

van den Dam, Rob

Conference Paper

Re-inventing the telecommunications industry

19th Biennial Conference of the International Telecommunications Society (ITS): "Moving Forward with Future Technologies: Opening a Platform for All", Bangkok, Thailand, 18th-21th November 2012

Provided in Cooperation with:

International Telecommunications Society (ITS)

Suggested Citation: van den Dam, Rob (2012) : Re-inventing the telecommunications industry, 19th Biennial Conference of the International Telecommunications Society (ITS): "Moving Forward with Future Technologies: Opening a Platform for All", Bangkok, Thailand, 18th-21th November 2012, International Telecommunications Society (ITS), Calgary

This Version is available at:

<https://hdl.handle.net/10419/72508>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

The 19th ITS Biennial Conference 2012

“Moving Forward with Future Technologies: Opening a Platform for All”

18 - 21 November 2012, Thailand

Re-inventing the Telecommunications Industry

Rob van den Dam
IBM Institute for Business Value
Rob_vandendam@nl.ibm.com

Re-inventing the Telecommunications Industry

Rob van den Dam
IBM Institute for Business Value
Rob_vandendam@nl.ibm.com

Abstract

After a decade of meteoric growth, the telecommunications industry now faces mounting challenges, leading to question whether the industry may fall victim of its own success. Dramatic forces are radically changing the telecommunications landscape, and it is not at all clear how it will evolve over the coming years.

Giving the ongoing uncertainties, IBM undertook scenario envisioning, that enables the industry to assess alternative contrasting futures distinctly different from the present. The findings are built on an extensive fact base, including face-to-face executive interviews with around 130 telecom providers, over 13,000 consumers surveyed in 25 countries in both developed and developing markets, and extensive secondary research. The analysis identifies four plausible scenarios that might emerge over the coming years, based on the trajectory and interplay of two key uncertainties: future addressable market growth and industry competition/integration structure.

The presentation will address:

- how the industry has evolved in the last decade
- the disruptive forces radically altering the telecommunications landscape
- the most likely scenarios for both developed and developing markets
- how advances in technology help telecom providers to prepare for the future
- how telecommunications stimulate economic development and improve lifestyle for people in both mature and emerging countries

A SHORT LOOK BACK

At the beginning of the new millennium, more than a century after its invention, less than one in six people in the world had access to a telephone of any kind. At the end of 2011, total mobile-cellular subscriptions reached almost 6 billion. With the world home to 7 billion people, that means a global penetration of 86%. In the mature world, where multiple SIM/device ownership is significantly increasing, penetration reached 122%.

Though the phenomenal growth in mobile telephony started in the mature markets, the emerging markets caught up very quickly, and now they are good for three-quarters of the mobile subscriptions. The communications service providers (CSPs) in these emerging markets demonstrated their ability to make profits from low ARPU users, with ARPU levels below US\$5.

The emerging markets were even leading the way in adoption of the SMS-based data lifestyle applications to deliver public information and advisory services to rural communities. These applications also allow mobile payments, money transfer and basic banking services, in particular useful in countries where a formal banking infrastructure is underdeveloped or unavailable.

One of the brightest spots in the industry towards the end of the decade was the phenomenal growth of mobile broadband, facilitated by the roll-out of HSPA networks. Driven in part by the increased penetration of smartphones, laptops/netbooks, tablets and other mobile Internet

devices, the number of mobile broadband subscriptions reached in 2011 just over one billion, almost twice the number of fixed broadband subscriptions (589 million).

Aggressive pricing and attractive packages, including “all-you-can-eat” bundles, have helped accelerate consumer adoption and take-up in mobile broadband traffic. The dramatic increase in application stores, following the success of Apple’s App Store, has reinvigorated the market for mobile applications. Both the iPhone App store and the Android App Store now contain more than half a million applications.

Overall, global mobile data traffic grew 2.3 fold in 2011. Worldwide, the total number of smartphones is expected to exceed 3 billion by 2017. Adding the growing number of notebooks and tablets, and the fact that we are moving to a world with a multiplicity of devices in a pervasive ‘Internet of Things’, we see that the growth in mobile broadband traffic will only accelerate.

While the boom in demand for mobile broadband is welcome for an industry looking for new sources of growth, there are also growing challenges, leading some to question whether the industry may fall victim to its own success.

