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Ref: No. RP/FY21-22/014
30th June 2022

Shri Asit Kadayan,
Advisor (QoS)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
JawaharLal Nehru Marg,
New Delhi – 110 002

Subject : Consultation Paper on Rating of Buildings or Areas for Digital Connectivity
Reference : TRAI's Consultation Paper on Rating of Buildings or Areas for Digital Connectivity dated 25th March 2022

Dear Sir,

This is in reference to TRAI's Consultation Paper on Rating of Buildings or Areas for Digital Connectivity dated 25th March 2022.

In this regard, please find enclosed our comments on the captioned Consultation Paper for your kind consideration.

Thanking You,

Yours' Sincerely,
For **Bharti Airtel Limited**

Rahul Vatts
Chief Regulatory Officer

Encl: a.a

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Response to TRAI CP on *"Rating of Buildings or Areas for Digital Connectivity"*

Executive Summary

At the outset, we would like to thank the Authority for providing us an opportunity to express our views on the TRAI's consultation paper on 'Rating of Buildings or Areas for Digital Connectivity'. This is an important area which requires attention as there is a need to enhance connectivity in the buildings and facilitate roll-out of telecom connectivity by TSPs by making it easier for them to have non-discriminatory access to buildings and adjacent areas.

We note that the Authority has issued this consultation paper with an objective to:

1) deliberate on policy interventions and explore possibility of new regulatory framework which may be required for facilitating TSPs and IPs in improving digital connectivity inside buildings, specific areas, specific transport corridors, public transport hubs etc.

2) create an ecosystem that might be required to design, deploy, operate, expand, and upgrade digital connectivity infrastructure inside buildings/other areas.

3) develop a methodology to measure and evaluate quality of experience in such areas and buildings and empower end users to get requisite infrastructure for digital connectivity, whether on their own, or via agents working in their interest, or by creating pressure on relevant entities.

However, equally important to note that the concept of Digital Connectivity Infrastructure (DCI) is being discussed in India for the first time, and, given the vastness of its scope with inter-sectoral interactions (e.g. real estate being other sector), we believe there should be thorough deliberations to propose / recommend a workable framework, that promotes DCI in a non-discriminatory manner, and does not become an additional burden on the Telecom ecosystem players, whose primary requirement is to have access and properly earmarked infrastructure inside the building premises to support DCI.

In summary, we propose the following in our submissions:

1. **Like the case of utilities such as gas, water and electricity facilities which are mandatory for a building, good telecom digital connectivity infrastructure should also be a mandatory requisite.**

2. Property manager should ensure that there is proper telecom/digital connectivity in the building. **Certificate of completion[1] should not be issued to the property manager by the concerned authority till the provision for good telecom digital connectivity is provided in the building.**

3. We submit that the **property manager should be the owner of the digital infrastructure** of the building. The property manager should manage the services available in the building and should deal with other agencies for all the services like gas, water, electricity, and digital connectivity.

4. As telecom services are an essential services, the property manager should maintain transparency and provide access to TSPs in a non-discriminatory manner.

5. Both Telecom Regulatory Authority of India (TRAI) and Real Estate Regulatory Authority (RERA[2]) should work in coordination with each other on the regulations/policies on DCI, Furthermore,

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[1] This relates to any under construction/new buildings.
[2] RERA (Real Estate Regulatory Authority)

both Regulatory Authorities should also coordinates & consults with the respective ministries on any such issue relevant to DCI.

6. **Rating of building will encourage property managers in improving DCI quality inside buildings.** An awareness campaign may **push property managers of existing buildings to get their buildings rated.**

   The Rating should account for cases where any lesser number of TSPs networks are available in an area due to any circumstances i.e. i.e. a property / building where assessment of availability of network of all (or incrementally higher numbers of) TSPs should always be accorded a higher rating and weightage than the Rating of a building/property having lesser numbers of TSPs networks available.
7. The DCI evaluator should be empowered to issue rating certification to the property manager. We do not believe a separate Self-Regulatory Body (SRB) is required to be created for this purpose.

8. TRAI and RERA may jointly create a wing where the property manager can appeal against the decision of DCI Evaluator, for review and reconsideration.

9. Validity of **ratings should be for a 5-year period.** Having shorter validity may lead to too much of work and rework on ratings. The same will also go against the principles of Ease of Business. The process of renewal of rating should be incremental.

10. TRAI, DoT should play a role in developing a methodology for rating of buildings in consultation with RERA/MoUD and TSPs. Further, TRAI and DoT should play an active role in getting the changes in the laws/ guidelines to facilitate the new ecosystem for orderly growth of the telecom / digital communication sector.

11. Regarding a rating of towns, villages, and states, a phase wise approach should be adopted, starting with rating of the buildings first. Once this process is tested and established, then in the second phase, the ratings of towns, villages, and states may be carried out.

12. For buildings and areas with high footfalls, such as airports, ports, railway stations, public transport stations, bus station, major rail routes and highways, large shopping complexes, industrial estates, government buildings, **it may be good to make the rating mandatory. This will facilitate roll-out of network and help TSPs in getting the necessary approvals.**

13. There should be a need to designate a nodal official for building(s) falling under the mandatory category to comply with the rating related requirements.

14. The TRAI must carry out the **Regulatory Impact Assessment (RIA)** before coming out with any Recommendation on DCI. Also the draft Recommendation should be shared with the industry for comments and inputs prior to finalizing the same.

15. DCI and its performance can be significantly impacted due to illegal/unauthorized boosters and repeaters, thereby deteriorating Quality of Experience and Service for the user, and network. Hence, illegal installation of boosters/ repeaters should be made a cognizable offence.

