



**STAR India's Response to Consultation Paper No. 08/2016 On Issues related to Digital Terrestrial Broadcasting in India dated 24<sup>th</sup> June 2016**

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**Q.1 Do you perceive the need for introduction of Digital terrestrial transmission in presence of multiple broadcasting distribution platforms? Please provide your comments with justification.**

**Response:**

Yes, we fully believe that the introduction of DTT in a competitive multi-channel, multi-platform environment can contribute to the digital strategy of broadcasters and hence is the need of the hour. The transition from analogue to DTT is considered globally as natural evolution for the broadcasting industry. The rapidly increasing television households in India, clearly reflects that Television matters in India and is one of the nation's favorite pastime and is part of the fabric of our society. The country's television industry produces some of the best programming which is hugely valued by the Indian viewers. The Indian television industry today is highly competitive with over 800 licensed channels where the broadcasters are investing huge sums of money in content creation to cater to the diverse content needs of the Indian viewers. Their sole aim is to deliver high quality original content to everyone, wherever they and whoever they might be.

The distribution platforms for television broadcast in India today comprises of (i) terrestrial (ii) Cable (iii) DTH (iv) Headend-in-the sky and (v) IPTV. Though there are several players in the cable and satellite space, terrestrial broadcasting has been the exclusive domain of the public broadcaster, Prasar Bharti (PB) providing FTA service via analog mode. Though the PB has initiated the process of transition from analog to DTT, there is no clear mandate or identified road map for the same.

Countries around the world are in the process of converting traditional analogue terrestrial television broadcasting to digital television broadcasting. While developed countries like USA, UK, France, Germany have already completed the switchover to DTT, several other countries like Russia, Philippines, Singapore, China are in the process of transition with a clear road map. The transition is known as the digital 'switchover' (DSO) and has been motivated by a broad range of benefits. Arguably the most important of these is the freeing up of spectrum. This freed up spectrum, known as the "digital dividend", is a valuable public resource which can be used for a range of purposes. Options include allocating further spectrum to digital terrestrial television (DTT), which would allow for new channels or high definition versions of existing channels. DTT is already a significant part of the television landscape in many markets, and for some consumers it provides a vital free

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alternative to paid TV services delivered via satellite or cable. Some significant identified benefits of DTT is summarized below:

- DTT delivers an attractive, low cost multi-channel service to a wide audience
- Ability to provide for fixed, portable and mobile reception
- Ability to cater to television needs in remote TV dark areas
- Through use of interactive standards digital broadcasting enhances broadcasting functionality and enables interactive features for viewers
- DTT is format agnostic and allows introduction of HD and full- HD services; if there is adequate availability of bandwidth it will enable support of ultra-HD services, 4K, 3D and other enhanced formats.
- Conditional access facilitates new business models; e.g hybrid free-pay TV business models.
- The use of encryption more generally supports better content protection, which helps prevent piracy and protects investments in content creation
- DTT reduces barriers to entry for service providers (the delivery cost of provision of a TV service within a multiplex will be lower on a per unit basis than that of providing a single analogue TV channel). This will enable DTT the ability to provide more opportunities to deliver niche, regional and community content.

All the above benefits can contribute to a vibrant and competitive broadcasting landscape which improves plurality and choice. Hence, we fully support the introduction of DTT in India.

**Q.2 If yes, what should be the appropriate strategy for DTT implementation across the country? Please provide your comments with justification.**

**Response:**

DTT should be implemented in a phased manner as has been followed globally with a clear sunset date for analog switch off as has been done globally and in the case of cable digitization.

