

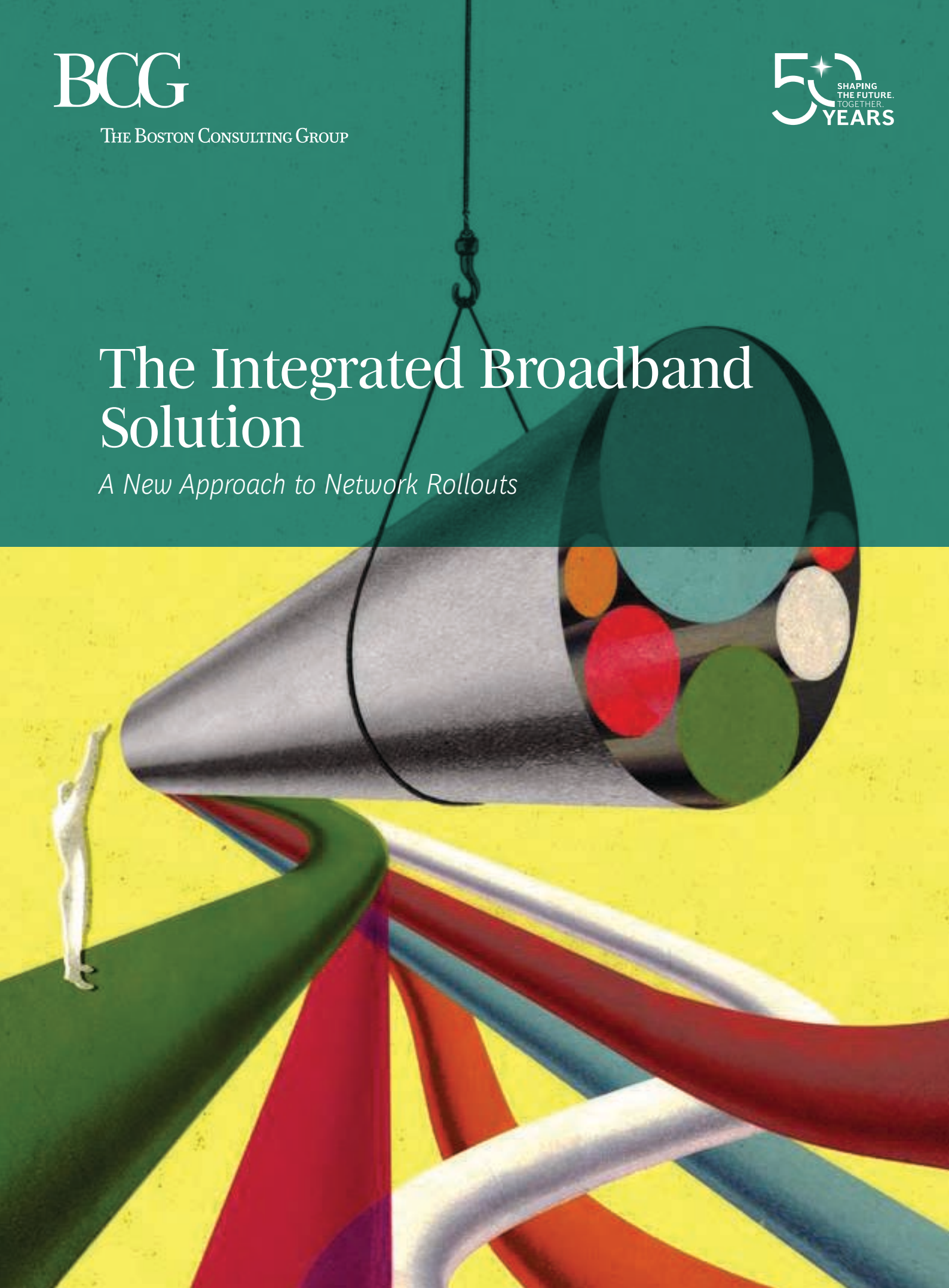
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The Integrated Broadband Solution

A New Approach to Network Rollouts



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The Integrated Broadband Solution

A New Approach to Network Rollouts

Heinz Bernold, Rüdiger Schicht, and Maikel Wilms

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AT A GLANCE

For telcos, meeting the rapidly increasing demand for network capacity won't be easy or inexpensive. And traditional rollout methods—with upgrades deployed on a national, one-size-fits-all basis—make investments costlier and less effective than they could be. Targeted upgrades offer a better approach and are already paying dividends.

A NEW PARADIGM FOR ROLLOUTS

BCG's *integrated broadband solution* enables telcos to deploy, in a manageable way, multiple upgrade paths—each aligned with the needs and potential of the local market. It also fosters synergies between fixed and mobile networks in order to provide broadband more efficiently.