We now provide our detailed question wise response to the questions raised in the consultation paper.

Response to TRAI CP on *"Rating of Buildings or Areas for Digital Connectivity"*

Q.1. How can an ecosystem be created to design, deploy and evaluate DCI with good connectivity in a cohesive and timely manner? What would be the typical role and responsibilities of actors of the ecosystem? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Communications is the lifeline of today's world and effective communication is a necessity. It should be treated at par with basic needs such as water and electricity and, proper infrastructure provisioning should be made within buildings, commercial areas among others, in order to facilitate the DCI.

As far as the role of the TSPs and IPs, is concerned, they are responsible for managing and providing telegraph services under the ITA 1885, and ecosystem is mature and well governed.

However, in order to rollout in-building telegraph infrastructure by service providers (TSPs/ IPs), the telecom licensees have a dependency on getting access rights and properly earmarked areas within the buildings (housing/ commercial).

In that sense, the housing / urban development sector becomes an important participant in an overall scheme of things for Telecom licensees to enable/facilitate digital connectivity to citizens.

In this age of collaboration and cooperation, getting timely access and infrastructure to deploy Telecom / telegraph infra and equipment requires close institutional level collaboration between Telecom and Housing Sector i.e. between the TRAI and RERA (both Authorities), within whose respective frameworks, their participants operate and will work collaboratively to facilitate DCI.

Thus, we are of view that following ecosystem players will operate under the same:

Telecom ecosystem and its participants:

- Telecom licensees like TSPs/IP1s
- Telecom Authorities and bodies like TRAI, and DoT
- Digital Communications associations like Cellular Operators Association (COAI)

Role and responsibility – as governed and mandated under the Indian Telegraph Act to install, operate, manage Telegraph.

Urban / Housing ecosystem and its participants:

- The RERA
- Ministry of Housing Development
- Developers/Property Manager

Role and responsibility – as governed and mandated under the National Building Code, RERA Act and other necessary legislations/ regulations issued by the competent authority .

There are two other important participants that can be considered:

1. **The end-users** - residents of residential buildings/infrastructure and users of telecom services
2. **The DCI Evaluator cum Rating entity** –

Role and responsibility of DCI Evaluator cum Rating entity –
We propose DCI evaluator be empowered to issue Rating as well. In our opinion the rating entity's should to rate the building infrastructure from DCI perspective, whether it has all necessary arrangements provided for a TSP/IP/Telecom licensee to install telegraph in premises. Please refer to our more specific response in Q31 & 32 in terms of process of evaluation and issuance of rating framework.

Q.2. How would the ecosystem proposed in response to Question no.1 ensure that created infrastructure does not get monopolized? Please justify your response with rationale and suitable examples, if any.

Airtel's Response:

In the telecom licensing and regulatory framework, there are enough safeguards to look into competition concerns. In-fact India's telecom growth story is a testimony how sharing infrastructure and no exclusivity can enable faster rollout of telecom infra and services.

However, the Telecom ecosystem has high dependency on infrastructure access and sharing specially in premises/buildings, and it should be ensured that such infrastructure does not become a bottleneck to deploy and expand telecom / digital connectivity of TSPs.

Therefore, the Property Manager and the housing ecosystem participants must ensure to earmark proper spaces/areas to house telegraph infrastructure (Passive and Active both), create utility ducts from such earmarked space up-to every household internally through proper piping, wiring for telegraph installation.

To ensure that such property is not monopolized, all such space should be given to TSPs/IPs without discrimination and on non-exclusive basis to let them install telegraph.

The TRAI and DoT (e.g. through their filed offices) should do a regular sample checks and audits to ensure that no monopolization or exclusivity is happening on DCI, and in the event of any such instance, TRAI along-with RERA should jointly address such concerns/complaints, under an agreed mechanism.

Q.3. How would the ecosystem proposed in response to Question no.1 enable DCI Designers to factor in the digital connectivity requirements of the existing and/or prospective users of the network? How can such requirements be gathered at the stage of construction of a new building or at the time of up gradation or expansion in case of pre-existing DCI? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Telecom network designing and implementation is core part of TSPs, IPs, licensees being governed under respective licenses/registration under section 4 of the ITA 1885. Therefore, TSPs are best placed to understand their users' demands and plan network designing.

In order to enable DCI, the sectoral regulator and ministry i.e. TRAI and MoC/DoT should share such requirements of their stakeholders, with RERA/MoHUD, who in turn shall incorporate those needs/inputs in respective requirements e.g. in national building code. This requirement sharing exercise can be mutual as well.

Since the platform shall enable a continuous monitoring and evaluation process, this will enable continuous feedback from the users or prospective users are taken into account while construction of new building or re-calibration of pre-existing DCI. Like electricity, Gas and water the market dynamics will create templates for the categories of the building (Residential / Commercial / Office Complex), Size and price segment, there need to be standard requirements (that will keep upgrading based on technological upgradations).

For existing or construction stage structures; a motivational rating system which allocates *extra basis points* to existing ones in comparison to new entrants in proposed DCI framework implementation would help promote participation among them.

Q.4. How would the ecosystem proposed in response to Question no.1 enable DCI Evaluators to get requisite information to evaluate and ensure that the designed or deployed network would meet the requirements of end users? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

At the outset we believe that TSPs, IPs, licensees being governed under section 4 of the ITA 1885 are best placed to understand their users' demands and plan network designing, and already plan it accordingly.

