laws and creating an enabling legal environment for good, brave and enterprising journalism to flourish. In order to promote transparency and accountability, and tackle issues of organized crime and corruption the Program also fosters quality investigative journalism.

Open Society Information Program

The Open Society Information Program works to increase public access to knowledge, facilitate civil society communication, and protect civil liberties and the freedom to communicate in the digital environment. The Program pays particular attention to the information needs of disadvantaged groups and people in less developed parts of the world. The Program also uses new tools and techniques to empower civil society groups in their various international, national, and local efforts to promote open society.

Open Society Foundations

The Open Society Foundations work to build vibrant and tolerant democracies whose governments are accountable to their citizens. Working with local communities in more than 70 countries, the Open Society Foundations support justice and human rights, freedom of expression, and access to public health and education.

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