SUBMISSION TO TRAI

CONSULTATION SUBMISSION

SUBMISSION TO CONSULTATION PAPER ON ISSUES RELATING TO MOBILE TELEVISION SERVICE

30th September 2007

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1 Summary of the submission

The Telecommunications Regulatory Authority of India ("TRAI") consultation paper on Mobile TV will help set the regulatory framework for a service that is still very nascent across the world and where high uncertainty of the business case implies high investment risks.

It is necessary to examine a number of important questions on the regulation of Mobile TV, which TRAI has rightly asked in its consultation paper:

- Should technology choice be mandated or should it be left to the industry to decide?
- How many frequency blocks should be allocated and in which bands?
- How does Mobile TV regulation fit in within the overall Digital Terrestrial Television policy?
- What is the best mechanism to licence Mobile TV spectrum?
- Which elements of telecom and broadcast regulation should be applied to Mobile TV?
- What licence conditions should be applied?

Spectrum Value Partners is a global management consultancy providing advice to the telecommunications and media sectors. Spectrum advises on issues including regulation and policy, strategy, product development, business development, technology strategy, implementation and change management. Spectrum has one of the largest dedicated TMT consulting teams globally, based across Asia, Europe and the Americas.

Our response to the TRAI consultation is based on Spectrum Value Partners' own knowledge and experience in the area of Mobile TV within the global telecommunications and broadcast market. Spectrum Value Partners has significant experience working with leading operators, regulators and financial institutions advising them on regulatory and policy issues both in India and internationally. We have advised vendors, operators and broadcasters in a number of areas on Mobile TV. This includes both unicast (3G) and broadcast (DVB-H etc.) market assessment, business case and launch support. We have mobile TV business planning and implementation experience from both developed markets (Europe, Australia, Singapore) and developing markets (India, Indonesia, Middle East, Latin America). Our response summarises some of the learning from our recent experience.

Spectrum Value Partners accepts no responsibility for how TRAI, or other parties, choose to interpret or represent the findings of this report once it is in the public domain.

Our position on the issues raised in the consultation is driven by the fact that these are still very early days for Mobile TV and thus regulators have the liberty to take a 'clean slate' position that best addresses consumer, telecom operator, broadcaster and vendor interests as well as promotes a rich and innovative media sector. While initial roll-outs of Mobile TV have not been very successful due to a variety of reasons, research and consumer experience from select markets suggests that Mobile TV could be a very significant consumer service in the future. Business models for Mobile TV are still nascent and unproven. It is still difficult to predict the technology 'winner' and different markets have seen different technologies do well; though early indicators suggest that DVB-H and possibly MediaFLO will be the technologies to watch in India. Given this uncertainty, the investment case at this early stage is equally uncertain. Thus, it is essential that TRAI does its best to remove any regulatory ambiguity and also does not make any recommendations that worsens the business case for market entrants and could kill the industry. TRAI should recognise the risks of the business

and help create an environment that offers flexibility, so that market players can change their business plans and strategies to succeed.

At the same time, consumer interests should be protected, because only by protecting consumer interests can the industry survive in the long term – for example, handset and service provider interoperability will protect consumer interests in a non-subsidy market like India.

We would like to point out right upfront that our response on the Mobile TV consultation is for **broadcast Mobile TV (e.g. more DVB-H, MediaFLO etc.) only** and NOT for unicast Mobile TV (i.e. over EDGE, 1x or 3G networks).

Correspondingly, our argument covers the following areas:

- It is very early days for Mobile TV and the **business case for Mobile TV is unproven**. The situation is similar to the initial stages of mobile licencing in the late 1980s/ early 1990s where regulators focused on **creating policies that reduced the risk of investment for market entrants.**
- It is **unclear which technology or technologies will win** in the standards race and it is equally likely that multiple technologies may be viable in a large market like India. Though, it appears that DVB-H and MediaFLO are the technologies most likely to succeed in India. TRAI has to balance its philosophy of technology neutrality against focusing investment and scale on a single technology. There are advantages and disadvantages to both positions. Maintaining technology neutrality will be in line with past policy and also ensure that market forces decide technology choice. On the other hand, mandating a technology will provide scale that will bring down handset cost, prevent spectrum from being 'hoarded' by a weaker technology and it will also enable customers to move easily between service providers. Both positions are equally strong. However, on the basis of precedent on technology neutrality, our view is that the market in **India could well be large enough to support more than one technology and TRAI should let the market decide.**
- The business model for Mobile TV is unclear. A number of models exist – mobile operator consortium led (e.g. Japan, Germany), mobile operator led (Italy, Korea), broadcaster led (Italy, Korea), operator-broadcaster led (UK), vendor led (US) etc. Then there are different models based on Pay TV or Free-to-Air. Each market may have its own characteristics and thus may select its own business model. The business model adopted may evolve with time and each market may be large enough to support multiple models. TRAI should recommend **regulation that encourages innovation and can support multiple business models**.
- An analysis of the **Mobile TV investment case for a Metro Circle in India suggests that a 10-year NPV (without Terminal Value) will be between (negative) – Rs 70 crores and + Rs 220 crores**. The NPV depends on a number of drivers including revenue model (FTA, Pay TV or hybrid), number of competing networks, nature of promoter (operator, broadcaster or consortium-backed), network model (wholesale or retail led), coverage (patchy or ubiquitous, level of indoor coverage), degree of handset subsidy etc. The investment case is also dependent on key assumptions, of which handset price decline and content costs are most important. Other key assumptions include use (or re-use) of existing infrastructure, whether there is an upfront spectrum licence fee, sales and marketing costs, customer service costs and topography.
- Some regulators are considering a model where there is one (or may be two) Mobile TV networks and these are then used by multiple service providers. According to these regulators, consolidating customers into one network improves the business case for Mobile TV. In markets like Germany, Finland, Australia etc., we see business models where one operator or a single consortium of operators are rolling out a single network with access being provided to multiple players. At this nascent stage of Mobile TV, TRAI should consider the investment case impact of too many networks. However, **instead of forcing a cap on providers, TRAI should facilitate winners of Mobile TV licences to share infrastructure** – towers, power and ancillaries, transmission etc. This will be in line with previous

recommendations, leave level of competition to market forces and yet help winners strengthen their business case. In addition, **TRAI should not force strict coverage requirements on the operators**

- International examples suggest that for India, Mobile TV in the UHF bands is likely to be most successful. If this is so, then it is difficult to take a view on how much spectrum should be reserved for Mobile TV without there being further clarity on Digital Terrestrial Television (DTT) and on Digital Switchover. In markets like the UK, where DTT is highly successful, there is no available spectrum in the UHF bands for Mobile TV and UHF spectrum for Mobile TV is likely to be only available after analogue TV switch-off (2009-2012). On the other hand, at least **on the basis of current usage within the UHF bands, there appears to be no shortage of UHF spectrum**.

- Assuming that the current situation within the UHF bands continues for a few years; viz., there is no shortage of spectrum and there is minimal marginal usage value from broadcasters (due to policy of not allowing private terrestrial platforms) or mobile operators (non standard UHF band for mobile telecoms); then we believe that **the market may be large enough to support 3-4 MUXes of 8MHz each**. Licencing 3-4 MUXes will ensure there is enough channel choice for the proposition to be popular and it will allow for multiple players, business models and technologies that will help to keep the market competitive. With these number of MUXes, India could become one of the largest Mobile TV markets in the world. Licencing 3-4 MUXes offers strong potential for local and regional content companies to play a part. Local television is a key driver for media consumption in many markets and India is likely to show similar characteristics.

- Auctions are the best judge of market interest. In India, we understand from our interactions with number of operators and broadcasters that there is significant interest in taking part in a possible Mobile TV auction. Given likely mismatch between available spectrum and number of interested players, we would recommend that **TRAI licence Mobile TV spectrum through an auction**.

- The industry should be **open to all industry players – operators, broadcasters, vendors and investor led consortiums**. This will help drive innovation and help push different business models which will be in the customer interest.

- TRAI should **adopt a suitable mix of strong pre-qualification criteria to prevent auction speculators but at the same time the criteria should not be so strict that it discourages new entrants** who could bring innovative and genuine business ideas. As the Mobile TV business case is not proven as yet, having very strict pre-qualification criteria will only scare away possible entrants into the sector.

