



सत्यमेव जयते

Government of India
Ministry of Communications
Department of Telecommunications

Strategic Plan for

SYNERGY

among the PSUs and other
organisations of DoT

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MANOJ SINHA

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MESSAGE

The Public Sector Undertakings (PSUs) of the Department of Telecommunications, namely, BSNL, MTNL, BBNL, TCIL, ITI and other units like TEC and C-DOT have been playing vital roles in building the Indian Telecom Network. After the entry of private players the competition has intensified, leading to a dramatic reduction in telecom tariffs with enormous benefit to customers. The Government encourages competition as it benefits all stakeholders, especially the common people. However, the existing intense competition in the telecom sector has become a big challenge to the business of the PSUs. To meet the competition and stay healthy, the PSUs have to diversify into new business areas and are, therefore, encouraged to participate actively in projects of national importance like BharatNet, Smart City Infrastructure, 'Digital India', defence communication, rural connectivity and Indian space programme. They also need to concentrate on foreign projects and explore the possibilities of exporting Indian telecom products services to other countries.

Our PSUs have their own individual strengths like network spread, research and development, manufacturing and consultancy, but these strengths are not being utilized optimally. It has, therefore, been a constant endeavor of this Department to encourage these organizations to cooperate to achieve optimum utilization of their resources. It is believed that synergistic working would produce a much better overall performance than their current individual efforts.

It gives me immense pleasure in the fact that the Department of Telecommunications has taken an initiative in this direction by bringing out a 'Strategic Plan' for creating synergy among the PSUs, and other DoT organisations. I am sure that this 'Strategic Plan' will serve as a guiding policy document for our PSUs and other DoT organizations to enable them to improve their productivity and efficiency in the coming years. This should help them not only to perform better in their current activities but also to address new business opportunities, face competition better and also lead to faster implementation of projects on the ground.

I wish all of them success in this important endeavor.

(MANOJ SINHA)

अरुणा सुंदरराजन
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Secretary



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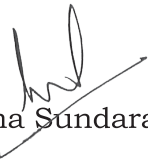


MESSAGE

The rapid growth of the Indian Telecom Industry has been possible due to the progressive policy and regulatory reforms and the active participation of industry including the telecom public sector units. This has led to rapid growth of the telecom sector and delivery of state of the art telecom services at affordable prices to consumers. The telecom PSUs have played an important role in this process. However, with increasing competition and falling tariffs, these organisations have come under pressure on account of decreasing revenues. This calls for an improvement in efficiency and also search for new revenue streams.

With the launch of new initiatives of the Government of India such as 'Smart City' development, Digital India and Skill India, a host of new business opportunities have emerged. PSUs can benefit from these by leveraging their existing strengths including their extensive networks and their R&D and manufacturing capabilities. Very soon we will see the rollout of Internet of Things networks, which will serve applications cutting across many industry verticals such as, transportation, healthcare, education and energy management. Such services will ride on networks created by Telecom Service Providers. However, the ultimate value to customers would lie in the provision of useful and cost effective telecommunication services, rather than the network itself. This constitutes an opportunity for telecom PSUs and would entail a quantum shift in their business strategies. They would need to work in unison and take advantage of each other's strengths to create a comprehensive ecosystem in order to provide seamless and competitive services to customers.

The 'Strategic Plan' prepared by the Service Unit (SU) Division of the Department is a very timely initiative in this direction. I congratulate all the officers and the committee members from DoT, BSNL, MTNL, BBNL, ITI, TCIL, TEC and C-DOT who have worked together to create this document. I am sure that this plan will help to guide these organisations to greatly improve their performance as a team. I look forward to the successful implementation of this plan.


(Aruna Sundararajan)

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MESSAGE

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The Indian telecom industry has registered strong growth in the past two decades and is currently the world's second largest market. This sector is very vital for the growth of our nation as it contributes nearly 7% to the GDP. With new players emerging, competition in the sector has grown tremendously. At the same time, due to the initiatives of the Government such as BharatNet, Smart Cities, 'Digital India' and 'Make in India', new business opportunities have also emerged.

BSNL, MTNL, BBNL, TCIL, ITI and other organizations like TEC and C-DOT have made significant contributions to this sector. However, in the present competitive scenario they need to synergize their strengths to provide cost effective telecommunication services to each subscribers. It would make good sense for them to avail services from each other. This would help each of them from an operational and financial stand point, creating a win-win situation for all.

The 'Strategic Plan' has been prepared by the Service Unit (SU) Division of the Department after extensive consultations at different levels with all the organizations. It is a unique initiative by this Department to bring forth various issues related to synergy among the organizations. I am sure that this plan will effectively guide the PSUs to take advantage of each others' strengths, which will help them to improve their collective performance, face the competition successfully and also take forward the various initiatives of the Government.

I congratulate all the officers and the committee members from DoT, BSNL, MTNL, BBNL, ITI, TCIL, TEC and C-DOT who have put in their efforts to prepare this "Strategic Plan". I wish them success in their endeavour.

(ANURADHA MITRA)

New Delhi
Dated 5.1.2018

एन. सिवासैलम, भा.प्र.से.

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Ministry of Communications
Department of Telecommunications



MESSAGE

The Telecommunication Sector is very vital for the growth of our country. From the landline era of the 1980s and early 1990s we have come a long way to become the 2nd largest telecom network in the world connecting a billion customers and contributing about 7% to the GDP of the country. We have seen technology change by leaps and bounds with the growth of mobile communications and IP centric data networks. These changes are manifest in the form of widespread smartphone penetration and growth in data dependent services and applications available through these smartphones.

This new era of telecommunications is bringing different challenges for the service providers. Competition has grown manifold. The private sector is much larger than the public sector now. Our PSUs BSNL, MTNL, BBNL, TCIL, ITI & other DoT units TEC and C-DOT are trying to face these challenges day in and day out to carve out their space in this sector and face the competition. So far these efforts cannot take them far. They need to think differently and one way is to combine their strengths, synergize their activities and work collectively for providing cost effective telecommunication services. Coming together will also help them to tap newer and bigger opportunities and address them more efficiently.

The 'Strategic Plan' prepared by the Services Unit (SU) Division of the Department of Telecommunications is a commendable initiative in this direction to bring such synergy among the organizations. I am sure that this plan will help achieve the desired objectives when implemented by the PSUs in right earnest. The plan also lays out certain timelines for synergy activities of the PSUs and I hope they will try their best to complete the activities within the given timelines.

I congratulate all the officers and the committee members from DoT, BSNL, MTNL, BBNL, ITI, TCIL, TEC and C-DOT who have worked together to prepare the 'Strategic Plan' for achieving the required synergy among the organizations.

N. Sivasailam

(N.Sivasailam)

हिन्दी का मान : राष्ट्र का सम्मान

Prabhash Singh
Member (Technology)
Telecom Commission



MESSAGE

The Telecommunication Sector, which is very vital for the development of the nation, has seen many changes in the recent years. The biggest change that has happened is growth of IP and data networks. We already see this change in the form of tremendous growth of data services, rapid proliferation of E-commerce in India, large number of startups in the Telecommunications & IT space, rapid penetration of e-governance, growth of social media etc. To meet these expectations, the Telecom Service Providers are also gearing up to offer the products, services, underlying technologies and infrastructure required.

So far, the PSUs of the Department like BSNL, MTNL, BBNL, ITI, TCIL and others like TEC and C-DOT have been playing a very traditional role of providing basic telecom infrastructure. However, due to forward looking policies of the Government for promoting Digital India, new business opportunities have emerged in areas of Smartcity infrastructure development, IoT services and Public Wifi services among others. The Department has also released an M2M Roadmap in 2015, which addresses many of the issues related to provision of these services, which can serve as a very useful reference document for the PSUs. Therefore, the PSUs, should aim to evolve into solution providers and become a one-stop solution for customers. This can be very well achieved by working together as a team to take advantage of every organization's strengths.

The 'Strategic Plan' prepared by the service Unit (SU) Division of the Department of Telecommunications is a very commendable initiative in this direction. I am sure that this plan will help achieve the desired objectives when implemented by the PSUs in true spirit.

I congratulate all the officers and the committee members from DoT, BSNL, MTNL, BBNL, ITI, TCIL, TEC and C-DOT who have worked together to deliberate on this important issue of synergy and crystallize the ideas into the present 'Strategic Plan'. I wish them success in this important initiative.

Prabhash

(Prabhash Singh)

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Foreword

The Indian telecom industry is very vital to the growth of the country. With supportive government policies and persistent efforts by the private sector, India has become the 2nd largest telecom market in the world. The wireless sector has seen tremendous growth with mobile tele-density jumping from 14.6% in FY-07 to 90.7% in FY-17. The growth of the wireless sector is also supported by widespread smartphone penetration and availability of high speed mobile internet. As a result, customer preferences have undergone a tectonic shift. Customers have become used to the convenience and efficient service delivery options available from the private telecom operators, which the public sector companies are finding difficult to match. As a result, the public sector market share of wireline and wireless subscribers put together has come down from 34.7% in March-2007 to 9.56% as of 30-Nov-2017.

In view of the falling market share, the PSUs, namely BSNL, MTNL, BBNL, ITI, TCIL and other units like TEC and C-DOT need to reinvent themselves and improve their performance in the existing business areas and also make efforts to enter into new business areas. The organizations have been making such efforts for some time but mostly on an individual effort basis. As a consequence, the performances of the PSUs have not improved to the extent desired. Therefore, the Department of Telecom has taken a unique initiative to create a cooperative framework for these organizations to share their experiences and strengths to work together in a synergistic manner. The framework will help the organizations to strengthen existing businesses, address the new and emerging business opportunities in the telecom sector and also expand into foreign markets for export of products and services produced by them.

To create the required framework of synergy among the organizations, extensive consultations were held at various levels to obtain the suggestions and comments of stakeholders, which have culminated into this 'Strategic Plan'. The plan lays lot of focus on undertaking projects and works under Make in India, Smart City, Digital India, Skill India and similar other initiatives of the Government. The Department has also laid out certain timelines for various milestones and achievements. Sincere efforts in this direction will go a long way to improve their effectiveness and competitiveness. This will enable them to not only stand up to the challenges in the business environment but also fulfil the objectives for which these organizations were created in the first place.


(R M Agarwal)
DDG(SU), DoT


Executive Summary

In accordance with NTP-2012, one of the important objectives of the Government of India is to bring about synergy amongst the public sector units and other organizations of the Department of Telecommunications (DoT). Within the DoT there are many PSUs, namely BSNL/MTNL engaged in provision of telecom services to the public, TCIL as a consultancy organization for telecom projects in India and abroad and ITI as the public sector manufacturer of telecom products. Under the DoT, we also have C-DOT as an autonomous body primarily engaged in Telecom Research & Development. In addition to that, TEC is another arm of DoT which advises the Government on technology and policy issues as well as provides technical support to the PSUs.

At present, all these organizations are performing functions which complement each other but at the same time they are operating independently without proper synergy thereby delivering sub-optimal results. Therefore, with the approval of Hon'ble Minister, it was decided to prepare a comprehensive 'Strategic Plan', covering various issues related to synergy. For preparation of the 'Strategic Plan', a Core Committee of SAG level officers from different organizations was constituted in DoT. To assist the Core Committee members, 5 working groups were also constituted to study different areas of synergy and provide their inputs.

Several meetings were held by members of the Core Committee as well as the Working Groups to deliberate and discuss the various issues. Based on the inputs from the members of the Working Groups and thereafter with the heads of various organizations, the 'Strategic Plan' has been prepared. The recommendations have been broadly classified into the following categories –

- (i) Effective utilization of human resources – Some organizations have excess manpower resources whereas there is shortage in others. Recommendations pertain to training and deployment of manpower among the organizations. For training of manpower a common web based platform will be developed by BSNL for use of all the organizations.
- (ii) Settlement of legal issues – Contesting legal cases against each other by the PSUs has been considered as an unhealthy practice and should be stopped. If required, DoT will intervene to resolve the disputes amicably. If the dispute is not resolved in DoT it will be referred to Law Ministry for settlement through PMA (Permanent Machinery of Arbitration), which is a mechanism prescribed by DPE for resolving disputes among Government organizations.
- (iii) Optimum utilization of vacant land and building spaces - Different organizations, especially BSNL & MTNL, have lot of vacant land and building spaces. At the same time other PSUs, which need space, search and take on lease from outside organizations. Recommendations pertain to optimum utilization of vacant land and building spaces among the PSUs of DoT first before approaching outside organizations. There is also a proposal to develop a Unified Information Portal for all the organizations to share information on vacant land and building spaces to make the process simpler.
- (iv) Standards and certifications – TEC is the nodal agency in DoT for drawing up



specifications & product certification. TEC to take proactive action for preparation of the specifications at least 6 months in advance and periodically review them and keep them updated. Also TEC & C-DOT to work together and prepare roadmaps on different technologies for policy formulation and technological guidance.

- (v) Promoting 'Make in India' – Despite a huge telecom market, manufacturing in India has not really taken off. Recommendations pertain to the PSUs and other organizations to have suitable policies to support 'Make in India' through Educational Orders, PMA (Preferential Market Access) policy of Government, focus on development of products for projects of national importance etc.
- (vi) Nomination policy – Recommendations pertain to award of work through competition over nomination for the purpose of price discovery. However, there may be circumstances in which work may have to be got done on nomination basis. Therefore, award of work on nomination basis can be decided on case to case basis as per prevailing circumstances.
- (vii) Pooling of resources to address emerging opportunities in the country – There are new business opportunities coming up in Digital India, Smart City business, Internet of Things etc. These are currently not addressed by the PSUs adequately. Recommendations pertain to possibilities for addressing these new businesses jointly by pooling resources, invoking PMA policy and developing mechanism for sharing of revenues and expenses.
- (viii) General recommendations – Recommendations pertain to issues of general nature for synergy among the organizations, e.g. preparation of roadmaps for major activities, entering into MOUs/agreements for business collaborations, conducting seminars & conferences, sharing IT infrastructure. Recommendations also include areas where the PSUs and other organizations can benefit by combining their operations.
- (ix) Smart infrastructure business – Smart Infrastructure / IoT business opportunities have emerged due to the policies of the Central Government, including allocation of funds both by the Centre and the States. It has the potential to transform the country tremendously and make the lives of the citizens meaningful. There is a large Telecom & Information Technology component in this business and the recommendations pertain to addressing this business opportunity by the PSUs through collaborative efforts.
- (x) Inter-organizational operational synergies – Recommendations pertain to synergy in the operations of the PSUs for not only reducing the operational costs but also a better customer experience.

An implementation plan has also been worked out for implementing the recommendations given in the Strategic Plan. The existing verticals in DoT designated for the management of different organizations will be used for resolution of the issues among the organizations. However, for all the synergy issues of the PSUs, a separate 'Synergy Unit' in DoT will be the nodal unit.

To monitor the progress of implementation, performance indicators and timelines have also been worked out. These are indicative of the desired goals to be achieved in a time bound manner for having synergy among the organizations. With these measures, it is hoped that all the PSUs and other organizations of DoT will be able to work together in synergy and address various business opportunities arising in the country.



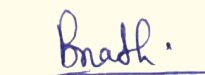
Acknowledgements

In the National Telecom Policy one of the important objectives of the Government is to have synergy among the public sector units and other organizations of the Department of Telecommunications (DoT). To meet this objective, extensive consultations were held with all the organizations through several meetings at different levels. With the inputs received from them, a comprehensive 'Strategic Plan' has been prepared and finalized in consultation with the heads of all organizations.

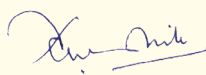
The 'Strategic Plan' document is a very unique initiative of this Department and several officers have contributed extensively to this initiative. We are extremely thankful to Ms. Aruna Sundararajan, Secretary(T), Ms. Anuradha Mitra, Member(Finance), Shri N. Sivasailam, Special Secretary(T) & Shri Prabhash Singh, Member(Technology) for their immense support and guidance to bring the document in the present shape.

We take this opportunity to express our sincere thanks to Shri Anupam Shrivastava, CMD BSNL, Shri Sanjay Singh, Administrator(USOF) & CMD BBNL, Shri A.K.Purwar, CMD MTNL, Shri A.S.Rao, CMD TCIL, Shri S.Gopu, CMD ITI, Shri M.P.Singhal, SrDDG(TEC), Shri Vipin Tyagi, ED C-DOT. We are also very much thankful to Shri R.K.Mittal, Director(CM), BSNL, Shri Sanjeev Kumar, Director(Technical), MTNL, Shri K.Alagesan, Director(Production), ITI, , Shri Rajiv Gupta, Director(Projects) TCIL, Sh., Shri B K Badola, DDG(Standardization), Ms. Deepa Tyagi, DDG(FN) TEC and Shri Jayant Bhatnagar, Director, C-DOT for their valuable contribution and continued support.