However, to from a DCI perspective i.e. whether the infrastructure within the building premises is capable, equipped enough to facilitate TSPs/IPs deploy telecom network/infra, a NPS rating system and 360^0 feedback of end customers who are using telecom services in DCI enabled structures/buildings would help the infrastructure improvise in terms of telecom needs fulfilment.

Q.5. How would the ecosystem proposed in response to Question no.1 ensure that upgrades and expansion of the DCI are done from time to time and continue to meet rising demands? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

From a DCI perspective within premises/buildings/commercial structures, to gather relevant and holistic user feedback that will enable upgrade and augmentation of DCI, we suggest that a NPS rating system *(ref answer to Q4)* and a Rating agency *(ref answer to Q1)* can be used. These inputs can further help TSPs/IPs to plan further better upgradation & implementation of telecom services.

Q.6. How would the ecosystem proposed in response to Question no.1 ensure that the TSPs' networks are planned, designed, deployed, and upgraded to serve the DCI requirements in a timely manner? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Telecom network designing and implementation is core part of TSPs, IPs, licensees; being governed under respective licenses/registration under section 4 of the ITA 1885. Therefore, TSPs are best placed to understand their users' demands and plan network designing, deployment and upgrades. It is also important that expansion of new technologies and networks are significant investments driven, which are

techno-commercial decisions (i.e. involving trade-offs among multiple factors like technology (and its obsolescence), demand, revenue generation and investments).

As far as meeting market demands and needs for purpose of DCI, we believe that once TSPs have been given timely access, RoW permissions and necessary in building DCI enabled infrastructure e.g. ducts (FTTx access to households) with proper wiring, power support, TSPs will ensure timely services and network in such areas.

Hence dependency in this case is less on TSPs, rather more on property managers to provide timely access/permissions within premises for DCI. However, as responded in Q3 above, if the ecosystem participants (e.g. property managers) witness any specific requirements emerging in the market, they should communicate that back to TRAI and RERA and the TSPs, for TSPs to assess and plan accordingly.

Q.7. How can an ecosystem be created to build capacity requirements of skilled professionals such as DCI Designers, DCI Engineers, DCI Evaluators? What would be the typical role and responsibilities of actors of the ecosystem? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We suggest that a pool of skilled professionals may be formed with a mix and match from existing professional resource pool belonging to various fields ranging from *TSPs, IPs & involved govt. bodies,* and new entrants from other fields such as building architects, construction suppliers etc.

Further, this role can be entrusted to the respective sectoral skill councils i.e. Telecom Sector Skill Council (TSSC) and Construction Skill Development Council of India (CSDC) to cross collaborate and design appropriate modules to train workforce in such areas. In-fact, the ITIs (industrial Training Institutes) can also be roped in to collaborate in such areas, and who can be given certification courses and trainings in such requirements.

Lastly, the role & responsibilities of the relevant actors of the DCI ecosystem, may be jointly decided by the TRAI and RERA along with their stakeholders.

Q.8. How would the ecosystem proposed in response to Question no.7 ensure that relevant training courses are available in the country? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

As suggested in Q7 above, the respective sectoral skill councils i.e. TSSC, CSDCs, ITIs can cross collaborate and design appropriate certification modules to train workforce in such areas.

To ensure that there is a structured approach in this entire gamut, TRAI and RERA can offer joint certifications for such modules and certification courses and also to colleges/universities etc.

However, we also suggest that with basic technical knowhow and initially formulated knowledge base, *as prerequisites*; the DCI framework can be implemented on pilot basis and further enrichment/enhancement can be developed over a period of time.

Q.9. Whether the training courses proposed in response to Question no. 8 are already being offered by any organisation or institution that can be recognized for the purpose? If yes, please provide a list of organisations offering such courses. If not, how specialized courses can be designed to meet the requirements? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We do not believe that any specific degree course is required to be created and mandated for purpose of DCI. The Civil and architecture engineering degree and diploma courses are being offered among almost all public and private engineering colleges/institutions/universities, and hence the DCI modules or as subject chapters can be included in their curriculum.

Aside, in the Telecom domain, there are already training and certification courses available to plan, design and deploy DCI. List of some of such courses offered by various organizations is provided below:

- Certified IP Telecom Network Specialist (CIPTS) offered by Telecommunications Certification Organization (TCO)
- International Association for Radio, Telecommunications, and Electromagnetics (iNARTE) offers certification program includes the Telecommunications Technician and Telecommunications Engineer credentials
- Master Technician Certification offered by NCTI
- The Registered Communications Distribution Designer (RCDD) certification offered by Building Industry Consulting Service International (BICSI)
- The WIRED certification offered by Wired Score.
- Certified Network Infrastructure Technician (CNIT) offered by CNET

Hence, we reiterate that there is no need to create any specialized and mandatory course or degree for purpose of DCI. Rather, some specific modules can be offered as certifications and also included in the existing curriculums of technical institutes for purpose of DCI.

Q.10. Is there a need to establish a council on the lines of "Council of Architecture" (CoA) to regulate minimum qualifications, additional specialized courses and practice of DCI profession in the country? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

No.

We do not believe that any such CoA is required, and establishing such an independent council for DCI – where requirement is more of civil/ electrical in nature as it is about facilitating the telecom infrastructure at building/premises; might delay the entire project.

In-fact, as suggested in response to Q7 above, the cross collaboration of TSSC, CDSC and ITIs can be more relevant and these entities can work under a common understanding framework for the purpose of DCI and jointly develop such certification and modules.

However, the framework may be overseen by the sectoral regulators TRAI and RERA jointly, in consultation with TSPs so that such modules remain up-to date and market relevant.

