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Telecommunications

Cutting through the 5G hype: Survey shows telcos' nuanced views

Operators see a marginally positive business case, expect rollout at scale to take until 2022, and don't think the increase in capital-expense-to-sales ratio will be as big as skeptics claim

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For a technology that gets as much attention as 5G, we know precious little about what telco operators truly think about how it will play out for the industry and what they truly plan to do.

93%

Fully 93 percent of the respondents said they expect network sharing to increase with efforts to bring 5G to areas where it doesn't make sense to have multiple networks.

Optimists tout the great benefits of low latency and high capacity that will eventually enable new value-added use cases, while pessimists focus on the lack of actual new use cases to emerge so far and what they see as a wobbly commercial rationale, not to mention the huge capital expense required.

To get a sense of what momentum there actually is toward building out 5G and realizing its potential, we recently conducted a proprietary survey of 46 chief technology officers (CTOs) directly engaged in 5G-development plans around the world. The results, combined with our own experience in helping companies develop 5G strategies, execute pilots, and move toward rolling out the technology, paint a much clearer picture of 5G in the coming months and years.

Free from the necessity of public posturing, the industry experts in the survey portray a more nuanced view of 5G, resisting the sentiments of both the true believers and the skeptics alike. Globally, they expect that the rollout will take until 2022 and that it will likely increase the capital-expense-to-sales ratio, but not as massively as many naysayers have claimed.

Finding the business case

The biggest uncertainties for industry professionals lie around the strength of the business cases and the underlying economics, as well as other emerging commercial considerations. Confidence in the technology is high, but less clear is whether and how soon it can fuel new products and services that customers are willing to pay for. Consequently, at least at the outset, the majority see enhanced mobile broadband and the Internet of Things (IoT), rather than fixed wireless access or mission-critical applications, as the most prevalent applications. These are not the revolutionary use cases lauded by 5G proponents, but they provide advancements that are still meaningful.

The survey results also show, somewhat surprisingly, that the uncertain economics of 5G are spurring telcos to consider some alternative business models. So far, at least in public, most operators have been reluctant to take a stand on whether they expect to work even more with other providers to share network infrastructure or if they intend to use third-party "neutral hosts" that have their own, or shared, 5G infrastructure and will run it for the operators in certain regions or buildings. Yet in the survey, fully 93 percent of the respondents said they

2020

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expect network sharing to increase with efforts to bring 5G to areas where it doesn't make sense to have multiple networks. And approximately 90 percent expect third-party neutral hosts to supply a part of the network to run for several operators. While these results align with what we see in our own proprietary models, the large industry consensus is remarkable.

Equally surprising is that operators also envision a relatively limited investment in operational support systems (OSS) and business support systems (BSS)—the very systems needed to be able to market, price, sell, provision, and operate the new uses cases so many of them have been talking about, such as enablement of connected cars and mission-critical solutions.

Overall, this survey paints a picture of 5G as a powerful new technology just waiting to be tapped for innovative new uses cases—one that even, many countries believe, has the potential to create and advance entire economies. However, until those cases emerge, most operators will tread cautiously, leveraging 5G for near-term objectives and waiting for a clearer view on the use cases' economics to accelerate. Yet given the expense required to prove those significant use cases, it could be an uncomfortably long wait. And for operators in countries that don't see 5G as a matter of strategic and economic importance, there is a greater risk of falling behind.

The conditions are similar to that of the rollout of 3G in the early 2000s, when adoption was initially slow, with fixed wireless access one of the only real early use cases and handsets still expensive and relatively scarce. Only when BlackBerry and especially iPhone came several years after 3G launched was the full network capability used, including for the beginnings of mobile broadband.

From a global perspective, the survey suggests some new trends in regional leadership. Although North America is in the lead, with the two top operators already launching 5G commercially, Asia is keeping pace. In Europe, however, there exists more doubts about 5G, which is a sharp departure from some earlier rollouts, such as 2G and 3G, when the continent led the technology's introduction.

