Primetime for Mobile Television

Extending the entertainment concept by bringing together the best of both worlds
IBM Institute for Business Value

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Primetime for Mobile Television

Extending the entertainment concept by bringing together the best of both worlds

Executive summary
Not long ago, the thought of watching television on a small screen seemed far-fetched. However, since 2005, interest in Mobile Television (TV) has grown rapidly. Broadcasters and content providers increasingly deploy Mobile TV as a vehicle for distributing their content on a larger scale, and as a source of new revenues. Telecom operators aim to increase average revenue per unit (ARPU) and reduce churn, and view Mobile TV as offering enormous potential to achieve both of these objectives. From a consumer perspective, market research indicates strong latent demand for Mobile TV.

Mobile TV has the potential to appeal to the mass-market.

Many operators are already offering Mobile TV services on a commercial basis over their wireless networks. Early deployments suggest that more people are watching television on their mobiles than originally anticipated. Meanwhile, subscriber numbers and volumes of video traffic are still low enough to avoid network problems. However, with increasing Mobile TV adoption, networks will become increasingly congested. To overcome the capacity problems of wireless networks, many operators worldwide are carrying out trials with complementary broadcasting networks. In a broadcasting network, a mobile picks up the signal directly from the ether. In Southeast Asia, some operators have already launched commercial services on this basis.

One problem, however, is the lack of consensus on a universal technology standard. Nokia has adopted the DVB-H standard, while Samsung is pushing DMB. Qualcomm has developed its own proprietary standard MediaFLO. In Japan, the ISDB-T standard will be used for Mobile TV. The Pacific region is driving the DMB-technology, while in the United States, both MediaFLO and DVB-H will be the main standards. In nearly all European countries, mobile operators are piloting the DVB-H standard. Complicating this issue further is the fact that none of these standards is compatible with another.

The business model for Mobile TV is also not yet clear. Early industry examples suggest that partnerships among operators, broadcasters and other media parties – including content providers – will become the most commonly adopted model. Whatever the specific business model, cross-industry collaboration is critical to bringing the best of the mobile and TV worlds together, supported by suitable revenue sharing arrangements. It enables the parties to profit from new revenue streams from access fees, additional traffic, subscription services, premium messaging and download sales to “m-commerce” (buying and selling of goods and services through wireless handheld devices) and advertising. The revenue sharing model, however, is yet to evolve.

Collaborative innovation is indispensable and separates winners and losers.

For mobile operators, Mobile TV offers an opportunity for differentiation to help drive new revenue growth, improve network utilization and reduce subscriber churn. Mobile TV is seen as having good revenue potential because of its mass appeal across the customer base, unlike many other content services such as games, which appeal only to selected customer groups, such as teenagers. The combination of a mobile and a complementary broadcasting network enables user/content interactivity, seen as a key driver of further Mobile TV adoption and usage. Without the reverse link that the operator provides with their mobile network, much of the technological and economic benefits of the broadcast model are negated.
For the consumer, Mobile TV has the potential to deliver new and revolutionary content that will extend the entertainment concept beyond new ways of watching TV. Mobile TV enables consumers to personalize their viewing experiences with the content to suit their tastes, wherever and whenever they want; a first step toward Personal TV in a multidevice (TV, computer, mobile) and networked environment. Southeast Asian countries are leading the way in Mobile TV, with the rest of the world likely to follow, as TV is an easy concept to sell to consumers. However, before widespread Mobile TV can become a reality, telecom providers need to resolve key issues, including:

- **Content**: Availability of the “right” content is key. Consumers want access to specific content to suit their tastes. “Must see,” interactivity and personalization are key adoption criteria.

- **Pricing**: The success of Mobile TV depends on consumer’s willingness to pay. Bundled, tiered flat rate pricing is more likely to be accepted than à la carte (metered) pricing. Additional fees can be based on pay-per-view, clip casting and interactivity-driven purchases.

- **User friendliness**: Key issues including form factor, power consumption, added functionality and TV picture quality have yet to be resolved. Handsets must be attractive and affordable.

- **Business model**: All parties involved have to agree on their roles in the Mobile TV value chain, including the adoption of a revenue sharing model that is acceptable to all.

- **Digital Rights Management**: Content providers see Mobile TV as a new channel to market for their content and want to enforce content rights and payments.

- **Technology standards and spectrum allocation**: The coexistence of several incompatible standards and problems with harmonization of the frequency bands, in particular in Europe and Asia, are key hurdles to be overcome.

### Planning for a future in Mobile TV

**Media companies seek to exploit their content on a larger scale**

Mobile TV combines two popular consumer products of our time, the mobile phone and the television. As Figure 1 shows, television is more popular than ever, and mobile penetration is very high in most major markets.