Q.11. Whether the requirements of additional specialized courses and practices of profession would vary depending upon the size of work or kind of work involved in a particular DCI project? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

The entire value chain of a DCI activity may involve multiple skillsets, from basic to advanced. There are various training programs & certification courses already available in telecom domain to plan, design and deploy DCI. These courses can be accredited in present form or customized for specific work requirements.

Further, additional specialized courses & practices would definitely vary depending upon quantum of work to be carried out. As an example, setting up a mast based tower or a pole site would require altogether a different kind of specialization as compared to underground or concealed fiber laying process.

There is a need for training and certification of skilled manpower, to use standard products to build the solutions & hence the need for certification of products related to the in-building solutions is also required.

We believe any such categorization of any specialized modules and certification courses should be left to TSSC, CSDC to develop in consultation with TSPs, industry from time to time.

Q.12. Whether creation of a digital platform to hire services of professionals would help Property Managers in creation of DCI? Should there be a feedback mechanism to assess quality of services delivered by professionals? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

While such platforms are desirable however creation of such platforms should be left to the market forces.

Yes, it is quite likely that establishing digital platforms to enable collaborative working among stakeholders could help in faster roll out of DCI. Such platforms for hiring services of certified professionals shall facilitate property managers and other stakeholders, to hire professionals. These platforms may also be used to gather feedback about the quality of the work carried out by the professionals. This will enable better hiring solutions for property managers.

However, we believe that **this may not be a regulated, rather be allowed to emerge on its own**, as such e-marketplaces may have multiple participants for overall ecosystem to grow, and innovation happen. Hence a separate platform to hire services of DCI professionals might not be the need of the hour.

To add credence to ecosystem, we suggest that a unique certification ID may be issued by TRAI/RERA/TSSC/DCSC to such DCI professionals, who may be validated/checked through online, and whose services may be taken by property managers or service providers.

Q.13. Whether creation of a digital platform for procurement of certified products would help Property Managers in creation of DCI? How would the certified products for the purpose of DCI be identified and updated on the platform? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We would like clarity that if the platform in question is about creating an e-marketplace where such certified products could be bought and sold, then such platform should be left to market forces to develop. The products for purpose of DCI could be regulated, licensed and totally unregulated, and or build on multiple other specifications e.g. Electrical components or batteries under BIS standards, Telecom under TEC.

In-fact, typical critical and core products are anyways regulated/certified under regimes like TEC, MTCTE and others, such products would already be passing through normal scanning. Hence there is no separate digital platform is required to be created for this purpose.

Further, pushing for use of only certified product does not have large examples in telecom industry and make become a complex compliance, and logistical / supply chain issue. However, complying to standards is a must, but is largely limited to common equipment (Network) and more linked to a limited set of characteristics.

However yes, Certification for products related to in-building solutions (IBSs) is desirable to make sure property managers deploy IBS products that are standardised, however the same should be voluntary.

Q.14. What may be the possible models of DCI ownership and its upkeep? Whether co-ownership models would help in aligning incentives in realising connectivity that would meet expectations of the end users from time to time? Should there be a need to specify terms and conditions for entities owning and responsible for upkeep of DCI to function in a fair, transparent and non-discriminatory manner? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Property manager should be responsible for ensuring DCI in a building. TSPs should be responsible for Antenna, Tower, Fiber, etc. deployment and O&M. Obligation should be on the Property manager to provide space, duct, and power so that TSP have easy access to deploy their equipment for Tower, small cell, or IBS. This should be a mandatory requirement to be fulfilled by the property manager on non-discriminatory basis.

Co-ownership model for DCI is a new concept in the entire digital ecosystem, which is yet to be seen and tested in the market, therefore, may be left to the mutual negotiations among the stakeholders.

Q.15. As one solution might not be suitable for all types of buildings, whether current requirements stipulated in the National Building Code of India, 2016 would be required to be evolved and prescribed ab initio to make it more appropriate for DCI requirements? Please justify your response with rationale and suitable examples, if any.

Response to TRAI CP on *"Rating of Buildings or Areas for Digital Connectivity"*

Airtel Response:

The provisions/requirements laid down in National Building Code of India 2016 (NBC) are intended to serve as a guiding principle to be followed by all stakeholders for adoption. However, the provisions of NBC might not be sufficient to accommodate requirements of telecom ecosystem which has evolved considerably in recent years with DRAN, mMIMO, TBs, small cells, AAUs etc. replacing traditional RAN.

New RAN equipment is becoming more and more compact in size as one unit whereas multiplying in nos. across the geography owing to high band spectrum deployment scenario. New building code shall be able to factor in all these landscape changes.

NBC has played a key role in providing good practices and acceptable standards for a variety of utility services and defining requirements at the time of construction of building and at subsequent stages also such as operation and maintenance of the buildings. These mainly focus on the essential requirements for ICT enabled installations, technology systems and related cabling installations in a building.

This also covers basic design and integration requirements for telecommunication with earmarking of spaces within the building/ buildings and their cabling infrastructure including their components and passive connectivity hardware.

Therefore, NBC may be required to come up with more detailed guidelines on DCI to meet the desired coverage and capacity requirements of TSPs. This will require referring to the specific standards for telecom and ICT as well as Best Current Practices (BCPs). Standards for DCI should be open and ready to accommodate futuristic standards evolving from time to time. Such standards will be required to be made applicable to special areas and organizations like Railways, Defence estates, Cantonment areas etc.

The above guideline may be formulated with due consultation with TRAI, RERA and TSPs. NBC provisions can be further incorporated in various Building Bye Laws and Guidelines published by Ministry of Housing and Urban Affairs and/or State/UT Governments.