Europe's relatively slow start with 5G is driven by a complex set of factors. For one, it has had slower economic growth than the United States and China since 2008. Also, its markets are smaller and more fragmented, hampering the ability to find quick returns on large investments. Relatively low prices in fixed wireless access also play a role, lowering opportunities for its expansion. Meanwhile, for the United States and China, technologies such as 5G and artificial intelligence are key battlegrounds, so the large operators in each of these countries are making advanced bets.

The survey

McKinsey surveyed 46 chief technology officers of large telcos around the globe, by phone and online, and conducted targeted interviews. The sample includes mostly incumbents and players that have both fixed and mobile capability; 20 percent of respondents are attacker operators, and 22 percent are mobile players only. Geographically, the respondents are varied: 25 percent are multiregion operators, 25 percent are in Europe, 20 percent are in North America, 20 percent are in Asia, and the rest are in the Middle East, Latin America, and Africa. The following is a selection of the results from our survey.

5G viewed as path to network leadership

Although many operators say publicly that they see IoT as a 5G priority, our survey shows that they really see this latest wireless advance primarily as an opportunity to cement, gain, or regain network leadership (Exhibit 1). Around half view such competitive positioning as the number-one priority for 5G. The second priority is customer experience, and the third is capacity, with about a third of operators citing this as their second objective for 5G. By contrast, operators don't see IoT as a core objective for 5G, confirming our hypothesis that for now, the existing IoT capability is sufficient for most use cases. While we hear a lot of talk about the use of 5G for fixed wireless access, only 22 percent of operators identify this as their first or second priority for 5G, the same as IoT.

Who's driving it and where

The momentum toward 5G still sits with CTOs. Around a third of the operators surveyed have 5G-pilot strategies in place and are done shaping their technology strategies. However, few have gotten the business case approved, and commercial planning is still in its very early stages (Exhibit 2).

The fact that the data seem to indicate that the technology team is leading the business team is notable, since it is usually the other way around, with a business case or financial return dictating the launch of any particular new service or technology. The reasoning behind this could be either that 5G is viewed as so important that it just has to move forward or that the "working" commercial teams—those below the CEO level—haven't pushed for it yet.

Expected return on investment

The business case and economics of 5G remain unclear, with about two-thirds of the operators stating they still have questions around the financing of it, and roughly 60 percent of respondents indicating they struggle with the business case (Exhibit 3). This element alone could possibly delay real full-scale deployments. The apparent bullishness of North American operators aligns with their push to launch now and their stronger market structure, while Europe remains skeptical on new use cases.

Increased costs

The business case is made more complex by the belief among most respondents that 5G will usher in rising costs. More than two-thirds of them said the capital-expense-to-sales ratio will go up. Given the densification needed in many of the networks to leverage the higher frequencies, as well as new spectrum acquisition and other potential spectrum-related costs (such as "refarming"), it is not a surprise that only 11 percent see 5G reducing industry capital expense. On the operating side of the ledger, industry figures worry about site costs (65 percent) and maintenance costs (50 percent). Many expect IT costs to increase (40 percent), while 22 percent see an opportunity to reduce them. Overall, the people surveyed see an increase in operating expenses.

