



NEXT ON MOBILE

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About Next On Mobile

Next On Mobile is a consulting, research and advisory firm wholly focused on providing global strategic insight to the mobile industry. It was founded based on the strong conviction that the unprecedented changes driving the mobile industry call for a bold new approach to equipping mobile executives with the most accurate global mobile market data, research insight and consulting advice that are critical for quick and decisive action in a fast moving market. Our approach to the mobile industry is characterized by four major vision elements - **Next Innovation, Next Growth Markets, Next Practices and Next Inclusion.** These Vision elements serve as the foundation and lynchpin of our research and consulting strategy and are closely aligned with our **manifesto for the emerging mobile world order.** We provide research and consulting services to mobile operators, application developers, venture capitalists, private investors, device makers and other key stakeholders in the mobile industry.

Founder and CEO

Ramesh Balakrishnan is the Founder and CEO of Next On Mobile. Ramesh has more than 13 years of industry experience in the global communications industry. Ramesh is passionate about studying, analyzing developments in the world of mobile, their impact on consumers and enterprises globally and examining the role of mobile devices and services in improving the livelihood and enhancing the human condition in 'Bottom of the Pyramid' markets. His research interests are focused on the next big mobile growth markets: NFC based contactless payments and commerce, New Mobile Champions and the future mobile world order (an investigation into the emergence of next generation mobile operators and operating models from emerging markets), Mobile Video, Emerging Markets (BRIC + Next 20), Canadian Mobile Landscape, India Market Trends, and Mobile messaging among others. His breadth of experience spans major players in the mobile ecosystem. During his career, he has worked with some of the leading firms in the mobile communications industry including Bell Canada, Amdocs, Critical Path, Tanla Mobile and Tech Mahindra (Canvas M VAS Division). Ramesh has a B.S. in Electrical Engineering from Anna University, Chennai, India and an International MBA from the University of Memphis. Ramesh is also a CFA Level 3 Candidate.

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Comments on TRAI's Consultation Paper on National Broadband Plan

2.23 Issues for Consultation

- What should be done to increase broadband demand?
 - **Broadband availability should be made more affordable with minimum downlink speed of 1MBPS. The definition of what constitutes the baseline in terms of minimum speed needs to be reviewed every 2 years and should be steadily upgraded over the next 10 years to 3MBPS, 5MPBS and beyond. Tiered Broadband should be a major component of the tariff plans of Broadband service providers so various market segments (heavy users vs light users) could choose the most appropriate pricing plan that matches their usage patterns and disincentives are built in so a few heavy users do not turn into bandwidth hoggers.**
 - **More affordable (sub \$100) network-enabled Tablet style devices should be designed and manufactured in India for the mass market. This should include Novatium type PC devices as well as smart phones, smart tablet computers among many other form factors.**

- What according to you will improve the perceived utility of broadband among the masses?
 - **Relevant applications that offer utility value to the end users should be encouraged through development platforms for developers**
 - **'Broadband for schools' should become a major focus of State Governments, so the next generation of children living in major urban areas all across the country have access to Broadband Internet.**
 - **Broadband should be made affordable based on tiered data packages with price levels based on levels of speed.**
 - **Broadband should be declared a 'basic utility' like water and electricity.**

- What measures should be taken to enhance the availability of useful applications for broadband?
 - **Content and new Broadband multimedia applications for the mass market (in vernacular languages) should be promoted so richer, relevant and compelling new content can be made available to millions of 'first time' Internet users, particularly the Youth segment in rural markets.**

- How can broadband be made more consumer friendly especially to those having limited knowledge of English and computer?
 - **Make available Natural language support in all local Indian languages.**

- Vernacular keyboards on mobile phones
- Local content development in local languages

2.35 Issues for Consultation

- Do you agree with projected broadband growth pattern and futuristic bandwidth requirements?
 - **Based on the pace of Broadband roll-out over the last 6 years (stemming from the Broadband Policy 2004), the projected growth pattern is quite aggressive. Moreover, globally, the history of Broadband roll out which commenced in 1995 suggests that in many countries, Broadband roll-out has been halting and sometimes stunted because of the multi-dimensional nature of the problems that need to be confronted by policy makers, operators, equipment makers, content providers etc.**
- Do you agree that existing telecom infrastructure is inadequate to support bandwidth demand? If so what actions has to be taken to create an infrastructure capable to support futuristic broadband?
 - **The current telecom infrastructure (access, core and backbone networks) is inadequate to meet the future Broadband needs of the country. As bandwidth demand explodes over the next decade,**
 - **Government should invest in a research funding to develop indigenous Internet backbone technologies through local research and development efforts. This could spawn the creation of new companies that could lead the way in developing new network infrastructure for cost effective deployment across the length and breadth of the country.**

