

Digital India•
A Call for Action

Internet and Mobile Association of India

1/10/2009

Executive Summary:

With the number of internet users set to touch 50 million and the number of mobile users already over 400 million, India is on the verge of a Second Information Technology Revolution led by connectivity or the **Digital Revolution**. This revolution is about reaching the benefits of technology to the people of India.

India is an infrastructure poor country and it is unlikely that the development of infrastructure here will be able to keep pace with the ambitions, aspirations and needs of the people, especially in the rural areas

The benefits connectivity for the individual, community and the nation is well-recorded in the literature. The power of “E” is clearly seen in areas such as governance, productivity, efficiency, employment, entrepreneurship and information disintermediation. A well known World Bank study calculates that for developing countries broadband connectivity can add 1.3 percentage points to the GDP of the country.

In India the well-known e-governance programmes such as bhoomi on Karnataka or Gyandoot in Madhya Pradesh among many others have lead to effective and transparent governance. The creation of online electoral lists notably in Gurgaon and now in Mumbai likewise if an important step in strengthening our democracy. Setting up of 100000 common service centres to cover all the villages in India is a giant step towards information disintermediation for rural Indians and a first step towards their empowerment. There are also numerous examples in India where NGOs have empowered communities of artisans and craftsmen and other skilled tradespeople through the internet. Several innovative businesses based in internet and available through PCs and mobile phones are enabling users to access critical information at the click of the button, enabling safe and secure transfer of money at the in seconds, allowing a level playing field to small businesses and enabling consumers and sellers to buy and sell goods across the country nay the world.

Digital Revolution in Rural India

Internet in India and many other similar economies is seen to be a medium used by the better off sections of the society. This is often a dangerous assumption since it does not recognize the fact that the greatest strength of internet is in the fact that it is a great leveler. There are numerous examples across the world to show that it is the people in rural areas and it is the people at the bottom half of the pyramid who can benefit disproportionately by being connected.

There are 5 broad areas which if taken together and deployed over internet would truly empower rural India by providing much needed economic security.

- a. Healthcare
- b. Education
- c. Poverty alleviation
- d. Democracy/Governance
- e. Commerce

In all these five areas there are enough examples in India to show what connectivity can achieve for rural India.

Why are we then not able to achieve the benefits of a digital revolution in India? Why is that countries lagging behind or travelling with us as late as three years ago have gone far ahead and are reaping the benefits of connectivity? The answers are complicated and but not far to seek: we as a nation have no agreement on the benefits of connectivity, we as a nation are happy to have islands of excellence in the vast sea of mediocrity, we as a nation are not aware of the economic and social costs of lack of connectivity to our developmental goals.

What needs to be done to unleash the digital revolution? Not an easy question to answer. But certainly what we need to do is to take a few steps to enable access, make it affordable, allow for an environment for development of applications and encourage people to adopt internet - and hope that this will lead to a self sustaining process which will allow us as individuals, communities and a nation to reap the benefits of leveraging internet to our benefit.

Access, Affordability, Applications and Adoptability: Keys to the Digital Economy

Access:

By access is meant access through mobile as well as broadband. A well deployed broadband economy has numerous benefits not only in rural areas in terms of training, entertainment, job opportunities and critical market information; but also on the overall economy. For every percentage point penetration of broadband services, there is an economic growth of 1.3 percentage points. It is therefore critical that access to broadband network is available in both urban and rural areas.

Affordability

India takes pride in being one of the lowest cost telecom markets in the world, but the premise holds true only for voice services. Internet access cost over PC as well as mobile remains high at more than 8 to 9 per cent of average monthly income as compared with 1 per cent in developed markets.

Applications:

Building applications, services and content is the key to the digital economy. In the last 15 or so years there have been very few Indian companies who have come up with useful services for various demographic groups and made a successful business of providing content and services on the internet. Many of the government services are now available on internet as a part of the national e-governance programme, but these efforts remain piecemeal and slow to take off.

Adoptability:

Access, Affordability and Applications will all come to a naught if there is no adoptability by users! It is therefore important that some practical steps are taken towards training and encouraging people to use internet. While considering adoptability it is also important to bear in mind that the initial trigger for adoption varies from person to person and group to group.

Summary of recommendations:

Access:

1. For every percentage point penetration of broadband services, there is an economic growth of 1.3 percentage points. *It is therefore critical that access to broadband network is available in both urban and rural areas.*
2. Developing universal and ubiquitous access to mobile phones with all its possible applications beyond voice should be a primary focus in India. *Our interpretation is that there is need to tweak the policies to encourage data services over mobile phones.*
3. *Government target in broad band penetration has to be met in a time bound manner.*
4. It is to be kept in mind that it takes 10-15 years for returns on investment in any form of connectivity, especially in rural areas. It is for this reason the private sector is not very keen to invest in such areas where the customer base does not already exist. *In such areas there is a clear cut case for private public partnership along the lines of PPP models that exist in case of highway building in India [BoT model].*
5. IAMAI research over the last 5 years has clearly established that public access points popularly known as cyber cafes are the main access points for most internet users. Public access points would continue to be the most important access point in rural areas as well as less privileged urban areas.
 - a. The National e-Governance programme is a major step towards address the issue of access in rural areas, *but differential tax or revenue share structure should be mooted by the government to*

encourage private sector set up common access points in rural areas as well as urban areas. The idea is to have walk-in access points where users are able to use the applications and services without the aid of an intermediary. Local Post Offices, Block Development offices and panchayat offices should also become popular access points.

