ASSOCHAM RESPONSE TO TRAI CONSULTATION PAPER ON OTT SERVICES & NET NEUTRALITY

Introduction

India is at a pivotal point in its trajectory through the ICT space. We have a great vision for propelling the nation into a digitally empowered society and knowledge economy through the program known as Digital India. Most of the pillars of the digital India structure rest squarely on Telecom and ICT. However, the current reality is that in respect of the ICT development index (IDI), India ranks as low as 129 out of a total of 166 countries and has an IDI value of 2.53 which is far below the world average of 4.77 as per ITU. In fact, India has the dubious distinction of being placed in the category of Least Connected Countries.

Not only is our overall position low in ICT development, the position is further exacerbated by the fact that there is an enormous urban rural digital divide which is actually worsening. In view of the above factors, one of the highest priorities before the nation is to provide access to mobile internet to more of the large mass of the unconnected and the low usage consumers.

As is well accepted, Net Neutrality and OTT services are key aspects of a new sunrise sector that is intimately involved with modern telecommunications and therefore **the manner of treatment of this new sector in respect of the applicable Policy and Regulation would play a great part in how effectively the country improves its IDI rank to gain a more respectable place in the world community and also how it bridges the huge digital divide and secure digital inclusion for all its citizens.**

ASSOCHAM, Industry and all stakeholders therefore most warmly welcome the comprehensive TRAI Consultation Paper on the subject and the opportunity provided to respond. Our considered views and recommendations in respect of the issues posed in the Consultation Paper are given below:-

Section I: OTT services

1. As the Authority has clearly brought out in chapters 1, 2 & 3, there are great opportunities as well as challenges arising from the recent advent of OTT services which are disruptive in nature. On the one hand, there are significant consumers benefits while on the other hand, there are serious implications as regards loss of revenues to the Government, security implications, threat to infrastructure investments etc. Hence **it would be appropriate to take regulatory cognizance of the issues involved at this early nascent stage itself before the situation spirals out of control.** As the Authority has summed up excellently "*To sum up, national policy issues arising from the rapid growth of OTT services need to be addressed. The various regulatory imbalances need examination at different levels and by different agencies ……. The Security issues (including law and order dimension that have surfaced …. need to be addressed. Public safety and privacy issues need to be addressed*."

2. Privacy notice inserted in the T&C of OTT players show that they have the right to use data as they like. Apart from the impact on privacy rights, it should be noted that this possibly opens up huge business opportunities to OTT players through exploitation of big data.

3. **The Authority has also pointed out various user related concerns.**

4. The urgency of initiating suitable steps in the matter is particularly because of increased concerns as regards security as well as the rising volume of revenues lost to the Government by way of license fees, corporate taxes, sales and service tax and various duties.

5. However, keeping in view the desired goal of maintaining always an Open Internet, it is recommended that the **regulatory intervention must be minimal and such that it does not stifle innovation or strait- jacket the development of this sunrise sector.**

6. It is of paramount importance that the **regulatory oversight is just enough to safeguard against discrimination and ensure level playing field for all players**. Maximization of end user benefit should be only within these guidelines. We do not recommend licensing of OTT players since that would lead to further fragmentation of an already overly-fragmented market. However, **the principle of 'Same Service, Same rule' must apply**. As rightly pointed out by the authority in 2.7, there are 3 types of OTT apps and the applicable rules may need to be appropriately different for each type. Unless level playing field ensured by application of this cardinal principle, the much needed investments for the sector would surely choke up.

7. In its Q 8, the Authority has enquired whether any inferences can be drawn from the ETNO proposals for a regulatory framework for OTTs in India. We believe that it would be healthy and appropriate for the Authority to permit appropriate interconnection and pricing agreements between TSPs & OTTs without prophylactic or 'ex ante' regulatory involvement. Regulatory intervention might be required only in case of a breakdown of negotiations or an impasse exceeding a stipulated time limit as in the case of TSP to TSP interconnection.

