

Response of Zee Network
To
Consultation Paper No. 9/2007
On
Issues Relating to Mobile Television Service

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Consultation Paper on Mobile TV

Response of Zee network

1. Introductory Comments:

The Zee Network welcomes the process of consultation on Mobile TV, which we believe can facilitate an orderly introduction of Mobile TV services in India. However we have some serious concerns on the regulatory process now adopted by the TRAI, which we would like to point out before we revert to the specific points on which comments have been sought by the TRAI.

(i) Firstly, we take reference to the recommendations of TRAI on the opening up of the Terrestrial broadcasting services to private operators (made on Aug 29, 2005). Had these recommendations been implemented, it would have created a level playing for broadcasters against the Unified Access Service Licensees (UASL), which have been receiving a very favorable treatment for allocation of resources such as spectrum. By not acting on the recommendations of the TRAI the Government of India has deprived the broadcasters of having fully operational terrestrial networks now (as is the case for FM radio). This has also resulted in the provision of unfavorable and discriminatory treatment to the broadcasters as in the absence of the implementation of the policy, they have been unable to seek the spectrum and other resources as a natural corollary. **This needs to be made good now in the spectrum allocation policies which are being recommended by the TRAI.**

The DVB-H service, which is in fact an add-on service on the DVB-T networks would then lie as a natural extension for the operators, to also broadcast for the small screens using the same /similar resources.

Hence making independent recommendations for DVB-H or other technologies, which in fact are worldwide being implemented as extensions of the DVB-T broadcast networks is quite ironical as the previous recommendations on Terrestrial broadcasting itself have so far remained unimplemented.

(ii) The TRAI has stated in the consultation paper that “As per Clause No. 2.2 (a)(i) & 2.2 (a)(iii) of United Access Service License (UASL) agreement, the telecom licensee can offer the SERVICES that cover collection, carriage, transmission and delivery of voice and/or non-voice MESSAGES over LICENSEE’s network in the designated SERVICE AREA and includes provision of all types of access services.... Similar clause also exists in Cellular Mobile Telephone Service (CMTS) license agreement. These clauses already permit the delivery of video contents over their networks.”

TRAI has tried to impute that the UASL operators can provide TV services on their networks as this is permitted under “Triple Play”. However we would like to point out that, as is the case of IPTV, for which the consultation paper has been issued, necessitating in the future a separate License Agreement, the same legal position also applies to Mobile TV services. As has been eloquently elaborated by us in our comprehensive response to TRAI Positioning Paper on IP TV dated 6th Sept 2007_ and also by other broadcasters that IPTV is a service which falls under the media sector, for which special regulations such as regulations on content, ownership, FDI guidelines, content codes etc are applicable, it does not, in any manner, fall under the automatic carriage under the UASL licenses. The service of IPTV, which is a media broadcasting service needs to follow all the guideline, FDI restrictions and content code as is applicable for the media sector and controlled by the ministry of I&B. We would like to point out that exactly the same position holds good for the mobile TV service as well, which is also a media broadcasting service, very similar to IPTV service on the broadband and mobile networks. Hence the mere fact that the UASL licensees (including CMTS licensees) may have the capability in their networks to carry TV content does not exempt them from following the licensing process of the media sector services.

Hence any operators, who rightly or wrongly may be claiming the carriage and delivery of Mobile TV on their cellular networks or Wireless/ Wimax networks do not have any legal sanctity for the said process.

Hence we strongly oppose the TRAI tacitly accepting the position that “Mobile operators are already providing mobile TV services” and to further state that “The spectrum allocation criterion is also agnostic to the service being offered as long as the service is permitted by the license.” At the outset, we would like to point out that neither the IPTV nor Mobile TV, both

being media services are permitted automatically on the networks. The question of the IPTV licensing is under consultation by the TRAI and by virtue of the present legal position on the matter, it is quite clear that IPTV will be a licensed service permitted only to those operators who follow the FDI guide lines and ownership conditions /criteria for this media sector service. The same position holds true for mobile TV as well.

We hope that the distinction of “ Mobile TV capable networks” and “Entities licensed to provide mobile TV services” will continue to be maintained along with the licensing requirements of Mobile TV per se.

(iii) The admission by the TRAI that the mobile operators are providing Mobile TV services or video clip streaming services also brings out the role of the TRAI in letting the sector grow in an unregulated manner. As is well known, the spectrum for the services is provided based on the number of customers. It is not auctioned or provided at extra cost. The operators are now using the spectrum to provide high revenue services such as video streaming, MMS with Video etc. By diverting the spectrum to such services, which are not in accordance with media laws, they are squeezing the quality of voice calls. At a rough estimate, over 20% of the spectrum has been diverted from legitimate use on maintaining of voice calls to Video and Video MMS services with resultant drop in voice call quality, dropped calls, failure of calls on roaming etc. On the pretext that this is happening owing to lack of spectrum, they are clamoring for even more spectrum to divert it to unauthorized media services. The TRAI has played a role of only a silent spectator in the whole drama.

(iv) As pointed out by the Zee Network in the IPTV consultation paper as well, these services are based on both “Live content” and also “On demand content”. We however find that the TRAI has not chosen to recognize this fact. It is sticking to the stand that “any channel granted down linking and uplinking permission” can be permitted for these services. However the need for licensing of content from the owners, its digital rights management (DRM) and permission to use the content as per rights granted by the rights holders have been ignored. We feel that if we wish the media sector to remain a regulated sector and not fall to piracy, these factors need to be incorporated at the time when the regulation for the sector is being initiated.

Also ignored is the fact that there may be channel specially created for mobile TV, which also need to be licensed. Such channels can also be owned only by companies which conform to the media sector guidelines, content and advertising codes. Hence the TRAI needs to lay down clear directions in the license in this regard and not allow the unregulated packaging of content and their unauthorized display on mobile networks.

(v) Zee Network proposal: Universal Broadcaster

In Para 2.8 of its introductory remarks, the TRAI has said that the Mobile TV operator will be “ a new class of operator” and that “Thus, there would be separate guidelines and licensing conditions which would give a formal legal status to mobile TV operator. However, since the delivery of video content over mobile telecommunication network is already permitted as per the licensing conditions of UASL and CMTS licensees, it is felt that these telecom licensees should not again be required to obtain mobile TV operator’s license to provide the TV channels on mobile handset using their network”.

We find this position of the TRAI entirely unacceptable and against common law. First of all we would like to point out that the ordinary terrestrial transmissions can be received on Mobile TV. In fact this is very common in many countries, such as Japan where many of the handsets receive standard NTSC transmissions meant for TV receivers just as they receive FM radios.

Mobile Phones with Analog Tuners



Hence provision of TV channels on a mobile TV is not necessarily a “separate licensed activity”. It falls in the natural domain of a broadcaster. Hence if there is a licensed Terrestrial TV broadcaster in India, its programs can be received on mobile handsets as well and it does not need a separate license. It is a different matter that it may try to optimize the technology and provide more efficient services using DVB-H extension of the DVB-T standards as air interface. Hence delivering broadcasts to mobiles in addition to regular TV sets is a normal broadcast operation for any licensed broadcaster.

Any licensed platform operator in India (such as DTH operator) should also be able to deliver the service on Mobiles, for which spectral resources as needed should be granted for extended deliveries.