Q.16. Whether NBC needs to prescribe a separate classification of buildings for the purpose of DCI? If yes, which factors should be considered to make such a classification? If not, how to accommodate DCI specific requirements in the existing classification of buildings by the NBC? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Yes, a separate classification of buildings for the purpose of DCI is required, on the lines of "Fire and Safety" classification for buildings.

However, it is not compulsorily that each building can be tagged into one particular set of category from telecom infrastructure design-thinking perspective; It could rather be a mix and match of different type of RF solutions. Hence broad categories as guidance are desirable.

For example, a heritage hotel comprises of ballrooms, galleries, guest rooms & open lawn areas etc. In such a scenario; we need to deploy different kind of solutions to provide mobile coverage, like omni-directional antennas for ballrooms, leaky cables for galleries & small cells for lawn & open areas etc.
So, it can never be defined as *"one size fits all"*.

The above classification may be formulated between TRAI and RERA with due consultation with TSPs.

Q.17. Whether there is a need to include DCI Professionals as Persons on Record as typically done in building bye laws or development regulations? Or registration with the Council proposed in Question no. 10 would suffice to practice profession across the country as followed in the case of Architects? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Please also refer our response to Q.10.

Having DCI professionals as Persons on Record (PoRs) is desirable to enhance accountability. The onboarding process should be easy. At present architects, engineers, structural engineers, and fire protection consultant are required to be 'on record' with clearly demarcated responsibilities and accountability, a similar approach may be adopted for DCI professionals if required to be PoR.

Further, considering DCI activity scope may also involve semi-skilled to skilled levels such like plumbing, electrical, carpentering etc. or e.g. deploying IBS; it is also in the interest of property managers to take services from such skilled / certified professionals, typically certified by TSSC/CDSC/TRAI/RERA, thus serving as the need of qualified professional workforce. Such certified workforce should be allowed to become PoR under a simple process.

Q.18. How can the clearances or approvals required for DCI at various stages of construction of building may be incorporated in building bye laws? In typical building bye laws, there are provisions for getting clearances from central government e.g., in case of civil aviation, defense and telecom being a central subject, what role can be played by the central government in giving such clearances or granting such approvals? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We believe that amendments will be required in the state and central laws and related regulations. The TRAI and DoT should play an active role in getting such DCI related clearances incorporated in building bye laws, through institutional mechanism and understanding between the two sectoral regulators / bodies i.e. TRAI/DoT and RERA /MoUD.

Further, TRAI should play an active role in getting clearances from central government e.g., in case of civil aviation, defense and telecom being a central subject etc.

Need to introduce a special class of Infrastructure Providers

Q.19. Is there a need to introduce a special class of Infrastructure Providers to create, operate and maintain DCI for a building or cluster of buildings in ownership models suggested in response to Question No. 14? What should be the terms and conditions for such special Infrastructure Providers? Should such terms and conditions vary depending upon type, size and usage of buildings? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

There is no need to introduce a special class of IPs to create, operate and maintain DCI. In-fact the very purpose of creating an IP1 registration under ITA 1885 is to facilitate telecom rollout. Therefore, we do not see any requirement to create a separate special class of IPs.

However, from a perspective of DCI facilitation and enablement (e.g. securing access permissions, creating Ducts, space for power etc.) at the property, the Property Manager should be responsible and to have complete ownership of the building.

Introduce rating of building from a DCI perspective- Voluntary scheme

Q.20. What are the initiatives or practices being taken in other jurisdictions outside India with regard to rating of buildings from a DCI perspective? Please share details and suggest how similar processes can be created in India?

Airtel Response:

We are not aware that any Telecom Regulator or ministry has come out with any specifications with respect to rating of building for DCI, whereas there may be market driven initiatives/practices in some of the developed countries like USA, Canada etc. However, these initiatives are taken by private organizations or by consortium of industry stakeholders.

Some of such initiatives have already been noted by the authority in its consultation paper such as WiredScore Score Certification Programs, SPIRE program by UL and TIA for assessing smart buildings.

Q.21. Is there a need to introduce Rating of buildings from the perspective of DCI that may help in nudging the Property Managers to strive for collaboration with other stakeholders to meet the digital connectivity expectations of the users of the building? Please justify your response with rationale and suitable examples, if any.

And

Q.22. In case, rating is introduced as a voluntary scheme, is there a need to monitor the progress? If progress is not satisfactory, would there be a need to launch campaigns and awareness drive to encourage Property Managers to come forward for rating? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Given Telecommunications services growing importance, essentially all stakeholders should facilitate create DCI in line with other essential services infrastructures, which however is not the case yet.

Therefore, rating in general can nudge property managers to get their buildings evaluated on quality of DCI available in the building, and may push property managers act in the direction of improving quality inside buildings and add values to their properties.

Property Managers have obligations in terms of ensuring proper supply and management of appropriate infrastructure for utility services such as water supplies, electricity, sewage, drainage, fire safety systems etc. Similarly, for creating DCI, there is need to have legal obligations on property managers to ensure a good digital connectivity inside a building or in an area which they are controlling or managing.

If an ecosystem is developed, then an in-building solution would get deployed that would meet general requirements of the users. To reach a level of enhanced customer experience, a mechanism may be required to be introduced that would **force the property managers** to come forward and implement the DCI solutions accordingly. Therefore, there is a need to create a connectivity index for the building.

We, therefore suggest certain parameters which may be considered for creating a **"Connectivity Index"** for any residential or commercial complex. This index would be derived from points in each of the proposed parameters (tabulated below). Based on the same end user would be in a position to take better call on whether the premise/building is suitable for telecom connectivity/digital connectivity experience or not.