We believe that the following steps should definitely be part of any immediate strategy:

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- **Mandating Prasar Bharati to digitize its terrestrial operations:** In the cable and satellite paradigm all distribution platform owners have been mandated to digitize their operations in the interest of better addressability, content and improved quality of service (QoS). We see no reason as to why the consumers of Prasar Bharati's terrestrial platform should not receive the same quality of service as their cable and satellite peers and in no manner should the public broadcaster be shielded from its responsibility to advance to a better technology.
- **Prasar Bharati to share its existing infrastructure with new entrants:** Globally, the rising precedent is to move from the days of "each for own" to a "shared" economy. This phenomenon has primarily happened due to the realization amongst the policy makers that if every service provider is required to lay down its own infrastructure, it only leads to increased CAPEX duplication and acts as a barrier to entry. Hence, Prasar Bharati for decades has been given an opportunity to spread its infrastructure throughout the length and breadth of the country and in the event of opening of terrestrial broadcast to private sector, the former should be required to share its infrastructure on paid basis.
- **Ensuring a level playing field between Prasar Bharati and the private terrestrial licensees:** As stated in the preceding paragraph, Prasar Bharati has been given ample opportunity at subsidized costs under the goal of national integration to set up facilities throughout India. Hence, Prasar Bharati already has a great first mover advantage. Thus, a level playing field needs to be ensured between them and the private payers to attract private investment.
- **FDI:** 100 percent FDI should be allowed under the FIPB route. Given that sectors like Telecommunication, defense, Cable and Satellite broadcasting have all been allowed FDI, there is no reason why an exception should be made for DTT.
- **Spectrum:** Given that this would entail usage of public spectrum, separate guidelines would be necessary for spectrum, auction, farming, trading etc.
- **Fees:** During the initial stages it is urged that the license fee and the spectrum fees should be kept minimal for the services to gain a foothold.
- **Investments:** There should be horizontal restrictions in place that would prevent powerful incumbent Telcos from cornering broadcast spectrum as well thereby foreclosing the DTT market and hoarding both telecom and broadcast spectrum. There should be no vertical

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integration restrictions and content networks should be allowed to own and operate DTT Platforms and also vice versa.

- **Regulatory approach:** The government/TRAI should stay out of regulating economics or business models in this space and allow private entrepreneurship to flourish instead. DTT players should decide on whether they should be Pay/FTA. The regulations in this sphere if at all should focus on conduct and hygiene namely Network neutrality and QOS issues (based on international best practices). Contracts between Content and DTT platforms should be allowed to be based on Copyright laws and Competition laws shall have oversight on the state and functioning of the DTT market as it evolves.
- **Incentives:** In the initial stages the government should also be looking at subsidizing the set top boxes and other Consumer premises equipment besides looking at necessary tax and other incentives that would facilitate the transition through private participation. For these, studies may be undertaken of how governments in other jurisdictions have been driving an incentive based transition from analog terrestrial to digital terrestrial

In effect, DTT policies and regulations should be enabling enough for any player to come into the field and compete with traditional platforms.

### **Q.3 Should digital terrestrial television broadcasting be opened for participation by the private players? Please provide your comments with justification.**

#### **Response:**

We fully support opening up of DTT broadcasting space for participation by private players. This will be in keeping with the 'Digital India' initiative of the Government and will also bring in the much needed competition in the country's terrestrial broadcasting landscape which is currently under the exclusive domain of public broadcaster.

Moreover, allowing infusion of private capital will enable hastening the pace of transition to DTT and thus create incentives for innovation and enable a robust growth of terrestrial broadcasting.

### **Q.4 Which model or a combination thereof for Digital terrestrial transmission will be most suitable in Indian context? Please furnish your comments with justification.**

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### **Response:**

All the models suggested by the Authority has its own pros and cons as has been highlighted by the Authority. However, we would like to reserve our views on the recommended model at this stage of the consultation process and would request the Authority to provide some guidance on quantitative data in terms of size, investments, costs and benefits among others under each of the models to enable us to evaluate the options and recommend an appropriate model basis such information and data.

**Q.5 What should be the approach for implementing DTT network (MFN/SFN/Hybrid)? Please furnish your comments with justification.**

### **Response:**

We recommend Hybrid so that there is necessary flexibility among service providers to choose their best case.

