

Mobile Broadcast Business Models

A State of the Art Study



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November 2006

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1. Introduction

One of the main issues in mobile broadcasting is that of the business model. A large number of approaches have been published over the last months.

The DigiTAG Handbook "Television on a handheld receiver – broadcasting with DVB-H" (1) gives a first comprehensive overview of the possible variety of business models in mobile broadcasting.

bmcoforum has established a working group "Generic Business Models" and discussed and compared the different approaches in more detail (2).

In Germany, the "Deutsche TV Plattform" has developed models based more on the national specifics such as player interests and licensing (3).

A large number of presentations have been given at various conferences and workshops, e.g. in (4) and (5).

Furthermore, after a large number of mobile broadcast pilots have finished first commercial services have now begun in Italy (3 Italy and TIM), Germany (MFD) or UK (BT Movio). Other countries such as Finland (Digita) will follow soon.

Looking at the companies mentioned here it becomes apparent that the main drivers come from very different parts of the value chain: broadcasters (Mediaset), mobile operators (3 Italy, Germany), platform providers (MFD, BT Movio) or broadcast network operators (Digita). National specifics and other reasons are behind this as well.

It might be of interest to potential stakeholders to describe these practical approaches more in detail but also to compare them to give new entrants examples and bases for approaches of their own.

This report was generated based on special input from the above-mentioned players. **bmcoforum** would like to thank them for their contributions and comments.

2. Generic business model considerations

2.1. *Revenue streams*¹

Mobile broadcasting can generate revenues from three sources, namely from

- customers,
- advertising,
- broadcast network access fees.

Customer revenues are based on the additional value of mobile TV services. Different charging mechanisms may be used. A monthly subscription fee is considered the most acceptable according to nearly all pilot market research. But pay-per-view or time-based charging are other options.

Additional customer revenues can be generated by interactive services related to broadcast services. The charging models then are based on the models applicable to the kind of interactive service used. For SMS-based voting the well-established premium SMS charging can be used. Pointing to the internet well-established internet charging mechanisms can be adopted.

Mobile broadcasting provides a new distribution channel for TV content including **advertising**. Thus, selling air time to advertisers can be considered as an additional income source for broadcasters.

New potentials for advertising may be opened up by combining broadcast ads with personalised advertising features using the interactive channel.

Advertising revenues probably will become significant only at a later point in time when mobile TV service has achieved sufficient penetration.

Broadcast network access revenues may be based on the potential interest in securing access to the mobile broadcast network in order to participate in the emerging market.

One aspect which may generate infrastructure access revenues lies in the valuable extension of coverage, not only related to the area or population but also to the time of day at which users can be reached.

2.2. *Cost streams*²

Cost streams are related to

- Infrastructure,
- Content,
- Device subsidies (possibly), but also
- Marketing and sales expenditures.

The largest part of **infrastructure costs** attains to broadcast network rollout and operation. Mobile broadcast networks are expected to have good indoor

¹ The following description is mainly taken from (2)

² The following description is mainly taken from (2)

coverage, because pilots have shown a high usage even indoors. So coverage and quality of reception are heavy cost drivers. Infrastructure costs also depend on the planned coverage.

Another infrastructure cost factor is the setup and operation of the service platform, enabling mobile broadcast services and containing the play-out centre, conditional access systems, content hosting and aggregation, billing systems as well as technical facilities for interactive services.

The main **content costs** relate to content creation and provision, the adaptation of content formats to the requirements of mobile reception, but also the acquisition of content rights and licenses.

Device subsidies may be considered as necessary in order to achieve quick customer acceptance and market penetration. But subsidies should not be seen in context with broadcast services only but in context with the whole service portfolio available on mobile devices.

Finally **market and sales expenditures** mainly come from activities in customer care, provision of points of sale, administration of customers (data warehousing) and marketing campaigns for new service on mobile phones.

2.3. Roles and players of the value chain

In most of the studies on mobile broadcast business models, the following main roles of the value chain have been identified:

- Broadcaster: aggregating content into channels based on a broadcast license if necessary
- Mobile broadcast service provider: providing the mobile broadcast service based on a platform license if necessary
- Mobile network operator: operating the mobile network and mobile services
- Broadcast network operator, operating the broadcast network based on a frequency license
- Users

The role of the mobile broadcast service provider is taken here to define a service consisting of channels broadcasted for mobile reception.³ It is a new role in mobile broadcast business and one which did not exist in the classical mobile and broadcast businesses so far. To some extent it can be compared to a cable operator, packaging channels and other packets as well.

Players in the value chain can take one or more roles, e.g.

- In Italy, Mediaset is in the role of the broadcaster as well as the broadcast network operator.

³ This should not be confused with the IPDC service provider, who is responsible for the technical service provision and can be whose role can be taken by the broadcast network operator or any third party.

- In the Netherlands KPN is in the role of the MNO and (via Nozema) also related to the broadcast network operator. The same is true of Hutchison 3 Italy owning a frequency license.
- T-Systems in Germany as well as TDF in France and (via Digita) in Finland are broadcast network operators not related to any broadcaster.

2.4. *Generic models*

In the literature and in practice, a large number of different approaches to describe mobile TV business models can be found, differing in abstraction level or type of value chain presentation.

In the following, free-to-air services will not be considered, because the business models do not differ from those applicable to any other digital terrestrial TV service. Here a broadcaster will provide one or more channels to everybody who owns a device able to receive them. The broadcaster will pay for broadcasting the channels to the broadcast network operator or anyone else in the value chain based on public fees or advertising revenues.

So, if we focus on models where customers pay directly for mobile broadcast service, then the question is: Who will bill the customers?

Under the service selling and billing aspect this leads to the following two generic business model approaches based on the customer ownerships from other business:

1. (Pay TV) broadcaster-led model
2. Mobile network operator-led model

Under the **mobile broadcast service provision aspect** several players will be able to handle this role:

- Broadcaster
- Mobile network operator
- Broadcast network operator
- Third party

If he does not own the customer relationship, the mobile broadcast service provider will need to define a wholesale service to one of the customer owners. This leads to another model:

3. Wholesale model

In the following these three models will be described more in detail.

2.5. *The broadcaster-led model⁴*

In the broadcaster-led model, a (Pay TV) broadcaster handles the role of mobile broadcast service provider, manages the end-relationship with the customers and is responsible for service provision, marketing and customer care.

⁴ The following description is partially taken from (1)

Normally, a broadcasting company will package its own channels only and provide them to their pay-TV customers. As this is not an integrated service proposal, consumers may need to subscribe and pay to more than one service provider to obtain the different services.

The broadcaster receives payments for the use of service from consumer subscriptions, or through payments made via the mobile network operator. A variation on this could be broadcast funding from advertising revenue.

The broadcaster will be able to offer the mobile broadcast service in a package with its stationary pay TV service.

Fully interactive services are a possibility, but they will make necessary a separate billing procedure. As an alternative, the broadcaster could obtain the status of a mobile virtual network operator (MVNO).

The involvement of the mobile network operator may be limited except for linked telecom services.

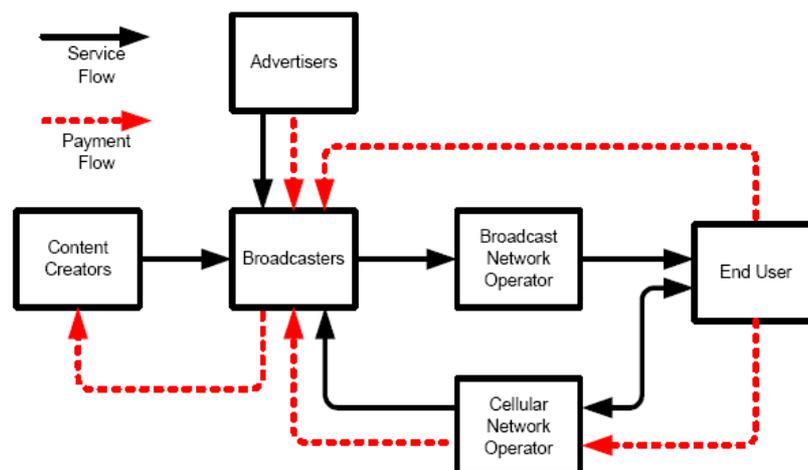


Fig. 1: Broadcaster led model

In this model, the broadcaster will need to enter into an agreement with the mobile network operator regarding the device technology, unless the former limits him to selling devices unconnected to the mobile network.