DISRUPTIVE FORCES

Dramatic forces are radically altering the telecommunications landscape, confronting CSPs with major challenges (see Figure 1).

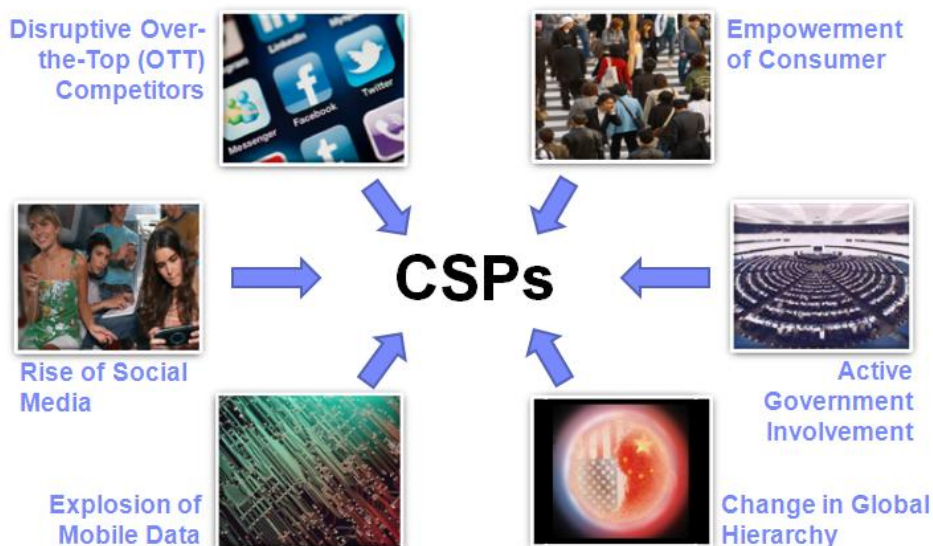


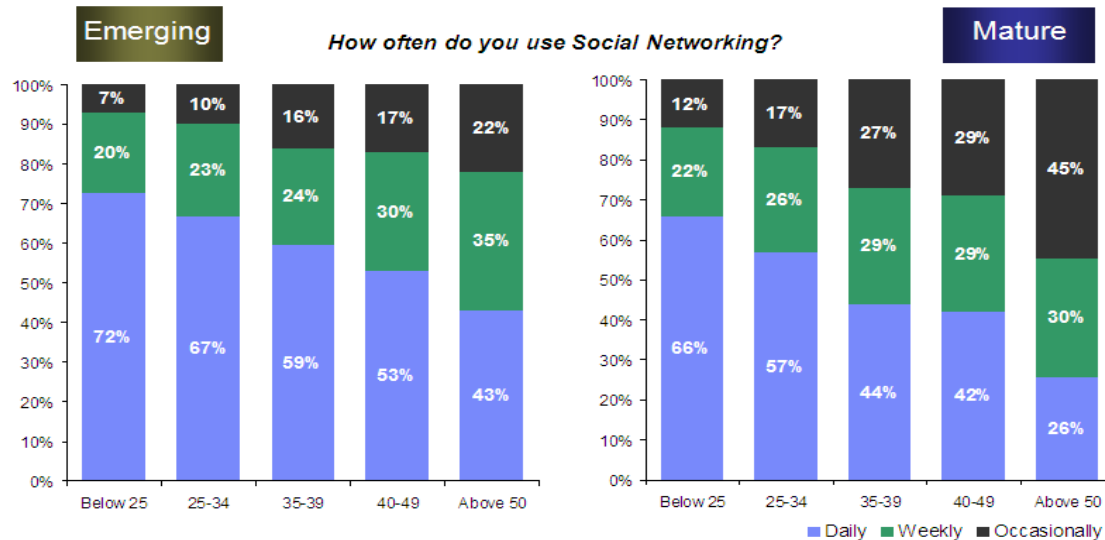
Fig. 1. Dramatic forces are radically altering the telecommunications landscape.

