

# **BIF Response to TRAI Consultation Paper on Regulation on Rating Framework for Digital Connectivity in Buildings or Areas**

## **Preamble**

In today's hyper-connected world, reliable and robust digital connectivity has become an essential requirement for any building, be it residential, commercial, or industrial. Just as we assess buildings for their structural integrity, Water supply, and electrical systems, evaluating, monitoring and maintaining/ improving their DCI has become equally crucial to ensure high quality QoE and QoS.

The users' expectations from the network (mobile, Wi-Fi or, fixed line broadband) has only increased since COVID with adoption of 'Work from Anywhere' as a concept. TRAI itself has recently come out with its own CP where it has sought to revise the QoS norms and also set QoE norms for DCI using both wireless and wireline networks, thereby emphasizing the need to improve the QoS standards and improve the overall QoE for all types of networks. Good digital connectivity is required especially inside offices, homes, airports, malls, hospitals and everywhere etc.

The approach to measure and rate the Quality of Digital Connectivity both from the infrastructure and Quality of Service is the only way to close the gap between the expectations of the consumers of Digital Services and the providers of the Digital Connectivity Infrastructure viz. Property Owners/ Managers and the Digital Infrastructure providers (IP1s/DCIPs). In this respect, the move from TRAI to introduce Rating of Buildings from the perspective of DCI is highly appreciated.

The Rating should assess a building's digital connectivity infrastructure, including QoS of internet connectivity, Quality of Experience (QoE) of the consumers, and overall technological readiness now and for the next 20-25 years or at least the life of the building. It aims to provide an overall holistic measurement for a building's digital capabilities and the Quality of service provided and experienced.

## **BIF Response to CP Questions:**

**Q.1- Do you agree with the broad classification of Buildings or Areas (also referred as Buildings) from Digital Connectivity perspectives provided in Section-3 of this chapter? If not, what could be other yardsticks to classify Buildings for provisions of near uniform Digital Connectivity Infrastructures in similar types of Buildings. Please justify your answer with suitable examples.**

**BIF Response:**

Yes- we do agree by and large with the broad classification as given in Section-3 of the chapter. However public areas should be treated separately in our opinion and should have different QoS /QoE requirements as compared to private/individual areas

It has been proposed that the Property Managers would apply for the rating of the building, however it might not be feasible to access private residential or office areas. This would result in rating a building partially and not allow end-user to get the complete benefit of the rating exercise.

The Public Areas which are accessed by wider and general public, are different for different category of buildings like Government Buildings, Airports, Railway Stations, or Bus Terminal. It is different in case of Residential Buildings as well. Just to illustrate, in a residential building, these areas are:

- Reception
- Conference rooms
- Lobby
- Lift Lobby
- Basement Car park
- Common waiting area

Basis the above, table of section 4.3 needs to be modified as below, with qualification of Categories of Area:

S. No.	Category of Building	Category of Area		Example
		Public Area	Private Area	
1	Residential	Publicly accessible areas like reception, Lift Lobby, Basement Car park	Residential Flats, Bungalow types -Multi Story flats with challenges in the higher stories	Apartments, gated colony, etc.
2	Civic Spaces (Public Areas)	Publicly accessible areas	Not Applicable	Airport, Bus Station, Railway Station, Hospitals, Educational Institutions, etc.

3	Govt. Buildings	Publicly accessible areas	Not Applicable	All buildings of Central Govt., State Govt., PSUs, Local Bodies, etc.
4	Commercial Establishment	Publicly accessible areas like reception, Lift Lobby	Small Commercial Offices (SOHO)	Commercial office complex, shopping malls, industrial estates, SEZs, multi-modal logistic park, etc.
5	Transport corridors	Publicly accessible areas	Not Applicable	Expressways, Highways, Railways routes, etc.

The rating system should begin with Public Areas which are having larger footfalls and Government buildings with gradually increasing involvement of property owners/managers. The ratings should be differentiated for public and private areas, as reliable connectivity and bandwidth needs are far higher in public areas like airports, hospitals, and public accessible areas as these cater to higher footfalls. Building facility teams, emergency support, and other support services are located at the Back-of-House (BOH), determining the quality of these services.