THE PATHWAY TO SUCCESS

IBS will require new processes, new expertise, and significant internal change. By following six key steps, telcos can make better investments, maximizing the capacity—and value—that they provide.

THE WORLD'S ENTHUSIASM FOR doing things online seems nearly unlimited, and as it grows, so does the demand for network capacity. The estimates are head turning: worldwide mobile data traffic is expected to increase 13-fold between 2012 and 2017, and fixed networks should see Internet traffic rise approximately 50 percent year over year.¹ For telcos that provide—and, more to the point, sell—network capacity, this would seem to be very good news. More demand, after all, means more opportunities to launch products, win customers, and increase revenues.

But there is a challenge here, too. Adding the capacity to satisfy the voracious appetite for data will require huge investments in fixed and mobile infrastructure. While telcos are no strangers to large capital expenditures, the anticipated figures are unprecedented, particularly for providers that follow the traditional method of upgrading networks through national, one-size-fits-all rollouts. In those cases, even midsize operators face investments of tens of billions of dollars over the next decade—far more than they can muster.

Enter a new, nontraditional approach to network planning developed by The Boston Consulting Group in the course of its work with telcos. The *integrated broadband solution* (IBS) gives telcos far more agility in rolling out network upgrades, enabling them to minimize investments while maximizing the value that those outlays create—both for themselves and for their customers.

At the core of IBS is the recognition that different regions within a national rollout area are different, with characteristics and market potential that vary—so a solution that works well in one region may not be needed, or successful, in another. Fiber to the home, for example, fares best in high-density, affluent areas but is hard-pressed to turn a profit in more spread-out regions. IBS forgoes the one-size-fits-all rollout in favor of a more targeted approach, with telcos tailoring their offerings for a mosaic of customer needs and local conditions. And it does so in a way that is practical, manageable, and cost effective.

In our experience, IBS drives rollouts that can be 20 to 30 percent less expensive than plans made the traditional way, while generating the same EBITDA. It stresses—and facilitates—three crucial elements: geographically targeted rollouts, integration between fixed and mobile networks, and investments that are scaled to match local business opportunities. These are strong cards that telcos hold, but the traditional approach to network and business planning—in which the fixed and mobile sides of the business tend to go their own ways, and marketing and engi-

Worldwide mobile data traffic is expected to increase 13-fold by 2017, and fixed networks should see Internet traffic rise approximately 50 percent year over year.

neering departments don't often interact—means they're not often played. IBS ensures that they are.

The benefits aren't just theoretical. When we worked with one telco on a granular review of target districts for a fiber-to-the-home/fiber-to-the-curb rollout, for example, our analysis led the client to reduce the overall fiber-to-the-home rollout significantly, avoiding more than \$1 billion in capital expenditures on which it would have earned no return. The analysis also redirected about 30 percent of the remaining investment to areas that were more commercially attractive.

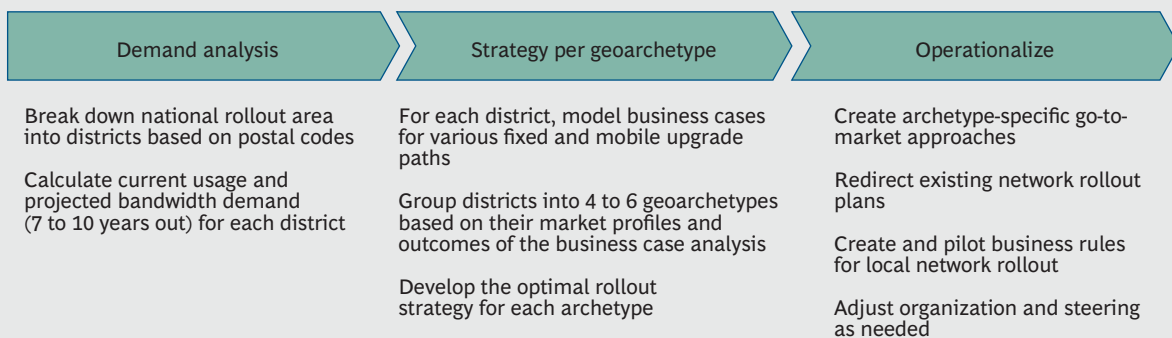
Yet IBS doesn't necessarily mean making smaller bets. It means making the right bets. It drives rollout strategies that more closely match the needs and potential of a given market and allows rollouts to be implemented in the most cost effective way, often using a mix of network technologies. We believe that when IBS is executed wisely, it will prove far more successful than traditional methods in driving upgrades that make sense in today's world. It is a new paradigm for new times—one that will help a telco not only tackle the future of broadband but lead it.