OTT providers thrive, value concentrates

Much of the growth in overall communication volumes has come from over-the-top (OTT) providers. These OTT providers have proven adept at dreaming up compelling new online experiences for consumers, which has been appreciated by the market. The market value of the companies of the Top 25 drivers of internet traffic are now almost half of the combined market cap of the top 150 CSPs, and they have achieved that with an average age of 14 years from founding. And the top four – Apple, Google, Amazon and Facebook – represent 70% of the total of the Top 25. The massive shift in value continues towards the OTTs as capital markets prize the direct customer relationship and value provided by OTTs, reducing the CSP valuation back to utility status.

Rise of Social Media

Social media such as Facebook and Twitter have become primary communication channels for an increasing number of people. These open platforms are shifting customers away from traditional CSPs and threaten profitable traditional services such as voice, SMS and long distance calling. It is the users of Social Media that are growing at significantly faster rates, even as take-up of traditional services accelerates in emerging economies (see Figure 2).



Source: 2011 IBM IBV Telecom Consumer Survey (25 countries, 13,237 respondents)

Fig. 2. Social Networking has become a key communication channel in both emerging and mature markets for all age groups.

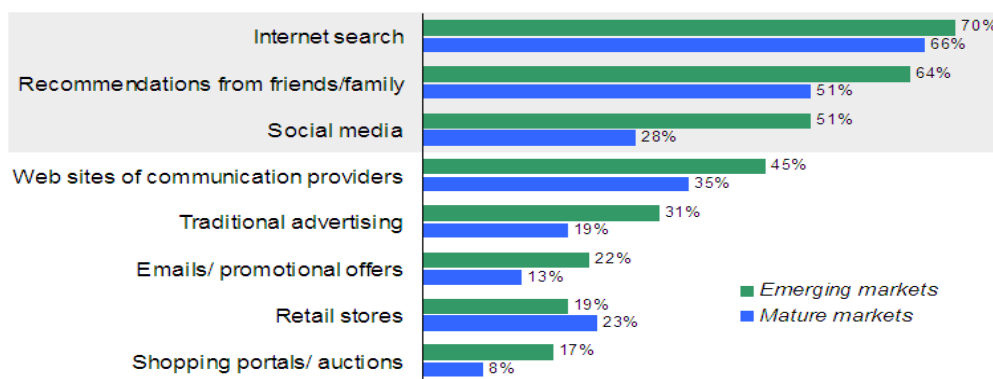
Mobile data explodes

Global mobile data traffic grew 2.3-fold in 2011, more than doubling for the fourth year in a row, and is expected to increase 18-fold between 2011 and 2016. Mobile video, in particular from OTT, will increase 25-fold in that period, accounting for over 70 percent of total mobile data traffic by the end of the forecast period. The explosive growth in mobile data causes significant capex and opex pressures on CSPs, further accelerating margin decline as the increase in data traffic will far outstrip revenue growth.

Empowerment of the consumer

Consumers today prefer to proactively exchange information about CSPs with friends and family or gather it via Internet search or social media (see Figure 3). As they encounter new products, services and experiences on virtually daily basis, many consumers feel less loyalty towards CSPs. At the same time, consumers now wield unprecedented power over how brands are perceived. A brand can be strengthened or weakened in a fraction of the time it once took due to the proliferation of instant, viral feedback via social media.

What are your preferred sources of information when you are looking for communication products and services?



Source: IBM IBV 2011 Telecom Consumer Survey (25 countries, 13237 respondents)

Fig. 3. Internet search, recommendations from friends and family, and social media have become the preferred sources of information for communication products and services.

Active government involvement

There is no doubt that the pendulum has shifted, in particular in mature markets, to heavier government involvement. And active government involvement means increasing regulations. The EU’s long-term vision, for instance, is to reduce mobile terminating rates in European member states to levels comparable to fixed termination. Another example are the FCC’s net neutrality rules putting broadband in the U.S. under an existing set of rules governing telephone services rather than its current status as a lightly regulated information service.

Change in global hierarchy

The growth for emerging market CSPs is likely to continue, with consumer demand, economic power and innovation shifting to rapidly developing markets. Part of this is due to the sheer volume of emerging market consumers, almost five times more than as mature markets. With close to 700 million subscribers in June 2012, China Mobile is the world’s largest CSP. With Bharti Airtel and Vimpelcom, they are in the top 7 of CSPs by subscribers. In emerging markets, mobile service revenue growth accelerated to 9.7% from 9.3%, offsetting a slowdown in the mature markets to 0.6% from 1.0%. And also consumer sentiment on future spending in emerging markets is high; it exceeds that of mature markets by 26% (see Figure 4).

