MOBILE INTERNET IN INDIA

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Research conducted by:

IMRB international | eTech

Research conducted for:

IAMAI

<u>Executive Summary</u>

Wireless infrastructures have emerged as an effective option of connecting to an ever-evolving expansive information network such as the Internet. Such infrastructures, due to their inherent advantages, promise a renewed future in terms of offering improved and exciting services to the existing users. As a result, stakeholders are willing to encourage the success of such infrastructures supporting "Internet on the move".

This promise is not without a concrete platform. In the recent past, there have been ground-breaking innovations such as 3G, WiMax and the like that could support disparate forms of content. The practicality of their implementation resulting into improved usage is yet to be witnessed, however. Similar developments have been witnessed in the domain of devices that are designed to support such networks. There is a parallel and equitable importance of providing relevant content using the devices and the underlying infrastructure. Given the high capabilities, a wide variety of content can be provided to the users. Considering the absence of deployable infrastructure and upcoming developments in bandwidth auction, the jury is going to be out there for some time. On the demand side, our current estimates show that there are 2 Mn users that actively access Internet on any form of mobile devices. These users are matured Internet users and are fairly young (18-35 years). Understandably, in the existing scenario, there is a need for a major fillip in ensuring the deployment and success of mobile Internet infrastructure.

This report details the existing scenario in the domain of mobile Internet, the drivers that could further the growth and the future trends that could be witnessed in the coming years.

Research Methodology

The research team at eTechnology Group with IMRB International adopted a combination of research approaches for this report. Given below is the research methodology used for the report:

Quantitative Research

Relevant datapoints were extracted from 'I-Cube 2008' reports , an annual syndication of eTechnology Group, IMRB International

The syndicated research is based upon primary survey covering 20,000 households, 90,000 individuals, 1000 SMEs and 500 Cyber Cafes

Secondary Research

Secondary research was done using information from various published and private sources and other research bodies to triangulate our findings

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1.0 Introduction

Information is a currency in today's world. This information age is characterized by the ability of individuals to access and share information freely among

themselves. Internet being the interactive medium has helped to increase the access to the information in a different way altogether. Usage of Internet has lead to information access overcoming geographical barriers.

Current business scenario requires quicker decision making and it becomes imperative to have access to the relevant information as and when required. 'Stay connected' is the need of an hour for effective decision making and this is facilitated by the technological advancements by providing access to Internet even on the move. These developments have lead to the mobile office concept which has transitioned from fixed, portable, roaming and nomadic access.

Internet in India is growing rapidly since its introduction but primarily restricted usage of Internet from "fixed" points like homes, offices and cyber café. While mobility for Internet exists, public access points such as cyber café have dominated as point of access for low PC penetrated Indian Market. Internet usage on the move can be facilitated by the high speed data cards, public Wi-Fi hot spots and Internet access on mobile phone. Over the years, other access points such as Wi-Fi hot spots and Internet access on the mobile phone are gaining user acceptance with better convenience and mobility. Data card and Internet access on the mobile phone has shown the considerable increase in the India. There have been some movements in the area of public Wi-Fi hot spots however, the current costs of access limit frequent usage of any mobile Internet.

1.1 Understanding Mobile Internet

Mobile Internet is the system of interconnected network which is accessed through mobile devices such as a cell phone, PDA or other portable gadgets or browsing a mobile network such as Wi-Fi. This access does not require a desktop computer or a fixed landline connection. It can also be referred to as Internet access 'on the move'. The table below depicts the differences between the mobile Internet and traditional Internet:

	Mobile Internet	**Traditional Internet**
Devices	Predominantly Smaller screen devices such as mobile phones, PDAs or other portable gadgets	Relatively Larger Screen such as Desktop Computer
Portability	Highly Portable	It has its natural limits
Navigation flexibility	Limited navigation flexibility with up and down function	Enhanced navigation because of the attached navigation tools like mouse, joystick, keyboard etc.
Speed	Currently, speed of Internet access is very slow. It is expected to increase with the onset of 3G	Speed is better and can be accessed either by dial up or broadband
Compatibility Issues	There may be browser compatibility attributed to usage of different operating systems like Windows, Symbian, etc.	Relatively lesser compatibility issues
Interactivity	Highly interactive with more personal experience	Fairly high interactivity though lesser than the mobile counterpart

1.2 Wireless Industry in India

India's mobile market has witnessed the significant growth since year 2000. As of today, India is world's second largest market after China based on the mobile subscriber base. The growth rate of telecom industry in India is one of the highest compared to other telecom markets in the world. The graph below depicts the growth in the wireless subscriber base in India over the years with the total wireless subscriber base surged at approximately 471 million as on September 2009. This has lead to increase in the overall tele-density to 44.3% in the end of September 2009 as compared to the 33.23% for the quarter ending in December 2008.
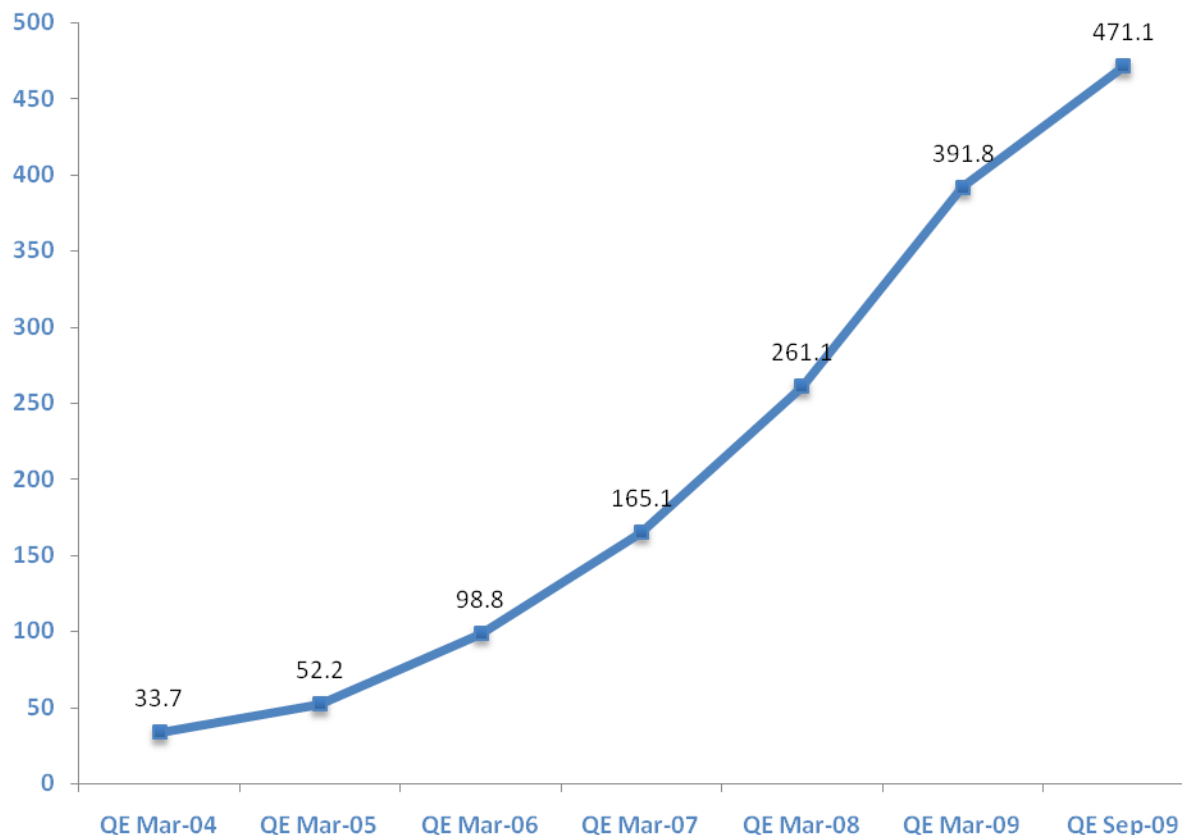

