

**COMMENTS ONCONSULTATION PAPER No 6/2020- ROADMAP TO PROMOTE
BROADBAND CONNECTIVITY AND ENHANCED BROADBAND SPEED**

By

Lt Col VC Khare (Veteran) , Cable TV industry Observer

Introduction

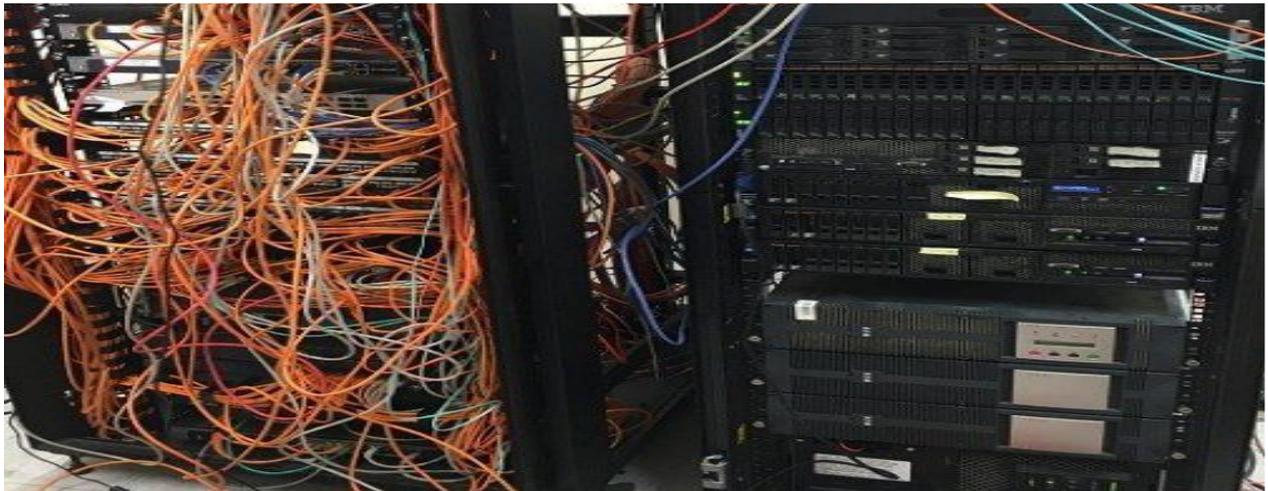
1. This paper envisages broadband(always ON voice+video+data+internet+wideband multi-media ; all indispensable) becoming an Indian citizen's fundamental right, implying obligation of the Government to warrant and provide. Therefore, it has to remain a Central Govt Subject. This facility is capital intensive and should, therefore, needs to be sourced from public funds NOT private capital.
2. Till about 1992, MTNL and BSNL were public sector TELCOs operating telecommunication services in India. They were mainly in wireline mode, both in residential and enterprise segments. Privatization of telecom service started with mobile telephony and basic telecom service(voice) after 1992. It is a different matter that private sector TELCOs progressed their projects faster than those from public sector. TELCOs are corporatized and function with better accountability in terms of applicable Act, Rules and Regulations.
3. In residential segment, wireline presence also pertained to millions of subscribers connected to receive multi RF channels, multi-program, uni-directional video content over networks erected by Cable Operators(CO),popularly called LCOs. This entity is registered with Deptt of Posts for delivering wireline video content, received from an HSP(Headend Service Provider), popularly known as MSO, registered with the MIB to source video content from broadcasters, aggregate the same and drive the wireline network(mostly optical fibre now) terminating in proximity of a CO, wherefrom the program stream travels over CO's network. HSP+CO comprise the CATV DP(Distribution Platform) for delivering multi-RF Channels, multi-program, digitally addressable service in accordance with the Cable Act. Though meeting the broadcast definition of ONE to MANY dissemination of content using radio frequency carriers over wireline medium, CATV is **not accorded** status of broadcast by the MIB. Broadcast engineering in general, and wireline broadcasting, in particular, are not covered in Indian academia. Hence, skill levels of technical staff employed in this platform too leaves much to be desired. There are over 1300 registered HSPs and 100000 COs in the country, with a wireline broadcast video connectivity of over 100 million subscribers. Out of these, there are about a dozen national level HSPs who can be deemed corporatized. The rest have serious voids in financial muscle and management acumen. None can boast of 100% conformity to Cable Act, TRAI Regulations and Indian Standards on date.
4. COs are so defiant, of DAS and TRAI regulations, that they have fire-walled DAS implementation in the last mile, taking advantage of the fact that neither TRAI, nor MIB have enforcement mechanism to come, monitor and penalise defaulters. HSPs too have refrained from activating SMS to bill subscribers. Instead they are billing COs based upon amounts remitted by COs to HSPs on per STB per month basis to tally the remittances against invoices raised by HSPs upon COs contrary to the Act, Rules and Regulations.
5. The unskilled networking force has no clue about damage to coaxial cable with impedance mismatch, VSWR and twisted joints causing egress of RF signals interfering with other networks in the vicinity.

