Consultation Paper

On

Issues related to

Telecommunications Infrastructure policy

Questionnaires and Comments

ISSUES FOR CONSULTATION

Overview of Telecom Infrastructure

6.1 Do you agree with the classification of infrastructure elements described in this chapter? Please indicate additions/ modifications, if any, particularly where you feel that policy interventions are required.

Ans. We are in agreement with the description & have no additional comments.

1.14, 1.15, 1.16 is generally describing 2G / GSM architecture, and should probably also include 3G / UMTS and LTE and possibly other wireless technologies. Alternatively, the description should be technology independent.

1.46 is partly restricted to only apply to UMTS technology (Node-B).

Generally, the overview of the subject for regulation and the regulatory approach should be technology independent in order to enable the development of any technology that fulfills the functional requirements. When regulation is technology dependent, it often become restrictive and does not provide scalability and efficiency. It is therefore recommended to develop a more generic description of the subject for regulation and accordingly also a more generic and technology independent regulatory approach. This is a major turnaround which cannot be made in one single step, but should be part of the high level strategy so that new regulation and revisions of existing regulations are made technology independent. Another important element for effective regulation is to encourage new business models and accordingly not be restrictive in terms of business model development. Historically, there was a strict relation between a technology / network and a service. PSTN networks was for telephony only, Cable TV networks was for TV only, ADSL networks was for internet access only. The current reality is that almost any service can be accessed via any network from any device. And this reality requires regulatory change. It may be constructive to fully separate:

- **the infrastructures (cables, ducts, towers, housing facilities, support systems etc)**
- **The networks (routers, switches, bts, node-B, etc)**
- **The services and service systems (telephony, internet access, TV, etc)**

In order to support scalability, innovation and development.

The regulatory approach may be used as an important instrument to develop new business models for this industry and ensure that the impressive volume of the Indian telecom market continues to grow and that the volume is also supported by a wider range of services, business models and technologies.

6.2 What measures can be taken to encourage more ILDOs and ISPs to set up cable landing stations?

Internet Exchange Point

6.3 Do you perceive the need for effective Internet exchange point(s) in the country to efficiently route domestic IP traffic?

Ans. This is definitely important in order to support development and efficiency. But traffic exchange can also be managed independently of the national exchange facilities. National exchanges are often important for new operators and small operators in order to arrange the necessary exchanges at low cost.

6.4 If your answer to issue in 6.3 is in affirmative, please comment on the licensing framework of the entities for setting up Internet Exchange Points in India.

Ans. It may be recommended that service providers are required to be present at the relevant exchanges

6.5 Will it be desirable to permit those Unified licensees to setup IP exchange points in the country who have no vested interest in routing of the IP traffic?

Mobile Virtual Network Operator (MVNO)

6.6 Please give your comments on the changes proposed in para 3.5 of Section C of Chapter 3.

Ans. The general definition of MVNO is a mobile service provider offering services through another MNO's network. It is not obvious to us why spectrum sharing should be mixed up with MVNO regulation. It is a different matter in our view. If the MVNO have a access network using another MNO spectrum, the MVNO is in practice an MNO.

In-Building Solutions

6.7 What methods would you propose for reduction of the number of towers?

Ans. Tower sharing regulation should be enforced. If there is an existing tower in an area where a MNO applies for building permit for a new tower, the MNO should install his antennas in the existing tower. Regulations should include economic conditions for tower access. When building permits for future towers are issued, they should require that the tower is dimensioned for the anticipated future maximum load including all operators and technologies. If an existing tower cannot support further sharing it may be reinforced or replaced instead of allowing an additional tower in the same area. In-Building solution will not solve the demand for antenna space above roof top level. In urban areas a UMTS network will have a site distance of about 500 meters.

6.8 In what ways do you think that IBS can be encouraged for better in-building coverage, better QoS and reduction in level of radiated power from Macro cell sites?

Ans. IBS (with distributed antenna systems) will only be interesting in buildings with high concentration of traffic. Otherwise it will be too expensive. In some cases femtocells and repeaters can be a low cost alternative to traditional IBS. But general outdoor coverage, in car covderage and indoor coverage in the majority of buildings will have to be provided by macro sites. In terms of radiation, the main advantage of indoor systems is that the transmit power of the user terminal is reduced so that the user is exposed to less radiation. In some cases, additional macro sites are built in order to solve a specific indoor coverage problem in a single building. In these cases, and indoor system could be a good alternative, but generally, most macro sites provides coverage to a wider area than a singly building.