Given the expected initial high cost of mobile broadcast receivers, market penetration may remain low if no receiver subsidies are offered.

The commercial risk is with the broadcaster as the mobile broadcast service provider. He has to pay to the broadcast network operator for the network set-up and operation, unless he also takes on this role.

2.6. Mobile network operator led model⁵

In the mobile network operator-led model, the mobile network operator handles the role of mobile broadcast service provider, manages the end-relationship with customers and is responsible for service provision, marketing and customer care.

For the service, the mobile network operator will need to purchase content from broadcasters and other content providers. In particular, he will become himself a broadcaster establishing his own channels, acquiring a broadcast license if necessary.

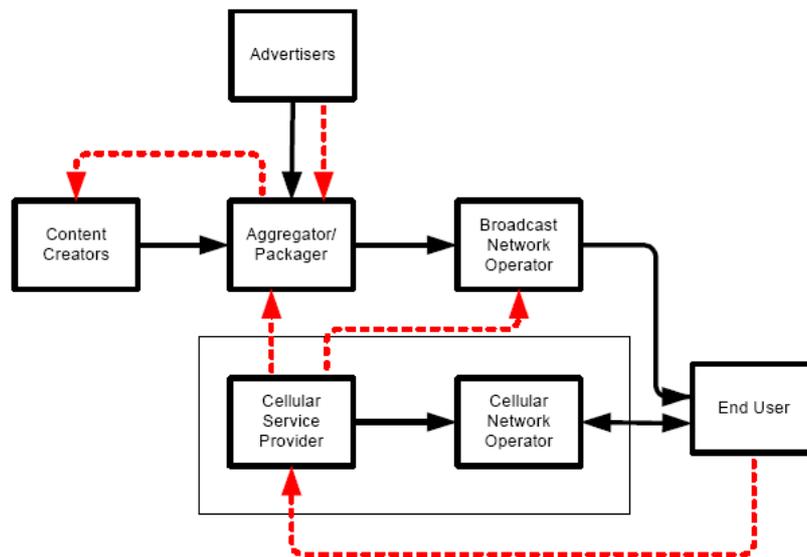


Fig. 2: Mobile network operator-led model

Customers will have access to an integrated service proposition, which means that a complete package will be offered by the mobile network operator.

The mobile network operator will receive payments for the use of mobile broadcast service from consumer subscriptions.

Fully interactive services are a possibility and no separate billing procedure will be necessary for consumers to pay for the use of such service.

As a variation, the mobile network operator could directly handle advertisements.

While mobile network operator would be responsible for general marketing, it could be possible for broadcasters to market individual television channels. For channels that generate revenues, e.g. Televoting, broadcasters would be responsible for marketing the channel while the mobile network operator would be responsible for billing. Revenue would be shared.

⁵ The following description is partially taken from (1)

The mobile network operator will have full control over the mobile device. He is also in a position to subsidise the device and to offer the mobile broadcast service in a package with other mobile services.

The commercial risk is with the mobile network operator as he is the mobile broadcast service provider. He will need to pay the broadcast network operator for the network set-up and operation unless he takes on this role himself, but possibly also to the broadcasters for providing the channels.

In any geographical area, there will normally be more than one mobile network operator. This model implies that each of the mobile network operators will broadcast his own package, even if the same channels are also available in the package of another mobile network operator. This inefficient usage of frequencies can only be overcome through the wholesale model.

2.7. Wholesale model⁶

In the wholesale model, a dedicated mobile broadcast service provider (wholesaler) acts as a facilitator for mobile network operators in the aggregation of channels and the usage of broadcast transmission capacity.

For the service, the wholesaler will need to purchase content from broadcasters and other content providers, among them also the mobile network operators. In particular, he may become himself a broadcaster establishing his own channels, acquiring on a broadcast license if necessary.

Customers of each of the mobile network operators will have access to an integrated service proposition, which means that each will offer a complete package. The packages and the service offer of the mobile network operators may differ in some parts, e.g. in bundling them with other services in different manners.

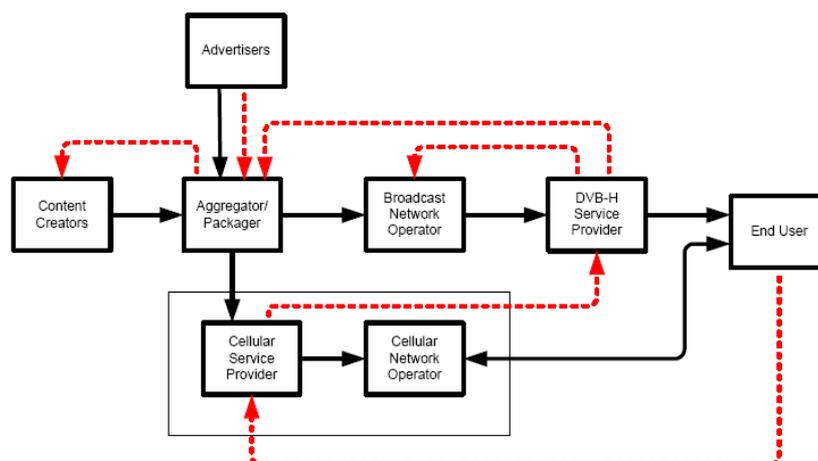


Fig. 3: Wholesale model

⁶ The following description is partially taken from (1)

The wholesaler receives payments from the mobile network operators who in turn will bill their customers for the service.

Fully interactive services are possible, and no separate billing procedure will be necessary.

While the mobile network operators would be responsible for general marketing of their competitive services, it could be possible for broadcasters to market individual television channels. For channels that generate revenues, e.g. Televoting, broadcasters would be responsible for marketing the channel while the mobile network operator would be responsible for billing. Revenue would be shared.

The wholesaler could promote market penetration through image marketing.

The mobile network operators will have full control over the mobile device. They are also able to subsidise the device and to offer their mobile broadcast services in packages with other services.

The wholesaler needs to set the standards for the wholesale service including broadcast reception and purchase and protection.

This model overcomes the inefficient usage of frequencies of the mobile network operator-led model.

The shareholders of the wholesaler fulfilling the role of the mobile broadcast service provider may come from

- Investors not involved in the mobile or broadcast business so far (as for Mobiles Fernsehen Deutschland or BT Movio),
- A broadcaster, providing channels on his own or third-party broadcast transmission capacity (as for Mediaset),
- A consortium of broadcasters
- A mobile network operator having access to broadcast transmission capacity and providing
- A consortium of mobile network operators
- A broadcast network operator
- Others

The commercial risk is with the wholesaler being the mobile broadcast service provider. He needs to pay to the broadcast network operator for the network set-up and operation unless he also takes on this role, but conceivably also to the broadcasters for providing the channels.

Having the commercial risk on the other hand the wholesaler is in the position widely (limited maybe by regulation or license terms) to define the channels to be broadcasted. However, he needs to consider the interests of the mobile network operators selling the channels to their customers.

2.8. DigiTAG approach

The DigiTAG Handbook "Television on a handheld receiver – broadcasting with DVB-H" (1) has given a comprehensive overview on the possible variety of business models for mobile broadcasting.

The DigiTAG handbook lists them as follows:

- Broadcaster-led approach with mobile telecom operator
- Mobile telecom operator-led approach with broadcaster
- Independent DVB-H service provider approach
- Mobile telecom operator-led approach

The first three approaches have been broadly described before. The fourth can be considered as a special case of the Mobile network operator led model.

