Subject: **Re: TRAI meeting on NTP-2018 at New Delhi**   Date: 01/19/18 11:29 PM

To: V K Agarwal <vk.agarwal@trai.gov.in>   From: Ajay Shah <ajayshah@mayin.org>

Cc: Ajay Shah <ajay.shah@nipfp.org.in>,
      Smriti Parsheera <smriti.parsheera@gmail.com>

On 18 January 2018 at 17:58, V K Agarwal <vk.agarwal@trai.gov.in> wrote:

> We are thankful for the valuable inputs provided by you during the meeting held on 17 January 2018 at TRAI. You may further provide your written comments, if any, latest by 22 January 2018 which will guide us in finalising inputs for formulation of NTP-2018.
>
> V K Agarwal
> Jt. Advisor (Broadcasting & Cable Services)
> Telecom Regulatory Authority of India
> New Delhi -110002
> Tel: +91-11-23664504
> Fax: +91-11-23220422

Our thoughts are as follows.

The concept of the New Telecom Policy

We need to more clearly articulate what the NTP document is. It would make sense to define it as a work program for public policy, spanning legislative and executive actions, for the next five years.

A sound NTP process is desirable as it reduces risk as seen by all private persons, who would be able to form expectations about the future evolution of policy. This is a healthy and desirable risk-reduction.

From this point of view, the contents of NTP-2018 should reflect the major concerns that are visible in telecom policy today.

Spectrum and its allocation

The first concern is about the allocation of spectrum for civilian use in India. Over the next five years, we need to broadly match the US/UK/EU arrangement on the spectrum that is blocked for government use including defence use. The thinking here needs to be forward looking in terms of the evolution of civilian applications. As an example, India has a small broadcast TV/radio industry, and India can then be a leader in freeing up this spectrum for data communications.

There is a need to rethink the concept of auctions for spectrum that aim to maximise revenues. While auctions can be useful in *allocating* scarce spectrum between rival objectives, spectrum auction revenues are an unhealthy source of fiscal revenues. At present, about 20% of non-tax revenues are coming from spectrum charges. This can be viewed as a narrow telecom-specific tax. This is an inefficient mechanism for obtaining government revenue. There would be efficiency gains if the same revenues were obtained through the two main broad-based taxes of the economy: GST and income tax.

There is a need for much spectrum to be allocated into non-rival civilian use, where innovative applications can move much faster without needing to allocate parts of spectrum to individual firms. Unlicensed spectrum is the best of all worlds, as it avoids the problem of auctions and non-tax revenues, while delivering the gains to society from the use of spectrum.

Finally, we turn to the problems of data and research. At present, when a spectrum auction takes place, the government needs to choose a reserve price and private persons need to choose their bid prices. These decisions on both sides are taking place in an environment of weak knowledge. Risk aversion on both sides is giving a push by government in favour of higher reserve prices, and a push by private persons in favour of lower bids, which is giving a failure to contract. This needs to be addressed by establishing new foundations of data and research, that will illuminate the decision making of all parties in the field.

The inclusion agenda

The inclusion agenda has been seen in terms of teledensity; our objective has been to arrive at a state where every adult in India has a phone. Much progress has been made in this direction, particularly for males.

However, the important way in which we need to now think about inclusion is about geographical coverage. There are a large number of habitations in India where there is no data network. This has profound implications for the life possibilities of

individuals there, and also the ability to adopt electronics in government such as the Aadhaar program and the new age governance systems that utilise Aadhaar.

This calls for an effort of using satellite imagery to identify every location in India with a few houses, and juxtaposing this with the coverage region of mobile base stations, so as to make a list of locations where there are houses but no data communications. A policy effort needs to be initiated that wil deliver data communications to all these locations. Various policy mechanisms can be applied for this, including a next generation redesign of the USO fund.

Quality of service

Once a lot of people have telephony, we need to shift gears to concerns about Quality of Service (QOS). This requires the establishment of a large network of measurement devices in the field, that will produce fine grained data about calls dropped, voice quality, bandwidth and latency. Once this data is in hand, this can be studied, and used to draft regulations which penalise left tail outcomes for quality of service.

There is a possibility to sharply enhance quality of service by rethinking the concept of a TSP. If a mobile phone could choose the best available base station, and connect to it, the QoS in India would improve radically. This could be achieved in a few different ways. As an example, perhaps there can be an unbundling of the telecom industry where the backbone is made up of tower companies (which build and rent out towers) and base station companies (which outfit towers with base stations). Once this is done, all B2C telecom companies could be MVNOs who have contracts with all base station companies. At all times, each handset would negotiate with the best available base station, and the billing arrangements would be setup through which the customer would pay the MVNO and the MVNO would pay the base station operator.