What TRAI is proposing, by saying that there should be a separate category for delivering TV to mobiles is tantamount to saying that “FM operators need a separate license and be in a separate category to be able to deliver to mobiles”. However the fact is that FM transmissions can be received on the mobiles and hence separate licensing is not needed for FM operators. It may be noted that the government cannot stop the reception of FM on mobiles. The same is true for TV transmissions on mobile devices as well. If there is any

terrestrial transmission in digital or analog format, it can be received on a mobile screen without special technology, just a tuner is needed. The government can not stop the same. Hence even if the TRAI were to, quite inappropriately create a category of Licensed Mobile TV operators, such a license can not be enforced as any terrestrial broadcaster without a mobile TV license can not stop its content on mobile TV handsets. Moreover handsets are now evolving to PDAs or ultra mobile PCs(UMPCs) which can receive TV in full resolution from terrestrial transmissions.

Worldwide, transmissions of TV programs to devices in different resolutions and different screen sizes is a combined activity. There are no separate broadcasters only for HDTV, SDTV and small screen TV. Hence we would like to introduce the concept of a **Universal Broadcaster**, now that when for the first time, the country's regulator is looking at broadcasting to different sized screens via different media. All existing DTH operators and/or those permitted to operate broadcasting platforms and conform to the security clearances, FDI guidelines etc. should be declared as **"Universal broadcasters"** and be automatically permitted to extend their transmission to mobiles and be granted spectrum for the same. Only those applicants should be eligible for a Universal broadcaster licensee who follow the FDI guidelines as applicable to the DTH sector.

On the other hand the statement of the TRAI that the "since the delivery of video content over mobile telecommunication network is already permitted as per the licensing conditions of UASL and CMTS licensees, it is felt that these telecom licensees should not again be required to obtain mobile TV operator's license to provide the TV channels on mobile handset using their network" is entirely against the provisions of existing regulations and the law. As pointed out by us, such content, i.e. licensed TV channels or media sector activity is not permitted on their networks. Hence in case they wish to operate the TV services to mobiles, they need to obtain a license even if their networks otherwise have the capability to carry the TV channels by virtue of technology. Thus **"UASL licensees" should need a separate "Universal broadcaster license"** in order to be able to provide media related services. For this purpose they will need to comply with equity ownership, FDI guidelines, security clearances and provide monitoring arrangements, follow content and advertising codes in accordance with the guidelines for the media sector. Eligible UASL licensees who obtain a " Universal broadcaster license" should then be able to operate media services on their networks.

Hence we find the statement of TRAI that the “ Mobile TV licenses to be in a separate category” and the “ mobile TV licensees not needing such license to be quite contradictory to existing legal positions. FM radio networks are technically capable of carrying News along with Music. But they are not permitted under the media guidelines in the best wisdom of the licensor (Govt.). Hence the attempt of TRAI to mix the technical capability to automatic permissions is entirely misconceived and needs to be read with a pinch of salt.

Broadcasting platform operators of any type, who are licensed, have the natural right to deliver it to different sized screens. Hence no licensing process is needed for the screen sizes. What we are proposing to discuss in the consultation paper on Mobile TV is not about separate licensing but how such a process can be facilitated for existing broadcasters by grant of spectrum and resources.

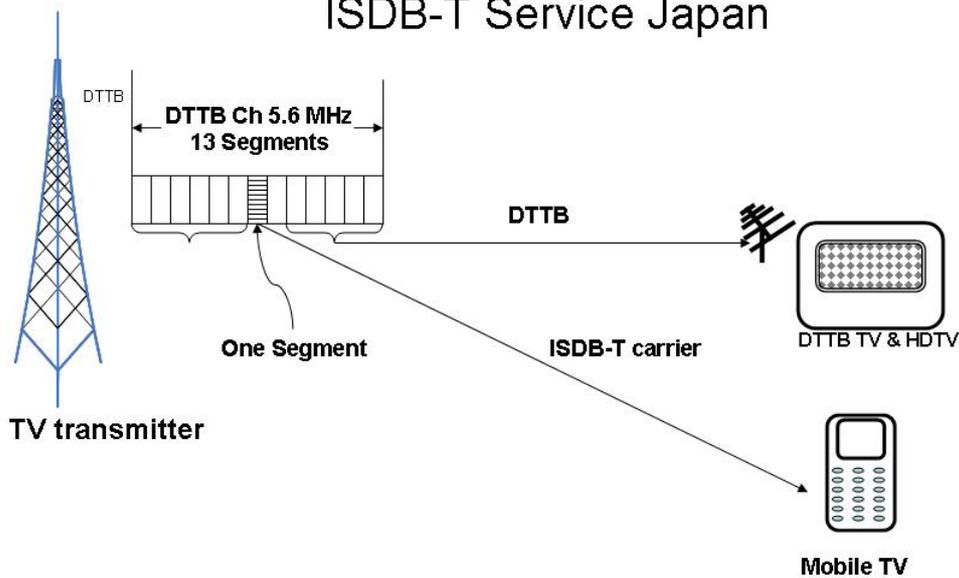
Mobile operators, in any event have no license to operate media based services on their networks. They can approach for a license after complying the equity shareholding, FDI guidelines, security clearances and monitoring and archival arrangements as applicable for media sector.

In summary the Zee Network position on this issue is as follows:

(i) The government should issue Terrestrial TV licenses. Such license should be automatic to DTH operators who already have permission to operate a platform. This is an established practice as well with the BskyB content being available on the mobiles in UK.

Such proposed operators should be able to transmit on a normal screen, large screen(HDTV) or small screen (Mobile TV). It will not be out of place that the ISDB-T services in Japan are designed to permit just this. The transmitted carrier has “13 segments”. One segment is dedicated to “Mobile TV”, 3-4 segments for HDTV and the remaining for SDTV. Hence one transmission carries the channels for all types of devices.

ISDB-T Service Japan



Hence the TRAI proposition of issuing a separate license for Terrestrial TV, Separate for mobile Terrestrial TV, separate for satellite mobile TV, separate for DTH- Mobile TV , separate for terrestrial HDTV, separate for satellite HDTV etc does not go with the trends anywhere in the World. In Europe also the DVB-T licensees are permitted to provide DVB-H extension on their networks without needing any other permission.

Hence, Zee Network would sincerely request TRAI to look at the larger picture rather than each piece of the Jig saw puzzle and try to license it separately rather than the whole picture. Once an operator operates a broadcast platform (e.g. for DTH) after complying with the sector guidelines of equity ownership, FDI, security clearances , monitoring and archival requirements, it should be designated as a “ **Universal broadcaster**” with extensions permitted in terrestrial broadcasting and extensions of delivery to Mobile TV or HDTV, via satellite or terrestrial medium.

At the same time mockery can not be made of existing legal provisions to permit the UASL licensees or CMTS operators who have only pipes capable of broadband to also permit media sector services.