- Trials from new entrants are essential at this stage. Trials are important to test appetite and business models in India. **TRAI and DoT should take steps to ensure that different networks commence on a trial basis**, not just single trial DVB-H network in Delhi from Prasar Bharati.

- FDI and questions on whether Mobile TV should be regulated under broadcast or telecoms regulation is a high level question of convergence regulation; while recommendations have been made by TRAI, there is still a lot of regulatory confusion on converged service like Mobile TV, IPTV etc. At one end of the regulation spectrum, if Mobile TV is deemed to be a terrestrial broadcasting service (which it is), then, as per current regulation, no private sector participation will be allowed. At the other end of the spectrum is Mobile TV under telecoms regulation where up to 74% FDI is allowed. Given that vast majority of Mobile TV launches worldwide are by mobile sector telecom operators, the **sector should be regulated under telecommunication regulation with content regulated under broadcast regulation**. However, if high licence fees are charged (e.g. current level of UASL fees) to every new entrant, this will result in no new entrant taking part.

- A risk of licencing spectrum to a use whose business case is uncertain is that there may be inefficient use of spectrum. To mitigate this risk, in the long-term, **limited sector spectrum trading can be considered** within the broadcasting sector. Limited spectrum trading will prevent hoarding and discourage inefficient use of spectrum. This also offers the flexibility of swapping out Mobile TV with DTT if Mobile TV fails to take off in the long-term while DTT is a big success.

- The consultation does not address the issue of Mobile TV handsets. To make the industry a success in India, steps need to be taken to ensure handset prices fall significantly and not in the too distant future. Mobile TV handsets today have a range of additional features including one or more high resolution cameras, 3G, application software etc. An Indian market specific handset which does not have too many functions and features can help push the price down. **Policies that attract handset vendors to set up assembly/ production/ R&D facilities in India will help drive down costs** and personalise handsets to suit the Indian context.

We expand on our conclusions in the section below.

1.1 With business case unproven, policies that reduce investment risk are needed

a) Take-up of Mobile TV till date has been slower than expected

The last 6-12 months have seen the launch of a number of Mobile TV networks worldwide. But after about 12 months of various worldwide launches, Mobile TV take-up has failed to match up to pre launch forecasts in most markets. Even in oft touted successful Mobile TV markets like South Korea and Italy, Mobile TV take-up is lesser than what was forecast. For example, in South Korea, TU Media, a subsidiary of SK Telecom (Korea's largest operator) initially targeted 1 million subs by end Sept 2006, but reached only about 750,000 (numbers have since crossed 1.2m). In Italy, the most successful Mobile TV operator, 3 Italy, has only now crossed 750,000 subs, about 6 months after its initial forecast.

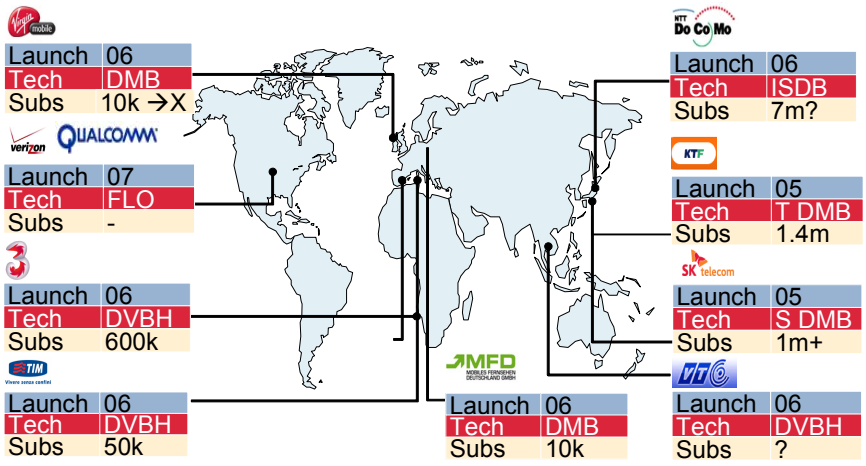
In some markets, some Mobile TV operators have even exited the market. In the UK, Virgin Media launched in October 2006 with much fanfare but the service has recently been shut down when it failed to reach even 10,000 subscribers. In the US, the DVB-H network launched by Crown Castle – Modeo, has exited the market after it failed to attract a single mobile network.

The possible exception to this is Japan where a home-grown technology based free Mobile TV network (based on ISDB-T, called OneSeg) has reputedly sold about 7m handsets.

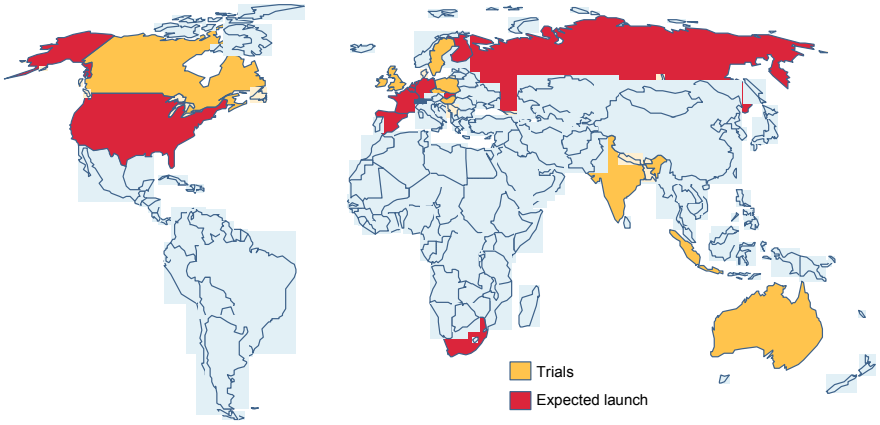
The exhibit below summarises the situation of poor take-up across most markets.

Exhibit 1: Deployment of broadcast mobile TV services has been limited

Commercial broadcast Mobile TV deployments *(all technologies)*



Expected deployments and trials worldwide as of 1Q07 *(DVB-H only)*



Note: Non DVB-H planned launches include Cingular in the US which plans to launch MEDIA FLO by end-2007
Source: Spectrum / Value Partners analysis

As is clear, the take-up has been much lower than expected. This can be attributed to a number of causes including poor quality and range of handsets and high cost, lack of quality content that is suited to Mobile TV screen size, weak business plans, short term profit focus of broadcasters and general customer apathy.

The lack of take-up in various countries is further summarised in the exhibit below. The exhibit gives a summary of the various reasons for low take-up in these countries.

Exhibit 2: Performance of specific Mobile TV networks across the world

Mobile TV deployments in Italy

Operator	Description	Status
• 3	• 12 channels offered including premium and low-cost made-for-mobile channels	• Subs watch average of 60-70 mins a day • At end-'06, 0.3m users (target of 0.5m) • Today c.0.6m
• Vodafone	• Offers 7 Sky channels • Free till end-Mar '07	• Data not available • Still early to gauge performance
• TIM	• Offers 8 channels and 2 adult channels • Offers 3 DVB-H handsets	• Service is free for high-spend subs – Mobile TV more a tool for subs acquisition/retention

Mobile TV deployments in other markets

Country	Operator	Description	Status
• UK	• Virgin	• 5 channels offered • Mobile-TV enabled handset is free	• Only 7,000 subs four months after launch • Dropped
• Finland	• Digita	• One TV channel & few radio channels	• Commercial launch delayed because unable to secure content rights
• South Korea	• Tu Media	• 15 video and 19 audio channels	• By Sep 2006, 750,000 subs (target of 1m)
• Vietnam	• VTC	• VTC itself provides majority of content for the service	• Nokia N92 handset cost is higher than average annual salary

b) However, recent trends in some markets are encouraging

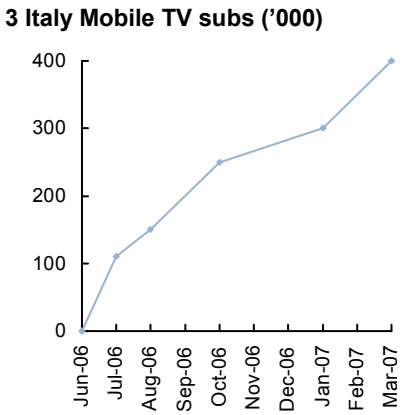
While most markets show a disappointing picture, it is interesting to look at Korea. Forecasts may have been missed, but the service seems to have slowly caught on. If you go to Korea today, it is not uncommon to see, for example, nearly half of a train carriage watching Mobile TV, or couples sharing handsets or people carrying spare mobile battery packs to ensure they don't miss their favourite programme. TU Media (on S-DMB) is targeting 2.2m subscribers by end of 2007 and is confident that as per current trends of take-up, it should be able to reach 6.6m subscribers by end 2010. KBC, the free Mobile TV network (on T-DMB) has sold more handsets than TU Media, reputed to have 1.4m customers in Q1 2007; however, the long term business viability of FTA Mobile TV in Korea is unclear.