In case of Private Areas, the rating of building can be conducted through the concept of Digital Connectivity Rating Agencies (DCRA) as introduced by TRAI. Though this maybe done after the need for Rating has been raised by the individual owner, it is advisable to do it periodically for all individual residences/apartments. The idea behind this is to be able to identify the end-point user quality of experience and the service provider's quality of service for each apartment in a building, each shop in a mall, each high footfall place, etc.

**Q.2- How the Infrastructure Providers (IPs) and Digital Communication Infrastructure Providers (DCIPs) can play an instrumental role in the effective development and deployment of DCI in Buildings or Area? Please provide your answers supporting the best practices followed internationally or national level in this regard.**

**BIF Response:**

We are of the view that categories of IP1s and DCIPs have been created through change in nomenclature, slight change in scope and with differential treatment as regards licensing of these entities.

Given the scenario, post notification of the new Telecommunications Act 2023, wherein all telecom networks and services are proposed to be operated Clause

3, sub-clause (1) and (6) through 'Authorisation', we propose that these entities be merged into one –either be called IP1s/DCIPs (who could be termed as Digital Infrastructure Providers) and be enabled through a 'Simple Authorisation'.

The benefit of such a move would be

- a) It would allow IP1s/DCIPs who want to provide active solutions along with the passive infrastructure to be able to do this
- b) It would be easier for the ecosystem for both the User and the Service Provider, as it would lead to a single point of responsibility for all issues pertaining to DCI.
- c) Will lead to simplification & ease of doing business

### **Role of IP1/DCIPs**

With mandatory provisions for DCI in Model Building Bye Laws (MBBL) and need for rating of buildings, the demand for IP1s/ DCIPs is set to increase significantly. These entities, equipped with expertise in DCI, become essential partners for cost-effective, innovative and optimal installations. Their role extends to ongoing maintenance and upgradation, ensuring sustained performance.

IP1s/ DCIPs aid Property Managers in adhering to standards, ensuring interoperability, and providing solutions for Right of Way (RoW)/fiber connectivity in buildings. They can collaborate with urban planners, architects, and city officials to integrate digital connectivity into building design. As indoor connectivity demand increases, these entities will shape the future of Digital Communication Infrastructure (DCI) deployment, ensuring a seamless indoor experience.

IP1s/ DCIP shall also serve as a neutral host infrastructure provider to the property managers, as they provide the expertise from design, implementation, and maintenance, across the entire life cycle. They have Design and Implementation Engineers with the necessary skill sets to provide the technical services.

**Q.3- What should be the key eligibility conditions including experience requirements for the Digital Connectivity Rating Agency (DCRA) proposed under the rating framework? Should there be any performance security for an agency to be DCRA and what should be criteria to evaluate their performances? Please also indicate broad scope of work covering additional aspects of Rating of Buildings for Digital Connectivity, if any, including area of operations [Nation-wide, State(s)/Union Territories(UTs) or Combination of States/UTs] of a DCRA.**

**BIF Response:**

The primary role of a DCRA is to provide ratings to buildings for Digital Connectivity Infrastructure (DCI), furnishing crucial public information for individuals considering buying, renting, or utilizing premises within a particular building. Therefore, it becomes imperative to establish stringent eligibility conditions and performance criteria, guaranteeing that the agency maintains a high standard of professionalism, credibility, and effectiveness in evaluating and rating buildings for digital connectivity.

- **Eligibility /Net worth**: The Draft Regulations in the CP stipulate in Regulation 4 that the Digital Connectivity Rating Agency (DCRA) should be a company with a minimum net worth of Rupees Two Crore. The applicant company is required to have individuals in its employment possessing sufficient professional and relevant experience to meet the Authority's satisfaction regarding the obligations under the rating framework. Additionally, the Authority retains the discretion to periodically review the eligibility criteria for DCRA to ensure the effective implementation of the rating framework.
- **Professional Experience**: Beyond having professional staff with the requisite qualifications, it is suggested that the experience requirement should encompass a minimum number of 10 years of experience in telecommunications, digital infrastructure, and building architecture.
- **Performance Bank Guarantee**: To ensure commitment and adherence to prescribed standards, a performance bank guarantee should be mandatory.
- **Compliance & Conformity to Regulatory Guidelines**: The evaluation criteria for DCRA should encompass adherence to established rating standards and methodologies, timely and accurate assessment of buildings for digital connectivity, feedback mechanisms for continuous improvement, and compliance with regulatory requirements and guidelines.
- **Performance Criteria** : The comprehensive scope of work for a DCRA can include the development and implementation of a rating methodology for assessing digital connectivity in buildings, defining the geographical area of operations (nation-wide, specific states, union territories, or a combination based on agency capacity and expertise), continuous monitoring of digital connectivity infrastructure, stakeholder engagement to gather relevant data and feedback, staying abreast of technological advancements for integration into the rating framework, and providing clear and accessible reports to building owners and relevant authorities.