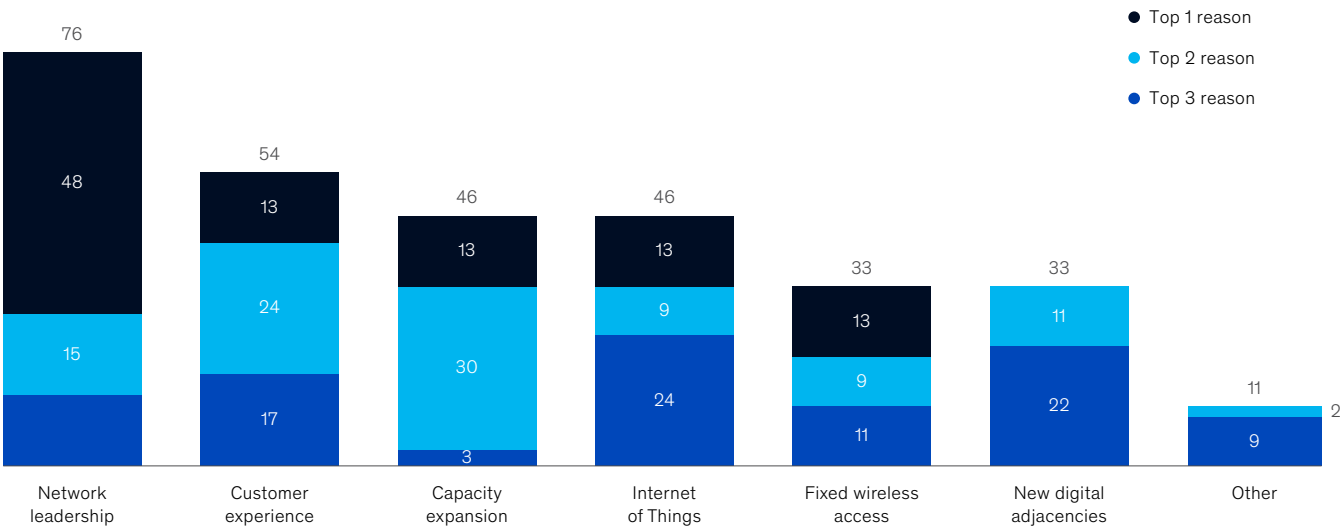
Regulation

Nearly a quarter of operators surveyed see uncertainty in regulation as a key stumbling block. Design of frequency auctions and rollout obligations are often top of mind, as are regulations that influence new business models (such as those regarding privacy, security, and indemnity). 5G also introduces the prospect of additional regulatory hurdles, such as having to deal with cities and other local governments on small-cell rollouts.

Exhibit 1

Top 3 reasons for 5G roll-out are network leadership, customer experience and capacity expansion

Top three reasons for 5G rollout,[1] % of respondents

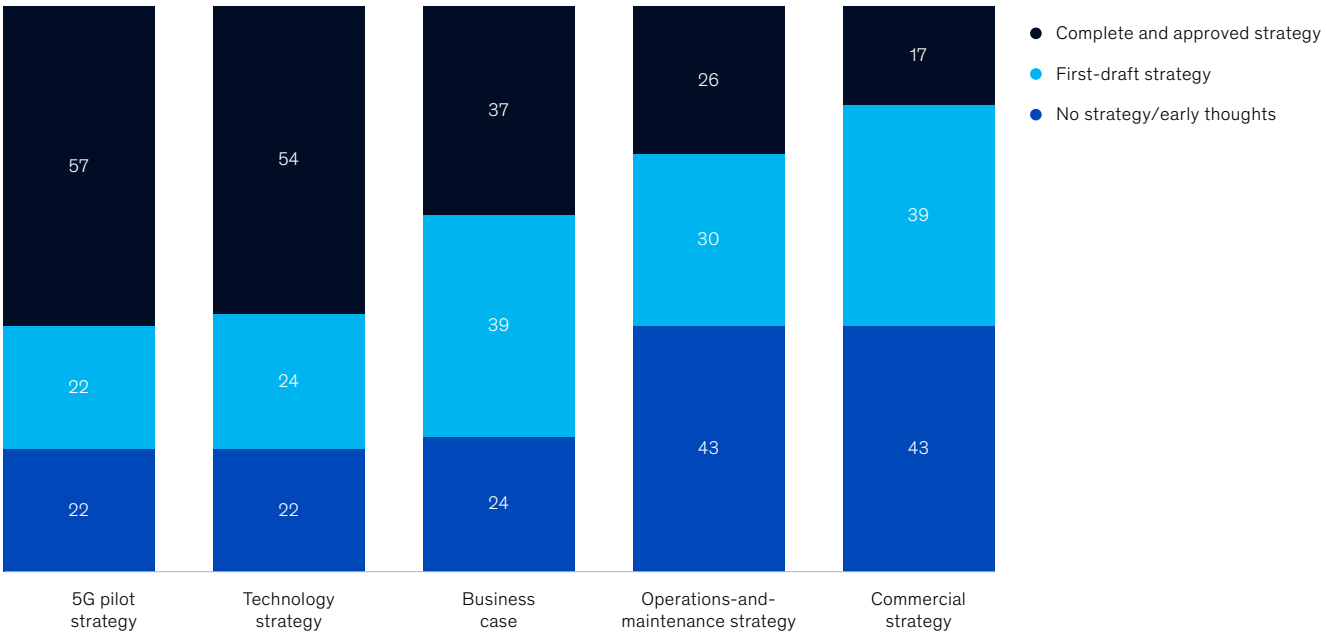


[1]100% = 46 operators. Original question: What are your top 3 reasons for 5G rollout?
Source: McKinsey 5G Survey 2018

