

**Consultation Paper No. 2/2023**

**TRAI Consultation Paper on ‘Telecommunication Infrastructure Sharing,  
Spectrum Sharing, and Spectrum Leasing’**

**Comments by Indian Space Association (ISpA)**

**March 3, 2023**

1. At the outset, we thank the TRAI for the opportunity to provide comments on the Consultation Paper.
2. The consultation paper has been fully scrutinized which included in-house brainstorming with Industry Members as well as experts who have been working in related fields. The ISpA has collated inputs received from a wide variety of experts and industries which would include R&D, Production, Installation, Operators and Service Providers.

**Infrastructure Sharing**

3. TRAI has previously recommended infrastructure with respect to sharing for satellite gateway infrastructure, and DOT accepted the recommendations and amended the Unified License accordingly. This ensures optimal use of the infrastructure by different service providers. It's important that TRAI's future recommendations on infrastructure sharing do not undo the positive impact of prior recommendations already incorporated into the Unified License.

**Remote Areas Connectivity**

4. As the TRAI correctly notes in the consultation, telecommunications services in remote areas of India have not improved, and the need to promote connectivity in these regions is an essential element to guarantee social and economic development.
5. We consider that mandatory roaming arrangements amongst TSPs to promote connectivity in remote areas of the country might prove an inefficient mechanism, due to the lack of economic incentive for TSPs to invest in such

areas. If TSPs that invest in such areas are subsequently mandated to share their network infrastructure with other TSPs, their investment interest might be further reduced as it will not necessarily result in an increase of their customer base.

6. The satellite industry is best positioned to promote connectivity in areas that lack essential access to fast and reliable communications networks. The satellite industry is ready and willing to invest in connectivity solutions, and to contribute to bridging the digital divide in the country. Therefore, we submit to the TRAI that satellite technology is the best solution to promote connectivity in remote areas of the country due to its natural extended coverage.

### **Spectrum Sharing**

7. Regarding spectrum sharing, we submit that the TRAI should consider the critical difference between the way spectrum is assigned for satellite use and assignments of spectrum for use by terrestrial networks. Satellite operators and service providers share spectrum in an effective manner by using the same frequencies across multiple satellites, satellite systems, and earth stations. Any fragmentation of the spectrum used to provide satellite services and to make exclusive assignments unequivocally results in a loss of satellite capacity, thus making unviable the provision of satellite services. On the other hand, auctioning of spectrum used by satellite operators and service providers on a shared basis would not add any value due to the lack of exclusivity.

8. Indeed, we note that concerns that shared used of spectrum causes a loss of revenue to the government and the waste of a scarce natural resource simply do not apply to satellite-based services. On the contrary, the sharing of spectrum that takes place among satellite operators and service providers should be valued by the authorities as a means for India to achieve a leading position in the space technology sector, accelerating the availability of quality education and healthcare, and enabling the overall development of rural and remote parts of the country.

9. The technical, economical and public interest aspects that explain why the auction of spectrum for satellite services has not been adopted around the world as an assignment mechanism should provide a good reason of why India should continue to promote the sharing of spectrum among satellite operators and service providers, as well as to maintain the administrative assignment model for spectrum used by satellite operators and service providers to ensure there are no delays to enabling increased connectivity in India through High Throughput Satellite (HTS) and Very High Throughput Satellite (VHTS) networks, both in geostationary and non-geo-stationary orbits.

10. The recent draft telecom bill that was released for public comments by the Ministry of Communications states in point 5 and sub-point 2 that: “The Central Government may assign spectrum for telecommunication through:

- auction;
- administrative process for governmental functions or purposes in view of public interest or necessity as provided in Schedule 1; or
- in any other manner as may be prescribed.”

11. The assignment of spectrum for satellite services certainly qualifies for the administrative process route, out of necessity. It is the norm, not the exception, and a practice that is followed by administrations around the world.

12. In conclusion, the sharing of spectrum by satellite operators and service providers is an essential practice (like satellite-broadband, Direct-to-Home television, captive satellite networks, and Governmental use, including defense networks), and its overall benefits should not be jeopardized through the creation of exclusive rights or the assignment of rights of use of spectrum through an auction mechanism.

13. As associated orbital slot allocation related to satellite spectrum is managed at ITU level as per its policies and regulations, spectrum sharing among satellite operators may be kept out of scope of this consultation paper.