(iv) Readiness of cellular networks to carry Mobile TV:

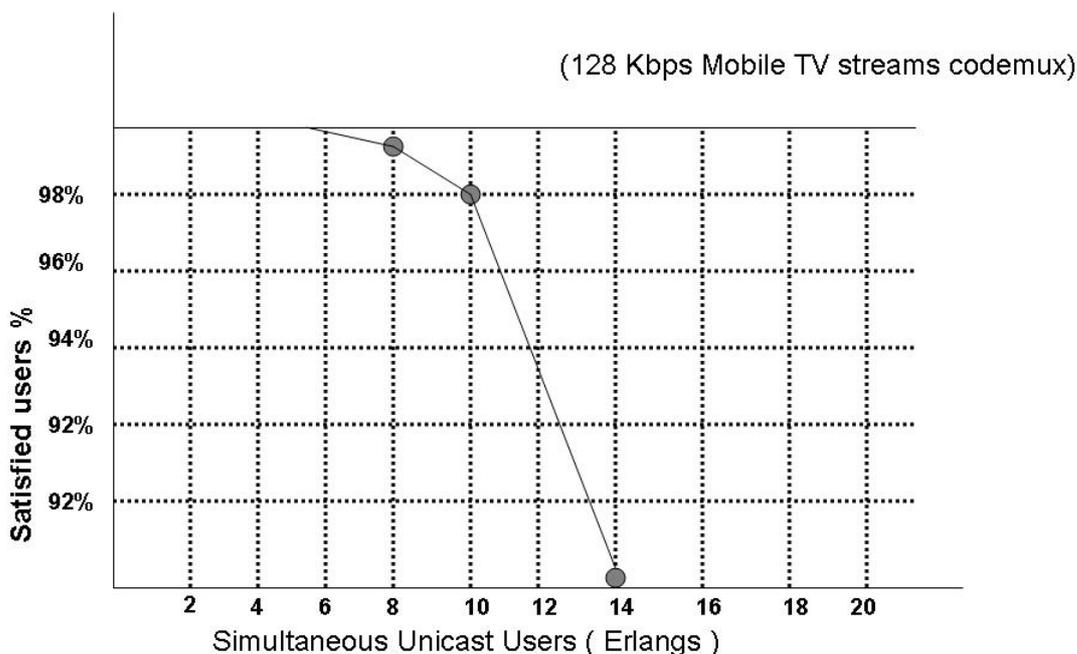
In section 3.2.2 and 3.2.3 of its introductory comments the TRAI has portrayed as if the Mobile networks are all ready for mobile TV delivery and the same can be delivered just if the spectrum is provided and the networks were upgraded to 3G. However the actual situation is quite distant from this statement.

First of all the IMT2000 framework, which forms the basis of 3G today was planned in the mid 90's and video services required on the scale today were not envisaged. The IMT 2000 envisages the use of Macro Cells, Micro cells and Pico cells with predicted data rates possible. IMT-2000 defines data speeds of 144 Kbps at driving speeds, 384 Kbps for outside stationary use or walking speeds, and 2 Mbps indoors. The 2x5 MHz paired band for W-CDMA can support a raw channel data rate of 5.76 Mbps which translates into data rates of up to 2 Mbps per user (dependant on network design). These speeds are nowhere sufficient to support even 10 users per cell with streaming unicast video.

With this realization, the work had begun on evolution technologies such as HSDPA under GSM evolved networks and EV-DO for CDMA evolved networks. HSDPA is a feature added in Release 5 of the 3GPP specifications. HSDPA extends the downlink shared channel (DSCH), allowing packets destined for many users to be shared on one, higher-bandwidth channel called the high-speed DSCH (HS-DSCH). On the average download speeds for DSCH the channel can be 10 Mbps (total shared amongst the users). However lab tests and theoretical predictions suggest the rates can be as high as 14.4 Mbps. Of course the maximum data rate falls as the users moves outwards in the cell and can fall to 1-1.5 Mbps at the cell

edge.

Capability of HSDPA Network to Cater to Simultaneous Users



As per an Analysis (Ericsson) for HSDPA networks with 95% of satisfied users, 128 Kbps streaming service can be provided at 12 Erlang of traffic. Under low usage conditions (i.e. 2x5 Minutes per day) all the users in the cell area (assumed density per cell of users as 600) can get satisfactory service. For Medium usage (assumed 5x10 minutes per day) the users which can be catered to within the satisfaction level falls to 171 per cell or 28% while for High usage (e.g.4x20 minutes) the usage falls to 108 users per cell or 18%.

Hence, 3G networks even with new evolved options can also only serve a few tens of users with high usage. For any higher density, technologies such as MBMS need to be used. These require new infrastructure and the statement of the TRAI that the cellular operators already have the infrastructure for delivery of mobile TV is entirely misplaced and erroneous.

What we are discussing is a broadcast service with hundreds of thousands of users such as a cricket match. Cellular networks with present technologies or those with 3G technologies alone will not be able to meet such requirements.

Hence we strongly refute the statement made by TRAI in section 3.2.2a that “ All infrastructure is in place” for mobile operators. On the other hand the position is that they will need to upgrade their entire networks to not only 3G but beyond that to HSDPA and MBMS or EV-DO and MCBCS. The expenditure needed for such expansion is much more than that required by a green field broadcaster using 4-5 masts in a city for DVB-H services.

Further in Section 3.2.2b a statement is made that “ No additional spectrum requirement”. We again dispute this fact. An MBMS service requires 10 MHz of additional spectrum and an EV-DO Rev B requires minimum 5 MHz of additional spectrum. Hence those mobile operators who qualify under media guidelines to offer mobile TV services will be standing in line for spectrum immediately when the services are permitted.

(v) Conditional Access Systems and Content protection:

We find it strange that the consultation paper is silent on the subject of both conditional access and encryption of the mobile TV services. Public interest requires that the services which are provided do not bind the customer to a particular hand set and also do not prevent him from changing the service provider if he so desires. Such a feature requires that the conditional access facilities be separated from the SIM card provided by the cellular service provider. Mobile TV operators have been implementing the feature of plugging in any operator by providing the CA system etc on a Micro SD card which can be inserted on any mobile phone.

In regard to the DVB-H recommendations on CA systems, there are two versions. One type of service protection is based on the CA systems and is the DVB-CBMS standard. The second method is the OMA-BCAST standard which requires the mandatory use of the mobile network in service authentication.

The broadcasters have always supported DVB based standards and the Zee network would like to reiterate its support of DVB based implementations.

(vi) Interoperability of Mobile TV services:

The TRAI consultation paper is silent on the interoperability of Mobile TV services. As in the case of DTH, the Zee Network would suggest that such interoperability should be enforced by the service provider making all software and APIs available and down-loadble and using fully open DVB-H based implementation.

We now revert to our comments on the specific points in the TRAI consultation paper.

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

2. 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.

We would like to bring to the attention of the authority that the standards for terrestrial transmission in India have been regulated. As mentioned in the consultation paper, India follows PAL B and PAL G respectively for VHF and UHF transmissions in the analog format. In the digital format India follows the DVB-T standards.(DVB-C for digital cable and DVB-S for digital satellite transmissions). Hence as a country we are aligned with the DVB standards in so far as the digital standards are concerned. The entire digitalization plan of India is expected to happen based on the DVB-T /DVB-H standards.

Just as we do not follow NTSC and ATSC standards for video and transmissions respectively, the question of allowing different standards should not arise. DVB-H is an extension of the DVB-T standards permitting the transmission to small screen devices using the same infrastructure.

