

TOP 10 TECHNOLOGIES

While 10 years may not seem like such a long time for a dynamic sector like the telecom industry which is always on the move—with newer technologies being discovered even before other nations have time to fully explore existing ones—a decade of telecom is a vibrant period and more so the last decade, which has seen the fastest yet uptake of mobile and related technologies.

The adoption of new technologies may have taken longer than other nations—due chiefly to a tedious government policy—however, there is no doubt that the hunger with which new technologies are so rapidly devoured, is proof of a growing market which shows no sign of saturation, unlike other world markets.

Keeping this in mind, we explore the top 10 technologies that have had the most impact on the Indian telecom sector in the last decade, taking us from the era of communication deficit to an era of ubiquitous computing and seamless communications.

VAS
Prepaid usage accounts today for more than 70% of total subscribers worldwide and is as high as 80-90% in some emerging markets, a major driver of VAS, along with falling tariffs. With a host of applications targeted at all age groups—be it m-commerce, LBS, GPS, social networking, MMS, apps stores or customized apps for individual needs, and propelled by the popularity of GPRS and mobile Internet—VAS has taken off in a big way, and higher-bandwidth networks like 2.5G and 3G, as well as cheaper handsets and a growing subscriber base, are only contributing to the VAS mania. Speaking about how video VAS doing, John Samuel, president India, Verizon Business says, “Video will become the most engaging app with 3G and will drive greater business efficiency, break down global barriers, and reduce costs, providing a faster time-to-market.” Kanika Atri, head, marketing, NSN India, says, “GPRS addressed the lack of last mile



Past Forward: Top 10 Technologies of the Decade

Advent of 4G services will lead to an explosion of high-end applications that will transform telecom service providers into experience providers

technology providers are emerging as a substitute to the basic voice technology provider, making way for almost free calls over the Internet, routed through a mobile. Calling it the marriage of voice and data, Amitabh Singhal, director, Telless Consulting Services says, “Close on the heels of fast Internet access, 1995 saw the introduction of a technology by Vocaltec of Israel, which went on to disrupt the telephone communication system like nothing had in the past 100 years. IP with a combination of Broadband and VOIP, as we know is more or less the default technology underlying any form of communication that we do today to transmit data, voice and video over any land, air or sky based systems meant to transmit and communicate. The very basis of NGN, highly intelligent communication links would be IP and therefore such is its impact.” Remarks Jim Machi, SVP, global marketing, Dialogic, “True telecom and Internet convergence is possible because of VoIP, spurring incredible innovation.” With less than 5.5% of IP addresses remaining, IPv4 will soon give rise to IPv6, another no-

table transformation. The growth of IPTV is also worth a mention here. According to Subhashini Prabhakar, CTM, Dax Networks, “Emergence of IPTV, creates a hope among telecom service providers for an extra revenue stream to increase ARPUs, and stop the churn of fixed line phones. While traditional TV viewing is ‘lean back’, Mobile TV is a ‘lean forward’ technology, making it highly interactive.” According to Yusuf Motiwala, founder & CEO, TringMe, “Apart from peer-to-peer and browser based telephony, with over 471 bn calls likely to be made via mobile from 100 mn users globally, VoIP in the near future is one technology that has and will continue to have a serious impact in the telecom sector.” Says Chandan Mendiratta, VP, SP & system engineering, Cisco India & SAARC, “The biggest advantage of IP telephony is its cost effectiveness for long distance call, and the software-oriented nature of IP telephony makes it easily scalable, making it possible to integrate other services and applications as well. With the advent of 3G in the Indian market, IP telephony will allow users to enjoy high quality voice, video and data over a single line and at affordable rates.” In future, even real-time voice on wireless networks may evolve as VOIP (SIP protocol). According to Manjit Singh, MD, Ruckus Wireless, India & SAARC, “Migration of core network from traditional networks to IP networks has made it possible to have multiple vendors in the network, which has given larger flexibility, as well as capex savings to the telcos, while affordable services to end customers.” IP telephony revenues touched \$209 mn in 2007. The IP telephony market in India is growing

infrastructure issue in smaller towns and cities and also opened up a huge market for VAS providers to inject infotainment content to consumers.” The mobile VAS industry in India generated revenue of \$1.2 bn in 2007-08 and is slated for a much higher growth in the wake of next generation networks.”

