

Response to TRAI consultation paper on Implementation Model for BharatNet

By

Dr. Rohit Prasad, Professor, Management Development Institute, Gurgaon;
rohit@mdi.ac.in

Dr. V. Sridhar, Professor, International Institute of Information Technology Bangalore;
vsridhar@iiitb.ac.in

[Q1] The “Report of the Committee on NOFN” has recommended three models and risks/advantages associated with these models. In your opinion what are the other challenges with these models?

Not answered

[Q2] Do you think that these three models along with implementation strategy as indicated in the report would be able to deliver the project within the costs and time-line as envisaged in the report? If not, please elucidate.

Response:

Except for the executing agency, the three models are not much different from the earlier NOFN model where the responsibility for monitoring the execution rests with BBNL. The failure of BBNL in monitoring the progress of such large scale project as evident in the NOFN deployment is all too well known. At least in the state-led model, the SPV may take some responsibility in augmenting roll-out.

Though the committee has indicated which states are suitable for which of the three models for deployment, a phased roll-out is the need of the hour.

We recommend that the roll-out should first include economically well-off subset of the 250,000 GPs and later clusters in decreasing order of economic well being. Once the success of deployment of BharatNet is demonstrated, then convincing all stakeholders will become easier. Though it is not politically appealing to first roll-out BharatNet at relatively well-off GPs, demonstrating the proof of concept in these GPs will spell success of the mission as a whole.

The committee has recommended unbundling of services from infrastructure and has since indicated that BBNL as the owner of infrastructure shall not provide services. Our response to allow bundling is provided under Q 18.

[Q3] Do you think that alternate implementation strategy of BOOT model as discussed in the paper will be more suitable (in terms of cost, execution and quality of construction) for completing the project in time? If yes, please justify.

Response:

[please see also our response to Q 18]

The private sector has greater functional competence in marketing than the government. It also has superior incentive structures to optimize operational capability. However, while the BOOT model may be suitable to leverage the marketing and operational capability of the private sector in some target geographies, in the vast majority of locations we believe it would fail on account of the difficult operating conditions, high level of demand uncertainty and the specific challenges associated with the uptake of broadband as discussed below:

(i) Difficult operating conditions:

In urban areas, the operational bottleneck is spectrum as operators must service a large number of subscribers in a small area. In the rural hinterland the bottleneck is network coverage as operators must service a small number of subscribers spread over a large area. Setting up a rural network is challenging for a number of reasons.

- a) Rural towers are more likely to be ground-based than urban towers, due to the scattered population and fewer buildings of sufficient strength supporting roof-top towers. Ground-based towers could cost 50% more than roof-top towers
- b) High cost of backhaul: Given the large distances and lower traffic involved, microwave is the medium of choice for back-haul connectivity in rural areas. Fibre based backhaul is costly given the volume of traffic that is forthcoming. Issues of right of way and change of land use also come into the picture.
- c) Limited Sharing Potential: Due to the low population density of rural India, studies undertaken by organizations like Credit Suisse and Citibank have concluded that only one operator can be expected to have profitable operations

in a region (this may increase to two in big villages with a population of more than 2000). This reduces the potential tenancy ratio of the tower business.

- d) **Discontinuous Electric Supply:** Discontinuous and erratic electricity supply necessitates alternative sources of electricity to keep network operations running. Inevitably, this means the purchase of a diesel generator set for each tower.
- e) **Inadequate Supply of Skilled Personnel:** The running of the current telecom network requires the availability of skilled personnel with skills in electronics, IT and telecom. Such people are not easily available in the rural hinterland.

(ii) Uncertain demand conditions

Subscribers in the rural hinterland have low per capita incomes leading to lower ARPUs. They are largely recipients of calls, rather than originators of calls. They rarely travel outside their cluster of villages and hence do not use the roaming facility. Their demand is as volatile as their incomes.