Across the Japan Sea, free Mobile TV ("OneSeg") has seen the sale of over 7m handsets in about 12 months. This points to the success of a different business model – a FTA network shared by mobile operators.

Recent trends in Italy are also interesting, though it is too early to say if Mobile TV in Italy will be a runaway success in the future

Exhibit 3: Recent trends of Mobile TV take-up for 3 Italy

- By March 2007, 3 had 400,000 subs (5.5% of its subs base)
- ARPU from Mobile TV subs is 60% higher than from other subs
  - Mobile TV subs also have negligible churn
- Usage levels have dropped off since World Cup but still high
  - daily viewing time of ~60 mins
- 3 is forecasting 10m Mobile TV subs in Italy by 2010



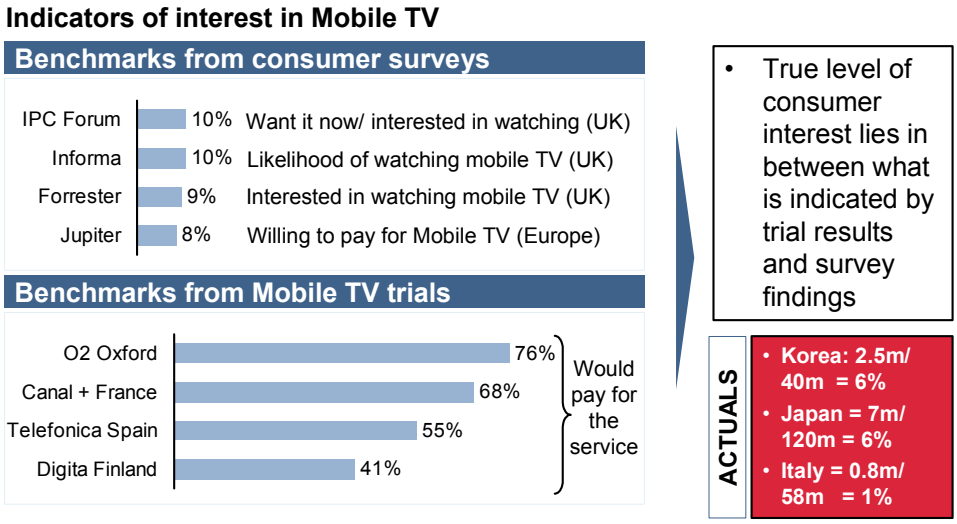
Source: Analysys Research

c) Conflicting signals from the market suggests that there is a great degree of uncertainty in the market

With conflicting signals emerging from current operations of Mobile TV, experts and industry insiders are divided on the potential of Mobile TV globally.

Outputs from a number of consumer studies on Mobile TV are shown in the exhibit below.

Exhibit 4: Summary of feedback from consumer surveys worldwide

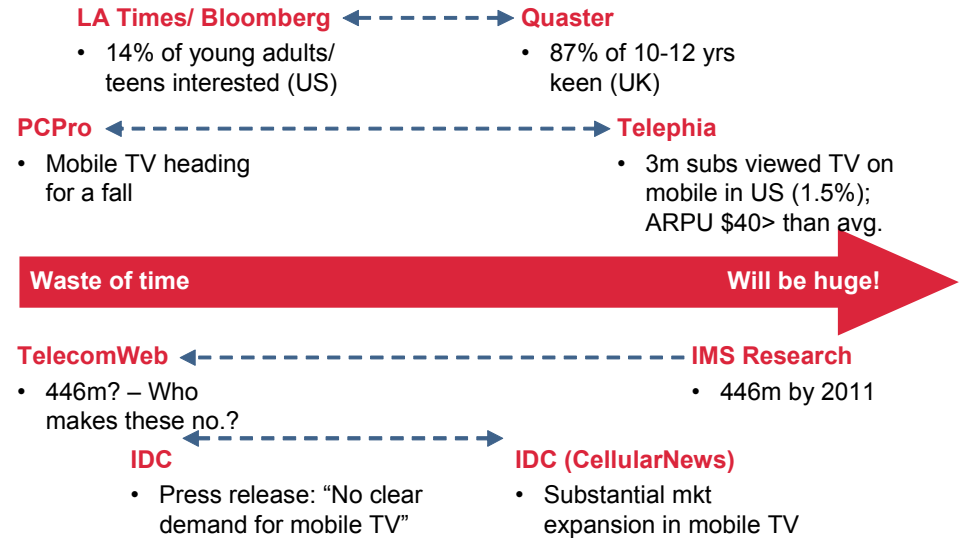


Note: We have assumed that consumer survey and trial data to refer to broadcast mobile TV only (i.e. not including on-demand only)
Source: Informa, Enders, Olswang, BT, Arqiva

The exhibit above shows that in Korea and Japan, take-up has already reached levels forecast from the consumer surveys – about 6% of the base has a Mobile TV service. Thus, in some markets, feedback from consumer surveys may actually be pessimistic.

This uncertainty is also reflected in the opinions of experts. As we can see from the exhibit below, there are lots of different opinions (sometimes by even the same research firm!).

Exhibit 5: Feedback from various experts and market research firms on Mobile TV



Source: Gamdala Blogspot; Screen Digest; Spectrum / Value Partners analysis

The situation in India could be very different from other markets. FM Radio is a huge service within the Indian mobile sector and no operator or handset vendor can ignore the FM radio market today. If audio has been so successful, many commentators believe that video services (i.e. television) can be equally successful in India, with many of them betting on a free-to-air (FTA) ad-funded model. The uncertainty would be in the cost of the handset – the handset cost would have to fall below Rs.4,000 (US$100) for Mobile TV to a mass service in

India. With scale, local production and by stripping out features such as multi mega-pixel cameras, such a price point may well be breached in India within the next 3 years.

d) Policy that removes uncertainty and reduces risk of investment is needed

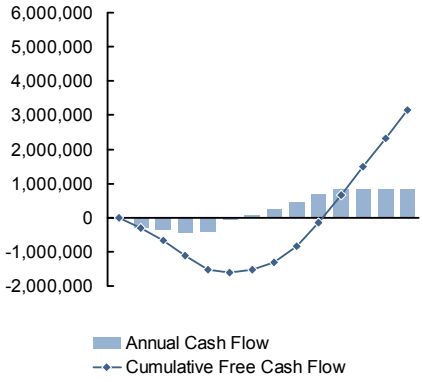
We have completed a number of Mobile TV investment case studies in developing markets such as Indonesia, India, Latin America and Middle East and even with strong and enabling regulation, EBITDA break-even is typically about 2-3 years with cash breakeven at 4-7 years depending on the business model and the nature of the promoters (i.e. consortium of broadcaster-operator vs. pure mobile operator vs. pure broadcaster).

Exhibit 6: Typical Mobile TV business case [Base case for industry, telecom operator model]

ASIAN Mobile TV business case

- Business case for Mobile TV service *in top 10 metro areas* in large developing Asian country
- Spectrum estimates that Mobile TV platform would become cash flow positive by 2012
  - NPV of US$60m – US$100m
  - consortium biz model
- This market would be split amongst a range of players
  - mobile ops, transmission co, content owners

Cash flow – Top 10 metro (m)



Source: Spectrum analysis

Given the uncertainty and relatively long breakeven periods, investors in Mobile TV will require minimal uncertainty and a pro-investment policy. Specifically, TRAI should look to remove uncertainty on investment criteria (FDI cap), licencing (would UASL fees need to be paid?), shared network (Mobile TV MVNOs allowed?) etc.

