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PREAMBLE TO A NEW BUSINESS/REVENUE MODEL FOR PB/DD

V-Satcast (V) is interested in offering an ultra-low cost Content Delivery Network to poor people in rural and remote India for delivering a variety of services. It is of the distinct view that while all the social services viz. e-governance, e-education and e-health, financial services are necessary and are essential deliverables from a Govt standpoint, it is the entertainment services viz. Bollywood movies, songs, video clips , news, weather information, etc which are the categories of information services which are likely to attract a paid viewership and hence viable.

To be able to offer this innovative delivery platform, V-Satcast is interested in using UHF Spectrum from one of the users for this purpose. The main advantage of the UHF spectrum is its ability to reach large distances in almost all weather conditions. Nevertheless the amount of spectrum is limited to merely ~ 230 Mhz. (470-698 Mhz). Due to its nature the UHF spectrum was used mainly for linear TV transmission which requires broadcasting (one to all the same content). The UHF spectrum can be very efficient for Data multicasting of high rich content such as movies, songs, e government forms, educational video presentations etc. As there is lack of Broadband infrastructure in Rural India due to low ARPU and low density of population in comparison to urban India, using the DTT platform to multicast high rich Data files can provide high quality entertainment as well as informative video for individual and community purposes in extremely low cost as well as in free to air models subsidized by advertisement like in traditional TV broadcasting. As the smart phone distribution over India as well as in Rural India increases sharply, within few years, there will be more smart phones and tablets over India and over Rural India than TV sets. As smart phones and tablets consume very little energy, it will be the perfect platform for people for entertainment, education and other informative video data. Unlike TV, the smart phones and tablets will enable people to watch on mobility mode which shall serve the people over Rural India during the time spent outside their homes as well as while commuting to other parts of India.

While leasing the spectrum could be done through various options under the current Regulatory environment , V-Satcast is of the opinion that the same could be best done by retaining the Role and Scope of Distribution of Broadcasting Content under the Public Broadcaster .

In fact V-Satcast believes that Migration to DTT provides an excellent opportunity for PB to modernise and innovate as well. Through the process of migration from Analog to Digital (DTT), PB can retain its core business of public broadcasting, meeting the social objectives of providing infotainment to the bottom of the pyramid and also innovate to provide an ultra- low cost content services network to the Rural and Remote areas . For this , we envisage that PB shall need to metamorphose into two arms viz. PB-Digital and PB-Internet Broadcast arms . Both

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these arms shall be carved out of PB-Analog or DD as it is known now. Of course while doing so, the existing Radio services out of AIR shall be left untouched.

In summary, we recommend that DD may be turned into **DD-Terrestrial Broadcasting (TB) and DD-Internet Broadcasting (IB).**

An essential point that needs to be mentioned here is that the UHF spectrum held by DD/PB should be allowed to be retained as the spectrum will not only be utilised for Terrestrial Broadcasting (albeit much less than before for pure Linear TV) but also for additional services viz. Internet Broadcasting or Data Multicasting besides other innovative and new services on the new Digital Terrestrial Platform . Also, what must be borne in mind is that for the New second entity of DD/PB i.e. DD-IB , the same is proposed to be carved out of a joint-venture in the PPP model between PB/DD and the V-Satcast led private consortium. In this venture, PB shall be providing the spectrum, the passive infrastructure and manpower , while the funding/financial resources including the active network equipment shall be entirely provided by the V-Satcast led consortium.

V-Satcast, Inc. wants TRAI to keep the above business model in the backdrop while reading and interpreting the response to the questions below:

V-Satcast, Inc. response to the TRAI Consultation Paper request for comments.

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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?

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

VSI: The existing digital television platforms each come with their own limitations. Over the past decades while PB and DD have been faced with studying the potential for DTT

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deployments in a capital constrained environment, tremendous progress has happened in the technology sector and with the broadcasting regulatory environment around the world. India has been assuming that its digital terrestrial television deployment would be based on the European DVB T2 and DVB T2 Lite standards. These standards have been dominant on most DTT deployments over the past decade. However, they have now been eclipsed by newer technical standards that have emerged out of the Future of Broadcast TV (FOBTv) international consortium. This international effort has resulted in the new Advanced Television Standards Committee 3.0 (ATSC 3.0) next generation standard that has already been adopted by the Korean government for deployment in conjunction with the Winter Olympics in February 2018. The USA regulators have already begun the process for adoption of this advanced new DTT standard as the new US standard.

TRAI has an opportunity to look forward in both the technology and market application domains. It will be a sad mistake if TRAI treats their regulation of the future of broadcasting using obsolete definitions and perceptions of TV broadcasting as simply linear television. The TV of the future using the latest standards is a mobile and fixed wireless service, that enjoys the advantage of being the most cost effective means of distributing digital content and video to platforms of all types that are relevant in the daily lives of the Indian populace.