This concept easily extends to the coming world of commercial and free WiFi hotspots. In an ideal arrangement, the handset would discover the best available WiFi hotspot, and if it was a commercial WiFi hotspot, the billing arrangements would be in place through which the customer pays the MVNO and the MVNO pays the operator who runs the WiFi hotspot (e.g. the coffee shop).

This rethinking of the architecture of the telecom industry offers two major benefits. First, the QoS goes up holding the network hardware unchanged. Second, it solves the problem of competition policy. There could be many MVNOs, but at the foundation, the telecom business would be about the relationship between a handset and the best placed base station. The MVNO would contribute superficial things like a brand name, a logo, a billing system, and customer support. It would be easy to switch between MVNOs as the QoS of all MVNOs would be the same.

Shift gears from mobile data to fibre lines

India is unique in the emphasis on mobile data. A new world needs to come about, where private persons obtain fibre optic lines, and give out free or commercial WiFi hotspots.

This involves addressing issues in the right of way, the ease of establishing commercial or free WiFi hotspots, removing the difficulties associated with the police and KYC. The opening up of unlicensed spectrum (e.g. V Band and E band) could have major implications in achieving the last mile of high speed connectivity.

Good governance procedures at DoT and TRAI

DoT and TRAI will gain from adopting the best governance procedures on all aspects of their functioning, which includes legislative, executive and judicial wings. Good governance procedures are Constitutionally required, create an environment of greater legitimacy and trust, and yield better decisions. The thinking in India on sound processes in regulators and in administrative law have evolved considerably over the last 20 years, and the modern state of the art needs to be brought into DoT and TRAI.

Specifically, at TRAI, the elements of a sound regulator are:
1. Board composition, the role of the board, and the processes adopted by the board
2. Regulation-making process
3. Executive process
4. Judicial process
5. Reporting and accountability.

The working of TRAI will be greatly aided by better data management and research capabilities that utilise this data. A framework for regulations that require electronic submission of data by TSPs is required, and a back-end needs to be constructed at TRAI which will receive these e-filings and turn them into a queryable database. On the research side, it is

interesting to note that the US FCC has now decided to build a team of economists who will bring research perspectives on the actions of the FCC. Such reforms are required at DOT and TRAI also.

Disaster risk resilience

India's uplinks to the Internet are few in number. In the past, on an international scale, we have seen situations where certain countries experienced a drastic collapse in connectivity when one submarine cable was accidentally severed. In the future, there may be the possibility of a hostile State actor initiating a cable cutting operation. There is a need to de risk India by greatly increasing the number and diversity of Internet uplinks at all possible points in the country, so that the coincidental failure of a few of them does not impinge upon the country as a whole.

The second dimension that deserves scrutiny is natural disasters such as an earthquake or the recent Chennai floods. The performance of telecom systems when faced with natural disasters is a particularly important element of the QoS work program: This is a time when the utmost QoS is required and this is hard to achieve. TRAI needs to embark on writing regulations about the minimum levels of capability that TSPs must achieve. After an event (e.g. the Chennai floods), a post-mortem exercise must be conducted.

Innovative pathways such as Google's `Project Loon' (which uses network equipment loaded on balloons) could be brought into disaster zones to quickly create a skeletal communications capability.

Another dimension of resilience to shocks that needs to come into QoS policy thinking is the death of a TSP. There is a need for designing a framework for a smooth handover, and uninterrupted service, when TSPs come to the end of their life.

Surveillance by law enforcement agencies

It is likely that the Puttaswamy judgement of the Supreme Court will create new legal challenges against S.5 of the Indian Telegraph Act. There is a need to rethink the legal foundations, and the checks-and-balances, for surveillance of communications by law enforcement agencies.

New legal foundations

In the field of finance, the Ministry of Finance initiated the `Financial Sector Legislative Reforms Commission' which fully redrafted the entire legal foundations of macroeconomics and finance in the country, proposing a unified modern law, the Indian FInancial Code.

In similar fashion, the legal foundations of telecom and TRAI now merit a comprehensive rewrite, reflecting the post-1991 experience at DOT and then at TRAI.

From ideas to action

An integral part of NTP should be an envisioning exercise about the specific work plan through which the NTP will be translated into reality, over the the 2018-2023 period.

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Ajay Shah
ajayshah@mayin.org
http://www.mayin.org/ajayshah
http://ajayshahblog.blogspot.com