### **Important Recommendations**

14. Authorized Shared Access (ASA) of spectrum should be permitted between incumbent government primary users holding such spectrum and the access/satcom services providers who are secondary users. The ASA framework should be simple, practical and be decided separately in discussion with stakeholders, i.e., TSPs, government users like railways, defense, etc.

15. We do not believe there will be any competition concerns in cases of inter-band sharing or spectrum leasing or ASA, as these options only offer a temporary and incremental support to network services. The Authority can always monitor the market and intervene in an ex-post approach.

16. Wrt Satellite services, Infrastructure sharing should be allowed for passive network as well as active networks as in NGSO, the same network will be shared across multiple service licensees.

17. USO sites - no justification for mandatory sharing else it simply goes against the very core of the support i.e., challenge of terrains, extremely poor economics of the typically sparsely populated area and the fact that the market itself has failed to reach there on its own and has needed external funding support. A mandatory sharing on a USO site that has been created in a very poor and limited revenue market, where costs exceed revenue potential, will depress and fragment whatever limited basic revenue opportunity there could be for any TSP investing there.

18. With regard to passive infrastructure-sharing, we recognize the issue highlighted by the Authority that enabling provisions for passive infrastructure-sharing are present in some specific service authorizations and not others. However, we believe the intention of the Licensor (DoT) was not to give the benefit of passive infrastructure-sharing to some licensees and not to others. It seems that it was inadvertent rather than intentional that enabling provisions were included in some authorizations and not in others. Hence a much-needed clarity may be brought in under the licensing, addressing this anomaly.

19. The infrastructure sharing charges should be allowed as pass-through while determining AGR for the purposes of payment of License Fee (LF) and Spectrum Usage Charge (SUC) in case of Unified License (UL), just like UL-VNO.
20. Consolidated comments/feedback received from the industry are placed under **Annexure A**.

**Annexure A**

**CONSOLIDATED FEEDBACK OF ISpA MEMBERS ON ISSUES FOR CONSULTATION**

**Q1. Should passive infrastructure sharing be permitted across all telecommunication service licenses/ authorizations? Kindly justify your response.**

21. We understand that extant license conditions already permit passive infrastructure-sharing across all telecommunication service licenses/authorisations.

In the interests of bringing clarity, we suggest that enabling provisions for passive infrastructure-sharing may be introduced in all individual service authorisations under the UL and UL-VNO. However, we submit that this suggestion is made only to remove ambiguity, and that passive infrastructure-sharing is already permitted across all telecommunication service licenses/authorisations.

**Q2. Should other active infrastructure elements deployed by service providers under various licenses/ authorizations, which are not permitted to be shared at present, be permitted to be shared among licensees of telecommunication services?**

**AND**

**Q3. If your response to the Q2 is in the negative, which active infrastructure elements should not be permitted to be shared?**

**Further, which active infrastructure elements should be permitted to be shared with which licensees'/ authorization holders? kindly provide details for each authorization with detailed justification.**

22. With respect to Satcom services, Active Infrastructure sharing among various licensees should be allowed for Antenna and RF, Baseband should not be allowed to be shared among various licensees. If some service license wants to provide services using other service license active infrastructure, VNO license may be taken for the same.

**Q4. In case it is decided to permit sharing of any additional active infrastructure elements among licensees,**

**(a) What precautionary conditions should be put in place to avoid disruption in telecommunication services due to any unforeseen situation? The response may be provided for each active infrastructure element.**

**(b) Whether there is a need to have a provision for permission from/ intimation to the Licensor before commencement of such sharing? If yes, what provisions and timelines need to be prescribed for each active infrastructure element?**

23. Please refer to response to Q2 & Q3.

India already has a very liberal active infrastructure-sharing framework hence no additional active infrastructure elements should be permitted to be shared among licensees. Any further sharing will raise concerns among the competition while also disincentivizing potential investors from making new investments into such infrastructure creation.

**Q5. Whether any other amendment is required to be made in the telecommunication services licenses/ authorizations with respect to the provisions relating to both active and passive infrastructure sharing to bring clarity and remove anomaly? If yes, clause-wise suggestions in the**

**telecommunication services licenses/ authorizations may kindly be made with detailed justification.**

24. Please refer response in Q1, Q2 & Q3.

In the case of passive infrastructure-sharing, the present license conditions already permit it across all telecom service licenses/authorisations.