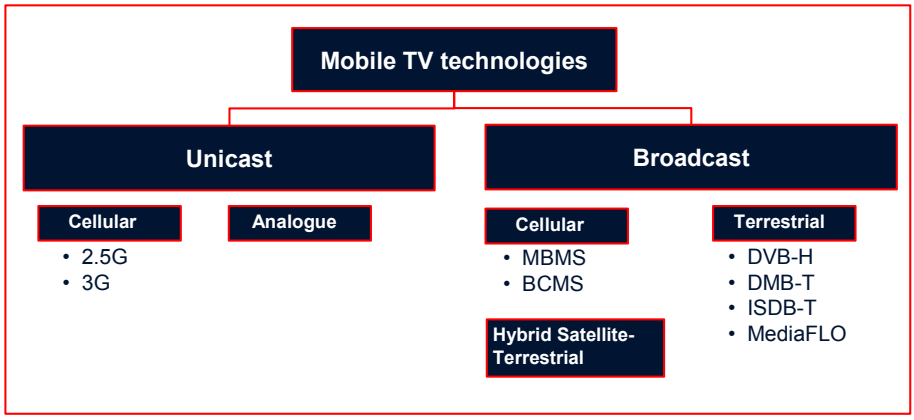
Enabling and restrictive regulation is further discussed in subsequent sections.

1.2 TRAI should adopt a technology neutral regime

a) There are a very large number of Mobile TV technology standards

There are a very large number of possible technologies for Mobile TV – both for unicast television (over 3G, EDGE or 1x networks) and for broadcast television (DVB-H, MediaFLO, ISDB-T, S-DMB, T-DMB, MBMS, TdTV, DAB-IP etc.).

Exhibit 7: Examples of Mobile TV technologies (not exhaustive)



Note: Illustrative list of key technologies
Source: Spectrum analysis

These technologies vary significantly by spectrum band used, capacity and throughput, channels and current handsets supported. The variation across the technologies is shown in the exhibit below. What is clear is that local Government support and vendor / operator lobbying helps one technology succeed over another; this has resulted in a lot of regional variation in terms of technology of choice.

Exhibit 8: Variation between key Mobile TV technologies on main characteristics

	Spectrum	Throughput	Channels	Handsets
DVB-H	• UHF, L-Band	• 2-3 to 11-12Mbit/s	• 15 to 25	
T-DMB	• VHF band III, L-Band	• 1.5Mbit/s	• 2 to 4	
MediaFLO	• UHF, L-Band	• 3-11Mbit/s	• 15 to 25	
3G TDtv	• 3G TDD	• ~5Mbit/s	• 17	?
3G MBMS	• 3G FDD	• Adjustable	• 3 to 4	?

Source: Spectrum / Value Partners analysis

b) It is not clear if there will be only one clear winner

DVB-H is particularly strong in Europe and is expected to be a favourite technology in former European colonies. On the other hand MediaFLO is particularly strong in the USA, where other technologies, including DVB-H has met with limited success till date.

In emerging markets like India, it appears that DVB-H is likely to be the most attractive technology; though, in India, MediaFLO may also be a strong technology choice for Mobile TV, especially given that more than a quarter of India's mobile subscribers are on CDMA.

Exhibit 9: Technology specific feedback and interest in developing markets

Technology	Overview
DVB-H	• Robust broadcasting standard • Strong momentum in Europe; GSM dominance
T-DMB	• Not likely to gain much headway outside S. Korea due to – lack of support; and – spectral constraints within the 1.7MHz band
Media FLO	• Significant threat to DVB-H (more efficient?) – but concerns of it being a proprietary standard with limited exposure outside the US
DAB-IP	• Unlikely to make much headway outside UK due to lower spectral capacity

Technology type	Technology	Overview
Cellular	3G MBMS	• Allows operators to leverage their existing network and spectrum assets • Capacity may be a severe constraining factor • Full ratification is not expected till end 2007
	3G TDtv	• Ability to broadcast ~20 TV channels with minimal upgrade to existing infrastructure • But concerns over reliability and scale
Wireless BB	**Wimax**	• Particular interest in broadcast 'tweak' • … but confusion on claims vs. reality

From our experience and industry interactions, operators and broadcasters in developing markets including India are most closely following developments in DVB-H, MediaFLO and broadcast variants of WiMAX.

c) Internationally, regulators have either backed one technology for scale or have adopted a technology neutral position

Initially it appeared that national regulators would take a technology neutral view and allow the market to decide on which technology to use.

However, in July, after a three month study, the European Commission decided to back a single technology – DVB-H, as the standard for Europe.

Exhibit 10: European Commission backs DVB-H as the single standard for Mobile TV[1]

The European Commission has launched its strategy intended to make mobile TV, still in its very early stages in Europe, a success story. In a communication adopted on 18 July, it recommends the use of a single standard in the EU for the broadcast of TV programmes on cell phones. For the Commission, "the DVB-H (Digital Video Broadcasting for Handhelds) standard is the most serious candidate, with successful trials and market rollout in 18 European countries and a growing number of other countries".

The Commission will add the DVB-H standard to the list of those published in the EU Official Journal. That will oblige member states to encourage its use for land-based mobile television services. The Commission will also monitor the market closely and hopes that a critical mass' of companies will adopt the standard. It will submit proposals in 2008, including if need be to mandate the DVB-H standard.

At present, there are three large families of mobile TV technologies in Europe: digital transmission networks and their extension (DVB-H, the MediaFLO technology developed by the US firm Qualcomm and DMB, a South Korean technology), MBMS (Multimedia Broadcast/Multicast Service, based on UMTS for third-generation phones) and a hybrid satellite/land-based system, such as DVB-SH. New technologies make it possible to broadcast the same programme to lots of different users at the same time. In contrast with MediaFLO, a proprietary technology owned by a single company, DVB-H is an open technology accessible to all. It is supported, among others, by Nokia, Motorola, Philips, Sagem, Pace, Sony-Ericsson and mobile operators Vodafone, O2 and T-Mobile. Asian groups, such as Korea's Samsung and LG Electronics, and Japan's Panasonic, are banking on DMB.

The adoption of a single standard in the EU is contested by members of the Digital Interoperability Forum (DIF), such as BSkyB, Canal+, Deutsche Telekom, Liberty Global, Microsoft TV, Qualcomm and Samsung. However, the European audiovisual, mobile phone and broadband operator TDF welcomes such an initiative: "Mobile television has real potential on the mass market. We welcome the adoption of a single standard in Europe, which will lead to economies of scale at industry level. The volumes generated will lower terminal costs for consumers," observed the firm's Chairman, Michel Combes. The European Broadcasting Union (EBU), which represents public channels, is convinced that it is too soon to recommend the adoption of any one standard over the others and that "it should be up to businesses to define attractive business models".

Reactions to the European Commission's communication are mixed. Information Society Commissioner Viviane Reding's decision to "encourage", at European level, the adoption of the DVB-H standard for the broadcast of TV programmes on mobile phones is a boon to some in the industry. Finland's Nokia, Britain's Vodafone and the Japanese-Swedish group Sony-Ericsson have already adopted that standard.

Opposed to the measure are members of the Digital Interoperability Forum (DIF), including Germany's Deutsche Telekom, the television branch of the US firm Microsoft, Samsung and Qualcomm. "The Commission seems to have abandoned the key principle of technological neutrality," regrets DIF. Its members also use two other major standards, DMB (Digital Multimedia Broadcasting - a primarily South Korean standard) for Samsung and MediaFLO, developed by Qualcomm. "There is no single perfect technology," argues DIF, which calls for freedom of choice and innovation.

For Viviane Reding, "this is a decisive time for Europe". She adds that the EU can either become a world leader, as it did with mobile telephony thanks to the GSM standard developed by European industry, or be left behind by other regions of the world.

There is dissent even within the national regulators on the EC ruling. The key opposition has come from Germany.

[1] Source: Europolitics Information Society

Exhibit 11: Germany is opposed to the European Commission ruling on single standard[1]

In a recent sitting the German Bundesrat ("federal council") decided there should be no mandatory standard for mobile TV broadcasts. The council does not agree with the European Commission, which wants to make the usage of DVB-H compulsory. Next year, three mobile operators plan to launch a nationwide DVB-H service in the country, but at the moment one operator, Mobiles Fernsehen Deutschland (MFD), already employs a commercial DMB service in some parts of the country.