We also express our sincere thanks to Shri J.S.Deepak, former Secretary(T), Shri N.K.Yadav, Ex-Member(Services), Shri R.K.Misra, Ex-Member(Services), Shri Lav Gupta Ex-Member(Services), Shri G.K.Upadhyay, Ex-Member(T) and Sh. D.P.De, Ex-Sr.DDG(TEC) for their valuable guidance and encouragement in the initial phase of the initiative. We also take this opportunity to show our sincere thanks to members of the Core-Committee, working groups, sub-committees and all concerned officers of DoT who have contributed immensely in the formulation of this plan. We would also like to express our special thanks to all the officers and staff of SU wing for their inputs and continuous logistics support during the entire period of preparation of this plan. We would like to sincerely thank everyone who have contributed directly or indirectly during the preparation of this document.



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01 Introduction



1.1 NTP OBJECTIVES

The Government of India released the National Telecom Policy-2012 for the sustained adoption of technology to address the development challenges in education, health, employment generation, financial inclusion etc. Accordingly, availability of affordable and effective communications for the citizens is at the core of the vision and goal of the National Telecom Policy – 2012.

One of the important objectives of the Government of India is to bring about synergy among the public sector units of the Department of Telecommunications (DoT). The relevant extracts from NTP-2012 are reproduced below –

NTP-2012: Objectives: Para 31 reads as under –

*31. Encourage **recognition and creation of synergistic alliance of public sector** and other organisations of Department of Telecommunications (DoT). This should be achieved through appropriate policy interventions and support for optimum utilization of their resources and strengths in building a robust and secure telecom and information infrastructure.*

Within the Department of Telecommunications, there are many PSUs, namely BSNL/MTNL, for provision of telecom services, such as TCIL, a consultancy organization for projects in India and abroad and ITI, a manufacturer of telecom products. We also have C-DOT engaged in Telecom Research & Development and TEC, which advises the Government on technology and policy issues as well as provides technical support to the PSUs.

All the PSUs and other units of the DoT are performing functions which complement each other but that is happening in silos, without proper synergy thereby delivering sub-optimal results. Therefore, NTP-2012 envisages to create a framework to achieve the required synergy among these organizations for utilizing each others' strengths and capabilities.

1.2 PRIOR EFFORTS ON SYNERGY

In accordance with policy objectives in NTP-2012, a committee was constituted by the Department of Telecommunications vide letter no. 11013/11/2011-Abs.Cell dated 20.05.2011, under the Chairmanship of Shri S.C.Misra, the then Member(S) Telecom Commission, to look into the overall issues including the pros and cons of the synergies among various telecom companies viz. BSNL, MTNL, ITI, TCIL, C-DOT and C-DAC. The Committee deliberated upon various issues linked with the terms of reference of the Committee and recommendations were made accordingly. The Committee discussed about the challenges faced by the different organizations, which are briefly given below -

(i) BSNL/MTNL

Technology in telecommunications is always evolving but BSNL/MTNL are not able to keep pace with change. Despite having huge market potential for telecom services, development/expansion activities to meet the market demand suffer continuously due to delays in procurement arising from lengthy procurement processes. BSNL/MTNL are deeply involved in total end-to-end processes like technology selection, evaluation, procurement, commissioning, operations, marketing, accounting, service delivery etc, thus rendering the entire process lengthy and inefficient.

On the other hand, private operators have incorporated and evolved sophisticated models to cut short the time by outsourcing the Network deployment and management to their vendors. They have established long term tie-ups with vendors who take care of all aspects of technology deployment, upgradation, maintenance, operations etc. In return the vendors are given a share of the revenue earned by the licensee. The private licensees mainly focus on marketing and service delivery. They have deployed different models like vendor financing, managed capacity, revenue share etc. These methods are proving to be more efficient than the concept of an integrated business model which is followed by BSNL/MTNL.

(ii) Indian Telephone Industries (ITI)

Despite having captive markets (BSNL/MTNL) under 30% reserved quota provisions, rapidly growing domestic telecom market and good production infrastructure, they don't have enough commercially viable technologies for supply. Even in cases, where they have acquired the technologies, they find it difficult to provide sustainable long term support / upgrades because of lack of Research & Development (R&D) activities. Therefore, even the acquired technologies become redundant after some time.

Secondly, ITI is mostly depending on contracts from Government organizations. It has not been able to penetrate the private sector telecom markets because of very high competition. The present Indian market (BSNL, MTNL and the private TSPs also) is almost entirely captured by foreign vendors especially Chinese, who are supplying all kinds of telecom products at highly competitive prices because of vast economies of scale achieved by supplying globally. Therefore, due to limited market opportunities, ITI is not able to achieve economies of scale and offer products of competitive prices.

(iii) Telecommunications Consultants India Limited (TCIL)

TCIL has expertise and potential as executor of turnkey projects as well as system integrator in telecom/ICT domain. It is primarily focussed on business in overseas markets. These capabilities need significant thrust, both abroad as well as in India.

(iv) C-DOT

Despite having excellent R&D skills, manpower and technology IPRs, due to non-availability of long term sustainable production support and markets, most of the development remains on shelf.

(v) C-DAC

Despite having excellent application development skills, especially in the areas of Indian languages, the potential remains unexploited on account of lack of marketing setup or opportunities.

Accordingly, the Committee proposed that all the PSUs will have to come together to form an “Alliance”, duly recognized by the Government as a policy, for preferential treatment of procurement of products and services rendered by the individual organizations, including sourcing of equipments, technology and consultancy from each other, wherever possible, for mutual benefit. The table below lists the various roles that have been envisaged for each organization in the alliance for synergy.

Sr. No.	Organization	Envisaged Role
1.	BSNL / MTNL	Provide telecom services to the end user by sharing networks and infrastructure facilities. Also share manpower resources with other alliance members and assess the market trends and provide input to TEC, C-DOT, C-DAC to make specifications, products and services on a continued basis.
2.	ITI	To take technology from C-DOT, manufacture the products for the alliance members, supply them and provide requisite after sales support or manage them after their installation.
3.	TCIL	To play the role of system integrator and turnkey project executor for the alliance members.
4.	C-DOT	To design and develop prototypes as per the standards defined by TEC, for the requirements of alliance members. To transfer the technology for the manufacturing of the equipment to ITI on non-exclusive basis. Setting up technical direction and advice to other alliance members on emerging technologies.
5.	C-DAC	Give advanced electronic systems to the alliance members. Provide multilingual computing support to C-DOT's solutions.
6.	TEC	Development of standards in consultation with C-DOT for new technologies and certify the products against the standards.

It was further envisaged that DoT will play a crucial role in the operation of this alliance. Therefore, the Committee further suggested that a permanent steering committee be put in place under the chairmanship of Advisor(O) or Advisor(T) with Sr.DDG(TEC) and Board level officers from each of the participating organizations as members for overall coordination with DoT and also within the alliance. It was also recommended to form an Apex Committee headed by Secretary(T) and consisting of the heads of the alliance organizations as well as other members nominated by DoT to provide overall strategic guidance, address the issues affecting the smooth functioning of the alliance and monitor the performance on a regular basis.

Subsequently the matter of synergy has been discussed several times by the Permanent Steering Committee. However, the discussions were mostly about placing orders on nomination basis within the alliance members. The advice of CVO, DoT was sought and it was informed that the CVC guidelines, apparently, prohibit placing orders on nomination basis. Therefore, not much progress could be made on the development of a framework to bring about synergy among the alliance members.

1.3 CONSTITUTION OF CORE COMMITTEE & TERMS OF REFERENCE (ToR)

In view of the CVC restrictions, on placing orders on nomination basis and minimal progress on synergy among the PSUs, it was decided to look into the whole issue of synergy in totality with a fresh perspective. Apart from examining the issue of placing orders on nomination basis, there was also a need to examine other aspects of synergy like –

- (i) Possibility of synergy among similar organizations like BSNL & MTNL for operations, ITI & C-DOT for R&D and manufacturing, TCIL as a common consultant for all.
- (ii) Operational synergy between MTNL & BSNL in NCR region for mobile business and other similar cases like in Mumbai/Maharashtra region.
- (iii) Identification of common business areas by BSNL & MTNL and development of common business plans, to avoid duplication of efforts, cut costs and to facilitate single window services to customers with pan India presence.
- (iv) Optimum and prudent utilization of spare equipments available with MTNL and BSNL.
- (v) Examine the issues involved in synergy like licensing, spectrum sharing arrangements, IUC, taxation, contractual agreements with others etc.
- (vi) Uniformity of technical standards for products and services and their acceptability across all organizations.
- (vii) Possibility of evolving capex/revenue sharing models among the organizations for long term viability.
- (viii) Optimum utilization and monetization of land and buildings held by different organizations for meeting own requirements as well as those of other organizations.
- (ix) Efficient usage of manpower resources available with different organizations by working out a mechanism for inter-organizational deployment as per requirements.

Therefore, it was decided to prepare a comprehensive 'Strategic Plan', which covers all synergy related issues. For preparation of the 'Strategic Plan', it was decided that a 'Core Committee' of SAG level officers from different organizations, including BBNL will be formed under the Chairmanship of DDG(SU), DoT with broad Terms of Reference (ToR) as mentioned above. The Core Committee was formed vide DoT order no.30-1/2015-SU dated 12th January 2016. The core committee also has members from other nodal units of respective organizations in DoT HQ. It was also decided that the members of the Core Committee will deliberate amongst themselves and fine-tune the draft ToR as required. The core committee was expected to study all the aspects of synergy in a comprehensive manner, including consultation with the PSUs at different levels, for finalization of the strategic plan.

1.4 CONSTITUTION OF WORKING GROUPS

It was decided to create different Working Groups (WG) to assist the 'Core Committee'. Each Working Group was expected to work on a specific area and submit its recommendations to the 'Core Committee' for preparing the 'Strategic Plan'. It was also discussed that each working group will be coordinated by members from one lead organization and one/more co-lead organization for conducting the internal meetings and discussions. Accordingly, five working groups were formed –

Sr. No.	Name of Working Group	Lead Organization	Co-lead Organization
1.	Human Resources Development	BSNL	BBNL/MTNL
2.	Technology Development & Manufacturing Roadmap	CDoT	TEC / ITI
3.	Policy & Regulation	DoT	BSNL / MTNL
4.	Operational Synergy	BSNL	BBNL/MTNL
5.	Business Promotion	TCIL	MTNL

1.5 WORKING GROUPS AND THEIR TERMS OF REFERENCE (TOR)

The following Terms of Reference (ToR) were framed for the different working groups and also given the liberty to modify the ToR based on discussions and recommendations in different meetings.

1.5.1 Human Resources Development

- i. To make it possible for Inter organizational deputation of manpower for effective utilization and skill enhancement
- ii. To suggest measures to make effective use of training facilities available with different organizations for skill development
- iii. To suggest measures to make effective use of vigilance infrastructure of BSNL & MTNL by other organizations like BBNL
- iv. To suggest measures to facilitate exchange of knowledge and expertise by all PSUs through workshops & seminars for different stakeholders

1.5.2 Technology Development & Manufacturing Roadmap

- i. To suggest measures to involve TEC/CDOT/ITI in the planning activities of user organizations like BSNL, MTNL, BBNL for working out a technology & manufacturing roadmap
- ii. To suggest measures to ensure that Technology & Standards development by C-DOT/TEC is based upon the needs of the user organizations, e.g. TEC can develop standards for equipment like Wi-Fi, GPON, SPV systems which are suitable for rural India. It may also develop standards for various tools and testers required for O&M of BharatNet.
- iii. To suggest measures to ensure that manufacturing activities are based on the needs of other PSUs, e.g. ITI should manufacture equipment like Wi-Fi, GPON, SPV systems which are suitable for rural India
- iv. To suggest measures to make ITI as a permanent production agency of CDoT for their indigenously designed and developed products.
- v. To suggest measures to facilitate prototype development and concurrent engineering by ITI for the products/systems developed by CDoT based on Transfer-of-Technology from other technology providers.
- vi. To suggest measures to engage TEC/C-DOT for identifying / envisioning technologies suitable for promoting USOF objectives
- vii. To suggest measures to involve C-DOT & TEC in the field trials of products by user organizations including feasibility of financial support
- viii. To suggest measures for the fine tuning of tender conditions by user organizations to encourage home-grown technologies by C-DOT / ITI etc.
- ix. To suggest measures to promote indigenous technology in the standardization and knowhow of domestic manufacturing
- x. To suggest measures for the adoption by all other organizations the GR/IR/SR etc. prepared by TEC.
- xi. To suggest measures to give the ‘Make in India’ programme a boost in telecom sector, e.g. User organizations at their planning stage can extend support in identifying technology/products/systems which can be jointly taken up by CDoT and ITI for indigenization.
- xii. To suggest measures to facilitate Indian organizations to represent in International Standardization bodies

1.5.3 Policy & Regulation

- i. To suggest how to increase the involvement of TEC / CDOT in giving technical & policy directions to DoT & other organizations
- ii. To suggest measures to promote indigenous design, development and manufacturing in telecom sector.
- iii. To suggest measures to give preference to C-DOT/ITI products to encourage local R&D and manufacturing
- iv. To review and suggest measures for fair financial terms of engagement among different PSUs.
- v. To suggest measures for a Nomination policy & RQ (Reservation Quota) policy for inter-organizational contracts
- vi. To suggest measures for sharing of costs by all organizations, which is incurred

- in design, prototype development and field trials of new technologies
- vii. To review and suggest measures to support DoT PSUs for contributing to 'Make in India'.
- viii. To suggest measures for funding by DoT for Research & Development by ITI for customization of telecom products
- ix. To suggest measures for financial and logistic support along with preference to indigenous technologies by USOF

1.5.4 Operational Synergy

- i. To suggest measures for integration of common operational functions of PSUs – e.g. Integrating NOC & Billing of BBNL & BSNL, common platform for BSNL & MTNL for Enterprise Business, common data centers etc.
- ii. Inter-organization exchange of surplus resources, e.g. FTTH equipments amongst BSNL, BBNL & MTNL based on need & mutually agreed terms and conditions
- iii. Inter-organization exchange of software & other assets for better utilization
- iv. Sharing of land and building infrastructure for optimum utilization
- v. Creation of common maintenance & repair hub in ITI for support to BSNL, MTNL, BBNL etc.
- vi. Project management & consultancy by TCIL to other PSUs

1.5.5 Business Promotion

- i. Promotion of C-DOT technology and ITI manufactured products in foreign markets by TCIL.
- ii. Participation in international projects with the help of TCIL by all PSUs for expanding their businesses
- iii. Use of TEC test labs for the benefit of all organizations
- iv. Utilization of telecom infrastructure available with the PSUs to support government objectives like 'Digital India', 'Make in India', 'Skill India' etc.
- v. Joint strategy of PSUs to enter into new business areas like Smartcity projects, IoT solutions etc.

1.6 MEETINGS HELD AND SUMMARY

The first meeting of the Core Committee was conducted on 12th January 2016 to discuss the action plan. The coordination meetings by DoT with members of Core Committee and/or working groups were conducted on 15/02/2016, 18/03/2016, 27/04/2016 & 14/06/2016. Meetings at the level of Member(Services) were also held on 30/07/2016 and 15/09/2017 with heads of various organizations. A presentation was also taken by Secretary(T) on 10/10/2016 on the key elements of the 'Strategic Plan'.

A format was also circulated to all organizations to list out their expectations and deliverables towards other organizations. Based on the information provided by the organizations, the Terms of Reference (ToR) of working groups was decided. Based on the various coordination meetings the draft recommendations were prepared by each working group.

The major issues faced by different organizations, as brought out in the various committee meetings, are listed below –

(i) MTNL

- a. MTNL is looking for synergy of operations with BSNL to use their equipments and services on revenue sharing basis. There are issues to be resolved between BSNL and MTNL to give a final shape to this arrangement.
- b. BSNL is a larger operator and providing services on a pan-India basis except Delhi & Mumbai. So they are in a position to procure equipments and services at very competitive prices, which is not possible for MTNL because of its smaller footprint. Therefore, BSNL should also give due consideration to the needs of MTNL while procuring equipments and services for itself.
- c. MTNL, BSNL & other organizations have lot of built up space lying vacant in many places but they are not gainfully utilized, whereas other PSUs are hiring space from private parties.

(ii) BBNL

- a. BBNL has laid out the fiber cables across the country but so far it has not been able to enter into an agreement with BSNL for its maintenance due to unresolved issues between BSNL & BBNL.
- b. BBNL being a relatively new organization has lot of requirement for staff but BSNL & MTNL are unable to provide the same, despite having unutilized or underutilized staff in them. BBNL wants suitable arrangements to be made for gainful utilization of such staff.
- c. BBNL has huge requirement of training its personnel. This requirement can be fulfilled by BSNL & MTNL through their training centers.