3.22 Issues for Consultation

- What network topology do you perceive to support high speed broadband using evolving wireless technologies?
 - **A variety of technologies - WIMAX, LTE, ADSL/VDSL, CABLE, FIBRE (FTTC, FTTH) - should be adopted based on detailed deployment feasibility studies.**
- What actions are required to ensure optimal utilization of existing copper network used to provide wireline telephone connections?
 - **Since the current wireline network only supports 38 Million connections and the need for Broadband deployment is so big, it is essential to focus on Cable Broadband rather than on DSL technology. By all accounts, the state of the current wireline network is quite poor. And since these connections are owned by state owned companies, it may not be feasible to provide public funding for continuing investments in these networks when the number of beneficiaries from these investments is quite low. By all means,**

the current network should be operated and upgraded with Fibre where required, but

- Do you see prominent role for fibre based technologies in access network in providing high speed broadband in next 5 years? What should be done to encourage such optical fibre to facilitate high speed broadband penetration?
 - **Fibre based technologies facilitate ultra-Bandwidth Broadband connectivity for more bandwidth intensive applications like Broadcast Video, entertainment, Multi-player gaming etc. The private sector should be encouraged to invest in FTTC (Fibre to the Curb) based networks based on the business case for specific investment projects. In more lucrative Metro and Urban markets, FTTC should be the technology of choice in enabling a connected society and unleashing a digital future that can be embraced by all Indians.**

- What changes do you perceive in existing licensing and regulatory framework to encourage Cable TV operators to upgrade their networks to provide broadband?
 - **Cable TV reaches homes in India that includes many rural markets. Two-way infrastructure of the Cable network could bring Cable Modem based High Speed Internet service to major metros and capital cities across the country. Modernizing the Cable TV network would involve billions of dollars. Again, the private sector should be encouraged to make these investments. Currently the Cable industry in India is too fragmented to make this happen. The Government should encourage the private sector to consolidate the industry across the breath of the country so the industry can support 3-4 large Cable TV operators with Pan-India operations. In most advanced markets, there are not more than 3-4 large players who then acquire the financial capacity to raise funding from public markets to build out high bandwidth networks to offer a slew of information, communications and entertainment services. The Cable TV industry offers immense scope in view of the fact that Convergence and IP technologies now enable Cable TV operators to provide Telephony services to homes, wireless services and other information and entertainment services.**

3.39 Issues for Consultation

- Is non-availability of optical fibre from districts/cities to villages one of the bottlenecks for effective backhaul connectivity and impacts roll out of broadband services in rural areas?
 - **Globally, nationwide optical fibre networks have led to the Broadband revolution and better connectivity and thereby boosting backhaul capacity.**

- If so, is there a need to create national optical fibre network extending to villages?
 - **In the long run, India would need a National Optical Fibre network extending to the nook and corner of India's more than 600,000 villages.**

- India should consider investing in a test bed research network for next generation Internet along the lines of CANARIE-
- In order to create National optical fibre core network extending up to villages, do you think a specialized agency can leverage on various government schemes as discussed in para B?
 - **The best way to bring ‘last mile’ Broadband to villages is through the private sector. This will encourage entrepreneurship in villages and unleash a wave of private sector activity that will create jobs, create wealth, and pay taxes through Community Broadband networks all across the country. Community Broadband Networks need to be built through the USF as well as other Government incentives and need to use a combination of Fibre optic and wireless investments.**
- Among the various options discussed in Para 3.35 to 3.37, what framework do you suggest for National Fibre Agency for creating optical fibre network extending up to village level and why?
 - **The National Fibre Agency should be the central coordinating point for ensuring the core fibre optical network is laid out and capacity can be sold to regional operators who will be sell backhaul capacity to the Community Broadband Networks that will be providing ‘last mile’ Broadband in thousands of towns and villages all across India. Major private sector actors are unlikely to operate in remote villages**
- What precautions should be taken while planning and executing such optical fibre network extending up to villages so that such networks can be used as national resource in future? What is suitable time frame to rollout such project?
 - **Projects of this scope and magnitude can take a decade or more from planning to execution.**
 - **Stakeholders in rural markets should be consulted on these projects to decide the optimal route for these networks**
 - **The Government should promote local Community Broadband networks through rural entrepreneurship programs at the village and town levels.**

4.18 Issues for Consultation

- Is there a need to define Fixed and mobile Broadband Separately? If yes, what should be important considerations for finalizing new definitions?

Fixed Broadband should encompass technologies like DSL, Cable Modem, and Fixed WIMAX. Other WIMAX and LTE based 4G technologies should be defined separately since these are likely to be more widely available over the next 3-4 years.

- Is present broadband definition too conservative to support bandwidth intensive applications? If so, what should be the minimum speed for broadband connection?

The minimum speed for Broadband should be 3-5MBps, but the goal post is constantly shifting with the availability of bandwidth intensive applications like Video.

