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भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

To,
Advisor (NSL)
Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan
Jawahar Lal Nehru Marg, (Minto Road)
New Delhi-110002

No: Regln/1-33/2014/2599 dated: 16-12-2015

Sir,

Sub:- Comments of BSNL on TRAI's consultation paper on " Implementation Model for BharatNet"

Kindly refer to the Consultation paper no.05/2015 on "Implementation Model for BharatNet". In this regard kindly find BSNL's revised comments (for Q.N. 18) are as follows:-

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?

BSNL Comments:

Presently NOFN (BharatNet) is being executed as per Cabinet Note dated 25.11.2011 which is similar to the Committee recommendation under CPSU Led Model. But it seems that Committee has ignored the essence of the Cabinet Note. The report is arbitrary and biased. Committee did not analyse the deviations during the execution of the project vis-à-vis provisions in the Cabinet Note. In case nodal agency (BBNL) follows the Cabinet Note with full spirit then the project can be executed within the stipulated time and within two year without increasing the cost over-run. Some brief of the Cabinet Note highlighting the underneath spirit are listed below:

a) **Objective of NOFN**: The objective of the NOFN Project is to extend the existing OF network to Panchayat utilizing USOF Fund. While Report of the Committee on NOFN did not mention source of fund for new proposal in its Report. A key feature is 'Non-duplication of existing Infrastructure. The BharatNet has encouraged duplication of OFC routes.

b) **The assets** so built under NOFN will provide non-discriminatory access to all service providers. Here service providers means Telecom Service Providers licensed by DoT but many efforts were made by other Government agencies that it should be directly accessed by Government agencies by passing the service providers which created the complexity in understanding the NOFN. To ensure non-discriminatory access of NOFN, BBNL would operate and maintain the infrastructure and provide only bandwidth to TSPs/ISPs. Services will be provided by TSP/ISP only.

c) **Invitation to all service providers for execution of NOFN project:** The project was executed by the participating agencies who agreed to share their existing Fibre. For which USOF (February 2010 to June 2011) called all the TSPs, ISPs under the License of the DoT for participation in the NOFN by sharing their Optical Fibre Network infrastructure on the GIS platform operated by NIC but except BSNL, Railtel and Power grid no other TSP/ISP came forward. So we can say that present NOFN model is CPSU Led Model but it was actually open to all the Licensee of DoT as PPP Model.

d) **Non-discriminatory access and PPP Model of NOFN:** NOFN is actually rolled out in the PPP model in terms of infrastructure development and services like broadband etc. to be delivered in the panchayat for public, CPSUs developing and maintaining infrastructure for NOFN and private (all TSPs/ISPs licensee of DoT) will provide services in the Gram Panchayat using NOFN. Access to NOFN is provided on non-discriminatory basis to all interested service providers.

e) **Complex Funding mechanism :** Government facilitated the direct funding of the project and brought the project from Planned to Non-plan bracket to avoid the delay in funding procedure. Accordingly USO Fund became entitled to receive funds for the project. HLC has facilitated to provide funds on the Estimate basis and settlement at the time of completion. But later on BBNL splitted the fund flow into eight stages or more and started blocking on one pretext or other. This resulted into a complex and complicated procedure of project funding due to triplication of procedures on contractors. Also, USO Fund forced an agreement with BBNL which was mismatching with the agreement between BBNL with CPSUs. This resulted into complete blockage of fund flow for several months (April 2015 to October 2015) which derailed the contractor's efforts in execution.

f) **Unrealistic targets to complete the project :** The initial target of laying 5,00,000 km in 2 years was unrealistic as various TSPs have laid few thousands of km to 2,00,000 km OFC during last 10-15 years. BSNL has laid maximum 45,000 km per year to have about 7,00,000 km OFC at present. BBNL further inhibited the speed of execution by not allowing Horizontal Direct Drilling (HDD) method which is mechanised and faster than open trenching method. There is shortage of labour in many parts of the country and BBNL has ignored this fact. In addition BBNL restricted the Schedule of Rates (SOR) as on 01-July-2013. SOR largely depends on the wages of the labour which is revised twice a year as applicable in a district. Non-revision of SOR affected the minimum wage consideration as prescribed in Labour Laws.