DCRA eligibility conditions may be summarized as below:

- Technical knowledge of digital networks, broadband technologies, and emerging connectivity solutions, and is adept at evaluating the performance, reliability, and security of digital infrastructure.

- A comprehensive understanding of both technical and regulatory aspects.
- Experience in developing and applying rating methodologies, adapting the rating framework to technological advancements and evolving connectivity trends.
- Commitment to ethical standards, including transparency and impartiality, to ensure the credibility and trustworthiness of the DCRA.

**Q.4-With reference to the rating criteria proposed in table at Section 6.2, kindly provide list of possible sub-criteria and corresponding sub-weightage against each criterion with justification? Please also indicate any other aspect which need to be included or modified in the proposed weightage criteria. Please provide your answer with suitable justifications.**

**BIF Response:**

Each of the criteria and sub criteria in our rating is not subjective or descriptive which considers only the presence or absence of certain facility or service. This may not necessarily ensure the required quality standards and the end user expectations are met. It is imperative to embrace an assessment methodology that will address the quality standards of the criteria under assessment.

All types of networks and services are essential for the delivery of cost-effective, meaningful, and universal services. Given the high data usage within buildings, the role of fiber-based connectivity and fixed broadband services is paramount. While mobile broadband can offer universal services with adequate coverage, the substantial data consumption within buildings necessitates the presence of quality fixed broadband.

Another critical criterion is the availability of Public Wi-Fi within buildings. Since buildings accommodate visitors, temporary users, and service staff who may not have access to office Wi-Fi, the inclusion of Public Wi-Fi, based on PM WANI Public Wi-Fi architecture or any other CDOT or TEC approved solution, is proposed as an important criterion with due weightage. In Common Areas & Public Areas, like airports, railway stations etc., PM WANI Public Wi-Fi is a must which can provide seamless and quality Wi-Fi services to the public accessing such areas. Therefore, in Common Areas & Public Areas, PM WANI Public Wi-Fi Access should be mandated.

The Property Manager's primary responsibility is to ensure the minimum provision of DCI in the building to meet Model Building Byelaws (MBBL) guidelines and make the infrastructure future-proof. However, to realize the objective of user centricity, the Property Manager must actively engage and attract Infrastructure Providers (IP-1s), Digital Communication Infrastructure Providers (DCIPs), and Service Providers (TSPs, ISPs) to offer users a choice and the required quality. Therefore, the onboarding of service providers should be accorded greater weightage than suggested in the CP.

The establishment of Property Manager as neutral host is critical to encourage the deployment of shared infrastructure, such as distributed antenna systems (DAS), small cells, and other network equipment, that can accommodate multiple wireless service providers. This eliminates the need for each service provider to build separate infrastructure, reducing duplication and costs. It also promotes open access to the connectivity infrastructure. This means that all licensed and authorized service providers have equal and non-discriminatory access to the infrastructure, enabling them to provide their services to users within the building. The rating criteria must include deployment of shared infrastructure and open access and it should be given due weightage.

The ease of entry for a new service provider in the building, flexibility with user to have service provider of choice will be important criteria, availability of good quality backhaul, presence of PDO/PDOAs to provide PM WANI Public Wi-Fi will all be part of user experience too. Therefore, user experience should be accorded greater weightage than suggested in the CP.