The council also warns that such regulatory measures from Brussels could interfere with the free flow of information, the plurality of the media and cultural diversity.

On the other hand, France has fully endorsed the EC's ruling on DVB-H.

Exhibit 12: France endorses European Commission's ruling on DVB-H[2]

France's Minister of Culture and Communications, Christine Albanel, signed a decree setting the broadcasting standards for personal mobile TV in the country, local media reported on September 24, 2007.

French technologies will be based on digital video broadcast handheld (DVB-H) broadcasting standard, which has been endorsed by the EU. European countries preferred DVB-H over the Digital Multimedia Broadcasting (DBM) standard, which was developed in South Korea.

The standardisation of the broadcasting system is further subject to the approval of local supreme audiovisual council CSA and communications and postal services regulator Acerp. They will sign a decree that will enable CSA to launch the selection procedure for the channels to be broadcast on mobile television.

The first cell-phones equipped with personal mobile TV should be launched in France in 2008, whereas the start of mass production is scheduled for 2010

d) There are strong arguments for both approaches; however, TRAI should adopt a technology neutral position given its past position on neutrality

It is unclear which technology or technologies will be the winner in the standards race and it is equally likely that multiple technologies may be viable in a large market like India. Though, it appears that DVB-H and MediaFLO are the technologies most likely to succeed in India.

TRAI has to balance its philosophy of technology neutrality against focusing investment on a single technology. There are advantages and disadvantages to both positions:

- *Maintaining technology neutrality* will be in line with past policy and also ensure that market forces decide technology choice.
- On the other hand, *mandating a single technology* will bring scale that will bring down handset cost, prevent spectrum from being 'hoarded' by a weaker technology and it will also enable customers to move easily between service providers.

Both positions are equally strong. However, purely on the basis of precedent on technology neutrality, our view is that the market in India will ultimately be large enough to support multiple technologies and TRAI should let the market decide.

[1] Source: Inside Satellite TV
[2] Source: French News Digest

1.3 Investment case is critically dependent on the business model adopted

We have completed a high level analysis for Mobile TV for a Metro Circle in India. The analysis was completed based on our previous experience and using benchmarks obtained from handset vendors, network vendors and likely participants.

The investment case analysis for the Delhi Metro Circle in India suggests that a 10-year NPV (without Terminal Value) will be between (negative) – Rs 70 crores and + Rs 220 crores. Thus, it is not definite that investment in Mobile TV will make positive returns for the promoters. TRAI should reflect this uncertainty in the recommendations by helping reduce the risk and cost for market entrants.

The NPV depends on a number of drivers; the drivers we examined included:

- *Revenue model*: various revenue models are possible – ad-funded FTA, Pay TV or a hybrid model. The business case is most sensitive to the revenue model
- *Number of competing networks*: the investment case is naturally stronger when all traffic and customers are concentrated on a single technology and a single network, especially in a Pay TV funded business model
- *Nature of promoter*: this determines the content cost and the network costs allocated to the Mobile TV network. We looked at three promoter options - operator, broadcaster or consortium-backed
- *Network model*: the business case depends on who bears the customer risk and at what minimum guarantees if any. We looked at two network models - wholesale or retail led businesses
- *Coverage*: nature of coverage is a determinant of network capex and opex. Possible options on network include patchy or ubiquitous coverage and the level of indoor coverage
- *Degree of handset subsidy*: the EBIDTA breakeven is pushed back by about 2 years with even a 30% handset subsidy.

The investment case is also dependent on key assumptions, of which handset price decline and content costs are the most important. Breaching the US$100 – US$150 mark for handsets will help the proposition move from being a niche service to having mass acceptance. Thus, operators and the Government authorities have to keep the handset picture in mind.

Other assumptions include spectrum frequency used, degree of overlap with DTT, topography. use (or re-use) of existing infrastructure, whether there is an upfront spectrum licence fee, sales and marketing costs, customer service costs etc.

1.4 Recommendations should not promote one business model over another

The drivers to success of a Mobile TV investment case are still evolving and it is very difficult to predict which business model will survive long-term in India. Also, it is likely that the market may support multiple business models and the business models may evolve with time.

Globally, Pay TV dominates as the preferred model for Mobile TV (exceptions being Japan and one of the providers in Korea). However, India may be different. Low ARPUs and a massive advertisement led content market in India mean that an ad funded model rather than subscription might work better in India. In any case, it should not be up to a regulator to decide!

a) Number of different business models exist for Mobile TV provisioning

There are a number of possible business models for Mobile TV provisioning. In our recent projects in both emerging and developed markets, we have typically examined four business models; these are summarised in the exhibit below.

Exhibit 13: Typical business models for Mobile TV being examined in developing markets

Assessment of business models

Business model	Advantages	Disadvantages
Operator owned • Operator develops mobile broadcast platform	• Full control over spectrum and all parts of value chain • Greater share of revenues	• High funding requirement • High risk, significant revenues not achieved until few years after launch
Consortium – Operator and content owner • Partner with content owners	• Content will be readily available • May be able secure content on favorable terms	• Objectives amongst players may not aligned • Content from other content owners not available?
Consortium – Telco ops • Rival ops partner to deploy network	• Cost of deployment is shared • Low financial risk • Lower content costs	• Unlikely to secure agreement of rival ops • Lack of differentiation
Reseller model • Operator is reseller only of mobile TV service	• Low financial risk • Low funding required, as no investment on infrastructure	• No control over value chain or overall proposition • Low revs / smaller margins

Source: Spectrum / Value Partners analysis

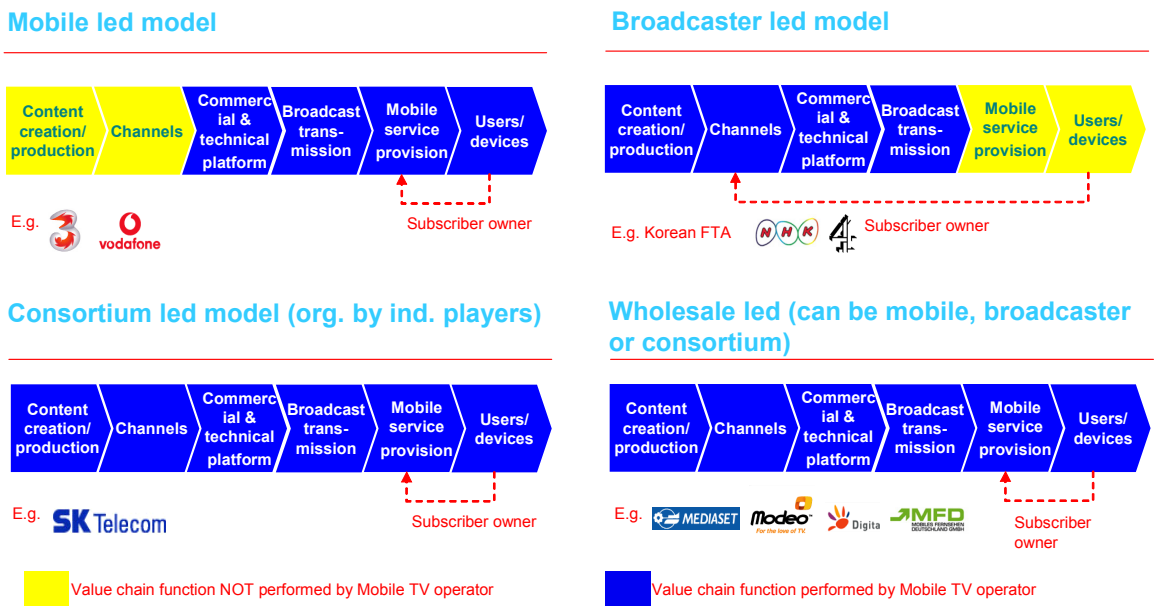
There have been a number of market launches of Mobile TV under each of these business models. Of these models, the telecom operator consortium model appears to be getting most support, but may be difficult to achieve in markets like India where the content and broadcast industry is very strong and has itself got strong ambitions in the Mobile TV space.