(iii) TEC

- a. TEC develops specifications for telecom products but these have not been made mandatory by DoT. As a result BSNL/MTNL are at liberty to follow other specifications or their own specifications. DoT can at least make it mandatory for govt/state funded projects to follow the TEC specifications.
- b. TEC can take a lead in creating the technology vision and then work in coordination with other organizations e.g. C-DOT can design the product based on the specifications, ITI can make the prototype & do production also, BSNL/MTNL can do the deployment, TCIL can provide consultancy etc.
- c. TEC is not getting adequate cooperation from the field units of BSNL, for giving the inputs, at the time of making standards at international forums.

(iv) BSNL

- a. At present, activities of BSNL are guided by the need to increase profitability and synergy with other organizations should take this need into consideration.
- b. BSNL is following the tendering procedures for award of work to get best prices in a transparent manner and while forming synergy among organizations this aspect should be taken into consideration.

(v) ITI

- a. ITI has lot of manufacturing infrastructure but it is not utilized for meeting the needs of the PSUs, especially BSNL & MTNL.
- b. ITI is unable to participate in many BSNL tenders due to restrictive clauses. ITI gave the example of the WiFi hotspot tender of BSNL, in which ITI could not qualify because it was offering C-DOT technology, which was a new technology and as yet unproven. Therefore, due to lack of synergy, one organization of DoT (i.e. BSNL) was refusing to take a technology developed by another organization of DoT (i.e. C-DOT).
- c. ITI wants orders to be placed by other organizations on nomination basis.
- d. ITI wants to work out a permanent arrangement with C-DOT for research, prototype development and production on a long term basis rather than on a case to case basis, which is happening at present.

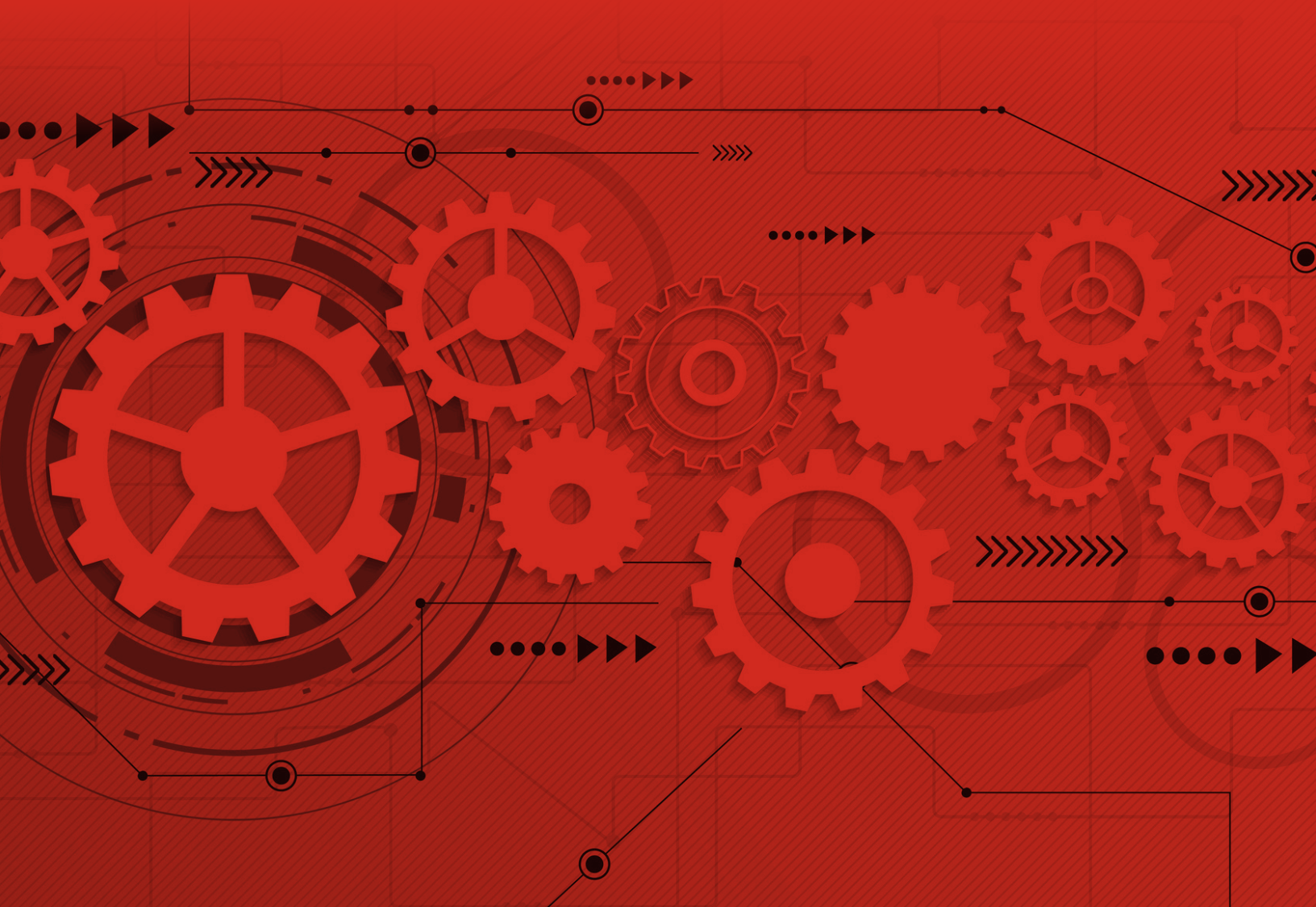
(vi) TCIL

- a. TCIL provides consultancy and works as a system integrator for most domestic and global organizations. For this TCIL has to approach many private organizations for tie-ups due to inadequate support / interest from the other telecom PSUs like BSNL, MTNL etc.
- b. TCIL wants to route international projects of the PSUs through itself so that it can leverage eligibility for bidding in larger projects floated by international organizations.

(vii) C-DOT

- a. C-DOT mentioned that it is not getting due importance from the other organizations. E.g. when TEC is drafting specifications, C-DOT experts are not invited to the meetings.
- b. C-DOT mentioned that there is a need to work closely with BSNL/MTNL, ITI & TEC for development, production and adoption of new technologies, which was not happening.

02 Expectations and Deliverables of one Organization from another Organization



Expectations and Deliverables of one Organization from another Organization

2.0 INTRODUCTION

During the meeting of the Core Committee conducted on 12/1/2016, it was decided that all organizations will submit their expectations and deliverables from other organizations. Accordingly, a format was circulated to all the organizations and they were asked to respond. The responses given by different organizations are given here.

2.1 BHARAT SANCHAR NIGAM LIMITED (BSNL)

2.1.1 Introduction

Bharat Sanchar Nigam Ltd. was incorporated on 15th September 2000. It took over the business of providing of telecom services and network management from the erstwhile Central Government Department of Telecom Services (DTS) and Department of Telecom Operations (DTO), with effect from 1st October' 2000 on going concern basis. It is one of the large & leading public sector units providing comprehensive range of telecom services in India.

BSNL operates across India except New Delhi & Mumbai, which are covered by MTNL. BSNL serves its customers with a wide bouquet of telecom services namely Wireline, CDMA mobile, GSM mobile, Internet, Broadband, Carrier service, MPLS-VPN, VSAT, VoIP, IN Services, FTTH, etc. BSNL has set up a world class multi-gigabit, multi-protocol convergent IP infrastructure that provides convergent services like voice, data & video through the same Backbone & Broadband Access Network. The company has vast experience in planning, installation, network integration & maintenance of switching & transmission networks & also has a world class ISO 9000 certified Telecom Training Institute, ALTTC, in Ghaziabad.

2.1.2 Expectations and Deliverables of BSNL from other organizations

Sr.No.	Organisation	Expectations of BSNL from organizations listed below
1.	MTNL	MTNL GSM network coverage can be improved in NCR areas i.e Ghaziabad, Faridabad, Gurgaon where BSNL subscribers are served by MTNL GSM/3G network. Prepaid dolphin recharge facility is very limited compared to other operator, the same may be enhanced in the NCR areas.
2.	ITI	AMC work of BSNL’s network equipment supplied directly or through 3rd party should be carried out as per AMC tender conditions.
3.	TCIL	TCIL may outsource 100% work of any country to BSNL.
4.	C-DoT	To support for NGN deployment for C-DoT switches

Sr.No.	Organisation	Deliverables of BSNL to organizations listed below
1.	MTNL	(i) CDR system can be given to MTNL on chargeable basis. (ii) BSNL can deliver NGN to MTNL on capex basis. (iii) Provide voice to MTNL FTTH using CDOT/Huawei NGN core on revenue sharing basis. (iv) BSNL can manage MTNL social Media on monthly payment basis. (v) BSNL can undertake Installation & Maintenance of Wi-Fi hotspot and manage them thru, NOC, portal etc on revenue sharing basis.
2.	BBNL	(i) BSNL may undertake maintenance of BharatNet on charge basis as per MOU. (ii) BSNL can share the training resources across India with all PSUs on chargeable basis.
3.	TCIL	(i) BSNL may provide technical consultancy to TCIL (ii) May hire space/quarters from BSNL.

2.2 MAHANAGAR TELEPHONE NIGAM LIMITED (MTNL)

2.2.1 Introduction

MTNL was carved out from the then DoT and was setup on 1st April, 1986 by the Government of India to upgrade the quality of telecom services, expand the telecom network, introduce new services and to raise revenue for telecom development needs of India’s key metro cities of Delhi & Mumbai. MTNL is the principal provider of fixed-line telecommunication service in the two Metropolitan Cities of Delhi and Mumbai. It offers mobile services in the city of Delhi including four peripheral towns Noida, Gurgaon, Faridabad & Ghaziabad and the Mumbai city along with the areas falling under the Mumbai Municipal Corporation, New Mumbai Corporation and Thane Municipal Corporation. At present, 56.25% equity shares are held by President of India & nominees and remaining 43.75% shares are held by FIIs, Financial Institutions, Banks, Mutual Funds and others including individual investors. Presently, MTNL is providing a host

of telecom services that include fixed telephone service, GSM (including 3G services) & CDMA based Mobile service, Internet, Broadband, ISDN and Leased Line services.

MTNL is also providing telecommunications beyond boundaries through its Joint Ventures and Subsidiaries. MTNL is present in Nepal through its Joint Venture United Telecom Limited (UTL) and in Mauritius through its 100% subsidiary Mahanagar Telephone Mauritius Limited (MTML).

2.2.2 Expectations and Deliverables of MTNL from other organization

Sr. No.	Organisation	Expectations of MTNL from organizations listed below
1.	BSNL	<ul style="list-style-type: none"> (i) Services of MTNL/MTL may be utilized on telecom related works on nomination basis. However, whenever any work is awarded to MTNL/MTL then due process will be followed in carrying out the portion which needs to be outsourced. (ii) Integration / utilization of the following IT systems for better customer experience <ul style="list-style-type: none"> (a) Leased circuits commercial and billing systems (b) Wireline and wireless billing systems (c) ERP of BSNL (d) Data centers (iii) Access to online training courses (iv) Sharing of IT initiatives and developments (v) Digital signature business on revenue share basis (vi) Common mail messaging systems (vii) Internet bandwidth may be procured jointly to get maximum benefit or volume based discount (viii) Investment by BSNL for upgradation and expansion of MTNL mobile network as a managed service partner (ix) Utilization of BSNL's NGN network for Delhi & Mumbai on commercial basis. (x) MTNL to offer all its NLD traffic (except between Delhi & Mumbai) to BSNL and seek competitive rates from BSNL, (xi) BSNL may provide CLS (Cable Landing Station) and STM-1 and submarine cable for establishing the ILD services of MTNL (xii) Both PSUs may form and maintain a common platform to decide and represent various regulatory issues with TRAI (xiii) Sharing of various network elements subject to the regulation of sharing (xiv) Settlement of pending payments i.r.o. <ul style="list-style-type: none"> (a) Roaming charges (b) Interconnection Usage Charges (IUC) (c) Leased circuits (d) Duct charges (e) Office rent and infrastructure charges (f) Service connections etc.

Sr. No.	Organisation	Expectations of MTNL from organizations listed below
	BSNL	<p>(xv) Acquisition of enterprise customers and high value business on pan-India basis utilizing the MTNL-BSNL infrastructure by offering attractive tariff plans and single window interfaces</p> <p>(xvi) Sharing and development of real estate assets</p> <p>(xvii) Permission for use of OFC network in NCR (National Capital Region)</p> <p>(xviii) Development of common dealer/franchisee network in NCR</p> <p>(xix) Explore new possibilities of growth both within the country and abroad through JVs/subsidiaries.</p> <p>(xx) To standardize the interconnect agreements of both the PSUs with other private operators, based on common interest and identical policies.</p> <p>(xxi) Joint committee for procurement of equipment, bandwidth and other purchases for both the PSUs at common rates.</p>
2.	BBNL	<p>Services of MTNL/MTL may be utilized on telecom related works on nomination basis. However, whenever any work is awarded to MTNL/MTL then due process will be followed in carrying out the portion which needs to be outsourced.</p>
3.	ITI	<p>(i) Services of MTNL/MTL may be utilized on telecom related works on nomination basis. However, whenever any work is awarded to MTNL/MTL then due process will be followed in carrying out the portion which needs to be outsourced.</p> <p>(ii) Annual maintenance contracts for wireline and wireless exchanges and other associated components are executed in efficient manner.</p>
4.	TCIL	<p>(i) Services of MTNL/MTL may be utilized on telecom related works on nomination basis. However, whenever any work is awarded to MTNL/MTL then due process will be followed in carrying out the portion which needs to be outsourced.</p> <p>(ii) Solution developed by TCIL like EPS etc. can be utilized in MTNL</p> <p>(iii) Leveraging the expertise of TCIL in execution of contracts awarded by enterprise customers.</p>
5.	C-DoT	<p>(i) Services of MTNL/MTL may be utilized on telecom related works on nomination basis. However, whenever any work is awarded to MTNL/MTL then due process will be followed in carrying out the portion which needs to be outsourced.</p> <p>(ii) Development of small size DSLAM equipment for utilization in MTNL BB network.</p> <p>(iii) Implementation of Lawful Interception System in MTNL network</p> <p>(iv) Implementation of IMS Technology in MTNL network</p> <p>(v) C-DoT may develop ILD gateway and LIM for ILD service roll-out obligation of MTNL.</p>

Sr. No.	Organisation	Deliverables of MTNL to organizations listed below
1.	BSNL	<ul style="list-style-type: none"> (i) Synergy in MPLS network on pan India basis (ii) Synergy in utilization of office space, buildings and ducts in Delhi & Mumbai (iii) Utilization of MTNL telephone exchanges and infrastructure for setting up of data centers and disaster recovery (DR) sites (iv) MTNL exchanges can be utilized as landing platforms for different services being taken from various service providers (v) MTNL may offer all its ILD traffic to BSNL, which may increase the bargaining power of BSNL with other ILD operators to claim further lesser rates for ILD traffic.
2.	Common to all organizations	<ul style="list-style-type: none"> (i) MTNL is having vast land/building assets on leasehold/freehold basis in the prime and strategic locations of Delhi & Mumbai, which can be utilized by BBNL, ITI, TCIL, TEC, C-DoT, DoT, TRAI etc. for setting up their offices and other technical establishments (ii) MTNL network, technical solutions, various types of telecommunication services, infrastructure and space may be utilized for providing e-services under Digital India programme and other commercial enterprise businesses.

2.3 BHARAT BROADBAND NETWORKS LIMITED (BBNL)

2.3.1 Introduction

Bharat Broadband Network Limited (BBNL) is the Special Purpose Vehicle (SPV), set up by the Government of India under the Department of Telecommunications for the establishment, management and operation of National Optical Fiber Network (NOFN) now renamed as BharatNet. The project is funded by the Universal Service Obligation Fund (USOF), Govt. of India. BBNL has been incorporated on 25-02-2012 as a Public Sector Undertaking (PSU) /Company under the Companies Act, 1956 with an authorized share capital of Rs. 1000 Cr. The company has been granted National Long Distance Operating (NLDO) license by DOT w.e.f. 01.04.2013. BBNL has been granted ISP Category "A" License (All India) from DoT on 29th December 2014.

BharatNet is the largest rural connectivity project of its kind in the world. It seeks to link each of the 2.5 lakh Gram Panchayats of India through Broadband optical fiber network. On its completion, BharatNet is expected to facilitate Broadband connectivity to over 600 million rural citizens of the country. It is expected that the establishment of BharatNet would not only have a transformational impact on the lives of citizens, but it would also open up new avenues for Access service providers such as Telecom Service Providers, Internet Service Providers, Cable TV Operators, Content Providers etc. to launch next generation services, and spur creation of local employment opportunities encompassing e-commerce, IT outsourcing, rural BPOs etc. as well as services such as

e-banking, e-health and e-education etc. for inclusive growth.