Thus, a Public Area building (e.g., Airport) having an outstanding rating (like 5 Star or Platinum) must meet the following:

- Exceptional DCI,
- Comprehensive coverage, high-speed connectivity, and minimal disruptions,
- Advanced technology integration and future-ready solutions,
- Shared DCI and Open Access to Service Providers
- Have good quality backhaul network
- High quality Public Wi-Fi (PM WANI),
- User-centric approach with a variety of service providers and choice of service to users, and
- Outstanding user experience and satisfaction.

Further, building ratings for Digital Connectivity Infrastructure (DCI) warrants establishing a regulatory framework for rating of buildings considering factors like quality, coverage, capacity, and user experience.

It is suggested to incorporate additional set of possible sub-criteria, for ensuring the robust and futuristic Digital Communication Infrastructure inside the buildings:

- i. Last mile part of fiber network architecture undergoes lots of bends and stresses inside the buildings. To ensure the network quality, it is recommended to use bend insensitive fibre type inside the building premises to enhance longevity and safety.
- ii. The rating criteria shall include the sub criteria for the minimum fire safety compliance confirmations under the main criteria 4 – *“Digital Connectivity*

*Infrastructure Resilience*". This is critical to reduce risk of human causality and property damage during fire incident, the cables (telecom cables like – optical fibre cables, category cables etc) installed inside the building should be fire retardant / proof (means resistance to catch fire) and low smoke generation properties.

- iii. Additionally, the building rating process should also give the emphasis on the deployment of right category cabling infrastructure inside the buildings, as per global best practices say Cat6a which is compliant to 500 MHz bandwidth and 10G speed as minimum specification for all new LAN horizontal cabling networks installations.

**The suggested list of criteria and sub-criteria for rating DCI inside buildings (Public Area) is given in answer to Q6.**

**Q.5- What should be the template and minimum score for award of ratings i.e., star-based ratings or any other template like Platinum, Gold, Silver, and Bronze? Please justify your suggestions.**

**BIF Response:**

We partially agree with TRAI star rating. Please refer to answer 4 and 6 for categories.

**Q.6- The proposed workflow and process of Rating of Buildings for digital connectivity is given in Section-8 of this Chapter. Kindly provide your comments or suggestion for improvement of the proposed workflow and process of rating with justification, if any.**

**BIF Response:**

TRAI has already mentioned about the Platform based approach which shall be managed and administered by TRAI. All enquiries for the building shall be submitted into the TRAI platform.

The approach for creating the process is mentioned below:

Practicality or Implementation?	⇒	TRAI (Regulator) standardized
Measurable or Qualitative?	⇒	Simple Qualitative & Quantitative metrics
Tech-specific or will keep pace?	⇒	QoE not QoS related
Ease of Measurement?	⇒	Simple App based tool
Credibility?	⇒	TRAI guaranteed closed loop Platform

The rating shall be based on both the criteria, as suggested to TRAI.

1. Qualitative



## 2. Quantitative

### **Process:**

The rating shall be done for buildings by both Property Managers and End-users in accordance with procedure laid below.

The end-user can ask to rate his or her personal property/apartment by requesting in the TRAI portal. Once the request is received, TRAI shall designate an authorized Digital Connectivity Rating Agency (DCRA) to conduct the rating. If not asked, the Rules shall permit periodic rating of properties –periodicity could be once a year.