- b. In the late 1990s there was an unofficial directive by the government that 3 per cent of all departmental expenditure would have to be on computers and related purchases. This directive had seen a gradual increase of computers by government employees. *A similar approach should be suggested to state, district and panchayat level workers.*
- c. Given the importance of small individual owned public access points in our country and their role in internet penetration in similar economies like China, it is suggested that:
 - i. *A registration process by the central government for starting such business be instituted. The registration fee should be notional, but subject to following certain practical security guidelines framed by the central government as a part of the IT Act and applicable across the country.*
 - ii. *The department of information technology should also use such access points as experimental labs for its “free” and open source software and other language tools and internet training.*
 - iii. *We believe that such steps will not only give such access points a sense of legitimacy by making them compliant but also make their business models viable. If starting and running a public access point becomes as simple as running a telephone booth, this will give rise to income opportunities. In the same breath it can be suggested that all telephone booths run by BSNL and MTNL be converted into two to three-seater cyber cafes. Many of these booths are used as stationery shops and photocopying centres already.*

Affordability:

1. While we are aware that prices are best left to market forces, it must be borne in mind that *a) in a regulated and licensed sector like telecom prices are never left to market forces, b) a direct co-relation has been established in case of India between pricing and increase in use in the case of voice calls and c) at no point should some services e.g., voice be subsidized at the cost of other services e.g. data. The regulator must*

guarantee that one service is not given a price arbitrage over others thereby skewing adoption and use.

- 2. We would also suggest that some of the fiscal incentives suggested by TRAI on promotion of broadband in the Authority's 2004 recommendations be speedily implemented [All the fiscal benefits are contained in Chapter 5 of that report]. Note should also be taken of other recommendations made by the Authority in their 2008 paper on broadband penetration.*

Applications:

1. Overall:

- a. An enabling set of rules under IT Act which helps encourage entrepreneurs come up with new and developed services on the internet and mobile platforms*
- b. An enabling set of rules and regulation that encourages existing business to spend less resources in compliance, litigation etc.*
- c. An enabling set of laws that promote foreign investment and long term business planning in online as well as mobile value added services.*
- d. An enabling set of laws that encourage offline companies to come online.*

2. E-Commerce:

- a. A separate ecommerce law which encourages ecommerce and its attendant transparency, efficiency and value proposition.*
- b. Simplification of the tax structure especially aggregating all local and national taxes under one head "ecommerce tax" and making it the only tax that is applicable to all ecommerce.*
- c. Easing customs norms for online exports especially single items of small value.*

3. Online Services:

- a. A moratorium for 5 years on service tax on all items connected to internet advertising including classified, downloads and access with a strict sunset law.*
- b. Promotion of gaming through rationalized duty structure.*
- c. Allow internet and mobile services companies to be empanelled for government advertisements with DAVP*

4. Mobile Value Added Services:

- a. A clear cut differentiation by law between vendors and independent service providers and provision for equitable business relation between independent service providers and telecom operators*

- b. *Moratorium on service tax/VAT and Wireless charges on all mobile data beyond core services for 5 years with a strict sun set clause.*

5. Digital Payments:

- a. *Regulatory encouragement of innovative forms of payment through mobile phone, especially mobile banking to those who do not have a physical bank account*
- b. *Regulatory encouragement to pre-paid instruments including cash out options.*

Adoptability:

1. There are certain “useful” services which help in adoption since they provide convenience and or cost arbitrage: government services, bill payments, money transactions, advertising and commerce provide many advantages over offline versions. *It is counter-productive to restrict services that can be provided over internet. One such example of artificially restricted service is the VoIP.*
2. Local language is one of the most important instruments of adoption. Unfortunately internet and mobile data services continue to be primarily in English. The government especially the Department of Information Technology continues to make much effort in encouraging use of local language which seems to have had little impact so far. *The government considers incentivizing local language use on internet in form of a short-term scheme for two years and also put up government advertisements on local language sites.*
3. In India there is a singular lack of knowledge and awareness about internet and its benefits. *We recommend that the private sector and various state governments should undertake schemes to provide computer and internet connections to schools in villages and small towns and teach young persons between 11 and 21 the uses of internet.*

In conclusion it is our suggestion that while all fiscal benefits should be time bound with clear cut sunset laws, overall government and regulators need to be more digitally minded and consider the digital angle in all regulations that come up for consideration from time to time. Special care should be taken not to discriminate against online business inadvertently.