2.3.2 Expectations and Deliverables of BBNL from other organizations

Sr. No.	Organisation	Expectations of BBNL from organizations listed below
1.	BSNL	<ul style="list-style-type: none"> (i) Extending BSNL training facilities in ALTTC/ BRBRAITT / RTTCs to BBNL officers/ employees/ partners. (ii) Providing officers/ Support staff having experience in Vigilance to BBNL (iii) Support of Vigilance Unit of BSNL for conducting Vigilance related inspections in the fields. (iv) E7-E9 level officers from BSNL should be allowed to join BBNL on deputation basis. (v) BSNL should use BharateNet to roll out services in the Rural Areas. (vi) For avoiding duplication of efforts and to cut costs in the development of transmission network, BSNL can utilize the OFC already laid by BBNL. They should not lay another OF cable where BBNL has already laid the cable. A few fibers are used in the new cable now and hence, BSNL can use available fibers for their mobile, data, voice network expansions in rural areas. (vii) BSNL can also install the additional ONTs or allow customers to procure their own ONTs and expand the existing NOFN network for delivering the bandwidth services using these fibers. (viii) Billing platform of BSNL can be utilized by BBNL. The BBNL NOC may be integrated with BSNL’s billing platform. The bills can be raised and collected by BSNL and may share the revenue. (viii) Billing platform of BSNL can be utilized by BBNL. The BBNL NOC may be integrated with BSNL’s billing platform. The bills can be raised and collected by BSNL and may share the revenue. (ix) BSNL may install their surplus FTTH equipment or any other transmission/switching equipment in the districts/blocks where BBNL could not provide the FTTH equipment. This is done in districts such as Mysore in Karnataka. (x) BSNL has already developed a GIS based software tool (OFCnet) to identify all OF cables/fibers. The same software may be integrated with BBNL GIS.
2.	MTNL	<ul style="list-style-type: none"> (i) Extending MTNL training facilities to BBNL to train its officers/ employees/ parties in CETTM/ DTTCs. (ii) Providing Officers/ Support staff having experience in Vigilance to BBNL (iii) E7-E9 level officers from MTNL should be allowed to join BBNL on deputation basis.

3.	ITI	(i) ITI should manufacture equipment like Wi-Fi, GPON, SPV systems which are suitable for rural India. (ii) Manager level officers of ITI may join BBNL on deputation basis.
4.	TCIL	TCIL can take up projects of BBNL like NOC/ Data Centre built up.
5.	C-DOT	CDOT should develop technologies like Wi-Fi, GPON, SPV systems which are suitable for rural India. It may also develop tools for effectively managing the BharatNet.
6.	TEC	TEC should develop standards for equipment like Wi-Fi, GPON, SPV systems which are suitable for rural India. It may also develop standards for various tools and testers required for O&M of BharatNet like PON based fault localization system etc.

2.4 INDIAN TELEPHONE INDUSTRIES (ITI)

2.4.1 Introduction

India's first Public Sector Unit (PSU) - ITI Ltd was established in 1948. With state-of-the-art manufacturing facilities spread across six locations (Bangalore, Palakkad, Raibareli, Naini, Mankapur & Srinagar) and a countrywide network of marketing/service outlets, the company offers a complete range of telecom products and solutions covering the whole spectrum of Switching, Transmission, Access and Subscriber Premises equipment. ITI entered into the business of GSM equipments with the inauguration of mobile equipment manufacturing facilities at its Mankapur and Rae Bareli Plants in 2005-06. This ushered in a new era of indigenous mobile equipment production in the country.

Presently, ITI is focussing on meeting the huge domestic demand of the PSUs (BSNL, MTNL, and BBNL for BharatNet project) for products like GPON, HDPE pipes, OFC, solar equipments, Wi-Fi products etc. ITI is also focussing on backward integration for some of its critical products like glass fiber manufacturing for OFC, Li-ion cells for batteries etc. For sustainable business in future, ITI is focusing on Smart Infrastructure projects to meet the domestic demand arising due to the Smart City initiatives of the Government of India. ITI has established a Smart Infrastructure Experience Center in Bangalore.

The company has diversified into Information and Communication Technology (ICT) solutions to complement its rich telecom expertise and vast manufacturing infrastructure. Encryption and Networking Solutions for Internet Connectivity, e-tendering portal etc. are some of the major initiatives taken by the company.

Secure communications is the company's forte with a proven record of engineering strategic communication networks for India's Defence forces. Extensive in-house R&D work is devoted towards specialized areas of Encryption, NMS, IT and Access products to provide complete customized solutions to Defence forces.

2.4.2 Expectations and Deliverables of ITI from other organizations

S. No.	Organisation	Expectations of ITI from organizations listed below
1.	BSNL/MTNL	<p>a) Early settlement (within a month) of all outstanding payment dues, especially of GSM project for which services have already been rendered by ITI. Waiver of LD, wherever unreasonably levied.</p> <p>b) Preference has to be given for the products manufactured by ITI and for technology/products/systems developed jointly by CDoT/ITI in the tenders of BSNL/MTNL.</p> <p>c) BSNL and MTNL should provide support to conduct pilot testing/field trail in their respective network for the products/systems designed, developed and engineered by C-DoT/ITI.</p> <p>d) Quantity manufacturing of the products/systems developed & engineered by CDoT/ITI should be given to ITI through preferred/nomination route for production. Also, products manufactured by ITI viz. SMPS, PLB-HDPE Duct, LPU, OFC (Infra being set up), Li-ion Batteries (Infra being set up), Solar Systems to be ordered by BSNL/MTNL on nomination basis.</p> <p>e) BSNL/MTNL to reintroduce earlier policy of payment of advance against orders placed on ITI.</p> <p>f) BSNL and MTNL at their planning stage should extend support in identifying technology/products/systems which can be jointly taken up by CDoT and ITI for indigenization. This will also give boost to Make in India program in the Telecom Sector.</p> <p>g) A committee needs to be formed with the members from DoT, ITI BSNL/MTNL and CDoT for continuous monitoring of needs and demands of each stake holder.</p> <p>h) BSNL should extend its training facilities for training of ITI skilled manpower in new technology areas. The training has to be free of cost.</p>
2.	BBNL	<p>a) Maintenance and Repairs Hub can be created at ITI to ensure long term services support for the products/systems procured by BBNL from the OEMs and SIs through tender route. BBNL should demand in tender from bidders to provide technical and commercial support for establishing common services facility at ITI Hub for the products and systems supplied by the respective OEMs and SIs for long term AMC support to BBNL.</p> <p>b) Orders to be placed by BBNL on ITI for the Products/Systems developed by CDoT/ITI, and also products manufactured by ITI viz. SMPS, PLB-HDPE Duct, LPU, OFC, Li-ion Batteries (Infra being set up), Solar Systems on nomination basis/preferential route.</p>

	BBNL	<p>c) ITI as an IP-1 licensor can provide Wireless Telecom Infrastructure for unconnected rural areas funded by USOF. The orders have to be placed on ITI through preferred route/ Nomination.</p> <p>d) Suitable ITI Manpower deployment can be thought of in organisation like BBNL or wherever needed.</p>
3.	C-DOT	<p>a) As ITI is having sound background of assimilation of technology and manufacturing, ITI should be nominated permanent Production Agency for CDoT for their indigenously designed and developed products. ITI will do prototype development and concurrent engineering for the production of these products for deployment in Indian Telecom networks. This arrangement should also be applicable for the Products/Systems developed by CDoT based on Transfer-of-Technology from other technology providers.</p> <p>b) A committee should be formed having senior members from CDoT and ITI-R&D and Plants. The committee will continuously guide and monitor smooth functioning of this arrangement.</p> <p>c) C-DoT to take up matter with BSNL / MTNL for an assured market and conducive pricing for the products manufactured by ITI, based on C-DoT Design. This issue is critical and essential for the products like GPON for the Broadband Infrastructure.</p> <p>d) Cost incurred by ITI for development of prototype of C-DoT designed products to be reimbursed.</p> <p>e) C DOT to take TOT fee on concessional terms.</p>
4.	TCIL	<p>ITI has proven track record of execution of Turnkey projects, TCIL and ITI can jointly undertake overseas projects on the lines of CDMA project executed in the past jointly by ITI & TCIL in Afghanistan.</p>
5.	DOT	<p>a) Restoration of Reservation Quota (RQ) for ITI. Long-Term RQ Policy for next Five Years should be put in place.</p> <p>b) Policy support by way of preferential orders from Govt. Departments under various developmental programs like Make-in-India.</p> <p>e) Existing Indian Tax Structure is not conducive for manufacturing vis-à-vis import of Telecom equipment. Restructuring of Tax System is required to make Indian Telecom manufacturing viable.</p> <p>f) Introduction of Policy for Exemption of Payments of EMD in BBNL/BSNL/MTNL Tenders.</p> <p>g) Exemption of PBG after getting orders from BSNL/MTNL/ BBNL.</p> <p>h) Support to ITI, so that, LD on all the supplies made by ITI to BSNL/MTNL to be waived off, after ITI was referred to BIFR (Since 2004).</p>

		<ul style="list-style-type: none"> i) Reimbursement of all the statutory dues like PF, Gratuity and PL Encashment. j) Policy decision to enable ITI to supply the product to BSNL/ MTNL/BBNL, at least on no loss - no profit basis.
6.	USOF	<ul style="list-style-type: none"> a) ITI as an IP-1 licensor can provide Wireless Telecom Infrastructure for unconnected rural areas funded by USOF. The orders have to be placed on ITI through preferred route. b) Policy support to place orders directly on ITI as IP-1 licensor for the USOF funded telecom infra projects through preferred/ nomination route

S.No.	Organisation	Deliverables of ITI to Organizations Listed Below
1.	BSNL/ MTNL/BBNL	<ul style="list-style-type: none"> a) ITI can execute projects on turnkey basis for the PSUs. b) ITI can manufacture Products/ Systems as per the requirement of BSNL/MTNL/BBNL. c) ITI can provide services support for the products/Systems supplied. d) ITI will ensure to meet time lines of project execution and deliverables by putting in place proper monitoring mechanism.
2.	C-DOT	<ul style="list-style-type: none"> a) ITI can develop prototype and manufacture the products designed and developed by CDoT. b) ITI can do production engineering and testing of products designed and developed by CDoT. c) ITI will do quantity manufacturing of products developed by CDoT/ITI.
3.	TCIL	<ul style="list-style-type: none"> a) ITI can execute overseas projects jointly with TCIL.
4.	DOT/USOF	<ul style="list-style-type: none"> a) ITI will ensure timely delivery of all products and services for the orders placed on ITI through preferred route with the policy support from DoT ,USOF or any other Govt. department.

2.5 TELECOMMUNICATIONS CONSULTANTS INDIA LIMITED (TCIL)

2.5.1 Introduction

Telecommunications Consultants India Ltd. (TCIL) is a leading ISO 9001:2008, ISO27001:2013, OHSAS18001:2007 and ISO 14001:2004 certified Govt. of India Undertaking incorporated in 1978 under the Administrative control of Department of Telecommunications. TCIL, a premier telecommunication consultancy and engineering company is making available its vast and varied telecom expertise to friendly developing countries. TCIL has extended its telecom consultancy and turnkey project execution services to telecom operators, bulk users and others in India and 80 other countries in Middle East, Africa, South & South East Asia. The success story of TCIL lies in its Quality Management and excellence in project execution. The Company’s organic and inorganic growth has led to multiply its standalone as well as group turnover manifold.

TCIL has been undertaking various projects in all fields of telecommunications and information technology and also continuously deploying new technologies in the field of Telecom Software, Switching and Transmission Systems, Cellular Services, Rural Telecommunications, Optical Fiber based Backbone Transmission Systems etc. TCIL has diversified its operations and has been executing turnkey projects of Power Transmission, Rural Roads and Civil Construction alongwith executing projects in latest technology verticals like FTTH, VOIP, IPTV, 4G, Smart City Solutions, e-waste management etc.

2.5.2 Expectations and Deliverables of TCIL from other organizations

S.No.	Organisation	
1.	BSNL/MTNL/BBNL	<p>Expectations: TCIL may be considered as preferred implementation agency for MTNL/BSNL/BBNL projects.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. TCIL can upgrade its eligibility in execution of high valued projects with large number of nodes so as to increase its international visibility for bidding and execution of projects. 2. MTNL/BSNL/BBNL can consider giving OFC related and mobile projects in 2G/3G/4G domain, O&M projects to TCIL. 3. All Inter Company issues should be resolved amicably in the real spirit of sister organizations without intention to cause any loss to the company. <p>Way Forward: MOU with MTNL/BSNL for collaboration to execute such projects by TCIL.</p> <p>Advantage: They can have more customer focus while TCIL can execute the back end jobs for them.</p>
2	C-DOT	<p>Expectations:</p> <ol style="list-style-type: none"> 1. C-DOT can carry out pilot trials with TCIL for Proof of Concept (PoC) and best practices for use of the technology for implementation and post implementation support. 2. C-DOT technology solutions can help TCIL pitch Indian technology in both national and international markets. 3. TCIL has a vast presence in the countries of the African Union and the Gulf countries. This can be used to the advantage of marketing of C-DOT products in the African Union countries and Gulf countries. <p>Way Forward: A workshop for relevant TCIL officials to be conducted by C-DOT for familiarizing them with the product lines and solutions.</p> <p>Advantage: This will open up with the domain of marketing C-DOT technology and solutions.</p>

3	USOF/DOT	<p>Expectations: Submarine Cable project for connecting ANI to Mainland India at Chennai can be given to TCIL on turnkey basis.</p> <p>Objective: This shall create TCIL’s international eligibility in submarine cable project execution and help in participating in international tenders of consultancy and execution.</p> <p>Advantage: TCIL will have submarine project credentials to bid in international projects.</p>
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2.6 CENTRE FOR DEVELOPMENT OF TELEMATICS (C-DOT)

2.6.1 Introduction

The Centre for Development of Telematics (C-DOT) is an autonomous body, established in August 1984, under the Government of India, for engaging in Telecom Research to develop state-of-the-art telecommunication technology to meet the needs of the Indian telecommunication network. The key objective was to build a centre of excellence in the area of telecom technology. Within a very short span of time, telecom switching products ideally suited to Indian conditions started revolutionizing rural telecommunication in India in the form of small Rural Automatic Exchanges (RAXs) and medium size switches as SBMs for towns. This was followed by induction of higher capacity digital switches known as Main Automatic Exchanges (MAXs). C-DOT technology spread across the length and breadth of the country through its licensed manufacturers with very strong technology transfer methodology. Nearly 50% of present fixed line infrastructure deployed by BSNL/MTNL is based on C-DOT technology. Beginning the journey with digital switching systems, C-DOT has ventured into products in the area of optical, satellite, wireless communication, NGN etc. From a purely hardware development centre it has diversified into development of Telecom software solutions like IN, NMS, Data Clearing House etc.

