Communications & High Tech

Igniting the next broadband revolution

By Arnim E. Whisler and Asheesh Saksena

It's a technology that can add hundreds of billions of dollars to the world's GDP, enough to put the global economy back on a path of vigorous growth. Here's how to make it happen.

Somewhere near the center of the global economic slowdown are the huge, and hugely troubled, communications and technology industries.

In the 1990s, on the premise that they were leading us into a new age of interconnectivity enabled by next-generation broadband, the world's telecom and allied tech companies attracted trillions of dollars in capital. The boom became a bubble, and when the bubble burst it left the industries dazed, governments scrambling and investors angry. All are now caught up in some very necessary post-mortems and corrective actions.

A consensus that broadband had been overhyped has emerged from the wreckage. But despite the excesses we've seen, the economic benefits to be gained from interconnectivity remain both genuine and immense.

Accenture believes that next-generation broadband will join previous innovations—the railroad, trans-atlantic flight, the transistor and the personal computer among them—that sparked long periods of economic growth. Indeed, we estimate that over the next five to seven years, this technology has the potential to contribute $300 billion to $400 billion a year to European GDP and $500 billion to US GDP.

Taking full advantage

We looked at a host of ways that could stimulate the global economy, from war and tax cuts to various big technology bets, including silent commerce and web services. None has the potential that next-generation broadband has to push the economy forward.

The radiating economic impact will be enormous, as consumers make a number of changes to take full advantage of the benefits of broadband. At the most basic level, people will spend more on their monthly network fees. People will also purchase new equipment—computers, modems, Wi-Fi (wireless fidelity) LANs, digital cameras, CD burners and MP3 devices—that is better suited to broadband's capabilities.

In addition, broadband users spend up to 64 percent more time on the Internet than dial-up subscribers. They spend 20 percent of their online time on entertainment and 12 percent on activities such as shopping, trading and banking, which can bring in additional revenues for the businesses that offer them. There are also general benefits from people being able to work at home more easily, including reduced commuting time, less congestion on roads and higher worker productivity.

This would be enough to put the world economy back on a path of vigorous growth. The tech, telecom and content sectors, with a modest assist from government, have the ability to make this happen.

A richer, more complete experience

Next-generation broadband is not just about cable modems and DSL access in the home. It will represent a dramatic advancement over current technology and will have four key features.

Ubiquitous access. Next-generation broadband will be an omnipresent "mesh" network offering both tethered and untethered access. It will be always on, always aware of the user's state and location, and it will require a broader range of technologies than those currently associated with broadband.

Enhanced cross-platform security. The highest levels of security will protect our most private personal

communications and our most critical business data. Security must safeguard users as they move from the home to the car or train to the office, and security features must be embedded in applications as well as in the network.

Lower costs. Businesses should anticipate and embrace rapid cost reductions in their business plans. Previous innovations (from transistors to transatlantic phone calls) have typically become up to 20 percent cheaper in each successive year after their launch.

Flexible speeds. Great speed is a defining characteristic of broadband, but there is no one speed that is essential for all applications. In many cases, the always-on nature of broadband will matter more than speed. Videostreaming to a top-end personal computer is a very different proposition than mobile e-mail synchronization to a hybrid phone or personal digital assistant.

With these characteristics, next-generation broadband opens the possibility of a much richer and more complete experience than previous visions of broadband did. It is the next great utility, as reliable and consistent as water or electricity supplies: an egalitarian network for companies and consumers to connect, share and transact business in a secure setting.