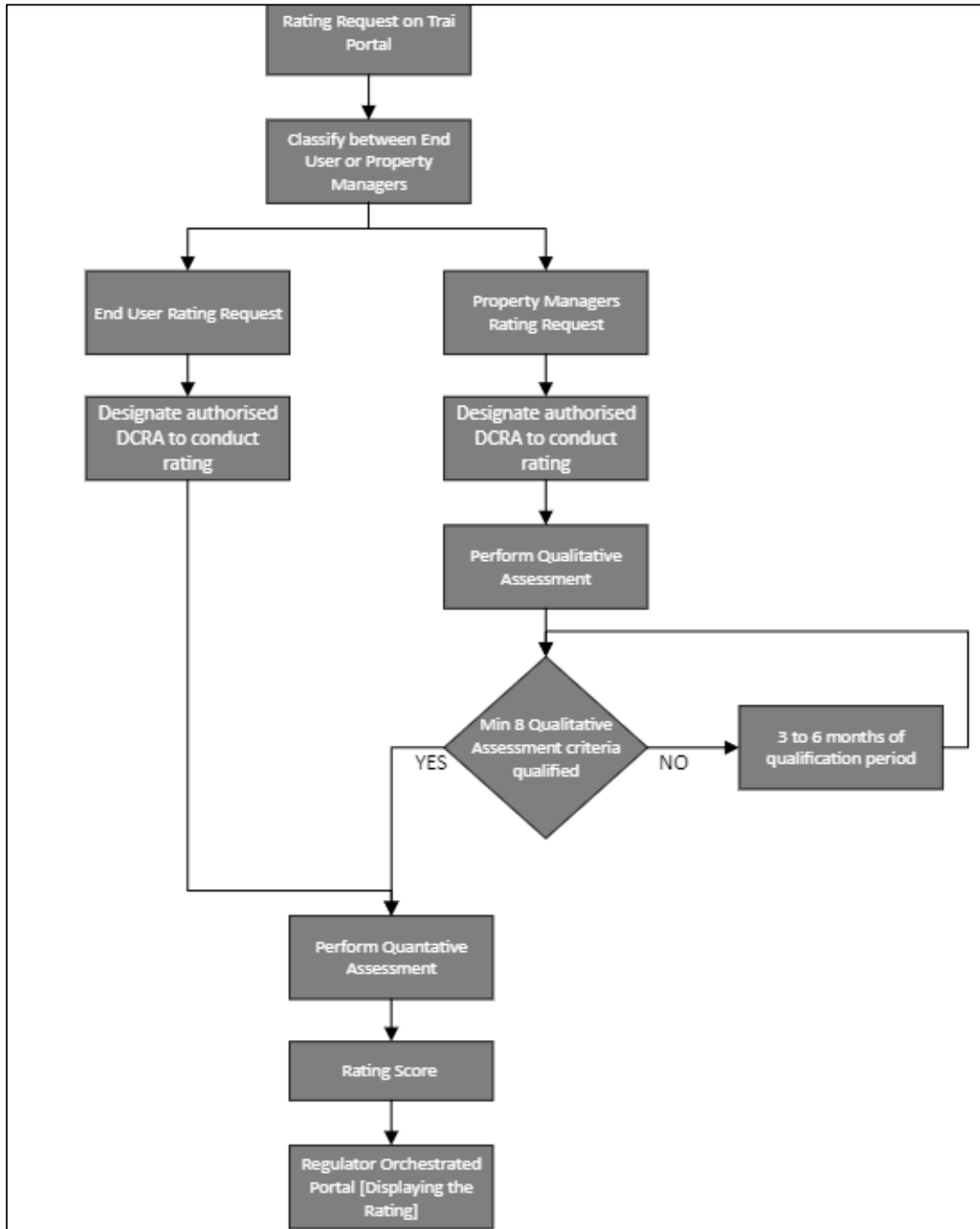
The same can be requested by the Property Manager. The request shall be qualified by asking the DCRA to conduct a Qualitative assessment. Once the Qualitative assessment as defined below is completed the quantitative assessment shall be later conducted to arrive at the rating scores.

The Quantitative assessment shall be only done if the 80% defined criteria are met. In case the score is below 80% then the Property Manager shall be provided a time period (3 to 6 months) before the next assessment can be performed.

Main Criteria	Weightage	Sub - Criteria	Objective of Qualitative Assessment	Sub-weightage
Digital Connectivity Infrastructure - Design & Implementation	40%	Fiber Optic Connectivity	Availability of fiber-optic internet connectivity through open access	5%
		Smart Building Integration	Presence of smart building technologies, such as IoT devices and sensors.	10%
		Wi-Fi Connectivity Infrastructure	Availability of Fixed Broadband / Wi-Fi connectivity available across buildings	5%
		Public Wi-Fi/PM-WANI availability	Availability and performance of PM-WANI based interoperable Public Wi-Fi services across all public areas	10%
			In-Building Quality	Presence of dedicated In-building technologies like Distributed Antenna Systems (DAS) or Small Cells.

