

Implementation Model for BharatNet

TEMA Response to TRAI Consultation Paper No. 5/2015

TEMA Response to the Consultation Paper circulated by TRAI on NOFN.

Q.1 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?

(a) CPSU-led (b) State Government-led (c) Private sector-led (EPC/Consortia)

TEMA reply:-

The three potential implementation models identified by the “Report of the Committee on NOFN” (CPSU-led, State Government-led and Private sector-led) all relied upon Government (Centre or State) to finance the cash outlays in a timely fashion, while following different approaches towards identifying an EPC partner. However, all models suffered from the following challenges:

- The Government was required to finance the cash outlays for the timely execution of the project. USOF can finance a part of this outlay, but is insufficient to meet the 3-5 year targets envisaged for the roll-out. The Government thus requires a source for funding of the project in the short term to ensure speedy and timely execution of BharatNet, which has not been provided.
- The implementation models decoupled responsibility for ensuring off take from source of financing, thus running the risk of under-utilization of the project potential (i.e. sub-optimal monetization push due to marketing agency not having “skin in the game”)

In addition to these three challenges that are common for all the three models, the individual models have the following risks as well:

- CPSU led model – There were perceived capability gaps and possibility of failures of accountability mechanisms potentially delaying execution, especially in CPSU-led model. **However the actual issues faced by PSU/Government were not addressed or solved.**
- State Government led model - Risks related to ensuring National uniformity for effective Central control and monitoring and adherence to technical standards. **These issues are well known but not attended to or solved.**

Through exploring the BOOT model, it is believed that the Government is trying to solve for these challenges.

Now let us discuss each model wise.

a) **CPSU- led:-** As presented in the Consultation paper, NOFN was conceptualized about 3 or 4 years ago and approval accorded by Govt of India, presumably after due consultations and examining all the alternatives with proper involvement of then Secretaries of Telecom and IT, Government of India.

Hence, it is fair to assume that NOFN as envisaged to be implemented by CPSUs with BBNL as the custodian/Governor was not a hurriedly announced but a well thought out plan.

Yes, it is a fact that NOFN implementation is lagging way behind the scheduled targets. In order to prescribe a cure, it would be prudent to have an objective analysis of the BBNL’s implementation using CPSUs, identify the root causes for the delays and assess remedies to the present system.

We firmly believe that BBNL and other PSU are fully competent and empowered to handle such matters. They have been managing the work efficiently for so many years.

We feel primarily there were issues of co-ordination between USO/BBNL, DOT, and PSU with regard to prices, payments, procurement procedures, etc. as are given below. WE REITERATE THAT THESE ISSUES CAN BE AND SHOULD BE SORTED OUT.

Specifically, it is necessary to have information on the following;

1. What was the process followed in formulating NOFN and who were the various authorities who assessed the project and accorded approvals?

2. Were the PSUs given the requisite authority, organization and administrative freedom to manage the project? Specifically, their control w.r.t. permissions concerning Right of Way involving multiple Departments of Central and State Governments?
3. What was mode of payment from USOF to BBNL and then to PSUs and what measures were taken to have it fast and trouble free?
4. There were issues with regard to wide variation in prices due to quantity, delivery schedules, capacity constraints of vendors etc. There were situations where someone quoted L1 prices but could not supply and situation like these needed decisions. These need to be sorted out.
5. Were the targets fixed in consultation with the implementing CPSUs?
6. Whether creating the proper infrastructure like building/room, power etc. at Gram Panchayat level was part of the project.
7. Was the actual work and complexities involved in rolling out in the Rural India at Village and Gram Panchayat level taken in to account in fixing the Targets?

In the absence of any details on the above it appears rather premature to think about alternatives.

However, on the other two models proposed the following can be noted;

b) State Government led model:

It is well known that State Wide Area Networks as part of the National eGovernance Plan can be considered as a well-intended program involving the State Governments. Unfortunately, the whole SWAN program took more than a decade to materialize in all the States and it is pertinent to note that even today some States are still tendering!!