However average revenue per user (ARPU) levels has came down by 6.82 % compared to the December 2008 quarter which is not a healthy sign for the industry. This growth in the telecom industry is majorly attributed to the voice as compared to the data usage. With the crashing voice prices, telecom

operators are bound to look at models which could increase the ARPUs. Mobile Internet may prove to be critical to fulfill this plan.

1.3 Internet in India

I-Cube 2008, an annual syndication from IMRB International reports that continuous growth in the Internet adoption has been witnessed for the Internet in India. With increase in user base, the growth rate has reduced compared to previous years and reached at approximately 25% as on September 2008. This has resulted in increase in claimed Internet users to

**All India Claimed Internet Users (Urban)**
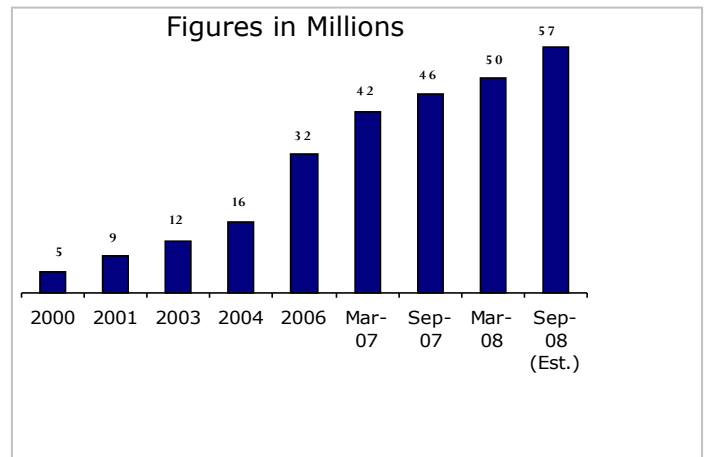
Source: I cube, 2008, IMRB Syndication

57 millions as on September 2008. This growth is attributed to the variety of online applications like online communication, information search, user generated content as well as online entertainment applications like gaming.

1.4 Emergence of Mobile and Public Wi-Fi hot spots as a Point of Access

Over the years, cyber cafes dominated Internet market in India and have been the leading point of access. In year 2008, 58% of Active Internet users have accessed Internet using cyber cafes. This is followed by Internet access through office (37%), home (33%) and others.

Base: 17.9 Mn Active Users surveyed in 30 cities
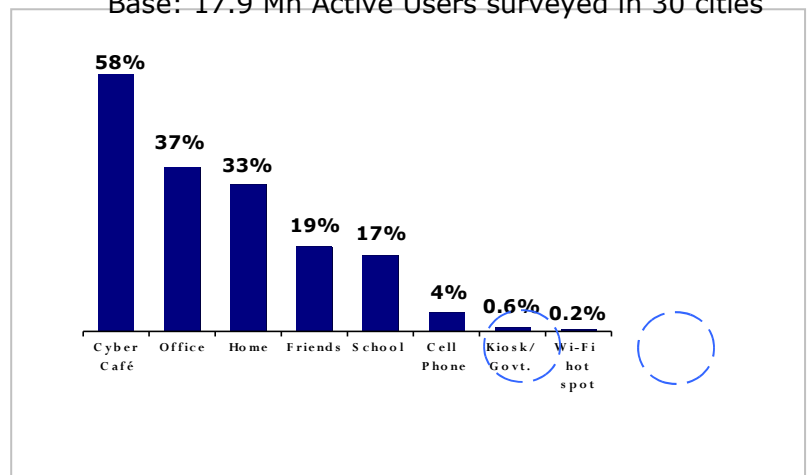
*Source: I cube, 2008, IMRB Syndication*

Mobile is emerging as the potential point of access for low PC and high mobile penetrated Indian market, although the present usage is restricted to 4% of total Active Internet user base.   Compared to last year, there has been significant increase in number of users (104 %) who have adopted this device for Internet usage. The Wi-Fi hot spots as a point of access have been utilized by the 0.2% of Active Internet users. All in all approximately 4% of the 36 Million Active Internet Users are accessing their mobile phones for Internet access at least once a month.

Further, we have seen with the increasing notebook / laptop penetration in the homes as well as businesses, the data card (mobile dongles that can be attached the laptops) market has increased significantly. Recently with the coming of the EVDO technology, high speed data cards are also available in the market.

2.0 Factors Enabling the Mobile Internet in India

India is second fastest growing telecom markets in the world. The wireless industry has seen the significant growth since its inception resulting in the wireless subscriber base surged at 392 million as on March 2009 (Source: TRAI). Similar growth patterns are not observed for the Internet growth in India which has resulted in Internet subscriber base to 57 million as on September 2008. This user base also includes the data card, public Wi-Fi hot spot and mobile phone users' i.e. mobile Internet users.