Exhibit 2

The technology strategy is mature for most operators, while commercial strategy and business case remains immature for most

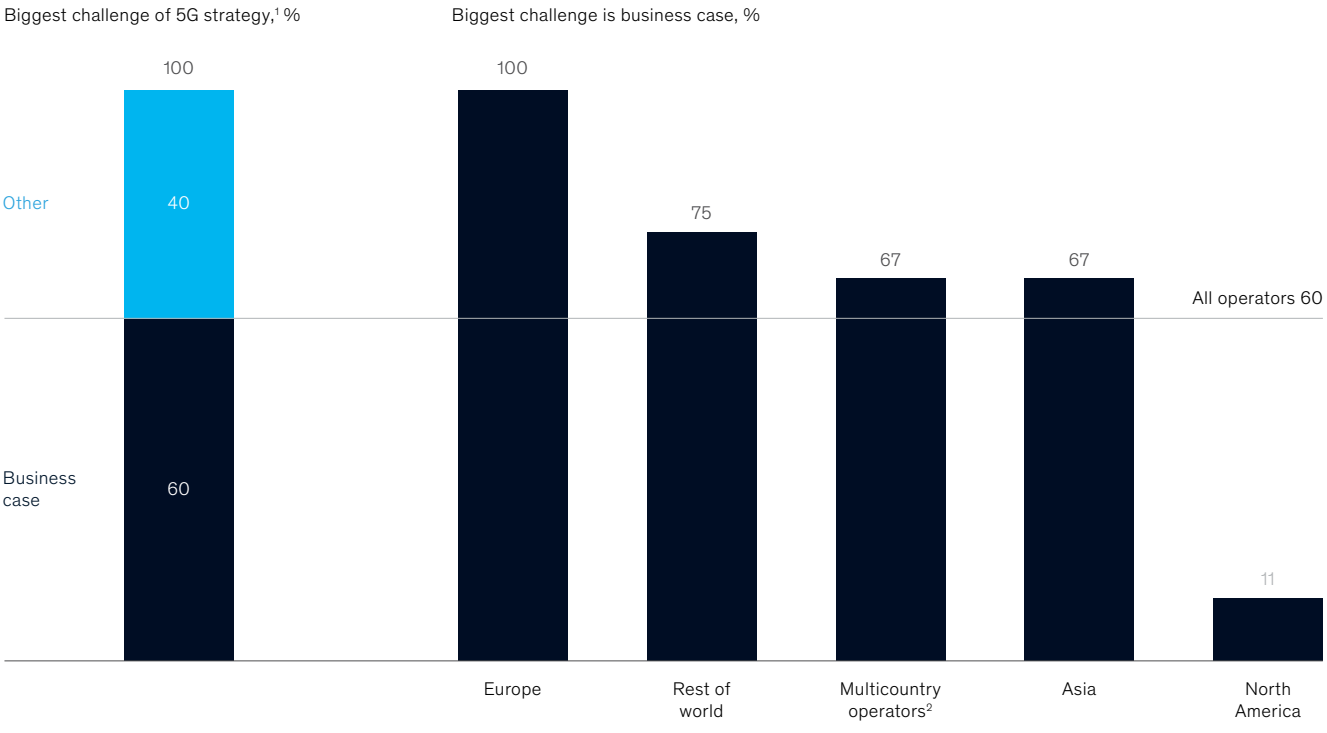
Current status of 5G strategy development,[1] %



[1] 100% = 46 operators. Figures may not sum to 100%, because of rounding.
Source: McKinsey 5G Survey 2018

Exhibit 3

The business case has been the largest challenge in 5G strategy for over 60 percent of respondents, excepting North American operators