Digital Connectivity Infrastructure Resilience	35%	Backup Systems	Presence of backup power systems	5%
		Alternate Power Sources	Redundancy in electricity connectivity with multiple providers	5%
		Alternate Backhaul Sources	Redundancy in ISP connection for MNO Equipment	5%
		Emergency Services	Availability of 2-way radio communication services	5%
		Disaster Recovery Planning	Building's readiness to handle connectivity issues during emergencies.	5%
		Dedicated Telecom Infrastructure	Availability of secured Telecom Equipment room	10%
Building Compliance	25%	Adherence to Building Bye-Laws	Compliance with building regulations and bye-laws related to digital infrastructure installations.	10%
		Shareable DCI Infrastructure	Provision and encouragement of infrastructure that can be shared among multiple tenants or service providers.	10%
		Open Access to Service Providers	Ensuring open access to multiple service providers, fostering healthy competition and choice.	5%

The proposed workflow for Rating of Buildings/ Areas from collection to rating is shown below:



*Process Diagram for Rating of Buildings*

**Rating Score:**

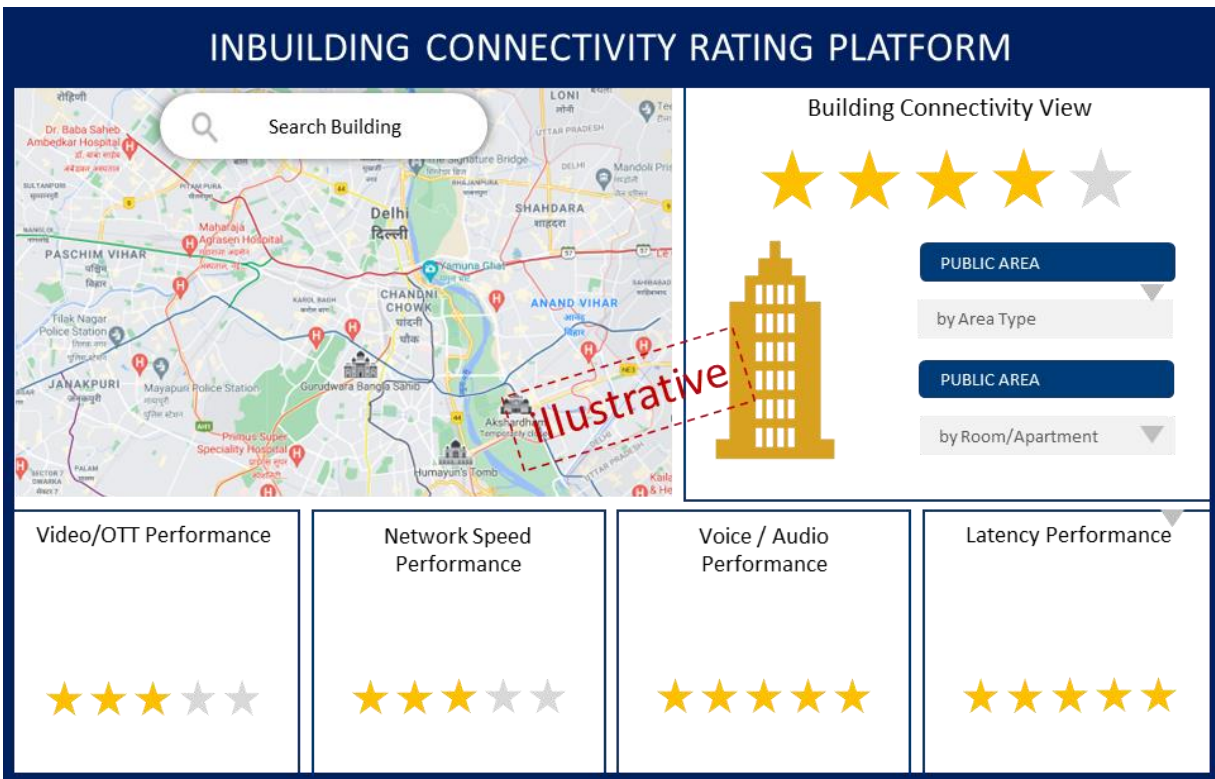
The quantitative assessment shall be based to measure the actual quality of service/experience of the end user and shall be measured using the App (approved by TRAI) at every 40-50 Sq. meters.

Basis the 5 criteria to score, with equal weightages, shall be used to arrive at the final score. Each parameter shall be measured at the specific points and the average score shall be arrived at for the property.