**Q.6 What should be the criteria for arriving at optimum size of DTT multiplex at any location? Please furnish your comments with justification.**

**Q.7 How many digital multiplex per DTT operator should be planned for metro, major cities, urban and rural areas and why? Please furnish your comments with justification.**

**Q.8 What should be most appropriate frequency band as per National Frequency Allocation Plan 2011 for implementation of Digital terrestrial transmission including mobile TV? Give your comments with justification.**

**Q.9 Should spectrum be exclusively earmarked for roll out of DTT services? If so, what should be the quantum considering the broadcasting sector requirement in totality?**

### **Response:**

We submit that questions 6-9 would require consideration of a host of factors viz.

**(a) Spectrum Allocations For Television Broadcasting**

Many countries have television assignments in VHF Band III (174-230 MHz), and UHF Bands IV & V (470-862 MHz). Part of Band V (790-862 MHz) was allocated to the mobile service at WRC-07, whereas others use Band III for sound broadcasting only, and rely on the UHF bands for television broadcasting.

**(b) Technical Standards For DTT**

Globally, broadcasters in most markets have migrated to digital using one of the four technical standards: DVB-T (European), ATSC (American), ISDBT (Japanese) and Chinese (DTMB).

**(c) Capacity Improvement Techniques**

Improved video coding systems are now available that can reduce the bitrate required for delivery of television programmes. H.264/MPEG4 coding can reduce bitrate by 30-60% for an SD service compared to MPEG2, and further improvements are expected in the future. In contrast, MPEG2 coding of video signals offers little if any future reduction. Newer video coding schemes are not necessarily compatible with older decoders, so broadcasters are faced with the choice of taking advantage of the improvements available via adoption of newer coding techniques, or protecting reception by audiences who do not possess newer decoders.

Since 2006, the second-generation system DVB-T2 has been developed. This gives improved channel coding resulting in an increase in capacity of between 50% and 100%. The current implementation of a DVB-T2 multiplex in the UK, for instance, has allowed delivery of an additional 67% total capacity while maintaining the same coverage.

The capacity gained from these improvements could be used by broadcasters to deliver some or all of the following to their audiences:

- delivery of additional services;
- delivery of enhanced services (for example, HD or 3D programmes);
- greater robustness of the delivery platform to improve reception.

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Even newer video coding techniques (e.g. H.265/HEVC) are now on the horizon. Although these offer the potential of even greater efficiencies, they still suffer from the same problem of lack of compatibility with existing receivers and decoders and would mean a complete change of all the receivers yet again. Typically, unless consumers receive some concrete incentive to upgrade, market forecasts indicate that even after 10 years, there may only be penetration to around 80-90% of households.

### **(d) Spectrum Efficiency Techniques**

In addition to the improved channel coding available in DVB-T2, the system also allows for more extensive use of single-frequency networks (SFNs) by virtue of the increased FFT size and consequentially longer guard interval that can be employed. SFNs can, under certain circumstances, allow a layer to be constructed using fewer RF channels. This is not universally true however, and in some cases can result in the same spectrum efficiency as MFNs.

Further spectrum efficiency gains may be achievable by a change from high-power, high-tower infrastructure to medium-power, medium-tower or low-power, low-tower infrastructure. A change to an infrastructure with higher density of transmission sites would provide a more uniform distribution of field-strength. Also the smaller sites and lesser power would result in a shorter distance at which a frequency can be reused for different content. Over a wide area, therefore, the number of frequencies needed to provide a complete layer is reduced, relative to the high-power, high-tower approach. It should also be noted, however, that a complete change of network infrastructure is likely to incur substantial additional cost of investment for the network operator.

### **(e) Limitations On Efficiency:**

While careful design and deployment of SFNs can result in an overall lower number of RF channels required per layer, there are constraints on their use that limit the efficiencies that can be gained.