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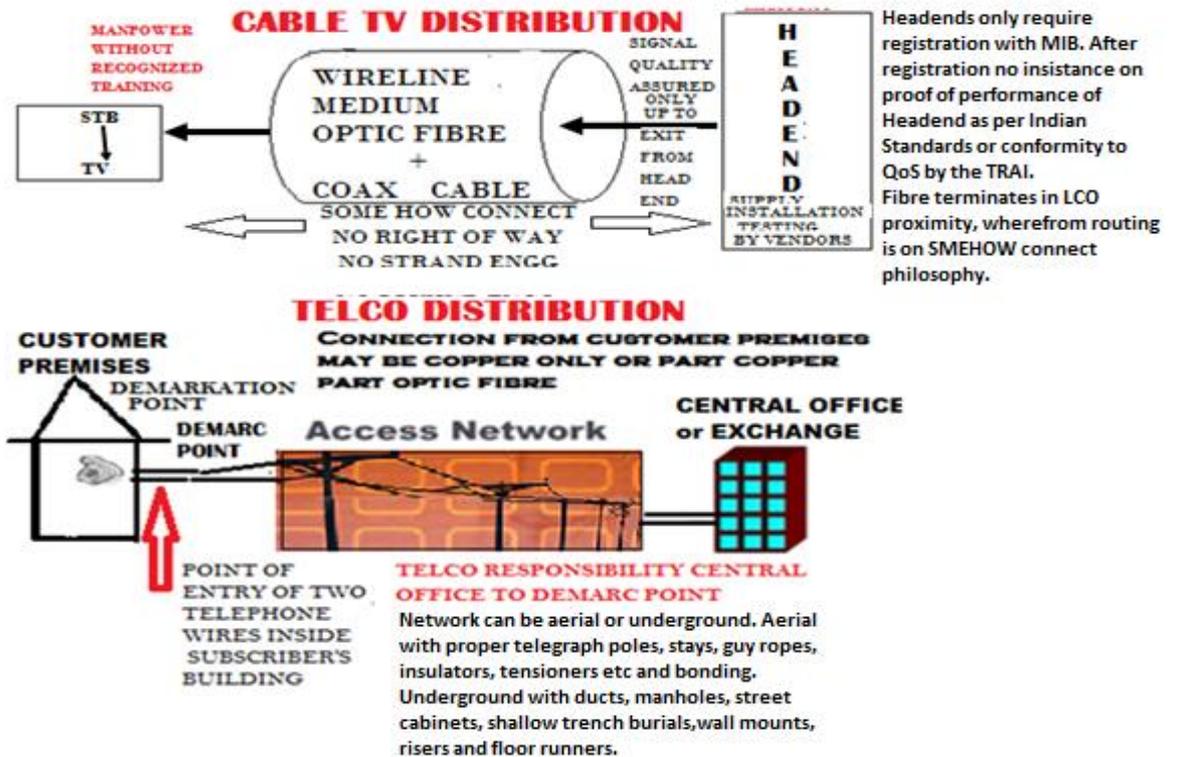
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7.The schematic below depicts a typical Headend .CATV