In case of active infrastructure-sharing, the existing framework should be continued with and that there is no need to expand the present scope any further. Thus, no amendment is required to be made in the telecommunication services licenses/ authorisations with respect to the provisions relating to active infrastructure-sharing.

**Q6. Should there be any obligation on telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers? Kindly justify your response.**

**25. No.**

We also do not agree with the contention that USO-funded infrastructure, with no mandatory sharing, would create connectivity islands only meant for subscribers of the respective TSPs.

First, the areas identified for the USOF projects are sparsely populated and located mostly in uneconomic and rural/remote areas. As a result, they have barely any business potential. There are also structural issues like unavailability of roads and power, adverse weather conditions, etc., which make the execution of these projects extremely difficult as well as costly. It would therefore be unviable for TSPs to execute these projects on their own.



Since the USOF subsidy is granted to merely bridge the viability gap, and not to fund the entire capex and opex of the projects, the amount of the subsidy offsets only a small part of the infrastructure development costs in USOF projects. The portion of costs that the TSPs bear themselves is several times the amount of the subsidy.

Furthermore, USO-funded projects are generally awarded to TSPs on a tender basis, i.e., through an open competitive bidding process. The process is completely transparent and fair and all the TSPs have an equal opportunity to participate in it. Any TSP wishing to provide mobile services in the identified areas may submit its bid. On being successful, the TSP is required to enter into an agreement with USOF, and then set up, operate, maintain and manage the respective infrastructure as per the terms and conditions laid down in the agreement. It is pertinent to mention here that these USOF agreements already contain provisions for mutual sharing of infrastructure among TSPs on a voluntary basis.

The bidding strategy adopted by a TSP is prepared after considering a variety of factors, including but not limited to the overall costs of the projects, the limited amounts of subsidy, the potential revenue, etc. Any retrospective application of any mandatory infrastructure guidelines to existing USOF agreements would be highly unfair to the successful bidders, as it would disturb the whole cost-and-revenue model on which they would have based their bids.

The purpose of the USO fund is to create very basic infrastructure where none exists and do so in a shared manner – hence the viability gap support. The intent of the USO subsidy is not to bring retail competition into a market where the economics of the subscriber itself are too poor to afford the service, making cost recovery for TSPs challenging. In any case, in addition to the mutual infrastructure sharing clauses under the tender, the Authority has already mandated that all TSPs provide MNP facilities to all their subscribers.

Any mandatory sharing of USO sites will disincentivise the TSPs from actively investing for infrastructure development as the bare minimum revenue available will get fragmented. This will deter TSPs from making ambitious competitive strategies, hurting the very purpose of expanding coverage in such areas and the interests of consumers, the TSPs, as well as the overall objective of universal connectivity at national level. Thus, sharing of infrastructure should continue only on a voluntary basis only.

**Q7. In case it is decided to impose some obligations on telecom service providers to share the infrastructure funded by Government with other telecom service providers, is there a need to provide a broad framework for sharing of such infrastructure? If yes, kindly suggest the key aspects of such framework with detailed justification.**

26. Refer our response to Q6 above. USOF agreements already contain provisions for mutual sharing of infrastructure among TSPs on a voluntary basis.

Having said that, the Authority should let the TSPs know its assessment of market failure of competition based on regulatory and cost benefit analysis, that would result in the need to impose a 'mandatory' obligation- before such a mandate is prescribed.

**Q8. Any other suggestion to facilitate infrastructure sharing may kindly be made with proper explanation and justification.**

27. We strongly recommend that the charges paid by a TSP towards infrastructure sharing should be allowed as a deduction from its Gross Revenue (GR). Further, this should not be limited to USOF projects only, but should be extended to infrastructure sharing in all scenarios.

Under the current regime, infrastructure sharing among various licensees has been permitted. Further, the UL-VNO permits the infrastructure-sharing charges paid by a VNO to an Network Service Operators (NSO) -TSP to be

deducted as pass-through for determining the Adjusted Gross Revenue (AGR) for the purpose of payment of LF and SUC. However, no similar provision exists in the UL for permitting the deduction of the infrastructure-sharing charges paid by one TSP to another TSP. This results in the incidence of double levy in cases of unified licensees – the charges for infrastructure sharing are subjected to LF/SUC not only in the hands of the owner TSP (as part of its revenue), but also in the hands of the other TSP paying these charges (since no deduction is allowed). Hence, the extant regime actually has the effect of discouraging infrastructure sharing.