SWAN implementation was delayed in most States and in those States, which rolled out, albeit with delay, could not use the SWAN effectively.

This basically happened because of inadequate Technical resources with the State Governments and lack of professional project management capabilities, besides lack of appreciation on the part of administration on the benefits of SWAN. Convuluted process of tendering etc made it further more delay prone.

Things have not changed much over the years and no great evidence on the improved capabilities of State Governments to think of State led model to drive NOFN.

c) Private sector-led EPC/Consortia (PSLC):

It is unclear, what is meant by Package approach in this model of implementation. However, it probably means that separate PSLCs will be involved for each region/State or District.

In this context, it is pertinent to review, how the USOF came in to existence and how the private operators performed w.r.t. their rural obligations.

1. It is a well-known fact that except BSNL, no private operator fulfilled their obligations of rolling out services in the rural areas. The CSC program of GoI under NeGP failed because no Operator was in a position to make data connectivity available for the CSCs.
2. It is also a fact that most of the private operators have fiber at best only up to the District level and NOT beyond. Therefore, it may not help in taking advantage of the fiber available with Private operators for NOFN whose primary objective is to create a National Fiber asset below the district levels up to Gram Panchayat and village levels.
3. Also, even today, most operators have their cell towers back haul their payload by Microwave, severely reducing call handling capacities.
4. If the private sector could not handle and attend to their rural obligations in the past, it is difficult to believe change of heart on their part now.

The consultation paper talks about the advantage of optimizing the network architecture by these PSLCs. This can actually lead to losing benefit of scale in procuring equipments; end up with different States with different makes and models of equipment resulting in huge inter-operability issues. The draconian warranty clauses of MNCs will be a huge cost besides combating 'End of Sale', 'End of Support' and 'End of Life' announcements of MNCs requiring change of equipments every few years.

In case of SWANs, this approach led to a situation where each SWAN has a different NMS etc. and made it impossible to interconnect SWANs and have a centralized monitoring facility. There are comments from some quarters that SWANs have become museums of equipments and did not lend to the benefit of learning of one State by others.

If only existing Telcos had fulfilled their rural obligations, NOFN might not have been conceived at all. Hence, trying to bank on PSLC model can be a wishful thinking.

The Broad Band initiative of GoI is to be construed as an Infrastructure obligation and this invaluable infrastructure ownership must be resting with GoI to retain the federal structure of the Country and enable State Governments to focus on delivering services as rightly pointed in the consultation paper.

Q.2 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.

TEMA reply:-

In all the three models, the Government is required to finance the cash outlays for the timely execution of the project. Over the course of the project rollout, the USOF fund may have additional inflow (but not guaranteed) that can fund part of the remainder. Additional funds can be allocated by the Govt. to ensure on-time financing and completion of roll-out in these models.

However, as described above, it is better to identify root causes and effect corrective steps before embarking on experimenting with a new model.

Some of the root causes seem to be;

1. Unrealistic targets.
2. Lack of proper understanding of the complexity of work involved in the rural India.
3. Lack of infrastructure like power, building/room etc. and taking ownership/involvement of the project at Gram Panachayat level.
4. Inadequate organizational structure of BBNL at CO as well as PMUs.
5. No development of authority and assigning responsibilities to CGMs of PMUs.
6. Non-availability of funds in time. Too much bureaucracy.
7. Delays associated with ROW involving agencies like Defense, Railways and Forest Departments of States.
8. Time taken in proving the CDOT Technology at the Field trial site.
9. It is clear that all the three models are not equal. The CPSU led model actually involves private actor in actual implementation of the program through tender processes ensuring cost optimizations for both fiber and the equipments. The implementation so far has actually proved the suitability of the technology. The deficiencies in implementation have been due to unbalanced resources in the field.

Q.3 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.

