Shri Subodh Kumar Gupta, Advisor (B&CS), TRAI
cc Shri Dr J. S. Sarma, Chairman, TRAI
cc Shri R. K. Arnold, Secretary, TRAI

10 September 2010

NDS Response to Consultation Paper on Technical Interoperability of DTH Set Top Boxes

Dear Mr Gupta,

NDS welcomes this opportunity to provide a written response to the Consultation Paper on Technical Interoperability of DTH Set Top Boxes. NDS would also welcome the opportunity to present its recommendations to and discuss them further with TRAI at your convenience.

NDS is the world's leading vendor of digital conditional access and digital rights management systems for closed pay TV systems, with over 133 million active authorised devices including set top boxes and digital video recorders incorporating its technology worldwide, protecting over $40 billion of annual pay TV revenues. Many of the world's largest pay TV platforms use NDS conditional access technology including DirecTV (US), BSkyB (UK), Sky Italia, Tata-Sky (India), DirecTV Latin America, SkyLife (South Korea), Astro MBNS (Malaysia) and Foxtel (Australia). NDS is also the world's second largest provider of middleware for pay TV: NDS middleware, including pay TV middleware, has been deployed on over 152 million devices worldwide. NDS is the leading provider of personal video recorder software and firmware, with over 30 million personal video recorders deployed. (All deployment figures as at 30 June 2010.)

NDS employs over 1,400 software engineers in its Bangalore research and development facility, working on set top box middleware, interactive applications, personal video recorder software and mobile television software.

NDS's customers in India include Hathway Cable and Datacom and DEN for digital cable solutions and Tata-Sky and Bharti Airtel for DTH solutions. NDS is a key player in content protection for IPTV and also has a full range of content protection and interactive solutions for mobile television platform standards including DVB-H/-SH and MediaFLO. NDS technology supports and is used by over 10 million subscribers in India today.

NDS is thus a significant stakeholder in the current Indian pay TV market and is committed to increasing its stake as this market expands and new markets develop.

NDS has been engaged in regulatory consultation on broadcast pay television since April 2002, before TRAI assumed authority for some aspects of broadcast and cable regulation.

NDS's responses are consistent with and similar to its responses to a range of well over 20 TRAI consultations over the past six years.

In particular, these responses are fully consistent with NDS's earlier recommendations made in response to the following TRAI consultations, which covered the issue of technical interoperability:

Consultation Paper No. 9/ 2004 on Broadcasting and Distribution of TV Channels

- TRAI should ensure a level playing field for all TV delivery platform types and technologies, to enable each to compete fairly

- TRAI should not mandate STB-based interoperability, since it acts as a tax on all subscribers for the sake of a minority and it stifles innovation and differentiation between operators and creates technical legacy problems – this applies equally to DTH, cable and other platform types

TRAI Consultation Paper on Interoperability of Set Top Boxes November 2005

NDS does have concerns about the broad application of certain technology mandates which are promulgated in the interest of interoperability. Chief among these concerns are:

- lack of transparent, public-domain cost-benefit analysis – to weigh the perceived benefits, which are rarely quantified, against the easily quantified, well-known costs

Consultation Paper No. 8/ 2006 on Licensing Issues Relating to DTH

This is attached in full as it includes a comprehensive cost-benefit analysis framework and many other arguments against mandated technical interoperability measures.

TRAI Consultation Paper No. 4 / 2007 on Issues Relating to DTH

- NDS opposes any Technical Interoperability requirements for pay TV platforms which significantly increase the cost of all set top boxes or reduce the security of all set top boxes. The existing DTH Technical Interoperability requirements with mandated DVB common interface do both and achieve very little in the way of consumer useable interoperability in return. They should thus be withdrawn.

NDS's specific responses and recommendations are set out in the following response.

Please do not hesitate to contact me if you need any clarifications or have any questions on this submission, or if you would like to arrange a presentation of and / or further discussion on these recommendations.

Yours sincerely

Paul Jackson
Chief Engineer
NDS Asia Pacific Ltd.

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Responses to Specific Questions

NDS agrees with all of the comments made on behalf of Tata Sky Ltd and Reliance Big TV Limited, as posted on TRAI's website on 8 – 9 September.

NDS notes, however, that the Dish TV India Ltd consultation response contains a number of inaccurate statements, in addition to a number of misleading statements and a number of self-contradictory statements presented as facts.

NDS totally refutes the claims made by Dish TV India Ltd that "Security concerns are raised by CA vendors on Common Interface but are infact measures to maintain proprietary systems", that "NDS is the only system which does not provide CAMS for its encryption system" and that "CAMs which are now inexpensive with prices which can range as low as $3-5 with the given volumes".

NDS will be happy to provide TRAI with a detailed rebuttal of Dish TV India Ltd's response to TRAI in due course, but to ensure a constructive response to the Consultation process within the deadline, will not provide this detailed rebuttal in this submission.

Rather than repeat all the valid comments made in Tata Sky Ltd's and Reliance Big TV Limited's submission, this submission will add a few supporting comments and attempt to address some of the points made by the nine other individual respondents whose six submissions were also posted on TRAI's website on 8 – 9 September.

For clarification, NDS has no current commercial or other connection with Reliance Big TV Limited, nor with the nine individual respondents.

3.1 Is it possible to have an Open Architecture based Set Top Box (STB) for DTH services that could ensure technical interoperability i.e. technical compatibility and effective interoperability among different DTH operators who have adopted same or different standards?

NDS submits that this is a leading question and begs two more fundamental questions:
a) what Rupee value would the level of technical interoperability so achieved be *to an average subscriber*? (e.g. what other cost will it save him or her), and
b) at what Rupee cost *to an average subscriber* would such level of technical interoperability be achieved?