Thus, infrastructure-sharing charges should be allowed as pass-through while determining the AGR for the purposes of payment of LF and SUC in case of UL, just like UL-VNO.

**B. Connectivity Issues Faced by the Subscribers in Remote and Far-flung Areas of the Country**

**Q9. What measures could be taken to encourage roaming arrangements among telecom service providers in remote and far-flung areas? What could be the associated regulatory concerns and what steps could be taken to address such concerns? Kindly provide details on each of the suggested measures with justification.**

**Q10. What could be the other ways to ease out the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider? Kindly provide detailed response with justification**

28. Satcom provides effective way to connect remote & far-flung areas. With new satcom technologies like NGSO, it will make the cellular backhaul connectivity over satellite more affordable. The cellular network availability in these areas should be enabled with supportive policies like

- i) USO should rollout separate ‘satcom based backhauls’ tender for enabling backhaul network creation for the specified area/village,

using this backhaul and local RF network, Telcos may rollout their cellular network.

- ii) USO should provide the subsidy for satellite based backhaul network for five years instead of existing two years.

This will help to ensure network coverage to far-flung remote areas.

**C. Issues relating to inter-band spectrum sharing among access service providers.**

**Q11. Whether inter-band access spectrum sharing among the access service providers should be permitted in the country?**

29. Satellite services have inherent characteristics of being sharable and thus satellite spectrum is already shared for use of satellite services and does not require exclusive allocation of spectrum unlike cellular services. This one of the reasons that the satellite spectrum is allocated on administrative basis across the world.

Satellite spectrum irrespective of spectrum allocation method should not be allowed to be shared for use other than satellite.

**Q 12. In case it is decided to permit inter-band access spectrum sharing among access service providers, please provide detailed inputs to the following questions: (a) What measures should be put in place to avoid any potential adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.**

**(b) Considering that surrender of spectrum has been permitted in the country, what provisions need to be included in the guidelines for inter-band access spectrum sharing so that any possible misuse by the licensees could be avoided? Kindly justify your response.**

**(c) What should be the broad framework for inter-band access spectrum sharing? Whether the procedure prescribed for intra-band access**

**spectrum sharing could be made applicable to inter-band access spectrum sharing as well, or certain changes are required to be made?**

**(d) What should be the associated charges, and terms & conditions for inter-band access spectrum sharing?**

30. Response: Please refer to response to Q11.

**Q14. Whether there is a need to explore putting in place a regime to implement Authorized Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis? Kindly justify your response.**

31. **Yes**, it should be permitted wherein an access/satcom service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies) on a dynamic sharing basis.

Considering the increasing data usage owing to increasing digitalization, proliferation of IoT based solutions, there is certainly a need to explore putting in place a regime for authorized shared access of spectrum, wherein the spectrum assigned/ earmarked for Government/ other users on a primary basis could be used by the access service providers on a secondary basis.

**Q15. In case it is decided to implement ASA technique for secondary use of frequency spectrum assigned to non-TSP primary users, please provide your response to the following questions with detailed justification:**

**(a) What are the potential spectrum bands in which ASA implementation can be considered?**

32. The potential spectrum bands in which ASA implementation can be considered are:

- i. S Band
- ii. L Band

**(b) What measures should be taken to encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique?**

33. The ASA technique could be used in the context of those sharing arrangements where the primary user refers to the different sections of the government (e.g., Defence, Railway). We recognize that these incumbent operators may have to invest in their network (say spectrum interference techniques, dynamic spectrum allocation) and accordingly the Government should consider providing financial incentive / support to these incumbent operators to invest in the required infrastructure essential for spectrum sharing through the ASA technique.

**(c) What should be the broad framework for implementation of ASA technique?**

34. Since this is a new concept to be discussed in India, and even globally, it understandably has not been mass deployed / used. Hence the framework for ASA should be principle-driven, making the access to unutilized spectrum from government users easier for TSPs to deploy, and without too many prescriptive aspects to negotiate through.

To ensure coexistence between both sets of users, there will have to be a discussion on what the definition of acceptable levels of interference and appropriate broad mitigation strategies would imply to ensure no interference to Primary users.

Therefore, since these are early days, and the TRAI should facilitate individual industry discussions with such stakeholder which may include TSPs / licensees, the government stakeholders like railways and defense, and other such parties, to formulate an India relevant framework.