g) **Shortage of Telecom Duct and OFC :** The manufacturing capacity of Telecom Ducts and OFC was limited to execute the project in 2 years. BBNL processed the tender for procurement of 1,00,000 km of telecom duct but could not place the order which resulted into shortage of ducts for the project. Similarly OFC supply was made very late.

h) Delay in supply of GPON equipment : BBNL failed to supply the GPON equipment. Out of the requirement of 2,50,000 requirement till date only about 4,000 has been installed by BBNL. More than 70,000 km of OFC has been rendered un-lit due to non-supply of equipment and may become faulty and untraceable anytime.

i) **Interpretation Issues for NOFN during execution**:

(i) **Estimate**: Estimate of NOFN, at the time of preparation of Cabinet Note in consultation with TCIL was proposed on average OFC requirement per Gram Panchayat as 1.5 KM / 2.0 KM/ 2.5 KM. Cabinet Note further states under para 8.5 which is reproduced below: *Given the complex nature of NOFN the widespread geographical area and multiplicity of agencies involved, precise estimates cannot be made as of now since actual cost will depends on Per KM cost of OFC as well as the length of OFC required for the Network will be known only after the detailed survey. However an indicative requirement of funds on year to year basis is placed at Annexure –'VIII'..... But the implementation agencies limited the cost on the value under Annexure – 'VIII' setting limits before the start of the work delayed the project by more than a year. Still there is uncertainty at their end on the actual estimate of the project.*

(ii) **Work distribution:** A High Level Committee (HLC) empowered by Cabinet Note (7.2) to decide project execution model etc. who allocated work to participating PSUs BSNL, Railtel, Powergrid in the ratio of 70:15:15 and work was supposed to be executed progressively by them as per their execution procedures. This distribution was based on simultaneous work execution by local presence of the CPSUs. Accordingly resource mobilisation started and survey for whole area completed in very short time. But during execution BBNL reduced work distribution geographical areas which affected the investment of CPSU and made workforce idle. The understanding about the execution of the project by these CPSUs during the HLC period had been badly effected due to unilateral alteration of roles of CPSUs by the BBNL and created a great confusion on deployment of resources by the CPSUs towards the project. This prevented the simultaneous work execution capabilities of PSUs in different geographies.

(iii) **Defective revision on work distribution:** The work distribution was allotted by HLC along with the strength of respective CPSUs BSNL, Railtel: Powergrid that means Powergrid will execute the Gram Panchayat along the power lines which will optimise the existing OFC of power lines where powergrid is having the main strength. Similarly Railtel will execute the Gram Panchayats along the Railway lines which will optimise the existing OFC of Railway and Railtel is having the main strength. The blocks according to that presence will be divided in such a way to meet the distribution ratio of 70:15:15 and all CPSUs agreed to this distribution. But later on for the sake of monitoring purpose only BBNL revised this policy and distributed the works State-wise. This resulted into non-utilization of workforce of BSNL in the state of Tamil Nadu; Gujarat; Andhra Pradesh and Himachal Pradesh. These states were highly penetrated by the existing OFC of BSNL. This resulted into low output of NOFN in these states. Further optimization of the OFC did not happen as there was no specialization of BSNL in tapping the Fibre from the Power lines and railway lines.

(iv) **Not exploring easy accessible to hard accessible approach**: The assets including OFC, Mobile towers, exchanges of the BSNL, Railtel and Powergrid was mapped on the Geographical Information System (GIS) maintained by NIC for assessment of existing OFC and incremental OFC works. It was found that nearly 50000 Point of Presence

(POPs) were there on OFC in the Panchayat and these OFCs were passing through the adjacent Panchayat creating OFC passing infrastructure through about 1,00,000 lakh Panchayats and with very minimum expenditure and efforts. These works were supposed to be executed by the CPSUs. It was termed as 'picking up low hanging fruit' by the HLC. But BBNL did not allow to execute in this manner instead they insisted initially for whole district execution and later on whole block execution by achieving step – by – step individual activity completions for a whole District irrespective of terrain conditions.'