**INTRODUCTION:
INDIA IS ON THE VERGE OF ITS 2ND IT REVOLUTION**

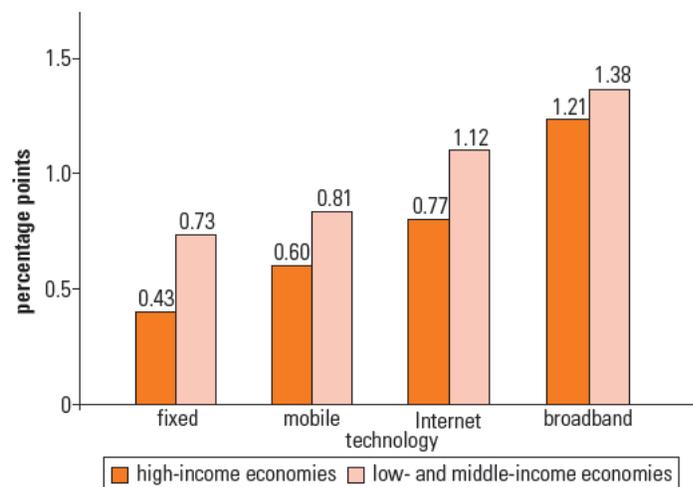
With the number of internet users set to touch 50 million and the number of mobile users already over 400 million, India is on the verge of a Second Information Technology Revolution led by connectivity. From the initial signs, it is clear that the Second IT revolution is going to be very different from the first in several ways.

1 Growth Effects of ICT

First, the aim is to include as many Indians as possible within the vortex of this revolution, making it more inclusive. Secondly, and more importantly, it is taking the benefits of technological revolution to the people of India. Hence it is about empowering people and providing them with the necessary enablers.

Thirdly and most importantly, it is through this revolution that a two-way traffic in governance, commerce and social action between the top and the bottom of the pyramid can be achieved.

Finally, it is about what India and India can do for themselves by themselves, rather than what Indian experts have so far been doing for others.



Source: Qiang 2009.

Note: The y axis represents the percentage-point increase in economic growth per 10-percentage-point increase in telecommunications penetration. All results are statistically significant at the 1 percent level except for those for broadband in developing countries, which are significant at the 10 percent level.

SECTION 1:
DIGITAL REVOLUTION: LIKELY ACHIEVEMENTS:

[e]MPOWERMENT: In a large and diversified country like ours, connectivity is the key to empowering people so that they can have a say in issues that affect their lives. Empowerment is the first critical step towards inclusiveness.

[e]QUITY: All pervasive connectivity and access is the easiest way to equitable participation, equitable transactions and an equitable say in governance, business and social issues.

[e]INFRASTRUCTURE: India is an infrastructure poor country and it is unlikely that the development of infrastructure here will be able to keep pace with the ambitions, aspirations and needs of the people. One of the best examples of robust infrastructure development in the last 10 years has been telecom and IT infrastructure. However, the existing infrastructure is still woefully short if we compare the same with the policy targets that the nation had set out for itself. Against a target of 20 million broadband subscribers by 2010, we had just 6 million till June 2009.

It would be appreciated that access devices, [e]INFRASTRUCTURE and online content have a symbiotic and reinforcing relationship and one cannot thrive without the other.

It is pertinent to mention here that Telecom Regulatory Authority of India (TRAI) had recommended various fiscal incentives for promotion of broadband in the country in April 2004 and the Ministry of Communications & IT had mentioned in the 'Broadband Policy' on 14th October 2004 that the same would be dealt with separately in consultation with the Ministry of Finance. TRAI had made another set of recommendations in 2008; those too have not been implemented.

[e]BUSINESS: It is an accepted notion that business drives development to a large extent. [e]BUSINESS is nothing but doing the same businesses in a different way; a way that is more efficient, has greater reach and is hence more inclusive and cost effective. In a country with poor infrastructure and

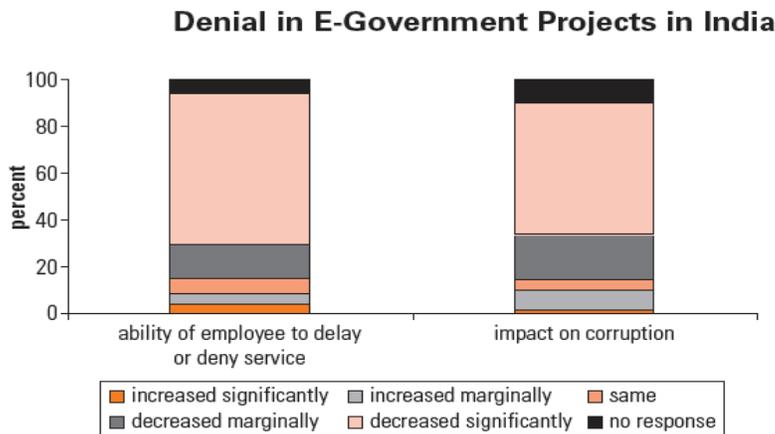
high input cost, e-business is the best way to take business to the people and allow people with limited resources to start business

[e]NTREPRENEURSHIP: Indians are known for their entrepreneurial skills but much if this is wasted due to obvious roadblocks. Promoting e-business and connectivity will allow for the growth of entrepreneurship in India. Anyone with a small idea can capitalize on it as the cost of doing business online is much lower.