8.The schematic below depicts the difference in CATV and TELCO networking :-

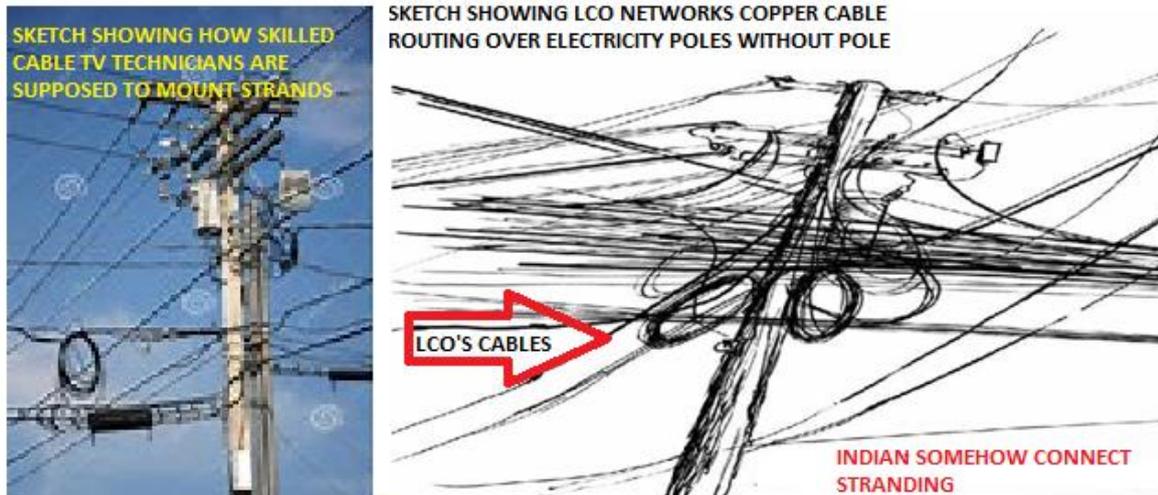


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9. And this is the state of most CATV networks in CO segment :-



10. Thus any one can understand as to why over one million subscriber homes , in CATV segment, on these networks are not suitable for delivering Broadband.

11. Had CATV segment, adopted DOCSIS broadband system over 75 ohms coaxial cable and delivered 3Play over upgraded bi-directional CATV networks, they would have enjoyed literal monopoly in this segment.

12. The write-up so far was to dispel mis-understanding prevailing about state of affairs in CATV services in residential segment.

13. ISSUES FOR CONSULTATION

Q.1: Should the existing definition of broadband be reviewed? If yes, then what should be the alternate approach to define broadband?

A.1 Yes ! to start with 1 MBps for both; later 1 Mbps for mobile broadband and 2 Mbps for fixed broadband dependent upon technology; download speed shall suffice for the time being.

Please suggest the complete text for revised definition of the broadband along with the threshold download and upload speeds, if required for defining broadband. Kindly provide the reasons and justifications for the same.

Q.2: If you believe that the existing definition of broadband should not be reviewed, then also justify your comments.

A2. So far the even existing speed of 512 kbps download is not achieved.

Q.3: Depending on the speed, is there a need to define different categories of broadband? If yes, then kindly suggest the categories along with the reasons and justifications for the same. If no, then also justify your comments.

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A3. Speeds for download and uploads are never likely to be the same. There is no point in laying down difficult targets which cannot be achieved. Wireless mobile broadband shall be affected by cell coverage density, contention ratio and congestion. Fixed wireless too will suffer from same handicaps but to a lesser degree. Hence speeds for the two could be specified separately.

Q.4: Is there a need to introduce the speed measurement program in the country? If yes, please elaborate the methodology to be implemented for measuring the speed of a customer's broadband connection. Please reply with respect to fixed line and mobile broadband separately.

A4. No ! because of a void in prompt enforcement and conviction mechanism on ground. At best a complaint mechanism to deal with complaints, verifiable with ping data, be introduced honouring the user device based readings.

Q.5: Whether the Indian Telegraph Right of Way (RoW) Rules 2016 have enabled grant of RoW permissions in time at reasonable prices in a non-discriminatory manner? If not, then please suggest further changes required in the Rules to make them more effective.

A5. Every case has different expenses involved from sanctioning authority by way of acreage of land for infra-structure as per circle rates for leasing. These rates are not same across the country. Hence on receipt of application, the sanctioning authority should, in a specified time, intimate to the applicant charges to be levied and payable for grant of permission. Further the Act should include sample formats for application to be used for grant of permission as well as format for such application.

Q.6: Is there any alternate way to address the issues relating to RoW? If yes, kindly elucidate.

A6. Consider appointment of licensed contractors and consultants to apply, seek permission and undertake infrastructure establishment/installation and obtaining approval of work.

Q.7: Whether all the appropriate authorities, as defined under the Rules, have reviewed their own procedures and align them with the Rules? If no, then kindly provide the details of such appropriate authorities.

A7. Structure of Committees is different in every state. Suggest this aspect be delegated to the CPWD for standardisation of procedures for uniformity across the country.

Q.8: Whether the RoW disputes under the Rules are getting resolved objectively and in a time-bound manner? If not, then kindly suggest further changes required in the Rules to make them more effective.