- 4.30 What specific steps do you feel will ease grant of speedy ROW permission and ensure availability of ROW at affordable cost?

The local municipal administration should provide a 'Single Window' clearance for ROW and should coordinate the ROW issues that may arise with other local bodies like Utilities etc.

4.4.2 Issues for Consultation

- Does the broadband sector lack competition? If so, how can competition be enhanced in broadband sector?
 - **At a national level, the Broadband sector lacks competitive offerings even though there are more than 104 service providers.**
- Do you think broadband usage charge is hindrance in growth of broadband? If yes, what steps do you suggest to make it more affordable?
 - **The only way to reduce Broadband pricing is to deploy more networks aggressively across the country**
- Do you think simple and flat monthly broadband tariff plans will enhance broadband acceptability and usage?
 - **Worldwide, Broadband pricing is simplified and flat rated even though most plans have limits and ceilings. This will encourage usage and enable**
- Should broadband tariff be regulated in view of low competition in this sector as present?
 - **Broadband tariffs should not be regulated because regulation only stifles competition leading to poor service quality and service delivery. As network deployment expands and more capacity is created across the country,**
- What should be the basis for calculation of tariff for broadband if it is to be regulated?
 - **Broadband should not be regulated as this will stifle innovation and service differentiation. Broadband providers in rural markets could also be conduits for providing highly differentiated content for end users. Consequently, these providers should be encouraged to charge prices that are different and their offerings should be**
- How can utilization of international Internet bandwidth be made more efficient in present situation?
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- How can use of domestic and international internet bandwidth be segregated? Will it have direct impact on broadband affordability? If so, quantify the likely impact.

4.48 Issues for Consultation

- What steps should be taken to bring down the cost of international internet bandwidth in India?
 - **Adoption of the latest fibre optic technology**
 - **Increase in capacity that is commensurate with Demand**
 - **More underground Fibre projects**
- How can competition be enhanced in the international bandwidth sector?
 - **As Broadband availability becomes widespread and consumption increases across the board, international bandwidth demand is likely to rise. New players will sense an opportunity to invest and grow their international footprint. However since international bandwidth is a commodity, global pricing trends will dictate competition. The market for international bandwidth will grow as demand for Broadband grows within the country and this will attract newly minted competitors.**

4.59 Issues for Consultation

- QoS of broadband, availability of bandwidth, adherence to given contention ratio, affordability, availability and spread are some intricately linked parameters. In your opinion what should be done to ensure good quality broadband to subscribers?
 - **QoS should be deployed**
 - **A bandwidth metering system should be made available to consumers so they know how much bandwidth they are consuming in a month. This will serve two purposes in a bandwidth constrained society like India. It will enable users to make to use Bandwidth wisely and pay only for what they use. Also, it will free up bandwidth for enterprises and other Bandwidth hungry consumers.**
- Do you think that bad quality of broadband connection is impacting the performance of bandwidth hungry applications and hence crippling the broadband growth? If so, please suggest remedial actions?
 - **Increase network capacity**
 - **Establish strict QoS metrics for continued monitoring**
 - **Establish a framework for operators to report QoS measures on a quarterly basis**
- Is there a need to define new/redefine existing quality of service parameters considering future bandwidth hungry applications, time sensitivity of applications and user expectations? What should be such parameters including their suggestive value and should such parameters be mandated?

- QoS parameters include the following:
 - Latency
 - Dropped packets
 - Delay
 - Jitter
 - Out-of-order delivery
 - Error

These parameters should be mandated and instituted so these measures can be monitored.

4.71 Issues for Consultation

- Do you perceive need for any regulatory or licensing change to boost broadband penetration?
 - **Some major regulatory and licensing changes are required in the Cable sector that will encourage a smaller number of regional players who will be provided with incentives to consolidate the cable multi-system operator market.**
- Is there any specific competition and market related issues that are hindering growth of broadband?
 - **The absence of large scale multi-year investments in NGN and Broadband networks is clearly a major hindrance to large scale availability of Broadband for vast segments of the consumer base**
 - **The poor state of the current fixed line infrastructure and the inability to deploy DSL family of technologies (ADSL, VDSL etc) is a major impediment to quick and rapid roll out as DSL has been the most widely deployed Broadband technology around the world because it involves utilizing existing infrastructure and rewiring existing Central Offices without having the need to dig up trenches in city streets.**
 - **No country in the world has leap fogged into a 'wireless only' network infrastructure. Every country in the world has grown its national telecom network infrastructure through a combination of various networks, both wired and wireless.**
- What other fiscal/non-fiscal measures should be considered to boost broadband penetration?
 - **Rural Broadband should be promoted through directed investments in rural broadband funds that are instituted and managed by a National Rural Broadband Fund. This fund should be disbursed through local IT based NGOs to small rural entrepreneurs to establish, manage and operate networks in small communities all across the country.**