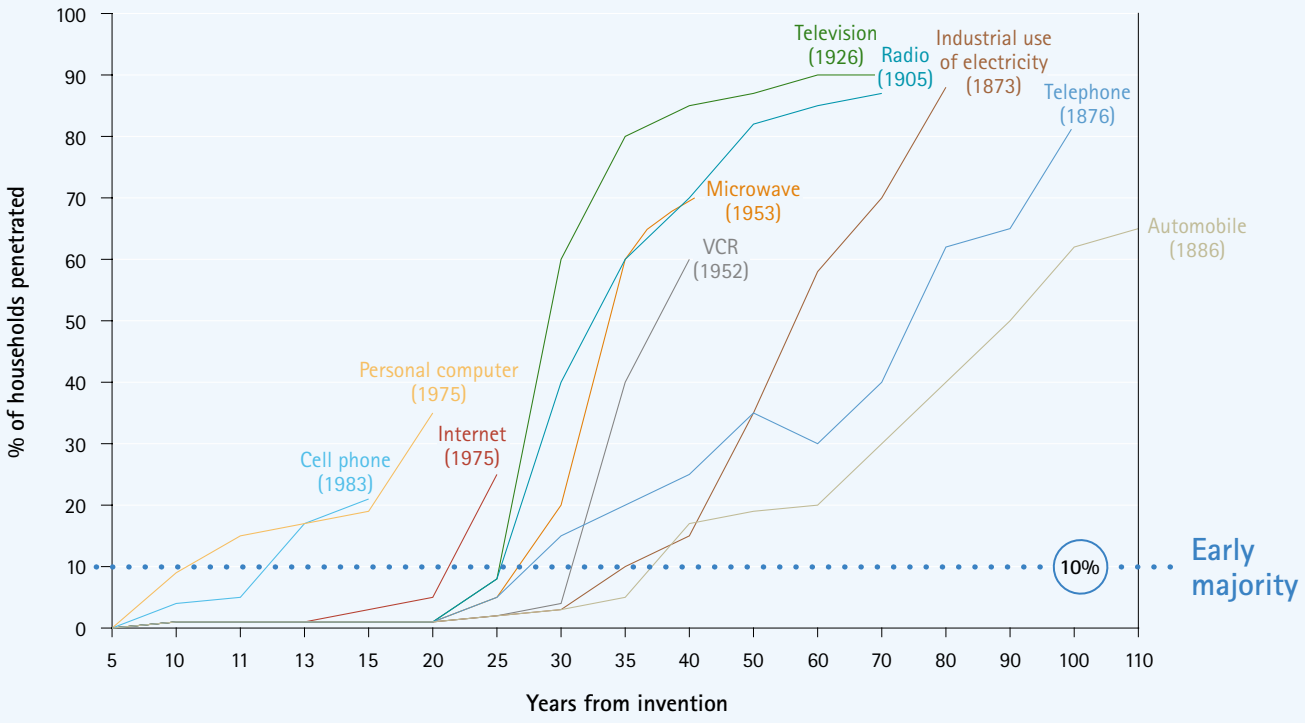
To date, broadband has followed the classic, S-shaped adoption curve of other economically powerful innovations. The pace of adoption starts slowly, driven by early users, and then increases rapidly once penetration moves past certain inflection points (see chart below).

Given the path broadband is on, it is clear it will reach critical mass on its own. So why intervene? Because not doing so would needlessly extend our current economic struggle. Some economies, like those of Taiwan and South Korea, are already well into the early stages of the mass market for broadband. Others, like the United States and parts of Scandinavia, are poised to hit 10 percent penetration this year. Unfortunately, several of the largest European economies are still below the first inflection point of 3 percent penetration (see chart, page 49). Unless something is done, it will take an additional four years for them to reach 10 percent.

And something can be done. Recent advances like consumer installed Wi-Fi, self-provisioning kits, and total-access solutions from

The S-curve of innovation

Most successful historic innovations show similar adoption curves. At about 10 percent, they seem to take off.



SOURCE: Frances Cairncross, *The Death of Distance*, Harvard Business School Press, Boston, 1997, 2001, p.37.

carriers have removed many of the technical obstacles to rapid and widespread broadband provisioning. Yet there remains a need to better understand the other impediments in today's market.

A lot of broadband discussion has focused too narrowly on supply issues: more network access, and faster speed, to more communities. These are important, but there is also a massive overlooked deficit on the demand side. In the United States, for instance, landline broadband connections already pass by 60 percent of all homes (that number is much higher if you consider recently launched wireless solutions), but only 8 percent of customers choose to be connected. Supply constraints exist, but they will come into focus only when demand catches up.

The industry's preoccupation with supply also narrows the vision of what broadband is and can be. Cable and DSL connections alone will not provide sufficient support for the new products and services needed for significant economic growth. It is only when the mass market gets steady access to secure high-speed information and content from wherever they are that we will see broadband's full potential and its effects radiating throughout the economy.

So how can industry and government unlock these benefits? By aggressively adopting a 12-point action program—the Accenture Broadband Stimulus Package—that addresses all players and all points of the value chain. The first six points are demand-oriented; they're immediately implementable and offer rapid return on investment. These points, in turn, should help to catalyze six more ambitious measures needed on the supply side. Together, these 12 measures can take broadband to the point where adoption will continue to grow under its own momentum.