When the Govt. of India acts on the recommendations of the TRAI on opening up the terrestrial broadcasting it would be specifying the DVB-T as the standard to be used and DVB-H is a natural extension which will in line with the national standards.

Just as the government will decline terrestrial broadcasting licenses to a private broadcaster proposing to set up ATSC based transmissions or 8-VSB based transmissions (American standard for digital TV), so should it bar any terrestrial transmissions in ISDB-T or Media

FLO. As analog TV and digital TV have to coexist side by side in India for a long time, it is all the more necessary to adhere to the standards adapted by the country and not permit stray licenses based on clamoring by various parties.

It will not be out of place to mention that the European Union has also recommended the DVB-H as a standard to be used throughout Europe. (Please refer Annexure-1)

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

The TRAI in the consultation paper has already mentioned the VHF and UHF bands which stand allocated to terrestrial broadcast services as per NFAP 2002:

Band	Spectrum	Number of TV Channels available in analogue mode	TV Channel Number
VHF Band I	47-68 MHz	3	2 to 4
VHF Band III	174-230 MHz	8	5 to 12
UHF Band IV	470-582 MHz	14	21 to 34
UHF Band V	582-806 MHz 806-960 MHz	28 ---	35 to 62 ----

Zee Network recommends the allocation from the spectral pool, most of which is lying unused for the private terrestrial broadcasters in India. As each DVB-T carrier in a bandwidth of 8 MHz provide 5-6 channels, only three slots need to be reserved for the national broadcasters and the remaining should be opened up for the private broadcasters.

While we are not recommending the permissions for other technologies such as MediaFLO or DMB-T, it is not out of place to mention that these also operate in the same band of VHF and UHF. Hence so far as the terrestrial broadcasts are concerned, bands other than VHF/UHF are not required.

Satellite Multimedia Broadcast Service (DMB-S), in case of Korea and Japan uses a high power satellite MBSAT operating in the S-band (2630-2655 MHz). The spectrum used by the S-DMB is the same as Digital Audio Broadcasting which has been allocated by the ITU and hence is available in most countries. The satellite transmissions in the S- Band directly to the Mobiles are possible through the use of a specially designed High power satellite, the MBSAT which has footprints over the major cities of Korea and Japan. The satellite services needs to use Gap-Fillers for coverage of indoor areas and where the satellite signal strength is not adequate.

Despite the high power of the satellite the signals a direct reception by mobiles requires more robust techniques for error protection and resilience against transmission conditions. The S-DMB uses modulation similar to CDMA against multi-carrier OFDM for terrestrial transmissions. (system E in Korea). The 25 MHz available on the satellite is then sufficient to provide 11 video channels, 30 audio and up to 5 data channels for delivery over the entire country. The video is carried at 15 Fps against 30 fps in T-DMB.

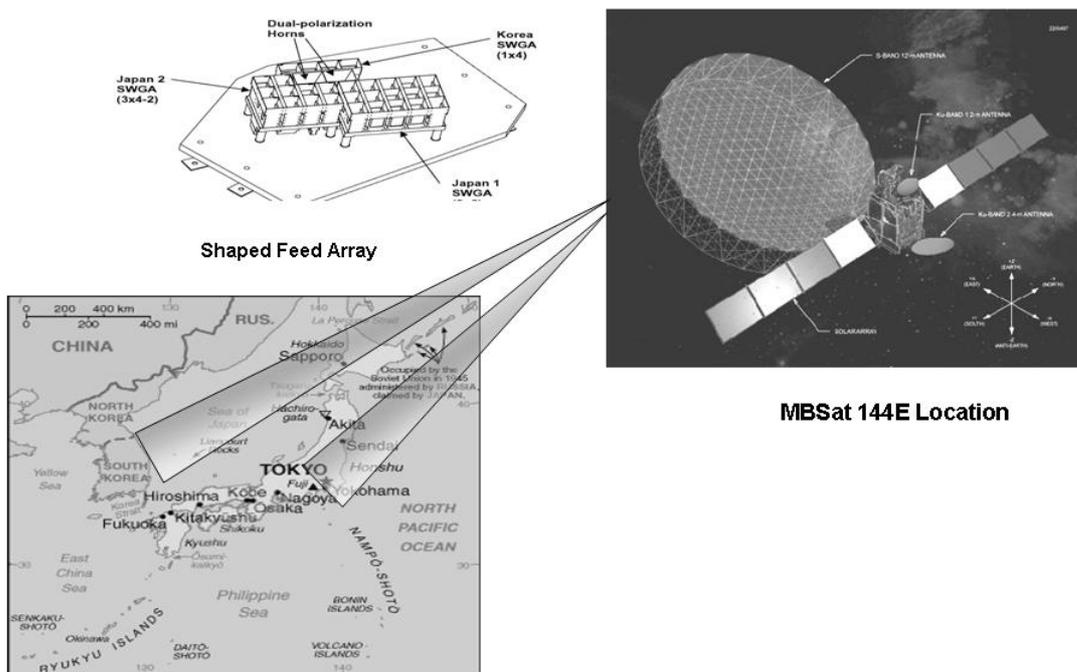
The low capacity of satellite transmission and small footprint does not justify its promotion at this stage by using up valuable spectrum.

4. 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?

As mentioned earlier the satellite based services require a very high power special satellite. In the example cited above, the satellite was designed specifically to provide coverage of Korea and Japan while avoiding interference to other countries through the use of a 12 Meter Offset

paraboloid offset reflector. The beam in the shape of the territories covered was achieved using a multi-element feed array. The large reflector satellite along with the high power electronics delivers high Effective Isotropic Radiated Power (EIRP) of 67dbW, which enables hand held mobiles to directly receive the signals. Areas inside buildings and in subway tunnels etc are covered using gap fillers which also operate in the S-Band. Just for the purposes of comparison, it is interesting to note that the Ku band Direct to Home Systems using the FSS Band use an EIRP of around 52dbW in conjunction with 60 cm receive dishes. The BSS band satellites such as Echostar have an EIRP of 57dbW. The

MBSAT Satellite for S-DMB Services



MBSAT for S-DMB services

EIRP of 67 dbW is 10 dB higher than the highest powered Ku band systems i.e. a power level which is 100 times higher. This satellite is somewhat unique in this regard and hence S-DMB type services elsewhere in the world would depend upon the availability of such high powered specially designed satellites. The S-Band geostationary satellite is jointly owned by MBCo Japan and SK Telecom of Korea and is manufactured by SS/Loral based on the FS-1300 bus.

For satellite based broadcast services, which operate in the S-Band for direct reception on mobiles, it may be mentioned that these need a very high powered satellite to deliver such services. For example the MBSSAT satellite at 145 E which delivers the DMB-S services over Korea the reflectors on the satellite need to be 12 meters and also have high beam shaping capability. India is at present not in possession of such a satellite, though one satellite is planned to be launched in the S-Band by ISRO.

The submission of the Zee Network is that if such a service is made available by a public organization such as ISRO, licensed broadcasters and teleport operators need to be allocated on an equitable basis. **Hence by merely launching a satellite or bringing it in orbit from elsewhere in the world, an organization or its investors does not automatically get entitled for the spectrum or providing the services.**

Hence at present we are only advocating the use of terrestrial spectrum, with the proviso that the DTH operators should also in addition be granted terrestrial transmitters on the lines of DARS radio system in the USA, where the use of both satellite frequencies as well as the terrestrial transmission on the same frequencies is permitted. We suggest that all DTH operators be granted spectrum in the S-Band for terrestrial repeaters under the “Universal broadcaster” scheme suggested by us.