Each of the existing digital TV platforms lack the unique advantages of DTT in that they: (i) do not support mobile services; (ii) the coaxial cable, telephone DSL copper or fiber optic outside plant is very expensive in terms of homes passed; (iii) cellular networks being highly granular, and optimized for one-to-one communications require complex and expensive interconnection and backhaul networks that broadcast networks do not require to reach the same population coverage.

Ultimately, there is no alternative for the delivery of digital content, both common data or video into small, handheld devices, including future smart phones, tablets, laptops and smart TVs. This cost advantage for a new public mobile capable information distribution service is a key missing element in the Digital India program

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

VSI: The most logical and simple answer regarding the expansion of DTT into private sector participation. Opening DTT broadcasting services and operations to private sector investment brings with it both positive and negative consequences. We foresee two alternatives:

1. If there is just a simplistic pursuit of auctioning the spectrum to the highest bidder, much of the potential for innovation will be lost to large incumbents and cellular operators who have responsibilities to their shareholders to protect existing franchises and operations from potential disruptive competition. A quick cash infusion to the

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government treasury results, but the new licensees' need for infrastructure construction and deployment capital is burdened by the overhang of the spectrum purchase, slowing the development of new services that will benefit the public.

2. Alternatively, the creation of new public private partnerships (PPP) wherein there is no transfer of the spectrum into private hands should avoid the inherent conflict of the long term public interest due to the increase in value that will be created by the delivery of new and innovative services. PPP structures can be developed in a wide variety of ways that appropriately deliver value to the private investor/partners over the lifespan of the agreement. Further, the liberalization of the DTT licensing to also authorize the participation of Foreign Direct Investment in such PPPs should dramatically increase the speed of network deployment. In all cases we contemplate under these potential PPP arrangement, the spectrum is never transferred from the government's ownership.

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?

VSI: Q4: The potential to leverage shared infrastructure holds the promise of significant operational expense for operators of next generation DTT networks, and associated new services enabled by the transformative new technologies that should be deployed.

Experience gained over many years of attempting to launch innovative services in concert with PB and DD leads this commenter to believe that relying on these existing entrenched bureaucracies will not lead to a successful implementation of next generation services.

V-Satcast believes that the VNO (Virtual Network Operator) model which lately was launched in the Telco sector may be kindly extended to the Broadcasting sector as well. The VNO model will enable new niche and innovative players in the market to focus on delivering new and innovative services, for which UHF spectrum maybe required to be leased from either PB/DD or from other private broadcasters

It is also requested that the government should treat these innovative service providers who would provide services to Rural India as Start-ups and be provided with a slew of financial incentives in terms of tax waivers, reduced statutory taxation, etc .

We propose that the government consider adding a third service to the PB authority. The best and highest use for next generation broadcasting is for the dissemination of broadband Internet content. Creating an IP multicasting "third franchise" under the existing PB authority seems to us to be a worthwhile addition to the needs of the nation.

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Ownership and management of any potential shared infrastructure could be accommodated under a mix of government ownership, PPPs, FDI, and franchise fees and licenses dedicated, shared, leased, rented or sold as deemed appropriate

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

VSI: Next generation DTT can be deployed using any or all of the architectures suggested. Another key issue that TRAI should include in its evaluation is the **potential for creating broader channels by licensing multiple 8 MHz channels to enable the truly broadband services that are rapidly coming into maturity.** Broadcasting 4G, 3D and high resolution virtual reality content will all require new and never before seen television channel bandwidths. Whether creating them by regulatory fiat, or authorizing channel bonding among multiple channels and combining capacity that is joined at baseband or in the digital domain, should be considered by TRAI as they determine the future of DTT in India and as a key element in Digital India.

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

VSI: We believe that **the future of DTT should enjoy substantial spectrum reserved for both classical linear broadcasting as well as IP multicasting to add a one-to-many extension to the broadband Internet. To help facilitate this, we recommend assignment of substantial bandwidth exclusively for broadcasting and data multicasting services (particularly in the UHF band)**

Q7: Q.7. What should be the criteria for arriving at optimum size of DTT multiplex at any location? Please furnish your comments with justification?

VSI: This is a question with too many multivariate issues to provide a single answer. Population density, required coverage range of the interference contour with adjacent frequency reuse locations, topography, and the eventual mix of services and government mandated information distribution and entertainment alternatives, and finally the evolving needs of the future for Digital India.