With mobile market penetration now greater than 80 percent in many countries, Mobile TV has the potential to appeal to the mass-market. For this reason, broadcasters and content providers are increasingly interested in Mobile TV. It provides them access to an untapped market of more than two billion cell phone subscribers worldwide:

- **Extending content delivery to the mobile device offers a new distribution channel on a much larger and more profitable scale.** In addition, the mobile phone enables them to enrich their services with interactivity and personalization. For instance, viewers may chat, vote or respond directly to TV programs. Other options include downloading special backstage shoots, and interactively reserving cinema/theater tickets on the basis of previews of the latest movies watched on the mobile. Mobile TV has indeed enormous revenue potential for media companies.

The increasing interest of the media world in Mobile TV is illustrated by recent market trends: MTV, Warner Music and CNN have formed alliances with operators to provide content specially tailored for cell phones. The Walt Disney Company has announced its new Mobile TV station, *Disney Mobile*. As one of the first, Fox Entertainment has started developing one-minute episodes for Mobile TV. An example of these so-called “mobisodes” is the “24 Conspiracy” series. More and more media parties, such as ABC and Endemol, have followed Fox in producing mobisodes. In the UK, Endemol has also introduced new TV channels, such as *Extreme Reality Channel* and *Comedy Channel*, especially for mobile phone users.
Operators seek to increase ARPU and reduce churn

Mobile operators are increasingly active in Mobile TV. With mobile/wireless Internet access ramp-up driving demand for multimedia content and other data services “on the move,” many operators are pinning their hopes on a more profitable future for Mobile TV than, for instance, mobile phones with built-in cameras. Despite the hype, camera phones have not created value for telephone companies (telcos) to date, as they have not driven additional traffic. In fact, industry forecasts suggest that the interest in Mobile TV might be greater than all other prospective mobile multimedia services, including games and music. ⁶

Interest in Mobile TV might be greater than all other prospective mobile multimedia services, including games and music.

Aside from its potential to drive additional data traffic, Mobile TV may also make important contributions to telco customer retention and loyalty strategies through customer lock-in. However, successful execution hinges on operators offering good quality content, tailored to individual customer needs, which makes collaboration with broadcasters and media producers a critical success factor. In recognition of this, some operators are starting to make acquisitions in the media world. For example, SK Telecom is the main shareholder in the Korean media company TUMedia and NTT DoCoMo recently acquired shares in Fuji Television. ⁷ In Europe, H3G Italia has acquired Canal 7, an Italian TV channel. ⁸
Delivering Mobile TV over cellular networks

Today’s Mobile TV more popular than anticipated

Many operators are already offering Mobile TV services on a commercial basis. They have observed that more people are watching television on their mobile phones than originally anticipated. In the U.S., Verizon Wireless provides (non real-time) Mobile TV services under the brand Vcast over its EV-DO network.9 Sprint offers Sprint TV (packaged video clips) and Sprint TV Live (real-time TV) over its new EV-DO network and its PCS network.10 And Cingular Wireless has the MobiTV service over its EDGE wireless network.11 Both Sprint and Cingular get all their content from MobiTV, a company that specializes in taking television feeds and sending them over cellular networks.12

In Europe, Mobile TV is provided by operators such as O2, Orange, T-Mobile and Vodafone. Orange in France offers more than 50 TV channels on its UMTS network.13 Vodafone offers Mobile TV on its UMTS Vodafone live! service in 12 countries. Most recently, Vodafone launched global Mobile TV channels across its markets as an extension of domestic TV programming.14 What these commercial services have in common is that signals are transmitted over wireless networks. This involves video streaming where the supplier sends the television signal to every user over the network in separate streams. This is known as uncasting, which can be real-time or non-real-time (see Figure 2).

Video streaming has the advantage of working across different mobile standards, such as GPRS/EDGE and 3G. Another advantage is that, in principle, an unlimited number of television channels can be offered. Finally, the two-way directional transmissions, upstream and downstream, allow a high level of interaction with the mobile user, which some players view as key to driving adoption and usage. Overall, this gives operators many opportunities to generate additional revenues. Indeed, many operators see television on the mobile phone as one of the important drivers for the success of 3G.