2.9. bmcoforum approach

bmcoforum has worked on generic business modelling in a corresponding working group (2).

It assumed that no player will be able to control the complete value chain in most countries. As the two industries converge, it is unlikely that the business will form a new value chain with traditional vendor-buyer relationships. More likely, the business will evolve as a **business web**, a customer-centric market model of interdependent specialised companies that "competitively" contribute their capabilities to an overall value proposition.

bmcoforum's approach thus is based on a business ecosystem which is likely to evolve as a competitive business web, comprising a "Service Value Web" and a "Network Value Web".

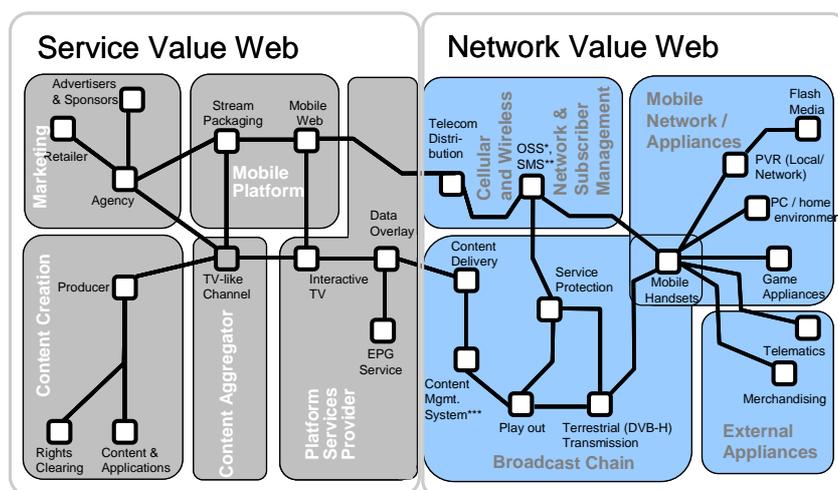


Fig. 4: Mobile broadcasting business web

In **bmcoforum**, the business models have been considered mainly under the mobile broadcast service provider aspect (called platform providers here). The following three models have been identified

- Broadcast service provider as platform provider

In this model, a group of mobile network operators and/or broadcasters etc. as the broadcast service provider orchestrate the business model.

This model is close to the wholesale model described above (1.7).

- Content provider as platform provider

In this model, the content providers do not act as a group. Rather each of them establishes his own platform.

This model is close to the broadcaster-led model described above (see in 1.5).

- Mobile network operator as platform provider

In this model, the mobile network operators do not act as a group. Rather, each of them establishes his own platform.

This model is close to the described broadcaster led model (see in 1.6).

This model is congruent the mobile network operator-led model (see 1.6), where each mobile network operator establishes his own platform

Besides functionally considerations for each partner of the value web, pros and cons of the different approaches have been identified and described in Tab. 1.

Based on these pros and cons, the **bmcoforum's** "Generic Business Models" group does not consider a separated approach either driven by Broadcaster or mobile network operators a useful one. This would induce inefficiencies, resulting in higher cost, cannot guarantee coherent services and reduces the capabilities of platform due to fragmentation and non-coordinated technology implementation.

The Broadcast Service Platform Provider approach is seen to provide the best chances to establish a successful business model for mobile broadcasting.

Backing of Broadcast Service Platform Provider by mobile operators would ensure commitment by mobile operators as well as significant implementation activities, especially with regard to terminal distribution, customer relationship management and development of interactive services.

| Business web shaper | Pros | Cons |
|-------------------------------------|--|--|
| Broadcast Service Platform Provider | <ul style="list-style-type: none"> ▪ High commitment through acceptance of investment risk ▪ Decisive influence of platform configuration; harmonized platform concept possible ▪ Interaction with mobile network operators and content providers already intended by construction ▪ Neutral market position ▪ Clear interface toward operators, broadcaster, regulators | <ul style="list-style-type: none"> ▪ Need for organising Broadcast Service Platform Provider ▪ Cooperation needs to be clarified according legal implications ▪ Could be subject of regulation due to stand-alone position in market |
| Mobile Network Operator | <ul style="list-style-type: none"> ▪ Customer base and direct relationship to end consumer ▪ Billing and Customer care already available ▪ Provision of return channel as precondition for interactive services, incentives given to drive development of Value-added Services ▪ Knowledge of mobile market and customer needs / behaviour ▪ Able to handle device management and subsidies ▪ Embedded service offer in one device, coherent proposition ▪ Mobile customer has learned to pay for mobile services | <ul style="list-style-type: none"> ▪ Differing interest of each mobile operator could lead to fragmentation ▪ No coherent service ▪ No harmonized approach regarding platform, conditional access systems, play-out centre could induce additional costs and inefficiency ▪ Lack of frequencies for separated approach |
| Broadcaster/ Content provider | <ul style="list-style-type: none"> ▪ Content available, opportunity for quick supply via existing TV formats ▪ Opportunity for driving interest in broadcast services by providing attractive content | <ul style="list-style-type: none"> ▪ No financial commitment on platform provision likely ▪ differing interests of individual broadcasters ▪ Limited capabilities regarding organizing provision of backward channel and terminal equipment ▪ Strict media regulation ▪ No homogeneous block in broadcast sector: <ul style="list-style-type: none"> ▪ Public versus private broadcaster ▪ Cable versus satellite versus terrestrial platforms |

Tab. 1: Pros and cons of business model approaches

2.10. Approach of German TV Platform⁷

The German TV Platform is an association of members from all parts of the German media economy. It has created a work item "Mobile Multimedia" to consider regulatory, technological and business aspects of mobile broadcasting.

The business models considered here (3) are closer to the players in the German market and their interests but also to frequency licensing.

Five business models have been described:

- **Independent** platform operator per multiplex

An independent platform operator will be granted a licence to use the capacity of a whole multiplex for setting up a mobile TV bouquet. If several multiplexes will be available, several different platform operators may be granted a licence.

This model is close to the wholesale model (see 1.7) incorporating investors previously not involved in the mobile or broadcast business so far, such as Mobiles Fernsehen Deutschland.

- **A consortium of mobile network operators** as platform operator per multiplex

A consortium of mobile network operators instead of independent stakeholders could be granted a licence to use the capacity of a whole multiplex for setting up a mobile TV bouquet.

This model is also close to the wholesale model (see 1.7) because the consortium will wholesale service bouquets to each of the mobile network operators.

- **Multiple broadcast-led** platform operators per multiplex

In this case the parts of the mobile broadcast multiplex are granted by the regulator individually to broadcasters (or maybe also to mobile network operators).

This model is considered able to secure the influence of the broadcasters on the broadcast capacity.

The model is close to the broadcaster-led wholesale model (see 1.5)

- **Usage of existing multiplexes** by broadcasters

This model implies the simulcast transmission of terrestrial TV and mobile broadcast within the same multiplex with broadcasters using the existing licenses.

Broadcasters will provide a wholesale service to (virtual) mobile network operators or third parties.

Using the existing multiplexes, broadcasters do not have special investment risks.

- **Mix of existing multiplexes** by broadcasters and special multiplex

⁷ Deutsche TV Plattform

This model combines the usage of existing multiplexes by broadcasters (previous model) with the license for a special mobile broadcast multiplex awarded either to an independent platform operator or a consortium of mobile network operators.

3. Recent commercial business models

3.1. Commercial DVB-H service of 3 Italia (5, 6)

3 Italia is the 3rd largest mobile network operator in Italy, playing a prime role in the multimedia services field. It is the first operator in the Italian UMTS market.

In 2005 Hutchinson 3G Italia bought Canale 7, Italy's fourth largest broadcaster, for about 35 Mio €. Thanks to this acquisition, 3 Italia acquired a terrestrial digital TV nationwide network operator's license with coverage for over 70% of the country.

Based on this, 3 Italia launched the first commercial DVB-H service worldwide in late May 2006.