5. 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?

It is preferable to segregate the analog and digital terrestrial transmissions to the extent possible. However this is not mandatory. There are power transmission recommendations for analog and digital transmissions to operate together.

As all the terrestrial transmission frequencies are at present with the National broadcaster, Doordarshan, it is necessary for them to present their plan of transition from analog to digital

and how they have planned their carrier arrangements in the available band. This will help to identify the exact frequencies which can be allotted to the private terrestrial broadcasters.

So far as mobile TV is concerned, the higher slots in the UHF band are better suited for mobile TV reception. This is also because at frequencies close to 800 MHz, the antenna size needed for mobile TV (UHF reception) is close to that needed for cellular operations in the 900 MHz band. Operations in the lower bands and VHF require larger reception antennas.

6. 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 down-linking guidelines by Ministry of Information and broadcasting?

The Zee Network will like to reiterate its position that the list of licensed channels at 270, which number is likely to increase to some higher number of channels in future, has no bearing on the channels which are likely to find carriage on Mobile TV. The channels which go on Mobile TV will be the news, current affairs, business, weather channels and channels specially created for mobiles. Typically one broadcasters would have a need of no more than 16-20 channels which can be worthy of transmission to mobile devices. In addition there will be channels which will comprise of “on-demand content”.

As there are over 60 channels which are available for terrestrial transmissions in the VHF and the UHF bands, of which Doordarshan may use only 3-4 slots at the most in a given area, there is at present no shortage of spectrum in these bands. In view of this, we feel that it is important to finalize the spectrum needs for private terrestrial broadcasting. The Mobile TV extensions form a part of the terrestrial broadcasting and need to be assigned accordingly.

We suggest that around 20 UHF band slots be reserved for allocation to the broadcasters who wish to commence the terrestrial broadcast services i.e. DVB-T or DVB-H. However if this is going to be a road block due to various organizations now holding these slots refusing to

budget from their positions, perhaps a lower number of slots can be assigned. Hence on this account alone the allocations should not be delayed.

7. 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.

As mentioned by the Zee Network earlier, the licensing of Mobile TV and Terrestrial TV should go together. The Mobile TV using DVB-H is only an extension of the DVB-T technologies and it is unlikely that there will be any operators who take a DVB-T license and choose not to also piggyback the DVB-H transmissions on the same transmission platform.

In order to provide clarity, we would like to state that DVB-H can be operated in three network configurations:

- (i) **DVB-H Shared Network (Sharing the MPEG-2 Multiplex):** In a DVB-H Shared Network the Mobile TV Channels after IPE (IP Encapsulation) share the same DVB-T Multiplex along with other Terrestrial TV programs. The Terrestrial TV programs would be coded in MPEG-2 while the Mobile TV programs are with MPEG4 coding and IPE. The Multiplex combines these into a single Transmit Stream (TS) which is then transmitted after Modulation.

DVB-H On Shared Multiplex

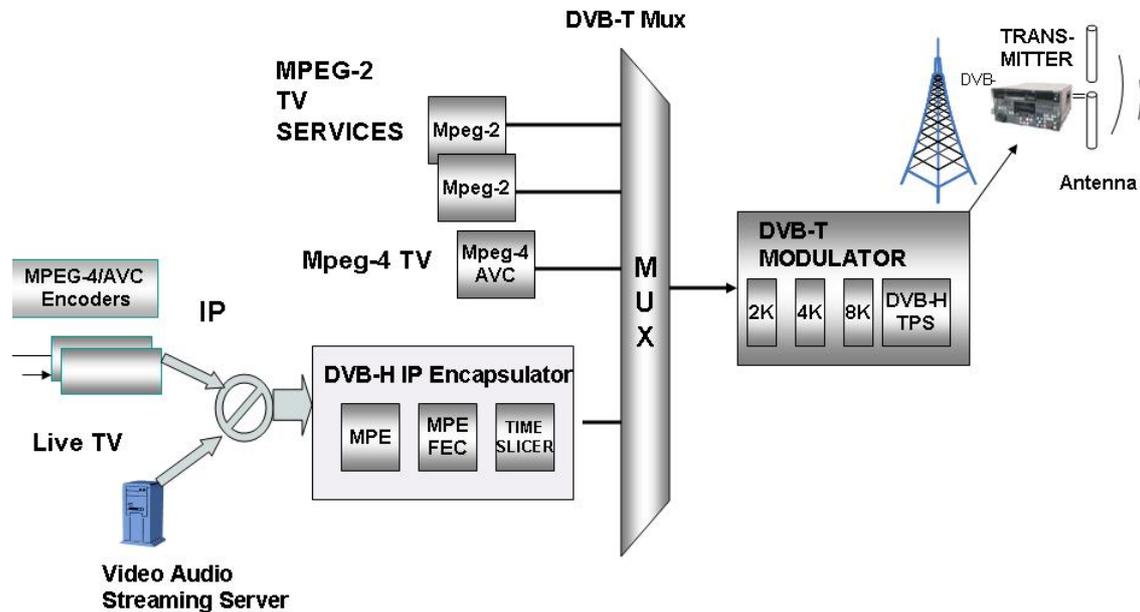


Figure DVB-H on a Shared Multiplex

- (ii) **DVB-H Hierarchical Network (Sharing DVB-T network by hierarchy):** In a hierarchical network, the Modulation is Hierarchical Modulation with the two streams, DVB-T and DVB-H which form a part of the same Modulator output. The DVB-T is modulated as a Low Priority Stream and DVB-H as a High priority stream. In case of High Priority, the modulation is more robust (e.g. QPSK) as against Low priority which may be 16QAM. The lower “density” modulation scheme provides higher protection against error as against higher density schemes.
- (iii) **DVB-H Dedicated Network:** The DVB-T carrier is used exclusively for DVB-H transmission. In a dedicated network, the COFDM carrier will be used exclusively by the Mobile TV and Audio channels as an IP Datacast with the MPEG-2 Envelope. Dedicated networks are generally used by new operators who do not have existing Digital Terrestrial Broadcasting or in countries such as USA where the DVB-T transmitters do not exist.

Hence the question raised by the TRAI of giving priority to Terrestrial TV transmissions “ because Mobile TV is in a trial stage” does not present a valid argument.

As is evident the DVB-H and DVB-T are designed to operate together and licensing of one enables the transmission on the other system as well.

In regard to the standalone licensing of DVB-H, we would like to state that the TRAI must adopt a policy which avoids potential hoarding of spectrum. We would like to stress that the Cellular mobile operators are already being granted spectrum in the 800 MHz and the 1800 MHz bands by virtue of their network expansions. Many of them have also taken spectrum in the WIMAX bands. (This data is available in the Consultation paper issued by the TRAI on spectrum).

We would like to suggest that the TRAI place an embargo on the multiple holdings of spectrum by licensed cellular operators as spectrum is a scarce commodity and multiple holdings create artificial shortage. Hence the Zee Network suggests that all terrestrial spectrum should be allocated only to broadcasters only.