A New Paradigm for Rollouts

IBS is a multistage process. (See the exhibit.) It starts by breaking down a national rollout area into local markets or "districts"—hundreds or even thousands of them, depending on the size of the country. For each district, it uses sophisticated modeling to analyze the business case for an array of upgrade paths—everything from fiber only to expanded 3G/4G to a combination of mobile, fixed, and offloading options. It pays particular attention to high-value customers, since they are an important driver of revenues in any area. It then sorts the districts into four to six *geoarchetypes*, grouping together those with similar market profiles and business case outcomes. For each archetype, it develops an upgrade path and a go-to-market strategy.

By focusing on four to six geoarchetypes, telcos can create rollout strategies that are granular enough to reflect local conditions without being too complex to implement on a large scale—no telco can efficiently implement 100 or even 20 different

Key Steps in the Integrated Broadband Solution



Source: BCG analysis.

rollout strategies. IBS may not give every district a rollout that is a perfect fit, but it comes far closer than the traditional one-size-only solution.

The beauty of this approach is that it enables telcos to apply innovative, creative upgrade paths that would never work—or even be considered—for a national rollout. For instance, a geoarchetype consisting of spread-out, low-rise, low- to middle-income areas with excess mobile capacity could be an ideal place to offload some stationary usage to 3G and LTE networks.

The analysis developed under IBS also helps telcos answer some difficult questions. In certain cases, even after developing the ideal upgrade path for each archetype, a telco may find that the cost of meeting the full expected demand is too high to be feasible. Instead, it will have to invest selectively. IBS can steer the telco's focus, showing how and where to best allocate its available investment.

IBS may not give every district a rollout that is a perfect fit, but it comes far closer than the traditional one-size-fits-all solution.

Adopting the Integrated Broadband Solution

Implementing IBS is no simple matter, of course. Targeted rollouts will require new expertise and significant internal change, including close coordination among departments that may be more accustomed to working apart. To guide telcos along, we have developed a step-by-step approach that will help them understand each element of this new paradigm—and how to get it right.

Break the rollout area into local markets. Key market characteristics—including population density, wealth, broadband use, and competitors' infrastructure—vary not just among neighborhoods but sometimes even block to block. Yet telcos have to be careful as they divide their national rollout area into individual districts. Turning the process into a science—examining every market trait in detail and carving out each district from scratch—will add too much complexity and require too much time to be efficient. Instead, we recommend breaking down the rollout area by postal code, with each resulting district consisting of perhaps 15,000 homes. This provides a simple way to define each district, while still capturing local nuances.

Analyze demand—for today and tomorrow. The next step is to analyze current usage and projected network demand (looking out seven to ten years) for each district. Coming up with current demand is relatively straightforward. In BCG's engagements, we look at data on the penetration of mobile and fixed-line access technologies (smartphones, tablets, laptops, and TVs, for example) and on current usage patterns for the major applications (such as Internet, voice, video, and broadcast and nonlinear TV). This lets us calculate total traffic per customer, both for the home and for “on the go” usage.

Long-term traffic forecasts are a bit more complicated. BCG's approach is to examine technology trends and changes in consumers' behavior in order to estimate how many hours they will be online, how much video—both on-demand and broadcast—they will consume, and so on. Traffic forecasts from research firms and vendors provide a good starting point, but they need to be adjusted for local conditions such as population growth, cultural preferences, and laws on privacy and security. Scenarios provide a useful sensitivity analysis of these estimates. The result is an

approximation of what a rollout area's digital future is most likely to look like and how much network capacity it will require.

Build a business case for each district. Once demand has been calculated, telcos can model the business case for investments in fixed and mobile networks in each district. This step gives operators a chance to model a multitude of technology options at the local level.

For mobile, the three levers available to increase capacity should be considered: adding spectrum, whether via 3G, 4G, or refarming; making more efficient use of existing spectrum (for example, through an aggressive 4G buildup or through technical advances such as heterogeneous networks); and increasing the density of the network topology (by means that include boosting the number of macro base stations, adding small base stations like picocells and microcells, or offloading traffic onto a fixed-line network). For each option, modeling will return capital expenditure, operational expenditure, and associated capacity, enabling telcos to home in on the investment with the greatest net present value.