Cloud Computing and Hosted Apps
According to IDC, the India Public Cloud Computing market was estimated to be \$66.7 mn in 2009 and projected to grow at a CAGR of 40% over the next 5 years to 2014. Explains John Samuel, president

India, Verizon Business, “Gone are the days when companies built for capacity. Today’s smart CIO uses only those resources necessary for his business. This is where cloud comes in, and customizing your cloud—with a shift from public to private cloud or hybrid cloud—is being considered by enterprises. According to Natesh Mani, president, consumer infrastructure services, Sify Technologies, “Cloud has allowed creation of compute infrastructure on the fly, thereby reducing time to implement an application and reducing cost of operations. This also enabled providing computing as a utility service on demand.” Says Navin Vohra,

VP, sales Asia Pacific, Andrew Solutions, “Cloud computing has revolutionized the business model in the telecom industry and it will continue to provide storage support to the mobile service providers.” Adds Alpna Doshi, CIO, Reliance Communications, “Carrier cloud infrastructure offerings will provide measurable benefits when users connect to these resources through carrier-provided VPN connections, with no additional bandwidth cost to access carrier cloud data centers.”

VOIP
Due to the all-IP concept in backhaul and access, VoIP came into the picture. With increasing market adaptation, these

- Top 10 technologies of the Decade**
- VAS
 - Cloud and Hosted Apps
 - VOIP
 - Mobile Internet
 - Web 2.0
 - Rise of Smartphones
 - WiFi, Wireless and WiMax
 - GSM/CDMA/Edge
 - 2G to LTE
 - FMC and Enterprise Mobility

at a CAGR of 119%. The VoIP market will be around \$6 bn by the end of the year 2010, according to estimates.

Mobile Internet

On December 11, 2002, the IEEE Standards Board approved the establishment of IEEE 802.20, the Mobile Broadband Wireless Access (MBWA) Working Group. According to Yusuf Motiwala, founder & CEO, TringMe, "Continued technology advancements in cellular telephony has fundamentally changed the way we access data. The surge of mobile Internet usage is

platforms like Android, iOS, Symbian is also driving the growth of mobile Internet across the world. Mobile social networking has also played an important role in this growth.

Web 2.0

According to Christopher Casey, director of service provider business, Asia Pacific, Blue Coat Systems, "Web 2.0 is the driving enabler for social networking, many-to-many, videos, and the massive increase of user generated content. Once again, there is a need among users for increased bandwidth requirements/expectations from the telcos." Explaining this trend, Natesh Mani, president, consumer infrastructure services, Sify Technologies says, "Major business applications were web-enabled so that the usage became pervasive and could be accessed from any device, including while on mobile. This helped in extending the enterprise application to extranets, thus tearing down the border of enterprise and moving a truly borderless network." Adds Srinivasa Addepalli, SVP, corporate strategy, Tata Communications, "The Web as we know it today is more personal, interactive and real-time than it was a decade ago. The dot-com boom promise of changing the way we live and do business is now being realized."

Rise of Smartphones

Remarks Jayesh Easwaramony, VP, ICT practice, Frost & Sullivan, "Increased capability and capacity of mobile devices have driven the smartphone and tablet revolution, and touchscreen has made the handset display intuitive." According to

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Gartner, the worldwide market for touch screen mobile devices will surpass 362.7 mn units in 2010, a 96.8% increase from 2009 sales of 184.3 mn units. By 2013, touchscreen mobile devices will account for 58% of all mobile device sales worldwide and more than 80% in developed markets. Remarks Vikas Bansal, director, carrier sales India, Cable&Wireless Worldwide, "Smartphones are giving stiff competition to all kinds of mobile devices in India due to a southward trend in the cost of entry level smartphones, along with more affordable plans for both prepaid and postpaid subscribers. Smartphones will also increase Internet penetration which can provide a boost to an array of service providers." Talking about the rise in cheaper handsets, Samvit Raina, SVP & head, communications media & utilities, Patni says, "Even before the introduction of smartphones, which is arguably considered to be amongst the biggest revolutions in the telecom segment, there was steady and incremental evolution taking place in the handset category with introduction of dual-band, tri-band and eventually multi-band capabilities, enabling switching across networks and bands. Moreover, cost-effective smartphones have flooded the market over the last 2 years offering wide-ranging choices for mobile users." According to Alpa Doshi, CIO, Reliance Communications, "The growth in smartphone shipments continues to be the dominant trend in the handset market as costs fall and performance increases."