In many cases their occupation is agriculture (78% in rural Rajasthan for example) and their income and demand for telephony vary with the vagaries of the monsoon. A survey conducted in UP and MP by Citibank showed that areas with no irrigation support and located far away from the city (i.e. reduced daily labour opportunities) saw 20-40% declines in recharge volumes after the bad monsoon of 2009.

The cost of the handset represents a significant capital expenditure and is an important part of the decision to buy mobile services. Today low end smartphones cost about Rs. 4,000 – Rs. 5,000. This could be a constraint.

[Q4] What are the advantages and challenges associated with the BOOT model?

[Q5] What should be the eligibility criteria for the executing agency so that conflict of interest can be avoided?

The government should own the NOFN

[Q6] Should there be a cap on number of States/ licensed service area to be bid by the executing agency?

We support bidding out projects at a district level. There could be a cap on the number of districts within a state that one agency can control, so that there can be competition and benchmarking across markets.
No other ceiling is necessary.

[Q7] What measures are required to be taken to avoid monopolistic behaviour of executing agency?

There should be a cap on the price charged to service providers and a requirement of open access.

[Q8] What terms and conditions should be imposed on the executing agency so that it provides bandwidth/fibre in fair, transparent and non-discriminatory manner?

The terms and conditions should be to provide "equal access to the dark fibre or bandwidth as the case may be in a non-discriminatory way" much similar to what is imposed on National Long Distance or International Long Distance companies for equal access to the local access providers at the Point of Presence.

[Q9] What flexibility should be given to the agency in terms of selection of route of laying optical fibre, construction, topology and deployment of technology?

The agency should not be held to very stringent norms on redundancy etc. All possible flexibility within the parameters of the project should be provided.

[Q10] What should be the methodology of funding the project? In case of VGF, what should be the method to determine the maximum value of VGF for each State/ service area and what should be the terms and conditions for making payments?

LI bidder for Engineering Procurement and Construction contract

[Q11] What kind of fiscal incentive and disincentive be imposed on the agency for completing the project in time/early and delaying the project?

Not Answered

[Q12] What should be the tenure/period after which the ownership of the project should be transferred to the Government?

Not Answered

[Q13] Do you think that some measures are to be put in place in case the executing agency earns windfall profits? How should windfall profits be defined?

Not Answered

[Q14] Whether there is a need to mandate the number of fibres to be offered as a dark fibre to other operators to ensure more than one operator is available for providing bandwidth at GP level?

[Q15] What measures are required so that broadband services remain affordable to the public at large?

Not Answered

[Q16] What safeguards are to be incorporated in the agreement entered between Government and executing agencies if RoW is not being granted to the executing agency in time?

Not Answered

[Q17] The success of BOOT Model depends on participation of private entities which will encourage competition. What measures should be adopted to ensure large scale participation by them?

We do not recommend BOOT in most locations. In suitable locations, they should be allowed to vertically integrate with the service provider provided access is provided at the same terms to others.

[Q18] Please give your comments on any other related matter not covered above.

Specific challenges in uptake of broadband

The availability of attractive content and applications that draw customers to use broadband is necessary. While the motto 'build it and they will come' may be true in

some cases, it is not clear whether it will happen for broadband. The availability of the internet through the common service centres set up by DIT did not result in a proliferation of attractive content and applications targeted to the rural customer.

The performance of the private sector in the spread of fixed line telephony, the created of mobile towers in rural areas, the creation of Common Service Centres, and even in the spread of mobile telephony illustrates the weakness of the private sector in this regard.

Fixed Line Telephony:

The National Telecom Policy (NTP) 1994 targeted full coverage of all six lacs villages by 1997. License holders were given a rural obligation towards this objective. By 1999, as many as 3.1 lacs villages still remained to be covered. Operators claimed they did not have a business case to meet their license obligations. The NTP 1999 once more targeted universal coverage. In 2003 after the formation of the USO Fund and the institution of the Universal Service levy, the rural obligation was removed from the license terms.

Creation of Mobile Towers:

In 2008, the government rolled out a scheme to set up mobile infrastructure in rural areas. 7871 towers were to be set up and 3 service providers had to share each tower. The infrastructure providers and service providers were to be selected based on bidding. Both parts of the scheme – infrastructure and service were to be bid out separately.