3 Italia operates a mobile network operator-led model as described in section 1.6. It handles the role of mobile broadcast service provider, manages the end-relationship with customers and is responsible for service provision, marketing and customer care.

3 Italia business model

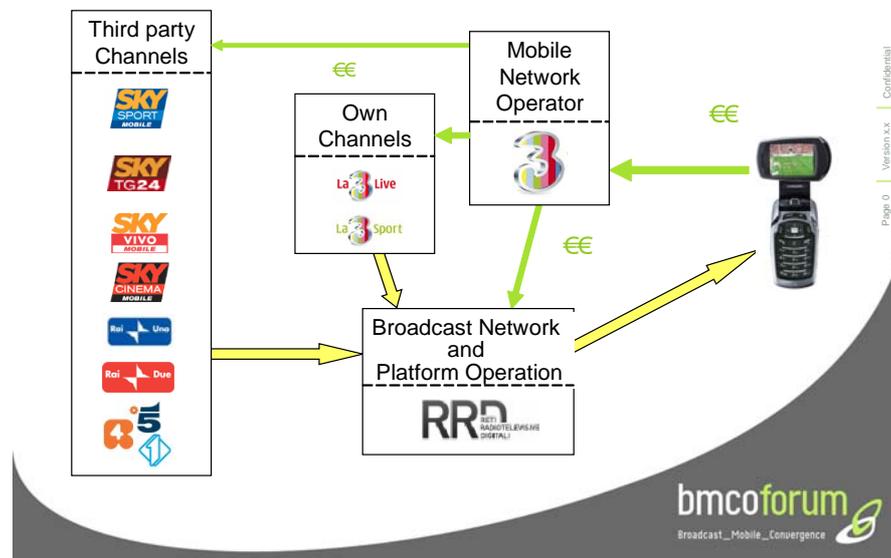


Fig. 5: The business model of 3 Italia

For the service, 3 Italia purchases content from different broadcasters. Among all these channels that are routed more or less with the same content as the other platforms (analogue, DVB-T, Satellite), the two channels La3 Live and La3

Sport are produced directly inside H3G. Thus, a mobile network operator is transforming itself into a media company.

The service is developed and maintained by Reti Radiotelevisive Digitali (RRD); a privately owned company specialising in system integration services for the mobile television market.

In its service centre RRD aggregates, encodes and encapsulates nine channels to form the basic package:

- La3 Live: A sort of "table of content" channel where 18 young 3jays alternate in talking about what is on air on the other channels
- La3 Sport: H3G' channel dedicated to sport such as World Championship Soccer, Champion's League and Serie A, MotoGP, Sailing
- Best of Mediaset: Football Serie A, MotoGP, top events, concerts, theatre)
- Sky Sport "mobile" : The most important competitions, championships and matches
- Sky News 24: National and international news updates minute by minute
- Sky Vivo: All the top international and Italian reality shows
- Sky Cinema "mobile" : The best cinema productions: from the most recent to the classics
- Rai Uno: public broadcaster
- Rai Due: public broadcaster

Furthermore, RRD provides 3 Italia with support service which includes the design, planning and deployment of the nationwide DVB-H network with coverage for 40 million people in Italy or 75% of the Italian population (April 2006).

La3 Live is the only free channel, while all the other 8 are protected through conditional access.

There are two bundles available:

- Basic Package: all the above channels
- Premium Package: Canale Playboy

Each of the packages is billed separately on a subscription base. Four options are available (prices taken from a promotion valid until November 15th, 2006):

- 1 day of access for all the channels at 2€
- 1 week of access for all the channels at 9€
- 1 month of access for all the channels at 19€
- 6 months of access for all the channels at 59€

For the subscription based service, the two available handsets, a LG U900 and the Samsung P910, are available for 249 € in operator lock mode.

There is another service offer based on a 24 months contract. Contract subscribers will get one of the described handsets and pay a monthly fee of 29€ (limited promotional offer) for a service which includes:

- The basic bundle
- 1GB of data traffic/month
- 60 minutes of 0 cent calls a day

H3G bills the customer and pays RRD for the network and platform operation.

Corresponding to (5), H3G pays the broadcasters a fixed fee for use of free-to-air content and shares the revenue for premium content (with minimum guaranteed). The pricing of premium content will be agreed with broadcasters to avoid cannibalisation of the pay-TV business. This way, pay-TV broadcasters achieve direct control over the pricing policies vis-a-vis end users.

www.la3tv.it/la3Live

3.2. Commercial DMB service of MFD in Germany

Mobiles Fernsehen Deutschland (MFD) is a private equity-based start-up.

Between February to October 2006 Mobiles Fernsehen Deutschland (MFD) was granted long-term (several years) test licenses for an L-band based DMB service by 15 German regional media authorities.

The licenses allow MFD to define most of the content to be transmitted in the 1.5 MHz block.

MFD operates a wholesale model as described in section 1.7.

The mobile TV service, named "*watcha*", started in early June 2006 in Berlin, Köln, Munich, Frankfurt and Stuttgart; a little later in Nuremberg. As of the beginning of September, it has been extended to Hamburg, Leipzig, Hanover, Dortmund, Saarbrücken and Gelsenkirchen.

Four TV channels are available within *watcha*:

- ZDF, the second public German broadcaster
- N24, a news channel of the ProSiebenSat1 group
- ProSiebenSat1 Mobile, a special mobile TV channel adapted to the mobile viewing behaviour including genre-specific weekdays and soaps broadcasted ahead of stationary TV schedule
- MTV, providing a music channel consisting of a one-hour music clips loop.

MFD's DMB business model

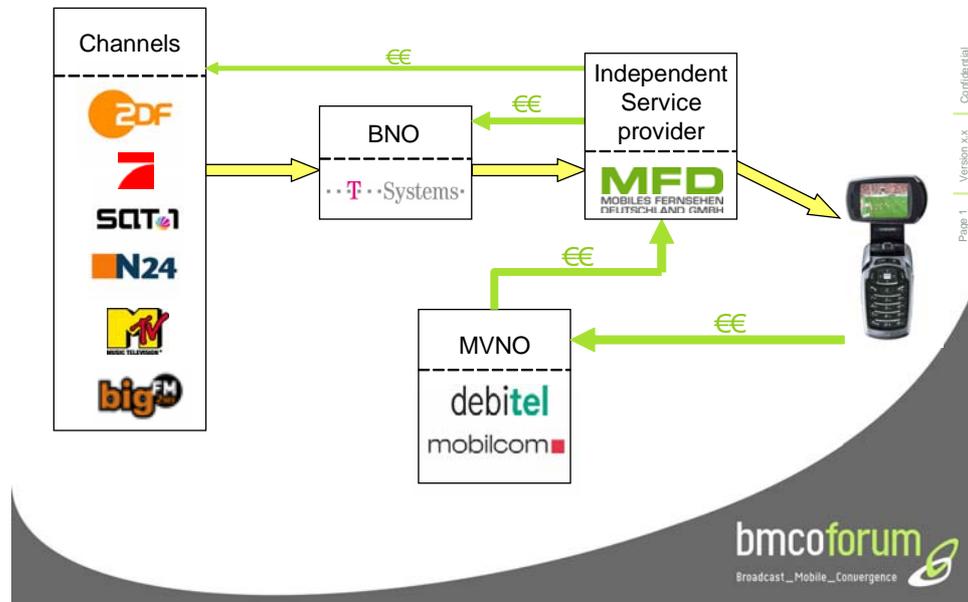


Fig. 6: The business model of Mobiles Fernsehen Deutschland

Furthermore, bigFM2see provides a visual radio channel. Additional radio channels will round off the service.

There is no information available on the commercial relationship between MFD and the broadcasters, but it is probable that MFD will pay for the content.

The broadcast network is operated by T-Systems, the license holder for the national L-band frequency. In the 12 cities, 31 transmitters have been installed. This covers a population of 11 million (13.1 %) with 15 million targeted for the end of 2006.

