Developing India 2020 : Strategies for Building National Broad Band Infrastructure

BackgroundIndia has already missed two very important buses. One is for building a nationwide network of roads and the other involves metro rail for easing local transportation. Both the buses have already adversely affected its GDP growth. India is now trying to catch up by attempting to build 20 kms of road per day as also some states are trying to go for metro rail infrastructure.

Fortunately, India has successfully demonstrated when it latched on to software wagon and shook the whole world by its amazing innovations centric approach to IT and forced the top global companies invest and set up shops here. The results are here for all of us to see.

GDP Rating. Indiastands as follows in the GDP at Purchasing Power Parity (PPP) per capita through three different means of evaluation of the world countries :-

(a) By IMF - 130
(b) By World Bank- 113
(c) By CIA World Bank FactBook - 134

GDP Growth. The quality of governance and efficient use of basic economic resources must improve drastically if our GDP growth has to hit the double digit. This is directly dependent upon the type of country leadership and available tools to exploit the resources. True broad band access to citizens can greatly assist in optimal utilization of available economic resources even today.

Basic Infrastructure. While the development of basic infrastructure of roads, ports, aviation, railways, education institutes, hospitals, power etc is inescapable to the inclusive growth of the economy of the country, parallel creation of an infrastructure for optimal utilization and full exploitation of basic infrasructure is equally essential

Broad Band Infrastructure. The mother of all basic infrastructure is ubiquitous high speed true broad band which enables efficient fulfillment of business and social needs of the society through the exploitation and utilization of the basic infrastructure. High speed true broad band removes the barrier of distance and shortage of time by making the basic infrastructure available for use any time any where on 24/7 basis thereby multiplying the availability of working hours in a day.

True Broad Band to Turn Around the Economy Fastest. In India, only 12 % of students go to college as against 40 % in US. The health care is available to only minuscule % of people. Imagine, true broad band bringing multi lingual school, college and university education class rooms to homes. True broad band also would bring multi specialty hospitals to homes and so on. All this becomes available on TVs at homes through intelligent STBs and versatile RF remote which works as phone and keyboard. In one stroke, the country starts exploiting costly and limited avaiability of basic infrastructures of educational institutions and hospitals while Billions of $ are being spent on their creation. We start increasing the % of people who go to college as also who

get health care services of diagnosis, consultation and prescription as the infrastructures are being built. There is no sleep period. The facilities are practically usable on 24/7 basis.

India No 1 in 2020. If India is to be a numero uno country by 2020, it can not afford to miss now the most important bus of the century for giving its citizens access to high speed true broad band services of the likes of at least 100 mbps. Thus, Govt must commit true broad band access to 70 % of the citizens by 2020 and 100 % by 2025 at least. This article suggests a pragmatic methodology of delivering this most essential and challenging service to its citizens by quickly establishing ubiquitous and most cost effective fat and efficient pipes.

General

While for wireless telecom, there is a near unanimous consensus to leap frog to 4G rather than transitioning from 2G to 3G to 4G, there is an urgent need to build and operate high speed true broad bandinfrastructure and services. For India, wireless alone is not the solution. This must be backed up in parallel by a sound plan and implementation program for end-to-end true broad band infrastructure consisting of fat and efficient pipes covering core, edge and access networks throughout the geography of the country.

Developed Countries Scenario Broad band access to its people at their work place and at homes can accelerate the GDP growth of a nation to an astronomical figure of 6.25 times. Therefore, nearly 40 developed countries have already put in place the necessary organization structure and funds to plan and execute a time bound program to get their citizens more than 100 mbps broad band access. In most of these countries, the heads of states themselves have declared that in some finite time, their 70 % to 80 % citizens would get access to at least 100 mbps true broad band. This is an indication of the importance and commitment the developed world is giving to true broad band access by ensuring its delivery through dedicated long term based Govt supported corporations.

Examples of a time bound work being done at break neck speed in US are as follows :-

Does the US get the bold broad band vision Congress has asked for?

The **US** Congress has asked the FCC for a bold plan to achieve the bold vision expressed by the Congress. See the*BuddeBlog*.