An example of a telecom operator led model running into trouble can be seen in Italy where high content costs from the broadcasters is ensuring that Mobile TV platforms are inherently loss making. An operator such as TIM spends about €30m - €50m per year on acquiring content; with handset and other subsidies, this operations cost goes by to €70m+. Thus, TIM has to monetise this operating cost over a very small base, at least initially (say 1m subs even in the most optimistic case; or about €70 per sub p.a. or €6.5 per month). The costs are higher than the revenues it makes and there is a risk that operators such as TIM may lose interest and close the service; thus impacting the long term viability of Mobile TV in the country.

In this situation, it is possible that a model where broadcasters and mobile operators form consortiums to launch Mobile TV is increasingly likely and should not be prevented by regulation.

In addition, a broadcaster led consortium may also be viable in India. Network costs for Mobile TV are comparatively small (compared to mobile networks).

Exhibit 14: Examples of Mobile TV business model launches worldwide



b) TRAI should evaluate regulation that supports business models that help both the industry and the customer

Business models that support the customer include:

- Customers should be free to churn between Mobile TV service providers – especially if NO handset subsidy has been offered by the service provider
- Customers should be able to receive a mix of FTA and Pay TV channels, IF the business case for both is there (market determined)
- Customers should have the option of receiving channels from as many multiplexes (MUxes) as is commercially feasible

Regulators in some countries have taken steps to enable some of these customer friendly outcomes to occur. In particular, we would like to highlight Germany.

Exhibit 15: Mobile TV regulation in Germany[1]

Germany's Federal Cartel Office regulator has given a green light to the planned mobile-TV joint venture, which will be created by three out of the country's four mobile operators if they demonstrate that customers can choose freely between their services. Number-one player T-Mobile Germany, second-placed Vodafone Germany and fourth-placed O2 Germany joined forces earlier this year to develop a mobile-TV platform based on the Digital Video Broadcasting-Handheld (DVB-H) standard.

The move will leverage the operators' power to purchase the licence programming, which will have a positive impact on the development of mobile TV in Germany. T-Mobile, Vodafone and O2 will jointly buy programming for the new platform, but would market the services separately. In a separate development in August, two rival German providers of mobile TV, Mobiles Fernsehen Deutschland (MFD) and Neva Media, joined forces in an effort to launch the DVB-H standard.

c) Mobile TV industry should be open to all industry players

The industry should be open to all industry players – operators, broadcasters, vendors and investor led consortiums. This will help drive innovation and help push different business models which will be in the customer interest.

High licence fee that may prevent any broadcaster led entrant from taking part. The NPV of the Mobile TV business case in India is unlikely to be higher than say UASL fees; so if the fee is levied, only telecom operators who have already paid the licence fee would take part in the process.

If TRAI wants players from the broadcast, vendor and investment community to take part in the Mobile TV sector in India, it will need to examine the applicability of high licence fees for Mobile TV.

Another aspect that will need to be looked at is the regulation on “Must Share” and “Must Carry”. Broadcaster led Mobile TV platforms will find it impossible to create differentiators and thus justify the investment in the current “Must Share” scenario. Channel capacity for Mobile TV is limited and subsequently “Must Carry” for certain channels will weaken the investment case for Mobile TV.

1.5 TRAI should not cap number of players, but facilitate infrastructure sharing

A key question is **how many Mobile TV networks TRAI should allow** at this early stage when the investor business case is unclear. Too much competitive activity may scare off top potential Mobile TV service providers and serious investors.

Some regulators have recognised this risk. In markets such as Finland, Australia, Germany etc., the regulator is debating whether it should facilitate a limited number of players at the network level with greater competition at the service layer level. In these markets, we see models where one operator or more likely a single consortium of operators (who could be competitors at the service / customer level) is rolling out a single network with access being provided to multiple service providers.

[1] Source: Global Insight Daily Analysis

The investment case study summarised in Exhibit 6 assumes that this network will be the dominant Mobile TV network in a two network market[1]. A key determinant of investor returns from Mobile TV is how many players mobile TV would be able to sustain. It is likely that the market may not be able to support multiple players. The fact that ARPUs in India are particularly low and handsets are comparatively more expensive in a country with low disposable income means that the risk in Mobile TV can be higher than in many other markets.

At this nascent stage of Mobile TV, TRAI should consider the investment case impact of too many networks. However, instead of forcing a cap on providers, TRAI should facilitate winners of Mobile TV licences to share infrastructure – towers, power and ancillaries, transmission etc. This will be in line with previous recommendations, leave level of competition to market forces and yet help winners strengthen their business case.

In addition, **TRAI should not force strict coverage requirements on the operators**. Strict coverage requirements at this nascent stage for Mobile TV will result in weak operator interest which will be anti-consumer in the long-term. Rather, winners should be free to build network coverage depending on their business case and customer interest. However, TRAI could retain the flexibility to impose coverage requirements at a later stage, if and when customer interest in Mobile TV takes off.

1.6 TRAI could licence up to 3-4 multiplexes in the UHF bands

Mobile TV can be launched in multiple frequency bands – UHF, VHF, L-band, S-band, 3G-TDD, 3G-FDD and even potentially in WiMAX bands. However, as discussed in an earlier section, it appears that DVB-H and MediaFLO are likely to be the most popular technologies in India – and both technologies are suited to work in the UHF bands.

The UHF bands in India are relatively less congested – at least when compared to countries in Europe and North America. The only terrestrial broadcaster in India is Prasar Bharati and typically we have only two analogue channels and we have couple of multiplexes used for DTT in the Metros (test DTT from Doordarshan).

In comparison, L-band (1452MHz – 1492MHz) is being used extensively by terrestrial point-to-point and point-to-multipoint microwave links across the country. S-band (2500MHz – 2690MHz) is being used for last mile connectivity by some ISPs in India; it is also the band identified as a 3G extension band and as the 'mobile' WiMAX band.

It is difficult to take a view on how much spectrum should be reserved for Mobile TV without there being further clarity on Digital Terrestrial Television (DTT) and on Digital Switchover. In markets like the UK, where DTT is highly successful, there is no available spectrum in the UHF bands for Mobile TV and UHF spectrum for Mobile TV is likely to be only available after analogue TV switch-off (2009-2012). On the other hand, at least on the basis of current usage within the UHF bands, there appears to be no shortage of UHF spectrum.

However, TRAI should bear in mind that these bands have very high marginal usage value – for example, 8MHz of spectrum in a higher frequency band (GSM900) is a highly prized (and priced!) asset.

Assuming that the current situation within the UHF bands continues into the future; viz., there is no shortage of spectrum and there is minimal marginal usage value from broadcasters (due to policy of not allowing private

[1] Based on Spectrum project on Mobile TV in a large emerging market in Far East Asia

terrestrial platforms) or mobile operators (non standard UHF band for mobile telecoms); then we believe that India is large enough to support a number of Mobile TV MUXes.

Therefore, in the current situation of no scarcity in the UHF bands and most popular Mobile TV technologies being in the UHF bands, at least theoretically, as many as 30+ MUXes[1] can be used for Mobile TV.

However, it is likely that long term, TRAI and I&B Ministry would want there to be a strong terrestrial television sector in India and would want capacity reserved for eventual Digital Migration. In this case, reserving 3-4 MUXes for Mobile TV would be sufficient for a customer to be able to receive up to 80-100 channels; which is far higher than any channel proposition available in any country. If the MUXes are equally split between two technologies (e.g. MediaFLO and DVB-H), then a customer can still receive 40-50 channels. This would still be a very strong proposition.

1.7 Auction is the best form of licencing Mobile TV spectrum

Auctions are the best judge of market interest. In India, we understand from our interactions with number of operators and broadcasters that there is significant interest in taking part in a possible Mobile TV auction. Given likely mismatch between available spectrum and number of interested players, we would recommend that TRAI licence Mobile TV spectrum through an auction.

TRAI has already taken the position that auctions are the best way to reflect inherent value of spectrum. Auctions are best suited in favour of market forces and helps prevent inefficient use (though steps and checks need to be in place to present misuse and hoarding by eventual winners).

There is no historical baggage and auctions conducted in a manner similar to FM Radio could be followed. Mobile TV licences can be offered on a block or circle basis so that smaller, regional players can also take part.

1.8 Pre-qualification criteria should shut out speculators but not stifle innovation

TRAI should adopt a suitable mix of strong pre-qualification criteria to prevent auction speculators but at the same time the criteria should not be so strict that it discourages new entrants with innovative and genuine business ideas. As the Mobile TV business case is not proven as yet, having very strict pre-qualification criteria will only scare away possible entrants into the sector.