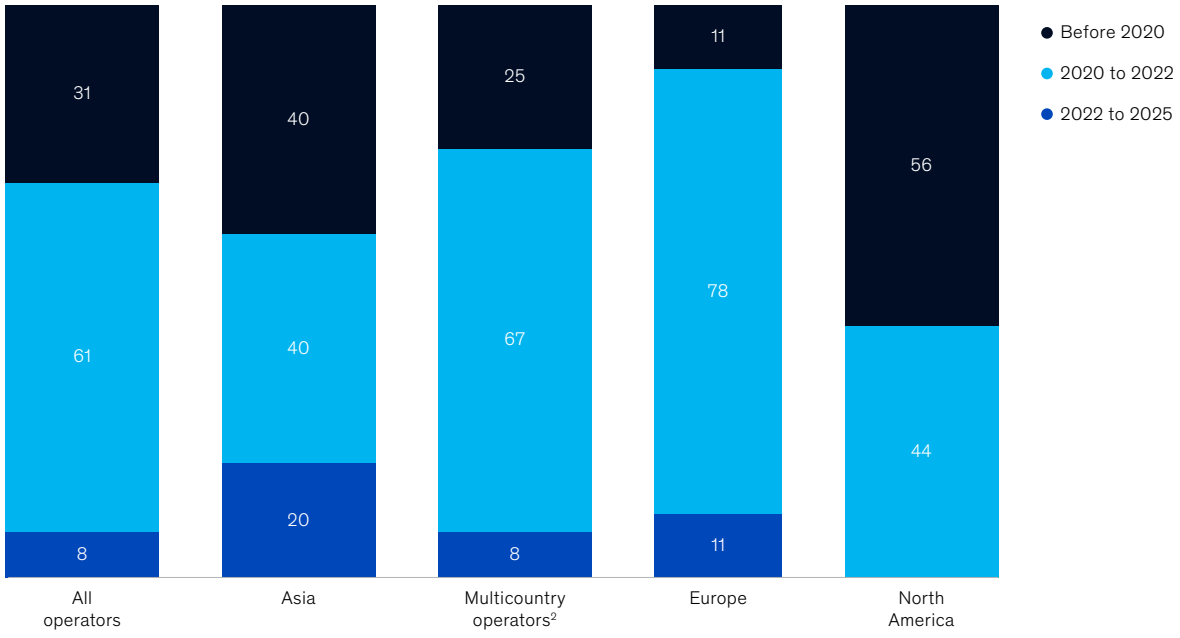


[1] 100% = 46 operators. Original question: What has been the biggest challenge, if any, in your 5G strategy?
[2] Multicountry-operator responses reflect perspective of group chief technology officer.
Source: McKinsey 5G Survey 2018

Exhibit 4

Large-scale deployment of 5G is around the corner, with approximately 92 percent of respondents planning deployment by 2022

5G large-scale deployment timeline,[1] % of respondents



[1] 100% = 46 operators.

