



Representations on Consultation Paper  
Relating to  
Mobile Television Service  
(Consultation Paper No. 9/2007)

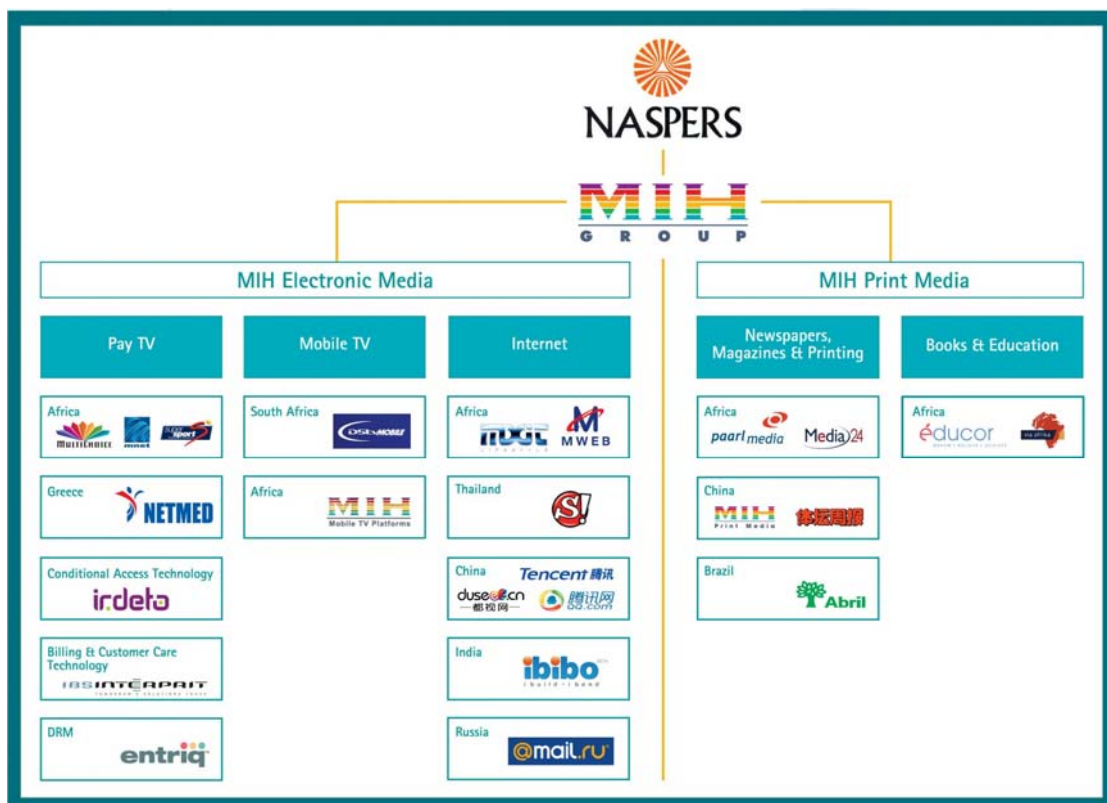


October 01, 2007

## Introduction

1. MIH wish to thank the Telecom Regulatory Authority of India (“TRAI”) for this opportunity to make written representations on the Consultation paper on Issues relating to Mobile Television Service ("the consultation paper").
2. We commend TRAI for publishing these well-researched and carefully considered questions as they will contribute to the effective regulation of the electronic communications sector.

Myriad International Holdings BV (“MIH”) is a multinational subsidiary of Naspers Limited. Naspers is dual listed on the Johannesburg and London Stock Exchanges, and currently has a market capitalization of approximately US\$9.9 billion. Naspers is South Africa’s largest media group and, through MIH, has significant operations in Africa, China, Russia, Thailand, the USA, the Netherlands, Greece, Cyprus and Brazil. These operations are involved principally in Pay TV; Internet and Print Media businesses, with the major business units being depicted in the graphic below.