Question: Compared to previous years, are you likely to spend less, the same or more on the following products / services in the next 2-3 years?

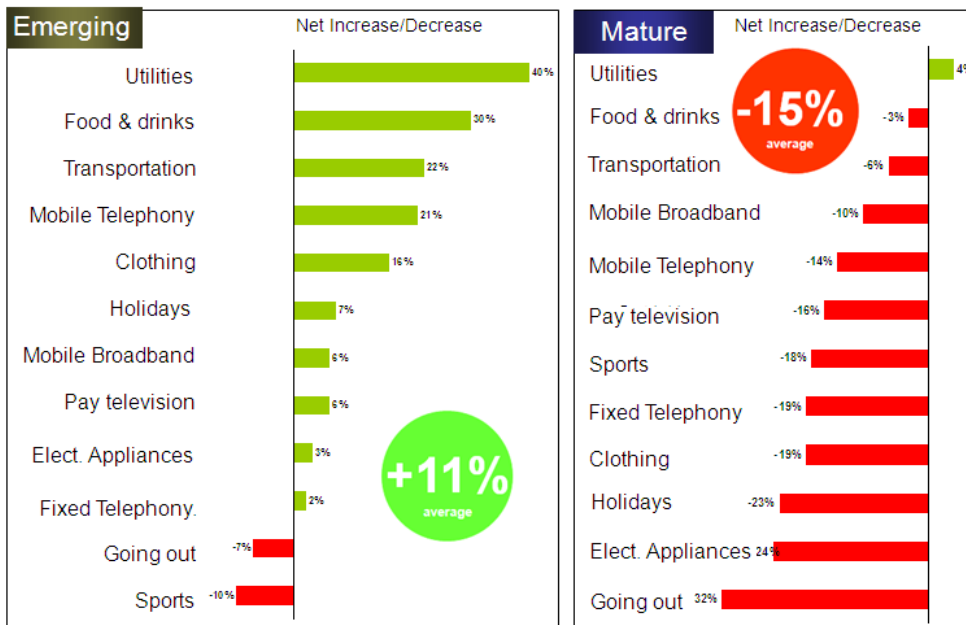


Fig. 4. Consumer sentiment on future spending in Emerging Markets exceeds that of Mature Markets by 26%

FOUR FUTURE SCENARIOS

Taking into account these dramatic forces, what evolution will transpire over the coming years? How will the industry evolve? Traditional approaches to predicting the future based on prefabricated world visions of economic and geopolitical trends are unsuitable for such a fast-changing industry as telecommunications, the evolution of which has taken many unprecedented turns over the past decade. Giving the ongoing uncertainties, IBM undertook scenario envisioning, that enables the industry to assess alternative contrasting futures distinctly different from the present. The findings built on an extensive fact base, including interviews with 60 senior executives from nearly 40 CSPs, over 13,000 consumers surveyed in 25 countries, and extensive research by the IBM Institute for Business Value (IBV).

The study identifies important industry trends that are highly predictable, combined with critical variables of which the outcomes are far from certain. Mapping the extremes of the possible outcomes reveals four plausible scenarios that might emerge over the period, based on the trajectory and interplay of two key uncertainties: *future addressable market growth* and *industry competition/integration structure* (see Figure 5).

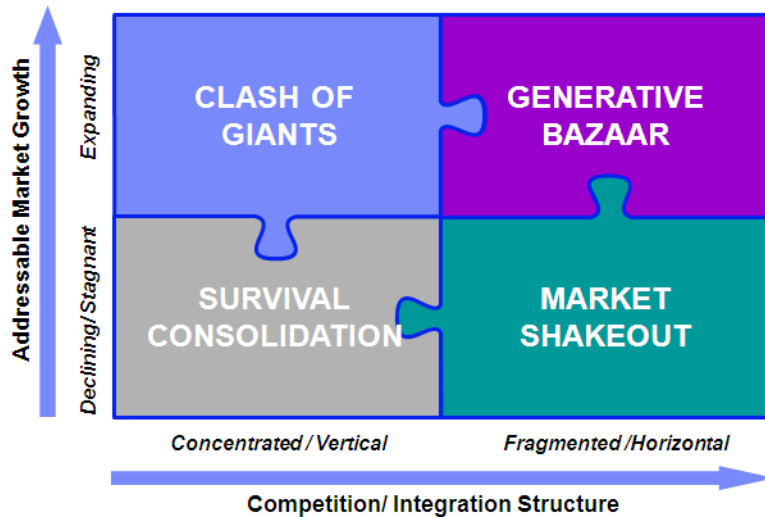


Fig. 5. Four contrasting future scenarios.