Emergence of Mobile as a point of access offers lot of opportunities for increasing the mobile Internet penetration for low PC and higher mobile phone penetrated Indian market. To facilitate this growth there is a need for efforts in the areas mentioned-technology, content and devices. Innovative devices, appropriate content and better technologies offered to the customers at cost effective rates will drive the mobile Internet growth in India.
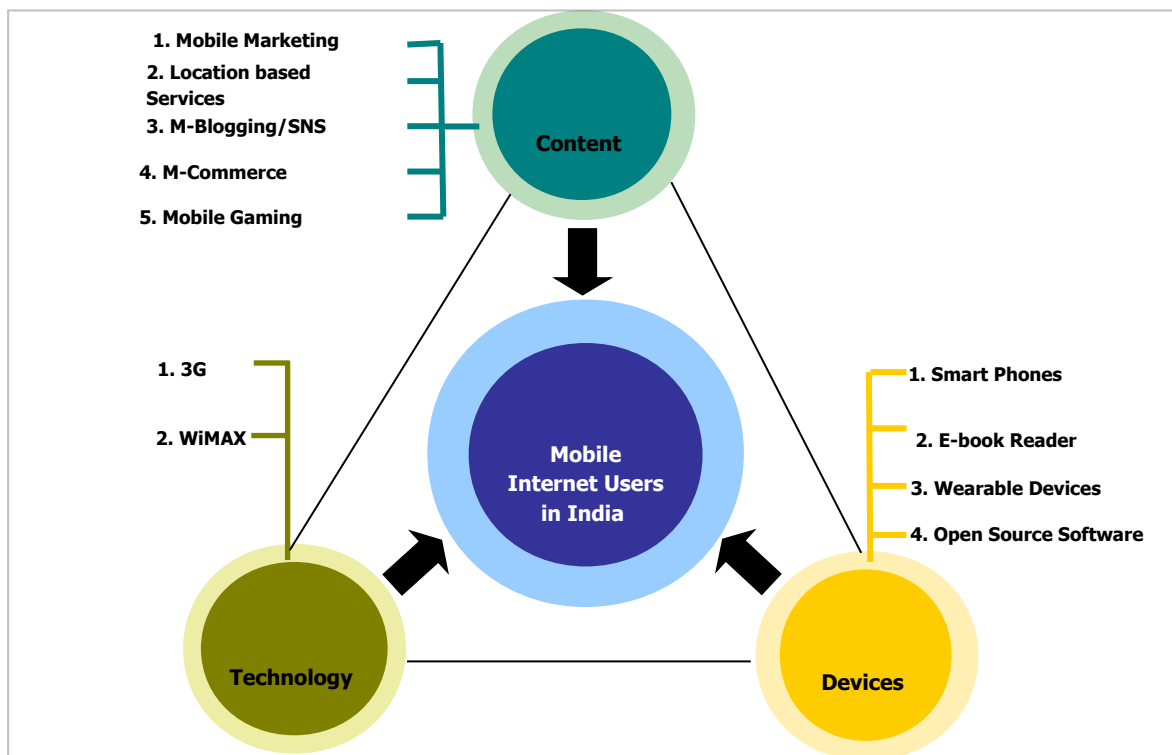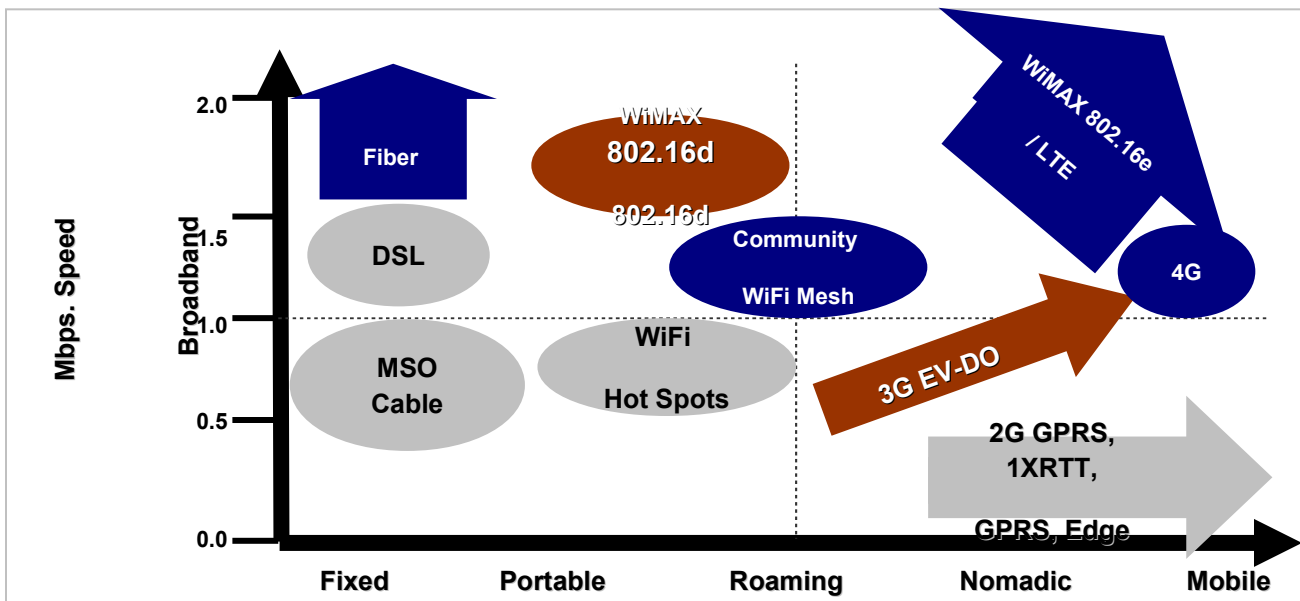
3.0 Technology

Over the years, telecommunication technologies have transitioned from data, voice, and video to the mobility. This has evolved from the triple play service of Internet access, television and telephone with the quadruple play of wireless access. The following table depicts the transformation of telecommunication technologies and the various features offered to the consumers:

Stage	Technology	Speed	Features
1G	AMPS	NA	Analog (voice only)
2G	GSM CDMA	< 20Kbps	Voice, SMS, conference calls, caller ID, push to talk
2.5G	GPRS 1xRTT EDGE	30Kbps-90Kbps	MMS, Web browsing, short audio/video clips, games, applications, and ring tone downloads
3G	UMTS 1xEV-DO	144Kbps - 2Mbps	Full-motion video, streaming music, 3D gaming, faster Web browsing
3.5G	HSDPA (upgrade over UMTS) 1xEV-DV	384Kbps - 14.4Mbps	On-demand video, videoconferencing
4G and beyond	WiMAX 802.16e LTE	100Mbps- 1Gbps	High-quality streaming video, high-quality videoconferencing, Voice-over-IP telephony

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3.1 Emerging Technologies

Following the trends as in developed countries, Indian telecommunication industry is going under a sea-change resulting in improved communication facilities and better connectivity. This section focuses upon the emerging technologies which could further improve the means of communication in India. The diagram, below, depicts the past, existing and future trends which have been and could be witnessed over a period of time in terms of mobility. X-axis represents the stages towards complete mobility, whereas, Y-axis is the speed of connectivity.