There are likely to be a number of interested parties:

- *Telecom operators*: it is likely that both national and regional operators would be interested
- *Broadcasters*: both national and international broadcasters as well as regional broadcasters would want to take part
- *Vendors*: there are vendor and site/ tower operators backed Mobile TV networks already in the world and vendors would have interests in Indian Mobile TV as well

[1] 14 cannels in UHF Band IV and 28 channels in UHF Band V in total; currently used are 2 analogue TV channels and 2 multiplexes for DTT in Metros; giving 30+ free MUXes if a single frequency network (SFN) is used (ubiquitous coverage) or MFN if patchy coverage

In addition, it is likely that partnerships that are backed by investment banks and other financiers may also be keen to take part. As the Mobile TV value chain is complex, consortia may jointly bid for a Mobile TV licence.

Given the wide range of interest and the value different market players could bring, the pre-qualification criteria should not shut out interested parties.

TRAI could bring the pre-qualifications recommendations of Mobile TV in line with the TRAI recommendations for private terrestrial television broadcasting. TRAI had suggested that no detailed eligibility conditions need to be laid down and the general disqualifications adopted for private FM Radio may be used.

1.9 Trials are important to test customer appetite and business models

Trials from new entrants and interested parties are essential at this stage. Trials are important to test appetite, technology affinity, handsets, price points and business models in India.

In most developed markets where Mobile TV has launched, operators and broadcasters have been assigned test frequencies to run both technology and consumer trials prior to an eventual launch.

TRAI and DoT should take steps to ensure that different networks commence on a trial basis, similar to the DVB-H network in Delhi from Prasar Bharati.

1.10 There is need for regulation for convergence services

FDI and questions on whether Mobile TV should be regulated under broadcast or telecoms regulation is a high level question of convergence regulation. We need to have an all-encompassing convergence policy in India and lack of convergence regulation is a source of confusion on telecom-media converged services (e.g. Mobile TV), telecom-IT converged services (e.g. Push-to-Talk) and fixed-mobile converged services.

Specific to media-telecom convergence, while recommendations have been made by TRAI, there is a need for further clarity on converged service like Mobile TV, IPTV etc.:

- At one end of the regulation spectrum, if Mobile TV is deemed to be a terrestrial television broadcasting service (which it is), then, as per current regulation, no private sector participation will be allowed.
- At the other end of the spectrum is Mobile TV, where under telecoms regulation where up to 74% FDI is allowed.

Given that vast majority of Mobile TV launches worldwide are by mobile sector telecom operators, the sector should be regulated under telecommunication regulation with content regulated under broadcast regulation.

However, if all aspects of telecom regulation are followed, especially UASL licence fees, Mobile TV in India will be severely impacted. If UASL fees are charged to every new entrant, this will result in no new entrant taking part. One way around this would be to re-examine the need to de-link telecom sector licencing and spectrum award. However, this is a subject that is beyond the scope of this consultation.

TRAI recommendations on licence fee for terrestrial broadcast could form the basis of the logic to be used for Mobile TV licence fees. TRAI had recommended for terrestrial television broadcast that the structure of the licence fee should be the same as for private FM Radio, with an entry fee related to the level of competition and size of the market along with an annual fee on basis of revenue share of the gross revenues.

Our high level estimates for 10-year NPV (without Terminal Value) for a Metro Circle Mobile TV business range from between (negative) Rs 70 crores to positive Rs 220 crores, depending on various assumptions of take-up, handset price, number of networks and business model. On this basis, assuming a maximum licence fee at about one-fifth of average investment value given the level of uncertainty at this nascent stage, we believe the maximum licence fee should be about Rs 15 crores for a Metro circle.

However, if TRAI recommends an auction, the licence fee should NOT be paid in addition to the auction value. Rather, this level (Rs 15 crores per Metro circle) could be set as the base price for the auction.

1.11 In the long-term, in-sector spectrum trading could prevent hoarding

A risk of licencing spectrum to a use whose business case is uncertain is that there may be inefficient use of spectrum. To mitigate this risk, in the long-term, limited sector spectrum trading can be considered within the broadcasting sector. Limited spectrum trading will prevent hoarding and discourage inefficient use of spectrum, especially if Digital Terrestrial Television takes off.

However, it is important to have a clear policy to prevent the misuse of spectrum trading – for example, speculators may enter the market to generate speculative profits by creating a parallel secondary market. Spectrum trading within a sector can reduce this risk. However, within the terrestrial television broadcast sector, limited spectrum trading would make sense only if it is clear what the demand will be from Digital Terrestrial Television (DTT).

Spectrum trading is a complex regulatory subject and is outside the scope of this consultation; correspondingly, we do not discuss it in depth.

1.12 TRAI and GoI should take steps to incentivise local handset production

The consultation does not address the issue of Mobile TV handsets.

To make the industry a success in India, steps need to be taken to ensure handset prices fall significantly and not in too distant future. Mobile TV handsets today have a range of additional features including one or more high resolution cameras, 3G, application software etc.

An Indian market specific handset which does not have too many unnecessary functions and features can help push the price down. Policies that attract handset vendors to set up assembly/ production/ R&D facilities in India will help drive down costs and personalise handsets to suit the Indian context.

2 Specific answers to submission questions

Our response to the TRAI consultation is based on Spectrum Value Partner's own knowledge and experience in competition and regulatory issues within the global telecommunications market. Spectrum Value Partners has significant experience working with leading operators, regulators and financial institutions advising them on regulatory and policy issues both in India and international markets.

Spectrum Value Partners' submission focuses on a number of the most important questions raised in the TRAI consultation paper.

Q1. **Whether the technology for mobile television service should be regulated or whether it should be left to the service provider.**

Mobile TV is still a sector in a nascent stage. It is unclear which technology or technologies will be the ultimate winner in the standards race. It is also equally likely that multiple technologies may be viable in a large market like India.

TRAI has to balance its philosophy of technology neutrality against focusing investment on a single technology. There are advantages and disadvantages to both positions. Maintaining technology neutrality will be in line with past policy and also ensure that market forces decide technology choice. On the other hand, mandating a technology will bring scale that will bring down handset cost, prevent spectrum from being 'hoarded' by a weaker technology and it will also enable customers to move easily between service providers.

Both positions are equally strong. However, on the basis of precedent on technology neutrality, our view is that the market in India will ultimately be large enough to support multiple technologies and TRAI should let the market decide.

Q2. **If the technology is to be regulated, then please indicate which technology should be chosen and why. Please give reasons in support of your answer**.

In our view, the market should decide technology choice. Though, it appears that DVB-H and MediaFLO are the technologies most likely to succeed in India.

Q3. **What will be the frequency requirement for different broadcast technological standards for terrestrial and satellite mobile television transmission in India?**

There are a very large number of possible technologies for Mobile TV – both for unicast television (over 3G, EDGE or 1x networks) and for broadcast television (DVB-H, MediaFLO, ISDB-T, S-DMB, T-DMB, MBMS, TdTV, DAB-IP etc.).

Mobile TV can be launched in multiple frequency bands – UHF, VHF, L-band, S-band, 3G-TDD, 3G-FDD and potentially in WiMAX bands. However, it appears that DVB-H (and potentially MediaFLO) are likely to be the most popular technologies in India – and both technologies are suited to work in the UHF bands.

Q4. **Which route would be preferable for mobile TV transmission – dedicated terrestrial transmission route or the satellite route? Should the mobile TV operator be free to decide the appropriate route for transmission?**

The Mobile TV operator should be free to decide.

Q5. **How should the spectrum requirements for analogue/ Digital/ Mobile TV terrestrial broadcasting be accommodated in the frequency bands of operation? Should mobile TV be earmarked some limited assignment in these broadcasting bands, leaving the rest for analog and digital terrestrial transmission?**

International examples suggest that for India, Mobile TV in the UHF bands is likely to be most successful. If this is so, then it is difficult to take a view on how much spectrum should be reserved for Mobile TV without there being clarity on Digital Terrestrial Television (DTT) and on Digital Switchover.