**(d) Is there a need for putting in place a mechanism for dispute handling including interference issues in case of ASA? If yes, what should be the framework?**

35. No additional comments

**(e) What methodology should be adopted for spectrum assignment to secondary users? What could be the spectrum charging mechanism for such assignment?**

**(f) Who should be entrusted the work of managing shared access of spectrum?**

36. For satcom services, the secondary assignment to secondary users should be done on an administrative basis.

**Q16. Whether there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers? If yes,**

37. No additional Comments

**(a) What are the possible regulatory issues involved and what could be the possible solutions?**

**(b) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.**

38. No additional Comments

**Q17. In case it is decided to permit ASA technique-based dynamic spectrum sharing among access service providers in the country, please provide your response to the following questions with justification:**

**(a) Whether there is a need for prescribing any framework for such shared use? If yes, what should be the framework?**

39. We reiterate and strongly urge the TRAI to hold individual discussions with relevant stakeholders including the TSPs and primary Government user agencies like the railways and defence ministries to deliberate upon and come up with an appropriate framework for ASA in India.

**(b) Whether access service providers should be required to obtain approval or intimate to DoT before entering into such arrangement?**

40. Yes, the ASA arrangement should be completed with the prior approval of the DoT since it requires a lot of coordination between primary and second users with the support of WPC.

**(c) Whether any fee (one time, or recurring), should be prescribed on the spectrum sharing party(ies)? If yes, what should be the fee and who should be liable to pay such fee?**



41. There can be a one-time, non-refundable administrative processing fee for the ASA. The same can be paid either by primary or secondary user. The fee should be reasonable and no more than the recovery cost of application processing.

- (d) What should be the treatment of spectrum shared through ASA technique for the purpose of computation of spectrum cap?**
- (e) Whether there is a need for an independent entity for managing spectrum access? If yes, who should be entrusted this work? If not, how should the spectrum access be managed?**
- (f) Is there a need for putting in place a mechanism for dispute handling including interference issues or should it be left to the access service providers? If yes, what should be the framework?**
- (g) What other terms and conditions should be applicable for the sharing parties?**

42. No additional comments.

**Q18. Suggestions on any other spectrum sharing technique(s), which needs to be explored to be implemented in India, may kindly be made along with the relevant details and international practice. Details of likely regulatory issues with possible solutions, interference management, dispute handling etc. may also be provided.**

43. No comments

### **E. Issues relating to Leasing of Spectrum**

**Q19. Where there is a need to permit spectrum leasing among access service providers? Kindly justify your response.**

44. As for Satcom services, spectrum is shared resource, spectrum leasing should not be allowed.

**Q20. In case it is decided to permit spectrum leasing among access service providers, please provide detailed response to the following questions:**

**(a) Whether spectrum leasing should be permitted for short term period only, or for both short-term as well as long term?**

**(b) In case only short-term leasing is to be permitted, what should be the maximum duration for such spectrum leasing? Should there be any restrictions on renewal of such short-term lease?**

**(c) In case it is decided to permit long term leasing, please provide your response to the following questions with justification:**

**(i) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?**

**(ii) Whether there should be a maximum duration for which spectrum leasing may be permitted?**

**(d) What should be the applicable roll-out obligations for the Lessee (the access service provider which takes spectrum through leasing arrangement from the Lessor)? Whether the spectrum leasing should have any effect on the rollout obligations applicable for the Lessor (the access service provider which has leased out the spectrum)? Whether the provisions for roll-out obligation require to be different for short-term and long-term spectrum leasing?**

**(e) Should the spectrum leasing charges be levied on similar lines as applicable for spectrum trading? If no, what charges should be made applicable in case of spectrum leasing?**

**(f) Should there be a lock-in period, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading? If yes, what should be the lock-in period post which, spectrum holder would become eligible to lease it to another access service provider?**

**(g) Whether there is a need for an approval from, or intimation to DoT before the proposed leasing of spectrum? If yes, whether prior approval/prior intimation requirement be different for long-term and short-term spectrum leasing? What should be the timelines for approval from, or intimation to DoT in each case?**

**(h) Whether the spectrum held by an access service provider on short-term, or long-term lease be included to calculate compliance to spectrum caps?**

**(i) Considering that surrender of spectrum has been permitted in the country, what provisions need to be created in the guidelines for leasing of spectrum between access service providers so that any possible misuse by the licensees could be avoided?**

**(ij) What other terms and conditions need to be prescribed in respect of spectrum leasing between access service providers?**

45. Spectrum leasing for satcom services should not be allowed.

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