Survival Consolidation

Survival Consolidation is certainly not an attractive scenario. Survival consolidation will occur as a result of reduced consumer spending leading to revenue stagnation or decline. Economic pressures and austerity measures might force consumers to cut back on communications spending in the upcoming years. In fact, we have witnessed a decline in wireless growth/revenues in a number of European countries. Investor’ loss of confidence in the sector produces a cash crisis. Constrained access to and high cost of capital elicits consolidation.

Market Shakeout

Alternatively, a prolonged economic downturn may invoke a different response from CSPs, investors and governments that leads to a different outcome – the Market Shakeout. The industry vertical integration model is disaggregated, either on voluntary basis or forced by investors as separate businesses may attract superior/sustainable returns. While this concept has been in the telecoms industry for at least a decade, we now see this concept maturing and extending to create a distinction between offering (premium) connectivity services sold to third parties, and serving end-customers under retail brands.

A shakeout may also be triggered by increased fragmentation resulting from greater involvement and investments by government, municipalities, utility companies and others to provide ultra-fast broadband to under-invested areas and/or for economic and business purposes.

Clash of Giants

Clash of Giants results as response to increased competitive threats from OTT providers and device manufacturers. Players as Google have one development team, one capex, one infrastructure, one set of services deployed almost uniformly everywhere. CSPs have different strategies, services that are not interoperable and multiple capex budgets and infrastructures. As response we see increased carrier cooperation and alliances. Initiatives of global industry collaboration include the ones GSMA is leading for rich communication services (RCS), the OneAPI global applications platform and Voice over LTE (VoLTE). It must help CSPs deliver experiences that make their applications and services more compelling beyond what OTT players can possibly deliver.

In this scenario, where the addressable market is expanding, mega carriers are also looking for growth through selected verticals, such as e-health and smart grids, for which they may

provide packaged end-to-end solutions. AT&T, for instance, set up its ForHealth business unit in 2010, with a vision to accelerate the delivery of innovative wireless networked and Cloud solutions specifically for the healthcare industry.

Generative Bazaar

Generative Bazaar is predicated on the break-up of the vertical integration model, resulting in some form of structural separation of CSPs into distinct network (NetCo) and services (ServCo) businesses. This co-operative will be based on a viable funding model to provide affordable and unrestricted open connectivity to any person, service provider, device or object. The Net Co-op may also emerge through the deliberate intervention of national governments, as currently exemplified in Australia and Singapore.

Generative Bazaar reflects a model that is opposite the dominant model of today. Connectivity becomes more prevalent in the mix. Most of the revenue is coming from connectivity. The demand for access grows, fuelled by the proliferation of smart devices, including machine to machine connectivity supporting growth in sensing and automated response capabilities. This scenario accelerates the explosion of new services and applications emerging to support the increasingly digital economy and personal lifestyles.

TECHNOLOGY TRENDS

Each of the four scenarios described is triggered by a distinct combination of factors across several dimensions: economic/financial, technological/investment, regulatory/competition and marketplace/customer-related. It is not a set of strategic choices to be made by individual CSPs. To be ready, providers will need to watch for the key scenario triggers, understand the requirements for success in each of these contrasting environments and begin to address execution gaps. Moreover, the telecom industry can act collectively to create the conditions necessary for the more dynamic and profitable scenarios of *Clash of Giants* or *Generative Bazaar*.

In addition, CSPs should nurture the critical capabilities that are common across all four scenarios. These include a cost-effective ultra-fast broadband deployment strategy, business optimization based on more advanced network and customer insights, more effective cost management and embracing a highly collaborative culture. Advances in network technology, analytics, cloud computing, social collaboration tools and security help CSPs to prepare for the future.