Popularity of Mobile TV over cellular networks results in congestion

Unicast transmissions, however, consume more network resources as usage grows. At present, 3G networks have plenty of spare capacity. However, as Mobile TV commoditizes and the number of television viewers grows, unicast networks will become more heavily loaded and approach capacity constraints. That will certainly be the case with the current low 3G network speeds of 150 to 220 Kbps, but even with steady increases in transmission speeds

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**Figure 2. Unicast and broadcast.**

<table>
<thead>
<tr>
<th></th>
<th>Realtime</th>
<th>Non-realtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unicast</td>
<td>Unicast live TV</td>
<td>Unicast on demand video</td>
</tr>
<tr>
<td>Broadcast</td>
<td>Broadcast live</td>
<td>Mobile video recording</td>
</tr>
</tbody>
</table>

- **Unicast real-time**
  - Via Vodafone live!, content providers can ‘stream’ TV-content over the 3G network

- **Unicast non-real-time**
  - Via Verizons Vcast, customers have access to large amount of clips (news, music, etc)

- **Broadcast real-time**
  - Worldwide operators and broadcasters are trailing broadcasting live TV to mobiles

- **Broadcast ‘non-real-time’**
  - Handset video recording capabilities for playback at the user’s convenience

Sources: IBM Institute for Business Value.
over the coming years to the 3G maximum speed of around 384 Kbps, this will be far from sufficient. With the evolution toward High Speed Downlink Packet Access (HSDPA) technology, faster transmissions can be realized. But even the theoretical speed of 14.4 Mbps will be insufficient in areas with many mobile television viewers.

Another technology alternative to improve video streaming over mobile networks is Multimedia Broadcast and Multimedia Services (MBMS) technology, which is being developed as part of 3GPP Release 6.15 MBMS enables efficient broadcasting over UMTS, but is only suitable for a small quantity of video streaming over only one to three television channels. Moreover, commercial products based on this standard will be available in 2007 at the earliest.16

The reality is that 3G networks were never intended for realtime television. It is an inefficient use of limited network capacity to use the mobile network to transmit a multicast service, and also inefficient from a financial point of view. According to Markus Lindquest, Nokia Director of rich media services, a three-minute video clip delivered to 100,000 users over current 3G networks could take 1.5 to 2 days to deliver.17 Over a broadcast network, the same transmission could take only a few seconds. In a broadcast network, a mobile picks up the signal directly from the ether. Across the globe, therefore, trails are carried out with complementary broadcasting networks, to overcome the capacity problems of mobile networks.

**SK Telecom decided to go for broadcasting after congestion of the cellular network**

In South Korea, SK Telecom decided to go for satellite broadcasting television after the mobile network became congested within nine months of the launch of video streaming.18 In order to provide DVD quality Mobile TV, SK Telecom has chosen the Digital Media Broadcasting (DVB) standard. Although mobile devices receive the signal directly from the satellite, the operator had to set up a separate network of repeaters in tunnels and behind buildings to fill gaps in coverage.

**TV broadcasting over a mobile**

**War of the standards**

The big challenge with broadcasting Mobile TV is power consumption. Mass market rollout will depend on the ability to provide TV pictures without significantly reducing battery life. This has been one of the main reasons for developing new digital television standards that are compatible with mobile phones. One key problem, however, is that the involved parties cannot agree on a universal standard (see Figure 3).

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**Figure 3. Standards for Mobile TV.**

<table>
<thead>
<tr>
<th>Standard</th>
<th>MBMS&lt;sup&gt;A&lt;/sup&gt;</th>
<th>BCMCS&lt;sup&gt;B&lt;/sup&gt;</th>
<th>DVB-H</th>
<th>ISDB-T</th>
<th>MediaFLO</th>
<th>DMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regions</td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
<td>Open</td>
<td>Proprietary</td>
<td>Open</td>
</tr>
<tr>
<td>Europe, Asia</td>
<td>U.S., Asia</td>
<td>U.S., Asia, Europe</td>
<td>Japan</td>
<td>U.S.</td>
<td>Korea</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>W-CDMA; EDGE/GPRS</td>
<td>CDMA2000; EV-DO</td>
<td>OFDM&lt;sup&gt;C&lt;/sup&gt;</td>
<td>OFDM</td>
<td>OFDM</td>
<td>OFDM</td>
</tr>
</tbody>
</table>

Notes: A) Multimedia Broadcast and Multimedia Services, allowing broadcasting over UMTS; B) BroadCast and MultiCast Service (MBMS-variant for CDMA2000); C) Orthogonal Frequency Division Multiplexing interface technology.

Source: IBM Institute for Business Value.
The DMB standard is the TV version of the European Digital Audio Broadcasting (DAB) standard. The Asia Pacific region is driving the development of this technology, backed by Samsung in particular. This standard can be divided into two headline technologies: satellite (S-DMB) and terrestrial (T-DMB). In 2005, SK Telecom launched the world’s first commercial television based on the S-DMB standard with seven channels for a US$13/month subscription fee. In Japan, satellite Mobile TV using DMB is provided by the Mobile Broadcasting Corporation (MBCO). The DAB/DMB standard is also trialed in various countries in Europe, in particular in the UK and the Bayern region of Germany.

The dominant development in Japan is the construction of a terrestrial broadcasting network based on the Integrated Services Digital Broadcasting Terrestrial (ISDB-T) standard. ISDB-T is the same standard that is used in Japan to deliver DTV services to the home. ISDB-T will be employed in Japan only. Commercial Mobile TV services started on April 1, 2006.