(v) **Platform for E-Services**: The Cabinet Note provisions platform for E-Governance to be delivered to Panchayats through NOFN project by hiring the bandwidth from the district to the NOFN OLT at Block from the existing bandwidth providers on competitive market and connecting Block to Gram Panchayat through NOFN on regulated Tariff by the DoT/USO Fund. There is a provision of Rs 1,230 crores annual in the business cases as part of the Cabinet Note. But there were several interpretations and this approach is not being initiated by the user Ministry formally either to the NOFN or to the BSNL. Instead new Committee has proposed direct OFC laying from District to Panchayats by duplicating about 7,00,000 KM of existing OFC with heavy investment and ignoring the operational cost and electronics associated to that segment.

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.

BSNL Comments:

No. All three models includes duplication of infrastructure in laying of OFC and network set up between District to Gram Panchayat duplicating with more than 7,00,000 KM of existing OFC. These reworking will take more than five years in time delay and more than Rs.28,000 crore as duplication of CAPEX. Further operational cost will also increase accordingly. This addition will not add any significant value to the network/connectivity as existing fibre can deliver enormous bandwidth even Terabyte (TB) by installing DWDM network on existing one pair of fibre at very low cost and lesser time. This Bandwidth can serve the requirement of all the operators and cable TV providers.

BharatNet has proposed Ring architecture of OFC to reach upto Panchayats which is not realistic as most of the Panchayats are connected with single link road. No electronics can support more than 5 drops in a ring. The proposed IP-MPLS technology does not support Ring. The Ring architecture has been justified wrongly in the report.

The State-run model will not be successful as the States do not have any telecom expertise or experience. It will be a futile exercise to try this model and end-up losing precious time.

The electronics proposed in all three models requires heavy power back up, environmental control (A/C) and civil infrastructure at each Gram Panchayat. There are solutions of very low cost devices able to deliver Gigabytes per Gram Panchayat with a very low cost (less than

Rs.5000/-) which can be used as use and throw'; during the maintenance. It does not require any environmental control (A/C etc.), civil infrastructure and high power. Such devices was considered in the NOFN to reduce the CAPEX and OPEX and made the infrastructure affordable and offer the tariff. The Report of the Committee on NOFN proposed high end electronics which are not manufactured in large scale in India. It may further delay the project execution. A lot of foreign exchange will be required to procure such equipment which is burden on the country.

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.

BSNL Comments:

There is limited commercial demand for telecom services in villages as the population concentration is very low (less than 5,000). The maintenance cost itself will be so high that the revenue from the village can not compensate it. This model will not be self-sustainable.

The method of calculation of minimum Viability Gap Funding (VGF) has not been explained in this model. In case a new agency who did not hold any existing OFC will succeed in bidding then the actual time of execution may take more than whatever expected and penalty if any will be proposed will further delay or create the complexity. It is proposed that an agency having highest number of existing fibre should be selected.

Regarding transfer of assets to the Government after a period following is submitted:
The life period of OFC is 18 years. The actual life period of buried OFC depends upon many conditions including segment fault, no. of joint faults, laying practices, controlled environment of the route etc.

The life period of electronics varies between 1 to 2 years for modems, three to five years for Computers and accessories and 7 to 12 years for Transmission equipment. Each of the component having vital role to deliver the bandwidth. So defining the tenure period of the assets so created has cascading effect of the components as mentioned above. So instead of transfer of assets to Government, it is suggested that the Assets will be owned by the executing agency for ever.

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

BSNL Comments:

Advantages:

In case of highest existing OFC operator of that area is selected then there will be lowest VGF required and faster work execution will be possible.

Challenges:

Execution of transfer stage means assets to be transferred to the Government will be a big challenge. The taking over agency will try to measure the many parameters for which there are no norms that yet exist after a tenure of a period. Some infrastructure buried in the underground cannot be visualised, for taken over/ made over. Most of the specialized manpower will be changed at the time of taking over. Technological advancements may render many components of the network as obsolete at the time of the taking over. Evaluation of depreciated value will become very difficult as there will be high value customers and revenue over the system but the system is going to complete its tenure.

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

BSNL Comments:

The eligibility criteria may include:

(i) The executing agency should be among the two highest existing OFC of that State/LSA;
(ii) The second competitor should not have less than 25% of the existing OFC with reference to the first competitor;
(iii) The OFC data provided by the competitors should be verifiable;

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

BSNL Comments:

No.