Firstly, political or commercial requirements for national or regionalized programming may not be accommodated within an SFN. This applies, for instance, across national borders, and across regional borders within a single country where broadcasting is regionalized (for example, in Germany where the Federal states mostly have different broadcasting organizations).



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Secondly, depending on the choice of guard interval, there is a practical maximum size over which an SFN can operate without self-interference starting to take effect.

DVB-T2 is designed with a larger range of guard intervals, including some of several hundred microseconds. For the case of a dense DTT transmitter network, this could effectively remove the upper limit on SFN size, as signals from transmitters “too far away” would be sufficiently attenuated by path loss to avoid causing interference.

The guard interval represents lost transmission time in the network. Therefore increasing the guard interval leads to a loss in network capacity.

There are additional limitations of spectrum efficiency that apply to both SFNs and MFNs. For example, the presence of sea paths between target areas can enhance propagation and hence increase the distance within which frequency re-use is not possible. In some parts of the world, extreme propagation effects frequently occur which increases frequency re-use distance.

In many cases, spectrum efficiency can be improved by detailed planning and moving away from relying on high-level planning algorithms. This, however, is a complex task requiring technical expertise and often sophisticated computer planning tools.

### **(f) Conclusion:**

As there is no one size fit all approach that can be taken on these issues, we submit that these questions needs to be resolved after detailed consultations between industry, DoT and WPC. We believe that a detailed study needs to be commissioned by the Government or TRAI whereby the requirement of each circle, state, region could be analysed objectively taking into account the above stated imperatives and other multiple factors like density of population, topography, available/unoccupied spectrum, extent of permissible dual use, appropriate technology and usage of white spots. Towards this end it would be imperative to engage experts in the fields of DTT from countries where DTT deployment has been successful. International bodies like ITU-R (ITU-Radio communication) and WARC (World Administrative Radio Conference) may also have to be looped in for the purpose.

**Q.10 What should be the roadmap for digitization of terrestrial TV network in the country? Please provide your comments with justification.**

**Response:**

The move to DTT is a complex and potentially a long drawn process, which directly involves many stakeholders. These include the government, policy makers, regulators, broadcasters and consumers. It also impinges on many other industry players such as content providers, service providers, network operators, receiver manufacturer and equipment vendors. These players can be segmented into three groups – key stakeholders, Suppliers and other interested parties. The incidence of costs and benefits is widespread across the players. For this reason it is important to ensure that right incentives are established early on in the transition process to achieve the desired outcome. This requires that the roadmap for digitization establishes conditions and objectives for key stakeholders and other payers through a detailed consultative process.

While firming up the roadmap for digitization of terrestrial network, we can seek inputs from other countries which have successfully completed the DSO. Plum Consultancy in its report on Benefits of Digital Broadcasting dated January 2014 identified the four phases of digital migration and assumed a phased switch-off, as opposed to a simultaneous switch off. The Report further identifies the key activities in each phase and the stakeholders involved which is attached as Annexure 1.

The Authority may set up a task force comprising of key stakeholders to recommend a detailed transition plan after considering the existing terrestrial landscape in India and the challenges of transition.

**Q.11 What should be the analog switch off date(s) for the terrestrial TV channels in context with the suggested roadmap for DTT implementation? Please provide your comments with justification.**

**Response:**

We recommend total transition to DTT by 2022 with an immediate mandate on Prasar Bharati to digitalise its networks starting from 2017.

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**Q.12 Stakeholders may also provide their comments on any other issue relevant to the present consultation paper?**

**Response:**

The entire consultation paper does not refer to “encryption”, “decryption”, “piracy” or “copyright protection”, “content protection” or “signal protection” and it does not set out any criteria to enter into this segment and there is no reference to enabling investments or the regulatory approach that should be adopted;

Absent these there will be very little incentives for private broadcasters to join hands with the government to ensure that the transition from analog terrestrial to DTT is indeed a reality.