Assessing the fixed-line upgrade path is mainly a matter of examining the business case for a fiber-to-the-home rollout, with the alternatives typically consisting of much more modest commitments to VDSL or G.Lite. Yet equally important is the competitive intensity of the district and the telco's ability—or inability—to be the first to offer high-speed broadband (50 Mbps and up). Experience has shown that first movers enjoy substantial competitive advantages—benefits that won't be shared by the second player on the scene. Telcos should note, too, that in some cases—because of geographic characteristics (such as heavy rain conditions) or the technology that has been deployed—operational expenditure per line can vary from one area to another and should be taken into account.

Plotting the mobile and fixed upgrade paths simultaneously is perhaps the most crucial element of IBS. It brings to light the ways in which mobile and fiber can, in effect, help each other out. In terms of operating costs, for example, fixed networks can deliver capacity far more economically than mobile networks—between 15 and 40 times cheaper, according to various industry estimates. Yet fiber also comes with up-front costs that rise dramatically as the acreage of the rollout area grows. Generally, that makes its deployment feasible only in high-density areas. IBS enables telcos to leverage the advantages—and minimize the disadvantages—of both types of networks. In high-density areas, fixed networks can be enhanced to pick up some of the mobile traffic, lowering the operational expenditure associated with mobile. Meanwhile, in some rural or other low-density regions, mobile upgrades can give users the greater speeds they demand while keeping fixed investments manageable. These synergies are well worth pursuing. Our modeling indicates that by incorporating offloading, telcos can increase by 40 percent the number of districts with a positive business case for fiber to the home.

To be sure, the large number of districts to analyze, together with the volume of data required, make the modeling complex. Given the challenges, BCG has developed proprietary methodologies to model the business case for each district in a fast, reliable way so that the full network is analyzed within an acceptable timeframe.

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Sort the districts into geoarchetypes. The next step—sorting the districts into four to six geoarchetypes based on their business-case outcomes—allows the network upgrade to be rolled out in a practical way. But the process is a bit of an art. While telcos will want to look for common or similar characteristics among districts, there has to be a logic to the sorting. Districts in New York City’s borough of Manhattan, for instance, may fall into two different geoarchetypes, but it would be difficult to deploy two separate rollout strategies in an area that has traditionally been considered a single region. Providing one city block with a network upgrade different from the next block would not only be operationally unwieldy, it would likely confuse and even frustrate consumers. Thus it may make more sense to place all the borough’s districts into one archetype—even if some of them more accurately fit into another.

It is important to note, too, that there are no standard geoarchetypes. Instead, they will vary from telco to telco, depending on circumstances specific to the company’s network, its competitive picture, and its rollout areas. The archetypes for one project might break down as follows:

- *Rich but Contested Turf.* In these affluent areas with strong competition, the market for fixed networks is stable and there is growth in mobile networks.
- *Seizable High Ground.* Competition is anticipated; the market for fixed networks is stable and there is growth in mobile.
- *Fixed/Mobile Synergy Areas.* The use of public switched telephone networks (PSTN) is declining rapidly; broadband is available mostly through mobile networks.
- *Low-Priority Areas.* In these relatively poor areas, the use of PSTN is declining rapidly, and inexpensive voice-only mobile dominates.
- *Up-and-Coming Areas.* In these emerging areas in terms of wealth, PSTN and DSL penetration is being maintained.

Determine the optimal upgrade path for each geoarchetype. Once the telco has sorted the districts into archetypes, it will need to develop upgrade strategies tailored to each one. Sometimes these will be fairly clear-cut. A geoarchetype consisting of rich, high-density areas where competitors have yet to deploy fiber would be a good place to lead with fiber to the home. A geoarchetype consisting of less affluent areas where broadband use is mostly mobile might warrant a large investment in 3G, with a lesser focus on DSL. Sometimes, however, the solutions will be decidedly unconventional—for example, using the fiber network in high-traffic areas to directly offload stationary mobile traffic.

Consider the five archetypes described above. Each lends itself to a very different upgrade path, balancing fixed and mobile in a unique way. In this example, the strategies we’d recommend are as follows:

- *Rich but Contested Turf.* Invest in fixed network infrastructure and offer triple-play service.

Geoarchetypes will vary from telco to telco, depending on circumstances specific to the company’s network, its competitive picture, and its rollout areas.

- *Seizable High Ground.* Preempt the competition by launching integrated fixed and mobile high-speed data; selectively upgrade to VDSL and fiber to the home.
- *Fixed/Mobile Synergy Areas.* Invest in 3G; make naked DSL the only nonmobile broadband offering.
- *Low-Priority Areas.* Milk 3G; make naked DSL the only nonmobile broadband offering.
- *Up-and-Coming Areas.* Improve DSL speed and invest in 3G.