[e]MPLOYMENT: Government, commercial and social activities riding on all pervasive connectivity are likely to give an unprecedented boost to employment in the country. This employment would not be based only on narrow set of skills (such as engineering) but would offer scope to people across a spectrum of competencies and types of skills.

[e]FFICIENCY: With better and pervasive connectivity, a large part of our governance, commercial and social activities can be conducted online; courtesy improved connectivity India and Indians will become more efficient as a nation.

Figure 2 Impact of ICT on Corruption and Service Denial in e-government projects in India



**Section 2:
Digital Revolution in Rural India**

For some inexplicable reasons, internet in India and many other similar economies is seen to be a medium used by the better off sections of the society. This is often a dangerous assumption since it does not recognize the fact that the greatest strength of internet is in the fact that it is a great leveler. There are numerous examples across the world to show that it is the people in rural areas and it is the people at the bottom half of the pyramid who can benefit disproportionately by being connected.

In this section we talk to 5 broad areas taken which together and deployed over internet would truly empower rural India by providing much needed economic security.

- **Healthcare:**

In rural areas where access to doctors and treatment are not only difficult but also involves a loss of earnings as well as higher incidental expenditure notably in form of travel, telemedicine if deployed thoughtfully has been very beneficial in many countries.

The Aravind Eye Hospital in Tamil Nadu provides a good example of telemedicine at work. Using a wireless broadband network the hospital connected five of its rural clinics in 2004 to provide eye care services to rural residents. Through a low cost video conferencing facility, minor problems are diagnosed and treated while patients with more serious problems are asked to travel to the main hospital.

- **Education:**

The very origin of internet is linked to education. It was in the universities and research institutions that networked computers were first developed. The power of the internet to reach education at all levels to rural and remote areas has now been well-recognised. In fact, much of the ills that plague primary and secondary education in India can be removed by “virtual” education. Not only is this medium very well adapted to “virtual” classroom nature, it also has several characteristics that make it very suitable to rural needs and work cycles. The anytime anywhere nature of the medium make it suitable for adults as well as children to learn when they want to and work when they want to without losing their livelihood or their contribution to family labour. It is also a remarkable medium to deploy skills development programmes to the rural artisans, craftsmen and tradespeople whose skills can be brought up to date leading to higher wages and better service through effective use of internet.

- **Poverty alleviation:**

One of the most important tools of empowerment through internet are harnessing of the networks to deliver benefits to the communities they are meant for directly without any or little intermediation. Such programmes in addition to other NGO initiatives can provide livelihood in rural areas and prevent much socio-economic trauma by taking away the main cause of migration to cities. One of the best non-government examples is the case of Village Internet Programme of the Grameen Bank in Bangladesh which created IT related job opportunities for the rural poor. Another example is that of the HoneyBee network in India which has created a repository of grassroots and green innovations and disseminates it among rural people.

In addition, a well connected system can also address crisis management especially those arising out of natural disasters and food security effectively. For example, electronic networks can deliver critical information to farmers, government and aid workers fighting a local famine.

- **Democracy:**

The ease with which information can be published and distributed over internet allows for more democratic and participatory political processes. By cutting down on information intermediation, it also leads to much more transparency and accountability. Nowhere are the benefits more effective than in rural areas where due to the near absence of mainstream media and information distribution system, information is either lacking or disseminated through existing and often jaundiced filters of information intermediaries.

Not only does internet allow for a more participatory political process in rural areas by allowing people to directly put forth their views and development priorities to their representatives, it also allows for transparent processes by making the representatives more transparent.

- **Commerce:**

Strong connectivity also helps integrate rural areas with the global economy in three ways. First it allows rural people access to information on which to base their economic decision, be it the price of grain or choices available for insurance. Secondly, it allows them access to the best at the most competitive prices. Even a cursory glance at rural consumption will show that in a large range of goods what is consumed is what is produced locally, soaps, biscuits etc. Very often such locally produced goods are of low quality and are sold for proportionately higher prices. Knowledge of better products at comparable prices through ecommerce improves rural consumption. Finally, and this is most important, being a two way medium, internet also allows rural communities to share information about their products and services to a much wider audience and without the aid of intermediaries which translates into a big opportunity for them.

In concluding this section it would be sufficient to say that in an infrastructure poor and resource rich country, internet can prove to be the best, fastest and lowest cost infrastructure that can be provided to rural

BENEFITS OF THE DIGITAL REVOLUTION

Economic Benefits

- Business Efficiency & Transparency
- Entrepreneurship
- Lower costs of business
- Rural entrepreneurship
- Rural economic inclusion/financial inclusion
- Growth in GDP
- Growth in employment
- Rise in efficiency and productivity of workforce
- Easier access to markets

Social Benefits

- Inclusive growth vehicle
- Empowerment
- Health care education
- Crisis management
- Rural sector

Governance Benefits

- Delivery of government services at the citizens' doorsteps
- Transparency and efficiency of deployment
- Participative governance

areas. Given the inherent innovative trait and folk wisdom, people in rural areas will find numerous ways of leveraging it to their benefit.