Qualcomm in the U.S. has developed a proprietary broadcasting standard, MediaFLO, based on its Forward Link Only (FLO) technology. FLO is a proprietary standard that operates in the 700 MHz frequency spectrum only. Qualcomm has already obtained exclusive nationwide rights to use this frequency band. Qualcomm’s MediaFLO can offer up to 20 channels at 30 frames per second. MediaFLO will mainly be used in the U.S.. Japanese operator KDDI has announced plans to go head-to-head with leading rival NTT DoCoMo with the revelation that it will set up a Mobile TV joint venture with Qualcomm.

According to Informa Telecoms & Media, the Digital Video Broadcast Handheld (DVB-H) standard will be the dominant standard by 2008, reaching 74 million users worldwide by 2010, equal to almost 60 percent of all broadcast Mobile TV users. DVB-H is the mobile version of DVB-Terrestrial (DVB-T), with reduced power consumption by as much as a factor of 10, as a result of a time-slicing scheme (content is delivered in bursts allowing the receiver to be “on” only around 10 percent of the time). It can theoretically offer 30 TV channels and has a frame rate of 25 frames per second, comparable with standard television. It is pushed by Nokia and has already been approved by ETSI. A key advantage of DVB-H is that it can be used over several frequency bands. It needs a separate network of terrestrial transmitters, but it is likely for the transmitters to be situated at the same sites as the GSM/UMTS transmitter masts. Nokia has recently formed an alliance, called the “Mobile DTV Alliance” with Intel, Modeo, Motorola and Texas Instruments. Recently Microsoft has joined the alliance.

Research firms predict a bright future for Mobile TV

Despite incompatible standards, there is much optimism that Mobile TV will live up to its promise based on this new digital broadcasting technology. As already shown, this is backed by a wide range of research forecasting the market to grow to between US$5 and 27 billion worldwide by 2010. For instance, Datamonitor has created a conservative forecast for the take-up of Mobile TV and is expecting 69 million global subscribers in 2009, generating revenues of around US$5.5 billion (see Figure 4).

Frost & Sullivan predict a similar trend; they expect Mobile TV revenues to hit US$8.1 billion by 2011. Other researchers forecast even more Mobile TV users by 2009/2010. ABI Research, for instance, forecast a market worth some US$27 billion by 2010, though the services will be spread much more widely than in today’s mobile ecosystem. Research by Informa Telecoms & Media predicts that by 2010, almost 125 million people around the world will possess a handset on which television pictures can be viewed. Finally, Juniper Research expects that by 2010, 65 million people around the world will be subscribing to Mobile TV services.
Preparing for lift-off

**U.S. finale between Qualcomm and Modeo**

Mobile TV trials are now widespread across the U.S., Europe and Asia. In the U.S., spectrum has been allocated and sold to Qualcomm (700 Mhz range) and Crown Castle (1670-1675 Mhz range). Both parties are currently working on national deployment of their broadcasting networks in approximately 30 markets across the U.S. Qualcomm’s MediaFLO network is operated by MediaFLO USA. The DVB-H network is operated by Modeo, formerly known as Crown Castle Mobile Media. Both broadcast network operators will wholesale their services to mobile operators, which in turn will offer the service to their subscribers. Qualcomm plans to launch its network in October 2006. Verizon Wireless, the largest U.S. CDMA carrier, will be the first mobile operator to use the MediaFLO network. Modeo, that has piloted its network in Pittsburgh, plans to launch the service mid-2006 in selected major U.S. markets, including New York. Cingular Wireless, the largest U.S. GSM carrier, could be one of the main mobile operators using the DVB-H network.

**European countries are preparing for a future in DVB-H**

In nearly all European countries, mobile operators are piloting the DVB-H standard to evaluate technology, business models, consumer preferences and new revenue opportunities. In Italy, media group Mediaset and Telecom Italia Mobile (TIM) have reached an agreement that looks set to become the basis for the world’s first commercial launch of digital terrestrial TV on mobile phones using DVB-H technology. However, 3 Italia, the Italian subsidiary of Hutchison Whampoa, is also in the race and planning to launch its DVB-H Mobile TV service in June. Italy is expected to be a fertile ground for the new technology as Italians number among the world’s keenest watchers of television and owners of mobile phones. In Berlin, Germany, a DVB-H transmitter is permanently in the air to test new services. Germany wants to get ready to broadcast the 2006 football world championships to mobile devices.