IBS gives telcos much-needed flexibility in their network and business planning, but operators shouldn't take that to an extreme. A telco doesn't want to stretch its brand too far, becoming a "premium" provider in one area and a discount provider in another area nearby. And, as always, it has to have the right foundation for whatever strategy it settles on. If Wi-Fi or small cells are deployed as an alternative to macro cells in high-density areas, there has to be fiber for backhaul—nothing else will get the job done efficiently.

Make the access mix operational—and support it for the long run. IBS doesn't end once strategies are developed for each geoarchetype. Telcos may need to modify or redirect existing investment plans. They must determine what changes to processes and governance may be required to make the access mix operational on a day-to-day basis. They'll have to develop a go-to-market plan for each archetype's access strategy—plans that will overlap in some ways and differ in others. For example, it may make sense to bring IPTV to market in two geoarchetypes but not in any of the others, or to add retail stores in one geoarchetype while closing them in another.

Successfully implementing an integrated broadband strategy will require many internal adjustments at the telco. Engineering manuals will need to be adjusted to account for the different upgrade paths—design guidelines may be very different for archetype A than for archetype B. Other departments, such as marketing, will need to know how targeted rollouts will affect their work, particularly as the company's full product portfolio will not be available in every market, and sales scripts and channels will have to be modified accordingly. Clear, comprehensive, and ongoing communication among departments will be essential.

Telcos will also need to realize that the network plans they develop won't remain static. They should review their geoarchetype strategies regularly, as their experience deepens and results are measured. Did the strategies perform as expected? Are tweaks required? Creating ongoing cross-functional governance can help ensure that vital information and market intelligence are continually captured, shared, and leveraged.

Results—and Implications

None of this will be easy, but there are measures telcos can take to boost their chances for success. They should begin by chartering a task force—comprising

IBS gives telcos much-needed flexibility in their networks and business planning, but operators shouldn't stretch their brands too far.

representatives from all key departments—to execute the steps outlined above, with the telco’s executive board (or equivalent) weighing in on the ultimate strategy for each geoarchetype. For most companies, this will entail three to five months of work, but from a managerial perspective it should be fairly straightforward to organize and carry out.

For telcos that have embraced it, IBS is already having an impact. One of our clients, engaged in a national broadband rollout, reduced its customer churn rate by 34 percent over the course of a year, and boosted its gross additions by 24 percent, by identifying geoarchetypes and differentiating its value propositions, pricing, and channels accordingly.

For many telcos, IBS will bring savings that let them meet capacity demands—in full or selectively—while taking on far less risk. For others, IBS may result in making greater investments than they would make with traditional rollout methods, with results that more than justify the added costs. For example, in one fiber-to-the-home rollout, our client’s proposed capital expenditures through 2020 rose, from €5.4 billion to €9.9 billion, as more homes were deemed worthy of inclusion. But the projected gains—9.3 million broadband customers by 2020 (instead of 6.3 million under the old plan) and €6.0 billion in annual revenues (instead of €4.4 billion)—made this the savvier investment.

IBS is not a panacea. It can steer companies to better investments, but targeted rollouts mean that some customers will get access to faster, more advanced networks than others. That may raise questions on the business side: Will the company’s reputation suffer? Will future opportunities in “lower priority” areas be hindered? IBS may raise important societal questions, too, such as whether selective upgrades create a digital divide. As the ways in which we live and learn become more digital—and more dependent on the network—will some parts of the population be at a disadvantage?

By optimizing investments and maximizing the number of people who get access to high-speed broadband, IBS can get us closer to universal access than can traditional rollout methods. But it still won’t be enough. Heterogeneous broadband services are going to be an unavoidable reality. What, if anything, should be done about that? And by whom? These are questions that will likely challenge telcos and public policymakers for a long time to come.

Bringing the world online, as telcos are being asked to do, was never going to be easy. But forging a view of the world that is at once local and global will make it easier—and even allow telcos to earn a fair reward for the effort.

By optimizing investments and maximizing the number of people who get access to high-speed broadband, IBS can get us closer to universal access.

NOTE

1. Cisco Visual Networking Index Global Mobile Data Traffic Forecast, February 2013, and IDC Worldwide Internet Broadband Bandwidth Demand 2012—2015 Forecast, March 2012.

About the Authors

Heinz Bernold is a principal and **Rüdiger Schicht** a partner and managing director in the Zürich office of The Boston Consulting Group. You may contact them by e-mail at bernold.heinz@bcg.com and schicht.ruediger@bcg.com.

Maikel Wilms is an associate director in the firm's Amsterdam office. You may contact him by e-mail at wilms.maikel@bcg.com.

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For Further Contact

If you would like to discuss this report, please contact one of the authors.

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