For towers the USOF prescribed maximum subsidy ranged from Rs 3.68 to 5.07 lacs per year for five years. However the final bid price was much lower ranging from Rs 0.66 lacs to 2.75 lacs per site per year. In Part B the bidding for services resulted in a zero or in some cases negative subsidy even though provision of services requires a service provider to provide backhaul connectivity, a highly capital intensive activity.

The bidding for services resulted in a zero or in some cases negative subsidy even though provision of services requires a service provider to provide backhaul connectivity, a highly capital intensive activity.

Only 5600 towers were set up and many of them were not operational till market conditions improved dramatically. The design of the scheme, with the separation of infrastructure and service may have been responsible for the failure. But even with a well designed auction mechanism, things could go wrong – as illustrated in the CSC scheme and the first auction for mobile services in 1995.

Common Service Centre Scheme:

The government aimed to set up 1,00,000 internet kiosks in rural areas. The design of the scheme did not make the errors of the tower scheme.

The CSCs were to be set up under the PPP model with a state (or sub-state in case of large states) private agency being awarded the contract to set up the CSCs based on bidding for viability gap funding.

The private agency was required to set up the CSC in partnership with a village level entrepreneur. The contract between the agency and the VLE ranged from an employee model, where the agency hired the VLE on a salary with a variable component that increased over time to 100%, to the pure VLE model where the entrepreneur financed the CSC, received back office and corporate support from the agency and shared revenue.

The scheme resulted in unprofitable CSCs. The progress of the SWAN as measured by the provisioning of broadband, the quality of the connection, and the cost to the CSC was not satisfactory.

Therefore the state level entity or the VLE had to bear the brunt of high connectivity cost, high cost of power, low provision of G2C services, unavailability of skills

needed for VLEs, and low awareness of digital services. The viability gap funding proved inadequate.

At the level of a VLE, the total subsidy was in many cases insufficient, less even than the loss incurred on the connectivity operations (revenue from connectivity based services minus cost of connectivity).

If we assume that what has happened in the bidding is merely a manifestation of the winners' curse, and that the government has conveniently passed off its fiscal burden to the private sector, then one must investigate whether the state level agencies are similarly passing the buck to the village level entrepreneurs who may also be over-optimistic about the prospects of this new business in the wake of general agricultural and rural hardship currently sweeping the countryside.

Indeed there have already been instances of such exploitation of the VLEs and agencies have been brought to book.

Mobile Telephony:

The tender for the first mobile service providers resulted in a winner's curse. Operators were bailed out by the government. There were no auctions for spectrum from 2001 to 2010. Operators benefited from low spectrum prices in an environment of galloping demand.

In sum, we need to be circumspect about the ability of the private sector in remote rural areas.

For this reason, the BOOT model will be appropriate only in those blocks where there is some ability to pay and should not be adopted for the country as a whole.

However we need to be bullish about the operational competence of the private sector and their ability to estimate and bear operational (not marketing) risk. Hence the EPC agency should be chosen by bidding – in which public sector agencies can also participate.

Summary of our recommendations:

- 1) Phase wise implementation
- 2) Deploy using Central-State owned SPV model (given as State-led in DoT committee report)
 - a) Distributed ownership and leverage vested interest of states for quick deployment
- 3) EPC not BOOT – build and maintain
 - a) Allow vertical integration and local monopoly
 - i) To reap economies of scale and scope effects
 - ii) Reduce average cost of service provisioning
 - b) Use Reverse Auction to select bidders for EPC
 - c) Allow private and public consortia to bid (as opposed to private sector led presented in DoT committee report)
- 4) Regulate consumer prices for checking monopolistic behavior on both infrastructure and service providers
- 5) Amortize payments over say 5 years, to control budgetary pressure
- 6) Integrate supply and demand side factors
 - a) Vertical integration might have demand side spin-offs; hence allow vertical integration of infrastructure (i.e. fiber/ bandwidth) and services.