## Mobile TV Activities

Although Mobile TV and the application of DVB-H in a commercial context are at an early stage of development, MIH identified the Mobile TV trend very early on and has already been actively involved in building Mobile TV businesses:

- In early 2005 a subsidiary of MIH (called MultiChoice, the largest Pay TV operator in Africa) launched a DVB-H service to users in South Africa. This service has developed significantly, and broadcast quality video is now delivered to users across all of the major economic areas of South Africa.
- MIH is currently expanding its Mobile TV operations into Namibia, Kenya, Nigeria, Cameroon and Zambia and intends to be the leading DVB-H provider in the African and Middle Eastern markets.
- On 14 June 2007, MIH announced that it had purchased a 37.5% stake in German Mobile TV Operator MFD. MFD currently operates a DMB service in 16 metropolitan areas across Germany, and has also applied for the license to provide DVB-H services in Germany.
- Irdeto, a conditional access technology provider (and a wholly owned subsidiary of MIH) has worldwide presence and has gained significant experience in various types of Mobile TV encryption solutions. Irdeto supplied the world's first mobile broadcast encryption solution in 2005 to TU Media in South Korea and has shipped over 3 million security devices to date

**Response to Question 1- Whether the technology for mobile television service should be regulated or whether it should be left to the service provider?**

3. A critical step in the rapid roll-out of terrestrial Mobile TV is the strategic selection by government of a preferred standard for Mobile TV and ensuring the allocation of the necessary radio frequency spectrum to promote that technology.
4. In the case of Italy and Finland, DVB-H was the preferred standard and in the case of South Korea the preferred standard was T-DMB. The selection of a preferred standard allows for economies of scale to be obtained for handset manufacturers and gives consumers a technology certainty when making purchase decisions.
5. Germany in contrast took a completely technological neutral approach by not selecting a preferred technology and introducing a licensing process for both T-DMB and DVB-H. This policy approach has meant that the T-DMB service which was licensed first has had a less than stellar consumer take-up as consumers are hesitant to invest in a technology when it might be overtaken by a competing technology, namely DVB-H once licensed, which can offer more channels or video quality.
6. It is possible for handsets to receive multiple technologies and chipsets can be integrated to receive both T-DMB and DVB-H but this increases the cost of the handset and although technically possible may not lead to the economies of scale efficiencies that are a result of the choice of one technology.
7. In the context of moving towards technology neutrality in the regulation of broadcast and telecommunication spectrum and services it is interesting to note that by and large the most successful communications systems had indeed been mandated. Recent developments in Europe may provide some guidance on this topic when considering it in the context on India. Based upon concern on the slow take-up of Mobile TV the European Commission in July 2007 issued a strongly worded statement on the need to proceed with the roll-out of services and to capitalise on advances made.
8. The Commission stops short of mandating DVB-H as the only standard for Mobile TV but refers to the success of the GSM standard – which had been strongly supported by the Commission and Member States - and the success of which proved the benefit of a common standard.
9. The Commission in the press release of 18 July 2007<sup>1</sup> confirms that it will promote consensus around a common standard, to reduce market fragmentation caused by multiple technical

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<sup>1</sup> *Commission opens Europe's Single Market for Mobile TV services*, Press release, IP/07/1118

options for mobile TV transmission and that it will prepare the inclusion of DVB-H in the EU's official list of standards (published in the EU's Official Journal). This would not yet mandate DVB-H but will encourage the 27 Member States to implement the technology. The Commission further undertakes to look closely at market developments over the next months and come with proposals in 2008 including, if necessary and appropriate, mandating the use of DVB-H.

10. The approach to arrive at a widely supported consensus position on a common standard is considered most productive and also recommended for consideration in India. However, it must be acknowledged that the support given to DVB-H as preferred Mobile TV technology by the European Commission puts this technology standard in a different league to all competing technologies. DVB-H no longer provides a mere alternative Mobile TV technology. It now through the backing of the European Commission represents a de-facto standard that will be implemented across Europe and through economies of scale and benefits of harmonisation result in wide-scale implementation world-wide