8. India is a market where the complete country still does not have the benefit of adequate mobile or Broadband coverage especially in Broadband, we are at abysmally low levels. Huge investments of the order of a few lakhs of crores are projected as required to meet the Broad band targets of the nation. Any inappropriate set of Net Neutrality rules would result in hugely increased concerns from potential investors and harm investor appetite seriously. India can ill afford this. Our approach to OTT services and Net Neutrality should squarely be within the framework of

   i) **the goals of our National Telecom Policy especially as regards universal connectivity, affordability and Broadband availability,**

   ii) **our current socio-demographic status and constraints,**

iii) **our need for enormous FDI & domestic investments to help achieve our Broadband goals and Digital India.**

iv) **our current state of ICT development vis a vis other comparable nations,**

v) **our vision of Digital India**

9. **OTT services being an evolved form of VAS and the VAS ecosystem having stabilized satisfactorily to co-exist with the telco eco system without licensing, we strongly recommend that a similar approach be considered for OTT services. This would be a clear Win-Win for all the stake holders-the Government, the consumer, the OTT player and the telco.**

It should also be noted that there is no level playing field between the TSPs and the OTT players in respect of legal jurisdiction also. It is seen that it is specifically provided in the T&C of OTT that they are subject to foreign jurisdiction.

10. The regulatory imbalance as regards Quality of Service obligations also needs to be corrected. OTTs today have no obligations in this regard unlike the case with the telcos.

11. Last but not the least, it should be noted that as per recent report in *Financial Times*, **the European Commission has decided to bring the OTT players like Whatsapp and Skype under some kind of regulatory framework to create a level playing field between them and mobile operators. The European Commission has also reportedly promise a "comprehensive investigation" into platforms such as Amazon and Google to look at how they display search results and use customer data.**

II. Net Neutrality:

A. Definition :

As the Authority has pointed out in 5.3, "Net Neutrality (NN) is generally construed to mean that TSPs must treat all Internet traffic on an equal basis, no matter its type or origin of content or means used to transmit packets. ……. The principle simply means that all Internet traffic should be treated equally." As per this definition, it can be seen that lack of traffic management and lack of prioritisation are core requirements of this particular definition or view of Net Neutrality. The Authority has itself pointed out that the FCC looked at NN another way and that there are various other definitions. We examine this aspect subsequently below but would first like to offer our views on the core aspects of traffic management and prioritisation.

B. 1. Traffic Management:

1.1 Traffic management has long been an important tool in meeting the needs of users of internet services and will become more important with the development of new technologies such as LTE, as even voice is delivered over the data networks.

Examples of current and anticipated network management practices include:

(a) management of congestion

(b) providing an optimal service to the customer – e.g. by compressing data, encrypting information for security purposes, delivering video on a "just in time" basis to reduce cost/improve quality

(c) blocking spam, malware, denial of service attacks and other security threats to the network or to user devices

(d) ensuring that time sensitive services such as voice, video, online gaming and enterprise services can be delivered in a way which ensures optimal performance of those applications (without calls dropping, buffering videos and time lags in games)

(e) providing premium services for enterprise customers.

1.2 It is difficult to predict how traffic management practices might evolve in the future, other than to say these techniques will become even more important. In June 2014, Cisco estimated that by 2018, there will be nearly four billion global Internet users (more than 51 percent of the world's population), up from 2.5 billion in 2013 and IP video will represent 79 percent of all traffic by 2018, up from 66 percent in 2013[1]. New technologies are already being used today which utilize the "dark" spaces in the internet – empty patches of resource in order to maximise use of the networks. Similarly caching is developing to bring content ever closer to the user and reduce costs and improve delivery.

1.3 It is worth noting that network management challenges faced by mobile network and fixed operators differ. Issues facing mobile networks are more acute, because mobile network operators face greater total capacity constraints (due to spectrum scarcity and the high costs of infrastructure investment) and because that capacity is then shared amongst users in the access network rather than being dedicated to each individual household. Mobile network operators also face greater challenges in providing transparency to customers. This suggests that any principles governing traffic management should take account of the challenges faced by mobile operators and should be sufficiently flexible to accommodate them.

It should also be appreciated that traffic management takes place at every level of the Internet. Providers of hand sets, browsers, virtual market places and other services such as Google, Microsoft, Nokia and others use traffic management to improve the delivery of their pages on the Internet and to optimize third party content using methods as used by ISPs. Optimisation, caching, intelligent traffic management and providers of Content Delivery Networks have a business model based on obtaining revenues by improving quality of experience for end users. Net Neutrality must address the complete value chain and result in

holistic benefits to the end user and restrictions if any, must apply equally to all players in the value chain.

It would, of course, be unfair and incorrect to apply restrictions on only one category of players and not the others.

Traffic management actually enhances consumer benefit and, in no way, increases consumer harm or inconvenience. The detailed explanation is as follows:-

B.2. <u>Traffic management is a tool for consumer benefit not consumer harm</u>

Traffic management, as generally understand, describes a range of techniques used by network operators, ISPS to ensure the smooth flow of data traffic across the networks between the end users and content /service providers.