Section 3: ONLINE BUSINESSES CAN DRIVE SOCIAL CHANGE

Based on the history of the last 15 years, it is our belief that digital business acts as a very powerful agent of economic and social transformation. By product and process innovation; by information disintermediation and dissemination; by being an anytime, anywhere medium and by being a transparent mechanism of money transactions the digital medium has the capacity of vast socio-economic change.

It is not our argument that the digital industry alone can bring about significant economic or social transformation, but that it can act as a strong catalyst and create the environment an environment for adoption of new and often more effective way of “doing things”. In this section, therefore, we take at a look at the stage at which the digital industry in India is poised and also make some comments on why and how it is necessary to allow it to perform its catalytic role in setting up the digital revolution in India.

- **E-Commerce and Online Business**

In the discourse on IT during the last 10 years, one segment has not got its due attention from the policy makers. This segment has been the online content, technology and services segment. The initial success years were seen to be the handiwork of maverick geeks and mindless venture capitalists which were pre-determined to go bust and forgotten.

But unbeknown to many, online business has risen like a phoenix in the last 5 years and is engaging the attention of serious investors and business persons. And this has happened without any support from any quarters except serious entrepreneurs, investors and of course, common users - the young student or executive, the house wife, the busy business executive, semiliterate farmer, the stockbroker and the senior citizen among others.

It does not take much imagination to foresee how crucial the contribution of these segments can be to the overall economic development of an infrastructure poor country like India: in terms of efficiency, productivity, empowerment, employment and entrepreneurship.

According to estimates, Internet based businesses account for nearly 3% of US GDP riding on a supposedly backward backbone of Telecom infrastructure. In a

country like South Korea which has a network of much more advanced broadband infrastructure, the contribution of Internet based business to GDP is nearly 50%. This is just an example of what we can achieve in India through leveraging internet based businesses.

Given our understanding of the current state and the future contribution of this

business, we are of the view that the industry at this stage needs to be nurtured by all stakeholders, especially the government so that it grows in the right direction and is able to realize its full potential not only for its own benefit but for the larger benefit of the economy as well as the social good of the country.

**CURRENT STATE OF AFFAIRS
INTERNET VS MOBILE**

Internet

- 50 million internet users
- Slow uptake of broadband
- Little or no rural penetration
- Wide digital divide in urban areas
- Basic internet use and basic eCommerce
- Negligible size of market
- Low employment generated

Mobile

- Huge user base [~400 Million]
- Voice dominated
- Lowering ARPUs and escalating competition
- No focus on data
- No plan to turn mobile into preferred internet access device
- Monopoly over pipes

•What can online businesses and E-Commerce offer?

- In a nutshell, E-Commerce and Online Businesses connect all the elements of the IT and Telecom segments.
- Brings not only governance but also the entire gamut of global social and commercial activities to the common Indian.
- Immensely empowers the common Indian by allowing him/her to conduct a range of activities from a location of choice; take decisions based on the information; have access globally and be a part of the

development process.

- Provides the best possible route to entrepreneurship to Indians from all social walks of life with a sense of fulfillment of a larger social goal.
- Increases the degree of transparency in monetary flow in the economy; provides the government greater insight into commercial transactions.
- Contributes to making India and Indian businesses more efficient.

• State of the Digital Business:

The size of the online business is significant; while IAMAI represents only the online publishers, e-Commerce and mobile value added services players even according to our statistics [which are conservative] B2C e-Commerce industry is around INR 3,000 crores today and is growing by almost 100% year on year. If this trend continues in the next 36 months, online businesses would represent a large commercial and social interest in India and this figure is without taking into account the online B2B businesses and without accounting for the e-

Commerce activities of brick and mortar business or the e-Governance programs of governmental agencies.

Investments in these businesses are coming thick and fast. Substantial investments by well-educated professional Indian entrepreneurs along with venture and Private Equity funds have been flowing in steadily. The larger companies in this segment are keen to achieve global scale and redistribute profits, towards this end many of them are now preparing for listing in the Indian stock markets.

In addition, most of the larger overseas players have established their presence in India to take advantage of the large market opportunity as well as to move many of their back and front office functions to India. This industry, therefore, is set to provide not only large and quality employment opportunities to technical and non-technical personnel, but also contribute significantly to the state exchequer. Today there are more than a 1000 companies that provide services to consumers and given the right policy environment, the number can grow to 10,000 in the next 5 years.

The success of e-Commerce is acting as a catalyst for adoption of e-Business by a cross section of brick and mortar businesses such as retailing, banking and financial services, stock trading, auto, auto components, media, FMCG among others.