In markets like the UK, where DTT is highly successful, there is no available spectrum in the UHF bands for Mobile TV and UHF spectrum for Mobile TV is likely to be only available after analogue TV switch-off (2009-2012). On the other hand, at least on the basis of current usage within the UHF bands, there appears to be no shortage of UHF spectrum in India.

Given this uncertainty on DTT as well as on Mobile TV, Mobile TV should be earmarked some limited assignment in the UHF broadcasting bands, leaving the rest for analogue and Digital Terrestrial Television .

Q6. **In the case of terrestrial transmission route, how many channels of 8 MHz should be blocked for mobile TV services for initial and future demand of the services as there are nearly 270 TV channels permitted under downlinking guidelines by Ministry of Information and broadcasting?**

Assuming that the current situation within the UHF bands continues for a few years; viz., there is no shortage of spectrum and there is minimal marginal usage value from broadcasters (due to policy of not allowing private terrestrial platforms) or mobile operators (non standard UHF band for mobile telecoms); then we believe that India is large enough to support 3-4 MUXes of 8MHz each.

Licencing 3-4 MUXes will ensure there is enough channel choice for the proposition to generate customer interest and it will allow for multiple players, business models and technologies that will help to keep the market competitive. With these number of MUXes, India could become one of the largest Mobile TV markets in the world and it offers strong potential for local and regional content companies to play a part. Local television is the new driver for media consumption in many markets and India is likely to show similar characteristics.

Q7. **Whether Digital Terrestrial Transmission should be given priority for the spectrum assignment over mobile TV, particularly in view of the fact that the Mobile TV all over the world is essentially at a trial stage.**

Currently, both Digital Terrestrial Television (DTT) and Mobile TV are at a nascent stage in India – with technical trials currently on (Prasar Bharati) in the Metros for DTT and in Delhi for Mobile TV. So, unlike some markets where there is a severe spectrum shortage in the UHF bands (e.g. UK), this is not the situation in India. Thus the question of priority is less relevant in India and MUXes can be easily assigned for both applications.

Q8. **Whether the frequency allocation for the mobile TV should be made based on the Single Frequency network (SFN) topology for the entire service area or it should follow Multi Frequency Network (MFN) approach.**

It is difficult to take a firm view without there being a clear roadmap on Digital Terrestrial Television (DTT). The question of SFN or MFN cannot be looked at in isolation.

If the DTT market takes off and there is interest from Prasar Bharati and private sector broadcasters for a large number of MUXes, then mandating a Single Frequency Network (SFN) will help free capacity to accommodate more channels and operators for both DTT and Mobile TV.

However, if DTT remains a public broadcast service and if there is limited interest from broadcasters (possible in India where 60%+ of television homes are cable and satellite (C&S) homes), there will be no need to mandate an SFN Mobile TV network. A Multi Frequency Network (MFN) will work as well, especially if there are no strict coverage requirements for ubiquitous coverage and Mobile TV network operators use low power transmitters/ repeaters.

Thus, in summary, assuming there is no requirement for ubiquitous Mobile TV coverage and also assuming DTT will not see shortage of UHF spectrum, an MFN Mobile TV network should work well for India.

Not withstanding SFN or MFN, the other thing for TRAI to bear in mind is potential interference with DTT spectrum (assuming DTT takes off in India). In Australia the whole allocation of Mobile TV spectrum has been delayed due potential interference with DTT. In certain areas, the high level of interference with DTT means that a higher number of repeaters would be required.

Q9. **Whether frequency spectrum should be assigned through a market led approach – auctions and roll out obligation or should there be a utilization fee?**

Auctions are the best judge of market interest. In India, we understand from our interactions with number of operators and broadcasters that there is significant interest in taking part in a possible Mobile TV auction. Given likely mismatch between available spectrum and number of interested players, we would recommend that TRAI licence Mobile TV spectrum through an auction.

Given how uncertain the investment case is at present for Mobile TV, there should be no specifications on roll-out obligations. However, in case Mobile TV takes off and there is genuine consumer demand, TRAI / DoT could retain the option of imposing roll-out obligations at a later date, for example after 3 years of the licence award. This will prevent hoarding by non-serious winners.

Q10. **What should be the eligibility conditions for grant of license for mobile television services?**

The industry should be open to all industry players – operators, broadcasters, vendors and investor led consortiums. This will help drive innovation and help drive different business models which will be in the customer interest.

TRAI should adopt a suitable mix of strong pre-qualification criteria to prevent auction speculators but at the same time the criteria should not be so strict that it discourages new entrants with innovative and genuine business ideas. As the Mobile TV business case is not proven as yet, having very strict pre-qualification criteria will only scare away possible entrants into the sector.

Q11. **Whether net worth requirements should be laid down for participation in licensing process for mobile television services? If yes, what should be the net worth requirements for participation in licensing process for mobile television services?**

No comment.

Q12. **What should be the limit for FDI and portfolio investment for mobile television service providers?**

Given that vast majority of Mobile TV launches worldwide are by mobile sector telecom operators, the sector should be regulated under telecommunication regulation with content regulated under broadcast regulation.

TRAI should not recommend high licence fees. For example, if UASL fees are charged to every new entrant, this will result in no new entrant taking part.

Q13. **What should be the tenure of license for the mobile television service providers?**

The business case of Mobile TV is uncertain and it is likely to show mass take-up only in the mid to long-term – various forecasts suggest it will be between 3-5 years before Mobile TV is a mass market proposition. Mobile communications became a mass market service many decades after it was launched; GSM mobile took about 7-10 years before it became a mass market service.

Given this long gestation period for Mobile TV, TRAI should set the licence tenure for at least 10 years.

For comparison, private FM Radio licence tenure is 10 years, DTH is 10 years and mobile licence is 20 years (10 years + 10 years option to extend).

Q14. **What should be the license fee to be imposed on the mobile television service providers?**

If high fees are charged to every new entrant, this will result in no new entrant taking part. The regulatory authorities should examine options where there is de-linking of licencing and spectrum award; especially as UASL fees have been fixed keeping in mind the intrinsic value of a mobile telecommunications business.

Our initial estimates for 10-year NPV (without Terminal Value) for a Metro Circle Mobile TV business range from between (negative) Rs 70 crores to Rs 220 crores depending on various assumptions including revenue model (FTA, Pay TV or hybrid), number of competing networks, nature of promoter (operator, broadcaster or consortium-backed), network model (wholesale or retail led), coverage (patchy or ubiquitous, level of indoor coverage), degree of handset subsidy, handset price etc. On this basis, assuming a maximum licence fee at about one-fifth of average NPV value (given the level of uncertainty at this nascent stage), we believe the maximum licence fee should be about Rs 15 crores for a Metro circle. However, it could also be lower, for example, similar to the FM Radio licence fees.

However, if TRAI recommends an auction, the licence fee should not be paid in addition to the auction value. Rather, this level (maximum Rs 15 crores per Metro circle, possibly lower) could be set as the base price for the auction.

Q15. **Whether in view of the high capital investment and risk associated with the establishment of mobile television service, a revenue share system would be more appropriate?**

Yes, revenue share is likely to be a better model. Revenue share will help reduce the risk for investors when the business case is uncertain. However, given that the business case will take between 3-5 years to become EBITDA positive, imposing a strict revenue share will work against investor interests.

Q16. **Whether any Bank Guarantee should be specified for licensing of the mobile television service providers. If yes, then what should be the amount of such bank guarantee? The basis for arriving at the amount should also be indicated.**

There should be a bank guarantee to prevent weakly funded speculators from taking part in the auction and driving up prices for genuine market entrants.

The amount of the guarantee can be determined from the NPV of the Mobile TV business case. Our high level estimates for 10-year NPV (without Terminal Value) for a Metro Circle Mobile TV business range from between (negative) Rs 70 crores to Rs 220 crores; depending on various assumptions of take-up, handset price, number of networks and business model. Bank guarantees of about one-third to one-fifth of average NPV could be imposed.

Q17. **Whether the licenses for mobile television service should be given on national/ regional/ city basis.**

Licences for Mobile TV should be given out on a Circle basis (precedence: mobile licencing) or a City basis (precedence: FM radio licencing). This will enable greater interest from regional and local content producers; local language and regional / local content has been a key driver of media consumption and TRAI should enable local players to take part. This will help ensure long term success of the industry and encourage innovation in the market.

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