"Connectivity index" would be a good parameter for DCI and mandating connectivity index would force the Property Managers to put efforts to make their property ready for telecom infra and take away any bias towards any TSP.

Parameters	Available	Provision
Connectivity		
Fiber to Premise		
Fiber to Towers		
Fiber to Home		
Fiber to Rooms		
Wireline Ethernet within rooms		
DTH satellite for premise		
DTH for each home / Apartment		
DTH cabling for each home / Apartment		
Meet me IT / Telecom room or facility		
Provision for macro sites		
Provision for site on street furniture		
WiFi within premise		
Provision for video cameras within premise		
Power backup for DCI infra		
Digital map of the premise		
Digital map of each house / apartment		
Neutrality towards TSPs		
- Fiber to premise		
- Macro site		

- Small cells on street infra		
- Fiber to home		
Open Wifi within the campus		
Ownership of maintenance of DCI		
Commercial cost for TSPs		
- Rental for Macro sites		
- Rental for Small cells		
- Cost for laying fiber within premise		
- Cost for laying fiber to each home / apartment		

We would also like to mention that "connectivity index" should not bring any parameter which has comparison of readiness or coverage by any TSP, rather as an index to rate buildings on DCI readiness.

Rating may not be made mandatory for all buildings. The market forces may push property managers to act in the direction of improving quality inside buildings and add values to their properties, to make same as business case. It is expected that once a successful model emerges, various stakeholders would start adopting it.

Q.23. Should the voluntary scheme of rating be extended to cover cities, towns and villages and even states? Would such a scheme help in encouraging local and state authorities to facilitate TSPs in creation or in improving outdoor as well as indoor DCI? Please justify your response with rationale and suitable examples, if any

and

Q.24. If in response to the Question No. 23 answer is yes then what framework should be introduced to rate cities, towns, villages and states, and how weightages can be assigned to different aspects of indoor and outdoor connectivity? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

The concept of DCI Rating/Connectivity index must be extended not just to residential or commercial spaces but to all areas including cities, towns & villages, however in a phased manner only. In the first phase the rating of the buildings should be done. Once this process of rating of buildings is tested and established, then in the second phase, the ratings of towns, villages, and states may be carried out.

Extending rating cities, towns and villages may push local authorities to mobilize local resources to create awareness about rating and, authorities take steps to improve rating of their cities, towns, villages. Such framework for should include facilitating RoW and installation of Towers.

Criteria like number of buildings rated, ratings awarded to such buildings, outdoor quality of network, easy approval mechanism for DCI etc. may be used for DCI rating of a city.

Rating as a mandatory requirement for specific classes of buildings

Q.25. Is there a need to make rating a mandatory requirement for specific classes of buildings such as public transport hubs, government buildings or any building of public importance etc.? If yes, which type of buildings should be covered under this category? Please justify your response with rationale and suitable examples, if any.

And

Q.26. What should be the time plan to rate buildings falling under the mandatory category and is there a need to prioritize some buildings within the mandatory category to make it more effective? Whether existing buildings falling under such classes are required to be dealt differently? Please justify your response with rationale and suitable examples, if any.

And

Q.27. Is there a need to designate a nodal official for building(s) falling under the mandatory category to comply with the rating related requirements? What actions are proposed to be taken in case of non-compliance? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Yes, in some cases, it may be required to make it mandatory, especially in the facilities and *buildings like airports, ports, railway stations, public transport stations, bus stands, major rail routes and highways, large shopping complexes, industrial estates, major market areas, office or workplaces, government buildings, government residential colonies and any other building of public importance.* Rating may also be made mandatory for large or high-rise residential buildings.

This will facilitate roll-out of network and help TSPs in getting the necessary approvals.

The methodology of rating buildings needs to be defined as well. A suitable time plan to rate buildings/places falling under the mandatory category may be defined after that. As a starting point a **"Connectivity index",** as suggested by us in response to Q21 &22 above, would be a good start.

Mandating such connectivity index would force the Property Managers to put efforts to make their property ready for telecom infra and take away any bias towards any TSP.

Nodal officer: In case of mandatory rating on certain buildings, designating a nodal official may help other stakeholders involved in quality assessment of DCI. Such an official may play a significant role in reaching out to the concerned stakeholders, coordinating activities, and getting digital connectivity rated.

Changes required in laws dealing with the development of areas or construction of buildings

Q.28. Is there a need to amend legal provisions under various laws, bye laws dealing with development of land and buildings or areas including forest areas, cantonment areas, port areas, panchayat areas, municipal areas etc. to facilitate creation of DCI and ratings of the buildings or areas? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Yes, there is there a need to amend legal provisions under various laws, bye laws dealing with development of land and buildings or areas including forest areas, cantonment areas, port areas, panchayat areas, municipal areas etc. to facilitate creation of DCI and ratings of the buildings or areas.

Specifically, this should cover access rights and permissions like RoW, installation of telecom towers, fiber through well laid ducts.

Role of Regulator in New ecosystem

Q.29. In case a voluntary scheme for rating is to be introduced or rating is notified as mandatory for specific classes of buildings then what should be the role of TRAI or DoT? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

In our view, TRAI should play an active role in coordinating with RERA for getting the changes in the laws/ guidelines. Further, TRAI and RERA in joint consultation with TSPs can develop a rating methodology for buildings.

We further submit that that Telecom Ecosystem (TRAI, TSPs and IPs) should get a dashboard view of key KPIs performance of the rating system. Based on periodic review, improvements can be communicated to counterpart institutions like RERA. This will help in creating evidence and analysis based framework for DCI ratings.