Faster/smarter networks

The milestone of 600 million fixed broadband subscriptions was surpassed in the first quarter of 2012. Most of the subscriptions are located in the developed world. In terms of technologies, Digital Subscriber Lines (DSL) account for six out of ten fixed broadband lines, with fiber optic FTTx and FTTH accounting for 16.7% of the market. Ultra-fast broadband continue to be a high priority for a number of CSPs, as they prepare to meet a considerable rise in demand, in particular TV and video services. Experimental programs plan to offer 1000/1000 Mbit/s symmetrical connections directly to consumer homes.

The race for ultra-fast mobile broadband appears to have been decided in favor of LTE, in combination with WiFi mobile traffic offload and femtocells. LTE is to deliver up to a maximum 50 to 70 Mbps downstream, with LTE-Advanced supplying even faster connections than LTE. LTE technology is to handle the tremendous surge in data traffic and to reduce per Gb prices. Today CSPs all over the world are running trials or rolling out new LTE 4G wireless networks, and the industry estimates that \$300bn will be spent doing this.

High speed broadband, as important it may be, doesn't make a network smart. We need the network to be multidirectional instead of point-to-point. Smart networks must be infused with

advanced analytics and intelligence, so they can identify connected instrumented things and collect relevant data from them. They'll have to be built on a foundation of standards and software that allows trillions of devices and objects to 'talk.

Advanced analytics

Perhaps the most valuable untapped resource CSPs are sitting on is the enormous amount of extremely valuable and unique information they have access to. There is a never ending stream of incoming data, both structured and unstructured, from the network, transactions, enterprise applications, web, mobile, social conversations and sensors. The challenge is to turn this Big Data into insights. That's where advanced analytics can help.

Advanced Analytics capabilities are able to process vast quantities of data within tolerable elapsed time. New tools are also capable to capture and evaluate the unstructured data produced by social platforms. In 2011, the possibilities of business analytics reached the public consciousness like never before with the unveiling of IBM Watson. Watson can sift through an equivalent of about 1 million books or roughly 200 million pages of data, and analyze this information and provide precise answers in less than 3 seconds.

Cloud computing

Cloud is a continuation of the virtualization trend that has been underway for over 15 years. The trend has now reached a tipping point where Cloud can create and deliver business value. Recent technology advances have created a perfect storm of opportunity for CSPs to embrace the power of Cloud to perform current business more efficiently (e.g. Cloud telephony), to maximize its role in vertical industries (e.g. Cloud-based healthcare services) or develop radically different value propositions (e.g. CloudTV or Cloud-based gaming).

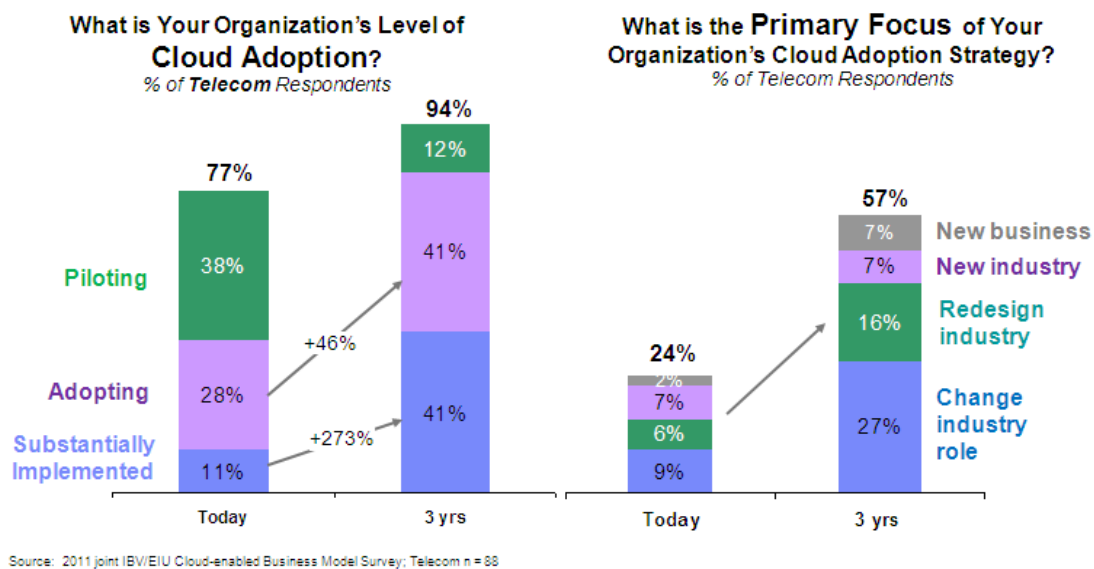


Fig. 6. Cloud is widely recognized by CSPs as an important opportunity.