The weightages can be later adjusted for higher importance given to public areas compared to private areas. This can be done in due course of time and with feedback after initially kick-starting the standard process for a period of time which TRAI deems fit.

Main Criteria	Sub-Criteria Name: sub-weightage	1 star	2 Star	3 Star	4 Star	5 Star	Weightage
Digital Connectivity Infrastructure - Operational Rating Score	Video/OTT Performance for a 5-minute video	>3 buffering or stoppages while playing the video	3 buffering or stoppages while playing the video	2 buffering or stoppages while playing the video	1 buffering or stoppages while playing the video	0 buffering or stoppages while playing the video	20%
	Network Speed Performance	< 1 Mbps	< 5 Mbps	> 10 Mbps	> 100 Mbps	> 512 Mbps	20%
	Voice Audio Performance (60 sec call)	Speech Silence > 5	Speech Silence 3 to 5	Speech Silence up to 2	Speech Silence = 1	Speech Silence = 0	20%
	Latency Performance	> 200 msec	> 100 msec		<50 msec	< 20 msec	20%
	No of ISP/TSP	1	2	3	4	>4	20%

An illustrative screen to display the data is available below:



**Q.7- Do you agree with the eligibility conditions for registration of DCRA, proposed in regulation 4? If no, what additional eligibility conditions for registration of DCRA may be incorporated, considering the present rating ecosystem in other domains in the country, with suitable justifications?**

**BIF Response:**

No specific comments. Kindly refer to response of Question 3.

**Q.8- Do you agree with the process of registrations of DCRA proposed under regulation 7? If not, kindly suggest proposed changes with justifications.**

**BIF Response:**

Yes. We agree with the process. This will take care of the submissions made in answer to Question 3 with respect to eligibility of DCRA.

**Q.9- Please suggest code of conduct for DCRA's proposed to be included under regulation 8 including the criteria for fees to be charged by DCRA's from Property Managers for different types of Buildings.**

And

**Q.10- Do you agree with the general obligations of DCRA provided in Section III of the draft regulations? If not, please provide suggested**

## **changes with justifications.**

### **BIF Response:**

Agree with the general obligations of DCRA provided in Section III of the draft regulations. It is submitted that the code of conduct can be framed considering these general obligations and include principles of fairness and confidentiality.

As regard to the criteria for fee to be charged by DCRA from Property Managers for different types of buildings it is submitted that DCRA should have a standardized and transparent fee structure. The fee will also depend on the size of the building and the level of assessment required.

### **Q.11- What should be the terms & conditions for the Property Managers to ensure use of ratings awarded to their buildings, in legalised manner?**

And

### **Q.12- Please suggest changes, if any, in the general obligations of Property Managers, provided under Section IV of draft regulations, with justifications.**

### **BIF Response:**

The utilization of such ratings by a Property Manager signifies the Property Manager's adherence to applicable regulations, encompassing any specified terms and conditions for such utilization. The Property Manager is permitted to apply the rating exclusively to the designated building and strictly within the stipulated time frame. The rating itself is non-transferrable and cannot be conveyed in any manner. In the event of any alterations in the building, the Property Manager must promptly notify the respective DCRA.

Crucially, while the Property Manager is allowed to incorporate the ratings in advertisements, it must refrain from portraying it as an endorsement of quality by the DCRA or any third party. The Property Manager is authorized to exhibit the ratings within the building or in any other marketing materials. The Property Manager is obliged to facilitate any periodic reviews of the rating or other evaluations prompted by changes in the building. The general obligations of Property Managers, as outlined in Section IV of the draft regulations, are reasonable.

### **Q.13- Draft regulation 25 provides broad rating criteria and distribution of weightage out of total rating score at a scale of 100. Please suggest new criteria or changes in proposed criteria if any, and relevant sub-criteria for each criterion and their sub-weightage against respective main criteria with suitable justifications in context of rating of buildings for digital connectivity.**

And

**Q.14- The score threshold for ratings is provided in draft regulation 26. Do you agree with the proposed thresholds? If no, please suggest changes with justification and global references, if any.**

**BIF Response:**

Please refer to answer for Q3, 4 and 6.

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