TEMA reply:-

No evidence exists to conclude that alternate implementation models will be more suitable and can deliver. Let us realize that even after five years of providing broadband to Panchayats, still it has not been commercially viable and Government subsidy is needed to make it operational. Hence the BOOT model as suggested and perceived in the consultation paper will not be suitable or BharatNet project.

From a cost perspective, BOOT will involve cash outlays from the private sector and the expectation is that this will reduce the burden on public funds. The Executing agency would focus on the quality of construction since the uptake from customers (and hence revenue realization) would depend on the quality of the infrastructure built. Timely execution is essential for the Executing agency to ensure early rolling out of services and realization of revenues; and project delays could lead to cost escalation.

From an implementation perspective, BOOT projects appear to bring more accountability and capabilities/ resources. However, there is serious flaw in that revenues are not guaranteed. If we take example of airports, highways, there is assured revenue stream without any effort or additional planning, except putting in the infrastructure. That is not the case in NOFON project. However execution can be expected fast, if all permissions are given instantly, which is again difficult proposition in case of NOFON because of multiple agencies involved, such as State/Municipalities, Forests etc. There are several examples where under BOOT project has been implemented fast, but permissions or lack of revenue stream is critical factor in case of NOFON.

While BOOT is thus a good approach to explore, there are several key considerations for structuring such a model with enough safeguards to meet the guiding principles. For instance, the BOOT model is not suitable for smaller private players, since it depends on raising of necessary capital and on revenue generation potential during the operation phase. Additionally, BOOT model works very well in areas with considerable monetization potential (e.g., urban areas with high penetration potential, etc.). However, in remote and/or rural areas, there could be lack of interest by private firms due to risks associated with monetization of the network. Additional challenges could arise when striving to achieve social goals in tandem with commercialization.

Analyzing past projects in India implemented based on the BOOT model would help in understanding the challenges that could be faced in such large scale projects. BOOT model in India has been used mostly in infrastructure projects such as highways, railways, bridges and airports. India's experience with the BOOT model has seen mixed success. While there have been success stories like the Bangalore airport, several projects have faced significant challenges. For instance, The Mumbai Metro project brings out two challenges that could arise while implementing the BOOT model – issue of affordability and inadequacy of minimum VGF as the appropriate criteria for selecting the executive agency. Additionally, past projects have also faced challenges such as poor quality completion, errors in demand forecasting, lack of effective monitoring mechanisms resulting in the executing agency adopting illegal measures etc. On account of the risk of monetization that the executing agency needs to take upon itself in BOOT model, participation is also normally low compared to EPC model.

BOOT model can be successful if the technology /equipments are standardized so that the integration of all such BOOT projects across the Country can be achieved. In that context the lessons of SWAN where different technologies in different States led to a conglomeration of networks must be noted. To make BOOT successful the Govt. may have to look at BOOT for the Fiber and Equipment separately. In either case, Govt. should standardize on technology for GPON which will ensure integration of all such BOOT networks through common NMS. **This will give Phillip to the Govt. of India “Make in India” program also**

In terms of cost, the Experts committee estimates show an upward revision of many fold compared to the existing estimates.

Q.4 What are the advantages and challenges associated with the BOOT model?

TEMA reply:-

- BOOT Model conceives a regular flow of revenue once project is implemented. The NOFON as of now does not guarantee any revenue. The project stops at creation of fiber network, which would be available to any user. Here user again would not be customer directly.
- There would be issues in getting support from commercial banks for such infra projects considering the dismal experiences of the banks in lending for infra projects in the past.
- Many organizations who implemented SWANs on PPP model as BOOT have become NPAs and have collapsed and hence it is difficult to work out a viable project.
- The vastly different revenue levels (even if revenue streams are worked out) in various geographies and service areas may be a huge deterrent which might need grouping of geographies to balance out over all revenue and enable some level of cross subsidizing.
- One definite advantage will be that Govt. will not spend any money, presuming PSLCs do come forward. Rest all other advantages are only mythical and may take huge amount of time to realize that they are not performing.

