

BY ELECTRONIC MAIL

18th December 2019

To,
Shri. Anil Kumar Bhardwaj,
Advisor (B & CS)-II,
Telecom Regulatory Authority of India (TRAI),
Mahanagar Door Sanchar Bhawan,
J.L. Nehru Marg, (Old Minto Road)
New Delhi - 110002, India

Dear Sir,

Re: Submissions to Telecom Regulatory Authority of India ("Authority/TRAI") in response to the Consultation Paper on Interoperability of Set Top Box dated 11.11.2019

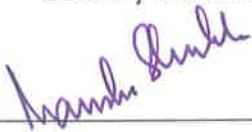
At the outset, we would like to thank the Authority for giving us an opportunity to tender our views on the consultation paper on interoperability of set top box.

In regard to the present consultation process, we submit that we have perused the said paper carefully. We hereby submit our comments attached as Annexure. The said comments are submitted without prejudice to our rights and contentions, including but not limited to our right to appeal and/ or any such legal recourse or remedy available under the law.

The same are for your kind perusal and consideration.

Yours Sincerely,

For Discovery Communications India



Encl: As above

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ANNEXURE

COMMENTS ON BEHALF OF DISCOVERY COMMUNICATIONS INDIA (“DCI”) TO THE CONSULTATION PAPER ON INTEROPERABILITY OF SET TOP BOX DATED 11.11.2019 (“Consultation Paper”) ISSUED BY THE TELECOM REGULATORY AUTHORITY OF INDIA (“Ld. Authority”)

The Authority, in the present Consultation Paper has pointed out that though there is a de-jure technical interoperability but there is de-facto technical non-interoperability. Despite presence of provisions relating to interoperability in the existing DTH Guidelines, the concept has not yet found a firm ground in practice. There could be various reasons for the same. The encryption of the TV signals which is done by the broadcasters are unencrypted by the distribution platform operators (“DPOs”) and then they are re-encrypted before being retransmitted to STBs installed at subscriber premises. These signals are thereafter, decoded by the STBs. The STBs are paired with conditional access system / subscriber management system of relevant DPO so that there are minimum chances of unauthorized access or piracy of the content.

With the new regulatory framework in place, the cost of TV services is platform agnostic and the consumers are generally offered the TV services at almost comparable costs by DPOs. Hence, the migration by the consumer from one DPO to another only from cost perspective may be limited. There may be other factors like higher channel carrying capacity, differentiating platform services, advanced technology, good service support, which may be the factors because of which the consumers may still consider changing their service provider/DPO.

The introduction of STB interoperability would require a number of technological as well as operational changes thereby fostering the need to further introduce content security provisions and anti-piracy mechanisms. At the same time, it would be needed to be ensured that the expenditure incurred in acquainting the STBs with interoperability features, does not gets irrationally passed on to the consumers and that they are not burdened with the increased costs incurred. For example – A consumer migrating from one direct-to-home (“DTH”) platform to another will also require retuning of the dish antenna, which will be an additional cost to the consumer. In India, cables carrying signals of television channels that reach consumer premises are not structured to carry signals of various multi system operators (“MSOs”). Further, there are also instances of monopoly in the last mile. Considering that majority of local cable operators (“LCOs”) / MSOs do not operate in all areas within their authorized areas of operation therefore, interoperability of STBs may be of limited consequence since, it will first require laying of fresh cabling by MSOs up to the subscriber’s premises, which may itself not be feasible inter-alia due to costs involved. There may also be integration related issues since, DPOs have proprietary middleware licensed from different vendors. The middleware is responsible for navigation experience, visual, graphics, electronic programming guide details, logical channel number, platform services, etc. and the middleware of one DPO may not work with STBs of another DPO.

Most importantly, the regulatory provisions would also need to ensure that the security of the CAS, SMS and other related addressable systems of the DPOs is not compromised and is

not susceptible to piracy. The security of the Broadcaster's content also needs to be ensured thoroughly in the entire distribution chain.