- **Mobile Value-Added Services [MVAS]**

Another emerging area represented by IAMAI is the mobile value added services businesses.

These comprise in India mainly three elements: entertainment [music and movie clips, downloads, mobile games], value added SMS [short codes], SMS marketing [accessing product related information or services].

MVAS is increasingly becoming the USP of major telecom service providers and is set to drive the next round of telecom penetration in the country. It is also adding to the ARPU of most telecom companies. More importantly, Short code services have helped bridge the digital divide in the country by widening significantly the access to products and services to people who do not have access to computers and internet. Short codes are today used by almost 100 million people on a regular basis to receive important security information (services provided by news channels post recent bomb blasts in Mumbai), collecting charity for the Prime Minister's Relief Fund post the Tsunami and Aids related information in addition to entertainment and enterprise services for people on the move.

According to industry sources, MVAS is expected to be worth INR 4,500 Crore by 2010.

CURRENT ROADBLOCKS TO ACHIEVING THE DESIRED GOALS

○ Low broadband penetration

- Lack of local content and application
- Lack of push from operators
- Policy regime is not favorable to internet use, encourages voice only
- High data access costs
- Slow Broadband infrastructure ROI preventing private players from investing; need for a similar model as infrastructure [PPP]
- Proper regulatory mechanism to encourage access over mobile phones

○ Local Language Content

- Local language content is missing
- Government to play a key role in promoting local language
- Without local language internet use is bound to hit a ceiling at 100 million

○ Proper Investment Ecosystem

- Role of overseas VCs limited since they do not have a long term view in mind and are subject to economic forces in the US
- The local VC and Angel market is not very developed; Indian FS companies should start investing in these businesses

○ Slow uptake of plastic money

- Credit card penetration is even lower than internet penetration
- Ecommerce does not grow without plastic money; the situation in India is dismal due to the conservative policies of the card companies as well as the regulator
- Debit card use is on the rise, but one needs to see if there are alternatives that can make up for the lack of penetration of credit cards in the form of mobile and pre-paid payment instruments

○ Ecommerce Ecology

- Ecommerce ecology [logistics and regulations] is poor and slow
- Multiplicity of taxes deters ecommerce
- No big brands sell online

Given our understanding of the current state and the future contribution of these businesses, we are of the view that the industry at this stage needs to be nurtured by all stakeholders, especially the government so that it grows in the right direction and is able to realize its full potential not only for its own narrow benefits, but for the larger benefit of the economy as well as the social good of the country.

So far both the e-BUSINESS and MVAS industries have grown on their own steam, but to take growth to the next level, where it can draw in more investments, provide more employment, contribute more to the tax basket and be a part of the India Growth Story, it needs structured and progressive support from the government and other stakeholders.

Section 4:

Access, Affordability, Applications and Adoptability: Keys to the Digital Economy

In order for the digital revolution to start and unfold its many benefits, we believe that four factors have to be enabled in parallel. We call this the 4As: Access, Affordability, Applications and Adoptability. These are elaborated in this section with specific recommendations.

- **Access:**

By access is meant access through mobile as well as broadband. It is now clearly established that mobile phones are the single largest distribution platform in the world and that the next billion users are going to be primarily from rural areas of developing countries. The way mobile phones transform lives is too well recorded to be repeated here. Some examples may not be out of place. In India, access to market information through mobile phones has enabled fishermen to respond faster to demand and has increased their profits. In Niger, the same process has led to reduction in price disparities in grain markets. Most interestingly, in Sierra Leone, workers in the cities have cut out intermediaries and transfer money instantly to relatives to remote villages. **Developing universal and ubiquitous access to mobile phones with all its possible applications beyond voice should be a primary focus in India where internet development has been slow.**

A well deployed broadband economy too has numerous benefits not only in rural areas in terms of training, entertainment, job opportunities and critical market information; but also on the overall economy. Consider the following cases. A 2006 study of 27 developed and 66 developing countries found that a 1 percentage point increase in the number of internet users is linked with a 4.3 percentage point increase in exports. For every percentage point penetration of broadband services, there is an economic growth of 1.3 percentage point. **It is therefore critical that access to broadband network is available in both urban and rural areas.**

Some of the policy changes that would be necessary to make access widespread are suggested below:

- The success of voice over wireless lines has been stupendous and has in a way clouded our view on the full potential of wireless networks/mobile