2.6.2 Expectations and Deliverables of C-DOT from other organization

S.No.	Organization	Expectations of C-DOT from the Organizations listed below
1.	BSNL/MTNL	<ul style="list-style-type: none"> • Specific project to be identified for deployment under synergy program wherein technology to be sourced from C-DOT and manufactured by ITI. • Direct commercial order to C-DOT on nomination basis where it has developed proven technologies useful to BSNL. • Active involvement of C-DOT team in framing of product requirements for the field deployment/tender • Participation of C-DOT team in meetings which decide future requirements and vision of BSNL so that C-DOT may take proactive initiative to fulfil BSNL requirements • Financial and logistics Support in Pilot trial of C-DOT products • Relaxation to C-DOT ToT partners in Tender terms on pre-requisites

2	BBNL	<ul style="list-style-type: none"> • Specific project to be identified for deployment under synergy program wherein technology to be sourced from C-DOT and manufactured by ITI. • Direct commercial order to C-DOT on nomination basis where C-DOT has developed proven technologies useful to BBNL. • Active involvement of C-DOT team in framing of product requirements for the field deployment/tender • Participation of C-DOT team in meetings which decide future requirements and vision of BBNL so that C-DOT may take proactive initiative to fulfil BSNL requirements • Financial and logistics Support in Pilot trial of C-DOT products • Relaxation to C-DOT ToT partners in Tender terms on pre-requisites
3	ITI	<ul style="list-style-type: none"> • Manufacturing of C-DOT product at competitive prices complying to all quality standards • Take C-DOT Technology on priority and explore domestic and export market.
4	TCIL	<ul style="list-style-type: none"> • Deployment of C-DOT technology/products in national and international market • Sending information on latest telecom trends in national and international telecom market
5	TEC	<ul style="list-style-type: none"> • Active involvement of C-DOT team during framing of TEC specifications for telecom products • Involvement of C-DOT as experts /& promotion of indigenous technology in the standardization and knowhow of domestic manufacturing.
6	USOF	<ul style="list-style-type: none"> • Financial and logistics Support for pilot trials of C-DOT technology relevant to the domain of USOF • Use of C-DOT expertise towards consultancy assignments • Engaging C-DOT for identifying / envisioning technologies suitable for promoting USOF objectives
7	DOT	<ul style="list-style-type: none"> • C-DOT to be involved in key policy making in the area of Telecom R&D, technology collaborations and technology Roadmap • Facilitate in promoting indigenous technology in the overseas market • Assistance in navigating telecom technology and direction • Timely release of funds to C-DOT to R&D programs • Regulate and promote indigenous design and domestic manufacturing through policy framework.
S.No.	Organization	Deliverables of C-DOT to the Organizations listed below
1	BSNL/ MTNL/ BBNL	<ul style="list-style-type: none"> • Timely technical consultancy on emerging technical trends and framing of specifications of requirements • Direct turnkey telecom solutions for specific requirements • Assured long term support for the system

		<ul style="list-style-type: none"> • Customization of the product as per actual field requirements • Spyware-less secure telecom products • field trials on small scale for new technologies • C-DOT can provide the technological edge for competitive advantage through innovative systems & solutions.
2	ITI	<ul style="list-style-type: none"> • Field proven, cost effective, Latest telecom technology in various segments
3	TCIL	<ul style="list-style-type: none"> • With the help of ITI, timely delivery of telecom products for domestic and international market
4	TEC	<ul style="list-style-type: none"> • Assistance in framing specs for telecom products • Expert to specific telecom Areas to facilitate joint WG, Seminars etc.
5	USOF	<ul style="list-style-type: none"> • Technical consultancy, Pilot projects
6	DOT	<ul style="list-style-type: none"> • C-DOT would be Technology providing arm of the whole synergy alliance. It would address DOT’s domestic as well as international requirements. • Approach assistance to futuristic ICT technologies

2.7 TELECOMMUNICATION ENGINEERING CENTER (TEC)

2.7.1 Introduction

TEC is the nodal agency of the Department of Telecommunications, which is responsible for drawing up standards, generic requirements, interface requirements, service requirements and specifications for telecom products, services and networks. It is a technical body representing the interests of Department of Telecommunications in the telecom sector. Its main functions are -

- (i) Preparing specifications and standards with regard to Telecom network equipment, products, systems, services and their interoperability.
- (ii) Specifications released as Generic Requirements (GRs), Interface Requirements (IRs) and Service Requirements (SR).
- (iii) Testing and Certification activities for issuing Interface Approvals, Certificate of Approvals, Service Approvals & Type Approvals.
- (iv) Interact with multilateral agencies like APT, ETSI and ITU etc.
- (v) Develop expertise to imbibe the latest technologies and results of R&D.
- (vi) Provide technical support to DoT and technical advice to TRAI & TDSAT.
- (vii) Coordinate with C-DOT on the technological developments in the Telecom Sector for policy planning by DoT.

2.7.2 Expectations of TEC from other organizations and proposed deliverables

(List of Expectations of TEC from other organizations)

1. TEC feels that it is necessary and mutually beneficial to strengthen the comprehensive cooperation among TEC and other organizations. Promotion of cooperation and interaction/exchange of information among all organizations is required in order to help create new / revised specifications / standards and promote new technologies as well as to identify other areas of mutual cooperation.
2. All organizations should proactively contribute in National Working Groups/ manufacturing forums/sub DCC/DCC meetings conducted by TEC as part of specifications/standards development/formulation process, which is multistage, consultative and transparent.
3. TEC has expertise in the field of standardization and product certification. It has taken massive initiative of developing specifications for which different working groups have been set up with wide participation from industry. All organizations should actively contribute in these working groups.
4. NTIPRIT (National Telecommunication Institute for Policy Research, Innovation and Training) also has expertise in conducting trainings in various fields of telecommunication including training for trainers. All organizations can utilize the facility of NTIPRIT for training their employees.
5. R&D activities of C-DOT and ITI coupled with expertise of TEC in drafting new specifications based on research inputs will be able to ensure deployment of quality products meeting international standards including security and seamless operations.
6. C-DOT can design the products based on TEC led technology vision and product specifications, testing and certification. Then ITI can make prototype and undertake production while BSNL/MTNL can deploy and TCIL can provide consultancy in this regard.

(List of deliverables of TEC to other organizations)

1. TEC as technical arm of the DoT can advise the organizations on the implications of various technological developments in Indian context. TEC can assist for development of technical regulations as well as for enforcement related issues for all communication interfaces while ensuring future and backward compatibilities.
2. TEC as representative of DoT at ITU and various Telecom Standardization Bodies can influence /ensure redressal of Indian concerns at these forums.
3. TEC as formulator of specifications for telecom products /systems/equipments/ networks can help draw and evolve new specifications to meet the challenges of fast changing telecom market. Telecom specifications developed by TEC inter alia cover requirements on issues related to inter-operability, security, radiations, safety etc. and are in harmony with international acceptance requirements.
4. TEC test beds/labs being setup can also supplement facilitation of testing and certification activities in telecom sector.

03 Synergy for New Business Opportunities in Development of Smart Cities & Smart Infrastructure



Synergy for New Business Opportunities in Development of Smart Cities & Smart Infrastructure

FIRST BUSINESS OPPORTUNITY

3.1 INTRODUCTION

Cities are engines of growth for the economy of every nation, including India. Nearly 31% of India's current population lives in urban areas and contributes 63% of India's GDP (Census 2011). With increasing urbanization, urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This requires comprehensive development of physical, institutional, social and economic infrastructure. All are important in improving the quality of life and attracting people and investments to the City, setting in motion a virtuous cycle of growth and development. Therefore, the Smart Cities Mission of the Government of India is an important step in that direction.

In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities.

3.2 THE SMART CITY MISSION:

The Smart City Mission will be operated as a Centrally Sponsored Scheme (CSS) and the Central Government proposes to give financial support to the Mission to the extent of Rs. 48,000 crores over five years i.e. on an average Rs. 100 Crore per city per year. An equal amount, on a matching basis, will be contributed by the State/ULB; therefore, nearly Rupees one lakh Crore of Government/ULB funds will be available for Smart Cities development.

The core infrastructure elements targeted to be addressed in a Smart City would include, but not limited to:

- (i) Adequate water supply
- (ii) Assured electricity supply
- (iii) Sanitation, including solid waste management
- (iv) Efficient urban mobility and public transport
- (v) Affordable housing, especially for the poor
- (vi) Robust IT connectivity and digitalization
- (vii) Good governance, especially e-Governance and citizen participation
- (viii) Sustainable environment
- (ix) Safety and security of citizens, particularly women, children and the elderly and
- (x) Health and education.

3.3 ROLE OF DIFFERENT AGENCIES IN THE SMART CITY MISSION

- (i) **M/o Urban Development:** The entire mission is led by the Ministry of Urban Development, Government of India. MoUD is using a competition based method to select cities for funding and using a strategy of area-based development. This captures the spirit of ‘competitive and cooperative federalism’. States and Urban Local Bodies (ULBs) will play a key supportive role in the development of Smart Cities. Smart leadership and vision at this level and ability to act decisively will be important factors determining the success of the Mission.

The Smart City Proposals (SCPs) invited by MoUD from state governments for taking part in the competition are required to have following essential features:

- (a) Assured electricity supply with at least 10% of the Smart City’s energy requirement coming from solar
- (b) Adequate water supply including waste water recycling and storm water reuse
- (c) Sanitation including solid waste management
- (d) Rain water harvesting
- (e) Smart metering
- (f) Robust IT connectivity and digitalization
- (g) Pedestrian friendly pathways
- (h) Encouragement to non-motorized transport (e.g. walking and cycling)
- (i) Intelligent traffic management
- (j) Non-vehicle streets/zones
- (k) Smart parking
- (l) Energy efficient street lighting
- (m) Innovative use of open spaces
- (n) Visible improvement in the Area (e.g. replacing overhead electric wiring with underground wiring)
- (o) Encroachment-free public areas
- (p) Ensuring safety of citizens especially children, women and elderly).
- (q) Cities will have to add more ‘smart’ applications in order to improve their SCP.
- (r) In the case of redevelopment and greenfield models of Smart Cities, in addition to the essential features mentioned above, at least 80% buildings should be

energy efficient and green buildings. Additionally, of the total housing provided in greenfield development, there should be at least 15% in the affordable housing category.

- (ii) **Consultants:** This being a new initiative by the Govt. of India there is very little indigenous expertise available with the states and the ULBs. Therefore, to assist the state governments and ULBs, the M/o Urban Development has appointed consultants in every state. States/UTs are at liberty to draw upon this panel. As considered necessary, the States/UTs may request financial proposals from these firms and do a selection based on applicable procurement rules and guidelines. The States have the option of appointing a consulting firm outside the panel by following transparent and fair procedures as per State financial rules.
- (iii) **Handholding agencies:** During the preparation of the Smart Cities Mission, a number of foreign Governments have offered to provide Technical Assistance (TA) support. Additionally, other external organizations, including bilateral and multilateral institutions, as well as domestic organizations have suggested to the Ministry of Urban Development that they can give technical assistance support. These include World Bank, ADB, JICA, USTDA, AFD, DFID, UN Habitat, UNIDO, etc. Such organizations, which have experience in the field of Smart City development, can also extend support to the States/UTs as hand-holding agencies in preparing the proposals and the MoUD will assist in tying up the arrangements.
- (iv) **SPVs (Special Purpose Vehicles):** The implementation of the Mission at the City level will be done by a Special Purpose Vehicle (SPV) created for the purpose. The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects. Each smart city will have a SPV which will be headed by a full time CEO and have nominees of Central Government, State Government and ULB on its Board. The States/ULBs shall ensure that, (a) a dedicated and substantial revenue stream is made available to the SPV so as to make it self-sustainable and could evolve its own credit worthiness for raising additional resources from the market and (b) Government contribution for Smart City is used only to create infrastructure that has public benefit outcomes. The execution of projects may be done through joint ventures, subsidiaries, public-private partnership (PPP), turnkey contracts, etc suitably dovetailed with revenue streams.
- (v) **Mission Monitoring Agencies :**
 - a. **National Level:** An Apex Committee (AC), headed by the Secretary, MoUD and comprising representatives of related Ministries and organisations will approve the Proposals for Smart Cities Mission, monitor their progress and release funds.
 - b. **State Level:** There shall be a State level High Powered Steering Committee (HPSC) chaired by the Chief Secretary, which would steer the Mission Programme in its entirety. The HPSC will have representatives of State Government departments. The Mayor and Municipal Commissioner of the ULB relating to the Smart City would be represented in the HPSC. There would

- also be a State Mission Director who will be an officer not below the rank of Secretary to the State Government, nominated by the State Government. The State Mission Director will function as the Member-Secretary of the State HPSC.
- c. **City Level:** A Smart City Advisory Forum will be established at the city level for all 100 Smart Cities to advise and enable collaboration among various stakeholders and will include the District Collector, MP, MLA, Mayor, CEO of SPV, local youths, technical experts, and at least one member from the area representing prominent organizations like the RWA, Tax payers associations, NGOs, Chamber of Commerce etc. The CEO of the SPV will be the convener of the Smart City Advisory Forum.

3.4 NEW INITIATIVES BY THE PSUS AND OTHER ORGANIZATIONS OF DOT FOR SMART CITY BUSINESS OPPORTUNITIES

3.4.1 BSNL

BSNL has signed an MOU with the Ministry of Urban Development for vehicle tracking and monitoring system. In addition, BSNL is also taking steps to setup large number of Wi-Fi hotspots across the country because internet access is an important component of smart city infrastructure.

3.4.2 MTNL

MTNL has taken the project of Mumbai City Surveillance in partnership with L&T wherein bandwidth for 6000 cameras installed is being provided by MTNL. MTNL also has a subsidiary MTL, which can be involved in various projects.

3.4.3 ITI

Traditionally ITI has focussed on the business of manufacturing telecommunication products for the telecom sector, primarily to meet the needs of BSNL & MTNL. However, ITI is now rapidly diversifying into other businesses to reduce its dependence on BSNL & MTNL orders due to stiff competition from overseas manufacturers. ITI is diversifying into providing ICT solutions, undertaking turnkey projects and the recent foray into the Smart Infrastructure business. For its Smart infrastructure business, following initiatives have been taken –

- (i) ITI has initiated steps to create a separate business vertical to exploit the new business opportunities in this sector.
- (ii) ITI has already identified manpower across its different offices in the country to handle the smart infrastructure business
- (iii) ITI has planned to train all of them through periodic training programmes, seminars and workshops.
- (iv) ITI has also initiated the process of identifying consultants to help and advise on its smart infrastructure business.
- (v) ITI has also signed teaming agreements with many solution providers for addressing the requirement of Smart Solutions.
- (vi) has also set up IoT Excellence centre in Bangalore as it is already having the necessary data centre infrastructure in place.

- (vii) ITI has also started participating in various tenders floated by different cities for Smart Infrastructure creation.

3.4.4 TCIL

TCIL has vast experience of providing consultancy for telecom projects covering a wide range of projects/services as given below –

(i) Telecommunications

- a. Wire line projects - Optical Fiber Network: FTTH, Submarine cable
- b. Wireless projects – Wi-Fi, mobile communications, Tetra, GSM, GSM-R, 3G, 4G, EMF Audits etc.

(ii) Information Technology

- a. Data centre
- b. Broadband networks
- c. E-governance
- d. Security and surveillance
- e. IPv6

(iii) Civil and Architecture Works

- a. Construction of buildings and roads
- b. Cyber Parks

(iv) Managed Services

- a. Co-location
- b. E-procurement
- c. Video conferencing
- d. Authentication services
- e. Smart City Solutions
- f. IoT

(v) New initiatives

- a. Solar power
- b. E-waste management
- c. Power line projects
- d. E-waste management
- e. Disaster management

In view of above TCIL is having good experience of executing various components required in the development of a Smart City. Therefore, it is in a good position to provide consultancy for smart city projects (design development & implementation) to the different PSUs. It can also function as a third party auditor.

3.4.5 C-DOT

C-DOT is also engaged in research on M2M products. Presently C-DOT is in the process of developing a standards based interoperable platform for IoT/M2M applications. Once this platform is developed different applications will be able to seamlessly communicate with each other over a standard interface. Such a standards based platform will be very important requirement in rolling out the smart infrastructure applications across the country.

3.5 OPPORTUNITIES FOR SYNERGY AMONG THE PSUS & OTHER ORGANIZATIONS OF DOT

Different organizations are presently working in isolation. There is scope of their coming together to work as a team by leveraging their individual strengths for participating in the smart infrastructure business. The different state governments have been floating tenders for different applications. A few examples of requirements are given below –

Sl. No.	Tender/RFP floated by Municipal Corporation/ State	Description
1	Bhopal Smart City Corporation Limited	Intelligent Street Pole
2	Udaipur	Implementation & operation of mobile and web based integrated citizen services
		Control & Command Centre buildings in Town Hall campus
3	Ahmedabad	Development of Integrated Group Housing Facilities
		Open Loop Smart Card Common City Payment System
4	Chandigarh	Smart Grid (Power Distribution)
5	Goa	Smart Street Light/LED Light

Most of the above requirements are in the nature of “Turnkey Execution”, which includes design, engineering, Installation & Commissioning of various projects like Smart GRID Project; Smart LED Street lighting (Intelligent smart poles) with Wi-Fi services along with OFC laying; mobile and web based integrated citizen services; Traffic signaling systems; Programme Management Consultant for Development of Smart Industrial Port City (SIPC). Therefore, it is difficult for one single organization to fulfill all the eligibility conditions. The PSUs can jointly address the tenders by forming a consortium or by having MOU amongst themselves with one organization becoming a lead bidder on case to case basis depending upon the requirement of eligibility conditions.

3.6 OPPORTUNITY FOR DIFFERENT ORGANIZATIONS

Presently most of the requirements are forthcoming in transportation, electricity distribution, street lighting, water management, waste management, security & surveillance. The different organizations can play the following roles to work as a team to address this business –

- (i) BSNL / MTNL: Smart city infrastructure needs a robust telecom network at the backend, which can be provided by BSNL/MTNL. They also have field offices across the length and breadth of the country and are constantly in touch with their customers, including senior officers in state governments. Therefore, they can take up the role of lead organization in the consortium of PSUs for bidding in smart city projects. Field trials of products developed by C-DOT & ITI can be done in BSNL/MTNL networks.
- (ii) BBNL: BBNL can play a similar role as BSNL because they are involved in laying out the backbone telecom network.
- (iii) ITI : ITI being a manufacturer of telecom products and solutions will develop the smart city solutions in-house in association with C-DOT. These solutions can be offered by the PSU consortium while bidding in different projects. ITI also has regional marketing offices throughout the country and they can interact with the state governments for acquiring business. ITI can do it jointly in association with BSNL. ITI is set up a 'Smart Solutions Experience Centre' in Bangalore to demonstrate different solutions to prospective customers. This will also meet other requirements like training, understanding the technologies, fine-tuning the solutions etc.
- (iv) TCIL: TCIL has vast experience in the telecom domain (network rollout, civil, electrical etc.), which are all components of Smart infrastructure solutions. TCIL can provide the consultancy to all the other PSUs and market the solutions in other countries.
- (v) C-DOT: C-DOT is engaged in research and development of various telecom products and solutions. C-DOT and ITI can together build smart solutions for use by the other organizations.
- (vi) TEC: Development of standards and take a lead in creating the technology and solutions roadmap, which will be followed by the other organizations.