Wi-Fi, Wireless and WiMax

According to Subhashini Prabhakar, CTM, Dax Networks, "Fiber optic cables that replaces the standard copper wire of the local telco can carry high-speed broadband services integrating voice, data and video, and runs directly to the junction box at the home or building. This technology has had a great impact with respect to the service providers offering high speed broadband services." Explaining the wireless trend, Vikas Bansal, director, carrier sales India, Cable&Wireless Worldwide says, "Wireless subscribers with capabilities to access Internet via mobile, is currently seeing a

tremendous rise. With the rollout of 3G and other forms of wireless technologies such as WiMax and LTE, the growth will be faster and greater. Gartner predicted in a recently published report that India will have 6.9 mn mobile and fixed WiMax connections by the end of 2011." Says Navin Vohra, VP, sales Asia Pacific, Andrew Solutions, "WiMax has shown significant uptake globally, due to the limited availability of 3G spectrum and low broadband penetration. This is seen as a great prospect for rural connectivity, as well." On the standards front, the WiMax Forum expects to see WiMax Release 2 IEEE 802 available commercially during the 2011-12 timeframe. Also, the last one decade has seen tremendous growth in the use of Wi-Fi by users. Thanks to IEEE 802.11 standards and its gradual evolution, most of the device manufacturers now provide built-in Wi-Fi as a standard feature and there is no premium attached to this anymore. According to an estimate, there are over 700 mn people using Wi-Fi spread across 750,000 public hotspots. Remarked Erwann Thomassain, director, marketing, Amdocs, "Wireless access is proving to be more cost-effective than other access technologies as a permanent access network in mid sized Indian towns and rural areas."

GSM/CDMA/EDGE

While Reliance introduced WCDMA, as a competing technology to GPRS, according to Vaibhav Mehta, VP, new business development, Elitecore, "The year 2001 brought another turning point with the policy announcement of additional licenses in basic and mobile services. By forcing rollout obligations to cover urban/semi-urban/rural areas in equal proportion, this witnessed the launch of CDMA in new circles, start of tariff reduction in GSM cellular and more. Soon after this, 2003 again observed a boom in mobile services subscription. In this way, availability of affordable mobile service created a better connected mobile nation and invigorated exchange and reach of

economic and other transactions, thus benefiting people in even the remotest regions and at every socio-economic stratum." Remarks Thomassain, "This technology initially designed to place phone calls, also introduced wireless data to the market, with the development of GPRS and EDGE."

2G to LTE

Having been promised to the telecom industry since 2007, 3G only came into the Indian market in 2010. Till then 2G was instrumental in wireless uptake and will still continue to make its presence felt for voice and data, in circles where 3G has not been rolled out. Remarks Kanika Atri, head, marketing, NSN India, "3G has been transformational and has ushered in a new era of mobile broadband offering

features. For most emerging markets, 3G and 4G will be the dominant (or only) broadband access technologies." LTE too is being perceived as a great remedy in boosting India's broadband penetration and many experts also believe that LTE will co-exist with WiMax and 3G, and shall help plug network gaps by enabling backhaul support wherever needed. According to Vikas Bansal, director, carrier sales India, Cable&Wireless Worldwide, "LTE's adoption by service providers around the world has the potential to generate economies of scale unprecedented by any previous generation of wireless networking technology as it becomes the universal 4G mobile platform used by both GSM and CDMA service providers."

FMC and Enterprise Mobility

According to John Samuel, president India, Verizon Business, "Today with companies going global and looking at global market, the executive needs mobility to quickly and securely access his network, so enterprise mobility becomes very important. Unified communications which converge multimedia communications like voice, video, instant messaging and business applications in a single device also contribute to greater enterprise mobility. Talking about the contribution of managed services to enterprise mobility, Kanika Atri, head, marketing, NSN India, "Managed service operations has transformed the backend business model for service providers, significantly reducing opex and improving network management and downtime, thus positively impacting the end user experience. It has also allowed service providers to compete more effectively, focus on subscriber acquisition and yet expand at the same time. As mobile networks become more complex with the introduction of 3G and LTE, we will see traditional managed services moving to multi-vendor and multi-technology managed services."

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