- phones. The current policy too encourages voice over data. ***Our interpretation is that there is need to tweak the policies to encourage data services over mobile phones.*** At 400 million plus subscribers voice is already established as the primary driver of mobile use but in order to use it optimally, it is necessary that data services are encouraged through policies.
- While there is a general agreement on the benefits of broadband, there are implementation related roadblocks. Notably, ***the missing out of several target sets before by the government.***
 - It is to be kept in mind that it takes 10-15 years for returns on investment in any form of connectivity, especially in rural areas. It is for this reason the private sector is not very keen to invest in such areas where the customer base does not already exist. In such areas ***there is a clear cut case for private public partnership along the lines of PPP models that exist in case of highway building in India [BoT model].*** Such partnerships should be implemented for data only.
 - IAMAI research over the last 5 years has clearly established that public access points popularly known as cyber cafes are the main access points for most internet users. Other popular access point being the office users. While home and office use will remain popular among those who can either afford it or is working, public access points would continue to be the most important access point in rural areas as well as less privileged urban areas.
 - The National e-Governance programme is a major step towards address the issue of access in rural areas, ***but differential tax or revenue share structure should be mooted by the government to encourage private sector set up common access points in rural areas as well as urban areas.*** The idea is to have walk-in access points where users are able to use the applications and services without the aid of an intermediary. ***Local Post Offices, Block development offices and panchayat offices should also become popular access points.***
 - In the late 1990s there was an unofficial directive by the government that 3 per cent of all departmental expenditure would have to be on computers and related purchases. This directive had seen a gradual increase of computers by government employees. ***A similar approach should be suggested to state, district and panchayat level offices.***
 - At present public access points are practically discouraged and held under suspicion by the local administrative authorities. Several local police departments have formed their own “security guidelines” for these access points to follow. In many cities, ruffians extract money from these small establishments in the

garb of violation of IPR. In informal discussions with IAMAI many public access owners have revealed to IAMAI following arbitrary security guidelines are not only expensive but also drive away legitimate customers; harassment by “moral” police and market cost of original software licenses make the business model non-viable. Given the importance of small individual owned public access points in our country and their role in internet penetration in similar economies like China, it is suggested that:

- *A registration process by the central government for starting such business be instituted. The registration fee should be notional, but subject to following certain practical security guidelines framed by the central government as a part of the IT Act and applicable across the country.*
- *The Department of Information Technology should also use such access points as experimental labs for its “free” and open source software and other language tools.*
- *We believe that such steps will not only give such access points a sense of legitimacy by making them compliant but also make their business models viable. If starting and running a public access point becomes as simple as running a telephone booth, this will give rise to income opportunities. In the same breath it can be suggested that all telephone booths run by BSNL and MTNL be converted into two to three-seater cyber cafes. Many of these booths are used as stationery shops and photocopying centres already.*

- **Affordability**

By affordability here, we mean affordability to the end user of internet. But before we get deeper into the issue, let us consider a set of important data. Denmark, the United Arab Emirates, Singapore and the United States have the most affordable ICT services in the world which is equivalent to 0.5 per cent or less of average monthly income. If these countries represent the most affordable then consider the following: internet price basket for sub-Saharan Africa in 2006 was about 62 per cent of average monthly per capita income and in South Asia including India it was 12 per cent. In most high income economies internet service costs less than 1 per cent of average per capita monthly income.

India takes pride in being one of the lowest cost telecom markets in the world, but the premise holds true only for voice services. It is clear that in many instances, data services are used to maintain if not subsidise voice calls which

attracts customers to mobile services. nothing else can explain the fact that USB based internet connections provided by CDMA operators charge nearly 3,500 rupees as one-time payment and monthly plans starting at Rs 500. The first number is nearly 20 times the ARPU of these service providers and the second number nearly 3 times. Even the state owned MTNL is relatively cheap, but compared to its own voice services very stiff. A one-time payment of rupees 1000 and monthly plans starting at 200 rupees averages out to be much higher than call charges. Not only that, internet is clearly seen as an elite item and prices are fixed accordingly, nothing else can explain the fact that in 5 star hotels it is customary to charge Rs 2,500 for a day's access - an amount unthinkable even in US dollar terms in any developed country.

While we are aware that prices are best left to market forces, it must be borne in mind that a) in a regulated and licensed sector like telecom prices are never left to market forces, b) a direct co-relation has been established in case of India between pricing and increase in use in the case of voice calls and c) at no point should some services e.g., voice be subsidized at the cost of other services e.g. data. The regulator must guarantee that one service is not given a price arbitrage over others thereby skewing adoption and use.

We would also suggest that some of the fiscal incentives suggested by TRAI on promotion of broadband in the Authority's 2004 recommendations be speedily implemented [All the fiscal benefits are contained in Chapter 5 of that report]. Note should also be taken of other recommendations made by the Authority in their 2008 paper on broadband penetration.

- **Applications:**

Building applications, services and content is the key to the digital economy. However, on this count India has been very slow with the result that when there is nothing much to do for people on the net. In the last 15 or so years there have been very few Indian companies who have come up with useful services for various demographic and made a successful business of providing content and services on the internet. Many of the government services are now available on internet as a part of the national e-governance programme, but these efforts remain piecemeal and slow to take off.