Q.8. What should be most appropriate frequency band as per National Frequency Allocation Plan 2011 for implementation of Digital 32 terrestrial transmission including mobile TV? Give your comments with justification?

VSI: The UHF frequency bands are essential to the future of DTT mobile services. Further, circular polarized antennas at transmitter sites are required to support mobile receiver antennas.

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?

VSI: See Q6 answer above. Further to why PB and DD should not be the gate keepers or system operators in the deployment of next generation of data centric (rather than linear TV) DTT services. The skills required to design, build and manage IP multicasting networks efficiently simply do not exist within these legacy organizations. They should probably participate as members of the suggested PPP as an infrastructure provider for the passive infra viz. land, buildings and also the spectrum that they hold in the UHF band.

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

VSI: We counsel that the next generation of DTT services and infrastructure be authorized, licensed and deployed with the minimum amount of delays and multi-agency approval in order to streamline the deployment of innovative new services. Streamlining regulatory processes and approval cycles will be essential for a successful implementation of DTT services.

Approving and encouraging FDI will be essential to organizing the required capital to effectuate a timely and successful nationwide deployment program.

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?

VSI: The Roadmap for Digitisation of Terrestrial TV Broadcast should include the following:

1. Clear roadmap & timeframe for complete digitisation of existing analog terrestrial networks
2. Firm Analog Switch off (ASO) date required to be communicated to all stakeholders to plan & create the necessary ecosystem for introduction of DTT services, as per India's commitment to ITU GE-06 agreement, PB has planned complete digitisation by 2017 and implement ASO by 2020. This ASO deadline should be strictly adhered to, as PB has slipped several times in the past . The extra three years leverage sought by PB for ASO date is probably to gear up for readiness of the ecosystem viz. appropriate services to be provided over the DTT platform, mass market availability of next generation smart TVs and DTT Set-Top Boxes (STB s).
3. The immediate need is to review the current digitisation efforts and to lay down a roadmap for digitisation of terrestrial TV networks & to decide an appropriate sunset date for analog terrestrial broadcast services.

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4. Another approach to digitisation could be in a phased manner on the basis of several criteria viz. regions, major cities covering large population channels, existing terrestrial channels . In such cases, ASO dates maybe mandated in a phased manner.

Some of the benefits of a phased approach are:

1. Learning & evolving strategies from experience
2. Spreading of requisite costs & resources
3. Making the process more manageable
4. Observing development & growth of the market place before finally deciding how & when to end analog services.

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

VSI: It is imperative that **TRAI and PB view the broadcasting spectrum and architecture as a discrete mobile wireless service in addition to the legacy linear television services to fixed receivers. Digital India can be realized with far more efficiency and rapidity if TRAI and PB address the forward looking benefits that are unique to the broadcast wireless architecture. Advantages that cannot be replicated by any of the existing digital television fixed services or the cellular operators of today.**

A cautionary note is that the cellular operators will be more than happy to take over the future of broadcasting and transform a free to air public service of today, or a private sector operated free to air advertising supported service of the future, and turn all mobile wireless services into paid subscription services that essentially transfer a public resource and benefit into a private enterprise or state controlled operator with P&L obligations met via charging for services to the public. Only DTT broadcasting offers the expansive, low-cost, high-capacity wireless service delivery platform that can be structured and organized in ways that benefit the public, the government, and the pending investors.

At the cost of repetition, we are enclosing again the key message that was made in the preamble to this response itself . This is given below.

To be able to offer an innovative content delivery platform for poor people in rural and remote parts of India , V-Satcast is interested in using UHF Spectrum from one of the primary users for this purpose. The main advantage of the UHF spectrum is its ability to reach large distances in almost all weather conditions. Nevertheless the amount of spectrum is limited to merely ~ 230 Mhz. (470-698 Mhz). Due to its nature, the UHF spectrum was used mainly for linear TV transmission which requires broadcasting (one to all the same content). The UHF spectrum can be very efficient for **Data multicasting** of high rich content such as movies, songs, e government forms, educational video presentations etc. As there is lack of Broadband infrastructure in Rural

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India due to low ARPU and low density of population in comparison to urban India, **using the DTT platform to multicast high rich Data files can provide high quality entertainment as well as informative video for individual and community purposes in extremely low cost as well as in free to air models subsidized by advertisement** like in traditional TV broadcasting. As the smart phone distribution over India as well as in Rural India increases sharply, within few years, there will be more smart phones and tablets over India and over Rural India than TV sets. As smart phones and tablets consume very little energy, it will be the perfect platform for people for entertainment, education and other informative video data. Unlike TV, the smart phones and tablets will enable people to watch on mobility mode which shall serve the people over Rural India during the time spent outside their homes as well as while commuting to other parts of India.

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