Demand-side measures

At the moment, some of the most basic numbers about broadband don't add up. In the United States, for example, satisfaction rates are lofty, yet take-up lags availability. The most urgent task, therefore, is to stimulate demand, preferably without additional capital outlays. The measures here rely mainly on making better use of existing infrastructure and better-targeted marketing.

Current marketing efforts miss the fundamental potential of the medium. Most propositions are mass-oriented, direct-mail campaigns that stress faster speed. They don't describe the potential benefits of those technical improvements. Imagine if the primary selling point for television over radio had been bandwidth; the development of TV probably would have stalled.

Broadband's potential to dramatically alter a user's lifestyle needs to be communicated. Knowing that you can see your relatives over a broadband connection instead of just hearing them over the phone can be a powerful motivator for change.

1. Target underserved market segments
Current broadband marketers should be targeting early adopters instead of doing mass-market campaigns. Upgrading smaller, profitable segments is a much faster route to crucial inflection points than trying to inspire the social changes that will drive the mass market. Small businesses, for example, which are showing significant growth in broadband adoption, promise up to three times the return on investment of the average consumer—yet many current service bundles and price structures are inappropriate for them. And marketing efforts should be targeted at entire families, not just individuals—or at enterprises with remote workgroup communications.

2. Evangelize telecommuting
Only 25 percent of people who work at home have a broadband connection. Of the remaining 75 percent who are not broadband-enabled, 58 percent say they want it. Providers should therefore market broadband to big corporations as a telecommuting enabler. The business case—lower office costs, time savings, greater efficiency—is so compelling that corporations will surely become early bulk purchasers. Broadband providers can lead the way here by enabling their own workforces.

3. Offer equipment subsidies, not access discounts
The cost of broadband access must fall as the mass market grows, but now is not the time for price wars. Indeed, a significant percentage of current users would have been willing to pay more. Subsidizing the initial acquisition of a connecting device (as some mobile phone providers have successfully done with handsets) is more economically valuable than lowering the monthly cost.

4. Create attractive bundles of services
Broadband operators need to develop compelling bundles of products and services targeting specific user segments. The lure of a product like the Apple iMac is not simply clock speed, but also a bundle of capabilities (video editing, CD burning, digital photography) that users value.

Successful broadband bundles combine the device, applications and financing. And while early adopters may focus on price and speed, touting bandwidth to the mass market is a mistake.

Early adopters are using broadband for digital photography, music sharing, videoconferencing or simply taking advantage of the always-on features. All of these require auxiliary purchases besides the broadband connection.

Yet the communications, equipment and content industries continue to make it hard to integrate all these technologies at the user level. Bundles for small companies and large enterprises have distinct characteristics that have not yet been effectively exploited. For instance, large corporations will be able to purchase a tailored "corporate dial tone" that includes applications, security and access across multiple network types.