Q.5 What should be the eligibility criteria for the executing agency so that conflict of interest can be avoided?

TEMA reply:- No comments in view of what has been stated above.

However, if BOOT model is preferred, then:

Eligibility criteria for the executing agency should be based on a combination of technical parameters that can ensure successful execution as well as financial stability. This has been detailed below:

- Technical parameters
 - Solid core capabilities - capabilities & demonstrated experience in System Integration
 - Effective relationships with partners/ suppliers/ joint bidders
 - Sound track record of in time and within budget completion of similar projects
 - Guarantee of conformance to technical specifications/ benchmarks (as set by BBNL)
 - Commercial/ Financial parameters
 - Financial stability of the executing agency in order to ensure faster and effective project execution
 - Sound business case and related terms and conditions (e.g., plan for monetization, exclusivity period etc.)

The Central Govt. must ensure that there is consistency in the criteria applied for selection of Executing agency across all States/ LSAs, which is easy, said than done because of wide variations in the geography of our Country. This can be achieved either by centrally mandating a common set of eligibility criteria for bidders, or by centrally pre-qualifying eligible bidders.

There are two options for avoiding monopolization – that drive choices around bidder eligibility & regulatory intervention:

- 1) Restricting bidder eligibility + Competitive retail markets: In this model, bidder eligibility is restricted to avoid monopolization via vertical integration in the value chain. In such a model, there will be some regulation needed to facilitate market forces:
 - Open and competitive bidding for the last mile
 - Retail broadband pricing left to market forces
 - Wholesale pricing partially regulated (price ceiling and floor mandated)
- 2) No restrictions to bidder eligibility + Significant Regulatory intervention: In this model, bidder eligibility is unrestricted. Vertical integration in the value chain allowed (i.e. IP license holders, TSPs and ISPs can be Executing agencies). The Govt. will impose significant regulatory intervention in one of the following forms: Retail pricing regulation and/ or leaving the retail pricing to market forces, but regulating wholesale pricing, mandating substantial dark fiber, restricting number of LSAs in which the agency will bid, setting up a strong monitoring mechanism to ensure arms length pricing and avoidance of anti-competitive practices

Between these two alternatives, the former model could be clearly more desirable due to a few different factors:

- It is simple to design and monitor
- It is market-driven - minimalist approach to regulation will help avoid market distortions.

On the other hand, the latter model of unrestricted bidder eligibility will:

- Require significant regulatory intervention - which could drive market distortions
- Monitoring infrastructure and resources need to be put in place to ensure smooth functioning
- Additionally, global examples of telecom players with significant market power indicate that regulation cannot substitute for market forces/ competition, and will also result in higher pricing to the end user

Q.6 Should there be a cap on number of States/ licensed service area to be bid by the executing agency?

TEMA reply:- Certainly the bidders will look for a combination of geographies/ service areas to balance revenues.

Q.7 What measures are required to be taken to avoid monopolistic behavior of executing agency?

TEMA reply:- Monopolistic tendencies are difficult to be avoided because of the inherent conflict of interest of PSLC implementing and other VAS providers. Only BBNL and CPSU led model can ensure truly non-discriminatory access.

Q.8 What terms and conditions should be imposed on the executing agency so that it provides bandwidth/fiber in fair, transparent and non-discriminatory manner?

TEMA reply:- May be possible to list out and impose terms and conditions but in reality, it may be difficult to enforce. The well intended 'Call Drop' initiative of TRAI and SWAN is an example in case.

Q.9 What flexibility should be given to the agency in terms of selection of route of laying optical fiber, construction, topology and deployment of technology?

TEMA reply:- BBNL should be given complete freedom to in terms of route selection and also in choosing an alternate technology like wireless in the extreme case of in-feasibility of fiber as well as plan alternate routes in cases where primary fiber route is failure prone for any reason.