While government services would require incentives of different kind - better, effective and efficient governance, services by private sector would require other types of incentives notably a friendly business environment. In our view a friendly environment consists of two important aspects favourable laws and regulation and fiscal incentives such as those given to a nascent industry and more importantly government's role as an unbiased mediator in relations between conflicting or competing industry segments. Some specific recommendations under both the heads are mentioned below:

Government Regulations and Incentives:

- It is important that there is some recognition in policy making about the potential of applications, content and services on the internet as well as on the mobile. It is needs to be recognized that such of services are at the nascent stage of development and should be actively encouraged.
- Second, it is our view that the huge software and services business has grown under the benign encouragement of the government and more active fiscal benefits. It is not true, as is believed in some circles that the software and services industry has grown because of absence of government interference. It is also true that software and services industry has been given special treatment because of their export potential and because in the early 1990s export earning was the topmost priority for the country. However, situation as well as the thinking has changed considerably. Export earning continues to be important but not at all costs. We now believe that while Indian brains have been making other countries and overseas businesses more efficient and productive, very little has been done to make Indians competitive by using ICT tools.
- Some of our specific recommendations to encourage development of applications and services for rural areas, people on the other side of the virtual divide and for small and medium businesses are:

Overall:

- An enabling set of rules under IT Act which helps encourage entrepreneurs come up with new and developed services on the internet and mobile platforms
- An enabling set of rules and regulation that encourages existing business to spend less resources in compliance, litigation etc.
- An enabling set of laws that promotes foreign investment and long term business planning and encourages long-term business planning
- An enabling set of laws that encourage offline companies to come online.

E-Commerce:

- A separate ecommerce law which encourages ecommerce and its attendant transparency, efficiency and value proposition.
- Simplification of the tax structure especially aggregating all local and national taxes under one head “ecommerce tax” and making it the only tax that is applicable to all ecommerce.
- Easing customs norms for online exports especially single items of small value.

Online Services:

- A moratorium for 5 years on service tax on all items connected to internet advertising including classifieds, downloads an access with a strict sunset law.
- Promotion of gaming through rationalized duty structure

- Allow internet and mobile services companies to be empanelled for government advertisements with DAVP

Mobile Value Added Services:

- A clear cut differentiation by law between vendors and independent service providers and provision for equitable business relation between independent service providers and telecom operators
- Moratorium on service tax/VAT and Wireless charges on all mobile data for 5 years with a strict sun set clause

Digital Payments:

- Regulatory encouragement of innovative forms of payment through mobile phone, especially mobile banking to those who do not have a physical bank account
- Regulatory encouragement to pre-paid instruments including cash out options

In conclusion it is our suggestion that while all fiscal benefits should be time bound with clear cut sunset laws, overall government and regulators need to be more digitally minded and consider the digital angle in all regulations that come up for consideration from time to time. Special care should be taken not to discriminate against online business inadvertently.

- **Adoptability:**

Access, Affordability and Applications will all come to a naught if there is no adoptability by users! It is therefore important that some practical steps are taken towards training and encouraging people to use internet. While considering adoptability it is also important to bear in mind that the initial trigger for adoption varies from person to person and group to group. Some individuals for example, start adopting internet by purchasing railway ticket and move on to other things, while others start by using online banking and move on to email and social networking site. Similarly some groups especially in rural areas might start to use the digital medium through healthcare services others might initiate themselves through mobile banking and so on. It is therefore important to have a wide range of services offered. Important in this context is to note that there are certain “useful” services which help in adoption since they provide convenience and or cost arbitrage: government services, bill payments, money transactions, advertising and commerce provide many advantages over offline versions. It is therefore, counterproductive to restrict services that can be provided over internet. One such example of artificially restricted service is the VoIP. In addition, some of the specific recommendations to help faster adoption are given below:

Local language is one of the most important instruments of adoption. Unfortunately internet and mobile data services continue to be primarily in English. The government especially the department of information continues to make much effort in encouraging use of local language which seem to have had

little impact so far. While it difficult to use legislative force to use local language, businesses do not tend to adopt local languages as long as the market for it is created. Illustrative here is the growth of cable TV connections on the backbone of local language programming. Our recommendation is that *the government considers incentivizing local language use on internet in form of a short-term scheme for two years and also put up government advertisements on local language sites.* While adoption is a complex cultural issue, the first step to adoption remains knowledge about the usefulness or otherwise of a product or service. In India, it is our contention, that there is a singular lack of knowledge and awareness about internet and its benefits. We recommend that the state governments should undertake a scheme to provide computer and internet connections to schools in villages and small towns and teach young people between 11 and 21 the uses of internet.

- **Conclusion**

The paper argues that India is poised for a second IT revolution, the digital revolution. The digital revolution will be led by connectivity and it will be about Indians making their fellow countrymen especially in rural areas and especially of economically backward classes more productive, efficient and better equipped. It will also help dissemination and delivery of health, education, commerce and money directly to the masses thereby empowering them through information and transaction.

The digital revolution will come about on governance as well as private services riding on a robust e-infrastructure and therefore the government has to create the right policy environment for building that infrastructure as well as making sure that there is an enabling environment for public and private services to flourish over that infrastructure.

In order for the digital revolution to start and continue in a self sufficient manner, the paper argues that the four issues of access, affordability, applications and adoptability will have to be addressed together.