Network operators and ISPS use traffic management to minimize the incidence and impacts of congestion, ensuring that as many users as possible get the best online experience possible.

Traffic management provides a number of clear benefits to end users that can be grouped into four key categories:-

i. **Performance:** Traffic management techniques enable the delivery of best possible on line experience to end users**.** In periods of peak activity, when parts of the network can get congested, traffic management helps operators to make sure that delay-sensitive services

such as voice calls, video streaming and online gaming keep working smoothly. This requires the use of prioritization techniques that are fully in keeping with the spirit of net neutrality principles of providing end users with access to properly functioning online services. The impact on services that are given a lower priority in periods of congestion (for e.g email, web browsing) are often so small that the end users do not experience any significant degradation.

Traffic management techniques also play an important role even in periods of normal traffic volume –when there is no congestion. They help provide a better online experience for end users and, by using available network capacity more efficiently, help network operators and ISPs support a larger number of concurrent users.

i. Innovation: Traffic management techniques help operators and ISPs to provide an essential platform for service innovation. They support the provision of connectivity solutions that provide different combinations of price, speed and usage volume. Thus they support the development of various specialized services ranging from IPTV and outside broadcast services to remote medical monitoring and transport automation. Competition and supporting innovation are consequently promoted.

ii. **Protection**: Traffic management techniques help operators & ISPs to protect end users from on line threats such as spam, malware & child abuse image. Without these protections, end users would be exposed to a range of undesirable impacts ranging from lower network performance : cluttered inboxes : greater risk of identity theft ; devise infection with viruses ; and exposure to inappropriate content.

iii. **Efficiency**: Traffic management techniques provide an essential layer of efficiency which alongside on going investments in speed, capacity & coverage, help network operators & ISPs cope with the rapid growth in data traffic consumption & offer value for money to end users. A number of studies carried out by operators & equipment vendors suggest that traffic management provides an overall efficiency benefit of 25 -35%.-ie , without traffic management, operators &

ISPs would have to invest for additional 25-35% of capacity to deliver the same level of QoS & end user experience.

In recent years, the situation is getting further accentuated due to data.

Over the last few years, the amount of data traffic flowing across communications networks has increased dramatically. In addition to increased traffic volumes, network operators have also had to cope with an increased complexity in the composition of data traffic. While internet traffic was earlier dominated by email and web browsing, we now see a broader range of traffic types including video/music streaming, file transfer protocols, encrypted packets, online gaming, instant messaging and VOIP etc. Some of these services have a high degree of sensitivity to packet delay, error and loss- undesirable consequence of higher levels of network congestion that follow from increasing traffic volumes.

Market observers share a common view that data volumes will continue to grow at a rapid rate over the next decade. This will place even greater pressures on network resources that cannot be addressed only by investments in additional capacity. **Traffic management will play an increasingly important role in helping network operators to maintain and improve the quality of service provided to end users.**

C. Prioritization is a Core Aspect of Internet Technology

It is argued by some that the internet protocol suite intended from the first to treat all traffic alike, without preference or prioritisation. This is **completely incorrect** ; **prioritised delivery was always envisioned as part of the Internet Protocol** although details were not fully specified at the outset. The implementation was entirely consistent with the layered network of the Internet – the application was to signal its Type of Service requirements to the transport layer, just as it would signal any other functional requirement, and the transport layer would in turn signal the Type of Service requirement to the Internet Protocol (IP) network layer. **Work on prioritized traffic delivery over Internet Protocol has a rich tradition with roots going back**

to the earliest days of the Internet and its precursor networks in the seventies, eighties (when production QoS- aware systems were in place for the U.S military) and nineties (when most U.S based Internet backbone ISPs had already implemented QoS capabilities into their networks.

In view of the above, it is strongly felt by many authorities that policy makers should not concern themselves with all forms of blockage and quality discrimination and instead focus on harmful forms.

2. In the context of prioritisation or beneficial differentiation, it is important to appreciate that QoS parameters like bandwidth, propagation delay queuing delay, packet loss etc and associated mechanisms are important to enable network operators to design, build and manage their networks; however, they are not directly visible or relevant to most consumer end –users. What is important for end-users, is the quality that they personally experience during their use of services and applications. The relationship between QoS at the IP network level and the end-user Quality of Experience (QoE) is strongly dependent on the application for eg

- Email is highly tolerant of high delay or loss.
- The QoE of voice conversations such as in IP telephony, is quite dependant on packet delay, delay variation and packet loss.
- For interactive gaming, delay and delay variation are also important.
- For streaming video, QoE depends not only on the same parameters for voice conversations but also other parameters as well for eg the zapping time.