As narrated earlier, it benefits Country to standardize the technology to reap the benefits of volume and scale, realize advantages of cross learnings and to create a National Network Monitoring, besides enable bulk procurement of spares and services.

The NOFN effort also must consciously encourage "Make in India" and stably address such issues.

In case of private participation:

One of the guiding principles of BharatNet is to "Design for operability as a single integrated National network that is "future-proof", with high reliability, security, and resiliency".

This guiding principle directly implies that the Executing Agency should not be provided with any flexibility in changing architecture or technology. This is necessary on two accounts. Firstly, to allow consolidation of network so that it acts as a supporting network layer for multiple uses eliminating need for overlapping networks. Secondly, to create non-discriminatory access for service provisioning and permit existing and new service providers to connect via multiple last mile solutions.

Additionally, the Executing Agency should have no substantial flexibility in the laying of optical fiber (e.g., route, depth) and topology. Allowing major changes could give too much discretion to the Executing agency and make "honest" execution difficult to achieve. Minor changes may however be allowed so as to account for ground-level realities.

Higher degrees of freedom directly contradict with the guiding principle of operability as a single integrated National network, and will compromise the overall architecture of the network (design for operability as a single integrated National network; high reliability, security, resiliency and scalability of the network rolled out). It may also result in a lower speed of execution, sub-optimal coverage and monitoring complexity.

BharatNet is envisaged as a long term project. It is integral that the network architecture – both in design/ construction methodology as well as topology – is not compromised for time or cost reasons for the project to be successful in the long run (e.g., using aerial networks instead of underground networks could result in faster completion, but will compromise the network reliability in the long run).

Q.10 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?

TEMA reply:- It will become a matter of great debate to establish viability and consequently, VGF. This can certainly lead to potential scams.

The cost of NOFN in the present model / architecture estimated at Rs.20, 000 Cr seems to be very realistic and reasonable and most of the cost is towards laying of fiber which will be a long term asset. Hence, it is preferable to proceed with NOFN as envisaged earlier.

It may be easier to concentrate on BBNL, identify root causes and empower suitably instead of dealing with more than 20 odd organizations who might get involved in any other model of implementation.

However for BharatNet implementation to be a success, the Government will need to use the public funds in the long run to provide for the necessary infrastructure as commercial viability is limited in rural areas.

- Rural broadband penetration is low in most Countries globally. Successful broadband rollouts in the rural areas across the world have been primarily funded by Governments, and there are no at-scale examples of privately funded & commercially viable National rural broadband. Examples include rural broadband deployments in New Zealand, Lithuania, Albania, Slovenia and France.
- In France, the original proposals by the French Government in December 2009 to provide limited public funding for superfast broadband deployment failed, because operators deemed the proposed approach to be uneconomic. In February 2013, a new National broadband plan was announced, to involve joint investment by local and central Government and network operators. The proposed joint investment totaled around EUR20 billion.
 - France was divided into two deployment zones (a) Commercial zones with higher revenue potential, covering urban areas and (b) Public Initiatives Networks (PINs) covering most of the rural areas, as well as urban areas where no private sector player expressed an intention to invest
 - Commercial zones cover 57% of the population in France. In these areas, the Government will make agreements with private operators for the deployment of FTTH networks by 2020, whereby the State can specify priority areas but does not provide any direct funding.
 - PINs will be deployed by public authorities. The public networks resulting from these investments will be open to all retail operators.

Thus it is almost certain that the Executing Agency's operations under a BOOT model in many areas are not financially lucrative and the Government will have to provide Viability Gap Funding (VGF) in most areas to ensure private sector participation. The Consultation Paper specified that the choice of the Executing Agency will be driven by minimum VGF in instances where a BOOT model is chosen.