There is trial activity in many other European countries: France (Orange, Bouygues), Netherlands (KPN), Switzerland (Swisscom), Spain (Telefonica Moviles) and the Czech Republic (T-Mobile). In the UK, in the Oxford region, 360 users are taking part in a DVB-H trial by O2, Nokia and Arqiva. In Finland, Nokia, Elisa, TeliaSonera, Digita, MTV, YLE and Nelonen have carried out a Mobile TV pilot with 500 users in the Helsinki region. Finland has awarded Europe’s first operating license for Mobile TV broadcast to French media group TDF’s Digita unit, which plans to open commercial service in the Nordic country in the second half of 2006. In general, the lack of spectrum in European countries and the slow process of allocating frequency bands may seriously delay the development of Mobile TV services there. In addition, there is the question of whether the allocation can be harmonized across the various countries.
Britain poised to offer Europe’s first mobile TV
Though the Italian operators TIM and 3 Italia are in the race to become the first operator in Europe to provide commercial DVB-H Mobile TV services, Virgin Mobile customers in the UK will likely be the first people in Europe to watch real broadcast TV on their DAB-facilitated mobiles, based on BT’s Movio service.38

Bringing the best of two worlds together
Business model innovation is the strategic differentiator
It is not yet clear how the business model for Mobile TV will evolve. Some operators may decide to buy themselves into the media world. SK Telecom, NTT DoCoMo and 3 Italia have made initial moves in that direction. On the other hand, some media companies may aim to become mobile virtual network operators (MVNOs) themselves. Walt Disney may be one such example, creating a direct channel for its huge catalogs of movies, TV, games and images, and also – through the MVNO – its own branded mobile phones. BSkyB, a pay-TV satellite broadcaster in the UK that already provides Mobile TV services via Vodafone’s 3G network, recently bought broadband provider Easynet, which could be a first step in that direction.39 It would also be a logical response to the recent merger of Virgin Mobile with cable company NTL, that created a quadruple play: mobile, fixed line, broadband and TV service under the Virgin brand.40

But in general, innovative business models in which operators, broadcasters and media companies work closely together have the greatest potential for success. The 2006 IBM CEO study reveals that business model innovation and collaboration are the key components for differentiating organizations in a highly competitive environment (see sidebar). In fact, an important finding of the study is that innovative collaboration separates winners and losers.

Expanding the Innovation Horizon
The 2006 IBM CEO study reveals that business model innovation is the new strategic differentiator, and that external collaboration is indispensable. The study involved hundreds of face-to-face and telephone interviews with 765 global CEOs, among which were many operators and media companies. Beyond any other factor, collaboration demonstrated the clearest correlation with financial performance. Regardless of the financial metric – revenue growth, operating margin growth or average profitability over time – strong collaboration consistently came out on top.41

Partnerships among operators, broadcasters, content providers and other media companies therefore is the logical way to bring the worlds of Mobile and TV together (see Figure 5).

Figure 5. Business model and roles: Multiple opportunities for business partners.

Source: IBM Institute for Business Value.
Operators have a large subscriber base and means for secure personal interactivity, but seek to increase ARPU and reduce churn. Mobile TV complements 2.5/3G services with a one-to-many broadcasting capability that enables the operators to develop their customer relationships further. Operators have low experience in quality content that only the media world can provide. Working together with broadcasters will enable them to offer unique programs that provide opportunities for brand differentiation.

Broadcasters have attractive content and an efficient broadcast channel, but seek to distribute expensive content on a large scale, as well as to enrich their services with interactivity and personalization. Mobile TV provides a new platform for taking broadcast TV into virtually any location outside the home. It expands the broadcast business into the increasingly mobile lifestyle of viewers. It creates additional, incremental audiences to receive broadcast entertainment and information during new prime times: the commuting periods and lunch breaks. Mobile TV is a real opportunity for broadcasters to build a unique mobile audience for their programs and brands.

**Mobile TV expands the broadcast business into the increasingly mobile lifestyle of viewers.**

From a business model perspective, content providers see Mobile TV as an additional distribution channel to extend their reach. Content payment and revenue sharing agreements, as well as Digital Rights Management (DRM), are critical to getting content providers on board. DRM involves the delivery of secured and accounted for digital content over IP networks specifying usage rights and prohibiting unauthorized usage or access. DRM covers key content related concerns, such as the number of times a particular piece of content may be viewed, whether content may be shared with other devices, content expiration dates, among other concerns, as well as enabling the previewing of content by a customer prior to purchase. Enabling conditional access (making sure only those paying for the service get it) is not a trivial matter, with a number of issues still pending resolution.

**Integrating cellular networks and broadcasting networks for interactivity**

The combination of a mobile and an overlay broadcasting network enables user/content interactivity, widely considered key to further growth and essential for mobile operators to generate revenues from their mobile networks. This can be executed via a parallel model; both the broadcaster and operator will be able to send signals to the mobile user, with a cellular backhaul (the return channel). Alternatively, an integrated model may be used, in which the operator is responsible for sending both cellular and broadcasting signals to its subscribers, and gets its content from broadcasters, content providers, content aggregators or other media parties (see Figure 6).