It is to be noted that traffic management and prioritisation has played a large role in the successful introduction of Voice over IP.

3. Again, the use of public mobile internet services for machine-critical-applications is increasingly of interest. **The police, fire, and emergency medical services (Public Protections and Disaster Relief ie PPDR services) have an increasing need for Broadband which have to function in a prioritised way during a natural or a man-made disaster.**

4. As can be seen from the above, **without prioritization and traffic management, new and innovative services may not would either not develop or be stifled in growth and there could actually be an overall slowing down of the internet**. The Internet operates by providing the best service possible to customers-by proactively prioritizing and optimizing traffic based on where end users are, what devise they are using and what type of traffic they request. ISPs use various techniques to optimize the performance of their network – by compressing video data, for example, so it takes up less space and (cause customers less to use), by adjusting video content so that it takes account of the size of screen and handsets being used, and by only downloading what is being used, not entire files. However, a narrow view of Net Neutrality would only allow traffic management where there is a temporary and exceptional congestion-which could mean in practice that videos and streamed content would buffer and quality would go down.

D. Treatment of specialized services

1. Specialised services provide a platform for innovation supporting competition choice and growth.

2. The most common form of specialized services offered by network operators today are IPTV and carrier-grade video telephony /conferencing. As networks move into an all-IP environment, carrier-grade voice services such as Voice over LTE would be covered by the specialized service definition as they need a guaranteed bit rate bearer to ensure the appropriate level of availability and reliability.

3. The open and universal nature of the internet and the enhanced QoS capabilities of communications networks have the potential to become a powerful combination for new service innovation not just within the electronic communication industry but across all industry sectors.

4. We are just at the start of a new revolution in new service innovation that can be enabled by this powerful combination. A number of new service concepts are starting to be developed and commercialized for example remote health care, transport automation, outside broad cast services etc. As high speed broadband connectivity becomes increasingly wide spread and penetrates deeper into the non-human environment (through the Internet of Things), the full potential of "Internet Plus" will become increasingly apparent. This potential should not be stifled by overly restrictive regulations before it has had the chance to flourish.

E. Premium services aide consumers as well as innovation –U.S research findings

Academic researchers of the University of Florida and University of Texas studied* the effects of a network provider offering premium transmission speeds for content provider. They found that the claims of the NN advocated do not hold when network providers keep their commitment to not degrade service. Specifically, they found that offering premium service stimulates innovation on the edges of the network because lower-value content sites are better able to compete with higher-value sites with the availability of the premium service. The greater diversity of content and the greater value created by sites that purchase the premium service benefit advertisers because consumers visit content sites more frequently. Consumers also benefit from lower network access prices. They also found that network capacity is enhanced with the offering of the premium service.

* Mark A. Jamison, Dept of Economics, University of Florida & Janice A. Hague,Dept of Economics, University of North Texas, "Getting what you Pay For : Analyzing the Net Neutrality Debate."

F. Mobile networks different to Fixed Networks on Net Neutrality

As already indicated earlier, mobile networks are different and call for different considerations.

1. Mobile networks are more traffic sensitive than fixed networks, meaning that the effects of high volumes and different types of data traffic have a more significant impact on performance and end user experience. As a result, traffic management has a greater significance and importance for mobile network operators than it does for fixed line operators.
2. There are a number of reasons for the greater sensitivity of mobile operators:

   A mobile network comprises of a network of interconnected cells with each cell working on a specific set of frequencies. The radio spectrum is a finite resource that has to be shared on a dynamic basis between many users. However, in a fixed network, each customer has a dedicated, physical connection (e.g copper, coaxial or fibre). Since spectrum is a finite resource, operators have only a limited amount of radio spectrum and many experts believe that we are approaching the limits of how much more efficiently we can use the spectrum. It takes many years to get agreement on new bands of spectrum and thereafter get vendors to develop and manufacture equipment.

3. Another difficulty is the number of users sharing a cell varies depending on the time of day. For example, at some points, there may be very few people using the same cell which means they will get faster and more reliable connections. At other times for example, in busy working hours, there would be lots of people using the same cell. They will all experience slower speeds and less reliable conditions.

4. Customary experience also depends on what type of services are being used e.g video or email etc.

5. The capacity and performance of mobile network is also impacted by weather conditions, especially rain, as well as physical obstacles such as buildings.