We also suggest that TRAI should perform a Regulatory Impact Analysis (RIA) of its recommendations in regards to this consultation and/or any subsequent frameworks emerging out of this paper. The RIA should be a standard approach in this case and be followed by both TRAI and RERA.

Q.30. Whether creation of "Regulatory Sandbox" to carry out experiments or demonstrate capabilities of innovative solutions to improve digital connectivity would be helpful to make changes in existing policies, laws or regulations? What should be the terms and conditions to establish a regulatory sandbox? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Regulatory Sandbox can allow regulators to base their regulatory response to innovations on the results of live experiments and helps them to make faster and better informed decisions. This approach may help in demonstrating capabilities of innovative solutions before relevant stakeholders.

Based on results/feedback, necessary changes in the laws or regulations may be required. Changes in the laws or regulations may be related to the variety of aspects covering:

- technical specs /standards such as limits of maximum output power in case of smart antennas,
- changes in approval processes
- assigning role and responsibilities in new context and any out of box solutions etc.

Regulatory Sandbox may also bring different types of stakeholders together to demonstrate their capabilities in the fields of planning, designing, procurement, deployment, and evaluation in the new ecosystem. New concepts with necessary proven-ness of the product and features may help in bringing

acceptance of the solution by the property managers. For example, better way of camouflaging and aesthetic blending of digital infrastructure. Such solutions may also be demonstrated as a part of Regulatory Sandbox.

Operationalization of rating framework

Q.31. Is there a need to establish a Certificate Issuing Authority to award ratings to buildings from DCI perspective? If yes, what should be the structure of such an authority? If not, who can be assigned the role to perform this function? Please justify your response with rationale and suitable examples, if any.

And

Q.32. Whether the authority suggested in response to Question no. 31 may use reports from DCI evaluators to award ratings? To ensure reliability of reports from DCI Evaluators, should Certificate Issuing Authority need to conduct periodic audits of DCI evaluators? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

No.

We believe there is no need to create a separate Certificate Issuing Authority to award ratings to buildings from DCI perspective, rather, the DCI evaluator should be empowered to evaluate and issue certificate under the oversight of TRAI and RERA.

The DCI evaluators may carry out such functions and **Connectivity Index** may be used to rate the buildings.

However, in order to ensure that DCI evaluators are able to work under a framework in a transparent and effective manner, the TRAI and RERA, in due consultation with TSPs should issue guidelines including methodology/algorithms.

The evaluator may give points against each of the connectivity parameters, and feed it into an App/system managed under TRAI and RERA oversight, which should then give back a final rating. This rating form should be downloadable which evaluator may issue/give to the property manager of a particular building.

Safeguards should be built to properly reflect and accommodate in the Rating for cases where any lesser number of TSPs networks are available in an area due to any circumstances i.e. a property / building where assessment of availability of network of all (or incrementally higher numbers of) TSPs should always be accorded a higher rating and weightage than the Rating of a building having lesser numbers of TSPs networks available.

Terms and conditions for using awarded ratings including provisions for its renewal, revocation & penal provisions in case of misuse

Q.33. What should be the terms and conditions for using ratings awarded to a building(s) from a DCI perspective? What should be the validity period of awarded ratings? Do you envisage any situations under which an awardee of ratings might be required to get the ratings renewed before the validity period? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Rating can bring value addition to the concerned building and can be used to draw attention of all stakeholders especially end users.

For T&Cs of ratings awarded, we suggest to incorporate the **Connectivity Index** proposed by us, and suggestion made in Q 31& 32 above.

Ratings should be awarded for a period of 5 years or 10 years, broadly consistent with Telecom technology changeover. and ratings can be renewed 2 months prior to expiry.

Q.34. Whether in the initial stages of introduction of the rating system, validity should be for a shorter time period, and later it may be increased as evaluation system matures? Should the validity period be dependent on the type of buildings? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

No. Since we are talking of DCI rating, it should align with telecom ecosystem developments, and hence a minimum period of 5 years and/or another for 10 years may be ok. We do not see any specific reason why should any shorter duration may be needed.

Further it is inherent in nature of a rating of DCI, that it will be a reflection of and have dependence upon type of building.

Q.35. Whether the process of renewal of rating should be the same as the process defined to get rated first time or it may be incremental? Or renewal process may be dependent upon the grounds on which it is being renewed e.g. expiry of validity period, introduction of new technology, introduction of new spectrum band(s), introduction of new services(s) etc.? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Process of renewal of rating may be incremental

Q.36. Whether the provisions to make an appeal should be introduced to give an opportunity to the applicant to make representation against the decisions of the Certificate Issuing Authority? What should be the time frame for preferring the appeal in case of disagreement with the rating assigned and its disposal? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

At the outset, we reiterate that the DCI evaluators should be empowered to issue the certification and no separate Authority/body is required for this role.
However, in instances where a property manager is desirous of disputing or appealing against the rating given, in that case, the same should be done in-front of TRAI and RERA jointly.

For this purpose, we suggest that TRAI and RERA may jointly create a wing where the property manager present his appeal for review and reconsideration of rating.

This proposed approach is also consistence with Ease of Doing Business.

Q.37. If somebody is found to be using ratings in an unauthorized manner, what legal actions are proposed to be taken against such entities? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Using of ratings in an unauthorized manner should be treated at par with fraud.

The Regulatory Authority (RERA and TRAI) may incorporate penal provisions in the framework/ Regulations/Policies which can be monetary in nature or actions like blacklisting the developer/property manager / DCI evaluator such an unauthorized rating is obtained/given/presented in a fraudulent manner.