The security specifications, standards, technical specifications and the content protection mechanism of the STBs must be thoroughly checked over a period of time and assessed by independent companies and vendors having expertise *inter-alia* in scrutiny of technical standard and security assessment before any recommendations are made by the Authority. It is submitted that in case of STBs that use smart cards, the protocol between smartcards and the compatible STBs must be reviewed by experts to ensure the robustness in case interoperability is proposed to be implemented. Similarly, in case of downloadable systems the security of the download system and the API interfaces between the downloaded client and the host must be thoroughly reviewed by experts.

In order to protect from unauthorised access to content, broadcasters must be aware about the type of encryption and the protection methodology. In case of any known and/or contemplated threat to content protection, broadcasters must be able to initiate enquiry / investigations by subject matter experts to check and diagnose the encryption system and wherever possible suggest required changes in such encryption systems of DPOs for content protection. The suggestion by such experts in such encryption/protection methodology must be implemented by DPOs. The DPOs should also be required to ensure that the encryption system of DPOs are up to date with the evolving technology and the STBs shall be capable of installing over the air any technical upgrade to such systems. The broadcaster should also be provided with additional rights to test in advance such interoperable STBs before they are deployed in the market.

It is submitted that the various approaches adopted to achieve interoperability of STBs should not compromise the content protection or restrict the innovations or deployment in new content protection technologies. In so far as the suggestion regarding creation of centralized trust authority is concerned, it is submitted that such authority should not be vulnerable to hacking attempts for theft of data and should not be soft targets to disrupt operations by malware attacks. It is submitted that serious threat to robustness of content protection mechanisms would be posed if the system is vulnerable risking the entire distribution value-chain. Having a diversified content protection mechanism and different security approach shall be preferred over one centralized system since, it tends to limit exposure.

It is submitted that software based interoperable solutions may reduce the cost of the STBs however, there are many indirect costs involved in their management like the additional human resources required to follow the procedures, etc. The software-based solution such as, ECI may also prone to hacking and piracy. Further, shifting of compliance responsibilities (which are normally collaboratively administered by stakeholders and Digital Rights Management ("DRM") providers) to a "trust authority" may making it difficult to test DRM compliance, or to quickly access needed information, and/or to fix issues involving data breaches. Further, if ECI standards as proposed in the Consultation Paper are implemented then there may be risk of major CAS and STB providers exiting Indian market in case, they are unwilling to share their proprietary information/keys either with STB manufacturers or the trust authority. It is submitted that the industry is already plagued with DPOs deploying faulty

/ compromised CAS and SMS, and any such exodus will have an adverse impact on revenues of broadcasters.

As regards to the availability of interoperable STBs through the open market, it may not provide the benefits of commoditization as the manufacturing plants of STBs set up in China, Vietnam, Thailand over the last decade have amortised the cost of the plant and due to intense competition, the STBs are being sold at quite competitive prices. Even otherwise, the DTH operators/large MSOs are the bulk purchasers and enjoys high bargaining power and are able to purchase the quantity in bulk at highly competitive rate. For example – the present price import price of HD STB is USD 15 which may not provide much room for further reduction.

With the above premise, we hereby submit our question wise response to the CP as below:

Q1. In view of the implications of non-interoperability, is it desirable to have interoperability of STBs? Please provide reasoning for your comment.

Response: Interoperability of STB's is desirable as it gives consumer the facility to switch amongst platforms and benefits the consumers. However, enforcing interoperability will result in an avoidable technology barrier that will only distort the competitive environment and not work in the interest of consumers in the long run. Technology changes very frequently rendering the earlier technology obsolete and thereby making switching difficult. Platforms have different formats and many have come into existence which clearly demonstrates the problems of switching as the STBs are incompatible for such changes in technology. DVB-CI standard in BIS specifications does not provide protection to content by providing forced fingerprinting, even with integrated designs for Conditional Access Systems, content security is being constantly attacked by the hackers/pirates. Interoperability should ideally work across different levels of software, if the same experience has to be made available for the consumer when consumer switches from one operator to another. Services like EPG, Customer information, Messaging, VAS services are host device specific and there is no interoperability standard to define them.

Additionally, many platforms use different Coding efficiencies such as CA modules and middleware. Hence, it may not be able to have the complete interoperability. However, to a certain extent, these functionalities can be extended to the various flavors of STB which will help the user/customer e.g. the basic function like services, EIT and various other tables.