A.8 This subject is 'taken for granted' for public sector undertakings. Being Capital intensive, Private Sector Applicants normally have a full fledged RoW Section to deal

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with the subject. Such matters will apply more to less organized segments such as Cable Operators who for the last several years have laid overhead wires without RoW and are continuing with the same. This category claims in-adequacy in personal capacity to undertake application work and compliance of conditions. Matter may surface now with construction of smart cities seeking removal of such overhead strands concerning cable TV operators. Adequacy of dispute resolution efficacy would be put to test only then.

Q.9: What could be the most appropriate collaborative institutional mechanism between Centre, States, and Local Bodies for common Rights of Way, standardisation of costs and timelines, and removal of barriers to approvals? Justify your comments with reasoning.

A.9 Shift the matter to CPWD to standardise the costing and promulgate in their state offices.

Q.10: Should this be a standing coordination-committee at Licensed Service Area (LSA) level to address the common issues relating to RoW permissions? If yes, then what should be the composition and terms of reference of this committee? Justify your comments with reasons.

A 10 Ref to A9 above.

Q.11: Is there a need to develop common ducts along the roads and streets for laying OFC? If yes, then justify your comments.

A11. Yes ! if broadband is to be accorded status of fundamental right. This matter should be entrusted to agencies to be designated Central Information Highways Authority of India and their functioning designed for empathetic public service.

Q.12: How the development of common ducts infrastructure by private sector entities for laying OFC can be encouraged? Justify your comments with reasoning.

A12. National Core fibre network should be designed with edge networks for different localities and private sector should be encouraged to build edge networks.

Q.13: Is there a need to specify particular model for development of common ducts infrastructure or it should be left to the land-owning agencies? Should exclusive rights for the construction of common ducts be considered? Justify your comments with reasoning.

A.13 These exist abroad and can be imitated. SCTE UK is the organization, with Indian Chapter, who if associated can help standardising these. Basically they involve, DIG ONCE, ease of access and pressurization of closets. Futuristic outlook goes without saying.

Q.14: How to ensure that while compensating the land-owning agencies optimally for RoW permissions, the duct implementing agency does not take advantage of the exclusivity? Justify your comments with reasoning

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A.14 The core network ducts have to be laid along National Highways where land is owned by the Central Govt. The duct is to be laid with 'DIG ONCE Ease of Access Always' philosophy. Ownership of land shall continue to vest with the Central Govt. Duct will be constructed as deposit work. This is on lines similar to GAS pipelines laid along highways. On the same principle, State and District Information highways need to be constructed. If work is undertaken as deposit work, question of exclusivity shall never arise.

Q.15: What could be the cross-sector infrastructure development and sharing possibilities in India? Justify your comments with examples.

A.15 NO COMMENTS !

Q.16: Whether voluntary joint trenching or coordinated trenching is feasible in India? If yes, is any policy or regulatory support required for reaping the benefits of voluntary joint trenching and coordinated trenching? Please provide the complete details.

A.16 NOT considered feasible except perhaps in remote areas.

Q.17: Is it advisable to lay ducts for OFC networks from coordination, commercial agreement, and maintenance point of view along with any other utility networks being constructed?

A.17 A well designed duct, VEE shaped, with slant walls and mounting trays should carry optical fibre, underground electrical power lines, water supply mains, sewers and gas lines with appropriate distancing. Generally these are laid in central kerbs.

Q.18: What kind of policy or regulatory support is required to facilitate cross-sector infrastructure sharing? If yes, kindly provide the necessary details.

A.18 Bureaucracy without egos and willingness to associate experts from other than GOVT segment; 3even if on short term association.

Q.19: In what other ways the existing assets of the broadcasting and power sector could be leveraged to improve connectivity, affordability, and sustainability.

A.19 Broadcasting sector, in absence of an enacted Broadcasting statute, is NOT into wireline medium deployment as yet. If this paper is referring to CABLE TV networks, they have NOT been accorded status of BROADCAST by the MIB. Power sector distribution poles can be utilized with formal pole rights. In designed ducts with foresight, underground power cables shall also lie in the central ducts.

Q.20: For efficient market operations, is there a need of e-marketplace supported by GIS platform for sharing, leasing, and trading of Duct space,

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Dark Fibre, and Mobile Towers? If yes, then who should establish, operate, and maintain the same? Also, provide the details of suitable business model for establishment, operations, and maintenance of the same. If no, then provide the alternate solution for making passive infrastructure market efficient.