The figures in dark blue represent the future and emerging technologies that could transform the foundational structure of the telecommuting. With high speeds through Long Term Evolution (LTE) Technology and other 4G technologies, it is expected that new forms of content would be available in the mobile environment.

3.2 3G

3G is the third generation telecommunication technology based on the International Telecommunication Union (ITU) family of standards under the IMT-2000. 3G works over wireless air interfaces such as GSM, TDMA and CDMA technologies and are designed to carry voice as well as higher data usage rate. These networks offer various services which include wide-area wireless voice telephony, video calls, and broadband wireless data on the move.

3G technology provides various advantages over the other technologies such as high data transfer rates, map and positioning services, multiplayer gaming and enables high-resolution video and multimedia services with streaming audio and video capabilities which can be used *"on the move"*.

Low speed of access of Internet is acting as a barrier for growth of mobile Internet in India*.* Voice based services acts as the major contributor to the Indian telecommunication companies compared to the data services using Internet. The upcoming 3G auctions will act as the catalyst to improve the usage of data services. Affordable handsets and appropriate content will act as the other important factors which will contribute for success of this technology in India.

3.3 WiMAX

Worldwide Interoperability for Microwave Access (WiMAX) is the next-generation of wireless technology designed to enable pervasive, high-speed mobile Internet access. WiMAX operates on the same principles as that of Wi-Fi. It provides wireless transmission of data using a variety of transmission modes, from point-to-point links to portable Internet access. It provides broadband wireless access (BWA) up to 30 miles (50 km) for fixed stations, and 3 - 10 miles (5 - 15 km) for mobile stations. Due to this delivery model, this technology is often termed as "Non Line of Sight Transmission". The term WiMAX encompasses receivers of various profiles such as fixed-wireless type, Nomadic type and Mobile type.

WiMAX offers high-speed mobile Internet access to the widest array of devices including notebook PCs, handsets, smart phones, and consumer electronics such as gaming devices, cameras etc. It also allows more efficient bandwidth use, interference avoidance, and is intended to allow higher data rates over longer distances. Provides portable connectivity and is a wireless alternative to cable and DSL for "last mile" broadband access.

In India, Reliance and TATA communications have piloted the Internet services powered by the WiMAX technology. Another company – Tikona has announced plans to launch internet access services using he WiBro (Wireless Broadband) technology.

4.0 Content

Emerging technologies will enable the users to experience Internet access with better speed and connectivity. The availability of appropriate content will drive this usage and help in increasing the frequency and number of hours of usage. It is of paramount importance to cater the content as per the varied need of the user.

With the advent of the technology, devices have transitioned to the small screen with more personalized experience. Devices used for mobile Internet predominantly use relatively smaller screens compared to the traditional Internet. Also, there is a considerable difference between the content offerings on small-screen compared to the big-screen. The diagram below shows the diverging paths followed by the Internet content for big and small screens across the globe.

Small-Screen Content
- Communications-Centric
- Highly Interactive
- Adapted or Made-for-Mobile
- Device-Optimized
- Bandwidth-Light (Mostly)
- Limited Browsing
- Light Formats (Mostly)
- Location-Aware (Always on)
- Mobile and Internet Brands

- E-Mail
- Social Networking
- News
- Sports

Big-Screen Content
- PC- and TV-Centric
- Some Interactivity
- Not Made-for-Laptop
- Device-Neutral
- Bandwidth-Hungry
- Heavy Browsing
- Video and Rich Formats
- Less Location-Aware
- Internet Brands

Source: Yankee Group, 2008

Over the years, there have been a lot of improvements in the content development for the small screens. These are enabled for accessing the large volume of the data. Introduction of smart phones has increased the range of data access with full access of HTML

browsers. This experience of accessing the data over the small screen is different compared to the big screens which are designed for extended period of interactions.

Although, Mobile Internet is very much in its nascent stages in India yet the future potential of this technology cannot be denied. Technological innovations and emergence of mobile as an access point will provide several opportunities. This will affect the way in which we communicate, play and even do the financial transactions.

Lack of compelling content limits the mobile Internet utility. Over the years, there has been considerable change in the content delivery with the introduction of the innovative applications like M-commerce, M-blogging and even location based services. This has resulted in the transition of applications from basic communication to the entertainment options like Mobile TV and user generated content like M-blogging and social networking sites (SNS).

The adjacent graph shows the different applications accessed by the Active Internet users through Mobile phones. Online communication is the main purpose for accessing Internet followed by information search.