**Response to Question 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.**

11. An analysis of trials and commercial launches worldwide clearly demonstrates that DVB-H is rapidly becoming the leading global technology standard for the transmission of digital TV to handheld receivers such as mobile telephones and PDAs. As a non-proprietary open standard, DVB-H has broad support across the industry and is well-positioned to become a global standard similar to GSM.
12. DVB-H provides broadcasters, handset manufacturers and silicon providers with tremendous growth opportunities prompting a recent report by Frost & Sullivan (DVB-H Technology – Market and Potential) to predict that this market is likely to reach US\$2.04 billion in 2010. The support for DVB-H in Europe (commercial launches already taking place in Italy and Finland) and Africa (commercial launch already in Nigeria, Namibia and Kenya to follow in the next few months) means that India would be well-positioned to derive the benefits from economies of scale in hand sets.
13. Although an approach towards reaching a consensus position on a national standard is strongly recommended, it must be acknowledged that the support given to DVB-H as preferred Mobile TV technology in Europe puts this technology standard in a different league to all competing technologies. All competing technologies provide interesting features and functions but none have the benefit of on top of delivering reliable and robust technology solution for Mobile TV also delivering a high level of certainty of wide-scale implementation and commercialisation.
14. DVB-H is recommended for India as
  - a. DVB-H represents the de-facto standard for Mobile TV that will be implemented across Europe and through economies of scale and benefits of harmonisation result in wide-scale implementation world-wide.
  - b. DVB-H is a widely implemented technology with a growing pool of information expertise and experience available world-wide
  - c. The technology has proven itself, is stable and mature
  - d. DVB-H allows for pay per view, pay as you go and other billing methods
  - e. Wide scale consumer research across multiple markets shows that DVB-H features including channel switching time are accepted and within consumer's expectations
  - f. DVB-H is widely supported and compatible infrastructure hardware (encoders, head-ends, transmitter etc.) and support is available from multiple commercially competing vendors

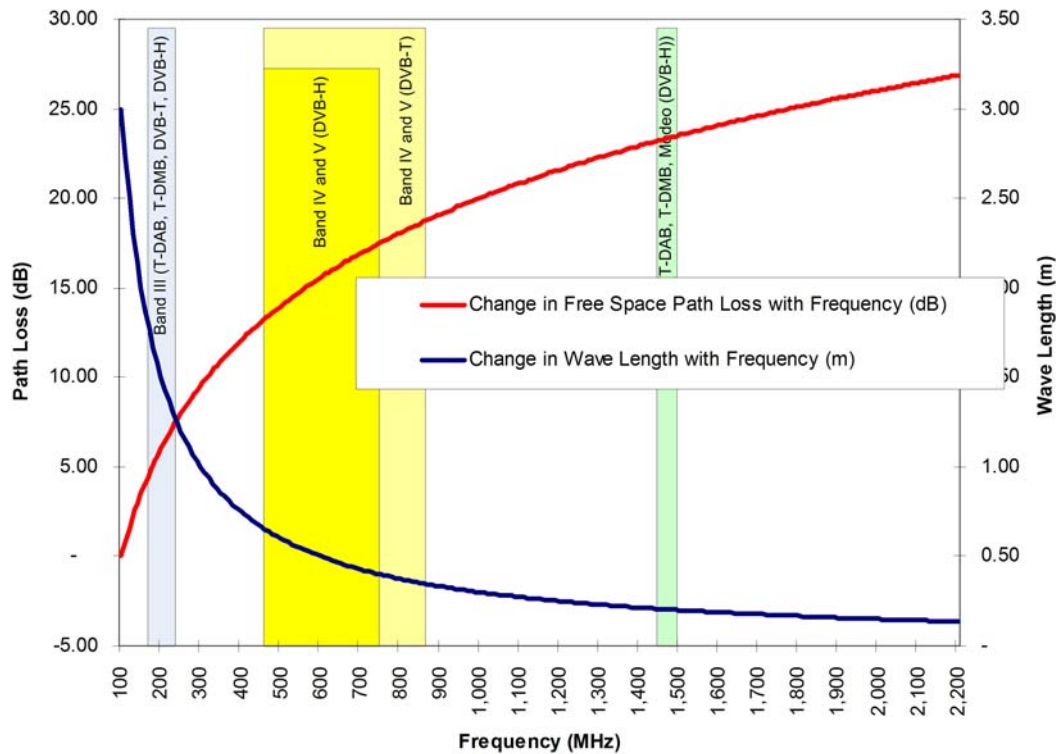
- g. The transmitter power required for DVB-H networks is on par with that required by competing broadcasting technology networks
- h. Multiple DVB-H receiver chipsets, integrations and handsets are available from multiple commercially competing vendors. Consequently the cost of handsets is dropping rapidly
- i. In future, the Indian nation and the public will benefit from all the improvements collectively designed into this world standard

**Response to Question 3 - What will be the frequency requirement for different broadcast technological standards for terrestrial and satellite mobile television transmission in India?**

- 15. The most appropriate spectrum for Mobile TV implementation is the UHF spectrum Band IV2. It provides for a good match between the requirement of antenna integration into the handset as well as acceptable penetration into buildings for in-door reception.
- 16. The size of an efficient antenna increases the lower the frequency. As the physical space required to accommodate an efficient antenna is often not available in the handset the integrated antenna is a compromise of antenna gain and space available. It follows that integrated antennas at lower frequencies (that would require a larger antenna) would have a lower gain than integrated antennas for higher frequencies (that require a smaller antenna).