IBM's 2011 Cloud Adoption survey revealed that three-fourths of the CSPs have piloted, adopted or substantially implemented Cloud in their organizations (see Figure 6). And though only a handful of CSPs generate significant value from Cloud services today, 57% of the CSPs in the survey indicated that they plan to rely on Cloud to enter new businesses or industries, reshape the industry or transition to a new role in the industry value chains.

Collaboration tools

An increasing number of CSPs are deciding to partner to expand the range of what is possible, tap into new sources of revenue and gain new competitive advantages. In the

telecommunications industry, innovation is required to address all the disruptions of the environment, and to be able to compete against OTT providers. Extensive collaborations across employees, partners, suppliers and customers will be the key.

Advances in collaboration capabilities help to better connect people, to break down boundaries, and to spur innovation. Social business tools significantly widens the aperture to identify, form and connect with relevant communities of interest, and to faster create and launch services that are more relevant, useful and accurate to consumers.

Security technology

Today, our world's infrastructure is both more sophisticated and more interconnected than ever before – linking vast amounts of information and services in new ways, but also introducing more security complexities and challenges in roughly equal proportion.

Advances in security technology help CSPs to secure protection against threats to personal, national and global security from cyber criminality. Technology developments in particular focus on security issues related to applications being migrated towards the Cloud, BYOD (bring your own device), growth in mobile, identity theft and increased threats from malware and cybercrime.

A CONNECTED WORLD

Our world is changing and becoming smarter:

- It is becoming increasingly instrumented. For example, there are billions of camera phones in the market and billions of RFID tags embedded into our world and across entire ecosystems
- It is becoming more interconnected. At the end of 2011 there were close to 600 million fixed broadband subscriptions, a million mobile broadband subscriptions, and the number of networked devices surpassed the global population.
- Systems are becoming more intelligent. 90% of the world's data was created in the past 2 years; 2.5 quintillion bytes of data are created every day.

The shift to a more connected world is transforming our society forever. Connectivity will become part of the fabric of society. Personal communications technology has evolved from a way to stay in touch into entertainment on demand, an office wherever you go, and social networks and streaming media as constant companions. Industries and municipalities are also coming up with new ways to improve lives using broadband. Simply put, healthcare, education and other vital services will never be the same, thanks to creative thinking and high-speed data transfer.

Realizing the potential of smarter communication technology will require the infusion of new capabilities and models into our systems to make it easier for devices to transmit and interpret data, provide more secure connections, and protect identities. The smarter world will build on next generation broadband networks, while embracing broader concepts of embedded intelligence, automated Machine to Machine (M2M) traffic, and the 'Internet of Things'.

High-speed affordable broadband connectivity is essential to the modern society, offering widely recognized economic and social benefits. The World Bank has estimated that a 10% increase in broadband penetration would yield a 1.21% and 1.38% increase in GDP growth on average for high-income and low/middle-income countries, respectively.

High-speed affordable broadband also improves our lives in a myriad of ways by providing better access to healthcare and education, and facilitates m-payments, to name a few. This is most compelling in emerging markets where this all was earlier out of reach. Broadband, either fixed or mobile, is making a tangible difference in the lives of people around the world.

It stimulates economic development, reduce poverty, generate employment and achieve prosperity, so needed in many emerging markets.

CONCLUDING

The communications industry is undergoing a massive transformation and this will affect every person and business on the face of the planet. This transformation will require significant and bold changes by existing CSPs if they want to remain an integral part of our future networked world – for example, through moving into adjacent markets such as healthcare and transportation, and maintaining the backbone for two-way smart utility meters, to name two.

The shift to a more connected world gives CSPs a need to rethink their identities as CSPs. After a decade of meteoric growth, the telecom industry now faces mounting challenges as explained above. But CSPs can turn these challenges into opportunities, not least of which is the opportunity to become the ‘middleware’ of the smarter planet.