It will not be out of place to mention that in case of many of the mergers in USA, the FCC has divested the carriers so merging of the spectrum held by them so that no large monopoly is created on spectrum.

8. 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.

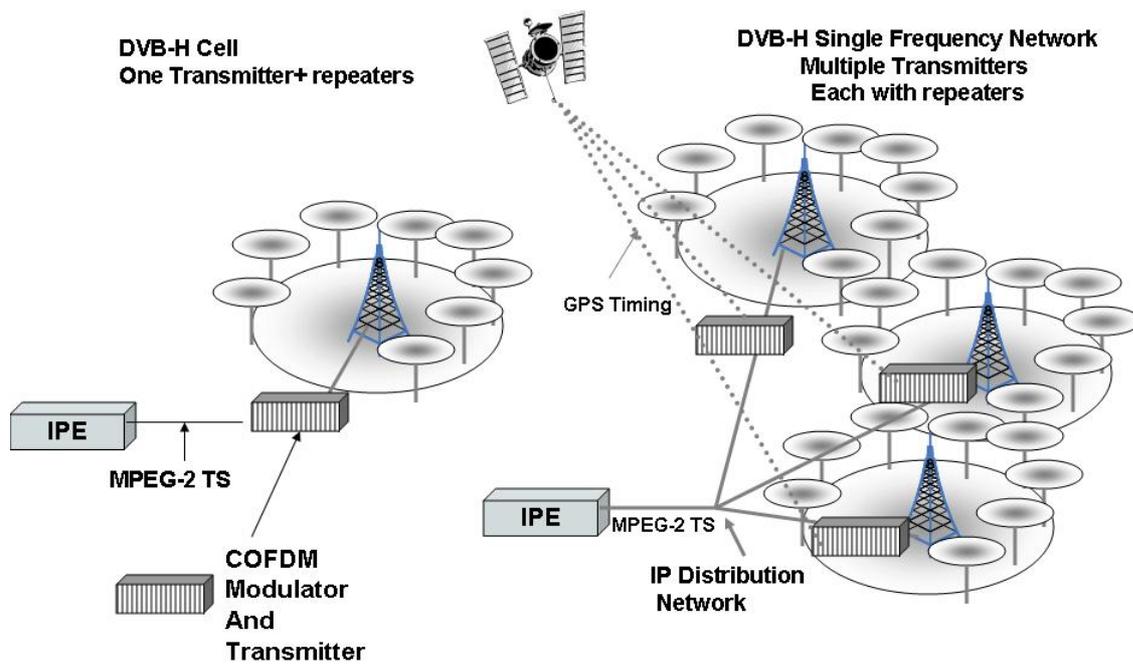
The question which has been asked by the TRAI is essentially of the design of a transmitter network in a given area.

If for example, an operator is granted license for terrestrial transmission in the NCR comprising of Delhi, Noida, Gurgaon, Faridabad and Ghaziabad, the operation as SFNs is possible. This will require 17-20 transmitters. Depending on the area required to be covered,

the DVB-H systems may be engineered with Single Frequency Networks or may need Multi-frequency networks.

A small town can be covered by a single DVB-H “Cell” comprising of one transmitter and 10-20 repeaters. The repeaters are required to cover the areas in shadows due to the geographical terrain. A repeater is essentially a mini-transmitter with a high gain antenna for receiving the signals from the main transmitter. Due to the SFN requirements, the above topology cannot be extended beyond a certain range as the time delay in reception from the main transmitter will result in the re-transmitted signal being not in phase with the main transmitter.

DVB-H Single Frequency Networks



DVB-H Single frequency Networks

The number of repeaters in a DVB-H cell is determined by the power of the main transmitter as well as the height of the tower. A very high tower reduces the shadow areas and the number of repeaters required for a given geographical area.

When the area of coverage required is large (e.g. an entire country of several hundred kilometers), sourcing a signal from a single IPE is not practical due to time delays to deliver signals to all transmitters. In such a case, transmitters beyond a certain range use different frequencies. Based on the topography, 5-6 frequency slots may be needed to cover a country. In such cases it is a usual practice to distribute the signals to the transmitter using a satellite backhaul so that hundreds of transmitters can be covered including in remote areas. Thus, it makes a logical extension the DTH operators who have already obtained the licenses from the Ministry of Information & Broadcasting by complying with all the stipulated requirements of security clearances, monitoring facilities etc.

The TRAI has proposed in the consultation paper the licensing areas which are aligned to “circles” for cellular operators. We do not find any logic in this argument. Are we licensing the FM transmitters based on the Cellular Circles?

The Zee network would recommend a city wise licensing in which case the licensee will be entitled to get a single frequency and operate a SFN and a Nation wide licensing in which case the licensee will be entitled to at least 3 frequencies to operate an MFN.

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

The Zee Network would like to suggest allocation of spectrum to all interested broadcasters with a roll out obligation of a maximum of 1 year in the area in which it seeks licensing. At present we do not advocate grant of any spectrum to cellular mobile operators or those who have been granted WiMAX spectrum. The charging of spectrum should be on a small revenue share based on AGR for the terrestrial and mobile TV services and subject to a minimum specified fee per year.

Auctioning of spectrum is not recommended for the present as sufficient UHF slots are available and auctioning leads to hoarding of spectrum by those who may not ultimately provide services.

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

As Zee Network has pointed out the, the licensing of the terrestrial services should be open to all eligible broadcasters & licensed DTH operators. The applicant company should be an Indian company duly registered under the provisions of The Indian Companies Act, 1956 with Indian management & control. The CEO and the key Executives should be Indian citizens & persons resident in India. The conditions of eligibility are similar for both mobile TV and terrestrial TV services.

In addition to the FDI guidelines, as creation of content for mobile TV is a specialized business only those broadcasters who have experience in running channels belonging to all genres and languages over past 10 years should be considered as eligible licensees. Hence only serious contenders with requisite due experience both in content generation & content aggregation as evidenced by broadcasting channels in the Indian markets and also experience in running a Pay TV service through encryption and SMS/CRM centers should be considered.

Being an encrypted Pay TV service, the Mobile TV will also require distribution and marketing countrywide in print and electronic media. Distribution of content is a specialized business. Similarly marketing expanses can be quite significant as experience of operators such as Pay DTH have shown and it also requires a countrywide network of distributors/agents for local support and billing.

The following is the suggested as the basic minimum eligibility criteria:

Applicant Company to be an Indian Company registered under Indian Company's Act, 1956.

(i) The applicant company must have Indian Management Control with majority representatives on the board as well as the Chief Executive of the company being a resident Indian.

(ii) A minimum of 10 years experience in running channels of all genres including news, business, sports, general entertainment, lifestyle, music and kids channels. The channels should include regional language channels.

(iii) An experience of a minimum of three years of operating an encrypted Pay TV service in India with Subscriber management System(SMS), Customer care centre and a countrywide distribution system

(iv) Demonstrated capability and past experience in running of an EPG and Carousal based service providing magazines and games to users in a Pay TV environment.

(v) Demonstrated capability and past experience of marketing of pay TV services in India and a countrywide network of distributors/ dealers for customer support and billing/ collection.