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<sup>2</sup> DVB-H receivers are required to operate across 470-750 MHz.



**Figure 1: The characteristics of frequency and wavelength**

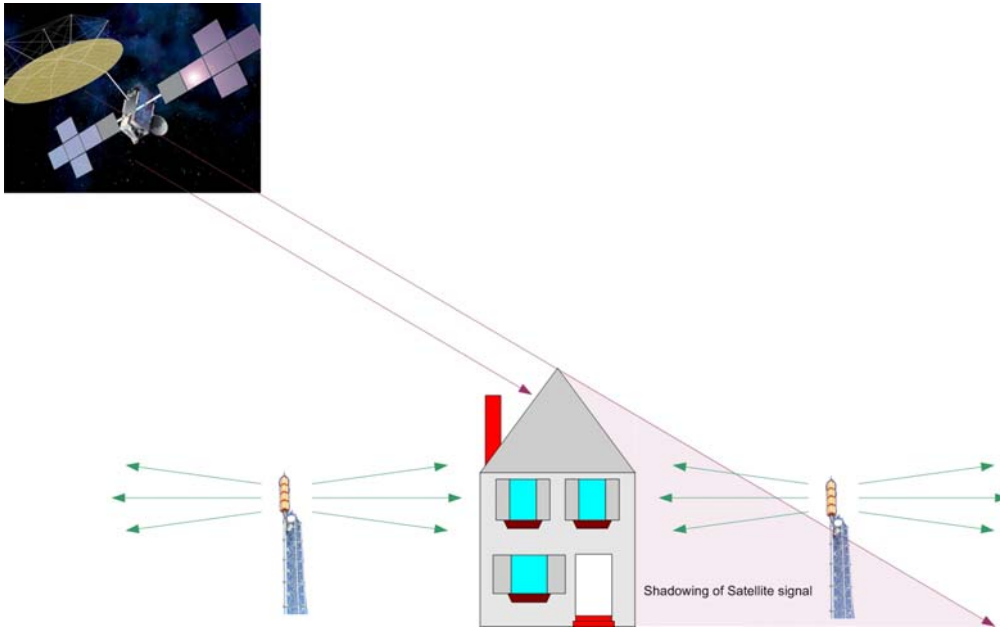
17. Whilst at higher frequencies (e.g. the L-Band and S-Band) the antenna size becomes smaller and more efficient antennas can be integrated into mobile handsets, this gain in antenna performance is offset against the decrease in propagation performance at these frequencies. Higher frequencies are affected more by vegetation, structures and suffer higher path- and building penetration losses.
18. At lower frequencies (e.g. VHF, Band III) the size of an integration of the antenna that is required to be physically larger due to the lower frequency into a handset is problematic. Consequently integrated antennas at VHF Band III are relatively inefficient thus resulting in requirements for higher transmitter powers than is the case in the UHF Band IV and Band V.
19. All satellite based Mobile TV solutions would require complimentary ground components (CGC) or gap-fillers to provide coverage in areas where buildings and other geographic obstructions block the satellite signal and to provide in-building reception. It follows that in addition to funding the space segment a terrestrial network would also have to be established and maintained.
20. S-band capacity would be required in order to deliver the service. Based on TRAI's assessment of S-Band usage in India, vacating S-Band capacity in order to accommodate satellite based Mobile TV services may prove to be difficult.



21. Mobile TV via satellite solutions are currently being pursued mainly on a regional basis. Unless such a regional initiative provides for cost effective space segment the satellite based Mobile TV solution is not considered viable.
22. The implementation of digital terrestrial television in India is likely to require the simulcast of the existing analogue services during the migration period. The DVB-T technology already deployed can with MPEG 2 technology accommodate between 5-7 Standard definition (SD) services and with H.264 technology 10-14 SD services. It is foreseen that one DVB-T and one DVB-H transmission would have to accommodate to allow for the migration towards DVB-T of the analogue services and the launch on DVB-H Mobile TV services. A minimum of two additional frequencies would thus have to be found to facilitate the introduction of Mobile TV and the simultaneous transition to DVB-T.
23. A detailed spectrum planning exercise that would review the frequency assignments per UHF broadcast site and assess the availability of the required 2 additional UHF frequency was not possible within the limited time allowed for responses in the current consultation process. From a quick assessment of the relatively low number of analogue broadcast channels on air in India the accommodation of one frequency for DVB-H (Mobile TV) and one for DVB-T (Migration of services to digital) seems possible.