With the introduction of M-commerce, advance booking of movie tickets using mobile phones and mobile adaptations of the social networking sites like Facebook and Orkut, there is substantial increase in users.
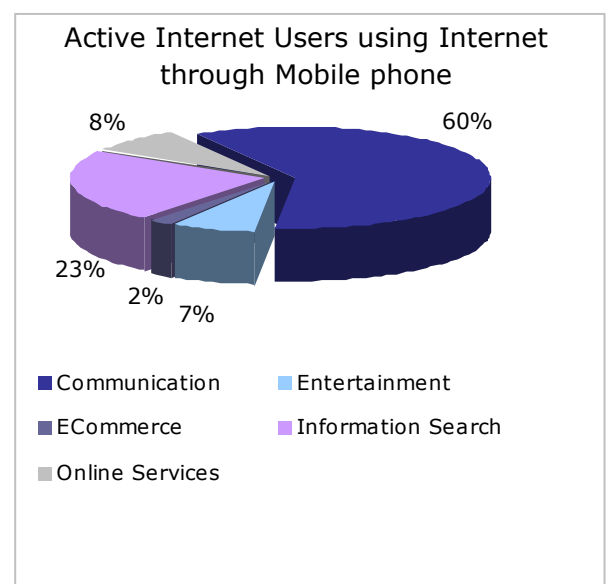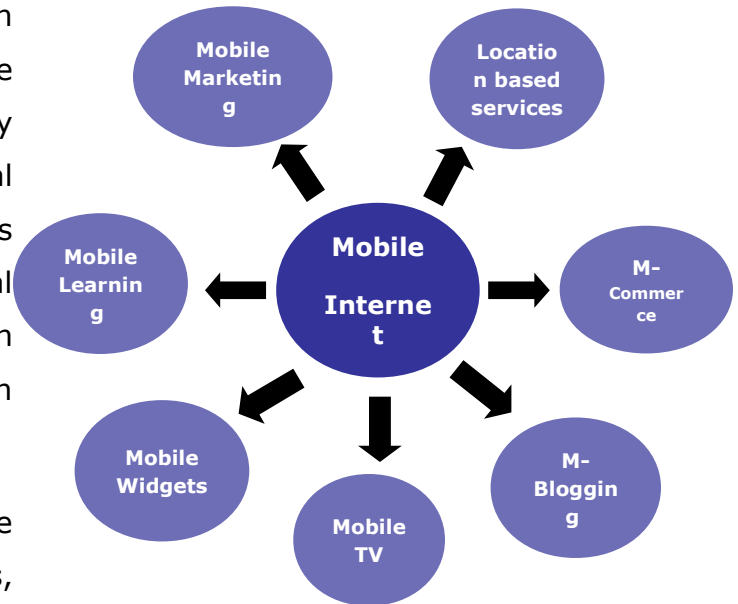
Source: I cube, 2008, IMRB Syndication

5.0 Devices

Technological convergence has led to the launch of various innovative devices which are compact, portable and changed the way for user interactions. Introduction of innovative devices will play a major role for boosting the growth of mobile Internet in India. Following section focuses upon such devices which have enabled Internet access with entire new experience:

5.1 Smart Phones and Advanced Processors

A smart Phone is a mobile phone offering PC like capability which runs on operating system software. With the improvement in the technology, customers are able to avail smart phones with better facilities such as powerful processors, increase memory space, larger screens and open operating systems at affordable price points.

Blackberry is such one device, developed by Research in Motion (RIM). It supports push email, mobile telephone, text messaging, web browsing and other wireless information services. These phones are majorly used by the executives to keep themselves updated with important communications with mobility.

iPhone is device marketed by Apple Inc. works on GSM technology. It offers various functions as a camera, media player, text messaging and visual voice mail offering complete multimedia experience to the user with better touch screen capabilities. iPhone has provided the interactive features for Internet access over the mobile phone but these features are focused on the Apple proprietary products. iPhone is not able to penetrate to the masses in India because of its high price.

Intel® Atom™ processor is the smallest processor build specifically for the Mobile Internet devices. Lesser power consumption and improved performance are needed for increasing the efficiency of the Mobile Internet Device. In addition to this, Intel's collaboration with 'Ubuntu' an open source community

will lead to the opening up the various opportunities for mobile computing devices in future.

5.2 Wearable devices

Wearable computing devices allows users to display and interact with the Web on any surface. These devices deliver big-screen viewing experience from very small package. Using these devices user will get the rich, hands-free, Internet and digital browsing experience in an improved manner. Improved interaction time- removing several manual steps from the process of receiving relevant, contextual information and complete mobility are the important advantages of these devices over the existing devices.

The researchers at the MIT labs have formulated the 'The Internet as Sixth Sense' concept for these devices. These devices are priced at $350 and it is expected that with the production on the mass scale these devices will be cheaper than the mobile handsets[1].

Hitachi, a leading manufacturer in new technology, has also developed an Internet device that could deliver a big-screen viewing experience from a very small package. This solution is a head mounted device with a miniature display that gives the impression of viewing a 13-inch desktop screen at a distance of two feet[2].

5.3 E-book Reader

An e-book reader is a device which displays e-books i.e. books in digital format. This device facilitates the reading and carrying more than 100 e-books on the move. It supports various digital document formats such as .txt, .pdf, .jpg, .htm and .rtf files. With the use an e-ink display users can get a feel of reading a textbook.

Globally, various players have launched this device. Of these, Amazon Kindle, Sony Reader Pocket, Sony Reader Touch and Barnes & Noble Nook have

[1] http://www.readwriteweb.com/archives/wearable_Internet.php

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gathered lot of attention from the customers. Understanding the present penetration levels and increase in the consumer acceptance for e-books this product has a promising future.

In India, these devices will be launched with the introduction of technologies like EVDO. State owned telecom providers like MTNL, BSNL have already launched 3G services in some of the metro cities in India but penetrations are really on the lower side. Cost effective roll out these technologies by the private companies will decide the future of these products in the country and the acceptance levels among the price sensitive and value driven Indian consumers. In addition to this, economics for these devices must be worked out as there are additional downloading charges for e-books.

5.4 Open Source Initiatives

Globally, the growth of mobile Internet was restricted by the technical constraints and reluctance of service providers to facilitate open access. The mobile Internet user interface was facing major hindrance because of volume of handsets in the market, the number of different operating systems and different developer platforms leading to compatibility and integration issues. Over the period of time, there are changes in this area with the players like Apple, Google and Nokia are actively pushing open mobile Internet initiatives. The table below depicts these initiatives and its target areas:

Open Initiative	Company/ Companies Leading Initiative	Other Participants	Target Area of Initiative	Comments
iPhone/iPhone SDK	Apple	Kleiner Perkins, AT&T, T-Mobile, Orange, Vodafone, O2, etc.	Drive innovation and development toward Apple-controlled channels	Is there really a need for more commentary on the iPhone?
Android/Open Handset Alliance	Google	Open Handset Alliance (e.g., China Mobile, KDDI, NTT DoCoMo, Sprint, Telefonica, Intel, Qualcomm, TI)	Entire device software stack	Google-dominated initiative
AOL	AOL	Action Engine, Aricent, Infosys, Obopay, ShoZu	AOL open mobile platform (AOL MyMobile, AOL.com WAP portal)	Stimulate interest in AOL's mobile properties as destination sites
Joint Innovation Lab	SoftBank, China Mobile, Vodafone	None yet announced	Widgets and other application/UI innovations	Seeking leverage from "mobile operators' unique capabilities"; implies some interest in countering proprietary developments
LiMo Foundation	Founding members: Motorola, NEC, NTT DoCoMo, Panasonic, Samsung, Vodafone	New members include Infineon Technologies, Mozilla, Sagem Mobiles, SFR, SK Telecom, Verizon Wireless, etc.	Linux-based open mobile device software platform	Strong service provider participation and a number of high-volume devices already in the market
Symbian Foundation	Nokia	Symbian licensees and newer foundation members	Free, open sourcing of Symbian OS and associated stack elements	Underscores Nokia's commitment to a services-led future; highly disruptive to Android and potentially other platforms if Nokia can disassociate itself
Verizon Open Network Initiative	Verizon Wireless	Not yet announced	Third-party device and developer access to the Verizon network	Shorten device certification process; expand type of devices allowed on the network; embrace new partnerships
Yahoo! Connected Life Platform	Yahoo!	Any company that seeks to create a widget for Yahoo!'s mobile properties	Yahoo! Portal (i.e., mobile web site; Yahoo! Go 3.0 client)	Leveraging early mover advantage to become the de facto mobile internet platform/destination site

Source-Yankee Group, October 2008

5.4.1 Google Android

Google Android is an operating system developed by Google and uses Linux platform. This is an attempt for development of operating system using open source software initially by Google and then by the open handset alliance-a consortium of several companies. This provides massive opportunity for the extension and creation of new and traditional Internet applications, services, sources and uses of information.

Following the trends of across globe, HTC has already launched the first Android powered phone –HTC Magic in India recently in June 2009 using the Airtel network which provides for accessing many utility based applications. Using Android, new features and better interactivity can be expected over a period of time. Android not only act a effective platform for Java Applications, audio/video /still media formats, high speed Internet access but also provides more flexibility to consumers for customizing the look and feel of their handset . Being an open

source initiative, there is no license fee for this OS which brings down handset prices. This will help in targeting the main stream price sensitive Indian consumers. Following HTC, many other handset manufacturers like Samsung, LG and Motorola are planning to launch the smart phones using this operating system.

5.4.2 LiMo Foundation

LiMo Foundation is an industry consortium with more than 50 telecom players, dedicated to creating the first truly open, hardware-independent, Linux-based operating system for mobile devices. The efforts of this organization will lead to the open and Linux based software platform for devices which will provide high-speed-3G data access and roaming, location-based services, mobile TV, music storage and delivery capabilities as well as advanced digital camera and imaging functionalities.

5.4.3 Symbian Foundation

Symbian platform is an open source operating system for mobile devices. The Symbian platform is based on Symbian OS and software assets contributed by Nokia, NTT DOCOMO, and Sony Ericsson, including the S60 and MOAP(S) user interfaces. Nokia has acquired Symbian and launched Symbian foundation to create a vendor-neutral environment and transform the Symbian operating system into an open source platform. The organization is working to make Symbian available under the Eclipse Public License (EPL), a moderately permissive open source software license. It has been expected that using this open source initiative, handsets will be launched in 2010.

5.4.4 Other innovative devices

Innovation in the devices has lead to the introduction of specialized devices focusing on music, video, online communication or other applications like navigation, gaming etc. These devices enable different user experience using mobile Internet and targeted to niche segment for satisfying their specific needs.

Portable Navigation Device (PND)

Portable Navigation Device also called as Personal navigation Device is an electronic product which provides positioning capability and navigation features. These devices are Global Positioning System (GPS) enabled and helps in finding out the locations. These devices are used in automobiles for finding out the locations and for navigation purposes. The latest version of this device offers variety of user interfaces including maps, turn-by-turn guidance and voice instructions.

Kangaroo TV

Kangaroo TV is the handheld device targeted to sports fan. The GUI is part of a service that captures live video, audio and real-time data and broadcasts it to the device. The device can be used for a variety of sporting events such as football, professional golfing and baseball and offers different sporting experience.

Zipit Wireless Messenger

Z2 wireless messenger enables user to stay connected with friends or colleagues. It supports AOL, MSN and Yahoo instant messaging services using wireless network.

6.0 Users

As stated in the earlier part of the report, enablers such as technological developments, content delivery and innovative devices must be delivered understanding the mobile Internet users' requirements. Acceptance of any technology or a product largely depends on the demographics of users who intend to utilize it. Considering the fact that mobile Internet as a concept is still to assume a sizeable recognition, it is imperative to identify the target segment who would readily accept such an offering.

Emerging telecommunication technologies and the devices will provide the necessary platform for providing this access in much different way with increased interaction and the improved speed. Appropriate content delivery will play a significant role for this adoption among users.

The adjacent graph shows profiles of the Active Internet users that access Internet using mobile phones. It has been witnessed that nearly 70% of these users are college going kids and young men. These demographic segments fall in the age group of 18-35 years which also contributes maximum to the total Active Internet user base.

Active Internet Users using Internet through Mobile phone

- 11% School Going Kids
- 35% College Going Student
- 33% Young Men
- 10% Older Men
- 7% Working Women
- 3% Non-working Women