(vi) Past experience and demonstrated capability of acquiring content, negotiating content rights and enter into long term agreements for content aggregation and distribution.

11. 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?

The Zee Network suggests a minimum net worth of Rs 1000 crores for a company being eligible to bid for a Terrestrial or a mobile TV license. This is owing to the fact that rolling out terrestrial services including Mobile TV requires large expenditure and capability to sustain operational losses for a couple of years as a minimum.

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

As a first step, the eligibility for terrestrial services should require the same terms and conditions as are applicable for a DTH licensee as the terrestrial transmission services which

can be received direct to the home or on personal mobile devices have the same sensitivity as the DTH services.

The provisions relating to the Content delivery and media have been appropriately brought under the FDI guidelines with the understanding that the operation of media, news, content generation and delivery services is a sensitive issue and foreign investors wishing to operate in this field need to adhere to guidelines which have been laid down for this purpose.

The FDI regulations have been prescribed by the Parliament and TRAI has no mandate to dilute any provisions which have been enacted by the Parliament by permitting services which deliver content including news and current affairs, in a manner which is identical to Cable TV.

At present the Govt of India FDI Policy provides for :

- 49% FDI Cap in Cable TV services
- 49% Foreign Equity Cap(FDI/NRI/OCB etc) of which no more than 20% can be FDI by any foreign investor in DTH Services.
- 100% FDI in Internet Service Providers
- 74% FDI in Telecom Companies

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

The tenure of license for Terrestrial and mobile TV services should be 10 years, extendable by an additional 10 years.

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

The license fees should be 4% of the Adjusted Gross Revenue (AGR) from mobile TV services or terrestrial transmission services.

There should be no entertainment tax or service tax on such services.

15. 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?

Zee Network view is that the revenue sharing system as is in Vogue for DTH is the only system which will work. Hence we suggest the licensing of Terrestrial TV services (including Mobile TV) based on the revenue share model., as mentioned hereinabove.

16. 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.

A licensee, who is granted a terrestrial license and is permitted to use spectrum on a revenue share basis needs to be able to put resources and commence network operations in a timely manner. This is because by virtue of having taken the license it would be using scarce resources using which others might have commenced similar services.

Hence we propose that a bank guarantee of Rs 10 crores valid for a year should be prescribed.

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

The Zee Network recommends grant of licenses either on a +city basis or at the national level.

EN



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COMMISSION STAFF WORKING DOCUMENT
Accompanying document to the

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

Strengthening the Internal Market for Mobile TV

Summary of the Impact Assessment

{COM(2007) 409 final} {SEC(2007) 980}

EXECUTIVE SUMMARY

1. INTRODUCTION

This Impact Assessment describes the options considered by the Commission in preparation of its Communication on "***Strengthening the Internal Market for Mobile TV***". The main objective of the Communication is to support the introduction of the nascent market of mobile TV (M-TV) across the EU. The timing of the Communication was chosen in order to ensure that all conditions are in place for a successful take-up of the services in the EU.

Stakeholders have been extensively consulted. In particular, the Commission services facilitated the setting up of an industry umbrella group, the **European Mobile Broadcasting Council (EMBC)** which gathered the main industry players concerned, including broadcasters, manufacturers, content providers and telecom operators. The EMBC issued Recommendations on technology, spectrum and regulatory issues in March 2007.

2. MOBILE TV AS AN EU ISSUE

Mobile TV is a new convergent technology which brings together, in particular, two major EU industry sectors: **mobile communications and audiovisual**. It has a great potential for growth and jobs in the EU - not only for the two industry sectors primarily involved, but also for several related areas, such as the content and advertising industries.

M-TV is also expected to bring significant benefits to EU consumers, as it enables them to access TV programs in any place and at any time as well as to have access to rich, diverse and personalised audiovisual content. This will result in new ways of using and interacting with audiovisual content which could make Mobile TV a new lifestyle rather than just a new technology platform.

However, the introduction and take-up of M-TV services in the EU so far have been slow, and Europe risks losing its competitive edge in mobile services and missing a major opportunity for growth and innovation unless a sufficient degree of coordination is achieved across Europe. The key to a wide take-up of these innovative services in the EU lies in setting the right conditions that will enable players to reap the benefits of the EU Internal Market and, in particular the **economies of scale** needed.

This is why the Commission has identified the need for an **EU strategy in the field of M-TV** which addresses the main regulatory issues and will contribute to shaping the action of industry, national authorities and all stakeholders. The objectives of the Communication and associated Impact assessment have to be seen in the context of the **i2010 Commission initiative**¹ and of the **EU regulatory framework for**

3. MOBILE TV TECHNOLOGIES

In plain terms, "**mobile television**" refers to the **transmission of audiovisual content to a mobile device**. Such a transmission can take different forms, from live TV to time-shifted or on-demand. Moreover, M-TV services can be transmitted over various networks including cellular/mobile communications, terrestrial broadcast, satellite, and Internet-based.

There is a **key distinction between unicast ("one to one") and broadcast ("one to many") mobile TV services**. Video on demand or time-shifted on demand transmissions are examples of unicasting, while traditional TV programmes are normally broadcast. Unicasting is today very common and most operators use the existing mobile communications cellular networks (2.5 or 3G/UMTS) to deliver TV content to mobile devices.

Broadcast mobile TV is still in its early days. The main technology used for pilots and commercial launches of digital broadcast terrestrial mobile television in Europe is: **DVB-H** (Digital Video Broadcast transmission to Handheld terminals) based on DVB-T standards. Other technologies include **T-DMB** (Terrestrial Digital Multimedia Broadcasting, based on T-DAB standards), and **MediaFLO** (Media Forward Link Only). There are also **Hybrid satellite/terrestrial systems**, such as **DVB-SH** operating in satellite bands.

DVB-H is currently the standard most widely used in the EU with trials and/or commercial offerings in 15 Member states. **DVB-H is the only standard ensuring backwards compatibility with DVB-T, the standard used for digital terrestrial television in the EU.**

4. SCOPE OF APPLICATION

The Communication and the associated IA addresses issues belonging to the regulatory framework for e-Communications, such as technology and standards, authorisation regimes and spectrum policy, and focuses on **broadcast terrestrial mobile TV** only.

Issues related to content are not covered because they are already addressed by a series of specific policy and legislative initiatives in the context of EU audiovisual policy. Notably, the proposal for a new Audiovisual Media Service

Directive will also apply to audiovisual content delivered over mobile platforms.

Audiovisual services provided over mobile communication networks, such as 3G/UMTS mobile communications, **are also outside the scope of application** of the Communication and associated I.A. because the use of these networks does not raise new policy issues in terms of technology, spectrum and authorisation regimes.

5. EU MARKET STATE OF PLAY

Today, the broadcast M-TV market is still in a very early stage of development with four Member States having already started commercial operations: Italy, Germany, Finland and the UK. However, we experience some momentum in the introduction of services. 2006 was a key year in terms of pilots and announcements. 2007 is expected to become the year of commercial launches, with nationwide launches planned in Germany, France and Spain. **2008 is for industry a target date** for M-TV services due to important sports events such as the European Football Championship and the Olympic Games that will provide an important test for these new services.