04 Recommendations



4.1 INTRODUCTION

During the meetings of the working groups, the members have discussed various issues at length. Each working group has submitted its recommendations, which are placed in **Annexure A-1 to A-5**. These recommendations were also discussed in the meeting held by Secretary(T), DoT on 10th October 2016. In addition it was also decided to specify measurable outcomes for assessment of progress in achieving synergy. The recommendations were further discussed with the CMDs/Heads of different PSUs & organizations on 15th September 2017 and decisions were taken accordingly for implementation of synergy. The recommendations have been grouped into different categories as given below.

4.2 RECOMMENDATIONS OF DIFFERENT WORKING GROUPS, COMMITTEES AND THROUGH MEETINGS

4.2.1 Effective utilization of human resources

- (i) Training of manpower
 - a. A common web-based platform is to be used for all types of training programmes offered by different organizations. BSNL is already operating one CTMS (Centralized Training Management System) online web-based platform for training in BSNL. BSNL to take inputs from all organizations to incorporate the required features into the existing system of BSNL for use of all organizations. Individual organization portals may be retained till seamless transition to common portal is completed.
 - b. Training calendars are required to be prepared in advance for proper planning of activities. Therefore, all organizations to prepare provisional training calendars and share them among themselves.
 - c. Training infrastructure available with various organizations like BSNL, MTNL, BBNL, C-DOT, ITI, NTI-PRIT, NICF etc. to be leveraged to meet the training requirements of the other organizations.

- d. For optimum utilization of the training infrastructure, more external training programmes for public and private organizations, academic institutions etc. should be conducted. Common web-based platform to be utilised as much as possible.
- (ii) Inter-organization deputation/deployment of manpower on contract basis
 - a. Manpower projections should be done by lending and borrowing organizations for firming up the excess or shortage.
 - b. Terms and conditions for the staff to be deployed on contract basis can be decided by the lending & borrowing organizations among them.
 - c. Inter-organization deputation to be given preference over market hiring and to be done in accordance with DPE/DoPT instructions.
 - d. DPE/DoPT exemption will be sought by DoT only in exceptional cases
 - e. Relevant provision in recruitment rules to be made by the organizations for deputation.

Note on DPE/DoP&PW guidelines on deputation of manpower

As per existing guidelines for PSUs, inter-organization deputation is required to be implemented in accordance with DPE OM No. 18(6)/2001-GM-GL-77 dated the 28th December, 2005. As per the OM, the employees of one CPSE joining other CPSEs, regardless of the level of the post involved, can do so only on immediate absorption basis. The option for filling up of a post on deputation should be used as an exception when all other avenues have been exhausted. Provision has also been made for relaxation of the policy in respect of certain categories of posts in CPSEs. The criteria for exemption of any particular category of posts from the “Rule of immediate absorption” should be non-availability of suitable persons for particular posts. Exemption in cases not covered by the OM have to be obtained from the DPE, on a case to case basis, by the administrative Ministry/Department concerned.

Another OM by DoP&PW 4/78/2006-P&PW(D) dated 12th October 2015 is having provisions for deputation of manpower but applicable for Central Autonomous bodies.

4.2.2 Settlement of Legal Issues

- (i) The PSUs in DoT to be prohibited from going to court against each other. All endeavours should be made by the organizations to resolve disputes mutually.
- (ii) In case of hurdles in mutual settlement, first they should approach DoT. Attempt would be made to resolve the dispute at the level of DoT in the following manner –
 - a) An empowered committee consisting of Member(S), Member(F) and AS(T) may examine the merits of the dispute for administrative resolution.
 - b) If the dispute can't be resolved administratively, it will be referred to arbitration. Arbitrator will be appointed by DoT.
- (iii) If the dispute is not resolved in DoT, then it will be referred to Law Ministry for settlement through the PMA (Permanent Machinery of Arbitration) mechanism.

4.2.3 Optimum utilization of vacant spaces in land and buildings

- (i) BSNL to develop a **Unified Information Portal** for all the organizations to share their information on vacant land and building spaces. BSNL to incorporate the requirements of all organizations into the portal.
- (ii) All organizations to explore existing options for sharing vacant land and building infrastructure among themselves before going for fresh proposals.
- (iii) Since BSNL & MTNL hold large amount of real estate assets, they should create specialized property management divisions to efficiently manage the real estate assets.
- (iv) Apart from real estate, the PSUs should also focus on efficient management of their infrastructure (e.g. towers, ducts, cables etc.) for revenue generation.

4.2.4 Standards and Certifications

- (i) TEC is the nodal agency for drawing up specifications & product certification. TEC to take proactive action for preparation of GR/IR/SR in advance (at least 6 months) as per the procurement plans of user organizations. TEC to periodically review its specifications and keep them updated.
- (ii) TEC & C-DOT to prepare roadmaps on different technologies for policy formulation and technological guidance

4.2.5 Promoting 'Make in India'

- (i) PSUs to make provision for 'Educational Orders' in procurement manuals.
- (ii) Government has notified the PMA policy under Rule 153(iii) of GFR 2017 and further through letter no. P-45021/2/2017-B.E.II dated 15th June 2017 issued by DIPP, Ministry of Commerce and Industry. All organizations to follow the Preferential Market Access (PMA) policy and also make efforts to invoke the policy with states.
- (iii) Under PMA policy tendering organizations should avoid restrictive/stringent conditions / product specifications etc. in their tenders. Cases of non-compliance may be referred to DoT for further action.
- (iv) Tendering organizations may do pre-consultation with user organizations before publication of NIT, wherever PMA is applicable.
- (v) C-DOT & ITI to focus on development of products, which are required for projects of national importance like BharatNet, Smart Infrastructure, Digital India etc.

4.2.6 Nomination Policy

- (i) Preference to be given to award of contracts on competitive basis for efficient price discovery.
- (ii) Contracts may be awarded by nomination on case to case basis as per prevailing circumstances.

4.2.7 Pooling of resources to address emerging opportunities in the country

- (i) For projects, like Smart Infrastructure, the organizations can pool their resources to synergize their operations.

- (ii) All organizations to invoke Preferential Market Access (PMA) policy for Smart Infrastructure projects of the States
- (iii) Organizations to develop suitable mechanism for sharing of revenues and expenses among themselves

4.2.8 General recommendations

- (i) All organizations to prepare ‘short term - < 1 year’, ‘medium term – between 1 and 2 years’ and ‘long term > 2 years’ roadmaps for their major activities and share among themselves. This will help all the organizations to prepare in advance for their activities
 - 1. USOF/BBNL/BSNL/MTNL – Procurement roadmap
 - 2. C-DOT/ITI – Design/Manufacturing roadmap
- (ii) All organizations to finalize and sign rate contracts for products, contract for manufacturing and services.
- (iii) C-DOT to prepare documentation on application scenarios of the top five technology solutions to help all organizations in their technology planning and procurement plans.
- (iv) All organizations to enter into MOUs / Agreements for collaboration among themselves.
- (v) TCIL to give preference to products and services of PSUs in such tenders where it is feasible, especially in overseas projects.
- (vi) The **‘Operational Synergy WG’** has worked out in detail the areas where the PSUs & other organizations can benefit by combining their operations. Recommendations are given in **Para - 4.2.10**. Most activities are within the ambit of the organizations and DoT may have to intervene only in exceptional cases.
- (vii) All organizations to periodically conduct seminars, conferences and workshops to address projects of national importance either independently or jointly.
- (viii) Corporate Guarantee in lieu of PBG/EMD may be accepted in tenders for products manufactured and services rendered by the PSUs.
- (ix) All organizations to share information about their IT infrastructure and the modules / software / applications which can be developed and hosted for other organizations on mutually agreed terms and conditions.

4.2.9 Smart Infrastructure business

- (i) All organizations to create Smart Infrastructure verticals with dedicated teams.
- (ii) TCIL, ITI & C-DOT to address the smart city projects of the central/state governments by **forming consortium / sign MOU** among themselves.
- (iii) Formation of a core group in DoT (led by TEC) to bring out a **“Roadmap for Smart Infrastructure”**.
- (iv) BSNL to leverage their widespread telecom network & field offices to support and coordinate smart infrastructure projects within the MOU / consortium framework.
- (v) ITI (in association with C-DOT) to build smart infrastructure solutions for commercial deployment.
- (vi) ITI to build **‘Smart Solutions Experience Centre’** in Bangalore (or any other suitable

place) to demonstrate different solutions to prospective customers and also meet other requirements like training, understanding the technologies, fine-tuning the solutions etc.

- (vii) TCIL to leverage its experience in foreign countries to execute overseas projects in smart infrastructure deployment within the MOU / Consortium framework.

4.2.10 The inter-organizational synergies proposed by the operational synergy WG is presented in brief in the form of a matrix below

Expectations by the Orgn below	BSNL	MTNL	BBNL
BSNL		Sharing of training resources on chargeable basis.	BSNL may undertake maintenance of BharatNet on charges basis as per MOU.
		BSNL to provide voice to MTNL FTTH using CDOT/Huawei NGN core on revenue sharing basis.	
		BSNL can manage MTNL social Media on monthly payment basis.	
		CDR system of BSNL can be used by MTNL on chargeable basis.	Sharing of training resources on chargeable basis.
		BSNL can deliver NGN to MTNL on capex basis.	
		BSNL can undertake Installation & Maintenance of Wi-Fi hotspots and manage them through NOC, portal etc. on revenue sharing basis.	

	TCIL	C-DOT	ITI	TEC
	Sharing of training resources on chargeable basis.	Sharing of training resources on chargeable basis.	Timely execution of projects and uninterrupted maintenance support from ITI	
	BSNL may provide technological consultancy to TCIL		ITI can take up AMC work of BSNL’s network equipment supplied directly or through 3rd party.	
	TCIL May hire space/quarter from BSNL on rental.	Support C-DOT for deployment of NGN switches	Sharing of training resources on chargeable basis.	

Expectations by the Orgn below	BSNL	MTNL	BBNL
MTNL	<ul style="list-style-type: none"> a. Leased circuits, mobile, landline and broadband billing to be unified by BSNL and MTNL by using BSNL's CDR billing system b. Operational synergy in mobile services c. jointly procure international bandwidth to leverage the benefits of volume based procurement d. BSNL may help MTNL in meeting the rollout obligation in respect of ILD license by way of allowing MTNL to utilize BSNL's ILD infrastructure, subject to regulatory compliance. e. Help MTNL in getting enterprise customers on PAN India basis utilizing MTNL/ BSNL infrastructure by offering attractive tariff plans 		
BBNL	<ul style="list-style-type: none"> i. O&M of BharatNet by BSNL ii. BSNL as Lead service provider and marketing agency on revenue sharing basis for BharatNet 		
C-DOT	<p>BSNL should support C-DOT in O&M of any pilot trials of its technologies in the field.</p> <p>Should give preference to C-DOT and ITI products and induct them in their networks.</p>	<p>MTNL should support C-DOT in O&M of any pilot trials of its technologies in the field.</p> <p>Should give preference to C-DOT and ITI products and induct them in their networks.</p>	<p>Long term relationship Should give preference to C-DOT and ITI products and induct them in their networks.</p>
ITI	<ul style="list-style-type: none"> a. BSNL/MTNL/BBNL should give preference to ITI/C-DOT products for deployment in their networks b. ITI to be an important turnkey solution provider for all future needs of BSNL, MTNL, BBNL c. ITI to be an active partner for Green Energy initiatives 	<ul style="list-style-type: none"> a. BSNL/MTNL/BBNL should give preference to ITI/C-DOT products for deployment in their networks b. ITI to be an important turnkey solution provider for all future needs of BSNL, MTNL, BBNL c. ITI to be an active partner for Green Energy initiatives 	<ul style="list-style-type: none"> a. BSNL/MTNL/BBNL should give preference to ITI/C-DOT products for deployment in their networks b. ITI to be an important turnkey solution provider for all future needs of BSNL, MTNL, BBNL c. ITI to be an active partner for Green Energy initiatives

TCIL	C-DOT	ITI	TEC
<p>TCIL may follow barter system with MTNL such that MTNL will offer its telecom services to TCIL in lieu of usage of its online procurement platform.</p>	<p>Maintenance of equipments deployed by C-DOT for free trial / POC to distinguished authorities etc. may also be taken care by C-DOT. For uninterrupted maintenance of these equipments, C-DOT may provide knowledge transfer to MTNL officers train them in repair / maintenance of supplied equipments.</p>	<p>Timely execution of projects and uninterrupted maintenance support from ITI</p>	<p>For standardization / specification preparation, the technical expertise of MTNL officers may also be utilized by TEC wherever required.</p>
<p>TCIL will provide the e-tendering portal</p>	<p>BharatNet will be supported by C-DOT & ITI technologies</p>	<p>BharatNet will be supported by C-DOT & ITI technologies</p>	
<p>TCIL should project C-DOT technologies in other countries and get it manufactured by ITI</p>		<p>ITI should be default ToT partner of C-DOT</p>	<p>Testing and GR formulation in new technology areas</p>
	<p>ITI to synergize CDOT’s development activities with its manufacturing capabilities like Low Power BTS, GPON etc.</p>		<p>ITI to partner TEC for developing new GRs</p>

05 Synergy Implementation Mechanism



Synergy Implementation Mechanism

5.1 INTRODUCTION

All the organizations have their independent management structure and decision making processes. Implementation of recommendations is largely dependent upon the cooperation among the organizations. Further, since DoT is the administrative ministry for all the organizations, unresolved inter-organization issues will be dealt by the DoT.

5.2 IMPLEMENTATION MECHANISM

Since DoT is the administrative ministry for all the PSUs, DoT will make the initial efforts to set up the required framework for synergy among the organizations. It will be implemented in the following manner.

(i) Synergy Unit in DoT will be headed by minimum SAG level officer.

One nodal unit in DoT will be created to deal with all synergy issues of the PSUs. It may be named as 'Synergy Unit'. To start with, the existing SU unit in DoT under DDG(SU), with additional JAG level officers & supporting staff, may be entrusted the functions of the 'Synergy Unit'.

(ii) Resolution of inter-organization issues within DoT

- a) The existing wings in DoT, designated for management of the organizations, to be used for resolution of issues among the organizations
- b) The 'Synergy Unit' of SU wing to coordinate the meetings of the concerned organizations and DoT units.
- c) The synergy issues may include, but not limited to, the following –
 1. User organizations (BSNL, MTNL, BBNL) –Sharing of Business plans / Annual procurement plans

2. Other organizations (C-DOT/ TEC/ ITI/ DoT/TCIL) – Annual Action Plans, future strategies, suggestions, technical trends/roadmaps etc. for the benefit and feedback of user organizations.
3. All organizations - inputs for preparation of Annual Action Plans, upcoming tenders for fine tuning of eligibility conditions to give opportunities to synergy partners.
4. Use of TEC’s specifications in tenders
5. To explore synergies in projects of national importance e.g. BharatNet, Digital India, Smart Cities etc.
6. Resolution of issues related to Preferential Market Access (PMA) policy.