However this is not a good model to follow because:

- Low flexibility on the network infrastructure design and route will imply that bidders cannot differentiate substantially on the cost of roll-out. There would not be much differentiation on the basis of ROI too since bidders are likely to have similar ROI expectations or Government is likely to negotiate with bidders to set "fair return" expectations. In such instances, differences in VGF requirement quoted between bidders will be primarily driven by variances in revenue projections, and thus will not be a 'real' difference (i.e. driven by suitability of bidder to execute).
- In fact, a lower VGF requirement can result from higher end-user pricing, which would go against the guiding principle of affordability, and thus be counter-productive. Past experiences with BOOT indicate that players have quoted low VGF to win the project, but once the project was completed, the Government had made concessions to make the business case viable for them. Thus the low VGF criterion could be misused by private sector participants to win the project, whilst knowing that there could be concessions made in the future.

As an alternative to minimum VGF requirement as the selection criterion, the choice could be using criteria that align better with the articulated guiding principles. For instance, a combination of such as speed of roll-out, uptake commitments bidder is willing to make etc. are better aligned with BharatNet objectives vs. choice of Executing Agency based on VGF requirement quoted.

The payment terms with the Executing Agency chosen can be drafted to incentivize the success and timely completion of the project while releasing the Government funding.

- For instance, a major portion of the capex can be funded by the Government upon commissioning (from USOF), with the rest provided over the period of project roll-out and tied to specific project goals/ milestones (e.g., extent of uptake, availability, quality).
- Opex funding (net of what is recovered through revenues) can also be done tied to specific project goals/ milestones (e.g., extent of uptake, availability, and quality). Operational profits (if any achieved) can be retained by the Executing

Agency. This will ensure that the Executing Agency will price reasonably and make the service affordable for the masses, while striving for monetization.

Q.11 What kind of fiscal incentive and disincentive be imposed on the agency for completing the project in time/early and delaying the project?

TEMA reply:-It is better to review the BBNL current organization structure and empower State CGMs of BBNL to take responsibility of execution in all respects.

BBNL Corporate office to set targets in consultation with CGMs of the State, assist them in procurement and monitor the progress.

Incentives for completing on-time, rather than penalties may be considered for all agencies involved in the project.

Almost all agencies involved have complaints about delayed or Non payment of monies due. A method of LC payments may be considered for all the participating agencies which can simplify administrative work to a great extent and ease payment problems.

We suggest the payment terms with the Executing Agency chosen can be drafted to incentivize the success and timely completion of the project while releasing the Government funding.

- For instance, a major portion of the capex can be funded by the Government upon commissioning (from USOF), with the rest provided over the period of project roll-out and tied to specific project goals/ milestones (e.g., extent of uptake, availability, quality). The executing agency can be rewarded for early completion via earlier payment of a greater portion of the agency's capex outlay
- Opex funding (net of what is recovered through revenues) can also be done tied to specific project goals/ milestones (e.g., extent of uptake, availability, quality). Operational profits (if any achieved) can be retained by the Executing Agency. This will ensure that the Executing Agency will price reasonably and make the service affordable for the masses, while striving for monetization

Q.12 What should be the tenure/period after which the ownership of the project should be transferred to the Government?

TEMA reply:- It will become impossible to take over from PSLCs at the end of the term because of the complex nature of the network.

This problem will not arise in CPSU led model.

Q 13 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?

TEMA reply:- Since CPSUs are the execution agencies and tariff will be decided by BBNL, no wind fall profits can be envisaged.

Even in case of State or Private led projects, the tariff should be fixed by Government.

It is also submitted that there is a significant amount of risk that the Executive agency takes because in future, the estimated VGF might actually turn out to be insufficient for the viability of the project. Hence the Executing Agency should be allowed to retain the upside in the event of an unforeseen off take of the project (i.e. 'windfall' profit) within the concession period as an incentive without which private participation could suffer in the BOOT model. This will also ensure that the Executing Agency will price reasonably and make the service affordable for the masses, while striving for monetization.