What the revenue sharing model will look like is not yet clear. More than likely, it will be based on a combination of subscription fee, network use, advertising revenues and download sales. But it is clear that cooperation among operators, broadcasters, media producers, advertisers and retailer can benefit all. Telcos will profit from service subscriptions, additional traffic, premium messaging (SMS/MMS revenues from viewer voting and user polls), download sales (on demand video clips) and m-commerce (for example, purchasing, data and Web-based services) via their networks' return channels. For the media players, it offers new revenue streams from access fees (for basic, enhanced packages of channels, content), pay-TV subscription services (premium channels, pay-per-view) and advertising. Advertising will be a source of income only from the moment that mass adoption has actually occurred.
Mobile TV offers an opportunity for differentiation to help reducing churn

Mobile TV is seen as having good revenue potential for mobile operators because of its mass appeal, unlike other content services such as games, which only appeal to selected user groups, for example, teenagers. Overall, mobile TV provides many opportunities for mobile operators:

- A new service that is easy to position and with obvious usage scenarios, and hence the potential to increase average revenue per user (ARPU)
- A complementary service to current 2.5/3G services with one-to-many broadcasting capability, enabling new service bundling and deepening of customer relationships (lock-in)
- Scope for interactivity via network return channels provides additional revenue potential, through services such as voting, chatting, purchasing, and data and Web-based services using the mobile.

- Scope to improve network utilization through additional traffic via the return channel (such as on demand clips).
- Deepening of business partner relationships (and revenue streams) through need for billing and e-commerce system upgrades
- Opportunity to offer unique program channels that allow brand differentiation.

Mobile TV offers a high-quality, interactive Mobile TV experience that could help to improve customer loyalty. Operators should focus on differentiation around exclusive content, high-profile brand names and more personalized programming. Exclusive deals with content providers to provide customers with previews and additional interactive services – such as ring tones and games – are key examples. Operators can also introduce pay-per-view options for exclusive content like movies or pre-screening of popular TV series. An example of such an exclusive joint venture is that of KPN and Endemol. Together they form one of the largest European entertainment companies.42
Operators play several important roles in making Mobile TV commercially feasible. As stated, they provide the reverse link needed to enable interactivity. Secondly, mobile operators already have in place the technology to recognize authorized users for the services. Thirdly, in most major mobile markets today, operators already serve as primary distribution channels for handsets.

**Consumer adoption determines success or failure of Mobile TV**

*Recent user trials reveal strong demand for Mobile TV*

Recent surveys, trials and current commercial Mobile TV services show that the demand for mobile TV is higher than originally anticipated. For instance, in a Siemens survey of 5300 mobile users in eight countries (United States, Canada, Brazil, Germany, Italy, Russia, China and South Korea), 59 percent of respondents expressed an interest in Mobile TV. Also, the results from recent DVB-H trials and BT Movio pilot tests have demonstrated apparent consumer demand for Mobile TV.

Interim results from the pilot in Oxford, UK, revealed that 83 percent of the participants were satisfied with the Mobile TV service; 76 percent said they would take up the service within 12 months of commercial launch. In France, 68 percent said they would pay for Mobile TV services, while 55 percent in Spain were willing to do so. Nearly 75 percent of Spanish participants would recommend the service to friends and family.

Above all, the success of Mobile TV depends on consumer adoption. Mobile TV provides for the customer a new and desirable service that is easy to understand and has obvious usage occasions. But consumers will only be willing to pay for Mobile TV if they are satisfied with the content, price and user friendliness. The aforementioned surveys and trials have revealed important indications for these important issues.

<table>
<thead>
<tr>
<th>Positive response to mobile TV</th>
<th>Finland</th>
<th>UK</th>
<th>Spain</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td>58 percent believe mobile TV services would be popular</td>
<td>83 percent are satisfied with the service</td>
<td>75 percent would recommend the service</td>
<td>73 percent were satisfied with the service</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Willingness to pay for mobile TV</th>
<th>41 percent</th>
<th>76 percent</th>
<th>55 percent</th>
<th>68 percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable monthly fee for mobile TV</td>
<td>€10</td>
<td>-</td>
<td>€5</td>
<td>€7</td>
</tr>
<tr>
<td>Average daily viewing</td>
<td>5 to 30 minutes of mobile TV per day on average</td>
<td>23 minutes per session with 1 to 2 sessions per day</td>
<td>16 minutes</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Peak viewing times</td>
<td>-</td>
<td>Mornings, lunchtime and early evenings</td>
<td>While commuting and between 7pm and 8pm</td>
<td>Morning (9-10), midday (1-2) and evening (8-10)</td>
</tr>
<tr>
<td>Popular content</td>
<td>Local programs available through Finnish national TV and sporting events</td>
<td>News, soaps, music, documentaries and sports</td>
<td>News, series and music</td>
<td>News, music, entertainment, sports, documentaries and films</td>
</tr>
</tbody>
</table>
**Consumers want content at the right time**

Key to success is the availability of the right content at the right time. The trials have identified the following particular situations in which mobile users like to watch Mobile TV.47

- **Spare time.** Watching during spare time; for instance, while waiting for or traveling on busses, trains and airplanes.