06 Performance Indicators & Timelines



Performance Indicators & Timelines

6.1 INTRODUCTION

The implementation of the recommendations will be done by the different organizations in coordination with the DoT. To monitor the progress of implementation, it is necessary to specify the performance indicators and the timelines to achieve the same. The performance indicators and timelines given below are indicative of the desired goals to be achieved in a time bound manner for having synergy among the organizations. ***‘T’ represents the date on which the ‘Strategic Plan’, after approval, will be communicated to all organizations.***

6.2 PERFORMANCE INDICATORS & TIMELINES

- 1) Effective utilization of Human resources
 - a. Training of manpower

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	Preparation of training calendars by all organizations	Annual Training calendar - First Training Calendar to be prepared for 2018-19	T+3
2.	Common web-based platform for hosting training programmes	a) Creation of common web-based online training platform by BSNL	T+6
		b) Hosting of training programs on the common web-based online training platform – (i) 50% of all training programs (mandays) in FY-2018-19 (ii) 100% of all training programs (mandays) in FY-2019-20	i) March-2019 (ii) March-2020
3.	Optimum utilization of training infrastructure by conducting more external trainings.	a) Number of external training programs (public and private organizations, academic institutions etc.) as a % of total programs conducted – (i) 10% of all training programs (mandays) (ii) 25% of all training programs (mandays)	(i) March-2019 (ii) March-2020

b. Inter-organization deputation including project based deployment of manpower

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	Deployment of excess manpower on contract / project basis	a) Identification of excess manpower by lending PSUs	T+3
		b) Finalization of terms and conditions of contract/ project deployment among the organizations	T+6
		c) Completing the process of actual deployment to projects in borrowing organizations	T+6
2.	Deployment of excess manpower on deputation among the PSUs	a) Manpower projection for 1,2,3 years (Firming up the excess / shortage by lending / borrowing organizations and sharing of information)	T+3
		b) Relevant provision in Recruitment Rules by the organizations for deputation	T+9

2) Settlement of Legal Issues

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	The PSUs under DoT to be prohibited from going to court against each other. To settle the disputes they should first approach DoT.	a) For Old Cases – Applicant PSU to send the details of each case to DoT (through nodal wing) along with recommendations. If agreed then permit the PSU to withdraw case from court and refer to DoT for settlement	T+3
		b) For New Cases/old cases / disputes – Settlement in DoT i. Administrative resolution through empowered committee ii. Appointment of arbitrator iii. Settlement through arbitrator	(i) 1 month (ii) 1 month (iii) 3 months
2.	If dispute is not settled in DoT, then referring the case to PMA (Permanent Mechanism of Arbitration)	Referring the case to PMA (Permanent Machinery of Arbitration)	1 month

3) Optimum utilization of vacant spaces in land and buildings

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	BSNL to develop a Unified Information Portal for all the organizations to share information on vacant land and building spaces.	a) Development of Unified Information Portal by BSNL	T+6
		b) Putting all real estate information on portal by all organizations	T+9

2.	Since BSNL & MTNL hold large amount of real estate assets, they should create specialized property management divisions to efficiently manage the real estate assets. Similar activity by other organizations, if required.	Establishment of property management divisions in BSNL, MTNL.	T+6
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4) Standards and Certifications

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	TEC & C-DOT to prepare roadmaps on different technologies for policy formulation and technological guidance	a) Short Term Technology Roadmap (2018- 2019)	T+3
		b) Medium Term Technology Roadmap with special focus on broadband and wireless technologies (2019-2020 onwards)	T+9
		c) Long Term Technology Roadmap (2020-21 onwards)	March-2019
2.	Preparation of GR/IR/SR by TEC in advance as per the procurement plans of BSNL/ MTNL/BBNL	100% availability of specifications by TEC as per the procurement plans of the user organizations	6 months in advance

5) Promoting 'Make in India'

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	PSUs to make provision for 'Educational Orders' in procurement manuals	Provision in procurement manuals	T+6
2.	PSUs should take advantage of the Preferential Market Access (PMA) policy.	a) Making efforts to invoke PMA policy with states and get it implemented	T+6
		b) Provision of PMA policy in procurement manuals and tenders	T+6

6) Pooling of resources to address emerging opportunities in the country

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	All organizations to develop mechanism for sharing of revenues and expenses (BSNL to take lead in this case)	Framework for proper accounting of the revenues and expenses	T+6

7) General recommendations

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	In normal course, all organizations to prepare ‘short term’ (< 1 Yrs), Medium Term (between 1-2 years) and ‘long term’ (> 2 yrs) roadmaps for their major activities and share among themselves.	a) USOF/BBNL/BSNL/MTNL – ‘Short Term’ Procurement roadmap for 2018-19	T+2
		b) USOF/BBNL/BSNL/MTNL – ‘Medium Term’ Procurement roadmap for 2019-20	T+6
		c) USOF/BBNL/BSNL/MTNL – ‘Long Term’ Procurement roadmap for 2020-21	T+9
		d) C-DOT/ITI – Short Term Design/Manufacturing roadmap for 2018-19	T+3
		e) C-DOT/ITI – Medium Term Design/Manufacturing roadmap for 2019-20	T+8
		f) C-DOT/ITI – Long Term Design/Manufacturing roadmap for 2020-21	T+12
2.	All organizations to finalize and sign rate contracts for products, contract manufacturing and services	a) Identification of the items on rate contract	T+2
		b) Finalization of rate contracts (ITI to takelead)	T+6
3.	C-DOT to prepare documentation on the application scenarios for the top five technology solutions to help all organizations in their technology planning and procurement plans.	Documentation on application scenarios of top five technology solutions	T+3 and thereafter every quarter / on need basis
4.	Organizations to enter into MOUs / Agreements for collaboration among themselves	MOUs / Agreements for collaboration among themselves	At least 1 per quarter
5.	TCIL to give preference to products and services of PSUs in such tenders where it is feasible, especially in overseas projects.	At least 1 overseas project	T+12
6.	All organizations to conduct seminars, conferences and workshops periodically to address projects of national importance either independently or jointly	Number of Seminar / conference / workshop	On quarterly basis (4 per year)
7.	All the organizations to share the information about their IT infrastructure and the modules / software / applications which can be developed and hosted for other organizations on mutually agreed terms and conditions	a) Sharing of information	T+2
		b) Signing of first MOU on sharing and thereafter based on requirements	T+6

8) Smart Infrastructure business

Sr. No.	Objective in Brief	Performance Indicators	Timelines (in months)
1.	Formation of dedicated teams in all organizations for Smart Infrastructure business	Smart Infrastructure verticals in all organizations with dedicated teams	T+3
2.	PSUs to cooperate extensively to jointly address the smart city projects of the central/state governments. They may form a consortium / sign MOU among themselves for the same.	TCIL, ITI & C-DOT to form a consortium / sign MOU for Smart City projects of central / state governments	T+3
3.	One of the organizations to take lead to bring out a Reference Document for setting up of smart infrastructure and its applications.	Formation of Core Group in DoT (led by TEC) and creating a “Roadmap for Smart Infrastructure”	T+7
4.	BSNL to leverage their widespread telecom network & field offices to support and coordinate Smart Infrastructure projects	At least 1 smart infrastructure project within the MOU / consortium framework	T+9
5.	ITI to build smart infrastructure solutions for commercial deployment.	At least 1 smart infrastructure solution for commercial deployment	December-2018
6.	ITI to build ‘Smart Solutions Experience Centre’ in Bangalore (or any other suitable place) to demonstrate different solutions to prospective customers.	ITI to build Smart Solutions Experience Centre	September-2018
7.	TCIL to leverage its experience in foreign countries for overseas projects in Smart Infrastructure.	At least 1 smart infrastructure project overseas within the MOU / consortium framework	March-2019

Annexures

Annexure A-1

Report of the Working Group on Human Resource Development

A1.1 INTRODUCTION

The working group on Human Resources Development is led by BSNL and co-lead organizations are BBNL & MTNL. The Work Group on “Human Resource Development” was framed by DOT, New Delhi during meeting held on 18th March 2016 and the following Terms of Reference (TOR) were finalized for the group:

- (i) Effective use of Training facilities availed with different organizations for skill development
- (ii) Inter organizational deputation of manpower for effective utilization & skill enhancement
- (iii) Effective use of Vigilance infrastructure of BSNL & MTNL by other organizations like BBNL
- (iv) Exchange of knowledge and expertise by all PSUs through workshops & seminars for different stakeholders.

Inputs were requested by GM (Rectt & Trg), BSNL from other member PSUs and organizations on the Terms of References (TORs). The report based on the ToR are given below.

1. TOR-I: Effective use of training facilities available with different organizations for skill development:

- (i) At present BSNL is utilizing training resources in optimum level to impart training to fresh recruits, in-house training to own employees as well generating additional revenues to BSNL by offering various training courses in telecom/ICT domain to non-BSNL trainees and external organizations (domestic/global).
- (ii) In addition to above, BSNL has already entered in to MoU with TSSC (Telecom Sector Skill Council) and GISD (Global Institute for skill Development) for skill development training under PMKVY. About 8 courses have already been developed by BRBRAITT Jabalpur and

some other courses are under development stage. The training to prospective target populations will commence immediately after its announcement/fixing of target by GOI.

- (iii) In recent past State Governments are also approached for courses/training for Skill Development of students of Engineering/diploma & MoU has already signed with respective State Government Departments/authorities (ex: Tamilnadu, Kerala, Jharkhand).
- (iv) For effective utilization of these training resources among various DOT organizations/PSUs, the following is proposed:
 - a. Various training courses in Telecom/ICT domain is scheduled & managed through BSNL training portal <http://www.training.bsnl.co.in>. BSNL will provide User ID to each organization/PSU of DOT.
 - b. This will enable them to nominate participants directly.
 - c. After getting acceptance from Training Centres, nominated participants can register after depositing requirement payment to the training centre.
 - d. If agreed, BSNL will keep links to training centres of ITI, MTNL, etc. in the above portal, wherein respective organizations have to provide user IDs in similar lines.

2. TOR-II: Inter organizational deputation of manpower for effective utilization & skill enhancement

- (i) Deputation in CPSU posts is not an independent issue to be handled by the management of the concerned CPSU. The governing ministry of CPSEs, i.e. the DPE, prescribes the general rules in this regard. The present dispensation vide DPE's letter 28th Dec 2005 provides that deputation to posts in CPSEs (whether Board level or below Board level) is not permitted. The same applies to inter-CPSE transfers as well. It provides that posts in CPSEs can be filled only on immediate absorption basis. Exemptions, if any, in this matter can only be given by DPE itself.
- (ii) BSNL has recently considered a deputation policy of its employees which largely governs the outside transfer of BSNL employees to other regulatory or autonomous bodies. It provides no scope for inward transfer of employees of other CPSEs or GoI.
- (iii) The scarcity at higher management services posts, a fallout of non-absorption of ITS offices in BSNL, is presently being managed by the deployment of ITS officers of DoT under a scheme approved by GoI w.e.f 11th March 2013 for a period of 10 years on diminishing basis. There the scope of inter-CPSE mobility at these levels is clearly negated. Other than this, the overall staff availability in BSNL has been found on the higher side in the study conducted by Deloitte for devising a HR plan. The proposals provide for reduction of overall positions. Therefore, the scope of taking employees from outside is clearly not available.

In view of the above, the deputation of manpower among the CPSEs under DOT is negated in the context of BSNL.

3. TOR-III: Effective use of Vigilance infrastructure of BSNL & MTNL by other organizations like BBNL

BSNL will examine the issue for the respective organization in consultation with the CVO.

4. TOR-IV: Exchange of knowledge and expertise by all PSUs through workshops & seminars for different stakeholders.

- (i) Experts from other Organizations/PSUs under DOT can add value to the programs as guest speakers. Conversely, experts from ALTTC Ghaziabad can also be deputed to deliver training at other venues for larger audience.
- (ii) It is also recommended that any PSU launching a new technology may conduct 1 or 2 days seminar wherein PSUs/Other organizations of DOT can also participate. Thus to have the Synergy & exchange of knowledge, all the PSUs should share the information through conduct of workshops/seminars. Such events can be scheduled through BSNL training portal at ALTTC. Events can be convened on rotational basis among PSUs.

Annexure A-2

Report of the Working Group on Technology & Manufacturing Roadmap

A2.1 INTRODUCTION

This working group is lead by C-DOT with TEC & ITI as co-lead members. The aim of the working group is to suggest strategies for aligning the various activities of those member organizations which are related to technology development, standards development and manufacturing with the needs and requirements of user organizations viz. BSNL, BBNL, MTNL & TCIL. The first meeting of the WG was convened by C-DOT on 30/3/2016 and in that meeting some modifications in ToR were done. The following ToR was finalized –

- (i) Involvement of TEC/C-DOT/ITI in the planning activities of user organizations like BSNL, MTNL, BBNL for effective technology and manufacturing roadmap.
 - (ii) Manufacturing activities should be based on the needs of other PSUs. Extra production capacity can be utilized for production for other non-member PSUs.
 - (iii) Explore contribution of synergy partners in flagship projects of the Govt. of India, e.g. Digital India, smart cities. In case of smart cities synergy partners can propose a pilot project which targets one aspect (viz. connectivity) for smart city implementation.
 - (iv) Technology and standards development by C-DOT/TEC should be based upon the needs of the user organizations
 - (v) Promotion of indigenous technology in the standardization and knowhow of domestic manufacturing
 - (vi) Fine tuning tender conditions by user organizations to encourage home grown technologies by C-DOT/ITI etc.
 - (vii) Involvement of C-DOT and TEC in the field trials of products by user organizations including feasibility of financial support.
 - (viii) Representation in international standardization bodies.
- The 2nd meeting of the WG was conducted on 2/5/2016. In the meeting ITI & C-DOT shared their present involvement,

requirements and capabilities with focus on government flagship projects, rural areas and still uncovered areas. It was felt that an apex level meeting of the synergy group members to discuss such flagship projects is required to make concerted efforts in this direction. Based on the meetings and deliberations the working group has made its recommendations.

1. Recommendations of the Working Group

- (i) Identification of immediate scope of synergy among member organizations : An apex level meeting of Synergy group members to be held within fifteen days from acceptance of these recommendations to discuss current involvement, requirements & capabilities of member organizations in various government flagship projects e.g. Digital India, Smart Cities etc., projects for rural areas and still uncovered areas .The output of such meeting would be list of opportunities and apex level commitment to action plan for implementation in next three months.
- (ii) To tap the business potential of smart cities: Synergy members should form a Core Group for creating “Roadmap for Smart Infrastructure” with active participation from all members. This core group should create dedicated teams within their respective organizations and develop some solutions for smart cities. A “Centre of Experience” can be created by ITI for showcasing such solutions to state governments.
- (iii) Synergy partners should ensure that indigenous products designed, developed by C-DOT & manufactured by ITI (henceforth called as “Synergy products”) conform to global standards for deployment by user organizations viz. BSNL, MTNL & BBNL.
- (iv) C-DOT & ITI should focus on development of products where security of telecom products is of prime concern. All user organizations viz. BSNL.MTNL and BBNL should give preference to procurement of such Synergy products.
- (v) Formation of formal committee to promote activities within synergy group: A formal committee consisting of synergy partners may be created which will meet every quarter to discuss the following minimum agenda:

A. User organizations viz. BSNL, MTNL, BBNL

- Planning heads (Directors and above) of these organizations would share their Rolling business plan/procurement plans for next 12 months.
- They would also apprise the committee on tenders planned to be released in same quarter of next year.

B. Non-user organizations (C-DOT/ TEC/ ITI/ DoT/TCIL)

- They would share their strengths, plans, suggestions, technical trends etc. for the benefits and feedback of user organizations.
- They would also share their strategy for next quarter to meet requirements of User organizations.

C. All synergy members

- Would give their inputs in preparation of Annual Action Plan of TEC
- Would discuss upcoming tenders for fine tuning of eligibility conditions to give

preference to synergy partners and ensuring compliance to TEC standards (wherever they are available).

- Would review the action plan of last meeting
 - *For first 6 months after approval of these recommendations , such meetings may be conducted on monthly basis to gain momentum and then periodicity may be reviewed*
 - *One out of such four quarterly meetings should be scheduled before starting of a financial year so that the output of such a meeting may be utilized in annual planning of member organization*
- (vi) TEC may review GRs/IRs (as per requirements of user organizations in near future) with active assistance coming from other members. Tenders floated by user organizations should mandatorily ask for product compliance against TEC standards (if they are available for that particular product)
- (vii) A Corpus fund should be created in DoT from which withdrawal and replenishment can be done by Synergy members for different projects (e.g. against capex or working capital requirements). Additionally TFC may be explored for funding large scale projects which are developed and deployed under Synergy initiative. This Corpus/TFC may also be utilized for deployment of Synergy products on revenue sharing model by Synergy partners.
- (viii) Field trials of indigenously designed C-DOT products would be conducted in networks of user organizations for evaluation of compliance to technical standards. On meeting the mandatory set of requirements, same should be absorbed by User organizations through adjustment using Corpus fund as recommended above.
- (ix) Allocation of projects on nomination basis should be encouraged among the Synergy partners through policy intervention.
- (x) All synergy members should enhance the competitiveness of their organizations through implementation of international quality practices in their organizations and keep other synergy partners informed about the same e.g. Standardization and Improvisation of manufacturing process in ITI, CMMI compliance in C-DOT etc.
- (xi) Synergy group members should proactively participate and contribute in the National Working Groups' meetings at TEC to assist it in reflecting Indian needs in International Standardization bodies like ITU, 3GPP etc.
- (xii) TEC can be involved in product testing and its certification so as to maintain key network objectives like interoperability, security etc...
- (xiii) Successful field trials of Synergy products should automatically qualify them for bidding in open tenders floated by user organizations. Such products should also be made available on rate contract basis for immediate procurement.
- (xiv) All tenders by Synergy partners for the products/technologies available within the synergy group shall continue to have an RQ for ITI.
- (xv) Immediate technologies available with synergy partners to accomplish Digital India/Smart Cities project as available for promoting local production under Make in India programme include:

- Gigabit Passive Optical Network
- 100G OTN platform
- Long Range Wi-Fi, Solar Wi-Fi, Wi-Fi Hotspot
- C-DOT GSM Radio Access Network (CGRAN)
- LTE-A femto solution
- Layer 2 Switch
- Stackable Terabit Router System
- VOIP Phone
- Green Power Supply System
- Gyan Setu (e-services Access Platform)
- IMS/NGN Solution

On similar lines, all other organizations should also identify their products and solutions available with them.