**Response to Question 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?**

24. The Satellite based systems are hamstrung in their ability to provide mobile coverage through building penetration loss and shadowing. In order to overcome these limitations terrestrial repeater networks are being planned and rolled-out next to the satellite service.
25. Although the satellite based solutions are seen as a means of providing large area coverage the Quality of Service would depend greatly on the receive point and whether the satellite signal is in any way obstructed or affected by vegetation, buildings and structures. This location dependent quality of service is unlikely to be acceptable to subscribers.



**Figure 2: Shadowing of Satellite signals in urban areas and the need for terrestrial gap-fillers<sup>3</sup>**

26. New generation high-power S-band satellites required to deliver mobile services are not available as free S-Band space segment. Proponents of satellite based Mobile TV have commissioned the construction of special satellites for this purpose.
27. It is not expected that suitable high-power S-Band space segment would be available over India in the short to medium term and the roll-out of a terrestrial based DVB-H network is likely to deliver services far sooner than a satellite based alternative would.
28. Whilst an approach that allows significant freedom to the operator to decide on the commercial aspects of the most appropriate Mobile TV solution is preferred, it is not foreseen that a satellite solution would be an attractive or available option in the short-to medium term in India.

**Response to Question 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?**

29. Mobile TV via DVB-H can be implemented across the UHF spectrum in the frequency range 470-750 MHz. A detailed spectrum planning exercise that reviews the frequency assignments per UHF broadcast site and assess the availability of the additional required UHF frequency assignments / allotments is recommended.

<sup>3</sup> Satellite image available on the Internet at [www.skyrocket.de](http://www.skyrocket.de)

30. From a quick assessment of the relatively low number of analogue broadcast channels on air in India the accommodation of one frequency for DVB-H (Mobile TV) below 750 MHz and one additional frequency for DVB-T (Migration of services to digital) seems possible.

**Response to Question 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 downlinking guidelines by Ministry of Information and Broadcasting?]**

31. In the short term at least one 8 MHz UHF4 assignment / allotment for Mobile TV services is to be made available in all key cities. This would allow for the initial provision of 12-16 Mobile TV programme channels. The allocation of additional spectrum for Mobile TV should be considered based on the availability of spectrum and uptake of the service.

**Response to Question 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.**

32. A key factor for the success of broadcast mobile TV is radio frequency spectrum, and if India wishes broadcast mobile TV to be successful it needs to make sure that there are sufficient and suitable frequencies for broadcast Mobile TV services to take off.
33. It is recommended that similar to Finland and Italy, broadcast mobile TV be viewed as falling within the category of Digital Terrestrial Television (DTT). The main difference from DTT using a DVB-T standard which is primarily targeting fixed home use, is that mobile TV using DVB-H technology specifically targets mobile devices with a limited battery capacity.
34. It is proposed that government should take a pro-Mobile TV approach and identify, in the process of frequency planning for DTT in India, specific frequency allocations for broadcast mobile TV. Bearing in mind the constraints in the UHF band in a digital switchover process, provision should be made as rapidly as possible for the allocation of sufficient radio frequency spectrum for the introduction of at least one DVB-H mobile TV broadcasting service in India.

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<sup>4</sup> 470-750 MHz

**Response to Question 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?**

35. Single Frequency networks are preferred as these offer numerous advantages.

**Improved spectrum Efficiency** – SFN operation allows for the re-use of a single frequency over a significant coverage area. It provides for the most efficient utilisation of the radio frequency spectrum and thus a good solution to introducing new digital services in a congested spectrum.

**Network gain** – Transmitters operating in an SFN provide a better coverage than what could be achieved if the same transmitters would be operating on the same power but on different frequencies. The signals from different transmitters in an SFN combine to provide superior network coverage

**Improved User experience** – Current generation handsets would not seamlessly switch between services on different frequencies. Essentially the Handsets would require a re-scan of the band to find the next frequency transmission. This would make for a tedious and unsatisfying user experience. In an SFN the handset seamlessly operates within the SFN regardless which transmitter provided the strongest signal at a particular point.