Q.14 Whether there is a need to mandate the number of fibers to be offered as a dark fiber to other operators to ensure more than one operator is available for providing bandwidth at GP level?

TEMA reply:- With BBNL implementing, true Non discriminatory access will be possible. With PSLC model it might become very difficult.

Further, requirements of dark fibers at GP level may not become necessary in the near future.

BBNL pricing policy must be flexible and nominal so that VAS providers are enthused to come forward and deliver VAS relevant to rural India. This can not be expected with PSLC model.

Q.15 What measures are required so that broadband services remain affordable to the public at large?

TEMA reply:- Government must make 256 KB access at a very affordable price if not free of cost. The 512 Kb and beyond to be charged reasonably, so that subscribers can avail with comfort. But it would be difficult to implement this, if projects are conceived under private sector led model or BOOT.

Q.16 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?

TEMA reply:-

It is day dream that private entities would be able to solve the problem of right of ways. We have experiences in plenty and we all know difficulties and variable costs involved. Even with PSU/GOI this has become a bone of contention.

The RoW issue is easier to handle if CPSUs are implementing. But inter departmental difficulties involving, Railways, Defence services and Forest Departments of States seem to be potential spoil sports and to be sorted out so that BBNL forges ahead.

Q.17 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?

TEMA reply:-As discussed earlier, going by the SWAN experience and realizing that there is hardly any guaranteed revenue stream, it is difficult to perceive wide scale private participation and if at all any one comes forward, the cost and concessions would be required to be given to make it viable.

It is preferable to address the root causes of the problems encountered earlier, come up with corrective measures and carry on with the present architecture. A review can be done after operating the present model for a reasonable period and opt for changes in the model of implementation if results suggest so.

The success of project depends on being incentivized by sharing of risk by the Government (by funding a major portion of the capex upfront, and providing viability gap funding), and by allowing the Executing Agency allowed to retain the upside in the event of an unforeseen off take of the project (i.e. 'windfall' profit).

Additionally, feedback from the lending community (basis experience in funding infrastructure projects with a VGF) indicates that the private sector player's ability to raise debt will depend on assurance of the timely availability of the promised VGF from the Government. This indicates that it will be critical to ensure there is transparency in the source of the funds for the public sector investment prior to the bidding process to ensure sufficient private sector participation. The Central Government should earmark clear, dedicated funds for BharatNet, and could also invite State Governments to play a role in contributing to the fund.

So in brief there is no escape from funding by Government especially for project like BharatNet, where revenue streams are not guaranteed.

Q.18 Please give your comments on any other related matter not covered above.

TEMA reply:- Interaction with CGMs of various PMUs of BBNL reveals that the whole problem was due to the unrealistic targets set because of which they were not achieved in time.

However, the experience of laying about 80,000 KMs of fiber and installing equipments at more than 10,000 GPs across the Country has resulted in huge learnings to make further implementation controlled and predictable.

If necessary authority and administrative freedom required for a project like NOFN is given to BBNL Corporate office and Regional CGMs are empowered suitably and made responsible, they all feel NOFN implementation can be expedited to accomplish the targets mutually decided.

Regarding the issue of Ring topology v/s linear topology, the matter can be left to Regional CGMs to study the fiber routes while laying the linear fiber and plan a passive alternate fiber route which can be used as a cold stand-by to be availed in case the primary route becomes unavailable. Since the stand-by fiber is already crimped, tested and readily available at the GP, the disruption in service will be minimal and only to the extent of time taken to insert the stand-by fiber.

Also, in future, when the services usage increases significantly, the end equipment can be upgraded to dual fiber equipment without any difficulty. Further, as service usage levels increase, alternate fiber can be planned for every GP over a period of time on the need basis of each GP.

While consultations and discussions are going on, BBNL must be allowed to go ahead with the existing plan because nothing will go waste but avoids the deep morasses that BBNL has got in to because of the 'Experts Committee' Report.