Annexure A-3

Report of the Working Group on Policy & Regulation

A3.1 INTRODUCTION

This group is led by DoT with BSNL/MTNL as co-lead organizations. The purpose of the group is to suggest policy measures likely to benefit the synergy among the PSUs.

A3.2 ISSUES FACING THE ORGANIZATIONS

The telecom market consists of three types of equipments – active, passive and end-user equipments. The active telecom network equipment category consists of carrier equipment like fixed and mobile switches, base stations, IN platforms, routers, softswitches, LAN switches and transmission equipment. The passive network components are cables, towers, shelters and ducts. The end-user equipment consists of subscriber equipment and devices like modems, routers, mobile handsets, smartphones, data cards and dongles. The passive infrastructure is by and large sourced locally and is therefore availability is not an issue. However, the active and end-user equipments involve more sophisticated technology where our organizations are lacking technology and manufacturing capabilities. Therefore, there is very high dependence on imports.

The DoT PSUs and other organizations are facing certain issues as below –

- (i) BSNL/MTNL have to follow an open tendering process for procurement, whereas such a requirement is not there on private operators. Therefore, it becomes immaterial whether a product is manufactured locally or it is imported as ultimately the L-1 bidder is awarded the contract. This puts organizations like ITI & C-DOT in a disadvantaged position, who are not always cost competitive.
- (ii) Global manufacturers have low cost structure due to economies of scale but ITI/C-DOT and others cannot achieve economies of scale and become cost competitive due to limited markets. Purchasers have no incentive to

- purchase locally. This can be mitigated to some extent by having a nomination policy / reservation policy for local manufacturers.
- (iii) In general, govt. procurement has to be based only on tenders, which ensures that contracts are awarded only to L-1 bidders. However, there will be instances / exceptional circumstances, when the L-1 concept does not work or it needs to be relaxed to achieve a larger policy goal. Such exceptions have to be identified to develop a workable nomination / reservation policy.
 - (iv) There is a trust deficit among the organizations regarding the quality of products, service & support. Due to this, purchaser tender conditions are often in favour of overseas suppliers.
 - (v) The average value addition by Indian manufacturers is a very low 11%. In many projects ITI has even lower value addition, which needs to be drastically improved.
 - (vi) There is low spending on telecom research and development and whatever is there, it is mostly govt. funded e.g. C-DOT. There is no incentive for the organizations to invest in R&D, which hampers indigenous development of products and more reliance on imported products.

A3.3 RECOMMENDATIONS OF THE WORKING GROUP

- (i) A suitable nomination policy is required, including identification of exceptional criteria, which may ensure that TSPs can award contracts on nomination basis only to those organizations which meet those exceptional criteria (e.g. indigenous solution, sole solution provider, quantum of value addition, strong R&D base, long term product support, holding IPR, 100% government owned organization etc.)
- (ii) An alternative to the nomination policy is sharing of revenues and expenses on a proportionate basis. For this to happen, all organizations will have to develop a framework for proper accounting of the revenues and expenses against each project. The organizations can sign an MOU among themselves to share these revenues and expenses. This arrangement can also be extended for the field trial of new technologies.
- (iii) The Preferential Market Access policy needs to be revisited to ensure that it is equally applicable to procurements in both public and private sector and not just to government procurements.
- (iv) The Telecom Finance Corporation (TFC) being set up by the DoT may also consider funding research & development of products exclusively for telecom use, through a separate fund, if needed. All PSUs (as well as private TSPs) may be mandated to contribute compulsorily towards this objective. The selection of products/projects to be funded through this fund may be made by an empowered committee of all stakeholders through an open and transparent process. This will encourage all the organizations to invest in R&D, which will facilitate creation of local products.
- (v) The financial terms of engagement among the PSUs can be liberalized, eg. Waiver of PBG, EMD, provision for mobilization advances etc., especially in those projects where the contract is executed exclusively by a PSU.
- (vi) The HRD group has proposed for inter-organizational transfer of manpower for

meeting the shortage. However, since the terms and conditions of employment are different in different organizations, there is a lack of harmony. This can be sorted out by evolving a suitable policy which facilitates this process.

- (vii) Regarding standards and specifications of products BSNL & TEC should evolve a common certification procedure, which can be followed by all the other organizations.

Annexure A-4

Report of the Working Group on Operational Synergy

A4.1 INTRODUCTION

This working group is lead by BSNL with BBNL as co-lead member. The aim of the working group is to suggest strategies for aligning the operational activities of the organizations to gain maximum benefit. During its various meetings, the working group has deliberated on sharing of resources to provide the same service to customers, sharing of surplus resources among the organizations, optimum use of land and building infrastructure etc.

A4.2 RECOMMENDATIONS OF THE WORKING GROUP

After deliberations, the WG has given the following recommendations -

Existing and future Synergies among PSU and various organisations of DOT		
Inputs from BBNL		
Organization Name	Existing Synergy	Future Synergy
BSNL	a. 70% work of OFC laying is being done by BSNL	Already the requirement for synergy is being taken care of by the organizations as detailed in existing synergies.
	b. An understanding has been reached with BSNL for doing O&M of entire BharatNet. The proposal is under approval in USOF/ DOT.	
	c. In the understanding with BSNL, BSNL shall also be lead service provider through BharatNet and marketing agency for BharatNet fiber on revenue sharing basis.	

CDOT	a. The main technology deployed in BharatNet is CDOT GPON.	
	b. CDOT is also developing NMS and Data Centre for BharatNet.	
	c. CDOT is also developing FFLS (Fiber Fault Localization System) for BharatNet.	
ITI	ITI has turned out to be L1 bidder in the new GPON tender. If approved, ITI will be taking a lead role in BharatNet GPON roll out and its maintenance	
TCIL	BBNL is using TCIL Portal for e- Tendering	
Inputs from C-DOT		
BSNL	C-DOT carries out many pilot trials in the BSNL networks, before inducting the equipment in the network. However, in most of the cases the operations and maintenance is carried out by C-DOT itself, thereby making it difficult for C-DOT to maintain the equipment.	BSNL should support C-DOT in operations and maintenance of any pilot trials of its technologies in the field.
MTNL	C-DOT carries out many pilot trials in the MTNL networks, before inducting the equipment in the network. However, in most of the cases the operations and maintenance is carried out by C-DOT itself, thereby making it difficult for C-DOT to maintain the equipment.	MTNL should support C-DOT in operations and maintenance of any pilot trials of its technologies in the field.
BBNL	C-DOT GPON equipment is being used in BBNL network and the operations of this network is being carried out by NMS being developed by C-DOT.	C-DOT and BBNL should have long term relationship as C-DOTs technologies are being used in the entire BBNL network.
TEC	C-DOT is part of most of the TEC committees which are formed to formulate various general requirements of the equipments. Besides, C-DOT provides inputs to TEC for any national working group meetings held in TEC.	C-DOT and TEC should continue their relationships in the testing and GR formulation areas of new technologies.
	TEC is the testing and certifying authority of all C-DOT products.	
TCIL	C-DOT has not been associated much with any substantial activity with TCIL	TCIL should project C-DOTs technologies in their areas of presence particularly in Africa or developing countries as well as countries in the Gulf and Middle East and get it manufactured by ITI.
ITI	ITI has a TOT partnership with C-DOT on various products. It is participating with C-DOT in the ongoing BBNL tender for GPON.	ITI should be by default TOT partner of all C-DOT designed technologies. BSNL, MTNL and BBNL should give preference to C-DOT and ITI products and induct them in their networks.
Inputs from MTNL		
BSNL	1. IUC Charges	1. Lease circuit billing: both the organizations are working so that the bills for leased circuit customers of MTNL may be migrated to BSNL CDR system. MTNL expects that its mobile & landline/Broadband billing may also be taken care by BSNL in similar line.
	2. Roaming charges	

	3. Duct charges	2. Operational synergy for mobile services. A process was initiated to explore various options of partnering with BSNL for offering quality mobile services in Delhi & Mumbai. A series of discussions were also held among the senior officers of BSNL, MTNL & DoT on the matter and based on the discussions a mutually agreed framework is likely to be emerged. In line with this, MTNL Board has passed a resolution to sign a tripartite MOU among BSNL, MTNL & DoT. Draft MOU document already sent to BSNL.
	4. Building rentals	
	5. Lease Circuit charges	3. International Bandwidth: MTNL expects that BSNL may procure international bandwidth for MTNL also, so as to leverage the benefits of volume based procurement.
	6. Service connection charges	
	7. NLD carrier charges	4. ILD Operations: MTNL expects that BSNL may help MTNL in meeting the rollout obligation in respect of ILD license by way of allowing MTNL to utilize BSNL’s ILD infrastructure, subject to regulatory compliance.
	MTNL intends to continue existing synergies in respect of above in more open, fair & transparent manner with settlement of dues in time bound manner.	5. Enterprise customers MTNL expects that BSNL may help MTNL in acquisition of enterprise customers on PAN India basis utilizing MTNL, BSNL infrastructure by offering attractive tariff plans. These activities will be carried out on negotiated commercials and other terms & conditions.
ITI	1. ITI had implemented 3G network of MTNL Mumbai under reservation quota.	If the reservation quota is continued in forthcoming tenders of MTNL, then MTNL will expect timely project implementation & un-interrupted maintenance support (AMC including warranty) from M/s ITI during the complete tenure of the project.
	2. AMC of NT switches :	
C-DOT		MTNL expects that the maintenance of equipments deployed by C-DOT for free trial / POC to distinguished authorities etc. may also be taken care by C-DOT.
		For uninterrupted maintenance of these equipments, CDOT may provide knowledge transfer to MTNL officers train them in repair /maintenance of supplied equipments.
TCIL	MTNL is using on line procurement platform of TCIL for floating online tender & bid submissions.	MTNL expects that barter system may be followed and MTNL may offer its telecom services to TCIL in lieu of usage of its online procurement platform.
TEC		MTNL expects that for standardization / specification preparation, the technical expertise of MTNL officers may also be utilized by TEC wherever required.

Inputs from ITI		
BBNL	Hiring of Data Centre Space	<ul style="list-style-type: none"> a. Supply of GPON equipments b. Manufacturing of BBWT or other products developed by CDOT and to be deployed in NOFN
BSNL	<ul style="list-style-type: none"> a. ARC of SMPS b. ARC of E10B Card c. ARC of OCB Cards d. AMC for GSM WZ equipments e. AMC for GSM SZ equipments f. NGN equipments g. Executing large turnkey projects for defense through BSNL. h. Through our Regional offices (with Pan India presence) addressing local requirements of BSNL at Circle or SSA level, etc. 	a. Addressing BSNL's requirements through our manufacturing capabilities like Low Power BTS.
		b. To be an important turnkey solution provider for all future needs of BSNL.
		c. To be an active partner of BSNL for all its Green Energy initiatives
CDOT	MoU for GPON and BBWT equipments including contract manufacturing	To synergies CDOT's development activities with our Manufacturing capabilities like Low Power BTS
MTNL	<ul style="list-style-type: none"> a. AMC of NT switches b. Implemented GSM network for MTNL Mumbai 	a. Addressing MTNL's requirements through our manufacturing capabilities.
		b. To be an important turnkey solution provider for all future needs of MTNL.
		c. To be an active partner of MTNL for all its Green Energy initiatives
TEC	Participate in activities associated with draft formation of TEC GRs	To partner TEC for developing new GRs
Inputs from BSNL		
BBNL	OFC laying under NOFN project is being done by BSNL	a. BSNL may undertake mtce of NOFN on charges basis as per MOU.
		b. BSNL can share training resources across India with all PSUs on chargeable basis.
		c. Proposal to carry out O&M of Bharat net of BBNL is under consideration
CDOT	C-DOT carries out many pilot trials in the BSNL networks, before inducting the equipment in the network.	To support for NGN deployment for C-DOT switches
MTNL	There exists an interdependence with MTNL with regard to IUC, Roaming, lease Circuit, service connection, NLD etc. on charge basis	<ul style="list-style-type: none"> a. CDR system of BSNL can be used by MTNL on chargeable basis. b. BSNL can deliver NGN to MTNL on capex basis. c. Provide voice to MTNL FTTH using CDOT/Huawei NGN core on revenue sharing basis. d. BSNL can manage MTNL social Media on monthly payment basis.

		<p>e. BSNL can undertake Instt & Maintenance of Wi-Fi hotspot and manage them through NOC, portal etc on revenue sharing basis.</p> <p>f. MTNL GSM network coverage can be improved in NCR areas i.e. Ghaziabad, Faridabad, Gurgaon where BSNL subscribers are served by MTNL GSM/3G network. Prepaid dolphin recharge facility is very limited compared to other operator, the same may be enhanced in the NCR areas.</p>
ITI	<p>a. AMC for GSM WZ equipments</p> <p>b. AMC for GSM SZ equipments.</p> <p>c. Repair of E10B card.</p>	<p>AMC work of BSNL’s network equipment supplied directly or through 3rd party should be carried out as per AMC tender conditions.</p>
TCIL		<p>a. BSNL may provide technological consultancy to TCIL</p> <p>b. TCIL May hire space/quarter from BSNL on rental.</p> <p>c. TCIL may outsource 100% work of any country to BSNL.</p>

Annexure A-5

Report of the Working Group on Business Promotion

A5.1 INTRODUCTION

The Business Promotion Working Group is lead by TCIL with MTNL as the co-lead member. The meeting of the WG was held on 12.04.2016 and various other discussions were also held separately among the members of the WG.

A5.2 RECOMMENDATIONS OF THE WORKING GROUP

TOR-1: Promotion of C-DOT technology and ITI manufactured products in foreign markets

1. An MOU is in place between C-DOT and TCIL for mutual co-operation for various products and technology areas. There are 15 items listed in the MOU.
2. It has been proposed that products/technologies listed in the MOU should be segmented into 3 categories as below –
 - a. Ready for deployment
 - b. About to get ready
 - c. Still under development
3. The immediate areas that can be promoted were GPON, Gigabit router and Broadband wireless terminal
4. C-DOT may prepare a concept paper and the application scenario for the top five technology areas indentified on the lines of the GPON concept paper.

TOR-2: Participation in international projects with the help of TCIL by all PSUs for expanding their business

1. TCIL shall include the products and services of C-DOT, in such tenders where the specification matches.
2. TCIL shall utilize the manpower of C-DOT and other PSUs on deputation for the specific projects

TOR-3: Inter-governmental projects like between DoT & Africa can be done through TCIL in association with other PSUs.

1. DoT shall assign inter-governmental projects to TCIL wherein TCIL shall co-ordinate through DoT with other PSUs for synergizing development and implementation.
2. TCIL shall take the manpower on deputation for execution of the projects.

TOR-6: Joint strategy of PSUs to enter into new business areas like the Smart City projects, IoT solutions etc.

1. Extensive discussions shall be done to develop joint synergy for Smart City and IoT projects, who are not always cost competitive.

Abbreviations

BBNL	Bharat Broadband networks Limited
BSNL	Bharat Sanchar Nigam Limited
C-DAC	Centre for Development of Advanced Computing
C-DOT	Centre for Development of Telematics
CVC	Central Vigilance Commission
CVO	Chief Vigilance Officer
DDG	Deputy Director General
DoT	Department of Telecommunications
FTTH	Fibre to the Home
GPON	Gigabit Passive Optical Network
GR/IR/SR	Generic Requirements / Interface Requirements / Standards Requirements
ITI	ITI
IUC	Interconnection Usage Charge
MTNL	Mahanagar Telephone Nigam Limited
NCR	National Capital Region
NOC	Network Operations Centre
NOFN	National Optical Fibre Network
NTP	National Telecom Policy
PON	Passive Optical Network
PSU	Public Sector Undertaking
SAG	Senior Administrative Grade
SPV	Solar Photo Voltaic
SPV	Special Purpose Vehicle
TCIL	Telecommunications Consultants India Limited
TEC	Telecommunication Engineering Center
USOF	Universal Service Obligation Fund
Wi-Fi	Wireless Fidelity



भारत सरकार, संचार मंत्रालय, दूरसंचार विभाग,
संचार भवन, अशोक रोड, नई दिल्ली – ११०००१

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