MFD has a long-term contract with T-Systems for network set-up, operation and maintenance. Thus, MFD assumes the investment risk.

Three of the four TV channels are encrypted, which is the basis for charging users. ZDF as well as the radio channels are transmitted unencrypted.

MFD does not have customer relationships of its own. From the start, it has used debitel, a German Mobile Virtual Network Operator (MVNO), as a sales channel. Since October 2006, Mobilcom, another MVNO, has also been offering the *watcha* service.

MFD provides the *watcha* service to debitel and Mobilcom on a B2B basis. No information is available on contract details, but MFD needs to provide well defined population coverage. MFD will provide thus DMB service in 45 large German cities by the end of 2006, covering 50% of the population by end 2007.

Being MVNOs, debitel and Mobilcom own users. They bundle the *watcha* service provided by MFD with their own mobile services and market bundle products to consumers at their own shops but also via media shops such as MediaMarkt.

Both debitel and Mobilcom subsidise the terminals

The debitel customer products may be characterised by the following (as of November 2006):

- 7,50 € for mobile TV service set-up

For the Samsung SHG-P900:

- 5,00 € p.m. in connection with a minimum 24 months contract for a debitel-card (promotion until January 2007: first 6 months for free)
- Minimum *watcha* contract time: 6 months
- Terminal price: 1,00 € or 29,00 € depending on contract type.

For the LG V9000

- 4,95 € p.m. in connection with a minimum 24 months contract for a debitel-card with a basic tariff of minimum 14,95 € p.m. (promotion until December 2006: first 3 months for free)
- Minimum *watcha* contract time: 24 months
- Terminal price: 99 €

The Mobilcom customer product may be characterised by the following (as of November 2006):

- 8,95 € p.m. in connection with a minimum 24 months contract for a Mobilcom card (promotion: first 3 months for free)
- Minimum Mobile TV contract time: 12 months
- Terminal price: 49 € / 79,00 € / 249,00 €, depending on the card contract type

In this business model, MFD acts as an independent service provider, taking on the main service risk. MFD is widely able to define the DMB service, but customer products are defined by the resellers.

debitel and Mobilcom bill the customers. MFD will get part of debitel's and Mobilcom's revenue after covering marketing, billing and terminal subsidiary costs. MFD itself needs to pay T-Systems for the network provision and probably partially also to ProSiebenSat1, N24 and MTV.

The ZDF channel is financed by the GEZ fee paid by each German household owning TV or radio set. ZDF does not pay any fee to MFD for transmitting the channel.

www.mfd-tv.de

www.watcha.de

www.debitel.de/privat_shop/mobilfunk/handys/index.php

www.mobilcom.de/tv

3.3. DAB-IP service of BT Movio in UK (8)

BT Movio is a venture owned by BT in the UK.

At IBC 2006, BT Movio announced the launch of its mobile broadcast entertainment service based on DAB-IP technology. This is a wholesale service as described in section 1.7.

In October 2006, Virgin Mobile as the first retailer started retailing BT-Movio's wholesale service to their customers. Virgin Mobile is the UK's largest mobile virtual network operator and uses T-Mobile's network for its more than 4 million customers.

BT Movio's wholesale service includes four channels:

- The simulcast programme schedule for BBC One, ITV1 and E4 with the exception of some film, sport and US-produced content due to rights issues

BBC One will be available on a trial basis for 12 months.

- Channel 4 will initially broadcast a special made-for-mobile TV channel, the Channel 4 Short Cuts. Simulcast Channel 4 is expected to follow.

As basis for the retail business service, ITV 1, E4 and Channel 4 are broadcast encrypted. BBC One is transmitted unencrypted and will be provided free to the customers.

BT Movio's DAB-IP business model

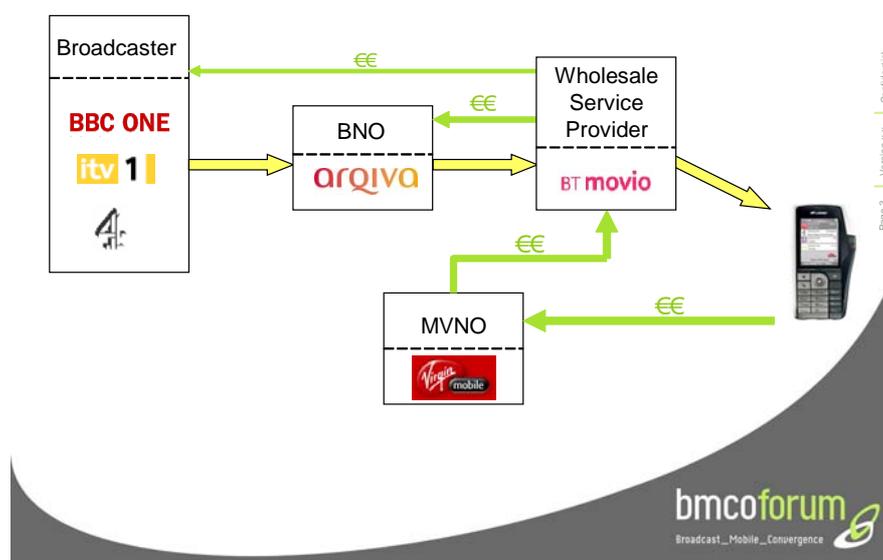


Fig. 7: The Business model of BT Movio

BT Movio is unique in that it combines all the DAB digital radio as well as TV channels in its line-up. Results from the recently concluded BT Movio pilot and other trials pointed to the fact that whilst Mobile TV captures consumer imagination, DAB digital radio is actually what consumers use more.

Thus, DAB digital radio is another key ingredient of the BT Movio service. Typically listeners in most major towns and cities in the UK can receive between 30 and 50 free-to-air DAB digital radio stations.

The BT Movio service is expected to provide a significant boost to the UK's world-leading DAB digital radio industry. By combining a digital radio receiver with a mobile phone, radio stations will be able to develop a two-way relationship with their audiences and launch innovative new services.

Other components of the BT Movio service are

- A seven-day programme guide (EPG) for finding favourite TV and radio shows and planning viewing or listening schedule. This also includes programme guide data for the UK's national commercial radio stations which can be picked up by compatible domestic DAB digital radios as well as compatible mobile phones.
- The "red-button" interactive services, allowing consumers to participate in TV and radio programmes by directing their phone's browser to web services specific to the programme that they are watching or listening to.

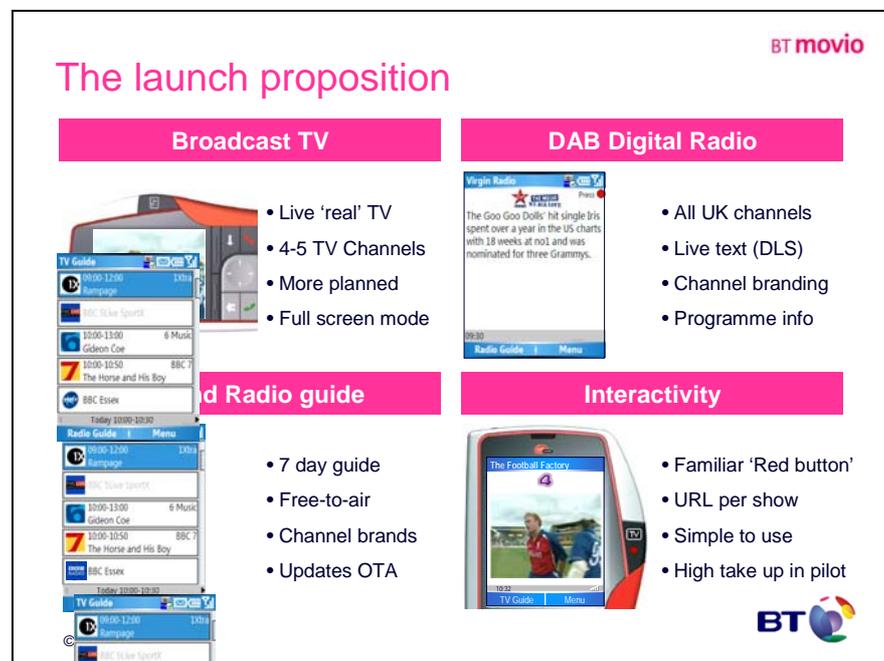


Fig. 8: The service proposition of BT Movio

BT Movio uses the existing DAB network (Digital One). It is based on a nationwide DAB licence in VHF band, which BT Movio has been granted. It covers more than 85% of the UK population.