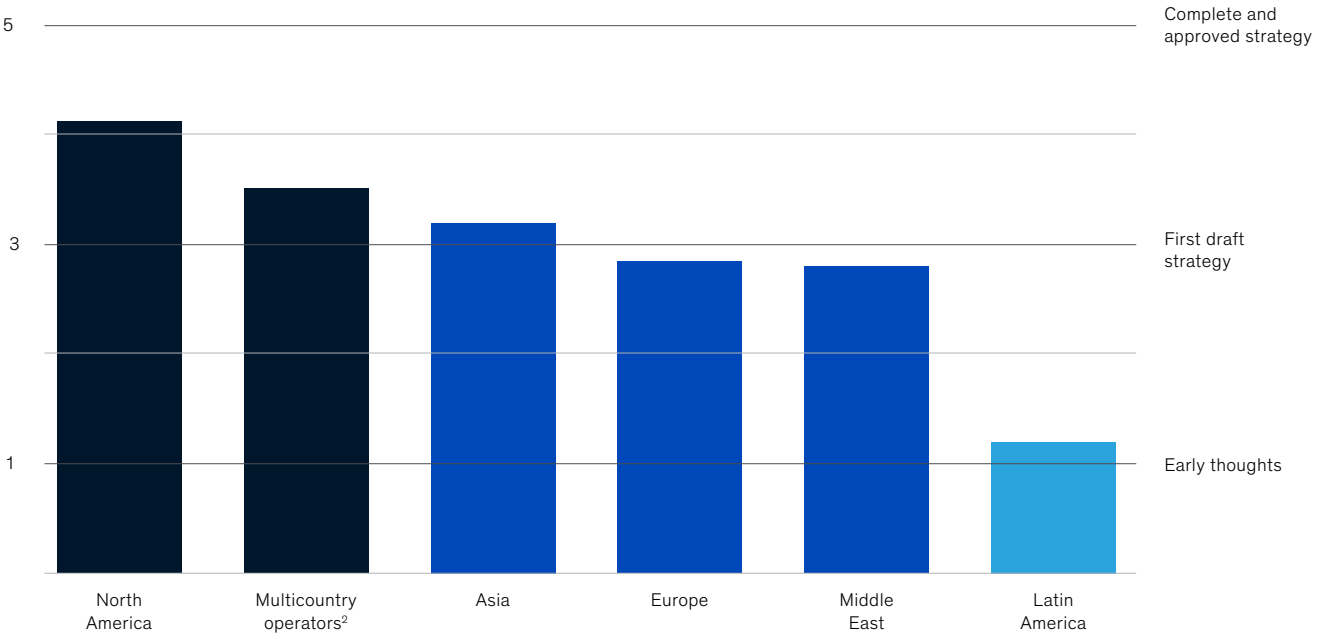
[2] Multi-country operator responses reflect perspective of group chief technology officer.

Source: McKinsey 5G Survey 2018

Exhibit 5

Large regional differences in maturity: US and multicountry operators lead on 5G maturity, while European operators lag behind

Average operator, overall 5G development,[1] score (1–5)



[1] 100% = 46 operators. 5G pilot, technology strategy, business case, operations-and-maintenance strategy, and commercial strategy

[2] Multi-country operator responses reflect perspective of group chief technology officer.

Source: McKinsey 5G Survey 2018

Rollout at scale likely won't come for another year or two, with regional variation

This year will mainly be spent on preparing and planning for 5G, with 61 percent of operators responding that they expect peak rollout during the period between 2020 and 2022 (Exhibit 4). While only around 30 percent of operators plan to roll out 5G on a large scale in 2020, about half are already engaged in or have completed 5G pilots (working with one or more technology provider). Of those who have yet to take the plunge at all, nearly two-thirds expect to launch a pilot within a year.

The regional variations apparent in the deployment timelines reflect the different regions' operators' varying levels of 5G maturity (Exhibit 5).

Operating models likely to include less millimeter wave but more sharing and neutral hosts

5G is such a significant technological transition that it has the potential to bring with it some equally significant shifts in the operating model, as reflected in the survey responses.

Millimeter wave

Less than 35 percent of operators expect deployment in the millimeter-wave spectrum in the short term, which many in the industry still hope will eventually help enable 5G's full potential. More than 80 percent of the respondents expect higher cost of density for millimeter wave, nearly half see deployment as the biggest bottleneck, and nearly half mention operating cost.

Network sharing

Just about everyone surveyed expects increased network sharing. This is in line with the widely held assumption that 5G will push up costs for operators. Network sharing can be an attractive option to lower costs, especially in areas with either little opportunity to differentiate quality, or in areas with high rollout costs, such as rural regions.[1]