- **Must see.** When people do not want to miss their favorite programs, even though they are not at home.

- **Catch up.** In situations where people want to follow breaking news. During the bombing incidents on the London underground in 2005, for instance, people found out that they could follow the news on their mobiles all the time.

- **Quick escape.** Orange has observed that 36 percent of its Mobile TV users are watching its 3G Mobile TV during lunch or other breaks.48

- **Background TV/radio.** Many people use TV or radio as background; for instance, at work.

The results of a trial in the Helsinki area in Finland are illustrated in Figure 7.

New prime times for broadcasters and advertisers also emerged from the pilots. The UK results reveal a lunchtime viewing peak higher than the normal TV pattern, suggesting that viewers are enjoying their favorite TV content while on their lunch breaks. In France, participants watched TV for 20 minutes on average per day, with early morning, lunchtime and mid-evening representing the periods of highest use. The Spanish pilot also reveals Mobile TV viewing spread throughout the day, with early evening representing peak viewing.

In the Finnish trial, the average user watched up to 30 minutes Mobile TV, with entertainment, sports and news content as the most popular.49 Interim results of the O2 trial in Oxford showed that users watched, on average, 23 minutes per session, with 1 to 2 sessions per day. Overall, trial participants viewed an average of about 3 hours per week, with one group of enthusiasts viewing over 5 hours per week.50

![Figure 7. Mobile TV is used at particular moments.](http://www.mobiletv.nokia.com/pilots/finland)
Consumers want the right content
Mobile TV is a crossroad of two powerful social trends: greater mobility, and new forms of accessing media content. Program content will, of course, be key to the success of Mobile TV and video services. Mobile TV is not just traditional television on a small screen. It is not a substitute for traditional television; instead, it will complement, not replace it. The introduction of Mobile TV will result in television without frontiers.

Mobile TV has the potential to deliver new, revolutionary content that will extend the entertainment concept, rather than extending the ways in which traditional TV can be viewed. Indeed, if content providers embrace the opportunities Mobile TV delivers, the long-term implications for traditional TV programming will be significant, as consumer demands shift and evolve. Mobile TV provides the highest degree of personalization and widest selection of desirable programming. Consumers may expect more choice and individual treatment.

Mobile TV has the potential to deliver new, revolutionary content that will extend the entertainment concept.

The TV viewer on the move is likely to enjoy programming that is coming in shorter fragments. Breaking news, highlights of sport events, mobisodes and music clips lend themselves well to this. Also, the “Big Brother” approach has proven to be a successful mode, where the consumers had the opportunity to watch behind the screen, which was not available to the general TV public. Creating made-for-mobile extensions of popular TV programs, usually in the form of clips, has appeal. And there is a potential for unique, made-for-mobile content, as Endemol is currently focusing on. The greatest gains are to be sought in the addition of interactivity to TV programs, such as voting, user polls, providing additional information on programs, chatting, merchandising, ticketing and on demand downloads (see Figure 8).

Broadcast TV for mobile can be a powerful new service that further enables users to personalize their mobile handsets so that they can always have the content they want. In fact, it is a trend toward “Personal TV”, and the addition of TV content digitally broadcast straight to users’ mobiles is a huge part of that vision. Mobile TV will appeal to some demographic groups more than others. But more than services as games, one of the attractive aspects of Mobile TV is its potential to appeal to a wide mass-market demographic. Mobile TV is likely to appeal beyond teenagers, the typical target group and early adopters of

Figure 8. The combination of broadcast and cellular networks enables interactivity.

Live broadcast TV

Browsing internet

Live broadcast TV

Broadcast network

Cellular network

Broadcast network

Source: IBM Institute for Business Value.
new content services. Also, “older” people (in the 30-40 range) have shown interest, according to recent surveys conducted by Siemens and Nokia.

Customers want the right price
Getting the pricing right will be important. First we have the fees for the mobile services itself. There are two options:

- Bundled, tiered, flat rate pricing – The most likely scenario involving a fee structure similar to that of traditional TV. This would likely involve an “all you can eat” fee structure, revolving around tiered package plans with different fees for basic programming and incremental additions for premium programming.