US Broad Band Stimulus Program Round Two is going strong to create infrastructure including mid mile and last mile and connect millions of users in rural areas for additional economic development, education and health care as also create many jobs. The link is below :-

http://www.wimax.com/commentary/blog/... -for-wimax-operators-0223

FCC Chairman is upset that US is ranked 40th out of 40 developed countries surveyed for creation and deployment of innovations. He wants to make US as Ist out of 40 by being the first country in giving 100 mbps broad band access to 100 million US citizens :-

http://www.cellular-news.com/story/42403.php

The FCC plan, mandated by last year's stimulus bill and being delivered to Congress on Tuesday, lays out an ambitious vision for wiring the entire country with broadband. It reflects the Obama administration's position that high-speed Internet access is no longer just a luxury but is critical for economic development, education and health care.

"To me, broadband is an infrastructure challenge that's very akin to what we've faced in the past with telephones and electricity," FCC Chairman Julius Genachowski said in an interview with The Associated Press. Genachowski has made the national broadband plan his top priority, and his legacy at the commission will be linked closely to the plan's success or failure.

The proposal sets a goal of connecting 100 million U.S. households to broadband connections of 100 megabits per second — at least 20 times faster than most home connections now — by 2020 :-

http://www.cellular-news.com/story/42395.php?s=h

Now **Google** has announced plans to offer ultra fast Internet access of the likes of Gigabits per sec :- https://councils.glgroup.com/news/ExternalLink.mvc/Article/305910

Australiahas earmarked $ 43 Billion and appointed a separate minister for broad band communications and digital economy to provide true broad band access to its citizens in 93 % of its geography in five years.

UK launches new body called Broad Band Delivery UK (BDUK) for universal broad band push :-
http://www.telecompaper.com/news/article.aspx?cid=722297

Indian Scenario

True Broad Band a GDP Growth Driver. 6.25 times rise in GDP growth on account of true broad band access to the businesses and people of the country is a serious national level exercise in which all sectors of the economy participate. Therefore, the country should neither vest with nor expect DoT and private players alone to deliver this service to all the sectors.

ROW. Experience of past 15 years in telecom liberalization has shown that unclear ROW and clearance poilcy has only brought such rampant corruption within the ranks of the civic bodies like MCD, NDMC, NHAI, PWDs, DDA, state Govt municipal corporations, Police etc which if persisted with would reinforce a dismal failure for the nation.

Private Telcos. About entrusting the private telcos to set up such huge infrastructure is also impossible as their investors while lending them funds today want ROI as of yesterday. Thus, per force the sector looks into those opportunties which yield quick ROI like wireless 2G, 3G, 4G, BWA etc.

Govt Telcos. Public sector telcos like BSNL and MTNL have their own problems of political interference and beuraucratic delays. Their working structure impedes the progress due to many procedural problems. No where in the world, Govt incumbent operators have been decimated as badly as in India in telecom liberalization. By short sighted policies, BSNL and MTNL have been made as statues of bronze with feet of clay. All this has led to the erosion of the annual revenue of BSNL from INR 100,000 Cr to around INR 30,000 Cr. More over, BSNL has been given BWA spectrum one year back but has not rolled out a single base station as yet. Thus, BSNL and MTNL can not be burdened with this national level time bound serious responsibility.

Public Pvt Partnership. This is a long term national commitment which is poised to be a constitutional one also meant for the benefits of all sections of society for their business and social needs requiring an inclusive participation. Being a long gestation based business, it requires a time bound plan, funds, efforts and relentless hard work. This is ideally suited to be a public private partnershipventure wholly managed by the empowered board having central Govt mandate where states and other private players just act on the policies and plan.

Right To Broad Band. Keeping the world scenario in view as articulated above and demonstrating seriousness towards making India as No 1 country by 2020, it would not be out of place to mention that the Govt must come out with a bill for Right To Broad Band (RTBB) for every citizen just like RTE and RTI. RTBB alone would commit the Govt to its time bound delivery.