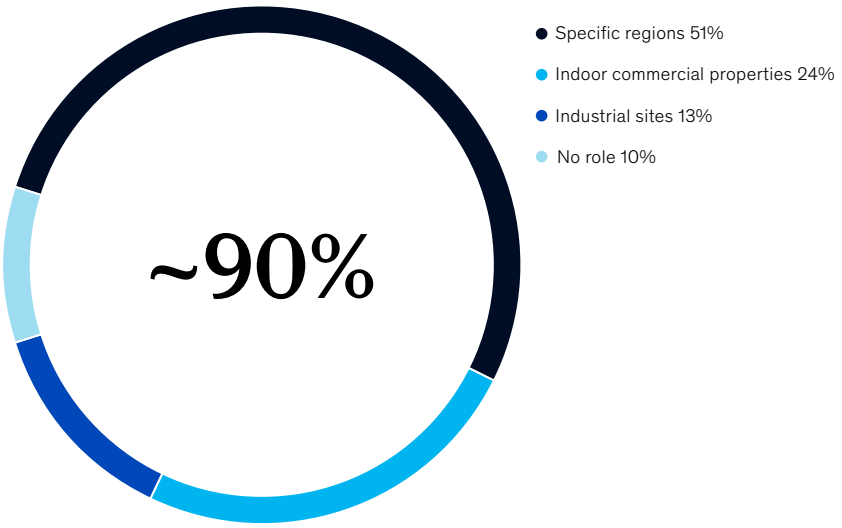
Neutral hosts

Beyond network sharing, 90 percent of operators surveyed say they expect to adopt new business models like neutral hosts, though there is no alignment yet on where such third parties will be involved (Exhibit 6). This indicates a significantly greater role for neutral hosts than operators let on publicly, but it makes sense for three reasons. The first is financing. Neutral hosts offer a lever to balance out the increased investment 5G demands, similar to network and other infrastructure sharing. The second reason is operations. Crowded venues that experience high demand for connectivity often have limited space, or they face limitations due to physical appearance, both of which can make it impossible for multiple mobile-network operators to deploy equipment in the same location. The third reason is customer experience, including improved connectivity. The use of neutral hosts is more prevalent in crowded places where people use a lot of data (an event in a stadium where people want to stream a lot of live video, for example). Shared infrastructure can ensure sufficient coverage and capacity to serve these high-volume, high-traffic areas.

Exhibit 6

Neutral hosts or networks are expected to play a role in 5G

Role neutral hosts/networks will play,[1] % of respondents



Note: Figures may not sum to 100, because of rounding.

[1]Excludes 6 respondents answering "do not know".
For the remaining 40, 36 answered "yes" and 4 answered "no".

[1] See Ferry Grijpink, Alexandre Menard, Halldor Sigurdsson, and Nemanja Vucevic, "Network sharing and 5G: A turning point for lone riders," February 2018, McKinsey.com.

Where the investment will happen

While there has been a lot of talk about new network capabilities, from leveraging latency to enabling more quality guarantees, most operators still see investment happening in the network, rather than the enabling layers like OSS and BSS. Our experience suggests that many operators are underestimating the challenge if they want to leverage 5G for new business models. At the same time, if pilots and enhanced mobile broadband (E-MBB) are the core focal points for pure 5G in the next few years, along with (to a lesser degree) fixed wireless access and enhancing IoT with 5G capability, investment in IT enablement of new business models can be delayed without much downside.

Industry leaders seem to predict significant implications for the core network, which would need to be upgraded to allow operators to offer 5G services (for example, network slicing and quality guarantees) to customers. Adding millimeter wave to the frequency portfolio will also have substantial impact—both in network architecture (for example, densification by adding small cell sites and overlay design through software virtualization to create additional layers of network abstraction) as well as from an operational process. However, there are differing views on millimeter wave, with Europe far behind other regions' bullish stances. This is driven by Europe's slower pace of millimeter-wave-spectrum auctions, smaller opportunity in fixed wireless access due to unbundled-local-loop regulations, and less overall faith in the 5G business case.

Although commercially in its infancy, 5G technology is ready, and in most markets its presence will be felt from 2020 on. Yet the fact that commercial models are not ready cannot be minimized; the business case is marginal, and the investments to enable new business models are not currently planned. Therefore, though we expect 5G to bring real benefits to the markets when it comes to speed and capacity, until real "new" use cases and corresponding business models emerge, 5G will feel closer to "more of the same." That reality is reflected in the survey results, which show the respondents' pragmatic acceptance that, at least at this early stage, 5G is not as revolutionary as its 4G predecessor. But this does not mean that telcos are willing to buy into the most pessimistic view that 5G will be a major, costly bust. Instead, the industry will keep patiently waiting for the innovators that leverage all 5G can bring into exciting applications for both consumers and businesses.

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