This would discourage the property managers from any such malpractices. We also suggest that to avoid any misuse or use of rating in unauthorized manner, we suggest rating assigned to buildings may be published on RERA website.

Adoption of Digital Tools & Platforms, AI/ML Models to co-design and co-create DCI

Q.38. Whether creation of a digital platform that allows stakeholders to co-design and co-create DCI would be helpful to realise better, faster and cheaper solutions? Whether technologies and tools such as AI, ML would be helpful in achieving this objective? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We are of the opinion that such a platform should be left to market forces to develop and use. Also, co-design or co-creation of DCI should be left to market forces. While it is indeed welcome to use new technologies and tools like AI/ML, that should also be left to market forces.

Given that it is an altogether independent, exhaustive and technical subject, we suggest that it should be taken-p as a separate specific consultation paper.

However, should the Authorities believe that a digital platform is needed, we recommend that it may be jointly developed by TRAI and RERA in consultation with TSPs.

Typical processes involved in rating of a building

Q.39. What should be the typical process to rate a building? Whether terminologies and steps involved in the rating process need to be standardized? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

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Response to TRAI CP on "*Rating of Buildings or Areas for Digital Connectivity*"

Rating at first instance seems to be a simple concept and easy to implement but, in reality, it may be a complex task. Rating involves assessment of quality which can be done using objective methods and subjective methods. Therefore, a simpler rating process may be considered so that the same would be easy to understand for the end-users.

As suggested in our response to question no. 22 & 23, we would like to reiterate that **"Connectivity Index"** may be considered for the purpose of rating a building or premise. there are certain parameters which may be considered for creating a "Connectivity Index" for any residential or commercial complex. This index would be derived from points in each of the proposed parameters (tabulated below). Based on the same end user would be in a position to take better call on whether the premise/building is suitable for telecom connectivity/digital connectivity experience or not.

"Connectivity index" would be a good parameter for DCI and mandating connectivity index would force the Property Managers to put efforts to make their property ready for telecom infra and take away any bias towards any TSP.

Parameters	Available	Provision
Connectivity		
Fiber to Premise		
Fiber to Towers		
Fiber to Home		
Fiber to Rooms		
Wireline Ethernet within rooms		
DTH satellite for premise		
DTH for each home / Apartment		
DTH cabling for each home / Apartment		
Meet me IT / Telecom room or facility		
Provision for macro sites		
Provision for site on street furniture		
WiFi within premise		
Provision for video cameras within premise		
Power backup for DCI infra		
Digital map of the premise		
Digital map of each house / apartment		
Neutrality towards TSPs		
- Fiber to premise		
- Macro site		
- Small cells on street infra		
- Fiber to home		
Open Wifi within the campus		
Ownership of maintenance of DCI		

Commercial cost for TSPs		
- Rental for Macro sites		
- Rental for Small cells		
- Cost for laying fiber within premise		
- Cost for laying fiber to each home / apartment		

Q.40. Whether the process of rating would vary based on the types of buildings? If yes, then what factors or aspects of a building would matter or impact the outcome of rating? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Please refer to our response to Q39 above. In a broad sense, the process of rating should be uniform to the extent possible as it will avoid any ambiguities.

However, a different rating process may be adopted for public spaces like Airports and Railway stations.

Q.41. Which objective methods should be used to evaluate the DCI? How can various aspects of performance to evaluate the quality can be combined together? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Please refer to our response in Q39

Q.42. Which subjective methods should be used to evaluate perceived quality of DCI? Whether survey techniques can be improved considering penetration of smartphones? Whether improved techniques can help in providing insights and actionable items to improve DCI? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We believe that the parameters suggested in our response to Q39, can work as a robust baseline to evaluate the quality of DCI, not just perceived, but actual as well.

Q.43. Would combining the parametric values or results of objective and subjective methods be helpful in assessing digital connectivity that is closer to the perceived quality of experience? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

While this assessment may be helpful, however, given this concept has been discussed for the first time in India, therefore, it is too early to give a definitive answer /example in this regard.

We believe that the parameters suggested by us in our response to Q39 can work as robust indicators even for perceived quality of experience.

Q.44. How advanced technologies such as Artificial Intelligence (AI), Machine Learning (ML) etc. might be useful to make the evaluation process more nuanced and suitable for the purpose? How can AI/ML models evolve from the inputs of measurement and evaluation being carried out in other parts of the city, state or Country? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

Since, this concept of rating of building/DCI is new in India, therefore, we believe that the parameters suggested in Response to Q39, will help building a base for evaluation and rating purposes. Once the same is established over next few years, the advanced Technologies such as AI/ML may be looked at integrating better outcomes.

Q.45. Any other issue which is relevant to this subject? Please justify your response with rationale and suitable examples, if any.

Airtel Response:

We would like to emphasise here that DCI and its performance can be significantly impacted due to illegal/unauthorized boosters and repeaters, thereby deteriorating Quality of Experience and Service for the user, and network.

In this case we submit that illegal installation of boosters/ repeaters should be made a cognizable offence on an immediate basis. Also, targeted action needs to be taken to ensure removal of such existing installations of boosters/ repeaters. In this regard, we recommend that various enforcement Authorities like WPC/ DoT and Police and impacted operators individually or through industry associations like COAI form a special task force and they be empowered to take necessary action for survey/ removal of such installations and such reports be shared/ published on a monthly basis by the DoT and TRAI.

Also, for DCI to be truly successful, implementation of access rights (RoW) within building premises are fundamental for TSPs to deploy networks. Hence RoW within building premises should be provided free of cost, and mandatorily.

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