Only the criteria that the bidder shall have highest among two existing OFC of that LSA or State. This will avoid delay in execution and minimise the VGF from Government. An Agency having the PAN India presence will definitely have capacity, experience to mobilise the manpower based on the work load and execute the work in a faster way.

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

BSNL Comments:

Measures:

(i) The executing agency of the LSA will create bandwidth in the steps of upto 1 Gbps in each Gram Panchayat and special provision for transport of cable T.V. content either on separate fibre or in the separate band of the same fibre which can be monitored.
(ii) In case executing agency is the TSP/ISP then there should be a limit that it should not utilize more than 25% of the bandwidth so created for its purpose. This will settle the issue of conflict of interest as well as meet the business case of the executing agency.

(iii) The above two measures will ensure avoiding monopolistic behaviour also as the spare 75% bandwidth will provide revenue to the executing agency only by leveraging it to other service providers. The tariff for remaining 75% bandwidth will be decided by the DoT in consultation with TRAI regularly based on actual CAPEX involved minus VGF plus operating cost of such infrastructure for that LSA.

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

BSNL Comments:

BSNL has provided non-disciminatory access to all concerned for providing services using NOFN. There have been many service trials where BSNL has provided backhaul as and when required. BSNL has facilitated the project by making the backhaul bandwidth available from District to Block.

The shelter space, stable power and telecom environment provided by BSNL to the project has given a lead time advantage for project roll-out.

As discussed in BSNL Comments detailed at 7 above, will ensure for provision of bandwidth in a fair and transparent and non-discriminatory manner.

Further a situation where 80% of the reserved 75% bandwidth has been utilized by the other agency then executing agency will either release its spare bandwidth or re-build more bandwidth from the system by upgrading its network on its own cost within a stipulated time period. Allocation of bandwidth should be on first come first serve basis. The first come shall be considered, based on date of first payment by the lessee to the executing agency. A quarterly bandwidth utilisation certificate shall be provided by the executing agency to the DoT.

There should be no restriction for providing the Fibre. It should be the sole discretion of the executing agency to provide fibre to any service provider based on their business and flexibility and availability of fibre in the OF Cable. Bandwidth is the sole product which can be enhanced only by adopting the upgrade technology without further physical route work and can meet all the TSP/ISP requirement by this method.

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

BSNL Comments:

The capital cost for laying the optical fibre will highly depend upon the construction practices, topology and deployment of technology. The computation of VGF will also vary based on the Service Level Agreement (SLA), Quality of Services requirement, conditions on topology and selection of specific transmission or IP equipment. The requirement of the service providers may also vary based on their core network and dependency on the newly created network technology. Further the CAPEX involved will eventually be recovered by service providers which will in return will be recovered from the village customers. The population in an Indian village

varies and typically it will be about 2000 to 5000. The business case will fully depend upon off take rate within the limit of population and prosperity of the region. Further there are more than 50% population under economically weaker sections.

So, executing agency should be allowed to provide Ethernet bandwidth upto 1Gbps per Gram Panchayat which will be further distributed among the service providers. If any service provider requires specific property with the bandwidth then executing agency may provide them on cost plus Centage basis.

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?

BSNL Comments:
The preferred methodology of funding the project should be advance payment of 50% of the VGF value as a mobilisation advance and 25% payment on completion of one complete block as a proof for start of work including complete payment of that block. Subsequent block wise work completion and payment release should be linked.

Estimation of VGF:

VGF shall be computed based on incremental OFC work requirement from the existing OFC of that LSA or from the existing OFC of the government PSU. A portion of the cost of existing OFC should also be considered while estimating VGF. In case of ring architecture (which is generally non-feasible for a Panchayat as there is only one access road to many villages), whole new route shall be considered based on commercial demand from the Panchayat. Rs.5.00 lakhs per KM for 24 Fibre OFC cable may be considered including electronics for calculation of VGF. This estimation was basis in the NOFN project also.

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?

BSNL Comments:

There is no uniformity in the OFC project execution in terms of terrain, RoW, Law and Order, insurgency, availability of store material and skilled manpower in large scale everywhere. So it is very difficult to assess accurate time by the Government and Executing Agency also. There should be no disincentive or penalty for any such delay.