- Metered pricing – Based on one of several options: total minutes of use; usage in proportion to network use; or possibly, by individual program subscriptions. A metered plan is not the most likely option as it could hinder the widespread adoption of this new service.

Additional services and fees can be built upon the flat rate and metered structures:

- Pay per view services for real team events
- Clip casting programs, such as a gardening channel
- Realtime applets, such as sport tickers or financial exchange tickers
- Regularly delivered game/application of the week type of service.

Complementary, there is the pricing for interactive driven purchases of ring tones and wall paper, items such as songs and videos, and content associated real world items (DVDs, movie tickets, toys and the like).

Various surveys and trials have shown users’ willingness to pay
A survey of 3600 Norwegian consumers by TV network NRK found that just over half prefer a monthly subscription fee, while the rest are almost equally divided between a per-minute charge or paying per program or clip. The interim results from the Nokia trials in Finland, the UK, Spain and France show that acceptable monthly fees range from €5 to €10. In the Finnish trial, 41 percent of the users felt that €10 per month is a reasonable price, while in France, 68 percent were willing to pay €7 per month for Mobile TV services. And the BT Movio trial showed that customers are prepared to pay up to about €11.5 per month.

Furthermore, the prices for the handsets are important. Initial broadcast-capable phones will be around 500, beyond the means of the average subscriber. To overcome this problem, operators may decide to subsidize the handsets.

Customers want easy-to-use devices
Most handset manufacturers are optimistic about the success of Mobile TV. DMB-handsets which support commercial Mobile TV services are already available in Southeast Asia, granting Korean handset manufacturers Samsung and LG first-mover advantages. Nokia has developed the Nokia N92, the first mobile phone with a built-in DVB-H television receiver. And Sharp is one of the device manufacturers investing in MediaFLO. Almost all handset suppliers have developed Mobile TV devices or prototypes capable of supporting one or more standards.

However, before widespread Mobile TV becomes a reality, a number of issues for the handsets have to be resolved, in particular with respect to user friendliness:

- Power consumption. Significant reductions in battery life will not be acceptable to consumers. The new digital mobile broadcasting standards can reduce power consumption by as much as ten times, in addition advances in semiconductor-process technology will further improve power consumption.
• **Form factor.** Customers are used to small devices and will not easily accept something larger. Tuner, demodulator/decoder and additional semiconductor chips must be integrated within acceptable “real estate” limits.

• **Good TV picture quality.** The picture quality must be comparable to that of normal television. The new standards make a speed of 20 to 30 frames per second possible, almost equal to the standard television frame rate. The average screen resolution is also good enough to view the pictures.

• **Added functionality.** Added functionality must be focused on making the handset easy-to-use for Mobile TV and should include: easy navigation and fast channel change, personalized list of TV stations, program reminders and recording capability. Extra features should not be added at the expense of losing existing functionality.

Recent handset launches, in particular in the South Korean market, indicate that manufacturers are on track to overcome these challenges. They are supported by component and semiconductor suppliers who are also increasingly active in this area. Philips was the first in Europe to demonstrate a complete TV-on-cellular chipset, which consists of a TV tuner, a decoder and peripheral component, and is now doing the same in the U.S. 

Thomson recently announced the acquisition of Thales Broadband and Multimedia, to provide cellular operators with a complete set of Mobile TV solutions.

### Mobile TV must have a new programming paradigm, in particular based on personalization and interactive experiences.

Mobile TV must have a new programming paradigm, different from normal television, in particular based on personalization and interactive experiences. The programming must have its own *Must See* element. And it must be delivered without comprising the TV experience. Channel changes must not be slower than on standard TV, they must include understandable electronic program guides and picture quality that does not deteriorate in bright sunlight. The service must be priced at a modest premium. After all, most of the content that underlies the basic service is not unique or inaccessible through other channels. Finally, adoption hinges on the availability of suitable, attractive devices, priced to attract the mass market.

The Asian countries have already taken a lead in the Mobile TV field. It is likely that the rest of the world will follow as TV, unlike mobile Web browsing, is an easy concept to sell to consumers. Trials in Europe and the U.S. have shown positive results, though issues around business models and multi-player revenue sharing arrangements are yet to be resolved. A number of commercial deployments are expected in 2006, but significant subscriber growth is not likely to gain momentum until 2007. Nevertheless, with many introductions in 2006, and the football World Cup as a key promotion, 2006 looks set to be the year Mobile TV takes off.

### A bright future for Mobile TV

Mobile TV is a key example of the digital convergence among networks, devices and content. Digital convergence will have a profound impact on consumer lifestyles, and as such, it carries new business opportunities for a plethora of players in the telecom and media worlds. To make Mobile TV successful, a combination of mass market content, low prices and mainstream phones is crucial. User adoption will be greatest if the content has the widest possible appeal at the times of day when users are most likely to be away from standard television.
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References
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