6.9 How can sharing of IBS among service providers be encouraged? Does TRAI need to issue any guidelines in this regard?

Ans. As far as we are aware, sharing of IBS is already the case in many commercial buildings in India. These are often managed by tower operators. They offer an attractive proposal to the building owner and offer access to the IBS to MNOs. This often put the MNOs in a weak negotiating position, as they will have to accept the terms of the singly IBS owner if they want to provide services in the building. Some regulation in this market could be required in order to ensure fair and reasonable terms and conditions. In other cases single MNOs build IBS in buildings. And as indoor coverage is a competitive advantage they are often not willing to share the IBS with other MNOs. It could be possible to regulate this as well in the same way as tower sharing could be regulated. This will benefit the customer as there will be more competition.

Distributed Antennas Systems

6.10 Do you agree that innovative technologies such as 'Distributed Antenna System' (DAS) can be effectively utilized to reduce number of towers and migrate towards tower-less cities?

Ans. No. There is nothing indicating that "tower-less cities" will become a reality. The current macro sites is a very cost effective solution for providing coverage. In areas with very high traffic density, distributed antenna systems may be an effective way to provide street level and indoor coverage and capacity, and accordingly offload the macrosites. But it will not be an alternative to macro sites. But it is definitely possible to place antennas more discretely in the cities, by avoiding big rooftop towers and place the antennas on the side of the buildings instead of on the top of the buildings. Typicaly, these environmental issues are managed through local building regulations, zoning policies / planning regulations, environmental regulations. And these regulations may be enforced more effectively in order to reduce the environmental / visual degradation of cities and landscapes due to telecom towers and antenna installations.

6.11 What are the impediments in adoption of new technologies such as DAS and how can these be removed?

Ans. The major hurdle for wide DAS deployment is currently cost. The description of the cost savings described in the consultation paper should be verified, as they seem to be based on input from a single DAS vendor. There is no doubt that MNO's are in the best position to identify the most cost effective technologies for providing coverage and capacity. There is no reason for the authorities to point out specific technical solutions. On the other hand, it is important that regulation does not restrict the opportunities for such new technologies. Sharing of outdoor DAS should be allowed according to the same regulations as sharing of antenna systems in macro sites.

Standardization of Tower Design

6.12 Would you agree that the design of towers can and should be standardized?

Ans. - Agreed.., the tower design can be standardized only when all operators / Infrastructure Company's have common loading requirement.

- **Tower design standardization helps to the nation in following ways.,**
  - **Implementation of less number of designs**
  - **Rolling of Common sections across the country in turn reduces the cost & demand.**
  - **Manufacturing & supplying of towers in mass scale is possible with less cost w/o any delays of material procurement.**
- **Current scenario of telecom operators / Infrastructure Company's, standardization of towers are not possible.**
- **However, RIMI strongly recommend to follow stringent guide lines on technical criteria for design of towers. A unified standard like ANSI/TIA-222-G_America to be introduced for the design of towers & foundations for telecommunication structures.**

6.13 If yes, how many different types of towers need to be standardized?

Ans. - If tower needs to be standardized, the main classification of tower shall be,

- **Urban Sites**
- **Non Urban sites**

- In Urban Sites: - The structure shall be designed by considering Aesthetic View. Adopting of Wall mounts/camouflaging solutions can be recommendable.
- In Non-Urban Sites: - Standard lattice structures can be recommendable in these sites.
- Sub classification under above (Urban / Non urban) will be based on geographical & wind speed.

6.14 What are the important specifications that need to be included in these standards?

Ans. Technical guide lines similar to ANSI/TIA-222-G and which shall cover at least

- Material Specifications
- Loading criteria (Wind, Ice, Erectionloads & Seismic)
- Analysis, Assumptions & Design
- Safety Factors (Loading & Design)
- Serviceability Criteria
- Fabrication, Erection & Safety Guide lines
- Protective Grounding
- Maintenance & Conditional assessment of existing structures

6.15 Which is the best Agency to standardize the tower design?

Ans. – Ramboll-IMIsoft is the best agency for standardization of technical guidelines / specifications. The technical guidelines / specifications shall be safe & Cost effective.

Ramboll-IMIsoft has been designing the towers since 1996 & is the first company to design a MW tower and presently all operators & tower companies in India have Ramboll-IMIsoft designs for towers and also their foundations.