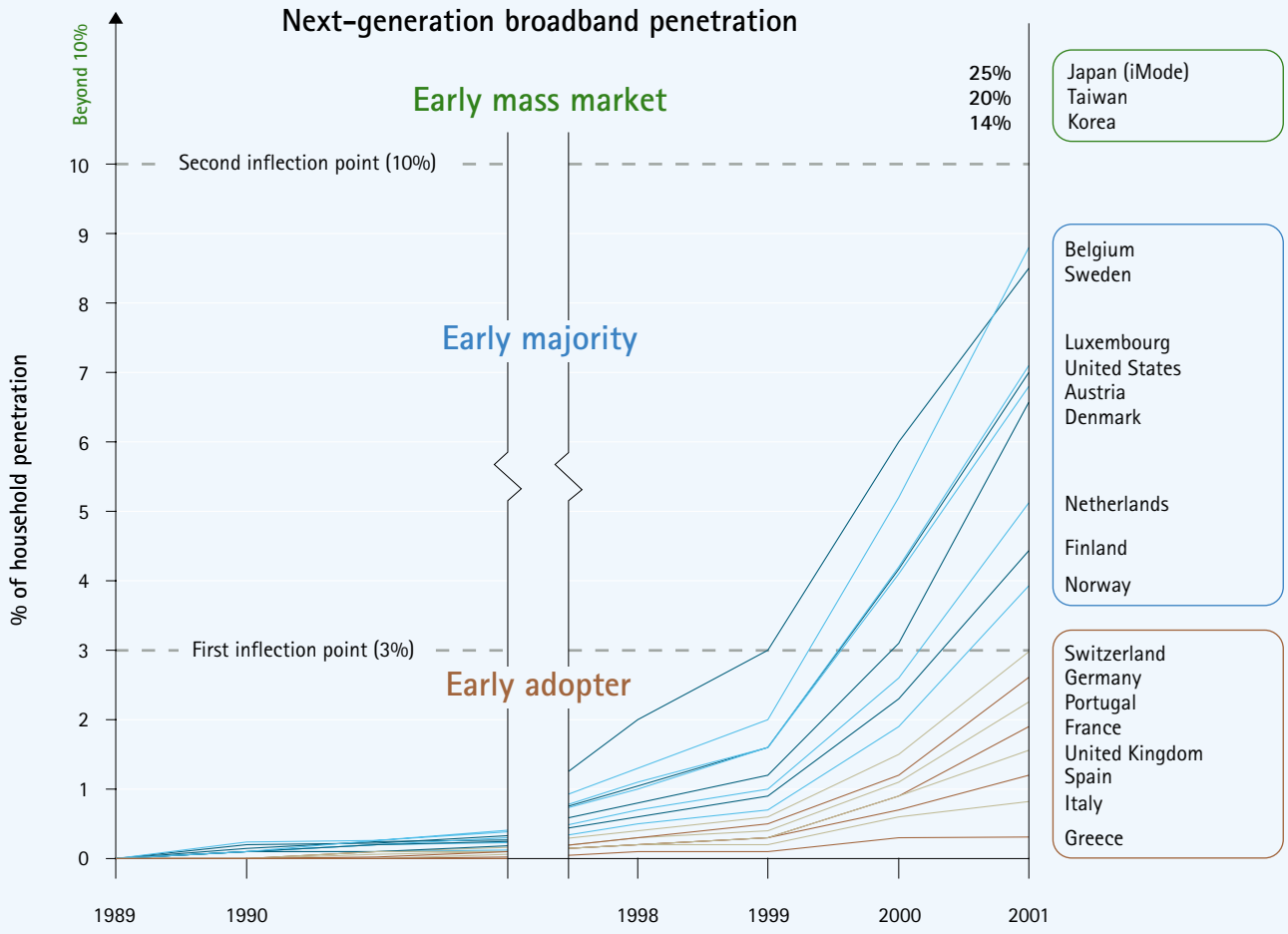
5. Create Trojan horses

Household penetration can also be achieved through the back door—through after-hours use of an e-work terminal, or Internet gaming via a Web console. IP-enabled devices such

Adoption curve

Broadband is following the same S-shaped adoption curve followed by many technological innovations. Initially, adoption is slow, as the innovation remains the province of early adopters. These pioneers, who either have a special need that the innovation answers or simply like to be at the leading edge, can take penetration only to about 3 percent.

But at this first inflection point, we begin to see the innovation's network effects: The more phones or rail terminals or broadband connections out there, the more valuable each is. New, more pragmatic users appear. This "early majority" is the precursor to the mass market, and can take penetration to the next inflection point of about 10 percent. Here, the mass market takes off. Penetration grows dramatically until the market is saturated.



SOURCE: Jupiter MMXI 2001, Pyramid Projections

as the Xbox, PlayStation 2, or iPod, or remote video cameras can act as Trojan horses for broadband adoption, an effect that can be boosted through bundling deals and enhanced-value propositions.

6. Apply well-targeted governmental help
Governments have an important role to play in broadband stimulus, mainly on the demand side. But it is not a costly role—especially considering the social, environmental and economic benefits to be gained.

Tax policy. A 20 percent tax credit to subsidize broadband adoption, either to the enterprise or the individual, would increase the addressable market by 15 percent—and return a 15-fold benefit on the initial cost. Governments can also give telecommuting a boost via vouchers or other flexible incentives.

E-government. Governments can bring broadband closer to critical mass by incorporating it into their own programs. Providing more services and information via the Internet will encourage both individual and community use of broadband. Similarly, there are clear benefits in connecting schools, libraries and hospitals—introducing services such as online education or telemedicine—which can become the hubs of local wireless networks and provide extra motivation for home use. These local hot spots would further stimulate usage and demand throughout the community.