A National Broad Band Corproation of India (NBBCI)

A classic example is that of Delhi Metro Rail Corporation (DMRC), an independent corporation which has shown how to build and operate a world class metro rail infrastructure and services. The Delhi government has provided all clearances and minimum essential funds without any political and bureaucratic delays.

Broad band infrastructure and service is exactly like building and operating nation wide metro rail infrastructure and service. DMRC digs tunnels under ground and builds metro lines on ground parallel to major roads and arteries. Broad band also digs trenches under ground for ducting and

cabling as also neatly builds over head cables and base station towers for wireless and mobility.

DMRC establishes large, medium and small size stations where people embus and debus and then take recourse to feeder routes to reach destinations. Broad band also establishes large, medium and small size node stations which interconnect to access infrastructure and thus enable multi terabits of traffic reach destinations.

For Operations and Maintenance (O&M) too both take recourse to similar procedures popularly known as FCAPS in telecom parlance to run the service 24/7. Both have busy hours and lean hours. During busy hours, the capacity utilization is highest and in lean hours from 11 pm to 6 am, it is the lowest. All in all, there is a proven similarity in both.

DMRC model can be successfully replicated by establishing an independent National Broad Band Corporation of India (NBBCI) managed by an empowered board directly working under the Prime Minister Office (PMO). They get their targets from the Planning Commission, only essential funds are released by the Ministry of Finance bereft of politically compulsive budgeting exercise suffering delays due to red tapism. All clearances are automatic in nature with full records and documentation. Therafter, they plan and implement as DMRC has successfully done.

The mandate of NBBCI would be to create efficient and cost effective broad band infrastructure and service, they would therefore, include all available public and private ducts, OFC, copper, HFC, wireless and satellite assets in their roll out plan employing an optimum mix of lease and build strategies. For Operations and Maintenance (O&M), they adopt a franchisee model.

The telcos and all other service providers lease this infrastructure and services in accordance with a well laid down NBBCI competitively priced policy based upon TRAI recommendations to ensure that this does not become a monopoly scenario. The operators run and manage all the GDP growth driving applications in conjunction with Wi-Fi, BWA and 4G for access and mobility.

High Speed Access Infrastructure

Fixed Line OFC, HFC and Copper

For high speed access infrastructure, apart from planning FTTH/FTTB/FTTC for the candidate cities, NBBCI would take into account exising copper and more than 130 million homes already wired up with Hybrid Fiber Co axial (HFC) cable for TV.

HFC based CATV last mile is capable of delivering the desired broad band speeds 90 % of which today only shows 90 analog TV channels. NBBCI would plan to have this upgraded for two way last mile IP infrastructure by making more than 70,000 Local Cable Operators (LCOs) their franchisees in accordance with a qualifying criteria and following proper procedures, agreements

and systems to account for each and every connection, service tax, income tax, entertainment tax and so on.

In one attempt, the country would be able to regulate the unorganized cable industry, swamp the nation with otherwise capex intensive, time consuming much needed last mile infrastructure, the most inescapable part for true broad band access and most importantly collect more than INR 5000 Cr annually as legitimate taxes which today get evaded due to 90 % under declaration of the business in this industry. NBBCI would also ensure overall improvement in HFC CATV infrastructure by enforcing standards and regulations upon the LCOs. The defaulting LCOs would stand to lose their registration. Home wiring/wireless is left up to the customer.

KTMT Consulting (www.kheratmt.com) has already prepared a blue print to offer multi play of voice, broad band, two way interactive multi lingual IP on demand GDP growth driving applications/TV and Fixed Mobile Convergence (FMC) services as B2B2C business and network models by making LCOs as the last mile franchisees.

The cable industry has one positive achievement to its credit. Starting from early 90s, at a lightning speed in about 15 years time, they have wired up more than 130 million homes with HFC plant. Thus, to 130 million homes, there already exists a fat pipe which with little upgrade is capable of carrying multi megabits of digital data. The unorganized nature of the cable industry is attributed to lack of political will and poor appreciation and understanding in Min of I&B. Both have failed in organizing this very valuable industry. Now when CWG are approaching, Delhi government wants to uproot all overhead cables to give the city a neat and clean look. Again, the objective is good but solution is short sighted, pathetic and bureaucratic. It is just like we want to remove the weeds by uprooting the lawn.