- **Based on above standard technical guide lines, Tower design can be standardized by operators based on their business strategy.**

Reducing Visual Impact of Towers

6.16 What is the likely cost of camouflaging the towers?

Ans. – The cost of camouflaging for towers cannot be discussed unless understanding the location of the tower, its strategic importance and aesthetic requirements.

6.17 Can camouflaging be made mandatory? If so, can this be made part of the design standards of the towers?

Ans. – Camouflaging can only be made mandatory for strategic locations & at the places where the beauty of important structures is to be retained.

The standardization of the camouflage design can be done as per the locations .

Clearance from Local Authorities

6.18 Do you consider that the existing framework of different civic authorities to grant permission for telecom towers is adequate and supportive for growth of telecom infrastructure?

6.19 Is there a need to set-up a single agency for approval and certification of towers? Is there an existing agency that can do this work? If a new agency is proposed, what should be its composition and framework?

Ans. The certification of the towers erected has to be a mandatory requirement & Ramboll-IMIsoft is the single agency recommended for approval & certification. Till date Ramboll-IMIsoft has quality audited & certified over one Lakh towers of all operators & tower companies since 2005 (Bharti Airtel Ltd, Vodafone, Idea cellular Ltd, Tata Teleservices Ltd, GTL, TVSICS, Reliance Infocom, Quippo Telecom, WttiL , Viom Infrastructure, ATC, Indus Towers, Bharti Infratel Ltd, & Essar).

6.20 Is it feasible to have a uniform framework of guidelines including registration charges, time frame, single window clearance etc for granting permission for installation of telecom towers and laying of optical fiber cables? If so, can it be prescribed by the Licensor or the Regulator?

6.21 What can be an appropriate time frame for grant of permission for erection of towers?

6.22 How can a level playing field be ensured for telecom service providers' vis-à-vis other utility service providers especially in reference to tower erection?

6.23 Which agency is best suited to inspect the buildings and certify the structural strength of the buildings in case of roof based towers?

Ans. Ramboll-IMIsoft is the reputed agency that is familiarized on the foundation & tower design requirements and has carried out the structural stability of buildings for roof based towers in more than 10000 locations.

Infrastructure sharing

6.24 Should sharing of mobile towers be mandated?

Ans. - Sharing of Mobile tower shall be optional rather than mandatory.

- **Final decision on sharing of mobile tower shall be given to Operator / Infrastructure Company's based on their business strategy with meeting technical guide lines which need to be standardized as mentioned in 6.14/6.15.**
- **However, need to standardize the guide lines on Sharing of mobile towers to ensure the safety of towers, building structures & society.**

6.25 Should sharing of active infrastructure, created by themselves or infrastructure providers, be allowed?

Use of USO for rural areas

6.26 Please comment on the issues raised in paragraph 5.6 of Section A of Chapter 5.

IPV6 (Internet Protocol Version 6)

6.27 What measures are required to encourage the deployment and adoption of IPV6 in the country?

Ans. In order to enable transition from IPV4 to IPV6 it could be required that network equipment should at least support IPV6.

6.28 In your opinion, what should be the timeframe for migration to IPV6 in the country?

Ans. The timeframes for migration to IPV6 have slided repeatedly and it seems like further delays are expected in many markets.

IPTV (Internet Protocol Television)

6.29 What measures do you suggest to enhance provisions of IPTV services by various service providers?

Ans. A TV service provider should be allowed to provide TV services via any radio based or cable based broadcast, multicast or unicast network. Separation of regulation in networks and services would be a clear advantage, and networks regulation should be service independent. The main challenge for IPTV in other markets have been intellectual property rights related to the content and different approaches related to content protection and user authentication. When providing paid content over IP networks, the broadcast companies often have very specific requirements on how the protection and security should be implemented. Different broadcast companies and content providers may have different requirements. And this makes it hard to build a single network supporting all the requirements. Standardization of content protection and user authentication requirements could simplify the implementation and make it more attractive to deploy IPTV services.

6.30 Should there be any restriction on ISPs for providing IPTV services?

Ans. The restrictions should be the same as for other TV service providers. The requirements on video quality (bit rate, bit error rate, jitter, synchronization, service availability etc) will typically be managed by the market. TV service providers are typically required to provide certain mandatory content like public service TV etc. For pay TV service providers there will be requirements on billing processes, customer management etc. But from a regulatory perspective there should be no difference on IPTV regulation compared to the regulation for providing TV services over other distribution technologies.

General

6.31 Please give your comments on any related matter not covered above.