The coverage will be improved where necessary, rather than embarking on the costly roll-out of an entirely new network of an alternative technology.

The broadcast network itself is set up, operated and maintained by Arqiva, a UK broadcast network operator, on a contractual basis. Thus, it is BT Movio taking on investment risk.

The primary business model at launch is based on the basic package of TV channels. BT Movio will charge its wholesale customers, such as Virgin Mobile, each time a consumer requests a license for the service (licenses are required to decrypt the protected broadcasts). The wholesale customers, mobile network operators, will be free to pass on this charge to their retail customers at the rate and in the manner they choose.

The launch device for the BT Movio service is the Virgin Lobster 700TV phone, manufactured by HTC. Other phone models are to follow.

The Movio platform is flexible enough to allow almost any type of charging model: daily, weekly, monthly or longer. However, in consumer trials, overwhelming support emerged for the monthly model.

A secondary model for generating revenues is to offer additional channels or programmes for one-off viewing fees. This model will be limited to certain markets, depending on the availability of extra spectrum for these broadcasts.

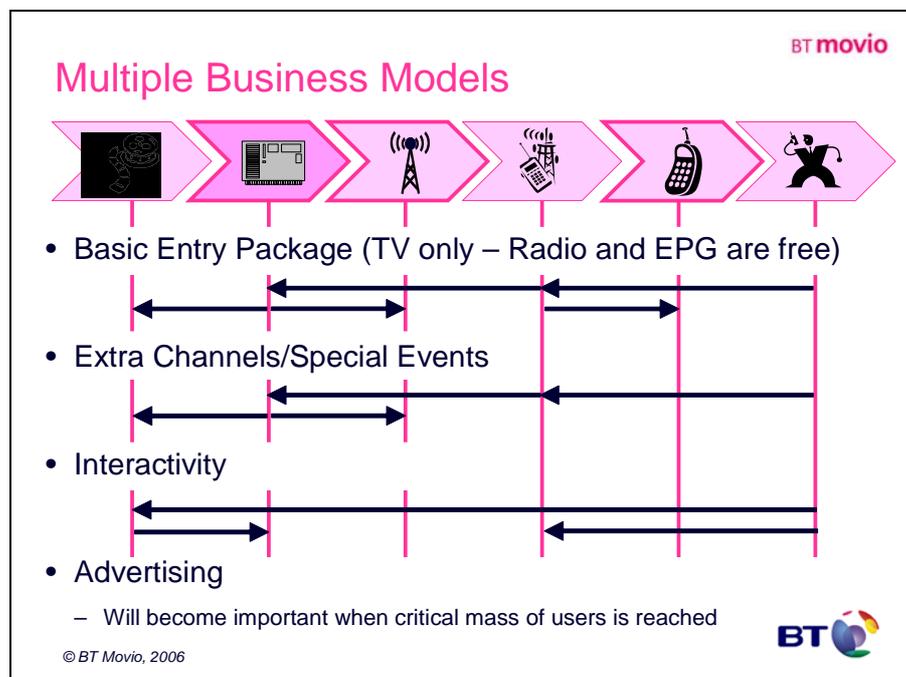


Fig 10: Revenue streams supported by BT Movio

The Movio service enables simple interactivity for the consumer via a familiar 'red button'. Several business models exist for these services, which are based on existing models used in the internet industry.

BT Movio is also currently putting the advertising enablers in place so that it can take advantage of new revenue streams in the future, once a critical mass of consumers uses the service.

In each case, the investment and risk for (virtual) mobile network operators retailing the service is limited to initial integration for authentication and billing, device procurement, promotion and customer service.

Being an MVNO, Virgin Mobile owns users. It bundles the TV and digital radio channels provided by BT Movio with its own mobile services and markets bundle products to its customers at Virgin Mobile Stores within Virgin Megastores and WHSmiths, its standalone stores and directly through the internet.

The Virgin mobile customer product may be characterised by the following:

- Mobile TV phone and service for free for customers on a contract of £ 25 (€ 37) a month and more for the life of their contract
- The phone is available on pre-pay for £ 199 (€ 296), with the service free for an initial three-month period, followed by a charge of £ 5 (€ 7,50) a month
- Customers signing a contract in Virgin Mobile Stores will receive from double the amount of airtime compared to standard tariffs available from other retailers.

www.btplc.com

www.virginmobile.com

3.4. Commercial DVB-H service of Mediaset in Italy (5)

Mediaset is the largest commercial TV broadcaster in Italy operating broadcast networks of its own.

In 2005, Mediaset bought a broadcast network license from Europa TV to be used for a DVB-H multiplex.

Mediaset will invest \$321 in the network infrastructure. By the end of 2006, 75% of the population are to be covered with indoor reception.

Mediaset has chosen a wholesale model in two directions:

- Purchasing DVB-H broadcast capacity to mobile network operators which can be filled by them with any specific content
- Provision of its own channel bouquet to all mobile network operators
 - Simulcast transmission of the commercial channels Canale 5, Italia 1 and Rete 4
 - A Premium channel with soccer movies and realities (pay per view)

Mediaset's business model

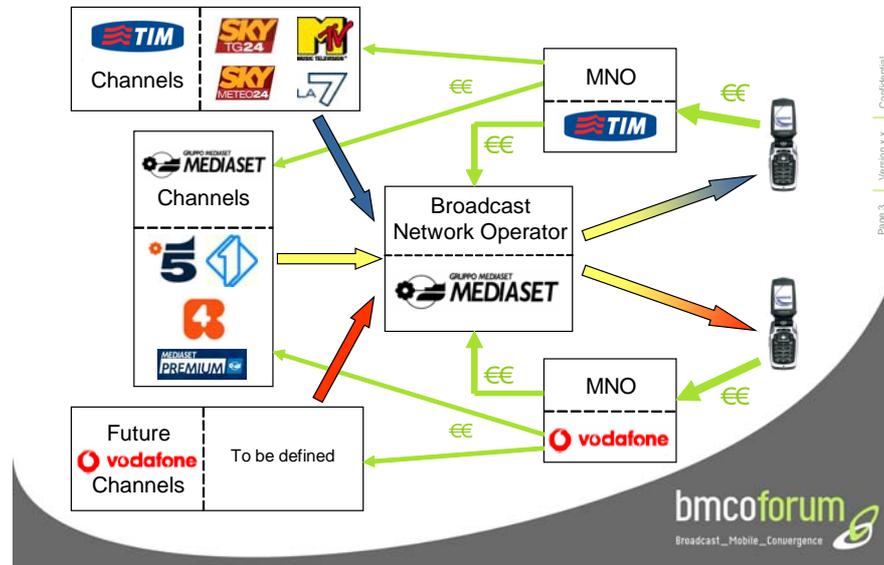


Fig. 11: The Business model of Mediaset

TIM as the first user of the Mediaset DVB-H offer launched the service in June 2006. Beside the Mediaset bouquet, the service includes

- The Sky news channels TG24 and Meteo24
- Sky Meteo
- La 7
- MTV
- Sport Italia

The TIM mobile TV offer is provided in 3 different packages

- Stand alone Mobile TV

The Samsung P920 can be obtained for 499 €.

The monthly subscription fee costs 5 €.

- TIM TV Telefono relax

This is a combined Mobile TV + communication package. "Telefono relax" allows the customer to get a UMTS/DVB-H handset paying one shot contribution of 199 € + a monthly rate of 10 € for 24 months. Monthly subscription fee for TIM TV is another 5 €.