6. A customer's mobile Broadband experience will also depend on how far away they are from the cell centre. The further the customer moves away from the cell centre, the slower and less reliable the connection will become.

G. Some excellent points seen in a blog post "On #NetNeutrality: Against the Consensus"

1. "With the AIB video on Net Neutrality being circulated almost feverishly on the social media & IMs and with AIB getting their fair share of publicity on the News Networks under #Save The Internet, it is not difficult to see why the video has caught people's imagination.

2. The AIB video about "Over the Top" services, curiously or perhaps not so curiously, itself goes over the top by displaying the lack of appreciation for the various facets involved in the #NetNeutrality issue. For starters, Net Neutrality hasn't been passed in the U.S. 'definitively'. FCC (the U.S. Regulator of communications services) has passed the Net Neutrality regulations on a 3-2 vote, which itself is being challenged in courts (Telecom Industry Sues to Overturn Net Neutrality http://www.wsj.com/articles/fcc-publishes-net-neutrality-rules-starting-clock-for-challenges-1428937026) Assuming we have sufficiently entertained ourselves with AIB explaining the nuances of the Net Neutrality Policy, let us turn to more credible views of the domain experts, many of whom are pioneers of the Internet Age, to examine the regulatory and the technological nuances of Net Neutrality.

3. Net Neutrality debate is an not a new debate that has emerged in the U.S. In Jan 2007, Robert Kahn, popularly called the "Father of Internet" strongly opposed the legislation over 'Net Neutrality' calling it a "slogan" and cautioned against dogmatic views of Network Architecturehttp://www.theregister.co.uk/2007/01/18/kahn_net_neutrality_warning/?mt=1429030817614. While more recently, Nicholas Negroponte, the co-founder of MIT Media Labs, opined "The term net neutrality has a little bit of a pejorative ring. How would you want something not to be neutral….. But the truth is all bits are not created equal….. And so to argue that they're all equal is crazy….. What I can assure you on the topic is those of us who were there at the beginning of the Internet never imagined that Netflix would represent 40% of it on Sundayafternoons. It was just off the chart" http://bigthink.com/videos/bits-bits-everywhere-with-mit-media-labs-nicholas-negroponte

4. And therein lies the crux of the debate in the U.S. The Net Neutrality debate came into the public limelight because of the dispute between Comcast and Netflix (which incidentally has been resolved). With streaming services catching the fancy of consumers and gaining prominence over the years, the pressure on the data networks due to explosive data consumption has been large. By some estimates, today ~70% of Internet traffic is on account of streaming services in the U.S of which Netflix alone consumes ~35%http://variety.com/2014/digital/news/netflix-streaming-eats-up-35-of-downstream-internet-bandwidth-usage-study-1201360914/. Outside the romanticized view of the Internet lie the practical bandwidth constraints of the localized data networks. Bandwidth, after all is not a product of Garden of Eden with an unlimited supply. Upgrading data networks and augmenting bandwidth requires large capital investments.

5. Given the constraints on bandwidth, views of David Farber, a member of Pioneers Circle of the Internet Hall of Fame, need closer attention: "When traffic surges beyond the ability of the network to carry it, something is going to be delayed. When choosing

what gets delayed, it makes sense to allow a network to favor traffic from, say, a patient's heart monitor over traffic delivering a music download. It also makes sense to allow network operators to restrict traffic that is downright harmful, such as viruses, worms and spam…. Pricing raises similar issues…. Blocking premium pricing in the name of neutrality might have the unintended effect of blocking the premium services from which customers would benefit. No one would propose that the U.S. Postal Service be prohibited from offering Express Mail because a "fast lane" mail service is "undemocratic." Yet some current proposals would do exactly this for Internetservices"http://www.washingtonpost.com/wpdyn/content/article/2007/01/18/AR2007011801508.html

6. So what do these insights about Internet and its recent evolution, primarily with respect to Streaming and IM/VoIP services, imply for the regulations? "Public policy should intervene where anti-competitive actions can be identified and the cure will not be worse than the disease. Policymakers must tread carefully, however, because it can be difficult, if not impossible, to determine in advance whether a particular practice promotes or harms competition. Antitrust law generally takes a case-by-case approach under which private parties or public agencies can challenge business practices and the courts require proof of harm to competition before declaring a practice illegal. This is a sound approach that has served our economy well" writes David Farber.