Rural development grant. On the supply side, government can help close the broadband availability gap between urban and rural areas. At the moment, 18 percent of the US population has no broadband option available, and an additional 35 percent has no choice of supplier. A grant of just $400 million to boost broadband adoption in rural areas would yield a 20-fold economic advantage, push adoption forward by an additional three percentage points and bring in new competition.

Catalyst for economic change

Economically important innovations of the past—railroads, the telephone, personal computers—share six characteristics.

Connection-creating. They bring together people, markets, goods or even entire societies.

Mainstream. Ultimately, these innovations become items of mass consumption, available to all classes of society.

Ubiquitous. Besides being available to all, they become available everywhere they are needed.

Low cost. As innovations spread, price falls rapidly and continuously.

Capital expenditure-led. In each case, a significant investment in infrastructure is needed ahead of mass adoption.

Prime mover-driven. A breakthrough application powers rapid adoption—although what it is may not be obvious in the early years.

Broadband possesses all these traits. And while it isn't yet apparent which of several applications might turn out to be a prime mover, it's easy to identify current broadband users who are even now laying the groundwork for far-reaching economic change. Telecommuters and the burgeoning small to medium-size business sector, for example, both fall in this category (and figure prominently in the stimulus measures).

Supply-side initiatives

Demand-side initiatives alone can push adoption to the 10 percent mark in the major economies of Europe, and significantly higher in the United States and Asia. But they will need to be matched with supply-side improvements if the momentum is to be maintained.

7. Get to work on next-generation operating support systems
Breakthrough levels of broadband access will require a new generation of support systems. This is a huge challenge: We need data roaming, with seamless access and common interfaces across all the networks we traverse. Network support systems need to be much more robust and able to read and handle the heterogeneous mix of networks that will make up the broadband "mesh." Meanwhile, back-office capability to handle complex digital settlements and convergent billing must be in place before we start trying to attract the compelling content that will draw in users.

8. Offer broadband lite
Research tells us that some customers would be up to five times more willing to purchase broadband if the price were lowered—even if that meant lower speeds. That implies a wealth of "broadband lite" applications waiting to be exploited. Wireless "hot zones" offering high-speed access within designated areas, such as coffee shops, service stations and other public spaces, are

increasingly popular. And in areas where landline broadband is not available, plug-in cards—which bring 2.5-generation wireless service to PCs and PDAs enabling them to double access speed—may come to be a far more significant application of 2.5G than wireless phone devices.

9. Emphasize delivery, not just content
So far, the problem of matching the economics of delivery to the demand for and nature of the content has not received sufficient attention. The goal, of course, is to target the right audience with the right content, in the right format, at the right time. Only by thoughtful attention to these issues can we ensure the performance users demand at a price that is both affordable and profitable.

10. Protect creative content through creative practices
Piracy is already a huge issue on the Internet, and broadband simply increases its potential. At its height, Napster carried nearly 25 percent of all Internet traffic. With broadband, all this can happen at up to 20 times the speed; the next Napster is just around the corner. Broadband must incorporate innovative security devices that both protect content owners and allay users' concerns over privacy, while not creating unduly complex management issues around digital rights. Otherwise, the supply of content will dry up and broadband will remain unappealing to the mass consumer market.

11. Develop innovative business models . . .
Next-generation broadband will require unprecedented levels of cooperation between and across network, device and content providers. This, in turn, will require a highly flexible set of business relationships and an industry structure in which both assets and consumers are shared. New types of aggregators and other business entities will emerge, capitalizing on the opportunities caused by disruptive technologies and new market practices.

12. . . . and make those models attractive to investors
The willingness of capital markets to invest in innovative companies has dwindled to a vanishing point—so much so that we have detected an explicit "innovators' penalty" built into share valuations. Overcoming this bias will require a commitment to profitability and transparency that was too often lacking in the bubble years.

The Accenture Broadband Stimulus Package offers enough immediate, short-term impact to justify its adoption on a case-by-case basis by individual communications, equipment and content companies and governments. Each organization will, however, need to carefully plot its own pathway to broadband ubiquity, based on (among other things) its financial position, customer base and existing network investment.

But all participants will do well to keep an eye on the bigger picture. Next-generation broadband can drive growth in GDP over many years and, in the process, make us not just richer but healthier, better educated and better connected with our families, our neighbors and our societies. The benefits of interconnectivity are real, and it is in our power to claim them sooner rather than later. We should do so. ■

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