If the customer, with a TIM TV subscription, is able to guarantee a minimum amount of 25 €/month of traffic during the month, the 10 € monthly rate of the handset is reduced to 0 €.

- TIM TV Tutto relax

This is a combined Mobile TV + communication package. "TIM TV tutto relax" allows the customer to get an UMTS/DVB-H handset paying one shot fee 99 € + 24 monthly fees of 1 € each. All services are packaged into a flat monthly subscription of 49 €/month. The package comprises:

- access to the basic TIM TV bouquet
- 1000 free SMS/month
- 1000 minutes of voice calls and video calls at 0 cent/min+ fixe charge of 16 €cents/call up.

All subscriptions done before December 31st will include "Serie A TIM", and the best of European Football matches for the whole 2006-2007 season.

As another mobile network operator, Vodafone will also use the Mediaset service soon.

TIM and Vodafone will pay Mediaset 75 Mio € p.a. each for 5 years (with a renewal option) for both broadcast capacity and the Mediaset bouquet.

3.5. *Planned DVB-H service in Finland (7)*

During March to June 2005, a DVB-H mobile TV trial was conducted in Finland. 500 paying customers participated. The two largest Finnish mobile operators Elisa and TeliaSonera acted as service providers selling the mobile TV services to consumers. The main domestic and some international radio and TV broadcasters provided the content. Digita built and operated the shared DVB-H network.

In March 2006, the Ministry of Transport and Communications granted the first DVB-H network license to Digita. According to the license terms, the network is to be opened to commercial operations by 01.12.2006.

The key reasons for granting the network license to Digita were its neutral position in the market and its technical competence in DVB-H. The key objective was to have one neutral network operator sharing the scarce spectrum resource with several service operators and content providers.

Finnish authorities promote open business models with shared networks. Digita was awarded the network license, but according to the license terms Digita is not itself allowed to function as a service operator. Digita will neither participate in the consumer business nor in the content business. Both mobile operators and pay-TV operators have shown interest in acting as service operators. The final business model in Finland is thus still under discussion.

According to the license terms, Digita is required to sell DVB-H capacity to all programming license holders under equal terms. No single entity can purchase more than one third of the capacity. The network supports different types of business models. For example, content providers could act as service operators by themselves if they chose to.

Finnish business model

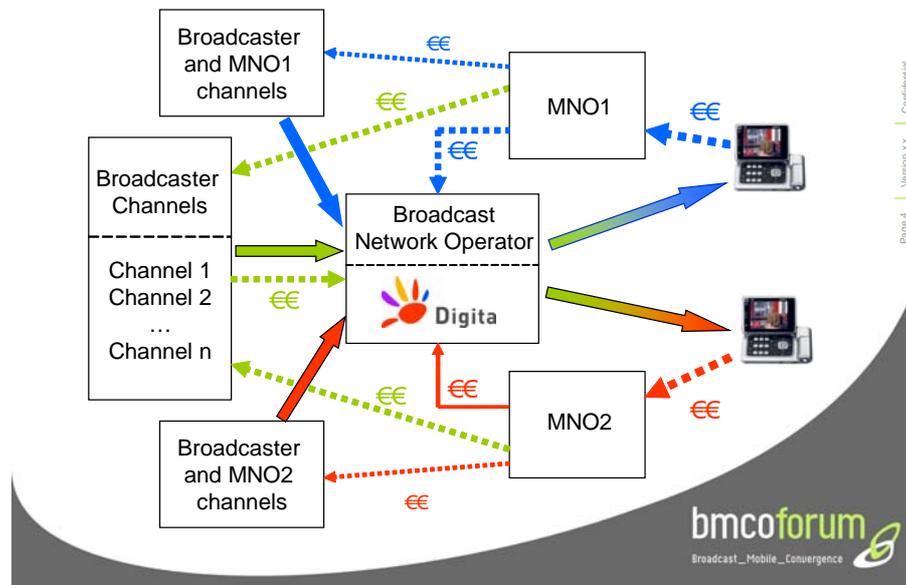


Fig. 12: The Finnish business model

The Finnish government is currently finalizing the programming license policies, aiming for highly flexible policies in this area as well.

Currently, the Finnish DVB-H network covers the Helsinki area. During 2006 Digita will expand the network to cover the six biggest cities of Finland: Helsinki, Turku, Tampere, Espoo, Vantaa and Oulu. About 29% of the Finnish citizens live in these cities.

The future expansions of the network will be agreed on jointly by Digita, content providers and service operators. Digita will still make the necessary network investments. The 2007 network rollout will probably be a combination of the most populated areas and the main roads in Finland. According to the network license terms, the network needs to cover at least 40% of the population by 1.12.2007.

During 2006, Forum Virium used the network for piloting purposes (www.forumvirium.fi).

Digita has selected Nokia to provide the service platform. The system is up and running. The first terminals in the market are Nokia N92 terminals. The Finnish market will be open to all terminal vendors that are interoperable with the DVB-CMBS standard. The availability of a wide set of handsets is seen by all market participants as a critical success factor for the mobile TV market.

www.digita.fi

3.6. Planned DVB-H service of MNOs in Germany

Among others, the four German mobile network operators T-Mobile, Vodafone D2, O2 and e-plus have applied for a DVB-H platform license in the German regions of Hamburg and Berlin. The specifics of this application are that they intend to set up a consortium, operating a joint DVB-H platform.

Under German telecommunication law, the broadcast network operations license will be awarded directly to the broadcast network operator.

The DVB-H platform consortium, on the one hand, intends to go into investment and finance the broadcast network operator to set up and operate the broadcast network infrastructure. This way, an efficient usage of scarce frequency resources shall be guaranteed by broadcasting channels once only to be used by different service providers.

Based on media regulation rules, the consortium, on the other hand, is to be granted wide discretion in defining the content to be distributed over the broadcast network.

The DVB-H platform consortium itself is to provide a wholesale offer to the mobile network operators but also, on a non-discriminatory basis, to interested third parties such as MVNO and resellers. Thus, the consortium is not to end consumer services itself.

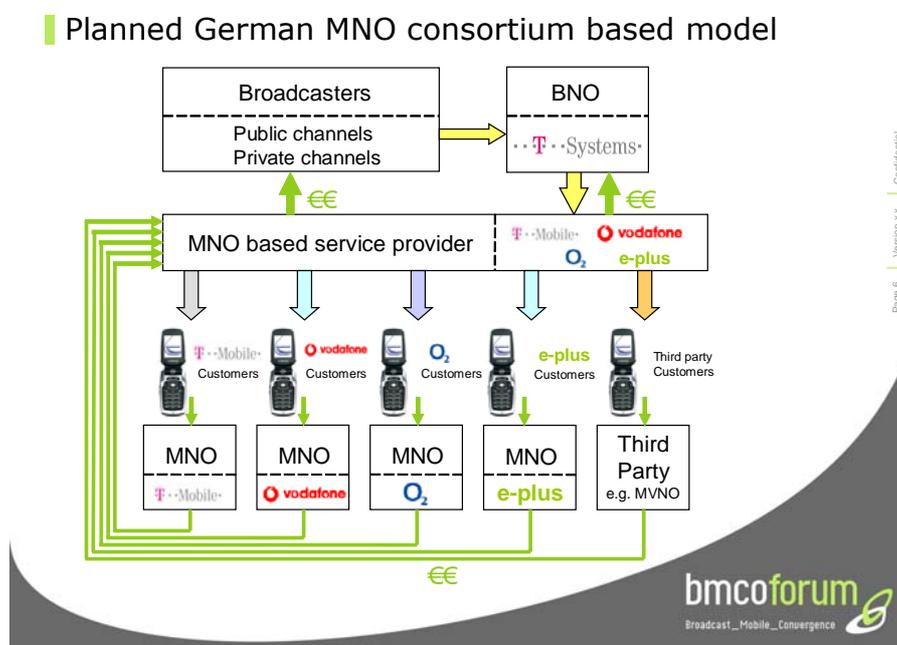


Fig. 13: The business model of the planned German MNO consortium

The content aggregated by the DVB-H platform consortium and to be provided as a wholesale offer is to consist of three parts:

- An extensive basic package of well-established public and private free-to-air TV and radio channels. Comparable to cable TV fee, this might be available to customers paying a fee covering mainly broadcast network transmission/operation costs, individually fixed by each of the mobile network operators or third-party providers.
- Beyond the basic package, customers are to be offered several premium channels. This may include channels with exclusive content for some of the service providers only. Customers are to be able to obtain the content case by case or based on a subscription, for one or several channels. Service providers will be able to determine their pricing structure and levels.
- Interactive services may be offered based on the addition of a GSM or UMTS connection to the broadcasted content. This way, linear TV programming can be extended through specific interactive service elements such as individual access to additional information, voting or messaging.