7. Many commentators assume innovation to be a variable indifferent to regulations. In their view, claims about the threat to innovation due to Net Neutrality regulations are exaggerated fear mongering by 'Greedy' telecom operators. Jeff Pulvers, the VoIP industry pioneer, addresses such views by elaborating on how the legal uncertainty about the Title II rules was proving to be one of the greatest impediments to innovation, the resolution of which, made FaceTime and Skype 'realities today and not just the stuff of science fiction movies'. Pulvers further cautions "Today, the echoes of

the fight can be heard in present policy debates over Net Neutrality, with certain groups arguing that utility-style regulation is the only way to ensure that ISPs won't block Internet sites or create discriminatory fast lanes. Not only are they wrong to think that utility-style regulation is the only way to ban discrimination, but they also completely fail to understand the collateral damage that would be caused by flipping our current model to Title II rules" http://www.usatoday.com/story/opinion/2014/09/16/jeff-pulver-net-neutrality-open-internet-column/15663385/

8. While it is greatly comforting to be seen outraging with the crowd against the telecom companies, a more considered approach would be to appreciate that creating telecom data networks infrastructure is not a public service. Acquisition of spectrum, investments in radio equipment (2G, 3G, 4G etc), installing telecom towers requires prohibitively large capital intensity and hence acts as a barrier to entry. NOT due to the greed and ability to conspire with regulators with an objective to fleece the consumers. So while telecom service providers incur the costs of rolling out data services, contribute to the revenue of the public exchequer (spectrum auctions); the Streaming Services (Netflix, Spotify, Saavan etc) & OTT services (Whatsapp, Viber etc), while brilliant innovations in their own right offering great convenience to the consumers, neither bear costs of network rollouts nor contribute to the public exchequer through spectrum auctions. Moreover, their explosive growth is threatening to disrupt the revenue models of telecom operators. Is such a situation tenable over the long term under the current norms?

9. It is worthwhile evaluating few questions:

9.1. Why shouldn't the telecom operators protect their revenues and profitability? In India, voice revenues still constitute more than 80% of telecom operators revenues. While it's true that telecom operators earn handsomely from the data consumption of Streaming/OTT

services, the incremental threat of sudden disruption to the 80%+ of revenues can be greater than than the incremental revenue accrual from data consumption. While technology is headed towards making 'Voice' just an 'App', if enforced prematurely through legislative actions, telecom operators might have to increase data rates consistently to compensate for loss of voice revenues. In the worst case, the burden of 'voice subsidization' could fall disproportionately on data users. Thus it is important that DoT and TRAI allow businesses to experiment and evolve a measured glide path towards evolving their revenue models in conjunction with the evolving voice/data consumption of their subscriber base.

9.2. The AIB video mentions that the fears of telecom companies are unfounded since data revenues are growing every quarter. Undoubtedly. But don't those revenues have costs associated with them? How should those network rollout costs be recovered? The comparable figure of streaming services contributing to traffic is ~35% in India as per some estimates and thus the pressure of traffic management on Indian operators is intensifying.

9.3. Should corporations stop making profits and operate like NGOs on a no profit basis? To extend that analogy to those vociferously opposing 'greedy profit making' intent of telecom companies, will they be willing to work without salaries? Or work on a bare minimum pay which covers for their elementary existential costs? Why aspire personally for high earnings and savings if one is ideologically opposed the 'savings' of corporations popularly called profits? Is the disconnect between these position so hard to conceive?

10. Perhaps the most important aspect that needs to be understood while 'in-sourcing' the outrage from the US to India is that the Indian Telecom & Cable industries are structured very differently than the U.S. or for that matter most other nations. In most nations, there are 3–5 telecom operators while the comparable figure for India 7–8 (or even more depending on the circles). Indian cable market has far more players (~6000 MSOs & ~50,000 LCOs as per TRAI estimates) than the telecom market. India, thus has a hugely fragmented market with weak pricing power unlike the U.S. where the market share is concentrated with high pricing power. Thus the fears of Indian telcos fleecing subscribers are driven more by hype than what

facts would bear out. Understanding of elementary economics is sufficient to realize that hyper competitive markets don't allow for super normal profits.

11. Readers can verify themselves. In a hyper inflationary economy over last 8–10 years, have the mobile/cable bills inflated (adoption of newer services notwithstanding)? Spending on handsets/STBs has inflated but has spending on monthly subscription inflated in line with inflation of other household costs? Most likely these costs have deflated on a constant unit basis. This can be further cross checked with call rates and profits of telecom operators. Most Indian telecom companies have seen their profits decline since 2007-8. After many years, it is only now with spectrum repricing and period of extreme regulatory uncertainty behind, that the outlook for profitability of the sector is improving. Instead of getting flustered by the noise around, readers should base their opinions on hard evidence at hand.