Table 1 - M-TV state of play in EU-27

Technology	Member states in which technology is in use	
	Trials	Commercial launch
DVB-H	AT, BE, CZ, DE, ES, FR, HU, IE, LT, LU, NL, PT, SE, SI, UK	IT, FI
DMB/DAB-IP	FR, IE, NL, UK	DE, UK
MediaFLO	FR, UK	

5.1. Problems identified

The Commission services have **identified three main areas** which are important for the successful introduction of M-TV to the EU: 1) technology and standards, 2) the regulatory environment, in particular authorisation regimes, and 3) spectrum availability and harmonisation. The **Internal Market dimension** is relevant in all domains.

5.1.1. Technology

The EU landscape today is characterised by the presence of several M-TV transmission standards. **The problem we face is potential market fragmentation arising from the multitude of technical options for mobile TV.** Similar issues have been raised in the past in relation to interoperability of mobile communications, interactive television and High Definition TV (HDTV) interoperability, and were addressed in different ways, ranging from harmonisation of standards (GSM, UMTS) to promotion of industry agreements (the "HD ready" label).

A fragmented European market is likely to result in loss of economies of scale, slower service take-up and more expensive equipment. In the case of new technologies such as M-TV, reaching a critical mass in a reasonable time is crucial for take-up and deployment.

Technology - The key question addressed by the IA is: what needs to be done to ensure that the economies of scale (Internal market) are reached as soon as possible so that EU industry and consumers can benefit from the introduction of M-TV services?

5.1.2. Authorisation regimes

National approaches to the authorisation of M-TV services vary considerably. This was confirmed in a fact finding exercise launched by Commission services in 2006.

In many Member States, M-TV is subject to the general regime applying to broadcasting. In some others, there are no specific rules or the regulatory framework for these new services is still being debated. This situation generates a high degree of **regulatory uncertainty** and in some cases a **legal vacuum** which affects negatively M-TV operators.

Licensing regimes must make sense in terms of the Internal market, and the aim should be to strive for a **level playing field** allowing the various actors to compete on similar conditions. Some degree of consistency in regulatory approaches across the EU is needed in order to clarify applicable regulation and create a regulatory environment conducive to investment and innovation.

Authorisation regimes - The key question addressed in the IA is: what needs to be done in order to ensure that M-TV services can benefit from a supportive regulatory environment across the EU?

5.1.3. Spectrum

A key factor influencing the successful deployment of mobile TV is **timely access to radio spectrum**. A key challenge is to ensure that the required types of radio spectrum resources can be made available without delay in all regions of Europe. In order to achieve this goal, there is a need to: 1) identify critical spectrum resources without delay; 2) assess any need for harmonisation, or coordination, on European level, amongst others to enable economies of scale; 3) anticipate the future demand for these identified spectrum resources, in quantitative and qualitative terms, as well as to match these with the evolution of national and European spectrum availability.

At this stage, **two main spectrum bands have been identified as relevant for M-TV and as requiring consideration at EU level**: the so called L band and the UHF spectrum.

A critical factor for availability of UHF spectrum is **switch-off** of analogue terrestrial TV transmission in this part of the spectrum. The EU deadline of 2012 for the switch-off of analogue terrestrial TV broadcasting, which was endorsed by the Council and the European Parliament, is likely to be met by the majority of Member States. A **Commission Communication on the Digital Dividend**, planned for Q4 2007, will set out the Commission strategy for the use of the spectrum resulting from the switch-off, and will address in particular the UHF Band.

UHF spectrum (470-862 MHz) is the spectrum preferred by most operators, due to its technical characteristics. However, use of this spectrum is constrained by the various national policies regarding the digital dividend and by a lack of EU coordination. The Commission's services have asked the Member states to identify a **sub-band for mobile TV** within the digital dividend.

The **L-band** (1452-1492 MHz) can constitute a fall-back solution in several markets where there is no other spectrum band available. The use of this band is currently

Spectrum – The key question addressed by the IA is: what needs to be done in order to ensure that adequate spectrum for M-TV is made available across the EU?

6. POLICY OPTIONS

With reference to each of the three main policy areas identified (technology

authorisation regimes and spectrum) the I.A. identifies and assesses three main policy options, as summarised in the table below.

Table 2 : Policy options

	<i>Issue/Policy area</i>	Technology	Authorisation regimes	Spectrum
<i>Policy Options</i>	Policy Option 1	Making one standard mandatory across EU	One EU-wide authorisation	EU Harmonised allocation
	Policy Option 2	Encouraging Industry agreement on a common standard, with a common standard being made mandatory in the absence of agreement	Non binding framework	"Soft law" measures
	Policy Option 3	Maintain current situation	Do nothing (i.e. take no specific action)	Do nothing (i.e. take no specific action)

7. CONCLUSIONS

The main conclusions deriving from a detailed evaluation of each option are summarised below.

Technology

In order to respond to the technology challenge, a **common standard across the EU** would have advantages in terms of economies of scale, rapid take-up of M-TV, cheaper terminals and EU competitiveness. In reaching this objective, an industry agreement on a common standard, backed up by the possibility of legislative action to make a standard mandatory (*Option 2*) would appear to be more proportionate to taking now an administrative decision on a specific standard (*Option 1*). A process involving industry would better adapt to technology change and is likely to reduce "migration costs" – i.e. the cost for industry players which have already invested in

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Radio Spectrum Committee (2006): Commission mandate on the L band (http://ec.europa.eu/information_society/policy/radio_spectrum/docs/current/mandates/EC%20Mandate%20to%20CEPT%20on%20L_Band%20Oct%202006.pdf) .

This could also be accompanied by support and promotion actions by the Commission and by elements of co-regulation if needed, such as the publication of a standard in the List of Standards. The Commission would regularly monitor progress made by industry

in this respect and assess whether the progress towards a common standard is satisfactory.

Authorisation regimes

Concerning **authorisation regimes**, a pan-European authorisation for M-TV (*Option 1*), would be theoretically the best option to ensure a level playing field across the EU. However, at present there is no legal mechanism to put in place such a pan-European authorisation system. The Commission proposals published for consultation in the context of the current Review of the e-Communications regulatory framework included, *inter alia*, provisions for authorising services at EU level. However, if approved, such proposals would enter into force too late to be applicable to M-TV. At this point in time, it would appear that *Option 2* whereby the Commission would set in place, through "soft law", non-binding measures, a legal framework for the authorisation of M-TV services, is best suited to attaining the objective of a level playing field and legal certainty for M-TV services in Europe.

Spectrum

An EU harmonised approach to the **identification and allocation of spectrum bands for M-TV** (*Option 1*) would have the advantage of providing EU-wide certainty as to spectrum availability for these services and hence offering the potential of tapping into a large market from the outset. This in turn would greatly strengthen the business case for M-TV as spectrum is a critical factor.

Where harmonisation is possible, action at EU level would appear to be the best solution, as it has been considered in the case of the L-Band. Where harmonisation may not be possible, at least during the initial phase, as in the case of the UHF band, then "soft law" measures (*Option 2*), would be used in order to encourage the Member states to take action in a coordinated manner, if and when possibilities in the UHF band open up. A *combination of Option 1 and 2*, depending on the spectrum bands, would therefore appear to best serve the objective of ensuring that suitable spectrum is made available across Europe for M-TV services.

In each case, the aim has been to find the least burdensome approach to achieving the desired objectives.