The incentive is in-built in the project itself by expected revenue to the executing agency by sale of 75% bandwidth to the other TSP/ISP and Cable T.V. providers as well as roll-out of services utilizing 25% of the bandwidth available with Executing agency as detailed in Comment No.7 above.

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

BSNL Comments:

The life period of OFC is 18 years. The actual life period of buried OFC depends upon many conditions including segment fault, no. of joint faults, laying practices, uncontrolled environment of the route etc. There are many developmental activities, excavation happens along the road sides at different times by the Government Agencies or by public.

The life period of electronics varies one to two years for modems, three to five years for Computers and accessories and 7 to 12 years for Transmission equipment. Each of the component having vital role to deliver the bandwidth. So defining the tenure period of the assets so created has cascading effect of the components as mentioned above. So instead of transfer of assets it is suggested that the Assets will be owned by the executing agency for ever and the conditional applicability of bandwidth to other TSP/ISP will be reduced to 50% after 7 years and 25% after ten years. Later on market forces will drive the competition.

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?

BSNL Comments:

The chances of windfall profits is very minimum and imaginary. A village having inhabited population of more than 5000 or village area has been notified by the Development Authority after adjacent city may attract some better revenue but to access the customer further CAPEX/OPEX is required per customer which may not be part of the VGF.

Q.14 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?

BSNL Comments:

The mandatory condition to provide Dark Fibre on non-discriminatory basis to any ISP/TSP or Cable T.V. operator will increase the capital cost manifold. Further there will be no business case for establishing multiple transmission equipment in a Gram Panchayat which is having mostly less than 5000 population and less than 2 Sq KM of geographical area. To avoid the monopolistic nature of bandwidth delivery BSNL suggests to regulate the bandwidth by DoT in consultation with TRAI as both agencies are neutral. Although while determining the tariff Government should consider the applicable incremental CAPEX and OPEX at that relevant time.

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

BSNL Comments:

The affordability of telecom services to the public at large mainly depends upon the income of a household. It has been observed that any person can afford his 5% of the earnings on his communication needs. While the tariffs will mainly depend upon the CAPEX + OPEX – VGF +10% profit to any infrastructure + Applicable taxes. The CAPEX will depend upon the architecture of the network like ring topology in the OFC route will enhance the CAPEX by about 2.5 times of the OFC link, OPEX by 1.5 times. The selection of electronics like high end routers will increase the CAPEX manifold with reference to the PON technology etc. So initially linear architecture should be considered between block to panchayat and subsequently based on economy of that route and availability of physical diversity some Panchayats may be converted to a ring.

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?

BSNL Comments:

In case of no blanket approval for RoW will be provided by the Government then the timeline and cost run over in execution of the projects will be badly affected. Hence a blanket RoW approval for the entire project is essential. Similar provision is granted in the existing NOFN project.

As per Telegraph Act except DOT, no other agency is authorised to get the free ROW on the State and Central lands for Telecom activity. At many places, ROW required from Central agencies like Railways, NHAI, Oil and Gas pipelines, Forest and other Central institutions. State led model will also require ROW from these agencies. This may require amendment in the Constitution of India as Telegraph is a Central subject.

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?

BSNL Comments:

(a) The condition of the transfer to be removed to increase the competition.
(b) The existing players should provide their OFC to the successful executing agency for which lease charges may be decided by the DoT/TRAI.
(c) Payment conditions should be liberal and in advance.
(d) License fee should be waived off for the business from the infrastructure so created by the executing agency. It should also be waived off from the revenue of other TSP/ISP who will execute the project on behalf of successful executing agency. Reason for waiver of License Fee is to develop rural infrastructure.

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

BSNL Comments:

Instead of exploring different methodology Government should focus on the existing NOFN policy in true spirit and interpretation as deliberated in the Cabinet Note. Present model of implementation of NOFN is a successful model despite all the issues and inherent co-ordination problems. BSNL has laid optical fibre for about 30000 panchayats with present model. Now connectivity to the panchayat will be on fast track as all the ground work has been completed.

16/12/2015

Raghuvir Singh
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