The mobile network operator will concentrate on their core competencies:

- High number of customers, experience in development and marketing of mobile services and products

Planned DVB-H service structure of German MNOs

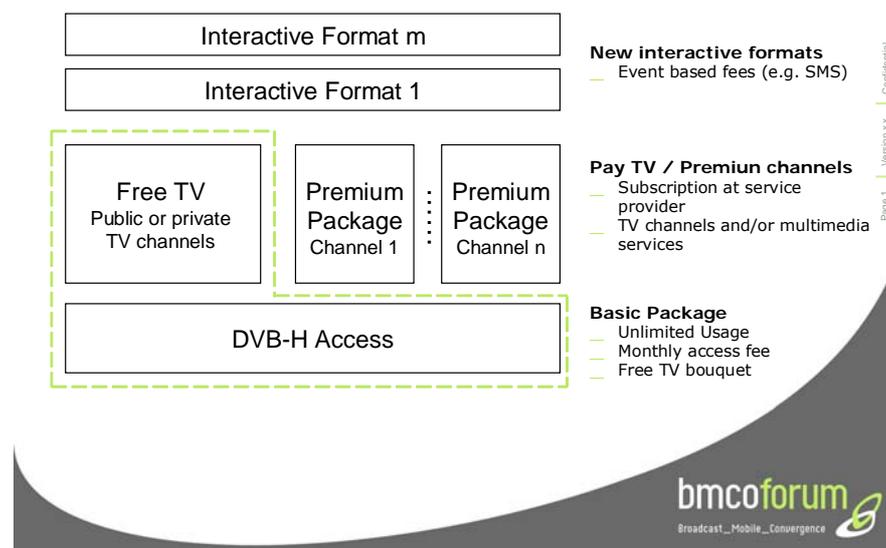


Fig. 14: Planned service structure of German MNOs

- Experience in critical processes of service provisioning such as customer care, billing and accounting, operation of mobile connection as basis for accounting and interactivity
- Competencies in the logistics of device distribution

Recently, this business model has come under scrutiny by the German Federal Cartel Office (Bundeskartellamt).

3.7. Comparison

Three of the approaches (BT Movio and both German models) are based on the wholesale model (see section 1.7). They assume a mobile broadcast service provider his services to resellers, be it MNOs, MVNOs or third parties. They differ in who owns the mobile broadcast service provider:

- In the case of BT Movio, it is BT, the UK's telecommunication incumbent
- In the case of MFD, it is private equity-based
- In the case of the German joint venture, it is expected to be the four German MNOs

H3G operates a mobile network operator-led approach. It acquired a broadcaster together with the media and frequency license. This is a form of vertical integration. No wholesale is foreseen so far in this case.

The other Italian case is broadcaster-led. Broadcasters such as Mediaset and RAI use their own broadcast and frequency licenses to provide a wholesale service to MNOs (TIM in a first step, Vodafone will follow)

Finally, in Finland, Digita as the broadcast network operator was awarded the DVB-H license with some obligations on how to share the capacity between interested players such as MNOs and broadcasters.

The resale service differs in the manner of bundling the TV service with other mobile products:

- Free device and service for customers with contracts over a certain monthly amount (BT Movio: 37 €)
- Free device and additional data and call traffic for a monthly subscription fee (H3G: 49 €)
- One additional fee for customers with contracts over a certain value of monthly phone subscription fee, a higher additional fee for customers with lower value (MFD/debitel)
- No free device, but some time of free access, afterwards a monthly subscription fee (BT Movio: 3 months free, then 7,50 € per month)
- No free device, but prepaid service on a daily, weekly, monthly or half year basis (H3G)

| | 3 Italia | BT Movio | MFD | Mediaset | Digita | German MNOs |
|-----------------------------------|---|------------------|------------------------------|---|-------------------------------|-------------------------------|
| Main investor | 3 Italia | BT Movio | MFD | Mediaset | Digita | Joint venture |
| Role in the business model | | | | | | |
| Broadcaster | 3 Italia, Sky, Mediaset RAI | Other | MFD, ProSiebenSat1, MTV, ZDF | Mediaset, Sky, MTV and other | Anyone with broadcast license | Anyone with broadcast license |
| Wholesaler | No wholesale | BT-Movio | MFD | Mediaset | Broadcaster | Joint venture of MNOs |
| BNO | 3 Italia (operated by RRD) | Arqiva | T-System | Mediaset | Digita | T-Systems |
| Sales to customers | H3G | Virgin Mobile | debitel, Mobilcom | TIM, (Vodafone) | MNOs | MNOs/ Third parties |
| Platform operation | Outsourced to RRD | BT Movio | Outsourced to MIDRAY | Mediaset, MNOs | Digita | tbd |
| License holders | | | | | | |
| Broadcast license | Each broadcaster | Each broadcaster | Each broadcaster | Each broadcaster | Each broadcaster | Each broadcaster |
| Platform license | | | MFD | | | Joint venture |
| Frequency license | H3G | BT Movio | T-Systems | Mediaset | Digita | (T-Systems) |
| Service | | | | | | |
| TV | Basic package with 9 channels; Premium package with 1 channel | 4 channels | 4 channels | Mediaset: 4 channels TIM: 6 channels | tbd | tbd |
| Radio | No | 30-50 channels | Yes | No | tbd | tbd |
| EPG | Yes | Yes | Yes | Yes | Yes | Yes |
| Interactivity | No | Red button | No | | tbd | tbd |

Tab 2: Comparison of recent commercial business models

| | H3G | BT Movio | MFD | | Mediaset |
|------------------------------|--|--|--|---|---|
| | | Virgin Mobile | debitel | Mobilcom | TIM |
| Resale conditions | | | | | |
| Free to air | 3 Live | BBC One | ZDF | | |
| Subscription | Yes | Yes | Yes | Yes | Yes |
| a) prepaid | 1 day: 2 € 1 week: 9 € 1 month: 19 € 6 months: 59 € | 3 months for free, then 7,50 € p.m. | No | No | No |
| b) monthly fee for post-paid | 29 € p.m. with 24-months contract including data and call volume | free for contract over 37 € | Samsung: 5,00 € p.m. with any 24-months contract LG: 4,95 € p.m. for 24-months contract over 14,95 € only | 8,95 € p.m. | a) 5 € p.m. b) 5 € p.m. c) 49 € p.m. with 24-months contract including data and call volumes |
| c) Pay per view | No | No | No | No | No |
| Device | pre-paid: 249,00 € post-paid: 0 € | prepaid: 296 € post-paid: 0 € | Samsung: 1,00 € / 29,00 € LG: 99,00€ | LG: 49,00 € / 79,00 € / 249,00 € depending on contract type | a) 499 € b) 199 € + 10 € for 24 months or 199 € + guaranteed traffic of 25 € p.m. c) for free |
| Service setup | | | 7,50 € | | c) 99 € + 1 € for 24 months |

Tab 2: Comparison of recent commercial business models (cont.)

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