Q2. Looking at the similar structure of STB in cable and DTH segment, with difference only in the channel modulation and frequency range, would it be desirable to have universal interoperability i.e. same STB to be usable on both DTH or Cable platform? Or should there be a policy/ regulation to implement interoperability only within a platform, i.e. within the DTH network and within the Cable TV segment? Please provide your comment with detailed justifications.

Response: Universal interoperability is possible as we have a Hybrid STB's available with the facility of DVB-C, DVB-S and even for IPTV which may be used across

platforms. There will be few critical issues before we move forward to the STB interoperability:-

- a. It will be tough to fix the responsibility in case of security breach if the piracy happens through the subscriber STB.
- b. Interoperability between conditional access systems and set-top boxes interoperability has been an issue from the very beginning of receiver development for digital pay TV. Interoperability ensures that any service can be received on any (interoperable) STB. The common interface solutions SimulCrypt and MultiCrypt are now standardized. However, these solutions have a number of disadvantages, including the need for service providers to agree on using each other's system, increased bandwidth usage, inflexibility, cost, and limited functionality.
- c. Many platforms use unique methods of encryption keys. They have dissimilar modulations techniques, and other related systems, databases, critical key algorithms involved at the CPE. Algorithms differ from one platform to other and these are proprietary in nature. It is of paramount importance to prevent piracy and hacking of contents.
- d. Decryption can be achieved amongst platforms either through CI (common interface) and CAM (conditional access module) or through downloadable CAS use the OTA (over the air) processes to download the different CAS on the STB keeping the similar protection mechanism. The solution envisages availability of bi-directional path at the time of switching of the CAS. However, if two networks are using the same CAS amongst platforms or across platforms then its differentiation would need an investigation. The other option of decrypting the services may be ECI (Embedded Common Interface). In DVB-CI specifications was a hardware implementation of CAS interchangeability where as ECI specification has been conceived to have embedded common interface for exchangeable CA solutions incorporated through software download ability.
- e. If the subscriber switches across platforms, we would need to understand how subscriber detail would be managed without any duplication.
- f. All the DPOs must be on same compression technique e.g. either MPEG2 or MPEG4 because MPEG2 compatible STB's won't work on MPEG4 standards.
- g. DTH & Cable Segments have different Modulation i.e. DVBS & DVBS2 for DTH and QAM & 16APSK etc. for cable. We suggest having the basic interoperability with in the platform, as to have the universal interoperability the box cost will increase multiple times which the customer would need to bear. To have the multiple tuners and upcoming IP protocols in line within the single box will increase the complexities and STB cost will not be viable for the business and customer.

Q3. Should interoperable STBs be made available through open market only to exploit benefits of commoditization of the device? Please elaborate.

Response: As regards the availability of interoperable STBs through the open market, it may not provide the benefits of commoditization as the manufacturing plants of STBs set up in China, Vietnam, Thailand over the last decade have amortised the cost of the plant and due to intense competition, the STBs are being sold at quite competitive prices. Even otherwise, the DTH operators/large MSOs are the bulk purchasers and enjoys high bargaining power and are able to purchase the quantity in bulk at highly competitive rate. Hence there cannot be any additional gains foreseen arising out of commoditization.

Any policy decision should reflect that no compromises are made in the security features and there is a comprehensive system of checks and balances. KYC could be additional feature as is the norm in everything else during purchase of such STBs.

In case a policy decision is taken to make the STBs available through open market, it should be ensured that all the security features are fool-proof and governed by Regulations to ensure checks and balances. Also, purchase of STBs should follow KYC norms.

Q4. Do you think that introducing STB interoperability is absolutely necessary with a view to reduce environmental impact caused by e-waste generated by non-interoperability of STBs?

Response: The argument that e-waste is generated because of non-interoperability of the STBs may not be fully true.

Any advancement in technology makes a particularly widespread used system redundant. Technology upgrade will tend to leave e-waste which seems to be a natural corollary. There must be a different government organ to deal with the e-waste policy.

DPOs are reusing the STBs by connecting new consumers with the same STBs.