A.20 It has been suggested, already, that ducts should be constructed and owned by Information Highway Authority of India. Keeping the ownership with Central or State Govt will involve bureaucracy, known for lack lustre performance. Hence maintenance could be contracted out. Generally, fibre is laid with at least 10 times immediate requirement (eg, instead of laying one bunch of 256 fibres, lay 10 bunches of 256 fibres keeping dark fibre as IT asset)

Q.21: Even though mobile broadband services are easily available and accessible, what could be the probable reasons that approximately 40% of total mobile subscribers do not access data services? Kindly suggest the policy and regulatory measures, which could facilitate increase in mobile broadband penetration.

A.21. Mobile broadband services are indeed a facility but come with costs. These are treated as desired available when operating out of work place or residence, in usable mobility, and hence using them from work or home premises makes them consumed from fixed positions. These services often go down with network congestion or in-accessibility too.

Q.22: Even though fixed broadband services are more reliable and capable of delivering higher speeds, why its subscription rate is so poor in India?

A22. Typical Indian tendency is to avail services FREE. In enterprise segment, these services are provided by the employer at fixed work stations, including but NOT limited to conference venues. In residential segment, most residential telephones were provided by BSNL or MTNL. Both have suffered from poor complaint restoration services and have been surpassed by mobile telephony connections. Fixed broadband services are being provided by BSNL/VSNL through ADSL modems to be procured and installed, if a fixed line exists. Airtel has penetrated residential segment but requires installation of FTTP or FTTP drops. JIO is entering the arena afresh. The moment, these service providers talk of integrating real time video broadcasts, they face eire(vandalism) of incumbent CO. Hence there is latency in adoption of this service. Fixed wireline broadband services from Airtel and Jio are largely confined to urban and semi-urban conglomerations only.

Q.23: What could be the factors attributable to the slower growth of FTTH subscribers in India? What policy measures should be taken to improve

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availability and affordability of fixed broadband services? Justify your comments.

A23. TELCOs adhere to standard network erection norms in routing of wireline securing it with Pedestals, Distribution boxes, risers, floor runners and in-house wiring. These practices require RoW for streets which TELCOs invariably have. But in residential complexes, easement rights have to be negotiated with RWAs(Resident welfare Associations) which invariably demand money or facilitation for complexes. Once a complex is being wired, infra-structure is established at least for FTTF. These are all time and money consuming with anyone's guess on harvesting connectivity.

Q.24: What is holding back Local Cable Operators (LCOs) from providing broadband services? Please suggest the policy and regulatory measures that could facilitate use of existing HFC networks for delivery of fixed broadband services.

A24. Lack of understanding of CATV distribution platform in India by TRAI in general and uni-directionality of existing networks (which are nothing but electronic slums) . When Cable Act was drafted, every CO operated a headend feeding a network. There were no MSOs because, till then, cable networks were NOT LEGAL. These networks were established with total private investment and any regard for QoS. Promulgation of Cable Act gave rise to the so called MSO(Multi Service Operators), providing only one service i.e. transportation of real time video broadcasts over cable networks. The MSOs had stronger financial muscle but poor marketing skills. So they motivated the, till then. COs to close down their headends and instead take programs streams from their better quality headends. In addition they promised protection from copy right raids and litigation to these COs, who are now being referred as LCOs. Broadcast engineering , in general, and wireline broadcasting, in particular, are not covered in the Indian academia. Hence, networks are haphazardly erected without any signal distribution budgeting or conformity to IS-13420. Equipment used is sub-standard, without bonding for preventing egress to cause interference. Broadband delivery, with 3Play, is covered in DOCSIS methodology. Providing broadband was beyond technical and financial capability of CO. HSPs found no incentive since providing broadband attracted 8% CGR payable to DoT. The service thrived on under-declaration, carriage and placemen fees. COs violated DAS implementation in last mile and continue to do so even now(subscribers are not empowered to select programs and be billed item wise. COs have area dominance in their area of networking without RoW with SOMEHOW CONNECT style of wireline routing. Hence these networks are termed SLUMS. With DIGITAL INDIA environment, COs have embraced Broadband service provision as franchises of local ISP. They receive bandwidth at their designated office and extend UTP to subscribers in the same SOMEHOW CONNECT style. Hence, that one million uni-directional video delivery connectivity cannot be considered

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as a potential asset to deliver Broadband which needs to be integrated on DOCSIS platform in the Headend.