Source: I cube 2008, IMRB Syndication

Understanding the higher adoption for the technologies of users in the age group of 18-35 years, this segment of customers will form the early majority for mobile Internet. It has been observed that there is significant percentage of users who are school going kids access Internet through the mobile phones. But the lack of spending power and monitoring from
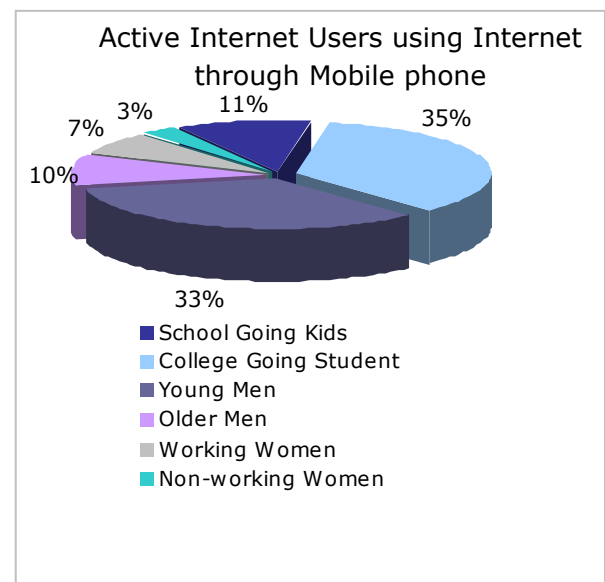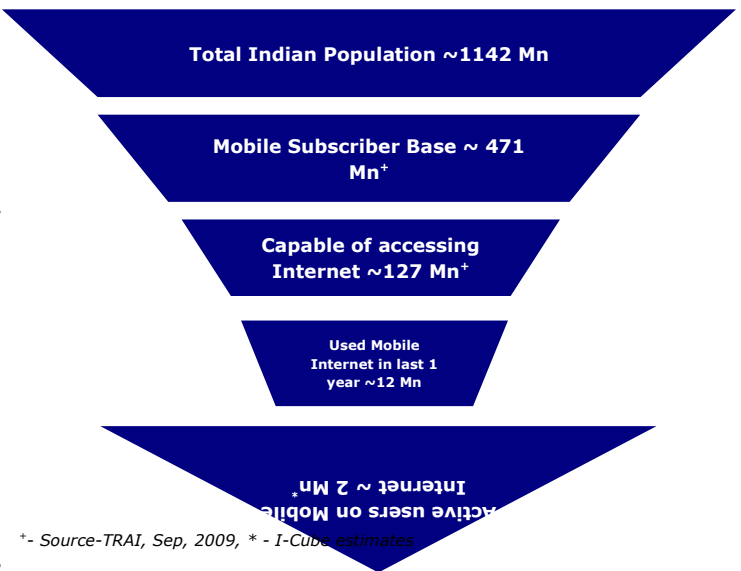
the parents will not lead to the higher penetration of the mobile Internet in the introduction phase.

6.1 Mobile Internet User base in India

The Indian telecom industry has witnessed significant growth with a subscriber base of 471 Mn as on September 2009 *(Source: TRAI report).* However, the number of subscribers capable of accessing Internet is just 27% of this penetration i.e. 127 Million.

Of these 127 Million, we estimate that around 12 Million users have used Internet over their mobile phones ever in this year (at least once in last one year). However, if we calculate the active users, i.e., the users who are using Internet over mobile phones at least once in a month, as per our current estimates, there are only about 2 million users accessing Internet through their mobile phones and other mobile devices on an active basis. Considering the 3G spectrum auctioning and reduction in the prices of 3G and GPRS enabled handsets in future, we estimate that there will be around 25 million mobile Internet users by 2012, and upto 50 million users by 2014.

Total Indian Population ~1142 Mn

Mobile Subscriber Base ~ 471 Mn^{+}

Capable of accessing Internet ~127 Mn^{+}

Used Mobile Internet in last 1 year ~12 Mn

Active users on Mobile Internet ~ 2 Mn[*]

[+]- Source-TRAI, Sep, 2009, * - I-Cube estimates

6.2 *Data Card Users in India*

Low speed of access and higher prices are acting as the hindrances for the penetration of the data cards in India. With the launch of EVDO data card services, we expect the penetration to increase to 2.1 million by 2011.

All India Data Card Users (Urban)

Figures in '000

279	651	1211	2096
2007-08	2008-09	2009-10	2010-11
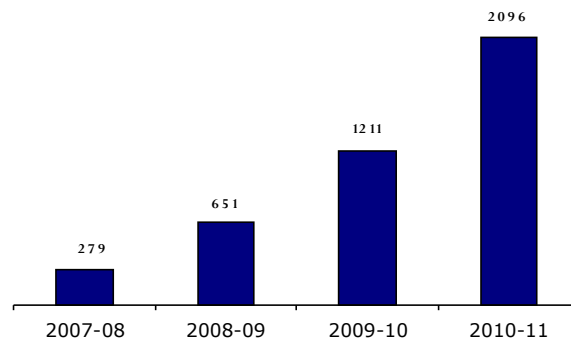
7.0 Drivers for Mobile Internet in India

As stated in the earlier part of the report, the mobile Internet penetration in India has not reached its potential. These penetration levels are on lower side as compared to developed countries. To boost mobile Internet adoption, there is need for combine efforts from regulators, technology developers and adopters i.e. users. This section focuses upon the role played by institutions, stakeholders and technological factors which will drive mobile Internet in India.
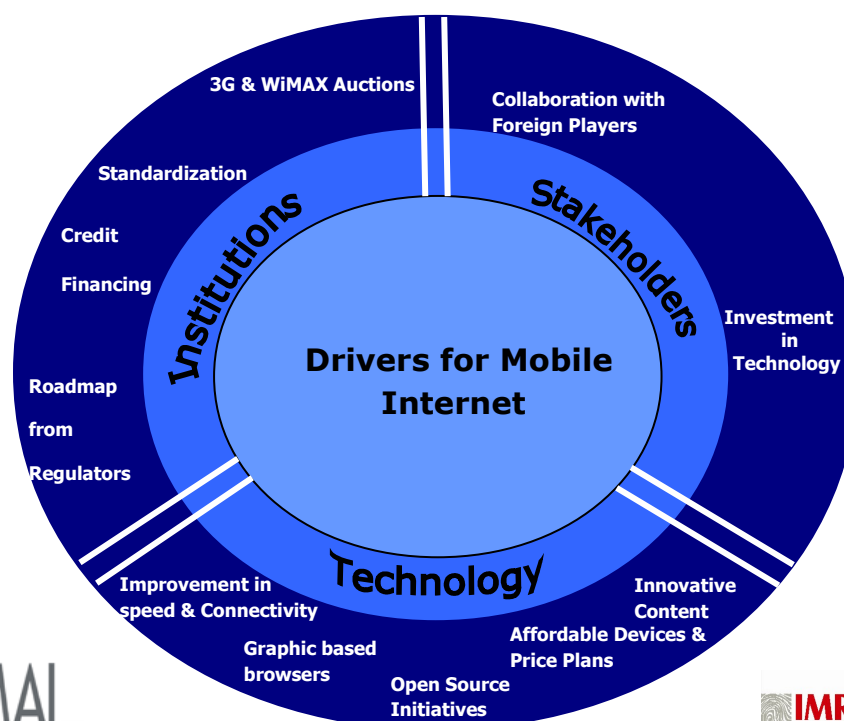
Institutions:

For purpose of this report, we are defining the institutions are those who will help in building supportive environment for the growth of mobile Internet in India. These institutions are primarily the government regulatory bodies, financial institutions and venture capitalists that will facilitate this growth.