Hence it cannot be said that non-interoperability of the STBs is generating e-waste. The e-waste is the outcome of primarily the technological advancements and the consumer aspirations to align himself with latest technology. This is a natural phenomenon with the all the electronics and there should be an e-waste policy to deal with this.

Q5. Is non-interoperability of STBs proving to be a hindrance in perfect competition in distribution of broadcasting services? Give your comments with justification.

Response: With the new regulatory framework in place, the cost of TV services is platform agnostic and the consumer is generally offered the similar kind of costs for

TV services. Hence the migration from one service provider to another by a consumer only for cost considerations may be limited. There may be other factors like higher channel carrying capacity, differentiating platform services, advanced technology, good service support etc. which may be the factors which the consumer may consider for changing his service provider. The interoperability of STBs will have a very limited role in deciding the migration of consumer from one service provider to another. One more point to be noted is that the DPOs are generally subsidizing the cost of STB and other consumer point equipment for consumer acquisition. Hence the entire cost of STB is not recovered from the consumer at the time of installation and it is recovered over a period of time from the service cost. Hence there is no significant cost for switching and sometimes it is absorbed by the DPOs fully if a subscriber chooses a long term plan say of over one year. Another option could be considered is a compulsory buy-back option for up to a certain period of time by DPOs in case of discontinuation of the service by consumer which will protect the consumer interest.

Q6. How interoperability of STBs can be implemented in Indian markets in view of the discussion in Chapter III? Are there any software based solution(s) that can enable interoperability without compromising content security? If yes, please provide details.

Response: The experience of STB interoperability in overseas markets has been not very great. The same should be endeavoured to be done in the Indian market with caution. The security of the broadcaster's content should be given paramount importance. The broadcasting industry is plagued by the incessant piracy issue and any attempt to make the STB interoperable should not result into increased piracy. Hence the security standards to be implemented for interoperable STBs should confirm to time tested international standards.

Q7. Please comment on the timelines for the development of eco-system to deploy interoperable STBs for your recommended/ suggested solution.

Response: We recommend a phased implementation. This will lead to a situation wherein DPOs can make long term orders based on financially sustainable model without putting them under too much of economic duress.

Q8. Do you agree that software-based solutions to provide interoperability of STBs would be more efficient, reduce cost of STB, adaptable and easy to implement than the hardware-based solutions? If so, do you agree ETSI GS ECI 001 (01-06) standards can be adopted as an option for STB interoperability? Give your comments with reasons and justifications.

Response: We are of the opinion that though the software-based solutions to provide interoperability of STBs may prove to be more effective, cost efficient, adaptable and easy to implement than the hardware-based solutions but we re-iterate the

importance of the uncompromised security of the CAS, SMS and the entire related addressable system and its insusceptibility to piracy.

However, w.r.t ECI, we feel that there is anxiety amongst the stakeholders on the ECI standards as they are of the view that ECI does not meet the content security and technology needs of major content providers. The proposed ECI standards do not meet ECP standards which describe high-level security requirements for the distribution of content. Also, ECI does not require watermarking and does not create a secure location for a watermark. Watermarked content is crucial as it helps in identifying data breaches and protects content stored on computer servers. Detailed analysis and evaluation would be required in respect of software based solutions and hardware based solutions to arrive at a conclusion as to which one is more effective. Security of the content should be sacrosanct. Any such software based solution should be fool-proof and thoroughly tested prior to implementation.

- Q9. Given that most of the STB interoperability solutions become feasible through a common agency defined as Trusted Authority, please suggest the structure of the Trusted Authority. Should the trusted authority be an Industry led body or a statutory agency to carry out the mandate? Provide detailed comments/ suggestion on the certification procedure?**

Response: We believe that an independent, technically proficient authority should be created which can vouch for the security of the systems. The moment one stakeholder shifts the compliance burden on the other player, it will create a problem of compliance.