Fundamentally, if the answer to a) is greater than the answer to b), then there *may* be merit in considering a degree of mandated technical interoperability – depending on the actual magnitude of the difference. But if the opposite is the case, then there is no benefit at all in pursuing mandated technical interoperability measures; they merely become an burden on all regulation abiding operators and their subscribers.

In a previous submission to TRAI on the same topic, NDS has demonstrated that the value of b) will exceed that of a) in all but the most extreme circumstances of subscriber

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churn across DTH platforms, and there is no evidence whatsoever to indicate that there are such levels of churn across or dissatisfaction with the existing DTH platforms in India.

Moreover, it must be understood that to support technical interoperability measures, which could only possibly benefit a minority of subscribers that wish to change their pay TV service provider, *all* subscribers must pay a premium, whether directly or indirectly. Indeed, this is the case as the regulations stand, unless of course these are subscribers of a DTH service provider that openly flouts the current regulations, without any penalty or sanction.

NDS further submits that, while it is technically *possible* to design, build and roll out set top boxes with limited technical interoperability – the ability to receive basic television services from another platform comprising moving pictures and sound only being the current aim of the Indian regulations – it has not been demonstrated anywhere that this is cost effective for pay TV, only for free-to-air markets such as digital terrestrial television.

As to the suggestion from Messrs Manu Sood, Lt Col (Retd) VC Khare and Vikram Singh Mains and Jitin Sharma, that EPG functionality be included in a CAM, this is possible and indeed has been implemented for CI+. However, CI+ is a more expensive solution than DVB-CI, and there are significant limitations on the EPG or other application functionality that can be supported, for example when one changes channel, the running application (e.g. EPG) terminates.

Lastly, NDS would like to point out that set top box technical interoperability is in itself a necessary, but totally insufficient condition for inter-service technical interoperability from a DTH subscriber's point of view.

For such inter-service technical interoperability, there are several other matters to consider, relating to the outdoor reception equipment – i.e. antenna / dish and low noise block down-converter / LNB.

Firstly, there is the non-trivial matter of widely varying satellite orbital locations of the satellites carrying the existing six licensed DTH platforms' services and Doordarshan Direct Plus. These *currently* range from 74°E to 93.5°E - i.e. a 19.5° span, though in theory this range could increase. The effect of this is that switching to an alternative DTH service provider would require significant antenna re-pointing (and thus complexity, cost and time) in many cases. There is no question that such re-pointing would need to be performed professionally, for reasons of safety, liability, service performance and reliability/availability. In some cases, such re-pointing might result in reception problems due to partially or fully obstructed line of sight to the alternative satellite – especially in densely built up urban areas.

This leads on to the second issue of differing effective isotropic radiated power (EIRP) and geographical coverage. There are significant differences in these across different DTH platforms, which become especially significant the further from the centre of India one is located (e.g. North West and North East, Andaman and Nicobar Islands,

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Lakshadweep). Thus one may require not only re-pointing of an existing antenna, but investment in a new, larger one.

Thirdly, there is also a likelihood that LNBs would need to be changed in many cases. The three contiguous blocks of Ku band frequencies used by the six licensed DTH operators and Doordarshan Direct Plus in total span 10.95 to 12.75GHz – or 1800MHz. However, the LNB output spans only 950 to 2150MHz – or 1200MHz, for compatibility with the BIS specified input frequency range for the set top box. Essentially, that means that most, if not all LNBs currently installed have at least a 600MHz block of downlink frequencies to which they are "blind", but that block of frequencies differs across the DTH platforms. Dual or multi-band LNBs are available, but are probably not installed on the vast majority of existing antennas, because they cost more than single band LNBs.

Finally, TRAI must consider how a subscriber's quality of service can be guaranteed if (s)he is using a set top box from one provider, outdoor equipment from another, and receiving pay TV services from a third.

Why (or how?) should the service provider in such case assume responsibility to guarantee the performance of equipment with which it had no prior involvement or responsibility – and almost certainly does not even have full technical documentation?

Given these last four complications, the suggestion by Mr Ronald Rodriguez and Lt Col (Retd) VC Khare that the antenna / dish and LNB be re-used to receive the alternative DTH service is simply not practical.

3.2 If yes, how can the interoperability be implemented and what would be the implications to the stakeholders?

NDS would like to add two further issues to those raised by Reliance Big TV Limited.

Firstly, any additional complexity added to a set top box – especially component count – will result in more potential for failure and shorter expected lifetime. This is another cost which must be borne by all subscribers.

Secondly, the same principle applies to quality of service guarantees – the greater the number of combinations of antenna, LNB and set top box, the lower the overall quality of service a DTH service operator can guarantee its subscribers – if indeed it can reasonably guarantee anything at all if it has no control over some or all of these. This is another cost which must either be borne by all subscribers in terms of lower quality of service guarantees, even if they use the service provider's own provided equipment; or (more likely) by the subscribers that wish to "plug and play" so-to-speak.

3.3 Is there a need to mandate any particular standard so that the objectives of technical interoperability can be achieved? If so, which standard?

NDS agrees with Tata Sky Ltd's recommendations in this section.

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3.4 If technical interoperability for STB is not possible, is there any other mechanism to safeguard the interests of the subscribers.

NDS submits that the current approach to regulation requiring both "technical interoperability" and "commercial interoperability" is unnecessarily burdensome and cumbersome.

As a matter of priority, NDS recommends that the current mandate on technical interoperability measures should be withdrawn.

3.5 Any other relevant issue that you may like to mention or comment upon.

NDS concurs with Lt Col (Retd) VC Khare's recommendations in this section, in addition to those of Tata Sky Ltd and Reliance Big TV Limited.

Paul Jackson
Chief Engineer
NDS Asia Pacific Ltd.

10 September 2010.