3G & WiMAX Spectrum Auctions:

Emerging technologies will drive the growth of mobile Internet in India by providing the better speed and improved connectivity. The timely spectrum auctions will lead to the successful deployment of these technologies. For facilitating the data usage, it has to be ensured that the part of 3G spectrum must be reserved for data. Tax benefits awarded by the government for the data usage will help in the economical offering to the customers.

Standardization in Technology:

Presently, the devices are following the different software platforms. This results in compatibility issues among the various devices. Standardization in the technology will enable the easier integration among the various technologies and will ensure compatibility among the devices.

Clear Roadmap from Regulators:

The important role will be played by the regulator for the development of mobile Internet in India. The policies set by the regulator will provide the supportive environment and fair play among the players. Formulation of guidelines for M&A and FDI in the country must be developed. Regulators can further boost growth of mobile Internet by providing the tax benefit schemes to the players. Adoption of best practices followed by the other countries globally and customizing them as per the Indian market will lead to the successful deployment of policies in the country.

Technological Factors

Over the years, telecommunication technologies have evolved because of continuous innovations. In India, this has lead to the increase in penetration of voice and data services. But this growth is majorly driven by the voice based services compared to the data usage. Below is the list of the technological developments which will drive the mobile Internet usage in India:

Improvement in Speed and Connectivity:

Unreliable network performance and lower speed of Internet access are acting as the hindrances for development of mobile Internet in India. It has been expected that with the development in the technology, ubiquitous connectivity and improved speed of access will be offered to the users.

Graphic based Browsers:

The existing browsers provide the text based environment for using Internet over mobile phone. These browsers are not as user friendly as graphic based browsers present on desktop PCs. Graphic based browsing and integration among different browsers will drive user for using Mobile Internet.

Open Source Initiatives:

As stated in the earlier part of the report, open platform is the next area of growth for mobile Internet. This will lead to the standardization and will lead to the reduction in the price of the handsets.

Affordable Devices and attractive price plans:

High prices of data card and usage of Internet over the mobile phone act as a barrier for using Mobile Internet. This has lead to the restricted penetration of mobile Internet in India. Introduction of cheaper handsets and attractive price plans such as flat rate pricing will help in increasing this penetration.

Innovative Content delivery:

Lack of appealing content over the Internet limits the mobile Internet utility and penetration. Appropriate content over the Internet will drive the users for using Mobile Internet. It has been expected that innovative applications like M-Commerce, M-Blogging etc. will help in attract many users.

Stakeholders

Stakeholders involve the organizations such as technology developers, service providers, content developers and adopter of this change i.e. users or enterprises. These will act as the contributors to the development of mobile Internet in India.

Collaboration with foreign Players:

Telecom players in the developed countries have better technologies and experience of the successful deployment of these technologies. In the past, the successful collaboration with foreign players has helped Indian companies like Airtel with Alcatel and TATA with DOCOMO to gain the competitive advantage.

Investment in technological development:

Over the years, the telecommunication technologies evolved and offered better services to the technological adopters i.e. enterprises and consumers. Technological providers must invest in the research and development of the newer technologies to attract new users and better services to the existing consumers.

The success of above mentioned drivers is based upon the interrelations between institutions, stake holders and technological factors. The economics of this offering has to be worked out based upon the price sensitive and value driven Indian consumer.

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8.0 Future Trends

This section focuses upon the future trends which will be observed for Mobile Internet in India. These trends will be based upon the advancements in the devices, technologies and the content delivery.

Ubiquitous Connectivity

The rise in the demand for the connectivity from the enterprises and consumers will lead to the connectivity among the various platforms. Ubiquitous connectivity designates a seamlessly integrated platform for interactions and collaboration across diverse and global communication environments. This will enable users to access and share the content over various platforms with complete mobility.

Fixed Mobile Convergence (FMC)

Fixed mobile convergence provides way to integrate the wire line and wireless technologies and services to create a single telecommunications network. FMC promises to overcome the physical barriers that prevent the telecom service providers from targeting the potential customers with all types of services. This initiative will offer the opportunities to the wire line service providers to not remain tethered to the landline networks and wireless operators will be able to utilize the resources to satisfy the growing demand of mobile subscribers. This initiative will lead to seamlessly connectivity for all devices, access points, applications and underlying networks, to deliver an enhanced user experience.

Quadruple Play

The transformation of telecommunication technologies will enable the triple play service of voice, data, and video with the wireless service i.e. mobility. The implementation of this quadruple play services has restricted to the some of the

countries of the world. With the improvement in the technologies, it has been expected that users will be able to access these uninterrupted services even on the move.

Mobile Advertising

Mobile as a device offer lot of opportunities for the low PC but high mobile phone penetrated Indian market. Considering the success of mobile advertising in some of the countries globally, relevant formats of the mobile advertising will be introduced in the Indian market.

Unified Messaging Service (UMS)

Traditional communications systems delivered messages into several different types of stores as per the type of message. Unified Messaging Service will help in bringing together all messaging media such as voice messaging, SMS, email into a single interface which is accessible from variety of devices. Based on the functionalities offered by this system, this service it will be more helpful for the enterprises compared to the users.

About eTech Group | IMRB

eTech Group | IMRB (*a specialist unit of IMRB International*) is a research based consultancy offering insights into IT, Internet, Telecom & emerging technology space.

Our continuous link with industry and a constant eye on the pulse of the consumer ensures that we can decode the movements of technology markets & consumers. To our clients we offer an understanding of the present market environment and a roadmap for the future.

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About Internet and Mobile Association of India (IAMAI)

The Internet & Mobile Association of India (IAMAI) is a not-for-profit industry body registered under the Societies Act, 1896. Its mandate is to expand and enhance the online and mobile value added services sectors. It is dedicated to presenting a unified voice of the businesses it represents to the government, investors, consumers and other stakeholders. The association addresses the issues, concerns and challenges of the Internet and Mobile economy and takes a leading role in its development. The association's activities include promoting the inherent strengths of the digital economy, evaluating and recommending standards and practices to the industry, conducting research, creating platforms for its members, communicating on behalf of the industry and creating a favorable business environment for the industry. Founded in January 2004 by leading portals in India, IAMAI in the only specialized industry body in India representing the interests of online and mobile value added services industry.

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