- Q10. What precaution should be taken at planning stage to smoothly adopt solution for interoperability of STBs in Indian market? Do you envisage a need for trial run/pilot deployment? If so, kindly provide detailed comments.**

Response: Kindly refer to responses to Q2 above and Q13 below. The Ld. Authority should also take note of the following concerns:

- (a) Concerns relating to security, piracy and practicality among stakeholders:
There have been innumerable instances wherein pirate cable operators have used easily available DTH STBs to source broadcasters' channels for unauthorized distribution of signals. The only way to identify such pirate boxes and to combat piracy effectively is via fingerprint mechanism. There is a strong possibility that interoperability of STBs may compromise this tool of detecting pirate card or STB which may lead to further complications and compromise security of content from piracy.
- (b) STBs used by cable operators:

It should be noted that there is no other DTH operator or service provider across the globe which presently offers STB interoperability since many major STB manufacturers have not fully developed high-end features and high-end operating systems on STB interoperability. We are of the opinion that the Ld. Authority should identify other jurisdictions wherein STB interoperability has been implemented, and should make available all literature/ reports/ material/ data relating to the same in order to enable stakeholders to effectively and meaningfully address issues in relation to the same.

Q11. Interoperability is expected to commoditize STBs. Do you agree that introducing white label STB will create more competitions and enhance service offerings from operator? As such, in your opinion what cost reductions do you foresee by implementation of interoperability of STBs?

Response: Interoperability would be game-changer as it will strengthen the service offering of any operator. Mistakes or faults which have been neglected so far will not be ignored or condoned if the services are deficient and found wanting. Retention of existing subscribers will be a challenge and the best and fittest would survive. There is another fallacy to this line of thinking as well as if the distributors are found failing in their services then the consumer may move on to a different platform altogether.

We feel that interoperability of STBs would enhance service offering from the operator. The Operator would also be in the fear of losing its subscribers in case of deficiency in services and hence would ensure enhanced service offering to its existing subscribers for retaining them. Also, this will be beneficial to the consumers and will help retain consumers in the same distribution ecosystem. Otherwise if frustrated by one distributor, the consumer may not like to again spend money to procure other STB for moving to another distributor and may decide to go to other modes of delivery (like digital etc.) or OTT.

Q12. Is there any way by which interoperability of set-top box can be implemented for existing set top boxes also? Give your suggestions with justification including technical and commercial methodology?

Response: The existing CAS/STBs and their algorithms/control words are proprietary in nature and varies with the vendors. For e.g. vendors like NOS, Conex, Irdeto etc will have their own algorithms which would be inbuilt in the STBs for a particular CAS. Hence it will not be possible to integrate the existing STBs with other CAS unless there are some modules to integrate the same. Even if the same is possible technically, we do not foresee any gains arising from such move to any stakeholder rather it will bring in chaos and mismanagement and additional costs without any resultant benefit as due to technological advancement, the rationale for making them interoperable does not exist. Hence the interoperability for existing STBs (and even those STBs which are available as stock/in manufacturing line on orders of the DPOs) should not be considered. However, going forward, after a suitably agreed cut-off date, all STBs can have interoperability (subject to proper security environment). Only the Smart Card

or the software based authorization should come from the DPO and the STBs may be freely available in the market which are compatible for both DTH/Cable modes.

Q13. Any other issues which you may like to raise related to interoperability of STBs.

Response: We are not against to implemented interoperability across platforms, but there may be issues with DTH, all the DTH services should be on the same satellite and polarization so that every time when subscriber request for change of DTH service then he/she shouldn't pay for the realignment of antenna. The Authority should take a practical view on the subject and should not compare the interoperability of the STBs with the MNP or portability in the telecom sector as the two scenarios are not comparable. Only if it makes economic sense for all the stakeholder and consumer, then the interoperability should be considered for future STBs.

Interoperability system should ensure that where multiple feeds are taken by the operator, subscriber switch is made. We must also point out that the industry is having to deal with many regulatory changes almost simultaneously. The migration to the NTO has taken time and also resulted in a drop in the overall subscriber base. Upgrading of infrastructure requires capital funding which is scarce. Hence, any attempt at a systemic change that requires capital investment and consumer education needs to be thoroughly debated and discussed- on the pros and cons before a final decision is taken. It is also equally important that the regulatory provisions for including interoperability of STBs should ensure safeguards for broadcasters.

The comments / views of DCI are without prejudice to their rights and contentions in the proceedings pending before the Hon'ble Delhi High Court in W.P. (C) No. 6915 of 2017 and W.P. (C) No. 9431 of 2019.