RoW must be mandated for existing HFC networks both for HSPs and COs. Financial assistance from banks should be facilitated from MUDRA. ISP fee should be exempted for 10 years. Upskilling facilities should be provided free of cost to over 240000 technicians with COs with layering of education on operating systems, computer configuration and OTT on demand services integration. All headends, registered for DAS with MIB, should be inspected for specifications PoP(Proof of Performance) and compatibility for broadband including fed networks.

Q.25: When many developing countries are using FWA technology for provisioning of fixed broadband, why this technology has not become popular in India? Please suggest the policy and regulatory measures that could facilitate the use of FWA technology for delivery of fixed broadband services in India.

A25. Those countries may be small but their enforcement of practices is stricter and comparatively free from corruption. India has too many laws on paper but ridden with lack of enforcement mechanism and unduly protracted adjudication. What matters today is stratification in society with quantum of amassed wealth. With such values degradation, CHALTA HAI is the prevailing attitude.

Q.26: What could be the probable reasons for slower fixed broadband speeds, which largely depend upon the core networks only? Is it due to the core network design and capacity? Please provide the complete details.

A26. In sufficiency of bandwidth, which costs money. When service is started, dynamic bandwidth allocation reserve is NOT catered for. As connectivity exceeds contention ratio, deteriorating factors such as number of concurrent subscribers, distance from BTS tower, Peak usage and quality and kind of user device compound the speeds slow down.

Q.27: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to contention ratio, latency, and bandwidth utilisation in the core network? If yes, please suggest the details. If no, then specify the reasons and other ways to increase the performance of the core networks.

A27. YES ! If TRAI's role does not finish with publication of regulations and desired road maps, without implementation mechanism under their control. Once licensed, the licensee, prior to commencement of service, should be subjected to PoP by competent agencies in general, and consequent to

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complaints received post service commencement. For this Subscriber Management System with pinging records upto 90 days may have to be retained. Provision needs to be made for compensation to user for established under-performance and penalisation of TSP.

Q.28: Should it be mandated for TSPs and ISPs to declare, actual contention ratio, latency, and bandwidth utilisation achieved in their core networks during the previous month, while to their customers while communicating with them or offering tariff plans? If no, state the reasons.

A28. Yes ! but to include edge networks too.

Q.29: What could be the probable reasons for slower mobile broadband speeds in India, especially when the underlying technology and equipment being used for mobile networks are similar across the world? Is it due to the RAN design and capacity? Please provide the complete details.

A29. Principles are developed by scientists and applied by engineers in making them work for individuals as applications. Hardware is manufactured by different factories and assembled as a system. Hardware is supplied by vendors and should be integrated by System Integrators. Hardly any one employs System Integrators. Maintenance engineers too need to be associated during installation with specific instructions to authenticate desired PoP. Integrated system performance always differs from marketing material. Last but NOT the least, Indian educational system does not prepare individuals for employment demands.

Q.30: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to RAN user plane congestion? What should be such checks? If yes, then suggest the details, including the parameters and their values. If no, then specify the reasons and other ways to increase performance of RANs.

A.30 No 1 if system of certification of PoP prior to commencement of service and annual inspections is introduced.

Q.31: Should it be mandated to TSPs to declare actual congestion, average across the LSA, recorded during the previous month over the air interface (e.g., LTE Uu), in the radio nodes (e.g., eNB) and/or over the backhaul interfaces between RAN and CN (e.g., S1-u), while reaching out to or enrolling a new customer? If so, then suggest some

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parameters which can objectively determine such congestions. If no, then specify the reasons and other ways to increase performance of the RAN.

A.32 This is absurd. No salesman ever talks about infirmities in product to a prospect. What is desirable is establishment of a world class NOC(Network Operations System) which may look like NASA space station internally, where state-wise desks can display network performance every moment. The subscriber could be taken to such locations to impress or connected with desk operator in the NOC over a video chat to show screen shots of performance data at that moment on the proximity tower.

Q.32: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons.

A32. No 1 it is against the spirit of governance in India in vogue where attitudes dwell on re-actions and remedies after suffering.

Q.33: To improve the consumer experience, should minimum standards for consumer devices available in the open market be specified? Will any such policy or regulatory intervention have potential of affecting affordability or accessibility or both for consumers? Please justify your comments.

A33. Bureau of Indian Standards (BIS) should publish minimum acceptable standards for consumer devices and product sellers should certify conformity. Affordability is always a parameter in buyer's domain. For example, from automobile industry a NANO and Rolls Royce perform the same functions of transportation from one place to the other with an engine, gearbox, brakes, cabin , steering wheel, seating and doors. Do they cost the same ?