12. Another important facet that needs consideration is — shouldn't India be more worried about Net Penetration before Net Neutrality? Large percentage of the population still has no access to the Internet in the first place. Government programs can't improve connectivity and hence private corporations are India's best bet. History of rising telecom penetration in India is well documented after opening of the sector to private operators along with an investment friendly regulatory regime. Hostile regulatory environment prohibits investments as is evident since 2008. Indians should ideally encourage a profitable private telecom sector which can undertake large investments to improve the data penetration and quality of data networks on the lines of the success of voice penetration in the last decade.

13. Alternatively, even if one doesn't want to take into consideration the point of view of telecom operators or cable companies, consumers should think for themselves. During my interaction with @c_aashish & @sanity_3 on this issue, @c_aashish drew an analogy which hit the nail on its head. If the speed & bandwidth capacity is limited, then why shouldn't ISPs prioritize between bandwidth application of say a hospital (or the bandwidth application of a patient who wants to send data to his doctor) versus the bandwidth application of someone who is streaming porn? Shouldn't the data 'requirement' of the hospital (or patient) take

precedence over the data 'requirement' and the 'right' of the person streaming porn? Why should these two applications of the "scarce bandwidth" have the same priority? Why is price discrimination between these two data types wrong?

14. I would extend the analogy to the absence of policy in India about prioritization on our road networks. It is for this reason that ambulances struggle to maintain their deadlines and time commitments. Since "We The People" place disproportionate importance on what Celebrities (Bollywood bandwagons, Celeb Journalists or anyone who is famous) have to say on Public Policies (outside the sphere of their domain expertise. Their views on their craft are well appreciated), perhaps an analogy from a film might help drive home the point. We clap 'in derision' when the movie 3 Idiots makes reference to the pizza gets delivered within 30 minutes in India but an ambulance struggles to arrive in time. However, we are challenged to draw a similar analogy when similar mistakes are being sought to be repeated in other areas of public policy.

15. To summarize:

1. Investing in creating, developing and maintaining telecom & data networks is highly capital intensive and has to be incentivized by profits.

2. The data speeds we take for granted are due to innovations and investments made possible due to a non intrusive and investment friendly regulatory regime.

3. Internet and telecom networks have bandwidth capacity constraints due to the quantum of spectrum (low in India compared to global benchmarks), number of subscribers and technology constraints (hence 3G,4G, 5G etc).

4. Look beyond the current hype over OTT apps and think about data guzzling streaming services. As traffic explodes with the proliferation of these services, it is unreasonable to expect ISPs to provide limitless bandwidth on a non-discriminatory (pricing) basis. Traffic

regulation will become necessary due to exponential growth in data consumption, primarily on account of streaming services."

H. "The real threat to Net Neutrality"

1. As eloquently argued by Professors Sowmya Sen and Alok Gupta of the Faculty of the Carlson School of Management, University of Minnesota, a **competitive market is the best way to overcome Net Neutrality violations not regulations and red tape.** The Professors state "to truly reduce the cost of internet access for consumers and improve Broadband penetration in India, adequate flexibility with pricing is desirable. In the telephone networks, 1-800 toll-free numbers allow businesses to subsidise user's access fees, but that same mechanism is missing for internet data services. Smart data pricing practices, sponsored data and zero pricing, can help create a win-win for both consumers and network operators. Facebook's internet.org and Airtel Zero are useful initiatives in this direction as they will foster greater competition between content providers and subsidise user's access costs.

2. Much of the proliferation of digital services in India can be attributed to the fact that the telecom sector has been a healthy market with large private investments, **high competition among operators and the cheapest pricing plans in the world**. To sustain this momentum, it is important for the Indian Government to step back from enacting stronger Net Neutrality laws and instead let the market decide the outcome. TRAI should neither try to help operators recover losses from their traditional revenue streams by bringing OTTs under the licensing regime, nor should it place itself in a position of regulating what pricing plans network operators can and cannot offer.

3. Professor Jagdish Bhagwati jokes that the problem in India has been the heavy hand of the Government is so pervasive that Adam Smith's "invisible hand " is nowhere to be seen. As far as the Net Neutrality debate in India goes, it is time to give the invisible hand of the market a chance."