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

36. The last two years have seen a proliferation of Mobile Television broadcast trials globally. Spectrum availability and regulatory processes have however prevented the commercial launch of such services in all but a handful of countries. The longest running commercial Mobile Television broadcast service is TU Media's DMB service which commenced operations in South Korea in May 2005, followed by 3 Italia's DVB-H service in Italy which has been running since June 2006. Mobile Television broadcast as a commercial value proposition is therefore clearly in its infancy. As a result business models for Mobile Television broadcast services are still evolving and will continue to do so until the optimum situation is reached.

37. Mobile Television broadcast operators are however required to invest in expensive transmission networks and incur significant start up costs before commencing commercial operations. The lack of a mature and proven business model therefore imposes significant risk on the Mobile Television operator.

38. The assignment of frequency spectrum through an auction process is not recommended due to the following reasons:

- The successful establishment of a Mobile Television broadcast service requires specific expertise in broadcast technology; content and subscriber management in a mobile context. The assignment of frequency spectrum through an auction process would not necessarily procure that the successful bidder possessed such expertise.
- The assignment of frequency spectrum through an auction process serves to increase the already significant financial risk to the Mobile Television operator, before the establishment of a proven business model. This scenario can be compared to the auctions of 3G spectrum in Europe. Hindsight has proven that operators overpaid significantly for this spectrum. There are other similar examples of examples of unsuccessful spectrum auctions in the broadcasting arena in Asia and elsewhere in the world.

39. As an alternative to the assignment of frequencies by auction we propose that the assignment take place through the conduct of a “beauty contest” process. As payment for the utilization of the spectrum the successful application will pay a utilization fee, where the quantum of such fee is related to the profitability of the business.

**Response to Question 10 - What should be the eligibility conditions for grant of license for mobile television services?**

40. The following eligibility conditions are proposed for applicants:

- A) Proven experience of rolling out Mobile TV projects in at least two areas in the world or in India;
- B) Demonstrate experience in the operation of the end to end provision of Mobile TV services either in trial or commercial modes;
- C) Ability to plan and implement Mobile TV frequency networks in different geographic and topological areas;
- D) Proven track record of content aggregation, content repackaging & purposing and subscriber management on various platforms including Mobile TV;
- E) Capability to work with/ without mobile operators
- F) Demonstrate practical experience of integrating conditional access into handsets and other terminals;
- G) Have practical experience in delivering Mobile TV content to not only handsets but also to non connected devices;

- H) Have existing relationships with equipment providers of transmission, broadcast and terminal, handsets.

**Response to Question 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?**

41. Yes, net worth requirements must be laid down for participation in the licensing process in order to discourage bidders without the requisite financial strength from obstructing the spectrum and roll out of services. It goes without saying that where the bidder is a newly formed entity, the net worth requirements should be satisfied by the parent company(s) of such entity, rather than the entity itself.
42. The net worth should be Rs 1,000 crore (US\$ 250 million.)

**Response to Question 12- What should be the limit for FDI and portfolio investment for mobile television service providers?**

43. In the light of mobile TV services being converged services and that broadcast mobile TV will be competing with Mobile TV provide via 3G cellular technologies, it is recommended that the limit for FDI/foreign ownership be the same as for mobile telecommunications networks. Namely, 74% with FDI beyond 49% being considered by the Foreign Investment Promotion Board (FIPB) on a case by case basis.

**Response to Question 13 - What should be the tenure of license for the mobile television service providers?**

44. The validity period of such a license can be 20 years similar to the mobile telecommunications networks.

**Response to Question 14 - What should be the license fee to be imposed on the mobile television service providers?**

45. There should be the payment of an annual fee based on a revenue sharing arrangement of 1% - 1.5% of the annual gross revenue of the licensee.

**Response to Question 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?**

46. The levy/quantum of a fixed licence fee can impact on the viability of mobile TV business. A revenue share system where the quantum of the licence fee is related to the profitability of the business makes good business sense.

**Response to Question 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.**

47. We understand TRAI's requirement that a Bank Guarantee be provided by the licensee, to ensure compliance with the terms and conditions of the license. We believe that in the same way that bank guarantee requirements are objectively calculated and imposed on Mobile Telecommunications Network operators, so these requirements should be applied to Mobile Television broadcast operators, with necessary adjustments made to account for the lower population coverage; revenue and profitability of Mobile Television broadcast operators.

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

48. We believe that licenses for Mobile TV broadcast services can be effectively allocated on a regional basis