Lets take a cue from the developed world. Cable competes with telcos for voice, broad band and TV which has ensured an unprecendented growth of competitively priced broad band in quick time.

India can do much better as we already have more than 130 million homes wired up for CATV which is the second largest in the world. Rather than dumping this, NBBCI needs to exploit it innovatively to beat the time and win the most important global race of this century. Therefore, NBBCI, teclos and other service providers should use this very valuable last mile to complement other traditional access networks to provide true broad band service fastest and cheapest in the world.

Virgin Media in UK has planned to serve 1 million rural homes through fiber to the premise over telegraph poles with next generation broad band service of 50 mbps. This is a non traditional roll out. Read full article on the link below :-

http://www.telecompaper.com/news/article.aspx?cid=723432.

Wireless 3G, Wi-Fi, BWA and 4G

Country needs to be complimented for achieving stupendous growth in mobile wireless 2G infrastructure and services. However, just becoming the fastest growing telecom country in the world is no guarranttee to being a numero uno by 2020. This growth needs to be backed up in parallel by fast and robust build up of nation wide fat pipes all the way to businesses and homes.

To stay ahead of the world, we need to build 3G, Wi-Fi, BWA, 4G as also femto cells of 3G, WiMAX and LTE to exploit quickly deployable last mile and mid haul wireless infrastrucure to achieve mobility by offering interconnects to the OFC based node stations and provide the super highway on lease to these service providers. The service providers would offer high speed true broad band Internet as also two way interactive IP multi lingual GDP growth driving applications to business and consumer segments both at their place of work as also homes on 24/7 basis thereby multiplying the availability of working hours in a day for the country to reap the economic windfall.

The cells size is going to be much smaller in LTE era thus femto cells back hauled over broad band would be a necessity to provide mobility and high speed internet access over wireless. Therefore, even for the success of full wireless and 4G, true broad band for back haul is a must.

We should run this in parallel as spectrum issues would take time to get resolved and it is a known fact that wireless alone is hopelessly inadequate for true broad band access . Without taking any thing away from the success of mobile wireless, we should realize that, it is only 10 % of the target achievement. 90 % is still left. Realizing this, the heads of states of 40 developed countries are way ahead in this.

All this necessitates that NBBCI, COAI, AUSPI etc need each other even for their own businesses. Thus, they complement each other in infrastructure and only compete in pricing, QoS and customer experience to deliver the world's fastest and cheapest true broad band service never seen any where in the developed countries.

Keeping the above in view, the delivery of broad band infrastructure and service can never be managed by a dept or a ministry. Thus, being inclusive in nature, the NBBCI must come up on the lines of DMRC, led and staffed by professionals with responsibility to deliver the true broad band infrastructure and service and accountability to the highest and apex executive office of the PM of the country.

Funds Management for Broad Band through Partnerships

Purely going by the bland estimates, for 150 Million homes @ INR 10,000 per home including the customer premise equipment, total capex comes to INR 150,000 Cr to be spent over 10 years time. At a very conservative ARPU of INR 250, this would generate annual revenue of INR 36,000 Cr when fully operational.

NBBCI can take a cue from the private telcos and incorporate the Managed Capacity (MC), Pay As You Go (PAYG), Managed Services (MS) and Managed Distribution (MD) proven lowest cost operational and financial models by inviting the global top vendors and contractors for selecting the best out of these as their strategic partners on revenue share basis through long term deals. This model needs minimum essential capital to start, then quickly becomes self sustaining and governs the entire infrastructure and the service chain resulting into lowest cost of generation and delivery of true broad band in the world.

Conclusion

The sooner NBBCI is created, India would become the first largest and cheapest broad band country in the world. This alone has the potential to make India as the most developed nation with very high GDP in about 10 years by fully exploiting the basic infrastructure.