I. Conclusion :

"India urgently needs Net Neutrality but one that is optimized for its needs"

1. One of the biggest tasks before us today is that of creating Digital India which is obviously closely connected to Net neutrality. All would be aware that the great vision of Digital India is to transform India to a digitally empowered society that is centered on the three key areas of Digital Infrastructure as a Utility for every citizen, Governance and Services on Demand and Digital Empowerment of citizens. This initiative which is slated for completion by 2019 aims at connecting the unconnected with high speed Internet connections. The entire project rests on 9 pillars, the foremost of which are Broadband Highways as Pillar 1, Universal Access as Pillar 2, Public Internet Access as Pillar 3 and Electronic Delivery of Services as Pillar 5. **It therefore follows that Mobile Internet Access and Usage are going to be paramount factors for the success of Digital India.** But, where are we today? Voice connectivity is only about 60% and data penetration far lower at about 20% only. India ranks as low as 129 out of 166 countries on ICT development index and has the dubious distinction of being placed in the Least Connected Countries group in the world. There are therefore formidable challenges for making progress towards the Vision of Digital India. Such a situation must make us pause and look for special solutions to meet our requirement.

2. We need to examine Net neutrality carefully in view of its close relationship to Digital India. We need to understand that there are multiple definitions and versions of Net Neutrality across the globe from the U.S to Europe to Asia Pac. In fact, even within Europe, different countries have different views on Net Neutrality. This is probably

rightly so since ***each country has to devise its own customized version for the maximum welfare of its citizens keeping in mind its own constraints and state of digital development. There is no 'one size fits all'*** *approach that would work in this regard.* With India's extremely low level of digital connectivity especially outside the urban areas and also keeping in mind the low purchasing power of our citizens and extreme price sensitivity of the market, **we need to urgently have an India-specific Net Neutrality that addresses this effectively. We cannot adopt an alien version ignoring our unique socio-demographics.**

3. **First and foremost**, **any product or concept that aids our low-end users or the unconnected through easiest entry and take-up of data services should be permitted and encouraged**. **Secondly it should also stimulate innovation and assist the new entrepreneurs with competing products.**

4. The above can be illustrated with an example. All are familiar with the established product Drop Box for the storage of one's files. If a new entrepreneur-NewCo were to come up with an excellent competing product, he might be greatly limited in a price sensitive market like ours for getting his fair share of the market. This is because, for eg, if I am a low end connected user with affordability of just 6 GB pack for a month, even though I wish to switch from Drop box to NewCo, I would not be able to do it because the steps of downloading all my files from Drop Box and uploading into New Co would breach my entitlement of 6 GB. However, if NewCo were to be on a Zero Platform, then I would incur no data consumption for uploading my files into NewCo. Thus I would easily switch from Drop Box to New Co. Innumerable examples like this could be given to show how **a product like Zero Platform clearly benefits the low end Indian consumer to use more data and the deserving innovative entrepreneur to get into the market.** Thus it serves both the objectives mentioned above.

5. Even the FCC noted in its March'15 rules that such "sponsored data plans (sometimes called Zero-rating)" could "provide benefits to consumers" and that such " new service offerings, depending on how they are structured, could benefit consumers and competition."

6. The third crucial element of Net neutrality for Digital India would be an **Open Internet with no blocking and no throttling**. Only sites having national security implications or impacting social norms /values like child pornography etc should be allowed to be blocked and that too, only by Government orders. **Fourthly**, while there should be no throttling or blocking of competitive services, **appropriate speeds would be permissible for different services say, e mail or browsing versus You Tube.** This since**,** especially **in India, not all users want all services –and providing equal access to all simply means that everyone subsidizes the heaviest user**. *This would be bizarre and retrograde since a rural or "jhuggi" dweller would be subsidizing the Lutyens Delhi resident!* Hence, the Indian NN should permit reasonable traffic management such that **all** users have a reasonable internet experience. And, transparency being a primary weapon in safeguarding the Open Internet, all users and the regulator should be disclosed the information.

7. There should neither be **no discriminatory practices of TSPs towards OTT players nor should there be any discriminatory treatment between TSPs and OTT players.** As the Authority has rightly pointed out in 5.37 & 5.38, allowing all forms of discrimination raises concerns of 'internet fragmentation' and banning all discrimination is over-inclusive and restricts the evolution of the network. Therefore, both extremes-strict Net Neutrality and no regulation-are inherently flawed. A balanced light-touch regulation through oversight appears to be the desirable outcome.

To conclude, it would be retrograde for India's economic development and harmful to our citizens' welfare to impose a Westernized version of Net Neutrality on this country and thereby

damage our Vision of Digital India. **The urgent need of the hour is an Indian version of Net Neutrality**.